

Before the Queenstown Lakes District
Council

In the matter of The Resource Management Act 1991 (RMA)

And The Queenstown Lakes Proposed District Plan Stage 3; Stream
18; Settlement Zone

**Statement of evidence of Luc Waite for Universal Developments (Hawea) Limited
#3248**

29 May 2020

Submitter's solicitors:
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**anderson
lloyd.**

Qualifications and experience

- 1 My full name is Luc Waite
- 2 I have the following qualifications: BSurv (hons), Licensed Cadastral Surveyor.
- 3 I am a Director of Southern Land Ltd. Southern Land Ltd is a multi-disciplinary land development consultancy. It comprises of over 35 staff including Surveyors, Planners, Engineers, Project Managers and Geographic Information System specialists.
- 4 I have 14 years of experience in land development projects and subdivision engineering. I have worked on a wide range of land development projects including small and large multi-lot developments. I have undertaken the engineering design of infrastructure required to fully service a variety of residential land developments. Required Infrastructural elements include earthworks, roading, reticulated water supply, stormwater and wastewater drainage systems. I have also overseen the construction and installation of these elements through to successful commissioning and vesting with the Territorial Authority.
- 5 I have had extensive involvement in the Hawea Special Housing Area project. My involvement has included design and consideration of:
 - Lot layout, staging, easements and amalgamations
 - Servicing (including water supply, stormwater and wastewater reticulation
 - Earthworks

Code of Conduct for Expert Witnesses

- 6 I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2014 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of evidence

- 7 In preparing this evidence I have reviewed the reports and statements of other experts giving evidence relevant to my area of expertise, including:
 - (a) Statement of Evidence of Richard Powell on behalf of the Queenstown Lakes District Council.

- 8 I have prepared evidence in relation to:
- (a) Infrastructural requirements for the development of the land proposed to be rezoned by Universal Developments (Hawea) Limited, as outlined in the evidence of Mr Williams at para [xx]
- 9 My evidence is divided into the following sections:
- (a) Water supply
- (b) Wastewater
- (c) Stormwater

Executive Summary

- 10 **Rezoning Proposal:** As outlined in Tim Williams' evidence the proposed re-zoning of the land depicted in the submission will provide for future growth in the district. The re-zoning is comprised of the following:
- 9.2ha of General Industrial Zoning – Yielding a potential of 72 (1000m²) sections.
 - 3.5ha of Local Shopping Centre Zone – Yielding a potential of 16,800m² GFA.
 - 3.5ha for a future school
 - 5.2ha of Medium Density Residential Zone – Yielding a potential of 145 sections.
 - 110.3ha of Lower Density Suburban Residential Zone (including 29.1ha approved as an SHA) – Yielding a potential of between 881 & 1137 sections plus the 465 sections approved via the SHA.
- 11 **Water Supply:** The Lake Hawea Township water supply network is currently fed from the Scott's Beach Bore Field and a subsequent reservoir located on a nearby hillside. The system has a high operating pressure so supply and extension of the network are the factors controlling serviceability. There are options available for managing these factors.
- 12 **Wastewater:** A new pipeline connecting the Lake Hawea Township reticulated wastewater system to Project Pure is provided for in the Long-Term Plan. This connection will remove existing capacity issues. The topography of the area proposed for rezoning is suitable for a gravity wastewater system to the lowest point of the site then subsequent pumping to the Project Pure intake.

- 13 **Stormwater:** The geology of the area proposed for re-zoning is characterised as alluvial outwash terraces. Geotechnical investigations have identified that disposal of stormwater to ground via suitable designed soakage devices is feasible and appropriate.

Evidence

Water Supply:

- 14 The QLDC's Land Development and Subdivision Code of Practice (CoP) outlines water supply standards relating to domestic and firefighting supply. These standards are as follows:

Domestic supply: A flow rate of 25L/min for normal residential sites and supply of 2100 L/day/dwelling

Firefighting supply: Demands as specified in SNZ PAS 4509. Demand depends on firefighting classification but generally for residential purposes a flow rate of 25 L/s

For non-residential firefighting classifications greater flow rates may be required. If the available reticulation provides insufficient flows for the required classification then alternatives such as booster pumps, on-site storage tanks and sprinklered buildings are generally used to address any deficit.

- 15 The Lake Hawea Township water supply network is currently fed from the Scott's Beach Bore Field and a subsequent reservoir located on a nearby hillside.
- 16 Existing reticulation is located within Cemetery Road and upgrades are proposed to the system in the QLDC Long Term Plan (LTP). Upgrades include the extension of a 250mm diameter main along Cemetery Road and the extension of a 350mm diameter main along the unformed part of Capel Avenue.
- 17 It has been confirmed by the QLDC that the above upgrades and the capacity of the The Hawea Reticulated Water Supply System will be sufficient to supply the demand from The Hawea Special Housing Area. This was confirmed with modelling through the resource consent process. Consequently, the water supply capacity for the SHA component of the re-zoning proposal (485 residential Lots and 3.5 Ha of land identified as a Local Shopping Centre for commercial purposes) has already been resolved.
- 18 Although access to the QLDC's Lake Hawea Water Network model is not publicly available we have made a request to have specific modelling for the proposed zoning undertaken as recommended in Mr Powell's evidence. This modelling was requested on 20 April 2020. A copy of the relevant request is contained within Appendix A attached in to my evidence.

- 19 Having followed up on the timing for the modelling to be completed Mr Powell (QLDC Property & Infrastructure) has commented that there is no capacity in the existing system rather than providing commentary on what upgrades might be necessary or providing clarity on why the modelling as he initially requested in his evidence was not run (refer Appendix A).
- 20 However the QLDC's Land Development and Subdivision Engineering Code of Practice (CoP) provides guidance on the number of lots that may be expected to be served by various sized principal mains (table 6.2). By interpolating from the table a 350mm diameter main may be expected to serve approximately 1400 residential lots (from a single direction feed). This number would be reasonably expected to double with a 2 ended feed although specific modelling would be required to confirm this. There is an existing 375mm diameter main located withing Domain Road between Cemetery Road and Timsfield Drive. Extension of this pipeline north to Capell Avenue and upgrades to existing infrastructure from either the Hawea Watersupply reservoir and/or Scotts Beach Bore Field could be undertaken. This would provide a large diameter water supply feed from both Capell Avenue (eastern side of the area proposed for re-zoning) and Domain Road (western side of the area proposed for re-zoning) which could allow water supply requirements for the proposed re-zoning area to be achieved.
- 21 A report prepared by Watershed in January 2020 has indicated that operating pressures for the majority of the Lake Hawea water network are in excess of 700Kpa. This is well above the Council's minimum requirements of 300Kpa. Generally speaking, pipe head loss per unit length for new pipes should ideally be < 2 m/km, or 2- 5 m/km for normal operation. This would equate to approximately 50Kpa reduction in operating pressure from Cemetery Road to the southern-most part of the proposed zoning which is not significant in this context. Pressures would remain well within the Council's minimum requirements.
- 22 The availability and duration of supply would need to be confirmed (i.e. delivery capacity of the bores and bore pumps, along with the reservoir volume and supplemented supply from the reservoir). In 2017 the bore pump capacity was identified as being around 46L/s, although one of the pumps has since been upgraded.
- 23 If specific modelling revealed a lack of supply, then options are available for increasing supply levels. These options include:
- Additional bores and pumps either at the source bore field or closer to Domain or Cemetery Road. Water can be direct injected into the reticulated network with pumps to required supply levels.
 - Provision of additional reservoir storage adjacent to the existing Hawea Water Supply Reservoir.

Wastewater:

- 24 The existing Lake Hawea Township Wastewater Treatment Plant operates above capacity. Consequently, the QLDC is in the process of providing a connection to Wanaka's centralised wastewater treatment plant (Project Pure). Once this connection has been completed the Lake Hawea Township Wastewater Treatment Plant will be decommissioned. The new connection has been designed to provide capacity for long term growth models. Funding for this connection has been allocated in the Long-Term Plan (LTP) funding programme.
- 25 The Site generally slopes from north to south at an approximate grade of 0.5% - 1%. This slope lends itself well to a gravity drained reticulated wastewater network. The gravity network would drain to the lowest point of the site at which point it would be pumped to the intake point for the connection to Project Pure.

Stormwater:

- 26 Various geotechnical investigations have been undertaken in the area. They identify the area as being primarily comprised of river outwash deposits. River outwash gravels are generally conducive to disposal of stormwater to ground due to high permeability levels.
- 27 High soakage rates have been confirmed within the proposed Lake Hawea Special Housing Area with intensive geotechnical investigations and soakage testing.
- 28 The QLDC's CoP identifies a Low Impact Design (LID) approach to stormwater management as its preferred option. A LID system may incorporate a wide range of alternatives for managing stormwater from a site including devices providing for soakage to ground.
- 29 Stormwater from the Site can be effectively managed with the use of LID features and ultimately disposed of to ground.

Conclusion

- 30 The reticulated water supply networks can be extended into new developments in accordance with the requirements of the CoP. The operating pressure of the existing network is high and consequently doesn't provide limitations within the area proposed to be rezoned. Any limitations in supply can be managed with additional bore and/or reservoir capacity.
- 31 The existing Lake Hawea Township Wastewater Treatment Plant operates above capacity. A new connection to Project Pure will remove capacity issues. The proposed area of rezoning lends itself to gravity reticulation with a pumping stations at the low point of the site.

- 32 Geotechnical assessments in the area have indicated that the underlying geology is conducive to stormwater disposal to ground.
- 33 There are no infrastructural elements (water supply, wastewater, and stormwater) that would prevent the development of this land in line with the proposed zoning plan.

Luc Waite

Dated this 29th day of May2020

Luc Waite

From: Richard Powell <richard.powell@qldc.govt.nz>
Sent: Tuesday, 19 May 2020 11:45 AM
To: Tim Williams
Cc: Luc Waite
Subject: RE: [# U4266] PDP Stage 3 - Hawea Water Modelling

Hi Guys,

Sorry this has been a bit of a strange one, the large area being proposed to be rezoned is not something that our planning for water supply within Hawea has taken into account. So the short answer is that there is no capacity within the network to supply this area and there are currently no planned upgrades that will also provide the capacity.

I am meeting with the Strategy and Performance team this Friday as they are developing a master plan for Hawea (water and wastewater), and this information could be taken into account as part of that process, then I guess the best outcome would be that the proposed land has been accounted for in the allowance for growth figures if the rezoning is granted.

Richard

From: Tim Williams <tim@williamsandco.nz>
Sent: Monday, 18 May 2020 2:12 PM
To: Richard Powell <richard.powell@qldc.govt.nz>
Cc: luc@southernland.co.nz
Subject: Re: [# U4266] PDP Stage 3 - Hawea Water Modelling

Hi Richard,

Sorry to keep hounding you on this but we really need this modelling ASAP.

Can you confirm where it is at?

Regards



On 13/05/2020, at 11:26 AM, Luc Waite <luc@southernland.co.nz> wrote:

Hi Richard,

Just following up on this.... Can you please advise when the requesting modelling will be available. Time is starting to run short and I need the info for the stage 3 PDP evidence I am preparing.

Thanks,

Luc Waite

Director

BSurv (hons) MS+SNZ CSNZ

<image001.jpg>

E luc@southernland.co.nz

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From: Tim Williams <tim@williamsandco.nz>
Sent: Tuesday, 5 May 2020 2:34 PM
To: Richard Powell <richard.powell@qldc.govt.nz>
Cc: Luc Waite <luc@southernland.co.nz>
Subject: RE: [# U4266] PDP Stage 3 - Hawea Water Modelling

Hi Richard,

Are you able to provide an update for timing on the modelling? We are keen to get this tidied up quickly so it can form part of the evidence as requested by Council.

Regards

<image002.jpg>

On 21/04/2020, at 3:24 PM, Luc Waite <luc@southernland.co.nz> wrote:

Hi Richard,

Thanks for pointing me in the right direction.

I have completed the request for work form so I presume this will come through to you?

As there wasn't a section for adding notes in the form I just wanted to have you confirm what model will be used as the baseline against which the requested modelling will be run? The PDP outlines an up-zoning of the Hawea Township zone to LDR. As this proposes higher development potential I presume a model for this has been generated and that it is likely that various upgrades have been identified as being required as a result. I would suggest that the Hawea LDR model should then be the baseline against which this requested modelling is run rather than the existing model.

Thanks,

Luc Waite

Director

BSurv (hons) MNZIS CSNZ

<image001.jpg>

E luc@southernland.co.nz

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From: Richard Powell <richard.powell@qldc.govt.nz>

Sent: Tuesday, 21 April 2020 11:47 AM

To: Luc Waite <luc@southernland.co.nz>

Subject: RE: PDP Stage 3 - Hawea Water Modelling

Hi Luc,

Best way is to fill it in on our website.

Go to - Resource Consents

Click on application forms and fees

Other relevant forms

Consent Process

And P&I work request form is third form the bottom.

I have a job logged with IT to make this easier to search so In the future you should be able to search work request form and it will come up.

Let me know if you have any more issues.

Rich

From: Luc Waite <luc@southernland.co.nz>

Sent: Monday, 20 April 2020 2:40 PM

To: Richard Powell <richard.powell@qldc.govt.nz>

Subject: FW: PDP Stage 3 - Hawea Water Modelling

Hi Richard,

The link below for the request for work form leads to a website for which I don't have log-on details. Can you please either try again or send as an attachment?

Thanks,

Luc Waite

Director

BSurv (hons) MNZIS CSNZ

<image001.jpg>

E luc@southernland.co.nz

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From: Tim Williams <tim@williamsandco.nz>
Sent: Monday, 20 April 2020 1:11 PM
To: Lane Hocking <lane.hocking@yahoo.com>
Cc: Luc Waite <luc@southernland.co.nz>
Subject: Fwd: PDP Stage 3 - Hawea Water Modelling

Hi Lane,

As part of Council's reporting on the rezoning they have said we should undertake water modelling to confirm capacity/and or any upgrade requirements.

Can you confirm if you are ok for this to be undertaken? As below it comes with a cost that we don't have much control over as Council holds the model/cost to run it.

I think it is still worth doing as it is one less thing they can then have against re-zoning the land.

Regards
<image002.jpg>

Begin forwarded message:

From: Richard Powell <richard.powell@glde.govt.nz>
Subject: RE: PDP Stage 3 - Hawea Water Modelling
Date: 20 April 2020 at 12:35:24 PM NZST
To: Tim Williams <tim@williamsandco.nz>

Hi Tim,

You will need to fill out a work request form, link below, this work will cost about \$1800 plus gst.

Cheers

Rich

[https://cianywhere.qldc.govt.nz/T1Prod/CiAnywhere/Web/PROD/Forms/FillOutForm?f=\\$TB.FRM.FILLOUTFORM&h=RJtHoKrWkz&t=F496588&suite=CES](https://cianywhere.qldc.govt.nz/T1Prod/CiAnywhere/Web/PROD/Forms/FillOutForm?f=$TB.FRM.FILLOUTFORM&h=RJtHoKrWkz&t=F496588&suite=CES)

From: Tim Williams <tim@williamsandco.nz>
Sent: Friday, 17 April 2020 2:20 PM
To: Richard Powell <richard.powell@qldc.govt.nz>
Cc: luc@southernland.co.nz
Subject: PDP Stage 3 - Hawea Water Modelling

Hi Richard,

Can you confirm the cost and process etc to get the water modelling completed as you recommended for the Universal zoning at Hawea?

Cheers
<image002.jpg>