

**BEFORE AN INDEPENDENT HEARING PANEL
APPOINTED BY QUEENSTOWN LAKES DISTRICT COUNCIL**

UNDER THE Resource Management Act 1991

IN THE MATTER of a Variation to the proposed Queenstown Lakes District Plan (Te Pūtahi Ladies Mile) in accordance with Part 5 of Schedule 1 to the Resource Management Act 1991

**STATEMENT OF EVIDENCE OF WARREN DAVID LADBROOK
ON BEHALF OF THE ANNA HUTCHINSON FAMILY TRUST**

DATED: 20 OCTOBER 2023

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MAY IT PLEASE THE HEARING PANEL

1. My full name is Warren David Ladbrook. I am a self-employed, professional engineer.
2. I am presently engaged by Anna Hutchinson Family Trust (**Trust**) to provide expert evidence and advice on stormwater matters for the purpose of supporting the Trust's submission, which seeks an extension to the Te Pūtahi Ladies Mile Variation (**Variation**) to the land generally known as Spence Park.
3. Prior to starting my self-employment, I was contracted to provide services to the Queenstown Lakes District Council (**Council**) on different projects that relate to the urban development of Ladies Mile. I was engaged from 2017-2019 as the Programme Manager for the development of the successful Housing Infrastructure Fund business case, and from 2019-2021 as the Government Liaison for the three Housing Infrastructure Fund projects, including Ladies Mile. In 2020 I was engaged as the Project Manager for the procurement and initial development of the Ladies Mile Master Plan (now known as the Te Pūtahi Ladies Mile Masterplan), which was won by The Ladies Mile Consortium consisting of Candor³, Brown and Company Planning, and Studio Pacific Architecture.

Qualifications and experience

4. I have over 30 years working in the engineering profession, preceded by approximately 3 years in the construction industry, 2 years in the surveying industry, and over 4 years in unrelated work.
5. I have a Bachelor of Science in Engineering, Magna Cum Laude, from the University of Tennessee at Chattanooga. I am a Professional Engineer in Georgia, Texas, Colorado, Missouri, North Carolina, and South Carolina within the United States of America. I am a Chartered Professional Engineer, an International Professional Engineer, and a Fellow of Engineering New Zealand. I am certified as a Better Business Case

Practitioner, and I am a LEED Accredited Professional with the United States Green Building Council, with a specialty in Neighbourhood Development. I also hold both Project and Programme Management credentials for the effective delivery of work products and broader programme outcomes.

6. I have extensive experience with many aspects of civil engineering, specifically including water, stormwater, and wastewater. I specifically note that I have previously led the stormwater design for the consenting of the Jacks Point development in Queenstown, in addition to numerous other projects and locations around New Zealand and abroad.

Code of Conduct

7. I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and confirm that I have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise, except where I have indicated that I am relying on others' opinions. I have not omitted material facts known to me that might alter or detract from my evidence.

Scope of evidence/matters to be addressed

8. I have prepared evidence in relation to stormwater in support of the submission memorandum of the Anna Hutchinson Family Trust (**Trust**), a submitter on the Te Pūtahi Ladies Mile Variation (**Variation**). My evidence includes:
 - (a) involvement in the Variation and the Trust's submission;
 - (b) description of the work/analysis undertaken;
 - (c) data, information, facts and assumptions considered in forming opinions;
 - (d) an assessment of the stormwater issues raised by the Variation including matters raised by the Minister for the Environment's Statement of Expectations;

- (e) matters raised by section 42A report and Council evidence, including any reasons for difference in opinion with Council experts;
- (f) my conclusions and recommendations.

9. I consider the key matters in question or in dispute to be:

- (a) Stormwater management that allows for future climate change impacts (Minister's Statement of Expectations).
- (b) Protect sensitive receiving environments including Lake Hayes and the Shotover River (Minister's Statement of Expectations).
- (c) Acceptance that a stormwater management system is viable for this site.

Involvement in the Variation and Trust's submission

10. I was not involved in the preparation of the Variation or Trust's submission, but have been engaged more recently to provide expertise on the stormwater design and management systems.

Work and analysis undertaken by me

11. I have reviewed documents from my prior work on Ladies Mile, pertaining to the Housing Infrastructure Fund, the Te Pūtahi Ladies Mile Masterplan, Flints Park stormwater, plus preliminary stormwater design for two other properties along Ladies Mile. In addition, I have reviewed relevant stormwater and servicing documents associated with the Te Pūtahi Ladies Mile Variation (including the Council's expert evidence on these matters), and the QLDC Land Development and Subdivision Code of Practice.

Issues raised by the Variation relevant to my expertise

12. I have prepared the following analysis in response to the key matters in question or in dispute.

Acceptance that a stormwater management system is viable for this site, within the context of a push for a centralised system

- 13.** As noted in the evidence of Mr. Gardiner, the TPLM Masterplan process proposed an integrated stormwater system with two primary stormwater devices. However, “this was removed from the notified TPLM Variation, with stormwater to be addressed by developers”.
- 14.** I agree that the creation of a centralised system is problematic due to the large number of land-owners and the different time-scale associated with any development. Further, it is unlikely that the Council will have funding available to purchase land for a centralised stormwater system.
- 15.** The Council has therefore requested that developers include a smaller number of devices for operational and maintenance purposes.
- 16.** I agree that a small number of devices could be accommodated on the Variation land, and specifically note that a centralised solution for Ladies Mile is not viable. Further, it is unclear whether the stormwater management system can be combined into a single device for the entire Variation area, and note that developers should not be constrained to a singular device when a more appropriate approach may warrant more devices.
- 17.** Any stormwater solution that involves multiple property owners would require further negotiation, and for that reason alone, may not be viable. The difficulties with a single device approach do not however mean that stormwater cannot be appropriately managed across the Variation area, including in particular the extension sought by the Trust. There is nothing materially different about the extension area sought by the Trust that would preclude a satisfactory stormwater solution being designed and implemented if the Variation also applied to this land.
- 18.** Any stormwater disposal to land will be achieved by either the use of ponds or underground disposal chambers. While both methods are viable, ponds

can take a lot of land and reduce the number of houses that can be constructed. Further, underground stormwater chambers should not be located below roadway kerbs, and preferably not below road pavements. However, it would be preferable for these to be located in generally grassed areas with/without footpaths or landscaping.

19. The decisions about the exact number, size, and location of stormwater devices can and should be deferred to Detailed Design stage, given that there is no overriding issue about the feasibility of these solutions.

Minister for the Environment’s Statement of Expectations for the proposed Te Pūtahi Ladies Mile Variation relevant to my expertise

20. I have prepared the following analysis in response to the key matters in question or in dispute.

Stormwater management that allows for future climate change impacts

21. To accommodate future climate change, the stormwater design should be based on High Intensity Rainfall Design System (HIRDS) rainfall intensities associated with the highest Representative Concentration Pathways, RCP8.5, as determined by the United Nations Intergovernmental Panel on Climate Change (IPCC).
22. RCP8.5 projects future rainfall intensities for the years 2081-2100, a 25% average increase in rainfall over historical events for all return periods, and a maximum increase of 35% for short-duration, low-exceedance probability storm events. RCP8.5 is approximately 8% higher than RCP6.0 which is accepted by the Council as meeting the 2.1 degC increase in climatic temperature – and provides an additional safety factor to all subsequent calculations.

Protect sensitive receiving environments including Lake Hayes and the Shotover River

23. The proposed stormwater system should be designed to accommodate the 24-hour 1% AEP (100 year ARI Return Period rainfall event using the conservative RCP8.5 (2081-2100) projections, in addition to lesser events.
24. The proposed stormwater system should be designed to closely reflect existing conditions with respect to stormwater quantity, flow rates, discharge locations, and quality.
25. Given the location of the land addressed by the Trust's submission, there will be no impact on Lake Hayes. Based upon the thick layers of gravel in the area, it is expected that stormwater disposal to land will be a viable approach, in addition to agreed levels of discharge to the Shotover River – with the understanding that any such discharge will be equal, or less than, existing conditions. This position can be readily met with regard to stormwater management on the land covered by the Trust's submission.
26. In the unlikely event that secondary flow is required, the flowpath for any stormwater overflows should be clearly articulated. Again, this can be addressed as part of Detailed Design and is not a matter that impacts on the relief sought by the Trust.

Council section 42A report and expert evidence

27. As noted in the evidence by Ms. Prestidge, "there are feasible options available to service this area". I agree, and in my view this statement also applies to the land identified in the Trust's submission.
28. As noted in the evidence by Mr. Gardiner, "there is no technical reason associated with either stormwater or earthworks than mean the TPLM Variation Area cannot be rezoned for urban purposes". I also agree, and again in my view this statement also applies to the land identified in the Trust's submission.

My conclusions and recommendations

- 29.** The Minister's Statement of Expectations have been addressed.
- 30.** The Council section 42A report confirms that stormwater must be addressed by developers, and that there is no technical reason why a stormwater management system should prevent rezoning for urban purposes, including the extension to the zone sought by the Trust.
- 31.** I consider that a stormwater management system can be developed which will not impact the Shotover River.
- 32.** In my view, there is little doubt that a suitable stormwater management system is viable for this Variation area and the land addressed by the Trust's submission.

DATED this 20th day of October 2023



Warren David Ladbrook