

**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 Hearing Stream 13  
– Queenstown Mapping  
Annotations and Rezoning  
Requests

**STATEMENT OF EVIDENCE OF MR JOHN FRANCIS McCARTNEY ON BEHALF  
OF MICHAEL SWAN #494 AND LARCHMONT PROPERTIES LTD #527**

**INTRODUCTION**

1. My name is John McCartney. I am a consulting civil engineer and I am the owner and director of the consulting engineering company Civilised Limited, based in Queenstown.
2. I hold the qualifications of Bachelor of Engineering (Civil) from the University of Canterbury. I have 25 years experience in the design and construction of civil infrastructure with particular expertise in site investigation and assessment along with the design and construction of development infrastructure including roading, water supply, wastewater and stormwater disposal systems. I have experience in the design and implementation of infrastructure works for both private companies and for Local Authorities throughout New Zealand.
3. Although this is a Council hearing, I confirm that I have read and agree to comply with the Code of Conduct for Expert Witness. This evidence is within my area of expertise except where I state that 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 the opinions that I express.

### **SCOPE OF EVIDENCE**

4. Civilised Limited (CL) has been engaged by the Gertrude's Saddlery Ltd (GSL) to assess and report on engineering related matters involving potential rezoning of land.
5. The rezoning requests have been made as part of the review of the Queenstown Lakes District Council (QLDC) District Plan. The requests are part of Stream 13 of the review process and the submissions are numbers 494 and 527. The rezoning requests are to amend the zoning of the site to low density residential. I note that the two rezoning requests covered slightly differing footprints. My evidence covers the area encompassed by the two rezoning requests in its entirety.
6. The land is contained in certificates of title 29585 and 393406 and is legally described as Lot 1 DP 307630 and Lot 2 DP 398656. The site is located at the end of Atley Road in Arthurs Point and the rezone request covers around 5.82 hectares in total.
7. QLDC engineering staff have assessed the rezoning requests and prepared evidence. Mr Ulrich Glasner opposes the rezoning due to the potential upgrades that may be required to the existing QLDC wastewater infrastructure<sup>1</sup>.
8. Mr Glasner also states in his statement of evidence that the site will be able to be fed from the existing Arthurs Point water supply reservoir but that as the point of connection is likely to be some distance from the site, the cost of servicing will be higher and therefore not as efficient<sup>2</sup>.
9. I note that Mr Glasner's evidence assumes a total yield from the rezoning of 89 additional residential units<sup>3</sup>.
10. Civilised Ltd has been engaged to assess and respond to the points raised about infrastructure issues in Mr Glasner's evidence and to more generally detail appropriate servicing responses to the general development of the site.

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<sup>1</sup> "Statement Of Evidence Of Ulrich Wilhem Glasner On Behalf Of Queenstown Lakes District Council Infrastructure - 24 May 2017" - paragraphs 7.117 and 7.122.

<sup>2</sup> Ibid - paragraphs 7.116 and 7.121.

<sup>3</sup> Ibid - paragraph 7.119.

11. My evidence today is limited to infrastructure issues and in particular the feasibility of servicing the site with stormwater, wastewater and water supply services.
12. From information supplied to me on behalf of GSL, the likely lot yield from the development will be similar to the yield of 89 additional residential units estimated by Mr Glasner.

### **BACKGROUND**

13. Following receipt of the Statement of Evidence of Ulrich Wilhem Glasner, I met with QLDC engineering staff including Mr Glasner to discuss the proposed rezoning and to determine what information could be provided to assist with evaluating the feasibility of servicing the subject site.
14. I have also contacted the engineering consultants that hold and operate the water and wastewater reticulation models on behalf of QLDC. They have told me that they are not able to carry out modelling using the network models without instruction from Council.
15. During discussions with QLDC engineering staff, they have confirmed that modelling is not able to be undertaken in the timeframes required for the evidence exchange timeframes.
16. They have further confirmed that the provision of details around how the site could be serviced to reduce impacts on the existing reticulation would be satisfactory.

### **WATER SUPPLY**

17. The Arthurs Point Water Supply services land adjacent and nearby to the site. This water scheme services much of Arthurs Point on both sides of the Shotover River.
18. The intake for the water supply is on the true right bank of the Shotover River upstream from the Edith Cavell Bridge. The water is pumped to the treatment plant and reservoir on Crows Nest Road before being distributed by the piped reticulation throughout Arthurs Point.

19. Mr Glasner has confirmed that there should be sufficient water pressure to supply the site<sup>4</sup>. I agree with this analysis.
20. I have reviewed the QLDC Long Term Plan and note that there is an amount of capital expenditure proposed for the Arthurs Point Water Supply. This amounts to \$1,423,000 and is currently programmed to be spent in 2018 and 2019. My understanding is that this expenditure is in order to provide further capacity in the water supply system. This additional capacity will further enable the existing water supply reticulation to provide water to the proposed rezoned area.
21. I note Mr Glasner's comments regarding the distance to the nearest suitable connection point for the water supply. I agree that the area to be rezoned is some distance from a suitable connection point, however, when the area to be rezoned is taken in conjunction with neighbouring undeveloped but already zoned land, the point of connection is much closer to the site of a future subdivision development that would likely encompass the entire undeveloped area. Attached as Attachment A is a drawing showing the likely connection point to existing Council reticulation along with areas of currently zoned but undeveloped land and the subject site.
22. As the point of connection will be adjacent to a larger development of land if the subject site is developed with the neighbouring zoned but undeveloped land, or will be brought considerably closer as the neighbouring zoned land is developed, I do not agree with Mr Glasner's assertion that cost of servicing will be higher or less efficient.

### **WASTEWATER**

23. The site encompasses a hill and ridge as well as various low points on its perimeter as the land drops towards the river below the site.
24. Due to this topography, it is likely that a wastewater pump station will be required in order to discharge wastewater from the site. Wastewater pump stations are frequently a component of residential subdivisions.
25. Subject to detailed design, available pipe routes and Council preference, the wastewater flows would drain to the existing manhole near 80 Atley

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<sup>4</sup> Ibid – paragraphs 7.116 and 7.121.

Road and marked as "*Probable Wastewater Connection Point*" on Attachment B.

26. Mr Glasner has stated that the lower elevations of the site may well require a pump station in order to reticulate wastewater runoff from future dwellings to the Council network<sup>5</sup>. I concur with Mr Glasner and anticipate that up to approximately 50% of the subject site will require the use of either a larger communal pump station or individual allotment pump stations to drain wastewater flows from site.
27. Mr Glasner further states that he would prefer development to occur in areas where additional facilities (such as the pump station) are not required as such facilities become a maintenance burden<sup>6</sup>. I acknowledge that pump stations do require maintenance but I do not agree that this is an unreasonable burden. The construction of a modern reliable wastewater pump station to the standards required by Council will minimise maintenance requirements. Furthermore, the establishment of a further 89 allotments will generate more rates for Council and enable a more efficient overall network due to the economies of scale. The amount of additional wastewater rates generated by the additional 89 residential units would be at least \$47,000 per annum. As the new network will be modern and relatively low maintenance, this amount is more than adequate to maintain the additional pump station along with making a considerable contribution to the wastewater maintenance of the overall Arthurs Point scheme.
28. If the option of a larger communal pump station is not acceptable to QLDC, it will be possible to implement a wastewater drainage option that involved the installation of individual pump stations on each allotment. This would consist of a grinder pump inside a relatively small pump chamber and a small bore rising main that connected to through a non-return valve to either a rising main in the street or the gravity reticulation. These small pump stations could also be controlled in such a way that the flows to the existing Council reticulation was minimised during peak flows. A similar small pump station arrangement is currently being implemented elsewhere in Arthurs Point.

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<sup>5</sup> Ibid - paragraphs 7.117 and 7.122.

<sup>6</sup> Ibid - paragraphs 7.117 and 7.122.

29. Mr Glasner also states that the existing wastewater main over the Edith Cavell bridge is nearing capacity and that this rezoning would further reduce capacity<sup>7</sup>.
30. With the introduction of either a communal pump station or individual allotment pump stations on the subject land that would be reticulating the majority of the wastewater flows from the site, it will be possible to ensure that the pump stations are configured such that they will not pump into the reticulation at peak times. This will require some buffering storage at the communal pump station and large enough pump chambers for the individual allotment pump stations to ensure that the pump station did not operate during the busy morning period or during the peak evening period. Thus, the increase in flows through the restricted main over the Edith Cavell bridge from this development would be limited and would not significantly contribute to the existing pipe capacity reaching capacity restraints.
31. Development contributions will be paid when allotments are created. These development contributions will allow QLDC to recover the cost of any future upgrades that are required to enable growth in Arthurs Point. Should the continued growth of Arthurs Point trigger an upgrade requirement for the wastewater main over the Edith Cavell bridge then this will be able to be added to the list of future works in subsequent LTP or Annual Plan processes and appropriate Development Contributions levied against the future allotments.
32. There is an item on the current QLDC LTP that allows for the upgrading of the existing wastewater main over the Edith Cavell bridge. This is budgeted for construction in 2023 and is expected to cost approximately \$172,000. With the additional development contributions from the proposed area to be rezoned, this upgrade could feasibly be brought forward and enable the elimination of this capacity constraint. I note that, under the current Council development contributions policy, 89 new residential lots would generate \$416,965 in wastewater development contributions for sewerage upgrade purposes.

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<sup>7</sup> Ibid - paragraphs 7.117 and 7.122.

**STORMWATER**

33. As previously outlined, the site lies at the top of a ridge and has fall to the Shotover River around much of its perimeter.
34. In order to prevent the concentration of runoff onto neighbouring land, and in the absence of any significant reticulation nearby the site, it is expected that the provision of stormwater drainage for the site will necessarily involve usage of Low Impact Design principles.
35. Low-impact development (LID) is a term used to describe a land planning and engineering design approach to manage stormwater runoff. LID emphasizes conservation and use of on-site natural features to protect water quality. This approach implements engineered small-scale hydrologic controls to replicate the pre-development hydrologic regime of watersheds through infiltrating, filtering, storing, attenuating and detaining runoff close to its source.
36. This approach has been used to some extent on recent subdivisions in Arthurs Point. I am aware that it is being implemented and used elsewhere in Arthurs Point and the District.
37. I would expect that this approach could be successfully implemented on the subject land following detailed investigations, analysis and design. The approach to stormwater runoff would be a key driver in developing an overall development plan for the site as runoff interception prior to flows departing site would be required. I note that there are several points around the perimeter of the site where both large and small ephemeral water courses are expected to form during a prolonged and heavy rainfall event. These will need to be managed to ensure that there is no concentration of flows onto neighbouring land following development. I do not envisage any difficulties achieving that.

**CONCLUSIONS**

38. A suitable water supply for the site is available and feasible to undertake. This has been confirmed in principle by Mr Glasner.
39. Development of the subject land could be done in such a way as to not be a significant burden on existing ratepayers. Any new pump station

required for the site would be funded by the developer yet built to the high standards required by Council. The rates generated by the additional residential units would more than offset the cost of maintaining the wastewater pump station.

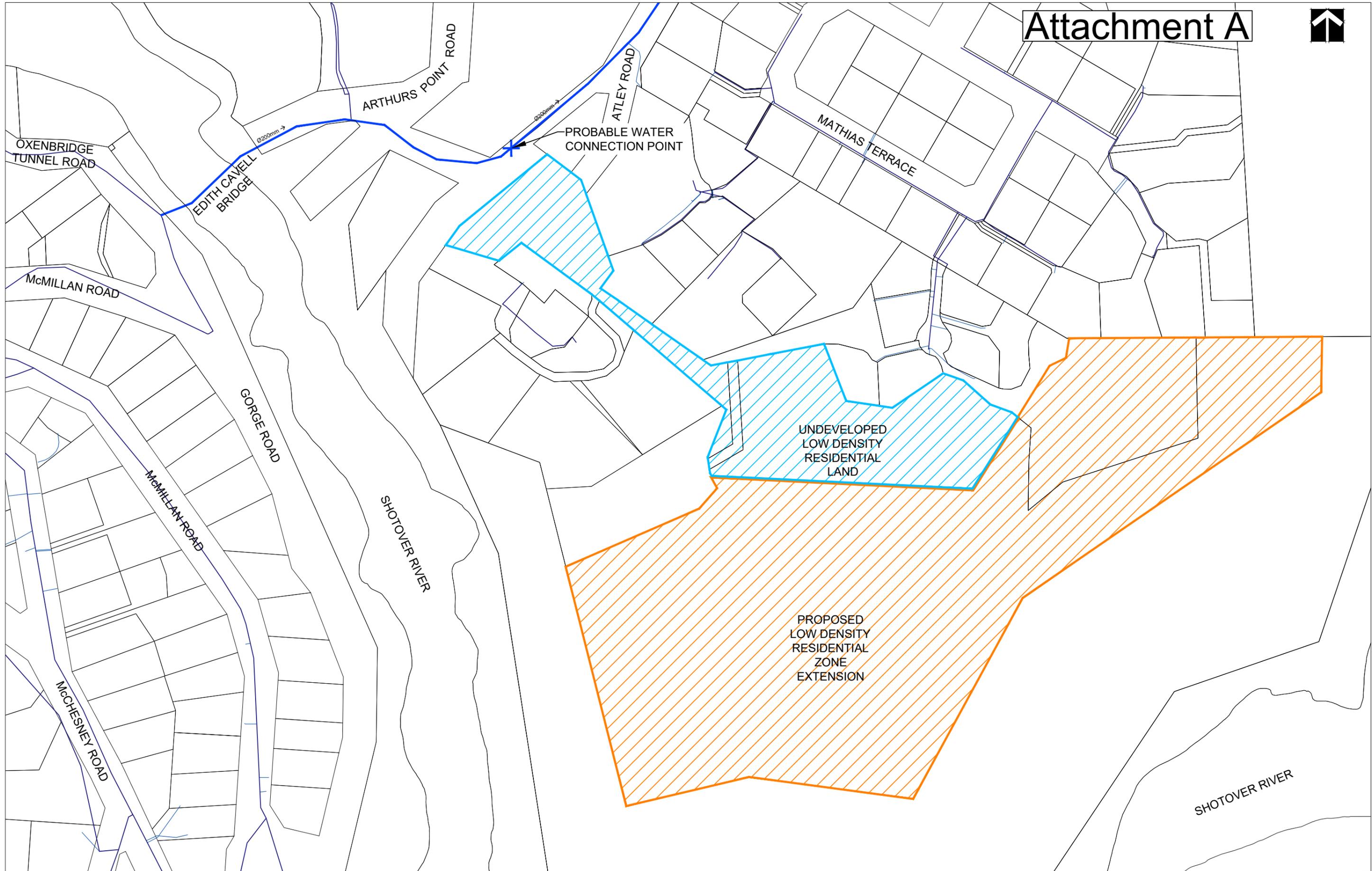
40. Any growth in Arthurs Point east of the Edith Cavell bridge will increase the likelihood of an upgrade being required for the wastewater main over the bridge. The future development of the site is a response to growth and not a driver of growth and as such is not solely responsible for the triggering of upgrades to the constrained wastewater main. The future development of the site will provide Council with a significant amount of development contributions that could be used to fund any required upgrades.
41. The inclusion of either a communal wastewater pump station or individual on site wastewater pump stations would provide the ability to control the timing of wastewater flows into the Council network and further reduce the effect that the development of the site would have on the existing reticulation.
42. Stormwater is currently being managed using Low Impact Design principles nearby to the subject land and at other developments around the District. Subject to recommendations and appropriate evolution of lot layout concepts, I expect that this approach will be able to implemented on the subject land in order to adequately manage stormwater runoff.

Attachment A            Water Supply Infrastructure

Attachment B            Wastewater Drainage Infrastructure

John McCartney

8 June 2017



REV	DATE	DESCRIPTION	APPROVED
A	07/06/2017	Initial Issue	JFM

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JFM	07/06/2017
DESIGN	DATE
JFM	07/06/2017
DRAWN	DATE
JFM	07/06/2017
CHECKED	DATE

CLIENT

**GERTRUDE'S  
SADDLERY  
LIMITED**

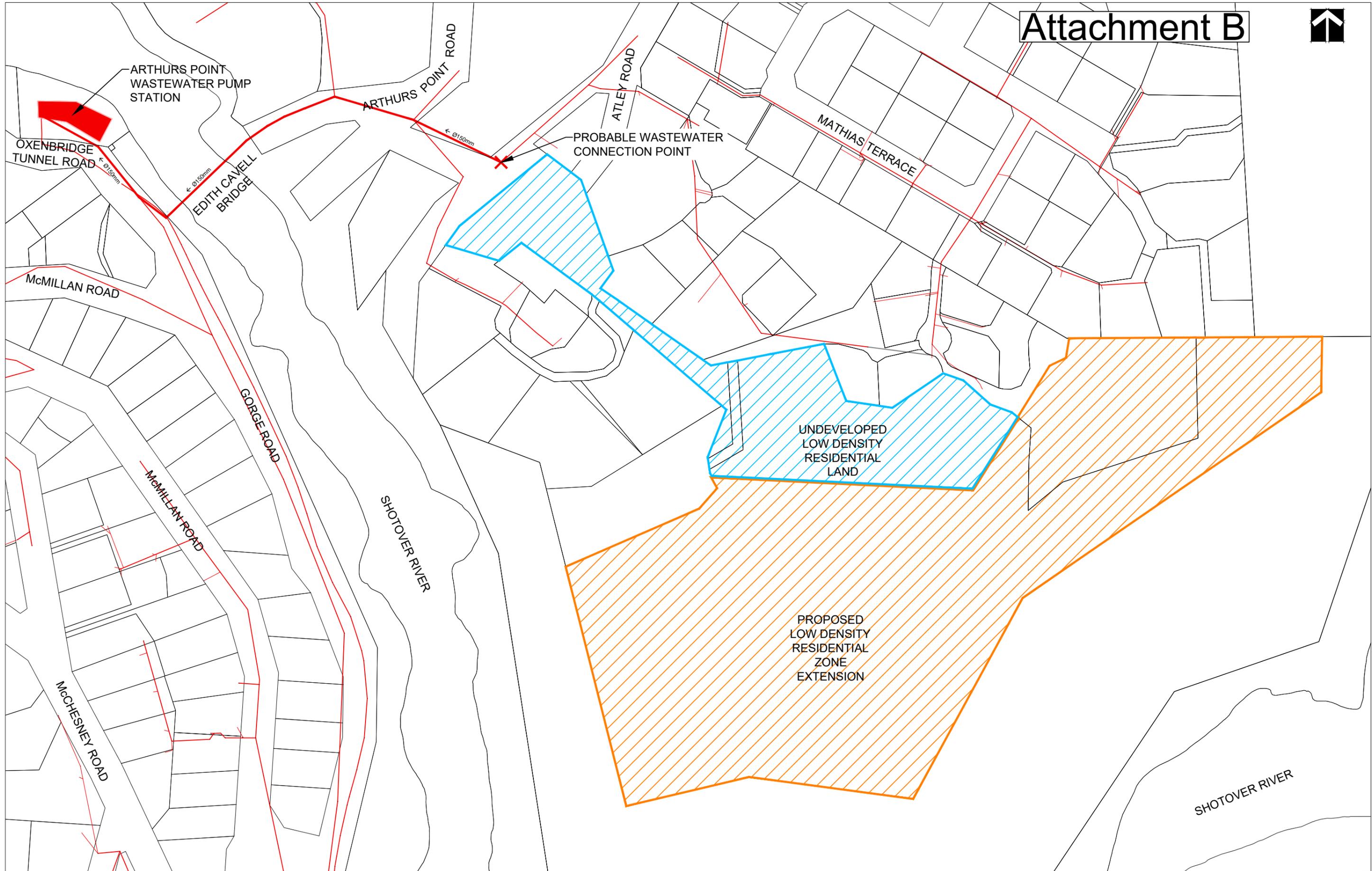
PROJECT/LOCATION

**PROPOSED REZONING  
ATLEY ROAD, ARTHURS POINT**

TITLE

**WATER SUPPLY INFRASTRUCTURE**

CONTRACT NUMBER		-
SCALE (AT A3)		1:2,000
DRAWING NUMBER	REVISION	
QV002-F-410	A	



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**GERTRUDE'S  
SADDLERY  
LIMITED**

PROJECT/LOCATION  
**PROPOSED REZONING  
ATLEY ROAD, ARTHURS POINT**

TITLE  
**WASTEWATER DRAINAGE INFRASTRUCTURE**

CONTRACT NUMBER	-
SCALE (AT A3)	1:2,000
DRAWING NUMBER	QV002-F-510
REVISION	A