

**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 Stage 3 and 3b of the
Proposed District Plan

**SECOND REBUTTAL EVIDENCE OF MICHAEL ANDREW SMITH
ON BEHALF OF QUEENSTOWN LAKES DISTRICT COUNCIL**

Transport – Universal Developments at Hāwea

19 June 2020

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1. INTRODUCTION

1.1 My full name is Michael Andrew Smith. My qualifications and experience are set out in my statement of evidence in chief dated 18 March 2020.

1.2 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise except where I state that I am relying on the evidence of another person.

2. SCOPE

2.1 My second rebuttal evidence is provided in response to the following evidence:

- (a) Andrew Carr for Universal Developments (Hāwea) Limited (3248).

3. ANDREW CARR FOR UNIVERSAL DEVELOPMENTS (HAWEA) LTD (3248)

3.1 Mr Carr has filed evidence in relation to an assessment of the transport related effects of the submission by Universal Developments (Hāwea) Limited. I did not address this rezoning submission in my evidence in chief.

3.2 While there was little certainty in the Universal Submission as to the types of urban zones sought, their size and location/layout in the context of the overall submission, more detail on the proposed zones and therefore likely yield has been provided through the submitter's evidence. In summary, the proposed zoning, as set out at paragraph 9 of Mr Williams' evidence and at Appendix B, now consists of:

9 In summary the rezoning proposal includes.

- Relocating the Urban Growth Boundary (UGB) to Domain Road and the southern and eastern boundaries of the Universal/LAC land.
- Utilising a Building Restriction Area in the form of a green buffer to reinforce the UGB.
- Provisions for a Water Race Reserve and associated walking/cycle trails providing connectivity through and around the Site.
- Re-zoning of land within the Site providing for:
 - 9.2ha of General Industrial Zoning – Yielding a potential of 72 (1000m²) sections.
 - 3.5ha of Local Shopping Centre Zone – Yielding a potential of 16,800m² GFA.
 - 3.5ha for a future school
 - 5.2ha of Medium Density Residential Zone – Yielding a potential of 145 sections.
 - 110.3ha of Lower Density Suburban Residential Zone (including 29.1ha approved as an SHA) – Yielding a potential of between 881 & 1137 sections plus the 465 sections approved via the SHA.

3.3 The submission relates to a large land parcel located to the south of the existing Hāwea Settlement, bounded between Cemetery Road and Domain Road, as shown in the submitter's proposed land zone (**Universal proposal**) diagram copied below (**Figure 1**). I have used this diagram to indicate the nature and extent of the proposed zone framework, along with the indicated key road connections to the existing road network.

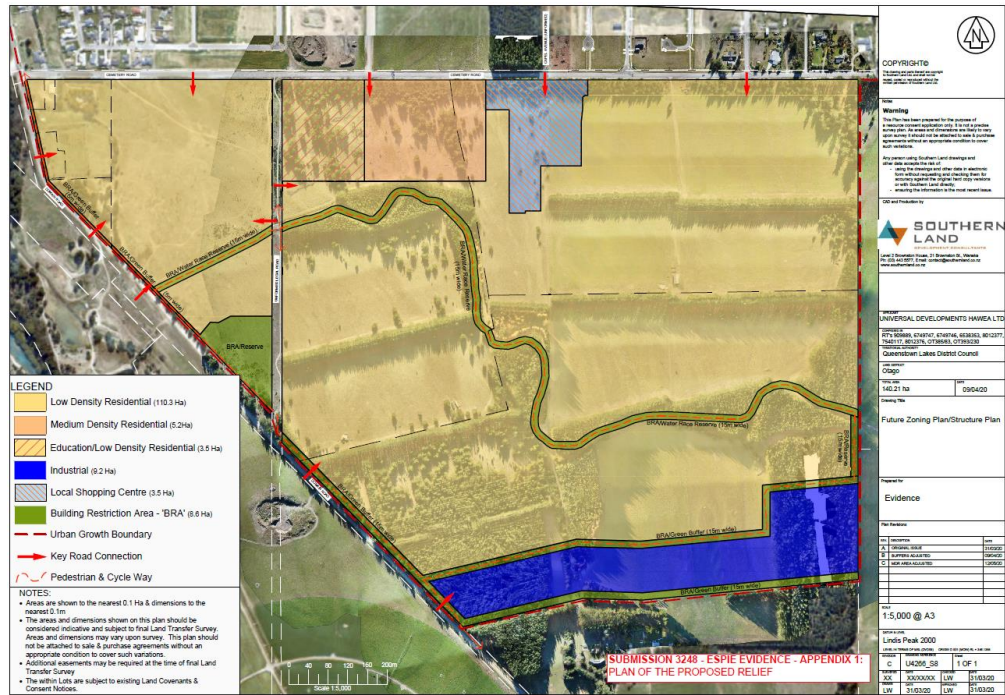


Figure 1

3.4 Mr Carr has presented in paragraph 14 that because the submission is at a high level, he has focused his assessment:

“... on identifying whether there are potential difficulties or constraints that would prevent the land from being rezoned, rather than proposing specific design solutions to any matters.”

3.5 As presented below, I consider that many key constraints have not been identified by Mr Carr, based on the proposal in **Figure 1**. This results in significant impacts which could affect the transportation effects and proposed mitigations put forward by Mr Carr.

3.6 Throughout his evidence, Mr Carr has made reference to the legal width of a road corridor being 20 metres, and that as such, *“therefore there are no impediments to achieving a suitable cross-section.”* I read this statement as a statement for all road corridors. I consider that width alone is not a true determinant of the suitability of a road for an upgrade. An example of this approach can be found in paragraph 15 of Mr Carr’s evidence. Here he has stated that an improvement of Domain Road would be required, but he has not outlined the effect that

this upgrade would have on the current road environment, and adjacent land owners.

- 3.7** Road formation width is determined by many factors. The District Plan, the QLDC Land Development and Subdivision Code of Practice, and NZS 4404: 2010 all provide guidance for the desired road width. For example, where a road serves a development land use such as Suburban “Shop and Trade, Work and Learn, Make and Move”¹ an E18 style road cross section would be required. Here, a desirable road width is 23 metres. I acknowledge that the existing road corridors are 20 metres in width, with the exceptions that I will address below. I also acknowledge that a road formation could be undertaken in a 20-metre road corridor, but where a E18 style cross-section would be required the formation in a narrower corridor could result in compromises being required.
- 3.8** The current road environment for Cemetery Road includes the provision of a 3-metre-wide shared use path along the north side of the road. This path serves recreational uses, and a safe route for children from the Cemetery Road area into the existing Hāwea Settlement. Should the land use change be granted to the south of Cemetery Road, and the street scape change, this would typically be replaced with a footpath. It is important to note that it is currently illegal for cyclists to cycle along a footpath, and as such, provision for cyclists would be required on-road. This includes an appropriate provision for school children.
- 3.9** While the recreational cycle use of the current path could be transferred to other locations such as the water-race reserve provisions, under the Universal proposal this does not link to the greater east-west road network due to the rural land to the east. The submitter’s land use plan (refer to Figure 1) indicated (small red dashed lines) that the cycle trail could run along the water race reserve, then back through the industrial landscape buffer zone, returning back to Domain Road. The proposed route does not connect back to Cemetery Road, or the greater road network to the east. A landscape strip on the south side of Cemetery Road could be utilised for safe passage of children and a shared path.

1 QLDC Land Development and Subdivision Code of Practice; Table 3.2

This may however, require provision of appropriate crossing points across Cemetery Road. I understand that this provision ceases at the proposed retail and Special Housing Areas (**SHAs**), thus breaking the effective linkage of the route.

3.10 I note Mr Carr's narrative on the Transport Assessment submitted for the SHA, and given that the SHA was approved, I will accept that evidence.

3.11 I acknowledge Mr Carr's comment in paragraph 17 regarding the absence of a traffic analysis of any potential up-zoning within Hāwea. In the absence of this, I have assumed that Mr Carr has utilised the Council's current land use transport model for his analysis. This has not been specifically stated by Mr Carr. If this has not, then the traffic effects at key intersections may be understated.

3.12 Mr Carr presents in paragraph 62 of his evidence that his analysis is for the "*worst case flows*", and he "*expects that the generated volumes will be less.*"

3.13 I consider that these in fact may not be "*worst case flows*", because in paragraph 43 Mr Carr states:

"I note that under the District Plan, a residential lot could have an auxiliary unit. However, this is only possible at the larger lots. To accommodate this, and in line with the analyses undertaken for other residential developments in the district, I have allowed for 50% of the larger low density lots to have such a unit. Thus the residential yield for the purposes of the traffic assessment is 1,407 units."

3.14 As the subdivision individual allotment size is as yet unknown, and would be addressed at the subdivision consent stage, the traffic volume could be higher. Similarly, the effect of the proposed up-zoning could have some effect on Cemetery Road due to trip redistribution for access to the proposed retail area. This would have an impact on the traffic generation and distribution from the proposed land use change.

- 3.15** In his analysis of the expected traffic distribution from the land use change, Mr Carr in paragraph 54 finds the distribution of traffic to be 90% in and around Hāwea, with 10% of trips being external to Hāwea. An analysis of the current transport AADT volumes from the Council's data (contained in the MobileRoad² website), indicates that a large amount of traffic travels to and from Hāwea. This traffic undertakes the left turn out from Hāwea Control Structure Road (Capell Avenue), towards Wanaka. As Wanaka is some 20 minutes' travel time from Hāwea, it is logical to expect that people will continue to travel to Wanaka for work, leisure or shopping.
- 3.16** With regard to the traffic analysis undertaken by Mr Carr, and considering the impact of the traffic volumes as more development happens, I concur with Mr Carr that changes would be required to the major roads (Cemetery Road and Domain Road), and at the intersections of Cemetery Road / Domain Road and Domain Road / Capell Avenue / Hāwea Control Structure Road. I have proceeded with my analysis of the M Carr's evidence on this premise. For clarity, I have not undertaken an independent traffic model analysis.
- 3.17** Turning to the road formations as presented by Mr Carr, I make the following comments around the respective intersections.

Cemetery Road / Domain Road intersection

- 3.18** Mr Carr in paragraph 61 states:

“The level of service on Domain Road (Capell Avenue to Cemetery Road) and Capell Avenue (west of Domain Road) and [sic] is not within the zone of stable flow and the point of this transition from stable to unstable flow is around 1,500 vehicles per hour”.

- 3.19** This indicates that the intersection will be under stress, and result in unsafe movements due in part to driver frustration and congestion.
- 3.20** In paragraph 64, Mr Carr outlines the modelling of the [dominant] intersections affected by the Universal Proposal. Mr Carr states that

the Cemetery Road / Domain Road intersection has been modelled for a revised intersection geometry, whereby the dominant movement is formed from Domain Road into Cemetery Road. This is due to the findings discussed in paragraph 3.17 above.

3.21 For the clarity of the Hearing Panel, I outline the key difference between the two layouts, as demonstrated below. The red lines denote the dominant movement, and the yellow lines denote the minor movement.



Figure 2: Current Intersection Geometry **Figure 3: Revised Intersection Geometry (as modelled).**

3.22 Mr Carr's modelling reveals that in general, the revised intersection geometry operates to a suitable level of service, when considering the net effects of all current subdivisions in the area, including the SHA and the entire Universal Proposal. This analysis indicates that the right turn movement from Domain Road (North), across the curved alignment from Cemetery Road into Domain Road (north), and into Domain Road (South) has a Level of Service (LOS) of D, with an average delay time of 29.3 seconds. This would indicate that a suitable right turn provision will be required to allow turning vehicles, especially large vehicles, to wait safely in the right turn position, and still allow the dominant vehicle flow into Cemetery Road to travel past on their left. This right turn position is indicated above by the blue turn arrow.

3.23 To consider the required intersection geometry to allow these movements to occur, I have focused on the junction form necessary to allow the required movements. Based upon Mr Carr's evidence, I consider that the geometry would require the formation of a through lane, along with a right turn pocket (sized for industrial traffic), and an

opposing through lane, along with associated left turn tapers. I have assessed the possible layout and considered the current road corridor. I do not consider the desired layout could be achieved within the current road corridors.

- 3.24** Any road and intersection design should be undertaken utilising the Safe Systems approach³. That is, a safe system approach says that while we all have a responsibility to make good choices. People make mistakes so we need to build a more forgiving road system that protects people from death and serious injury when they crash.
- 3.25** In the context of this intersection, a best practice design would require a curve design that is appropriate for the underlying legal speed and accommodates appropriate facilities for the turn movements.
- 3.26** I am of the opinion that a compliant design could not be achieved within the current road reserve. It would require land take from both the submitter's property and the opposing side of the road, being 5 Cemetery Road. To assist the Hearings Panel, I provide a scheme that has what could be considered a minimal curve radius of 50 meters, following the road centreline. The left-hand edge of the road would be some 10 metres offset from this line. As can be seen below, this would traverse into the adjacent property.



Figure 4

³ <https://www.saferjourneys.govt.nz/about-safer-journeys/the-safe-system-approach/>

- 3.27** Similarly, Domain Road (South) must curve to the right to form a square intersection form. In this instance, land is likely to be required from the land defined as the north east most quadrant of the Universal Proposal, in and around 6 Cemetery Road. The final design and form could only be assessed following detailed design to the appropriate standards.
- 3.28** Failure to understand the potential design at this stage, and the nature of land required, could mean the required redevelopment form cannot be constructed. As stated by Mr Carr, this would be due to an environment such as an adjacent permitted development occurring, or a land owner not agreeing to sell land. This would severely compromise the design and could result in an intersection form that would have inherent safety issues.

Domain Road / Capell Avenue / Hāwea Control Structure Road

- 3.29** Paragraphs 66 and 67 of Mr Carr's evidence state that the current intersection layout has a very poor level of service when considering the proposed traffic modelling from the Universal Proposal. I also concur that this intersection form is outdated and, in my opinion, encourages high speed entry and exit movements between Domain Road and Capell Avenue.
- 3.30** A key point of difference for this intersection is that at present, the dominant movement is from State Highway 6 (**SH6**) into Hāwea, as shown in **Figure 5**. With the Universal Proposal, the dominant flow will be changed from SH6, deviating to the right into Domain Road, as shown in **Figure 6**. This fundamentally changes the operation of the current intersection.



Figure 5: Current Dominant Movement



Figure 6: Future Dominant Movement

3.31 Mr Carr states in paragraph 68 that he has tested a roundabout with a notional 30-metre radius, and that a roundabout of this form produces an acceptable level of service based upon the assessed traffic flows. Based upon the material presented, I concur with this assessment as to level of service.

3.32 Mr Carr states in paragraph 68 that “...as shown on Photograph 4 above, there is a significant amount of land at the intersection...” If I consider this from a purely aerial view, this will appear the case. However, in considering the actual road environment I consider that the formation of a roundabout is fraught with issues. I outline these below. For the sake of clarity, I submit an image with a notional 30 metre radius, indicating the possible land required. I reference each position indicated below in the following sections.



Figure 7

3.33 Location 1 in Figure 7 is characterised by a safety barrier placed at the top of the dam embankment, falling through a series of terraced batters to the power station outlet canal below. The steepness of the batters, along with the surcharge required for a road formation would be expensive to design and construct. This land is designated “Electricity” in the District Plan and would require approval of the requiring authority to achieve a change to the existing formation. This is especially so where a design could potentially impact the delivery of supply to the electrical grid.



Figure 8

3.34 Location 2 in Figure 7 is characterised by a road formation (two lanes), including a narrow footpath along the top of an embankment for rip-rap protection for the lake edge. A post and wire fence has been installed along the edge of the footpath, on the lake side. Again, the steepness of the batters, along with lake edge protection for erosion, and a compliant road safety barrier system for a road formation would be expensive to design and construct.



Figure 9

3.35 Finally, Location 3 is characterised by a steep batter slope leading up to the upper terrace of the Hāwea township. Incorporated within this batter is the shared path track that serves for movement along Domain Road. Again, the excavation of the batter, along with the associated retaining walls and shift of utility services would prove expensive to design and construct.

3.36 In considering the proposed roundabout as presented by Mr Carr, I have also considered the potential effects of the proposed design within the road reserve. In viewing the QLDC GIS Aerial imagery, with the property database layer, there does not appear to be a road corridor defined through this area. Rather, the entire land area is designated “Electricity” as stated earlier.

3.37 In considering the assessment above in paragraph 3.35, I consider that despite the high costs of the intersection form as presented, there may not be a mechanism for the Council to actually undertake the desired

upgrade, if that was the outcome required to service the rezoning sought by Universal Proposal.

Conclusion

3.38 Using Mr Carr's modelling of effects, and considering the intersection forms required to mitigate them, I am of the opinion that the assessment fails to address many issues which could prohibit the formation of a suitably design, compliant intersection forms, as follows:

- (a) the Cemetery Road / Domain Road intersection could not be formed without land take from the adjacent landowner at 5 Cemetery Road, and land alongside 6 Cemetery Road.
- (b) the Domain Road / Capell Avenue / Hāwea Control Structure Road is fraught with issues which could prevent the formation of a suitable intersection form. These include expensive design and construction costs associated with building alongside a power station canal and lake frontage, and the excavations and retaining walls required for the remaining land.

3.39 Failure to enable compliant intersection forms will burden QLDC with serious and ongoing road safety issues in the future.



Michael Andrew Smith

19 June 2020