

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

**IN THE MATTER** of the Resource Management  
Act 1991

**AND**

**IN THE MATTER** of Hearing Stream 14 –  
Wakatipu Basin hearing and  
transferred Stage 1  
submissions related to  
Arrowtown and Lake Hayes

**BETWEEN** **Dave Boyd**  
  
Submitter (#38)

---

**PLANNING EVIDENCE OF DANIEL IAN THORNE  
ON BEHALF OF  
DAVE BOYD (SUBMITTER #838)**

---

## 1. INTRODUCTION

- 1.1 My name is Daniel Ian Thorne. I am employed as a Senior Planner with Town Planning Group Limited, a planning consultancy based in Queenstown and Christchurch.
- 1.2 I have been asked by Dave Boyd (**Boyd**) to provide evidence in support of his submission on the Proposed Queenstown Lakes District Plan (**PDP**). The Boyd submission opposed the retention of the Rural zoning of 53 Max's Way and surrounding properties, and sought Large Lot Residential zoning and an amendment to the Urban Growth Boundary to reflect the suitability of the site and surrounds for urban forms of development. The area of land sought to be rezoned is approximately 30ha.
- 1.3 The Boyd submission was lodged on Stage 1 of the PDP, however was deferred for consideration as part the present Stage 2 Wakatipu Basin hearing.
- 1.4 I have read the Section 42a Report for Ladies Mile prepared by Ms Vanstone (Planning), including the evidence of Mr Smith (Transport), Ms Mellsop (Landscape) and Ms Jarvis (Infrastructure) for the Queenstown Lakes District Council (**QLDC**).

## 2. QUALIFICATIONS & EXPERIENCE

- 2.1 I hold a Bachelor's Degree in Environmental Management and a Post Graduate Diploma in Resource Studies (Distinction) from Lincoln University. I am an Associate Member of the New Zealand Planning Institute, and have over eleven years' experience in the resource management field.
- 2.2 I have prepared resource consent applications and plan change requests for a variety of activities across the South Island and regularly give expert planning evidence in respect of the same. I have been involved in a number of plan change proposals and plan reviews, most recently the Christchurch District Plan.
- 2.3 I have been involved in planning in the Queenstown Lakes District since 2015 and am familiar with the planning environment and local issues. In

particular, I have assisted Boyd with recent and current subdivision and land use proposals for his property located at 53 Max's Way, along with reviewing and assisting with his submission on QLDC's proposal to amend the Special Housing Area (**SHA**) Lead Policy to incorporate the Ladies Mile Area.

- 2.4 I have read the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note 2014. I agree to comply with the Code and confirm that my evidence has been prepared in accordance with it. The matters which I give expert opinion evidence are within my area of expertise and on which I am qualified to express an opinion. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

### 3. SCOPE OF MY EVIDENCE

- 3.1 In my evidence, I

- (a) Briefly outline the background and context to the original submission made in 2015, highlighting a number of significant contextual changes in the locality since the submission was lodged;
- (b) Identify the areas of agreement with the Section 42A Report and evidence presented by QLDC;
- (c) Undertake an assessment of the rezoning request taking into account the relevant 'zoning principles' identified by the Panel<sup>1</sup>;
- (d) Undertake an evaluation under section 32 of the Resource Management Act 1991 (**RMA**); and
- (e) Provide my conclusions.

- 3.2 For the purposes of my evidence, the land shown on the plan contained in **Appendix 1** which identifies the extent of the zone request is referred hereafter as "**the site**".

---

<sup>1</sup> Paragraph 132 of Report 17.01: <https://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/PDP-Stage-1-Decisions/Reports/Report-17.01-Stream-13-Mapping-of-Queenstown-other-than-Wakatipu-Basin-Introduction.pdf>

#### **4. EXECUTIVE SUMMARY**

- 4.1 The site comprises approximately 30ha of land to the south of State Highway 6 (**SH6**), and presently comprises a range of rural residential allotments on a series of terraces. The site is located in close proximity to the established Shotover Country residential development, and is partially located within the Ladies Mile SHA Indicative Master Plan area.
- 4.2 The original submission sought to rezone the site from Rural to Large Lot Residential and a corresponding amendment to the Urban Growth Boundary, with no changes proposed to the approved objective, policy and rule framework for the Large Lot Residential Zone.
- 4.3 I have reviewed the Officer Report prepared by Ms Vanstone, and the evidence produced on behalf of QLDC, and am in general agreement with the conclusions reached. While I am supportive of a higher density residential development across the site such as that recommended by Ms Vanstone, I do not consider that the suitability of the site for such an outcome completely discounts an assessment and determination on the appropriateness of Large Lot Residential zoning across the site, which represents an intensification of development from the current Rural zoning.
- 4.4 I consider rezoning to allow higher density development will enable a more efficient and effective use of the land than retaining it within the Rural Zone, or deferring consideration until such time as QLDC have reviewed and prepared a planning framework for the Ladies Mile Area, noting that such an outcome or approach remains uncertain. I consider that rezoning the site in accord with an existing zone framework will enable development that adequately mitigates any potential adverse effects on landscape, infrastructure, and the potential to achieve future urban growth, form and development across the site.
- 4.5 Overall, I believe that rezoning the site to Large Lot Residential, or indeed a higher density residential zoning such as that supported by Ms Vanstone, would better achieve the strategic outcomes sought in the PDP and other relevant planning documents than the alternative of the notified Rural zoning, and would therefore better achieve sustainable management under Part 2 of the RMA.

## 5. BACKGROUND AND CONTEXT TO THE SUBMISSION

- 5.1 In brief, the Boyd submission sought Large Lot Residential zoning across the site, which totals approximately 30ha of land sandwiched between SH6, Stalker Road, the Shotover Country residential development, and Old School Road (refer [Figure 1](#)).



Figure 1: Site Area (s42A Report of Ms Vanstone, 30 May 2018)

- 5.2 The site comprises a series of terraces that step down from SH6 towards the Shotover Country Special Zone and the Shotover River. The upper terraces adjoin SH6 and are pastoral in character. The intermediate terraces are characterised by rural living lots of between 2-5 hectares in size, accessed from Max's Way, and the lowest terraces have smaller rural living lots (between 0.4 – 1 hectares) accessed from Old School Road.
- 5.3 Notably, the Boyd submission was lodged 23 October 2015, prior to:
- (a) the approval of the Shotover Country SHA (20 June 2016);
  - (b) the approval of the Queenstown Country Club SHA (4 July 2016);
  - (c) the preparation of the Wakatipu Basin Land Use Study (**WBLUS**) (March 2017); and
  - (d) the inclusion of the Ladies Mile Area within the QLDC SHA Lead Policy (26 October 2017).

- 5.4 Mr Boyd has confirmed to me that had he known that QLDC was going to approve the above SHA developments, and promote further intensification of the area departing from rural residential land uses, he would have sought a higher density development outcome across the site, commensurate to those outcomes approved by the SHA developments.
- 5.5 As evident from the thorough summary provided by Ms Vanstone, these developments have introduced significant change in the context and land use expectations for the surrounding environment. By way of example, whilst presently zoned Rural, the WBLUS identifies the site as within the Ladies Mile Landscape Character Unit, which is considered to have a 'high' capacity to absorb increased levels of development, and should be prioritised for development given its strategic location<sup>2</sup>.
- 5.6 I note that Boyd submitted on QLDC's proposal to amend the SHA Lead Policy to incorporate the Ladies Mile Area in July 2017, and sought the identification of the site as appropriate for low to medium density development. The adopted Indicative Master Plan for the Ladies Mile SHA is identified in [Figure 2](#) below, with the site identified as a combination of low to medium density development, 'deferred status', and open space. While no reasons were given by QLDC as to why the entire site was not included within the SHA boundary, I understand that this was likely a consequence of capacity concerns associated with the Shotover River Bridge.

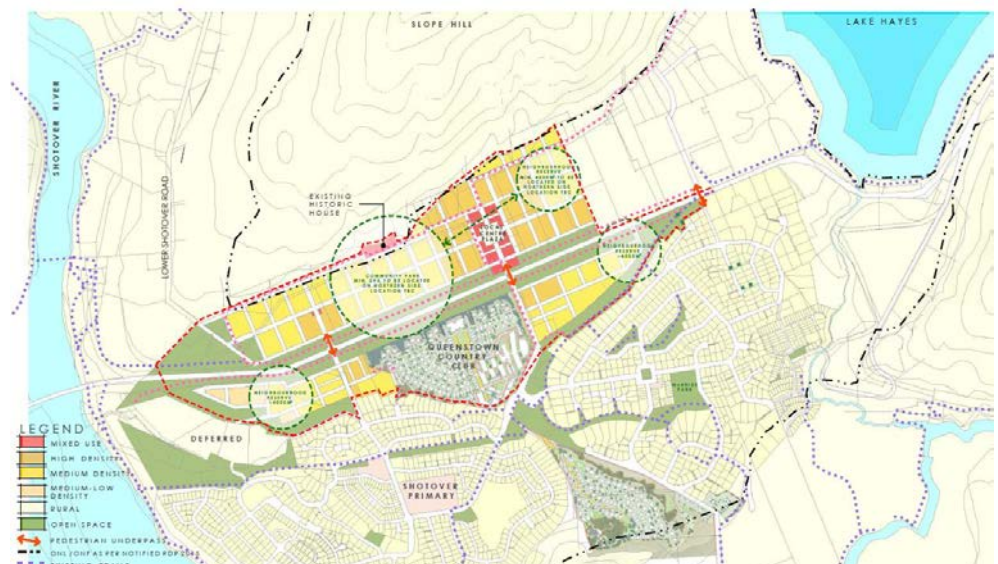


Figure 2: Indicative Master Plan for Ladies Mile, QLDC SHA Lead Policy, 26 October 2017

<sup>2</sup> WBLUS: Final Report Paragraph 7.5 and Appendix K: Absorption Capability Ratings

5.7 In summary, at the time the Boyd submission was lodged, Large Lot Residential zoning was considered an appropriate outcome for the site for the reasons outlined in the submission. However, given the delays in hearing the relief sought, and the various developments and investigations that have taken place since the submission was lodged, I consider that some form of higher density residential zoning would also be an appropriate outcome, and arguably one that can be seen to be an expected land use outcome for the site and surrounds by surrounding property owners and the wider community. The matter of scope is a legal one.

## **6. OFFICER REPORT**

6.1 For the most part, I agree with the conclusions reached by Ms Vanstone that:

- (a) The Rural Zone is not reflective of the existing character of the area, and the use of the area for productive purposes pursuant to the objectives and policies of the Rural Zone is likely to become increasingly challenging over time;
- (b) The site is well placed to provide for residential development of low – high densities;
- (c) A comprehensive plan change, including the development of a structure plan, would be beneficial to ensure that the area can be development successfully, maximising density and carefully managing environmental effects, transport network issues and three waters infrastructure.

6.2 Given my considerable agreement with Ms Vanstone, my evidence is focused on the particular issue where I have some degree of disagreement with Ms Vanstone. This primarily relates to her position around the ‘opportunity cost’ of rezoning the site as Large Lot Residential, and her subsequent position that the relief sought is contrary to the purpose of the RMA and should be rejected.

6.3 As noted above, I concur with Ms Vanstone in relation to the appropriateness of the site for low – high density development, however I do not consider this

completely discounts consideration of the relief sought, or creates significant opposition to the same. Indeed, granting the relief sought will not prevent QLDC embarking on a comprehensive plan change, or an expansion of the Ladies Mile SHA boundary, to incorporate and provide for higher densities of development across the site, if this is deemed a reasonable and appropriate outcome.

- 6.4 In terms of the other evidence presented by QLDC relating to infrastructure, landscape and transport matters associated with the relief sought, the key conclusions are as follows:

Infrastructure (Ms Jarvis)

- (a) Considers that on-site servicing can be achieved subject to secondary onsite wastewater treatment, there may be opportunities to connect to QLDC infrastructure, and does not oppose the relief sought.

Landscape (Ms Mellsop)

- (b) Considers that development on the upper terraces adjoining SH6 would have significant adverse effects on visual amenity and is opposed to the relief sought, albeit acknowledges that QLDC is promoting urbanisation of these terraces through the SHA Lead Policy.
- (c) Considers that the lower terraces have limited visibility from the surrounding landscape, and does not oppose the relief sought subject to a minimum 4,000m<sup>2</sup> allotment size (corresponding to Large Lot Residential Area B).

Transport (Mr Smith)

- (d) Considers that the additional traffic volumes are unlikely to be noticeable and can be accommodated within the current capacity of the network, however on the basis of adverse cumulative effects on the long term network performance from development in the Wakatipu Basin, is opposed to the relief sought.

- 6.5 I am in agreement with Ms Jarvis in relation to the ability to meet the infrastructure demands of Large Lot Residential development across the



site, however note that in December 2015 a number of properties within the site were approved by QLDC to connect to the reticulated water supply scheme within Shotover Country (refer **Appendix 2**).

- 6.6 I consider that the incorporation of the upper terraces adjoining SH6 within the SHA Lead Policy as appropriate for low to medium density development is of significant relevance when considering the potential visual amenity effects of the relief sought. To this end, I have some difficulty with Ms Mellsop's position in relation to opposing development on the upper terrace, albeit concur that the lower terraces have limited visibility and can absorb development in accord with the relief sought.
- 6.7 With respect to the transport concerns raised by Mr Smith, I share the opinion of Ms Vanstone, in that given the level of growth anticipated within the Ladies Mile Area, investment will be necessary to resolve the identified capacity constraints within a reasonable time horizon, and simply preventing any additional development north of the Shotover River Bridge is an untenable proposition<sup>3</sup>. I also understand from Ms Vanstone's Officer Report that the Ladies Mile Area is being considered further as part of the Detailed Business Case for the Housing Infrastructure Fund, which may provide a source of funding to assist necessary transport upgrades.

## **7. ASSESSMENT OF ZONE REQUEST**

- 7.1 In undertaking my assessment, I have adopted the Panel's approach of considering a number of 'zoning principles' which provide an integrated set of guiding principles to evaluate a zone request on the PDP<sup>4</sup>.
- 7.2 My assessment against the relevant zoning principles is focused only on those which I consider to be of particular relevance to the rezoning of the site to a higher density zoning (at least Large Lot Residential), with these identified and assessed as follows.

*whether the change implements the purpose of the PDP  
Strategic Direction, Urban Development and Landscape  
Chapters;*

---

<sup>3</sup> Paragraph 15.13, s42A Report of Ms Vanstone

<sup>4</sup> Paragraph 132 of Report 17.01: <https://www.qldc.govt.nz/assets/Uploads/Planning/District-Plan/PDP-Stage-1-Decisions/Reports/Report-17.01-Stream-13-Mapping-of-Queenstown-other-than-Wakatipu-Basin-Introduction.pdf>

- (a) Ms Vanstone considers that retaining the notified Rural Zone at this time pending a comprehensive plan change would be a significantly better approach to achieving the relevant strategic objectives of the PDP than granting the relief sought<sup>5</sup>.
- (b) While I can understand Ms Vanstone's position, I believe that what is required to be considered is whether the rezoning of the site to, at a minimum, Large Lot Residential would implement the purpose of the PDP Strategic Direction, Urban Development and Landscape Chapters. I am of the opinion that it would, primarily is it would provide for urban growth to be managed in a strategic and integrated manner<sup>6</sup>, would ensure a mix of housing opportunities<sup>7</sup>, and would achieve a compact and integrated urban form that is able to be coordinated with the efficient provision and operation of infrastructure and services<sup>8</sup>.

*the overall impact of the rezoning gives effect to the ORPS;*

- (c) In my opinion, rezoning of the site will provide the framework to achieve a form of urban growth and development that is well designed, reflects local character, and integrates effectively with adjoining urban and rural environments<sup>9</sup>. To this end, I consider the impact of rezoning of the site will give effect to the ORPS.

*whether the objectives and policies of the proposed zone can be implemented on the land;*

- (d) The site features a number of stepped terraces, along with established access infrastructure via Stalker Road, Max's Way and Old School Road. Given these existing site features, it is considered that development of the site in accord with the objectives and policies of the Large Lot Residential Zone can be implemented logically and practically across the site. In this regard I note the zone generally seeks to provide low density living opportunities, serving as a buffer between higher density residential areas and rural areas, whilst maintaining a high quality of residential amenity value. I hold

---

<sup>5</sup> Paragraph 15.12, s42A Report of Ms Vanstone

<sup>6</sup> PDP Objective 3.2.2

<sup>7</sup> PDP Objective 3.2.2.1(f)

<sup>8</sup> PDP Objective 4.2.2A

<sup>9</sup> ORPS (Decisions Version), Objective 4.5

the same opinion if the site was rezoned to a higher density residential zone.

*economic costs and benefits are considered;*

- (e) I do not consider that the rezoning of the site will in itself give rise to any significant economic costs, noting that the economic costs of servicing and undertaking development would need to be met by the individual landowners. Further, I understand the identified capacity constraints associated with the transport network (particularly the Shotover River Bridge) will arise regardless of the rezoning request as a consequence of wider growth and development within the Wakatipu Basin. The rezoning would however enable the landowners to realise some economic benefit through the ability to undertake further development on their respective land holdings.
- (f) I note Ms Vanstone's opinion that the relief sought would give rise to an opportunity cost, with potential adverse impacts on urbanising the area in an orderly and efficient manner<sup>10</sup>. I disagree with Ms Vanstone on this point, and do not consider this to be a significant or likely economic cost of the proposal.
- (g) If Council were to provide certainty in respect of future development plans for the site and surrounds through embarking on a comprehensive plan change or variation, or through amendments to the SHA Lead Policy, I consider it reasonable to expect that the individual landowners would delay any immediate development plans, so as to ensure they maximise the economic benefit associated with higher density residential development across their respective properties. I do not consider the relief sought would preclude such future planning exercises from been undertaken, or that it would give rise to barriers or costs in achieving greater urbanisation of the site in an orderly and efficient manner at some point in the future.

*changes to the zone boundaries are consistent with the maps in the PDP that indicate additional overlays or constraints (e.g Airport Obstacle Limitation Surfaces, SNAs, Building Restriction Areas, ONL/ONF);*

---

<sup>10</sup> Paragraph 15.11, s42A Report of Ms Vanstone

- (h) The site does not feature any additional overlays or constraints that are considered problematic for future residential development.

*changes should take into account the location and environmental features of the site (eg. the existing and consented environment, existing buildings, significant features and infrastructure);*

- (i) As identified, the site topography and existing access infrastructure provides a logical and practical development layout, and to this end, future residential development (in accord with the Large Lot Residential standards, or an alternative low – high density zone framework) can be seen to appropriately take into account the location and environmental features of the site.

*zone changes are not inconsistent with long term planning for the provision of infrastructure and its capacity;*

- (j) While Mr Smith considers that the relief sought would give rise to long term negative cumulative effects on the performance of the transport network, I understand that such effects will arise regardless of the rezoning because of the significant growth and development within the Wakatipu Basin and immediate Ladies Mile Area. To this end, I consider it reasonable to expect that some form of investment will be required to address the identified network capacity issues, and that this will likely need to occur in the short to medium term.

- (k) I understand from Ms Vanstone's Officer Report that the site is located within the area that is presently being considered further as part of the Detailed Business Case to the Housing Infrastructure Fund, the outcome of which may provide additional funding to address transport capacity issues within the Ladies Mile Area.

- (l) Given the above, I consider that the relief sought, and indeed the timing of future development on the site would be able to be undertaken in an integrated manner that corresponds with the provision of, and upgrades to, relevant infrastructure.

*zone changes take into account the effects on the environment of providing infrastructure onsite;*

- (m) As identified by Ms Jarvis, the provision of infrastructure servicing on site is feasible, however critically, the site is well located with respect to Council's existing reticulated wastewater and water infrastructure.

I therefore do not consider the provision of infrastructure servicing to be an impediment to granting the relief sought.

- 7.3 With respect to the other zoning principles identified by the Panel, I do not consider them to be particularly relevant to the relief sought, taking into account the scale and significance of the change proposed, and the adoption of an existing approved zone framework.
- 7.4 Overall, for the reasons outlined above, and noting my general agreement with Ms Vanstone on a number of points, I consider that the rezoning of the site gives appropriate regard to, and achieves a high level of consistency with, the relevant zoning principles identified by the Panel.
- 7.5 I note that my assessment of the relief sought against the above-mentioned zoning principles in many respects can also be seen to also provide support for a low – high density residential outcome over the site. In my view, this reflects the appropriateness and capability of the site to absorb further development, whilst meeting the strategic objectives of the PDP, and the purpose of the RMA.

## **8. SECTION 32 EVALUATION**

- 8.1 The relief sought by Boyd does not propose any changes to the approved objective, policy and rule framework relating to the Large Lot Residential Zone as identified in the Panel's Stage 1 decision<sup>11</sup>. The relief sought simply seeks to rezone the site as a means to recognise and achieve the relevant policy framework.
- 8.2 Taking into account the above, I have undertaken a brief evaluation as required by Section 32 of the RMA, with this considered to correspond to the scale and significance of the relief sought. This evaluation is supported by my assessment undertaken against the relevant zoning principles identified by the Panel, the areas of agreement with Ms Vanstone and other Council staff, and the recommendations of the WBLUS.

---

<sup>11</sup>[https://www.gldc.govt.nz/assets/Uploads/Planning/District-Plan/PDP-Stage-1-  
Decisions/Chapters/Chapter-11-Large-Lot-Residential-Decisions-Version.pdf](https://www.gldc.govt.nz/assets/Uploads/Planning/District-Plan/PDP-Stage-1-Decisions/Chapters/Chapter-11-Large-Lot-Residential-Decisions-Version.pdf)

- 8.3 This evaluation is focused around whether the rezoning of the site to a higher density zoning (with particular regard to the Large Lot Residential zone) is the 'most appropriate' way to achieve the objectives by:
- (a) Identifying other reasonably practicable options for achieving the objectives; and
  - (b) Assessing the efficiency and effectiveness of the provisions in achieving the objectives.
- 8.4 I understand that case law has interpreted the term 'most appropriate' as used in Section 32 of the RMA to mean "*suitable, but not necessarily superior*". To this end, I consider that this means the most appropriate option does not need to be the most optimal or best option, but must demonstrate that it will meet the objectives in an efficient and effective way. I note Ms Vanstone appears to concur with this interpretation<sup>12</sup>.
- 8.5 In general terms, I consider that the relief sought, and indeed the alternative of a higher density of development such as that supported by Ms Vanstone, would both represent appropriate options for achieving the relevant objectives of the PDP. In particular, both options would provide for urban growth to be managed in a strategic and integrated manner, would ensure a mix of housing opportunities, and would achieve a compact and integrated urban form that is able to be coordinated with the efficient provision and operation of infrastructure and services.
- 8.6 I consider that the character of the existing area, the existing allotment sizes and layout, and the context of the surrounding environment are such that utilising the area for productive purposes in accord with the objectives of the Rural Zone is impracticable. I therefore consider the alternative option of retaining the notified Rural zoning would not be an appropriate outcome taking into account the relevant objectives.
- 8.7 With respect to the efficiency and effectiveness of the relief sought in achieving the relevant objectives, no changes are proposed to the Large Lot Residential Zone framework as approved by the Panel in their Stage 1 decision. To this end, those provisions can be seen to efficiently and effectively give effect to the PDP objectives, and indeed the relevant higher

---

<sup>12</sup> Paragraph 15.11, s42A Report of Ms Vanstone

order planning documents. To this end, I consider the focus is whether or not the accepted Large Lot Residential zone framework is appropriate in this location, which in my opinion, turns on the particular costs, benefits and environmental effects of the proposed rezoning.

- 8.8 For the reasons outlined in my assessment, I do not consider that rezoning the site would give rise to any significant adverse effects on landscape, infrastructure, transportation, or the ability to achieve greater urbanisation of the site in the future.
- 8.9 In terms of the costs and benefits associated with the relief sought, overall it is considered that there will be few costs, and those that will arise will be limited to the individual land owners as part of future development exercises. The benefits are focused around providing for the economic well being of the individual land owners through the ability to enhance the development potential of their properties, along with providing additional housing opportunities in a location that is well suited for the same.
- 8.10 While I share the view of Ms Vanstone that the site is well placed for low – high densities of residential development, and that this would be an appropriate outcome, I do not consider granting the relief sought at this time will give rise to a cost through the creation of barriers to achieving future urbanisation across the site. If such an outcome was pursued by QLDC and deemed to be a reasonable and appropriate outcome for the site, I expect that the landowners would participate actively, and delay any immediate development plans until such time as they could realise greater development potential of the site. Indeed, a number of landowners<sup>13</sup> have submitted on the PDP seeking a higher density of development across the site, signalling their intention and support for such an outcome.
- 8.11 I consider that rezoning the site would better achieve the PDP objective framework than retaining the notified Rural zoning of the site. In particular, the provisions of the Large Lot Residential Zone, or an alternative higher density residential zoning, will enable development to occur in a logical and strategic manner, will provide a range of housing opportunities, and will

---

<sup>13</sup> \*J & L Bagrie, 37 Max's Way (2246), \*R & J Kelly, 12 Stalker Road (2251), \*D Stanhope & G Burdis, 6 & 8 Layton Lane (2253), A Elms & P Smith, Old School Road (#2323)

\*I acknowledge the Panel Minute dated 16 April 2018 determining that these submissions are not 'on' Stage 2 of the PDP, and therefore not subject to consideration.

ensure that the amenity values and the quality of the environment is maintained.

- 8.12 Overall, I believe that the relief sought, or an alternative low – high density residential zoning, would be preferable over the existing notified Rural zoning in terms of Section 32 of the RMA, would more efficiently and effectively achieve the objectives of the PDP and, through this, the purpose of the RMA.

## **9. CONCLUSION**

- 9.1 On the basis of my assessment above and in consideration of Ms Vanstone's Officer Report and evidence presented by QLDC, I consider that rezoning the site to provide for higher densities of residential development (i.e. Large Lot Residential zone or an alternative low – high density residential zone), would be the most appropriate outcome for the site. The relevant factors for me in reaching this position are generally as follows:

- (a) The character of the site does not reflect that anticipated for the Rural Zone, and utilising the land for productive purposes as per the purpose of the Zone is likely be challenging and impracticable;
- (b) The site topography, location, access and lack of any notable constraints on development are such that the site lends itself to a higher density of residential land use;
- (c) There are no significant landscape or amenity effects associated with the rezoning of the site, taking into account the existing character of the site and the expectations for future development within the Ladies Mile Area;
- (d) The site is well located with respect to potential future access to Council reticulated wastewater infrastructure, and enjoys existing connections to the Council reticulated water supply;
- (e) The additional traffic volumes associated with rezoning the site to Large Lot Residential are unlikely to be noticeable on the road network;



- (f) I consider it reasonable to expect transport network upgrades will need be advanced at some point in the near future, which will address identified capacity constraints associated with the transport network. Further, I understand that the Ladies Mile Area is presently the subject of a detailed business case to the Housing Infrastructure Fund which may provide a source of funding to address the identified transport constraints;
  - (g) Granting the relief sought will not preclude Council from embarking on a future rezoning or variation, or amendments to the SHA boundaries, to achieve higher densities and integrated development across Ladies Mile, noting that I consider such an outcome would be appropriate;
  - (h) I do not consider that granting the relief sought at this time will give rise to significant barriers in the future in achieving a higher degree of urbanisation across the site;
  - (i) The adoption of the approved Large Lot Residential zone will ensure development in accord with the same will efficiently and effectively achieve the objectives of the PDP.
- 9.2 I consider the relief sought will enable a more efficient and effective use of the land than retaining it within the Rural Zone, while at the same time adequately mitigating any potential adverse effects on landscape, infrastructure, or the potential to achieve future urban growth, form and development across the site.
- 9.3 Overall, I believe that rezoning the site to Large Lot Residential, or indeed a higher density residential zoning, would better achieve the strategic outcomes sought in the PDP and other relevant planning documents than the alternative of the notified Rural zoning, and would therefore better achieve sustainable management under Part 2 of the RMA.

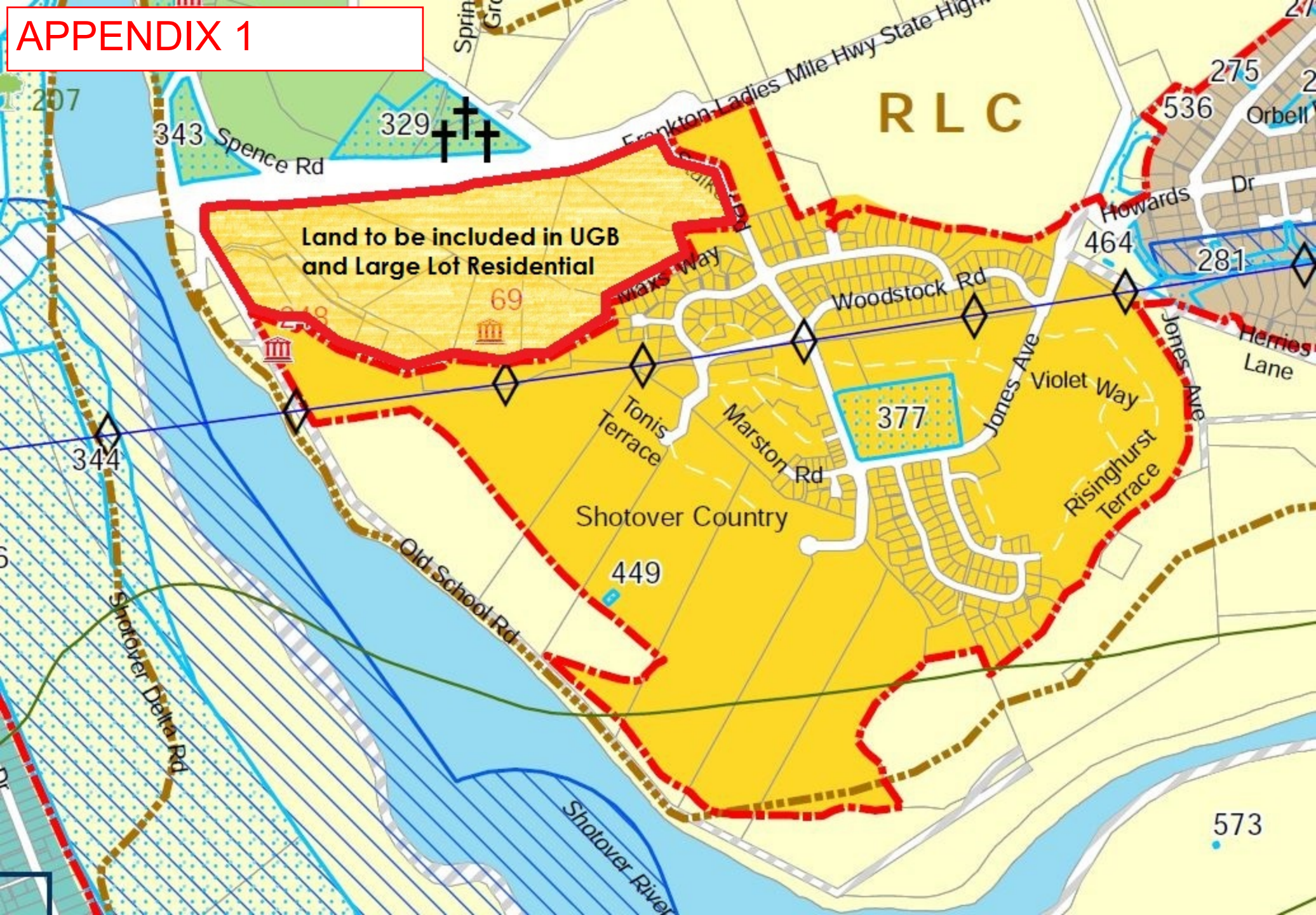
**DATED** 13 June 2018

**Daniel Thorne**

**APPENDIX 1: SITE AREA**

**APPENDIX 2: APPROVAL TO CONNECT TO  
COUNCIL'S RETICULATED WATER SUPPLY**

# APPENDIX 1





18 December 2015

Clarke Fortune McDonald & Associates  
Address

Email: [chansen@cfma.co.nz](mailto:chansen@cfma.co.nz)

Agent: Chris Hansen

VAL#2907124002, 2907464900, 2907464500,  
2907464300, 2907464700, 2907464800, 2907124003,  
2907465201, 2907464603, 2907464401 and 2907124202  
Intersection of SH6 and Stalker Rd  
Shotover Country  
Wakatipu Basin

**APPLICATION FOR CONNECTION TO WATER RETICULATION FOR EXISTING  
LOT 2 DP 23101, LOTS 1, 2, 4, 9 AND 8 DP 325561, LOTS 1 AND 2 DP 439440, LOT 1 DP  
473343, LOT 1 DP 431492 AND LOT 1 DP 27866.**

The enclosed Approval of your Application for Connection to Council Services refers to connections at the above mentioned property:

Connections to Queenstown Lakes District Council reticulation is only approved subject to following the imposed conditions and exceptions:

**General Conditions:**

- The works applied for are:  
1 x 32 mm Water connection
- Work shall be undertaken in accordance with QLDC's Land Development and Subdivision Code of Practice adopted on 3rd June 2015 and subsequent amendments to that document up to the date of issue of the approval, amendments made thereto by Queenstown Lakes District Council (QLDC); *National Code of Practice for Utility Operators Access to Transport Corridors (2011)*.
- For work in the Road a Corridor Access Request (CAR) for Roads and Application Fee (payment made out to Queenstown Lakes District Council), shall be submitted by the Applicant to QLDC Infrastructure Services at least one working day before work starts.
- A traffic management plan, plus plan approval fee, shall be submitted by or on behalf of the Applicant to QLDC Infrastructure Services for approval prior to undertaking any work within the road or road reserve that will disrupt normal traffic movements in the area including pedestrian traffic. This must be put together by a qualified Site Traffic Management Supervisor (STMS).
- The applicant is responsible for repair of any faulty materials or workmanship where services have been buried prior to inspection.
- Conditions of relevant Resource Consents (including Engineering Approvals where applicable) and/or Building Consents are to be adhered to, including Development Contribution payments applicable. **This approval is only valid once these consents have been granted.**
- The applicant must contact the Resource Management Engineering team in the Planning and Development department at Council with regard to inspection of the physical connection works. Phone 441 0499, with a **minimum of 48 hours notification** prior to when you require

the inspection. All costs involved with connection works shall be the responsibility of the property owner.

- The excavations containing water and waste water pipes must be open and exposing the new pipework for Council inspection. The contractor will be required to uncover buried works for inspection at the applicants cost if this is not achieved. This may incur an invoice for extra time required by the Council Authority to undertake this agreed approval process.
- No mains water shut downs are to be carried out without the knowledge of Fulton Hogan Ltd, the Council's Maintenance Contractor, phone FH 27 2753876 . They must carry out any such shut down or approve of the Applicant's Contractor doing so. They require a **minimum of 72 hours notice**.
- Prior to any works being carried out in the road reserve please arrange for existing services in the vicinity to be located. This includes power, gas and telecom services location.
- This approval is only valid for a period on one (1) year after the approval date (being the date of this letter). If works are not started by that date a new application must be sought. The applicant only may request of Council officer for an extension to this approval at any time during which the approval is still valid without any change to the submitted and intended application proposal.

#### **General Exceptions:**

Any item in the general proposal which has an exception from normal procedure or standards.

- The water connection shall be made in accordance with Clark Fortune McDonald & Associates '*Shotover Country, ladies Mile Highway – Stalker Road Roundabout Services*' (Job 11117, Drawing E002, rev N)

#### **WATER**

**All water reticulation shall only be installed by persons qualified under the National Certificate in Water Reticulation – Service Person or registered for training for the National Certificate in Water Reticulation – Service Person.**

- As per plan provided with Application.
- The works applied for are:  
1 x 32 mm water connections
- The new water connection is to be made to the existing 150 mm (ID), uPVC water main in the Stalker Road. The water main should be at a depth of 1m cover in the grass berm.
- Connection shall be by way of a tapping band (or ferrule strap) tapped or containing a 32mm self-inserting ferrule positioned on the main preferably as a top take off.
- A 32mm MDPE PE80 (typically blue in colour) lateral pipe is to be taken from the point of connection to a position prior to the property boundary where the Toby box will be positioned. This path shall be aligned perpendicular to the direction of travel of the water main. Non perpendicular lays will not be approved except with Council officer approval and high accuracy As Built plans recorded.

- No lateral will be approved which is laid parallel or nearly parallel to a water main in the road.
- All toby valves above 25mm shall use a resilient seated gate valve. Where a extraordinary water supply has a seasonal use it shall have a diaphragm valve installed so as to be water and pressure tight when isolated in times of no service. This may require specific design pipework including flange jointed pipe.

**As-built information for all new reticulation including connections to mains, any new valves / Toby's, stating size of line and type of material is required to be submitted by the applicant in accordance with the Council's standard As-built requirements. This must be provided by a local survey firm with knowledge of Council's As-built requirements.**

Please do not hesitate to contact the writer with any queries.

Prepared by



Lyn Overton  
**RESOURCE MANAGEMENT ENGINEER**

Reviewed by:



Reg Fraser  
**SUBDIVISION INSPECTOR**

Encl.: *Corridor Access Request (CAR) for Roads form*

cc: Fulton Hogan – (Steve Murch (Lake Hayes Supervisor) [steve.murch@fultonhogan.com](mailto:steve.murch@fultonhogan.com)  
Resource Management Engineer – [lynette.overton@qldc.govt.nz](mailto:lynette.overton@qldc.govt.nz)  
Subdivision Inspector – [reg.fraser@qldc.govt.nz](mailto:reg.fraser@qldc.govt.nz)  
Road Corridor Engineer – [tony.francis@qldc.govt.nz](mailto:tony.francis@qldc.govt.nz)  
GIS Analyst – [marco.olmos@qldc.govt.nz](mailto:marco.olmos@qldc.govt.nz)

Queenstown Lakes District Council  
Private Bag 50072, Queenstown 9348  
Gorge Road, Queenstown 9300

<b>Phone</b>	03 441 0499
<b>Fax</b>	03 442 4778
<b>Email</b>	<a href="mailto:services@qldc.govt.nz">services@qldc.govt.nz</a>
<b>Website</b>	<a href="http://www.qldc.govt.nz">www.qldc.govt.nz</a>

# Application for Connection to Council Services



# QUEENSTOWN LAKES DISTRICT COUNCIL

## APPLICATION DETAILS

Name of Property Owner: 11 in total - refer attached.

Postal Address and Post Code: C1 - CFMA

Phone Number: (Work) 441 6044 (Home) \_\_\_\_\_

Email: chanson@cfma.co.nz

Name of Agent (Applicant if not owner): Chris Hansen

Location of Site to be Serviced: \_\_\_\_\_

Valuation Number: \_\_\_\_\_ Legal Description: \_\_\_\_\_

Resource Consent # \_\_\_\_\_ Building Consent # \_\_\_\_\_ Licence To Occupy Y / N

## NATURE OF CONNECTION TO SERVICE REQUIRED

	New	Replacement	Diameter of Main	Diameter of Connection requested	
Water Supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>150mm <math>\phi</math></u>	<u>32mm <math>\phi</math></u>	refer A & B
Stormwater	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	refer A & D
Sewer	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	refer A & C
Vehicle Crossing	<input type="checkbox"/>	<input type="checkbox"/>	urban/rural (circle one)	sealed/unsealed (circle one)	refer A & E

Further Information to assist processing : refer Attached plan & water model report.

## DEPOSIT INFORMATION

The deposit payable with this application is an administration fee of \$55 plus \$120 per connection to council services. E.g application for vehicle crossing and sewer connections is \$55 + \$120 + \$120 = \$295 total.

- Deposit is based on expected processing time and one site visit, providing clear detailed information is submitted by the applicant.
- Return inspections because of non-complying initial inspections may be additionally billed to the owner/applicant named above based on time taken.

## A STANDARD CONDITIONS FOR ALL APPLICATIONS

- No work shall proceed until the applicant is in receipt of approved application.
- The work shall be carried out by a Contractor approved by the Queenstown Lakes District Council
- The cost of restoration of services or property damaged during the course of the work shall be the responsibility of the applicant.
- The applicant shall be responsible for contacting the appropriate Utility Operator and arranging for the location of any underground services in the proposed work area.
- The applicant shall arrange to reinstate all Council Road and Footpath services, where applicable, to the Council's satisfaction at the applicants own cost and shall advise the Council in writing of the date this restoration work is complete.
- Materials, equipment and method of construction shall be to Council's standards applicable at the time of application.
- The applicant shall be solely responsible for the adequacy of all restoration works for a period of twelve months following their completion.
- **As built plans are required at the time of inspection.**

### Contact Details:

Queenstown Lakes District Council  
10 Gorge Road  
Private Bag 50072,  
Queenstown 9348

**Phone:** 03 441 0499 – Wanaka 03 443 0024  
**Fax:** 03 442 4778  
**E-mail:** services@qldc.govt.nz  
**Website:** www.qldc.govt.nz



**B WATER SUPPLY CONNECTION**

- An Acuflo® CM2000 with AMB003 and AMB350 valve box combination or other prior approved toby valve and box shall be brought to ground level as close as practicable to the boundary.
- If water supply is intended for irrigation or pool/spa water supply please contact Council for special requirements.
- Minimum depth of service shall be 600mm at any point within the road corridor, unless approved special protection is provided.
- The Council's water mains shall only be turned off by the Council's maintenance contractor and is subject to an additional charge (72 HOURS NOTICE REQUIRED). It is an offence to introduce contaminants into Council's potable water system.

**C PIPED SEWER CONNECTION**

- An approved cleaning eye brought to ground level shall be provided on the property as close as practicable to the boundary.
- The property owner is responsible for the cost of clearing all future blockages that may occur between the property boundary and the sewer main.
- Minimum cover to service shall be 750mm at any point within the road corridor unless approved special protection is provided.
- It is the property owners' responsibility to ensure that only sewage enters the sewerage system. It is an offence to dispose of stormwater through a sewerage drain.

**D STORMWATER CONNECTION**

- An approved sump shall be provided on the property as close as practicable to the boundary where:
  - Drains serve more than 2 residential dwelling units
  - Drains serve commercial or industrial premises
  - Drains receive yard or subsoil drainage
- It is the property owners' responsibility to ensure that only stormwater enters the drainage system. It is an offence to dispose of sewage or sullage water through a stormwater drain.
- Minimum cover to service shall be 750mm within the road corridor.

**E VEHICLE CROSSING APPLICATION**

- A site plan is required to be submitted with the application showing:
  - Dimensions of crossing requested (including construction details) from edge of existing carriageway to the property boundary
  - The design of any vehicle crossing shall be in accordance with Section 14 and Appendix 7 of the District Plan
  - Location of crossing in relation to site boundaries and existing intersections
  - Speed limit of roads
  - Any structures required within road reserve including retaining walls
  - Surfacing material proposed

The applicant shall provide a site plan which shall clearly show the location and position of proposed connection(s) and depth required below ground level at the property boundary. Also state size of connection required.

- **Should approval be granted for the above, I agree to abide by the conditions of the approval listed on the reverse of this form. I also agree that no work shall proceed until I am in receipt of the approved application.**
- **Development Contributions may be calculated as a result of this application for increased demand placed upon Council Infrastructure. These will be calculated and invoiced to the owner. Connection to any Council Service cannot be made until any Development Contribution has been paid.**
- **Be aware that this application may trigger the need for a Road Opening Notice. Any approval letter will advise you in this regard.**

Signature: [Signature] Date: 28-9-15  
 Signature of owner (or agent with proof of authorisation to act for owner)

FOR OFFICE USE ONLY	
QLDC to Complete	
Fees Payable: Administration Fee:	\$55
Connections <u>1</u> x \$120 =	<u>120</u>
Total Deposit:	<u>\$175</u>
Receipt No: <u>Direct Debit</u>	
Application Approved by: <u>[Signature]</u>	
Date: <u>12/10/2015</u>	
Sighted: <u>VES</u>	
Comments if new connection: <u>AS PER APPROVAL</u>	
Application Approved: <u>[Signature]</u>	
Date: <u>13/10/2015</u>	



Stalker Bore Water Users

Owner	Address	Legal Description	Valuation No	Contact
1 Kenneth John Turner Kim Judith Turner	31 Old School Road	Lot 2 D.P.23101	29071-24002	<a href="mailto:kenturner@xtra.co.nz">kenturner@xtra.co.nz</a>
2 David Thomas Boyd Julianne Jean Boyd Christopher John Boyd	53 Maxs Way	Lot 1 D.P.325561	29074-64900	<a href="mailto:dave@boydtown.co.nz">dave@boydtown.co.nz</a>
3 Anna Elms Peter McDonald Smith	37 Old School Road	Lot 1 D.P.439440	29071-24003	<a href="mailto:peteandanna@xtra.co.nz">peteandanna@xtra.co.nz</a>
4 Peter Allan Heslip Leann Gay Heslip	39 Old School Road	Lot 2 D.P.439440	29074-65201	<a href="mailto:pandlheslip@gmail.com">pandlheslip@gmail.com</a>
5 Scott Fredrick Bramwell Pamela Hsin Pan Bramwell	49 Maxs Way	Lot 9 D.P.325561	29074-64800	<a href="mailto:fred@hoamz.co.nz">fred@hoamz.co.nz</a>
6 Sheena Rachel Haywood Stephen Ross Brent McCulloch Trustees 2004 Ltd	47 Maxs Way	Lot 8 D.P.325561	29074-64700	<a href="mailto:photos@sheenahaywood.com">photos@sheenahaywood.com</a> <a href="mailto:Stephen.Brent@cavell.co.nz">Stephen.Brent@cavell.co.nz</a>
7 Joseph William Bagrie Lucille Miriam Bagrie Graham Stuart Dick	37 Maxs Way	Lot 1 D.P.473343	29074-64603	<a href="mailto:joe@iltrading.co.nz">joe@iltrading.co.nz</a>
8 Graham Kenneth Burdis	6 Layton Lane	Lot 2 D.P.325561	29074-64500	<a href="mailto:michelle@stanhope.asia">michelle@stanhope.asia</a>
9 David Michael Tyldesley Stanhope	6 Layton Lane	Lot 1 D.P.431492	29074-64401	<a href="mailto:michelle@stanhope.asia">michelle@stanhope.asia</a>
10 Jan Elizabeth Kelly Russell Anthony Kelly	12 Stalker Road	Lot 4 D.P.325561	29074-64300	<a href="mailto:Russell.Kelly@placemakers.co.nz">Russell.Kelly@placemakers.co.nz</a>
11 Raymond John Key Janet Louise Lamont	396 Frankton-Ladies Mile Highway	Lot 1 D.P.27866	29071-24202	<a href="mailto:raymondjkey@yahoo.co.uk">raymondjkey@yahoo.co.uk</a> <a href="mailto:janetlamont@yahoo.com">janetlamont@yahoo.com</a>

Table 5: Design demands for Shotover Country

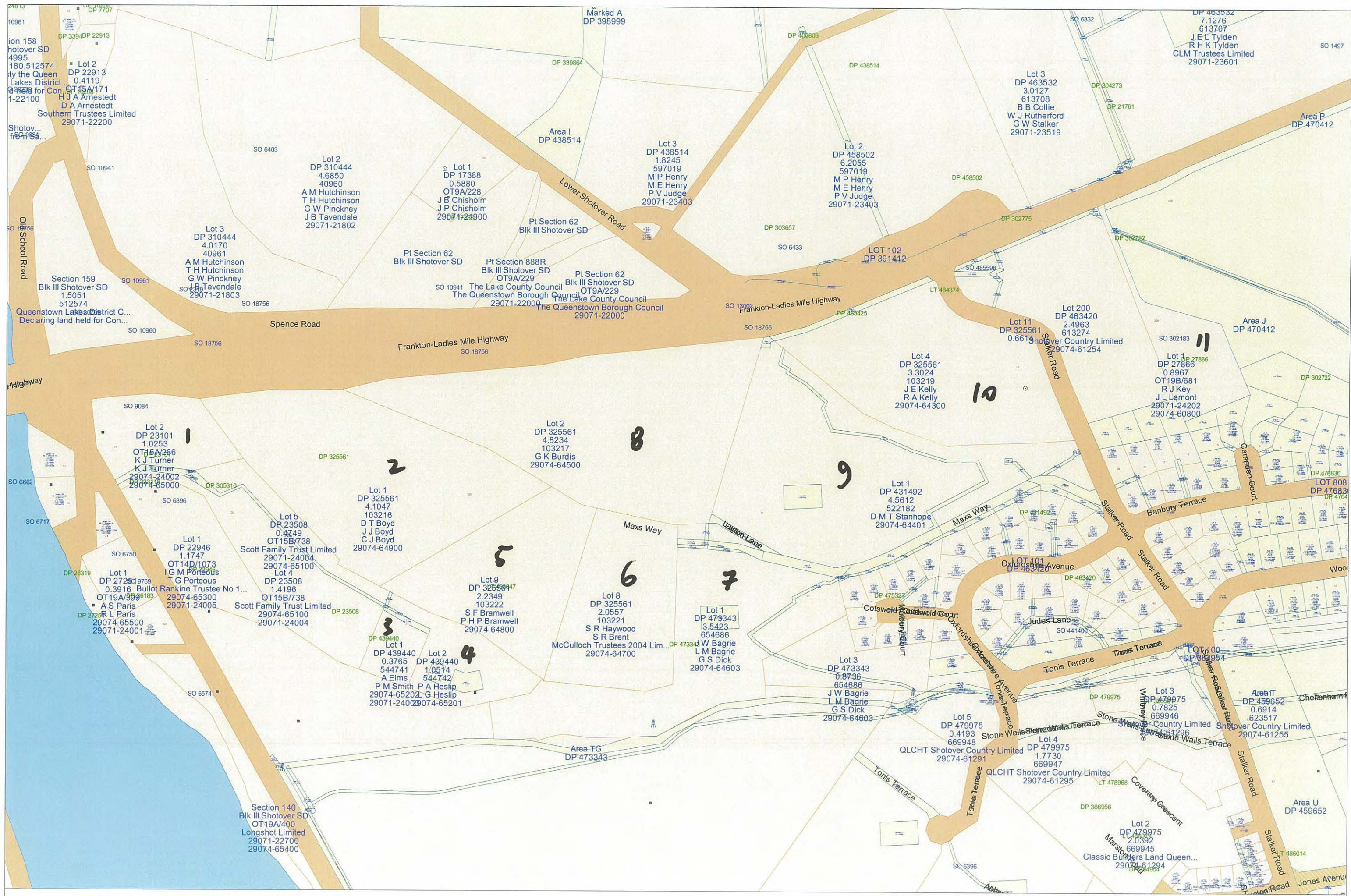
	Dwellings	ADF		PDF		PHF	
		m <sup>3</sup> /d	l/s	m <sup>3</sup> /d	l/s	m <sup>3</sup> /hr	l/s
Shotover Country Ltd	54	113	1.31	227	2.63	24	6.6
	36	76	0.88	151	1.75	16	4.4
	16	34	0.39	67	0.78	7	1.9
	27	57	0.66	113	1.31	12	3.3
	58	122	1.41	244	2.82	25	7.0
	70	147	1.70	294	3.40	31	8.5
	35	74	0.85	147	1.70	15	4.3
	153	321	3.72	643	7.44	67	18.6
	41	86	1.00	172	1.99	18	5.0
	68	143	1.65	286	3.31	30	8.3
	51	107	1.24	214	2.48	22	6.2
	135	284	3.28	567	6.56	59	16.4
	78	164	1.90	328	3.79	34	9.5
	21	44	0.51	88	1.02	9	2.6
	0	16	0.18	32	0.37	3	0.9
	10	21	0.24	42	0.49	4	1.2
Classic Builders	24	50	0.58	101	1.17	11	2.9
	33	69	0.80	139	1.60	14	4.0
	44	92	1.07	185	2.14	19	5.3
Shotover Primary School	650 pupils	57	0.66	114	1.32	12	3.3
Community Centre		21	0.2	42	0.48	4	1.2
Lake Hayes Estate		160	1.8	527	6.10	44	12.1
Total demand	954	2144	26.1	4722	54.6	480.5	133





The map is an approximate representation only and must not be used to determine the location or size of items shown, or to identify legal boundaries. To the extent permitted by law, the Queenstown Lakes District Council, their employees, agents and contractors will not be liable for any costs, damages or loss suffered as a result of the data or plan, and no warranty of any kind is given as to the accuracy or completeness of the information represented by the GIS data. While reasonable use is permitted and encouraged, all data is copyright reserved by Queenstown Lakes District Council. Cadastral information derived from Land Information New Zealand. CROWN COPYRIGHT RESERVED













The map is an approximate representation only and must not be used to determine the location or size of items shown, or to identify legal boundaries. To the extent permitted by law, the Queenstown Lakes District Council, their employees, agents and contractors will not be liable for any costs, damages or loss suffered as a result of the data or plan, and no warranty of any kind is given as to the accuracy or completeness of the information represented by the GIS data. While reasonable use is permitted and encouraged, all data is copyright reserved by Queenstown Lakes District Council. Cadastral information derived from Land Information New Zealand. CROWN COPYRIGHT RESERVED



Queenstown Property Information Ltd  
309 Lower Shotover Road  
RD1  
Queenstown

Attention: Neil McDonald

Dear Neil

## Water Modelling for the Proposed Shotover Country, Lake Hayes July 2015, Variation Order 3

### 1 Introduction

Following our recent discussions (24 June 2015 with Chris Hansen), and in accordance with his request (email received 30 June 2015) on your behalf, we have provided additional water supply modelling for the proposed additional dwellings and alternative peaking factors at Shotover Country, Lake Hayes.

Modelling of Shotover Country has previously been undertaken by T&T<sup>1</sup>. Clark Fortune McDonald and Associates (CMFA) advised that subsequent to this modelling the following amendments have been made:

- 1 A total additional 95 dwellings have been added to Activity Areas 1D, 1E and 1F<sup>2</sup> (increase from total of 859 dwellings to 954 dwellings), and a Community Centre and Equestrian Centre have been added south of Area 1F, as detailed in the drawings provided by CFMA (Clark Fortune McDonald and Associates Drawing 07, Proposed Activity Area 1F Reserves, Rev A, dated 28/05/2015).
- 2 The use of the previously used peaking factors of Peak Day Flow (PDF) = 3.3 x Average Day Flow (ADF) and Peak Hour Flow (PHF) = 6.6 x ADF have been discussed with QLDC, and new factors of PDF = 2 x ADF and PHF = 5 x ADF have been adopted, based on NZS4404:2010 and understood to be agreed to by QLDC.

A separate brief has been provided by QLDC for modelling to the effects on the network with the Bridesdale development and all of Lake Hayes Estate being connected to the Shotover Country system, and this modelling will be covered in a separate report to QLDC.

---

<sup>1</sup> Water Modelling Results for the Proposed Shotover Country, Lake Hayes – December 2014, T&T Ref. 51559.0071, dated 12 December 2014

<sup>2</sup> Mark ups provided by Chris Hansen (CFMA) to Janelle Cowley (T&T) via email, dated 10 July 2015

## 2 Summary

A total of 900 residential dwellings (of the 954 dwellings proposed), in conjunction with the primary school and commercial areas can be serviced via the current 300 mm production bore capable of producing approximately 70 l/s.

Table 1 below summarises the points in the scheme where upgrades are required, and outlines the approximate number of residential dwellings (based on an assumed average population of 3 people per residential dwelling and an average daily water consumption of 700 litres per person per day, as per Queenstown Lakes District Council requirements) that can be connected before the respective upgrade is required. Further detail outlining these results is found within this report.

**Table 1** Summary of modelling results

Average peak day flow	Equivalent development (Cumulative)	Network arrangement
52 l/s 4450 m <sup>3</sup> /day	900 dwellings, 2000 m <sup>2</sup> commercial use and the proposed primary school within Shotover Country, and the existing 159 dwellings within Lake Hayes Estate scheme.	<ul style="list-style-type: none"> <li>- Bore flow of 72 l/s.</li> <li>- 355 mm PN 16 rising main from borefield to former Lake Hayes Estate reservoir site. 355 mm PN 12 rising main from former Lake Hayes Estate reservoir site to Shotover Country reservoir. 350 mm ID falling main from Shotover reservoir to former Lake Hayes Estate reservoir site.</li> <li>- Storage requirements of 820 m<sup>3</sup> live storage, 180 m<sup>3</sup> firefighting storage and 715 m<sup>3</sup> emergency storage.</li> </ul>
55 l/s 4720 m <sup>3</sup> /day	954 dwellings, primary school and commercial areas (entire Shotover Country) and existing 159 dwellings within Lake Hayes Estate scheme.	<ul style="list-style-type: none"> <li>- Bore flow of 75 l/s <sup>(1)</sup></li> <li>- Storage requirements of 820 m<sup>3</sup> live storage, 180 m<sup>3</sup> firefighting storage and 750 m<sup>3</sup> emergency storage.</li> </ul>

(1) Installation of additional storage within the network may be considered and is outlined in Section 8.3

Internal reticulation within the development will accommodate the demands for the final Shotover Country development, and it is anticipated that the required pipe diameters will be installed as the development progresses.

It is recommended that an additional bore pump and standby generator is installed to allow for redundancy and security of supply to the network. It is also recommended to connect the 300 mm, 150 mm and 100 mm supply pipes at the Jones Ave and Woodstock Road junction. This will maximise the number of delivery routes and alternative flow paths should a pipe failure, for example, occur. Provision for direct injection to the network is strongly recommended to enable supply with the reservoir isolated.

## 3 Development setting

The Shotover Country development is adjacent to Lake Hayes Estate and located just south of Frankton-Ladies Mile Highway. Modelling for this stage involved installation of a new reservoir to the south of the Shotover Country development. The new reservoir is to be supplied from a new bore located south of the Frankton-Ladies Mile Highway Bridge. The new reservoir will replace the existing Lake Hayes Estate reservoir and is intended to supply both full development of the Shotover



Country and Lake Hayes Estate. The layout of the location of the new reservoir and associated reticulation is shown in Figure 1 attached.

#### 4 Modelling methodology

The modelled demand scenarios used to determine levels of service for the Shotover Country water supply network were:

- Peak day demand - To determine whether available fire flows meet firefighting requirements<sup>3</sup>, and
- Peak hour demand - To determine whether minimum residual pressures at each connection are  $\geq 300$  kPa<sup>4</sup>

#### 5 Demands

The average daily flow (ADF) demand was calculated assuming an average population of 3 people per residential dwelling and an average daily water consumption of 700 litres per person per day, as per Queenstown Lakes District Council requirements.

The demands for the propose primary school were supplied by the Ministry of Education. This demand was calculated assuming an average daily water consumption of 53 litres per person per day<sup>5</sup>.

Modelling of the commercial area has been based on 266 l/person, assuming 3 people per 100 m<sup>2</sup>. The demand for Community Centre have been based on the Lake Hayes Pavillion<sup>6</sup>.

The previously used peaking factors of PDF = 3.3 x ADF and PHF = 6.6 x ADF have been discussed with QLDC, and new factors have been adopted, based on NZS4404:2010 and understood to be agreed to by QLDC.

Development demands during the peak day and peak hour demand scenarios were calculated as follows.

- Peak day flow (PDF) = 2 x ADF
- Peak hour flow (PHF) = 5 x ADF

Modelled demands are shown in Table 5, attached.

The recorded peak hour flow from Lake Hayes Estate in February 2009 was 26 m<sup>3</sup>/hr (7.2l/s). Based from the demand on the number of dwellings, the expected peak hour for full development of Lake Hayes Estate (up to 159 residential dwellings) is 44 m<sup>3</sup>/hr (12.1l/s). The model has proceeded on the basis of full development Lake Hayes Estate demand of 44 m<sup>3</sup>/hr as per previous modelling for this area.

We have added the demand of the proposed dwellings into our Mike Urban PDF EPS network and PDF SS network analysis model for Lake Hayes.

---

<sup>3</sup> Fire flow requirements are in accordance with SNZ PAS 4509:2008, "New Zealand Fire Service Fire Fighting Water Supplies Code of Practice".

<sup>4</sup> The minimum residual pressure requirement is as set out in Queenstown Lakes District Council Amendments and Modifications (2005) to NZS 4404:2004, "Land Development and Subdivision Engineering".

<sup>5</sup> As per attachment to email between Chris Hansen (Clark Fortune McDonald & Associates) and Dominic Fletcher (Tonkin & Taylor) dated 4 September 2012

<sup>6</sup> Email between Chris Hansen (CFMA) and Janelle Cowley (T&T), dated 10/07/2015

## 6 Water reticulation layout

It has been advised<sup>7</sup> that the Shotover Country reservoir will be supplied via a rising main from the proposed new bore location south of the Frankton-Ladies Mile Highway Bridge, as outlined in Figure 1 attached. Modelling has proceeded on the basis that the Shotover Country reservoir will supply both Shotover Country and Lake Hayes Estate. This will be achieved via a supply main connecting back into the existing pipework running from the Lake Hayes Estate reservoir location to the Lake Hayes Estate reticulation, and the proposed Shotover Country falling main.

### 6.1 Internal reticulation modelling results

Modelling has indicated that the required pipe diameters to allow for levels of service to be achieved are as per Figure 1 (attached). Modelling of the trunk main from the Lake Hayes Estate reservoir site (manifold from falling main) into Shotover Country (with the revised Variation Order 3 demands) indicated that pressure and firefighting levels of service are just met with a 250 mm internal pipe diameter for the trunk main into Shotover Country from the existing Lake Hayes Estate reservoir location to approximately the Jones Ave – Ringhurst Terrace intersection (approximately 480 m). Increasing the size of the main to 300 mm NB will allow for future proofing if some further demand is added to the network in the future (i.e. increase in headlosses down the falling main).

It is recommended to connect the 250/300 mm, 150 mm and 100 mm supply pipes at the Jones Ave and Woodstock Road junction. This will maximise the number of delivery routes and alternative flow paths should a pipe failure, for example, occur.

Modelling results are presented in Table 2 below. These results relate to a 250 mm ID falling main into Shotover Country. Note that these results relate to the Shotover Country alone with Lake Hayes Estate demands at full development (PHF of 12.1 l/s), and do not include demands from other proposed developments recently modelled by T+T (i.e. Bridesdale and inclusion of entire Lake Hayes Estate scheme).

**Table 2** Minimum pressures and fire flow availability

Nodes assessed <sup>(3)</sup>		Residual pressure (kPa) <sup>(1)</sup>	Fire flow available (l/s)	Fire flow required (l/s) <sup>(2)</sup>
Primary school Western entrance	1	330 ≥ 300 OK	≥ 50 OK	FW3
Commercial Area	2	330 ≥ 300 OK	≥ 50 OK	FW3
Area 1a	3	330 ≥ 300 OK	≥ 25 OK	FW2
Area 1b	4	300 ≥ 300 OK	≥ 25 OK	FW2
Area 1c	5	330 ≥ 300 OK	≥ 25 OK	FW2
	6	320 ≥ 300 OK	≥ 25 OK	FW2
Area 1e,f,g	7	540 ≥ 300 OK	≥ 25 OK	FW2
Area 2a	8	370 ≥ 300 OK	≥ 25 OK	FW2
Area 2c	9	330 ≥ 300 OK	≥ 25 OK	FW2
Area 1e,f extension	10	530 ≥ 300 OK	≥ 25 OK	FW2
Community Centre	11	580 ≥ 300 OK	≥ 50 OK	FW3

(1) A minimum residual peak hour pressure of 300 kPa is required as per QLDC amendments to NZS 4404:2004.

(2) A total of 25 l/s is required from within 270 m of each non-sprinklered, residential dwelling for Class FW2 firefighting, and a total of 50 l/s is required from within 270 m of commercial areas for Class FW3 firefighting as per SNZ PAS 4509:2008.

(3) Refer Figure 1 attached.

<sup>7</sup> *Shotover Country Water supply Upgrade, Scope of Works – Work Package 2, Clark fortune and McDonald and Associates*, Fulton Hogan

Maximum pressure levels of service are also met, with the resultant static pressure between the reservoir and Area 1f being less than 900 kPa.

Modelling shows that during the design peak hour scenario, the residual pressures in the development will be at least 300 kPa. Hence, the Queenstown Lakes District Council (QLDC) requirement for minimum pressures being  $\geq 300$  kPa is met within the proposed development. With the use of the Shotover Country reservoir, pressure levels of service within the Lake Hayes Estate scheme are above the required minimum 300 kPa.

Modelling shows that a minimum of Class FW3 (50 l/s) fire flow can be achieved within Shotover Country during the ultimate design peak day demand scenario at the required locations (Primary School and Commercial areas). All hydrants can deliver at least 25 l/s within 135 m of each proposed lots, with the remaining 25 l/s available from within 270 m (total of 50 l/s as required for FW3 firefighting).

Modelling shows that a minimum of Class FW2 fire flow can be achieved within Lake Hayes Estate during the ultimate design peak day demand scenario at all residential dwellings. Hydrants can deliver at least 12.5 l/s within 135 m of each proposed lots, with the remaining 12.5 l/s available from within 270 m (total of 25 l/s as required for FW2 firefighting). So whilst some hydrants cannot meet Class FW2 independently, the standard is met with contributions from the adjacent hydrant.

## 7 Pipe Sizing and Layout

The pipe sizes outlined by Fulton Hogan<sup>8</sup> were modelled to determine if levels of service can be met within Shotover Country and Lake Hayes Estate, and that QLDC guidelines were met. Modelling has indicated that the outlined pipe diameters are sufficient. These are outlined in Table 3 below.

Table 3 Pipe diameters and model results

Main		Required pipe	Model results
Rising	Shotover Country Bore to former Lake Hayes Estate reservoir site	355 mm NB PN 16 PE	74 l/s, 1.3 m/s
	Former Lake Hayes Estate reservoir site to Shotover Country reservoir	355 mm NB PN 12 PE	74 l/s, 1.1 m/s
Falling	Shotover Country reservoir to former Lake Hayes Estate reservoir site	350 mm ID	132 l/s, 1.4 m/s

Modelling has incorporated assessing the pipe diameters and associated velocities, headlosses and resultant levels of service. Transient analysis was not included in this scope.

## 8 Infrastructure

### 8.1 Reservoir capacity and operation

#### 8.1.1 Shotover Country Capacity and storage requirements:

The storage volume of the proposed Shotover Country reservoir is 1000 m<sup>3</sup>. Of this total storage, 180 m<sup>3</sup> is required for firefighting at all times (FW3 storage). Emergency storage requirements are 8 hours of average day flow which equates to approximately 700 m<sup>3</sup> for full development.

<sup>8</sup> *Shotover Country Water supply Upgrade, Scope of Works – Work Package 2, Clark fortune and McDonald and Associates*, Fulton Hogan

The recorded peak hour flow from Lake Hayes Estate in February 2009 was 26 m<sup>3</sup>/hr (7.2l/s). Based from the demand on the number of dwellings, the expected peak hour for full development of Lake Hayes Estate (up to 159 residential dwellings) is 44 m<sup>3</sup>/hr (12.1l/s).

The design peak hour for the entire Shotover Country development is 430 m<sup>3</sup>/hr (120 l/s). Hence, if the reservoir level is drawn to the firefighting storage level (i.e. no emergency storage within the Shotover Country reservoir), the proposed reservoir appears to have sufficient capacity/storage to supply both Shotover Country and Lake Hayes Estate during the peak hour at full development (1000 m<sup>3</sup> – 180 m<sup>3</sup> > 430 m<sup>3</sup>).

#### 8.1.2 Shotover Country Operation:

An operational range of 60% to 100% was assigned to the proposed Shotover Country reservoir (on the basis of reservoir dimensions 16.5m diameter x 7.1m, with a 2.175m void from the maximum water level). Modelling was carried out assuming the Shotover Country reservoir had an initial starting water level, at 12 am, of 60%, and so that at the end of the peak hour the reservoir had been drawn down to the minimum FW3 storage volume (18%).

Modelling has indicated that the operational range of the Lake Hayes Estate reservoir will have a minimal effect on the required instantaneous bore head and flow. However, the required volume produced by the bore can vary, due to the number of hours the pump is required to operate during the day. The allowable duty point for the allowable bore flow are outlined in Section 8.2 below.

It is recommended that flow meters are put in place at the outlet of the proposed Shotover Country reservoir to monitor flows.

#### 8.2 Bore pump capacity and operation

It was advised<sup>9</sup> that construction of a single 300 mm production bore capable of producing approximately 70 l/s has been installed. Modelling has been carried out to determine the demand that a bore of 70 l/s can provide, to enable staging of the development and installation of an additional bore at the relevant time. Table 4 below outlines the serviceable demand for the given bore flow of 70 l/s, and also the required bore flow to service the full design demands.

Modelling has been carried out assuming a bore water level of 310 m RL.

Table 4 Modelled pump duty points and associated demand flows

Scenario	Average flow on peak day		Bore Pump Requirement			
			Head	Flow		Bore operation
	l/s	m <sup>3</sup> /d	m	l/s	m <sup>3</sup> /d	hrs per day
Development to capacity of existing bore	52	4450	77	72	4900	19
Total development	55	4720	80	75	5160	19

The required supply volume from the bore during the PD is greater than the total PD volume due to the level of live storage within the network, and a higher pumping rate to ensure that the reservoir does not drain or go below firefighting storage during the peak hours.

<sup>9</sup> *Shotover Country Water supply Upgrade, Scope of Works – Work Package 2, Clark fortune and McDonald and Associates*, Fulton Hogan

The bore requirements outlined above assumed that during the peak day, the reservoir level was drawn down below the emergency storage volume, with firefighting storage remaining.

We note that while current recorded flows in Lake Hayes Estate are advised as being less than the ultimate design demand (12.1 l/s), there is the potential for these flows to increase in the future. It is also possible that dwellings within the Shotover Country development may not utilise all of the calculated design demand. It is recommended that bore flows and volumes are monitored to ensure that consent conditions are not exceeded before installation of an additional bore.

It is recommended that an additional bore pump and standby generator is installed to allow for redundancy and security of supply to the network.

Provision for direct injection to the network is strongly recommended to enable supply with the reservoir isolated. With restricted demands on the peak day the bore capacity would enable up to approximately the average peak day flow to be supplied in conjunction with FW2 (25 l/s) or FW3 (50 l/s) fireflows.

### 8.3 Discussion

Once the daily average demand flow of 52 l/s, or daily demand volume of 4450 m<sup>3</sup> is exceeded, upgrades and additional bore will be required. If upgrades are not carried out there is the possibility of the reservoir draining into the required firefighting storage.

Given the flow that a 72 l/s bore can supply is only 54 dwellings less than full development (954 dwellings in full development), it is recommended that flows are monitored as demands may vary from the design peak day demands. Full development may be able to be fed on the 75 l/s bore. Alternatively, it is possible that demands will be greater than design demands, hence monitoring of flows will allow for an additional bore to be installed at the required time (average flow on peak day of 52 l/s).

Modelling has been carried out under the assumption that once the current bore flow is met, an additional bore will be constructed. There is the possibility that this increase in demand can be met through additional storage within the network (i.e. an additional reservoir); however, modelling would have to be carried out to determine the required tank size and operation to allow for the peak day final development scenario to be met.

## 9 Applicability

The model is a numerical representation of the physical reality, and subsequently bears some uncertainty. The demands and peaking factors used are based on assumptions regarding the patterns of water use in the township, and are an approximation of the physical reality. Hence, actual demands within the network may differ from those modelled.

This report has been prepared for the benefit of Queenstown Property Information Limited with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

In addition, the modelling results presented in this report show the available levels of service for the Lake Hayes network, based on the design demands, and are not a guarantee of available levels of service in the future.

We trust this modelling report meets your requirements. Please contact Janelle Cowley ([jcowley@tonkin.co.nz](mailto:jcowley@tonkin.co.nz)) on 03 363 2440 if you wish to discuss these results or any other aspect of this modelling report.

Yours sincerely,

TONKIN & TAYLOR LTD

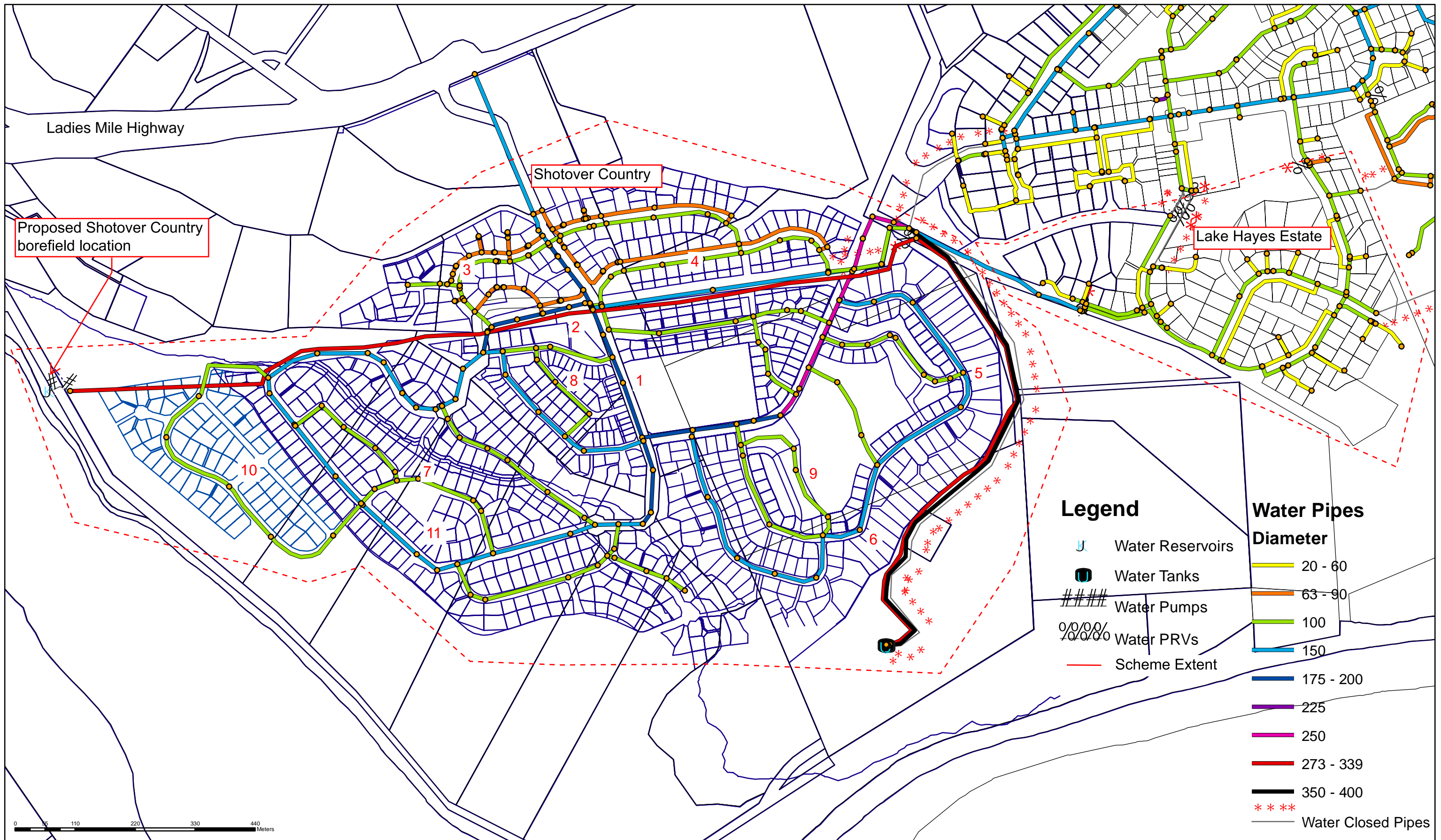


Grant Lovell  
PROJECT DIRECTOR

jtc  
p:\51559\51559.0070\workingmaterial\shotover reservoir\2015-07 july\2015-07-21.shotover country report july 2015 variation order  
3.docx

		Dwellings	ADF		PDF		PHF	
			$m^3/d$	$l/s$	$m^3/d$	$l/s$	$m^3/hr$	$l/s$
Shotover Country Ltd	Stage 1	54	113	1.31	227	2.63	24	6.6
	Stage 2	36	76	0.88	151	1.75	16	4.4
	Stage 3	16	34	0.39	67	0.78	7	1.9
	Stage 4	27	57	0.66	113	1.31	12	3.3
	Stage 5	58	122	1.41	244	2.82	25	7.0
	Stage 6	70	147	1.70	294	3.40	31	8.5
	Stage 7	35	74	0.85	147	1.70	15	4.3
	Stage 8 (incl RV)	153	321	3.72	643	7.44	67	18.6
	Stage 9 (1D)	41	86	1.00	172	1.99	18	5.0
	Stage 10 (2B)	68	143	1.65	286	3.31	30	8.3
	Stage 11 (2D)	51	107	1.24	214	2.48	22	6.2
	Stage 11 (1E, 1F)	135	284	3.28	567	6.56	59	16.4
	Stage 11 (1E, 1F extension)	78	164	1.90	328	3.79	34	9.5
	Stage 12 (2A)	21	44	0.51	88	1.02	9	2.6
	Stage 12 (Commercial)	0	16	0.18	32	0.37	3	0.9
	Existing Stalker bore users	10	21	0.24	42	0.49	4	1.2
Classic Builders	Stage 1	24	50	0.58	101	1.17	11	2.9
	Stage 2	33	69	0.80	139	1.60	14	4.0
QLCHT	Stage 1	44	92	1.07	185	2.14	19	5.3
	Shotover Primary School	650 pupils	57	0.66	114	1.32	12	3.3
Community Centre			21	0.2	42	0.48	4	1.2
Lake Hayes Estate			160	1.8	527	6.10	44	12.1
Total demand		954	2144	26.1	4722	54.6	480.5	133





# Shotover Country

Figure 1



Drawn By:	JTC
Date:	31/07/2015
Approved:	
Scale:	1:6,500





A3: Corridor Access Request (CAR) for Roads		No:
Utility Operator		
Contact Name		
Contact Details		

**Notifies**

Corridor Manager	
Contact Details	

**Of our intention to undertake the following work: (tick)**

Project	<input type="checkbox"/>	Major	<input type="checkbox"/>	Minor	<input type="checkbox"/>	Emergency	<input type="checkbox"/>
---------	--------------------------	-------	--------------------------	-------	--------------------------	-----------	--------------------------

**Details of proposed work (tick all relevant aspects):**

<input type="checkbox"/>	Open Trenching	<input type="checkbox"/>	Installing Cabinets / Pedestals
<input type="checkbox"/>	Horizontal/Vertical Drilling	<input type="checkbox"/>	Installing other structure/s (specify below)
<input type="checkbox"/>	Installing Chamber/s	<input type="checkbox"/>	Removing/pole/cabinet/pedestal/structure/s
<input type="checkbox"/>	Installing Poles / Posts / Piles	<input type="checkbox"/>	Other (Specify Below)
Description of Work:			
Address:			

**Location in Road (tick)**

Carriageway	<input type="checkbox"/>	Footpath	<input type="checkbox"/>	Berm	<input type="checkbox"/>
-------------	--------------------------	----------	--------------------------	------	--------------------------

Estimated Timing	Start Date Time		End Date		Duration Days	
Reference No's	Utility			Consents		
Utility Structures likely to be affected by the work	Name of UO	Contact person	Contact Details	UO has been notified and consulted with		

**Applicant's details (tick)**

Utility Operator	<input type="checkbox"/>	Consultant	<input type="checkbox"/>	Contractor	<input type="checkbox"/>	Other	<input type="checkbox"/>
------------------	--------------------------	------------	--------------------------	------------	--------------------------	-------	--------------------------

Company Name		Contact Person	
Postal Address			
Phone Work		Phone Mobile	
Email		Fax Number	

If the above information is not provided, the CAR will be deemed not to have been lodged. Lodgement will be deemed when the information required has been specified.

*We hereby agree for/or on behalf of the Utility Operator to comply in full with the requirements of the Code: Utilities Operators' Access to the Transport Corridors, and any other Reasonable Conditions required by the Corridor Manager and to keep this notice on site while work is in progress. This request is valid for six months for date of issue.*

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

I ..... (name) as agent for ..... (the principal provider)

## Schedule of Fees and Deposits

These are the fees payable to Council to cover the costs of administering requests to work in or occupy sections of Road under the jurisdiction of Council. on the basis of *National Code of Practice for Utility Operators Access to Transport Corridors (2011)*,

Fees may be updated from time-to-time by resolution of Council to better reflect actual costs.

Fees originally adopted as part of Queenstown Lakes District Council's Code of Practice for Working in the Road – March 2007, 'Appendix O'.

<b>Length of Trench / excavation</b>	<b>Fees ( incl GST)</b>	<b>Deposit (if required)</b>
0- 20m	\$150	\$1,500
20m -100m	\$300	\$5,000
100m - 500m	\$450	\$15,000
500m - 2000m	\$600	\$50,000
> 2000m	\$1,500	Value of Work ( to be calculated)
Temporary Traffic Management Plan only	\$100	