

**BEFORE THE HEARINGS PANEL
FOR THE PROPOSED QUEENSTOWN LAKES DISTRICT PLAN – STAGE 3**

IN THE MATTER of the Resource Management
Act 1991

AND

IN THE MATTER Stage 3 of the Proposed District
Plan - Hearing Stream 17 –
(General Industrial Zone, Three
Parks Commercial, 101
Ballantyne Road Rezoning,
Business Mixed Use and
Residential Design Guides and
variations)

**STATEMENT OF EVIDENCE OF NICHOLA JANE GREAVES
ON BEHALF OF UPPER CLUTHA TRANSPORT LTD (SUBMITTER 3256)
HEARING STREAM 17**

29 May 2020

INTRODUCTION

- 1.1** My full name is Nichola Jane Greaves. I have a Bachelor of Engineering degree (natural resources with honours) from the University of Canterbury. I have 15 years' experience in civil engineering. I hold the position of Civil Engineer at Meyer Cruden Engineering Ltd based in Wanaka. I have been in this position since March 2019. I was previously employed as an Infrastructure Advisor at Rationale Ltd. and prior to this I was employed as Three Waters Engineer at Queenstown Lakes District Council (QLDC), based in Wanaka.
- 1.2** I am a member of Engineering New Zealand MEngNZ, as a Chartered Professional Engineer (CPEng).
- 1.3** Throughout my engineering career I have specialised in 3-waters infrastructure including investigations, issues and options studies, and the design and construction of 3-waters reticulation, collection and onsite systems.
- 1.4** In my 3-water roles in the Infrastructure Department at QLDC I was involved in the design and construction of new 3-waters assets, 3-waters asset management and contract management of the Wanaka 3-waters operations and maintenance contract. I also provided 3-waters infrastructure advice to the resource management engineering team on subdivision developments. I am familiar with the Wanaka Queenstown Lakes District 3-waters assets as a result of this experience.
- 1.5** Although this is a Council hearing, I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.
- 1.6** I have been asked by Upper Clutha Transport Ltd. (UCT) to provide evidence in relation to infrastructure matters relating to the proposed zone change identified in their Submission #3256.

1.7 The key documents relevant to my area of expertise that I have used, or referred to, in forming my view while preparing this brief of evidence are:

- (a) Upper Clutha Transport Ltd submission on the proposed Queenstown Lakes District Council – Stage 3 including appendices.
- (b) Mr Richard Robert Powell's Statement of evidence on behalf of Queenstown Lakes District Council (QLDC), Infrastructure – Three Waters – Rezoning requests, Stage 3 of the Proposed District Plan. 18 March 2020;
- (c) Mr Luke Place's Section 42A report on behalf of Queenstown Lakes District Council (QLDC), Chapter 18A General Industrial Zone - Text and Mapping. 18 March 2020;
- (d) Land Development and Subdivision Code of Practice 2018 V1.1;
- (e) Queenstown Lakes District Council, Long Term Plan 2018-2028; and
- (f) Queenstown Lakes District Council, Three Waters Asset Management Plan 2018/19-2027/28, February 2018.

1.8 I have prepared my evidence based on my:

- (a) Expertise as a three waters land development Civil Engineer,
- (b) Familiarity with the application site and surrounding area, and
- (c) Familiarity with the above-mentioned documents.

1.9 I have attached to this evidence the following:

- (a) **Appendix A** – Maps of the area proposed for rezoning and site plan;
- (b) **Appendix B** – Servicing plan;
- (c) **Appendix C** – Email from Mr Richard Powell confirming the additional information in this evidence satisfies Property and Infrastructure that the servicing of the proposed land is feasible.

2. SCOPE OF EVIDENCE

2.1 I have reviewed the infrastructure evidence of Mr Richard Robert Powell dated 18 March 2020 which included an assessment of the submission by Upper Clutha Transport Ltd (3256).

2.2 Within this report Mr Powell is satisfied that stormwater disposal for the development can be sufficiently provided for. I agree with this assessment. The focus of Mr Powell's evidence is on water and wastewater assets and I have tailored my response to address his concerns.

2.3 My evidence addresses the following matters:

- (a) Water supply capacity, and
- (b) Wastewater capacity.

3. SUBMISSION

3.1 Upper Clutha Transport Ltd has sought that approximately 13.89 ha of their site be rezoned from PDP Rural Zone to General Industrial Zone (GIZ). The net developable area would be 5.28 ha (following the removal of land for setback purposes and the proposed no build area over the existing closed landfill).

4. EXISTING INFRASTRUCTURE

4.1 The site sits just beyond the north eastern extent of Luggate, between Church Road and the Clutha River. Please refer to the rezoning plan attached as Appendix A to this evidence.

4.2 The site is located outside the Council's infrastructure scheme boundary and currently the site is not connected to any 3-waters reticulation.

4.3 Currently the nearest wastewater manhole available for connection is the receiving manhole to the new West Luggate Wastewater Pump Station (also known as Luggate Wanaka Highway #2 Wastewater Pump Station) which is approximately 800 m from the site.

4.4 West Luggate Wastewater Pump Station (WWPS) pumps to Project Pure, Wanaka's wastewater treatment plant at the Wanaka airport.

4.5 There is an existing 100 mm diameter water main approximately 500 m from the site on Church Road and a larger sized 250 mm diameter water main 700 m from the site on Main Road. It would be feasible to connect to either of these mains with a new water main along Church Road from the subject site. These details are shown in Appendix B, servicing plan.

5. ASSUMPTIONS

- 5.1** To assess the impacts of the rezoning on the water and wastewater network, it is necessary to estimate the likely flow and demand generated by the proposed GIZ. I have relied on the design parameters within QLDC Land Development Code of Practise for these estimations.
- 5.2** Council in Stage 1 of the PDP has approved land zoned Rural Industrial Sub Zone immediately adjacent and to the south west of this site, as shown on the site plan in Appendix A. This existing zone is yet to be serviced with reticulated water and wastewater. It would be appropriate to assume that this adjacent zone will be supplied with the expected level of service consistent with the extent of development enabled by the Rural Industrial Sub Zone. This would have similar demand/flow requirements as the submission site. When this area is serviced it also may change the points of connection available to the submission site.

Wastewater

- 5.3** The wastewater supply requirements in the QLDC Land Development Code of Practise state:

- 5.4** “Section 5.3.5.1

(b) Commercial and industrial flows. Where flows from a particular industry or commercial development are known they should be used as the basis of design. Where there is no specific flow information available and the TA has no design guide, table 5.1 is recommended as a design basis. These flows include both sanitary wastewater and trade wastes and include peaking factors.

Table 5.1 – Commercial and industrial flows

Industry type (Water usage)	Design flow (Litre/second/hectare)
Light	0.4
Medium	0.7
Heavy	1.3

Water

5.5 The water supply requirements in QLDC Land Development Code of Practise states:

“6.3.5 Design Criteria,

6.3.5.1 Hydraulic design; The diameter, material type(s), and class of the water main shall be selected to ensure that:

- (a) *The main has sufficient capacity to meet peak demands while maintaining minimum pressure;*
- (b) *All consumers connected to the main receive at all times an adequate water supply and pressure; and*
- (c) *The appropriate firefighting flows and pressures can be achieved.*

.....

6.3.5.6 *Minimum water demand*

(c) *Firefighting demands as specified in SNZ PAS 4509;.....*

6.3.5.10 *Design pressure shall be between 300 kPa and 900 kPa”.*

5.6 Firefighting flows for existing zoned areas are defined through proposed level of service in the QLDC three waters asset management plan, where it states;

“Section 2.2.1 Water Supply for On Demand Supplies Only (as Defined by the QLDC Water Supply Bylaw).

Firefighting supplies in Council approved commercial, industrial, and residential areas are designed to provide 60% of annual peak demand in addition to fire flow, on a zone by zone basis. As a minimum QLDC will provide FW2 for residential areas and FW3 for commercial/industrial areas. Grading's above FW3 need to be investigated, priced and approved by the General Manager Property and Infrastructure or Council under Section 10A of the LGA. Refer Section 4.2 of national fire standards (SNZ PAS 4509:2008).

6. INFRASTRUCTURE ASSESSMENT

- 6.1** Based on the assumptions I have outlined in the preceding paragraphs I have prepared water and wastewater demand / flow calculations for the proposed zoning. The proposed peak demands for water are calculated at FW3, 25 l/s from within 135 m of the site and an additional 25 l/s within 270 m of the site at 100 kPa minimum pressure. The proposed maximum peak flow for wastewater is calculated at 6.9 l/s.
- 6.2** Mr Powell's evidence referred to modelling of the water supply and wastewater reticulation to confirm existing capacity or identify necessary upgrades to these networks. QLDC hold the hydraulic water and wastewater models that could provide this information. This modelling was not available at the time of writing this evidence.
- 6.3** Appendix C to this evidence provides confirmation that Mr Richard Powell has been given the opportunity to review this additional infrastructure information and Mr Powell has confirmed this satisfies the QLDC Property and Infrastructure department that the servicing of the proposed land is feasible.

Wastewater

- 6.4** The site plan in Appendix A to this evidence shows the ground levels for the site vary between 272 masl and 280 masl. The approximate level of the West Luggate WWPS is 280.3 masl This confirms a pump station would be required to lift the wastewater from the site for connection to the existing reticulation 800

m from the site. A suitable rising main and pump station can be designed at the time of development for the proposed zone.

- 6.5** From table 5.1 the wastewater flows for the developable area of 5.28 ha (accounting for setbacks and no build over the closed landfill) vary between 2.1-6.9 l/s depending on the water use type. I note based on the description of the current UCT Luggate site it would be classified as low water use because it is a predominately a yard-based activity
- 6.6** Mr Richard Powell has confirmed in Appendix C that the estimated wastewater flows from this site have been included in the design for the West Luggate WWPS and therefore the existing wastewater reticulation has capacity to service this proposed zone without any upgrades.

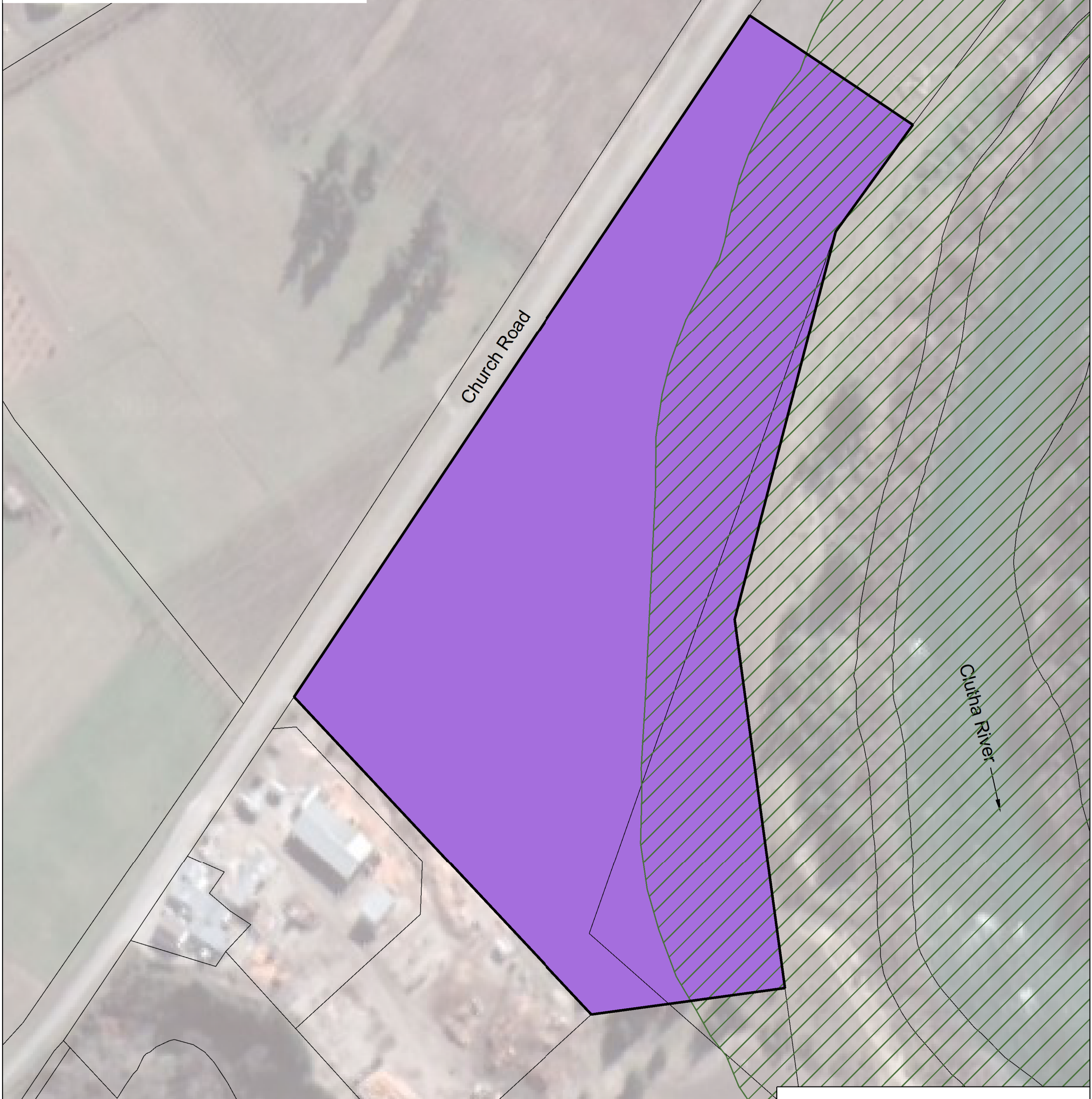
Water

- 6.7** Delivering adequate water pressure and water flow are the two key considerations when assessing water capacity. Peak demands are typically set by the firefighting requirements of the zone. For water flow demand this is based on Council's proposed level of service requirements that state FW3 firefighting supply will be supplied to industrial/commercial zones.
- 6.8** Capacity issues currently exist in the Luggate water supply system. A project to upgrade the Luggate and Wanaka Airport water supply resolving these capacity issues has been identified through the QLDC Long Term Plan and I understand this is currently under construction. It is expected this upgrade will provide adequate flow and pressure in the Luggate network to service the adjoining Rural Industrial Sub Zone. Therefore, this rezoning with similar demand requirements and similar elevation will also be adequately serviced by this current project and any further upgrades are unlikely.
- 6.9** My conclusions can be confirmed with modelling at the time of subdivision when the internal reticulation is designed. Any upgrades deemed necessary at that stage can be paid for by the Developer for their fair and reasonable portion.

7. CONCLUSION

- 7.1** I consider that with the information available the proposed rezoning can be adequately serviced.
- 7.2** More specifically, QLDC have confirmed that the existing wastewater reticulation has sufficient capacity to service the proposed rezone. A new pump station would be required to lift the wastewater from the site for connection to the existing reticulation 800 m from the site.
- 7.3** A project to upgrade the Luggate and Wanaka Airport water supply is currently underway. This project will provide adequate flow and pressure in the Luggate water network to service the adjoining Rural Industrial Sub Zone and the proposed General Industrial Zone which will have similar demand requirements.
- 7.4** I understand that Mr. Place has indicated in his s42A report that the application of the Rural Industrial Sub Zone to the submission site as an alternative to the proposed General Industrial Zone is preferable. If that were to occur I consider that the servicing demand would not significantly change and, if anything, may reduce when compared to the likely demand generated by the General Industrial Zone. I therefore consider that either zoning option can be appropriately serviced.

Appendix A – Proposed Rezoning and Site Plan



MEASURED
 LAND SURVEYS

Legend

- Parcel Boundaries
- General Industrial Zone Boundaries (proposed)
- General Industrial Zone (proposed)
- Wahi Tupuna

Proposed General Industrial Zone
 (Church Road - Luggate)
 S3256-UCT-T17-GREAVES N-EVIDENCE

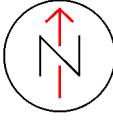
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Surveyed:	Drawn: ST 16/11/19

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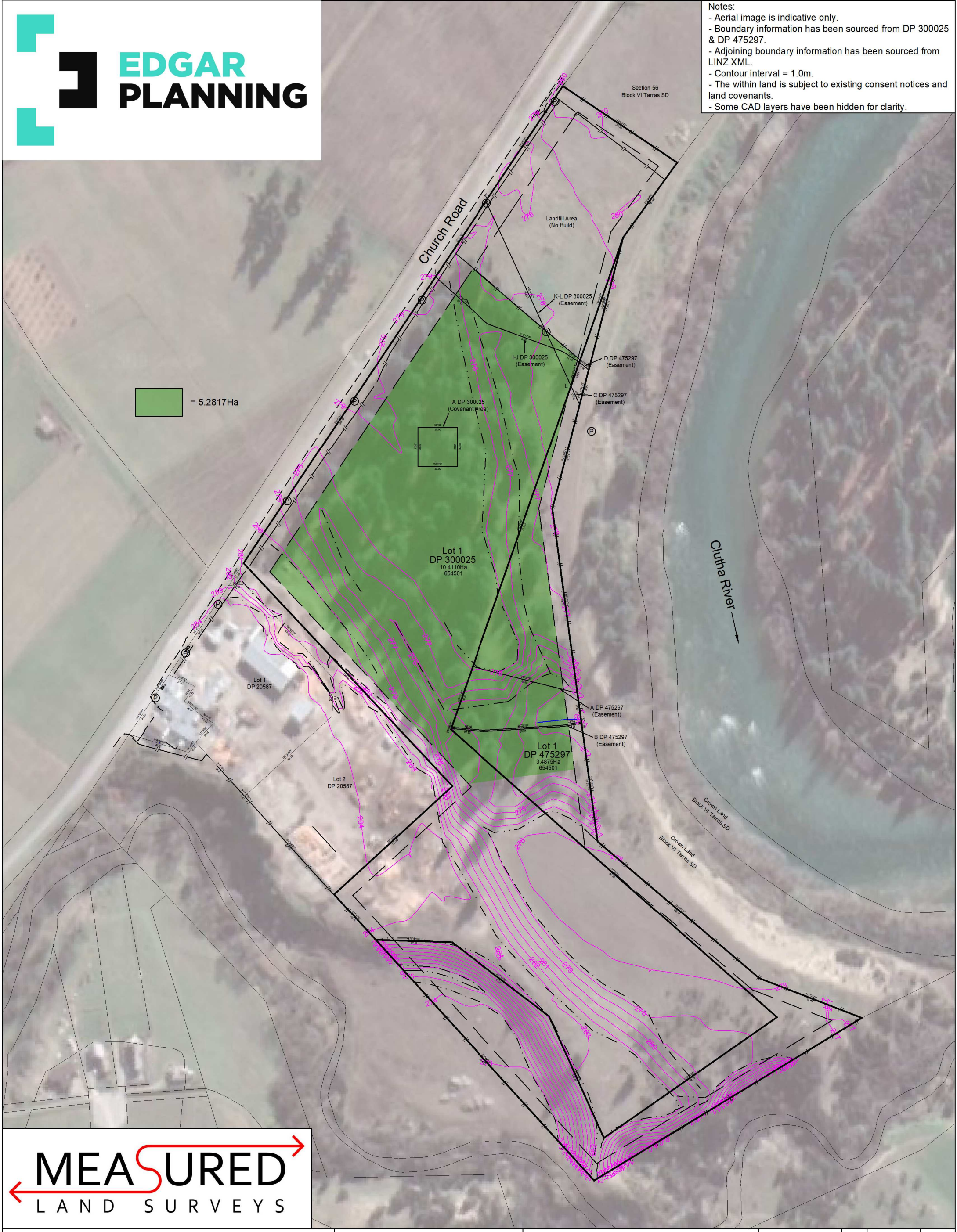
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Datum: **Lindis Peak 2000**

 Sheet: 1 of 1	Rev	Description	Date
	A	ORIGINAL	06/11/19
Job #: 19073_M2	Rev: A	11	

Notes:

- Aerial image is indicative only.
- Boundary information has been sourced from DP 300025 & DP 475297.
- Adjoining boundary information has been sourced from LINZ XML.
- Contour interval = 1.0m.
- The within land is subject to existing consent notices and land covenants.
- Some CAD layers have been hidden for clarity.



Due Dilligence
Rural Industrial Sub Zone
Setbacks
 20m Road/10m Bdys
 S3256-UCT-T17-GREAVES N EVIDENCE
 (Luggate)

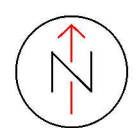
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Surveyed:	ST 21/09/19
Drawn:	ST 04/05/20

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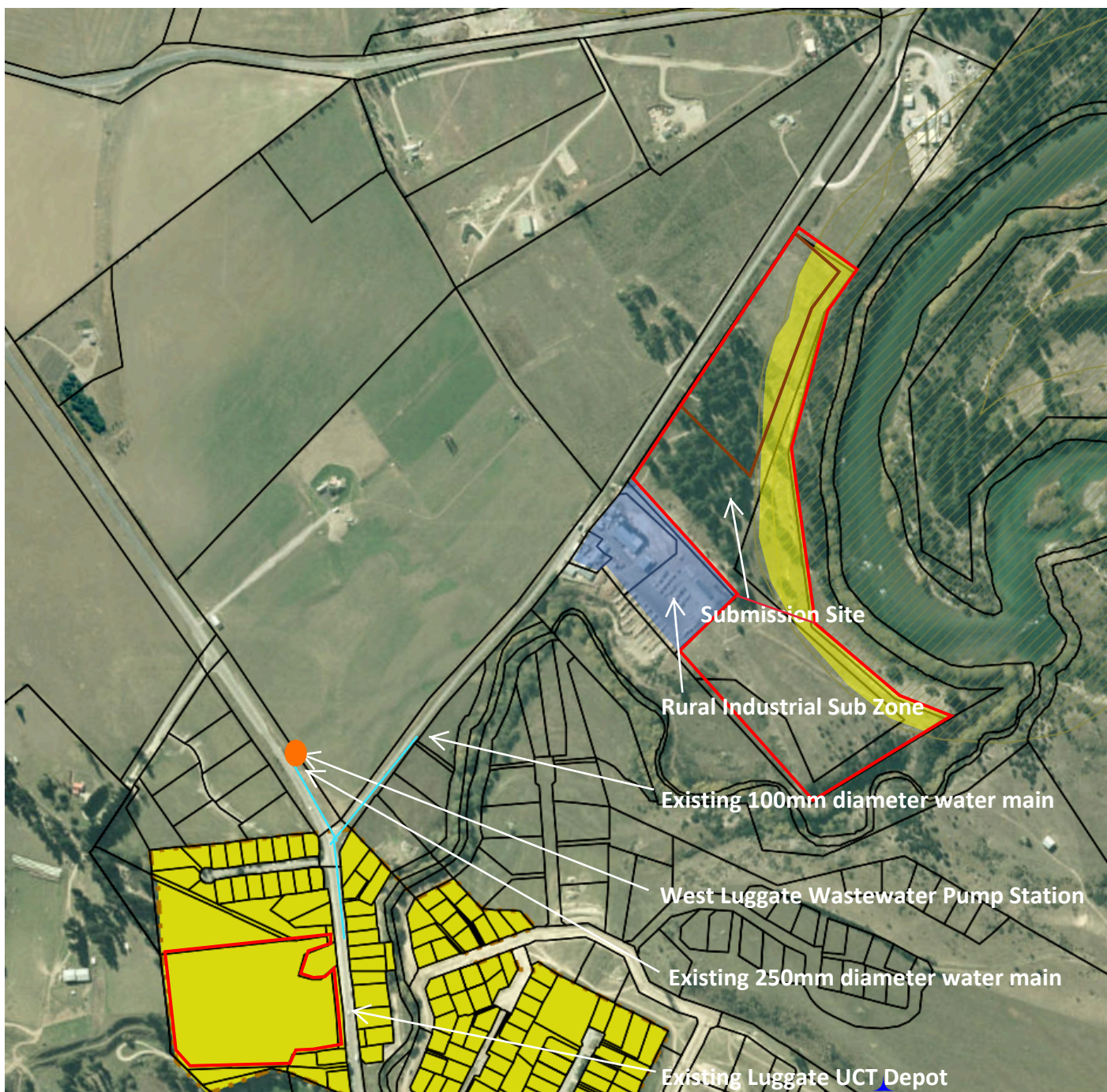


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Datum:
Lindis Peak 2000/DVD 1958

 Sheet: 1 of 1	Rev	Description	Date
	A	ORIGINAL	04/05/20
Job #:	Rev:		
19073_M3	A	12	

Appendix B – Servicing Plan



Appendix C - Email from Mr Richard Powell, QLDC

From: [Richard Powell](#)
To: [Nichola Greaves](#)
Cc: [Ulrich Glasner](#)
Subject: RE: Rezoning Church Rd Luggate, infrastructure requirements
Date: Friday, 15 May 2020 1:39:00 PM
Attachments: [image006.png](#)
[19073_M3_A \(04-05-20\)\[1\].pdf](#)

Hi Nichola,

Thank you for providing the below information.

I can confirm that the subject land has been identified and been used to help estimate potential future wastewater flows for the West Luggate wastewater pump station which is the likely connection point, I accept that a suitable rising main and pump station can be designed at the time of subdivision for the proposed land once lot numbers, flows and layout is confirmed.

I accept your argument that adequate pressure can be presumed as this site lower in level than the majority of Luggate, I also accept that suitable water supply can be confirmed through modelling at the time of subdivision once lot numbers and layout are confirmed, with any necessary upgrade being paid by the developer or contributing a fair and reasonable portion of the upgrade.

Overall Property and Infrastructure are satisfied that the servicing of the subject land is feasible.

Regards

Richard

From: Nichola Greaves <nichola@mcengineering.co.nz>
Sent: Tuesday, 5 May 2020 8:39 AM
To: Richard Powell <richard.powell@qldc.govt.nz>
Subject: Rezoning Church Rd Luggate, infrastructure requirements

Hi Richard,

I have been engaged by Upper Clutha Transport to review the infrastructure requirements for the rezoning of a Church Road, Luggate (submission 3256) site to General Industrial Zoning (GIZ) (as part of the Stage 3 PDP Review). See attached the proposed rezoning plan below. I am in receipt of your evidence on this submission.

I am following up on what is required in terms of water and wastewater servicing information to address the point that insufficient information was provided regarding the ability to service for the proposed rezoning.

The extent of the rezoning of this site is from Church Rd in the west and extending towards the Clutha River to the east. The map from the stage 1 PDP decision below shows the site is surrounded by rural zoning and there is an area with rural industrial overlay immediately to the south west. The Luggate community and reticulated wastewater and water supplies are also to the south, currently approximately 700m from the probable connection points. The site is

located outside the Council's infrastructure scheme boundary.

With the existing QLDC infrastructure information available to me I can make the following assessment, see below. Is this sufficient or what level of information is required and can Council provide more details to base an assessment on?

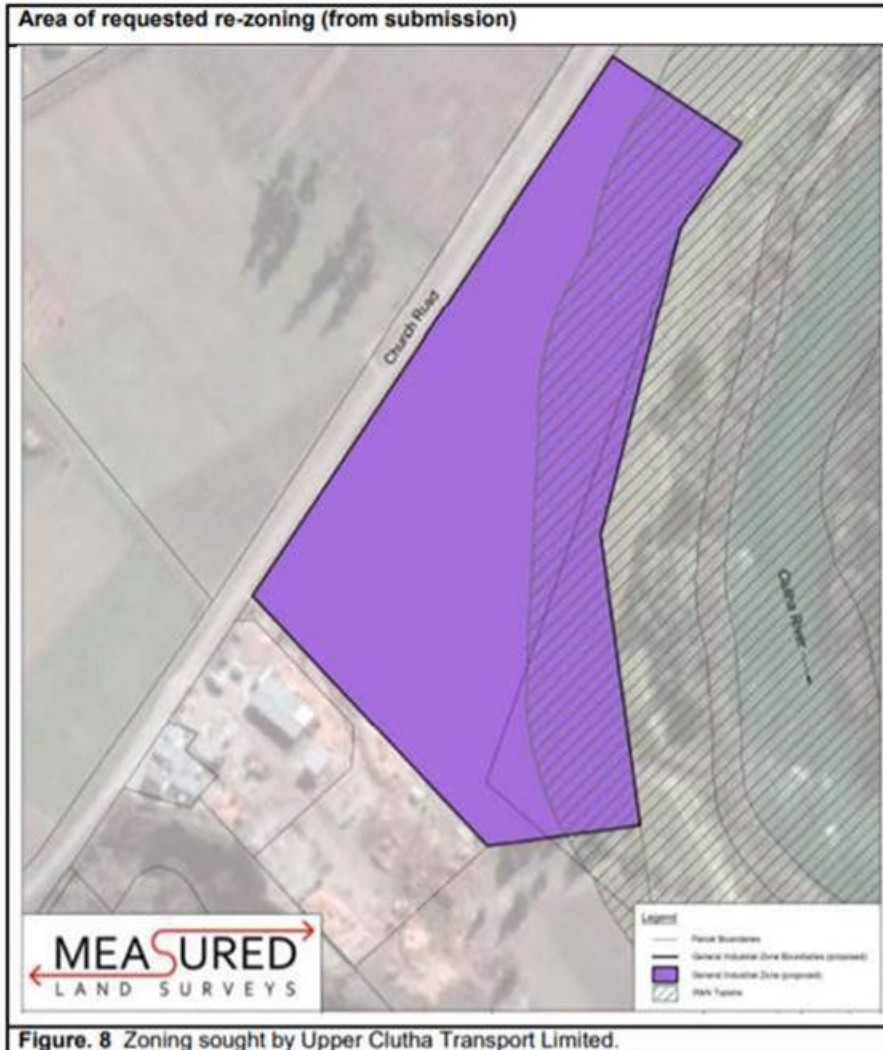
- Wastewater, the site is expected to connect into the network at the Luggate Highway Pumpstation. From the COP table 5.1 Commercial and Industrial flows. The flows for the developable area 5.28 ha (accounting for setbacks and no build over the closed landfill) vary between 2.1-6.9 l/s depending on the water use type. I note that at the current site UCT would be classified as low water use. The levels provided confirm a pumpstation would be required to lift the wastewater from the site to the Luggate Highway pump station.
- Water, we can assume there is adequate pressure to achieve Council's level of service requirements based on the site being slightly lower elevation to the neighbouring serviced portion of Luggate. Fire Fighting would set the maximum flow demand for this site if it was fully reticulated. I assume Council has made provision to service the approved stage 1 GIZ zoned land immediately adjacent to the SW and the same demand requirements would be required for this site. This may be as per the 3 Waters AMP 2018 minimum level of service for industrial areas of FW4 (50l/s within 135m plus additional 50l/s within 270m at minimum 100 kPa) or alternative as Council deems satisfactory.

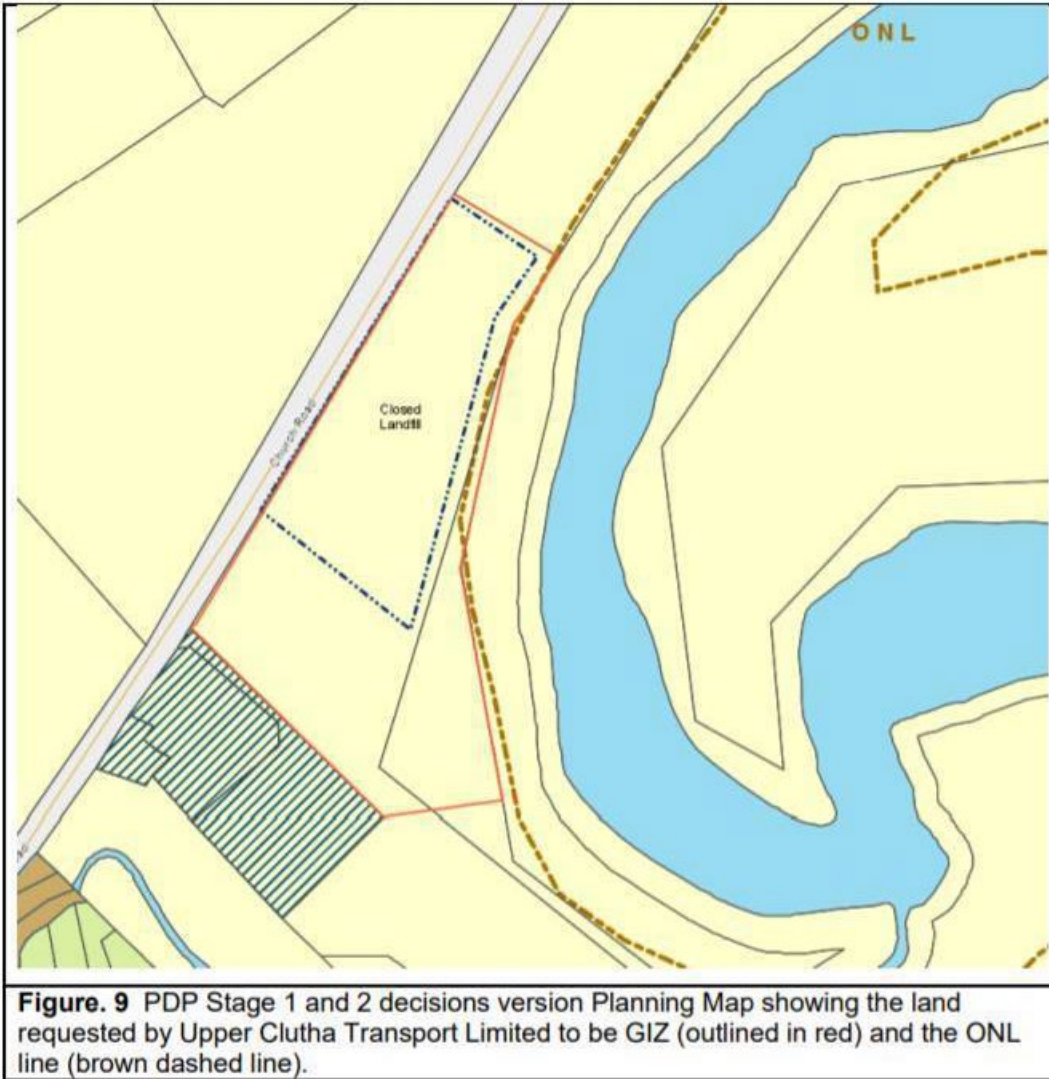
At the time of subdivision after more detailed investigation has been completed if the existing water or wastewater reticulation requires upgrading because of this rezoning (including the wastewater pumpstation for the site) the developer will contribute to the proposed rezoning's fair and reasonable portion of this.

Your evidence for this site is below for reference;

- 5.2 Water supply: Capacity issues within Luggate's water supply system already exist and investigations into upgrade options (as set out in the current LTP) are underway and will be constructed once confirmed.
- 5.3 To identify if the upcoming upgrades have sufficient capacity to supply the proposed rezoning, calculations of expected demand will need to be provided by the submitter and modelling of the system will need to be undertaken.
- 5.4 Wastewater: An existing (council owned) wastewater pumping main, that sends Luggate's wastewater to Project Pure (treatment plan), is located to the south-west of the subject land, a suitable connection point to this line is located approximately 800m from the closest edge of the site. To ensure the pumps and pipe have capacity for this additional connection (i.e. the rezoning) calculations of the expected wastewater generation will need to be provided and modelling of the system will need to be undertaken
- 5.5 Storm water: A natural water course run is located adjacent to the subject land south-east boundary this is considered a suitable location to discharge stormwaters along the southeast boundary of the subject site, with suitable treatment and attenuation storm water generated from the site could be discharged to this water course.
- 5.6 Excluding the LTP planned water supply upgrades mentioned above, no other infrastructure upgrades are programmed to service this area.
- 5.7 From an infrastructure perspective I oppose the relief. Until such time that sufficient

information has been provided to ensure Council's infrastructure can service the subject site either as is (with appropriate connections) or with required upgrades that would need to be funded by the developer.





I'm available if it's easier to call to discuss.

Kind Regards,

Nichola Greaves
Civil Engineer

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78 Ardmore Street, Wanaka

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