

BEFORE TAUPŌ DISTRICT COUNCIL

IN THE MATTER OF the Resource Management Act 1991 ('the Act')

AND

IN THE MATTER OF of an application for a Proposed Plan Change 37 Nukuhau

**SUMMARY STATEMENT FOR HEARING BY DAVID JOHN ROBERT SMITH
ON BEHALF OF TAUPŌ DISTRICT COUNCIL**

Date: 9 November 2021

QUALIFICATIONS AND EXPERIENCE

- 1 My name is David John Robert Smith. My role in relation to Private Plan Change 37 (PPC37) is as an independent expert witness to Taupō District Council on traffic and transportation matters. My qualifications and experience are set out in my Evidence-in-Chief.

CODE OF CONDUCT

- 2 I have read the Code of Conduct for Expert Witnesses outlined in the Environment Court's Consolidated Practice Note and have complied with it in preparing this evidence. I also agree to follow the Code when presenting evidence. I confirm that the issues addressed in this brief of evidence are within my area of expertise and that I have not omitted to consider material facts known to me that might alter or detract from my opinions.

BACKGROUND

- 3 I have prepared or contributed to the following documents:
- My Evidence-In-Chief (EIC) dated 30 September 2021.
 - The Section 42A report prepared by Mr Bonis.
 - Joint Witness Statement (JWS) of experts in relation to transportation effects dated 18th October 2021.
- 4 In my EIC I present my review of:
- The Traffic Impact Assessment Report;
 - WSP letter and traffic note dated 22 September 2021; and
 - Matters raised through submissions
- 5 This summary statement is based on the above documents (although it does not replace them), along with consideration of the following:
- Evidence-in-Chief of Mr Swears and Ms Cui on behalf of the Applicant
 - Evidence of Mr Sapsford on behalf of Bike Taupō
 - Nukuhau Plan Change: Additional Modelling Memorandum dated 8 November 2021

SUMMARY OF MY EVIDENCE IN CHIEF AND JWS

- 6 I consider that the Plan Change site is well located in terms of its proximity to the Taupo town centre to support walking and cycling modes and there are public transport options which could provide for further mode choice in the future. On this basis I consider that PC37 is well located for residential development compared to many other development areas which are located further away from the town centre.
- 7 I have concluded that there is currently insufficient capacity in the vicinity of the CGB to accommodate traffic associated with the Plan Change. The bridge is operating at or near capacity and further development which is currently zoned will extend delays and queues at the bridge and adjacent intersections.
- 8 I do not support residential development from being established on the Plan Change site until such time as a second bridge is operating or the existing bridge is duplicated with associated intersection improvements and note that this is not programmed within the current LTP.
- 9 I engaged in traffic expert witness conferencing with the outcomes documented in a Joint Witness Statement (JWS) dated 18th October 2021. The conferencing included a review of additional transportation modelling undertaken by the Ms Cui. I consider that the experts are aligned in accepting the underlying modelling methodology and modelling results, however the remaining differences relate to the interpretation of the results in the context of future development to the north of the Control Gate Bridge including but not limited to development with the Plan Change site.
- 10 I do not consider that the morning and evening peak travel times modelled by Ms Cui and presented in pages 10-11 of the JWS are acceptable in the context of short local trips within the Taupō township, and believe that these would result in extensive queuing and blocking back through intersections and accesses, including much of the town centre in the evening peak. I remain of the view that the lack of capacity of the Control Gate Bridge should be addressed prior to residential development on the PC37 site.

COMMENTS ON BIKE TAUPO EVIDENCE

- 11 In paragraph 39 of Mr Sapsford's evidence a condition is proposed to be included within the Plan Change such that prior to the subdivision "*cycling infrastructure is provided between the Nukuhau Structure Plan area and the town centre that enables cyclists to safely travel to and from the Taupō town*". I consider that such a requirement would better meet objective 3f.2.1 highlighted by Mr Sapsford in paragraph 19 of his evidence, however I have some difficulty in terms of how such should be defined with sufficient provision to be a rule.

- 12 Mr Sapsford highlights the current deficiencies in safe cycling infrastructure in paragraphs 25-26 and references Mr Swears evidence regarding the importance of cycling and quality of the cycling environment in paragraphs 32-34. Although I am familiar with the area, I have not had the opportunity to undertake a specific site visit in the context of this Plan Change. As such I am reliant on online aerial and street imagery to support my assessment. Based on this desktop review I agree with Mr Sapsford's concerns relating to the current lack of safe cycling infrastructure to connect to the shared path facilities on Wairakei Drive north of the Control Gate Bridge.
- 13 My view is that the provision of safe cycling infrastructure does not necessarily need to involve upgrades to Norman Smith Street but could also include safe and well-marked provision for cyclists through the local streets to connect to the existing pedestrian path between Kaiuru Street and the Norman Smith Street signals. This would also require upgrades and widening of the current pedestrian facility to provide a high-quality path for cyclists. I further note that Mr Swears has included this indicative route (in purple) in Figure 5 of his evidence.
- 14 Paragraph 5.8 of my evidence acknowledges that with the delivery of a second bridge I would expect an improvement in walk/cycle connectivity to the town centre delivered as part of these works and through investment in cycle infrastructure funded through the Taupo District Long Term Plan".
- 15 I consider that including Mr Sapsford's recommended addition to the provisions in paragraph 39 of his evidence is a matter for Council to plan for and implement, and in my view would be addressed through the delivery of a second bridge and planned future cycle infrastructure and does not need to form a provision within the Plan.

COMMENTS ON MR SWEARS EVIDENCE

- 16 In section 5.3.1 of his evidence, Mr Swears refers to the use of the Waikato Regional Transport Model in the assessment of traffic effects. I understand the Taupō Traffic Model has been used to inform the assessment of Plan Change effects as stated in Ms Cui's evidence and Mr Swears has confirmed this. I agree with Mr Swears views set out in paragraphs 22-26 in the context of either model and consider the Taupō model is the appropriate tool to inform this assessment.
- 17 Mr Swears introduces the concept of peak spreading in paragraphs 32-38 whereby effects in terms of lengthened delays and travel times would be spread out over a longer period, reducing the maximum (peak) delays and travel times experienced on the transport network. Whilst I agree with Mr Swears, I consider that delays and travel times being experienced over longer temporal periods remain adverse effects, that peak spreading does not mitigate increased delays and travel times and should be assessed accordingly.

- 18 In paragraphs 43 and 102 Mr Swears refers to the Control Gate Bridge as “*not necessarily the capacity constraint*”, in the modelling assessment. I disagree with this statement and elaborate in my response to Ms Cui’s evidence.
- 19 In paragraph 49 of his evidence, Mr Swears provides the rationale for an improvement in safety performance at the Wairakei Drive / Poihipi Road intersection in recent years. I agree with Mr Swears in this regard and add that the posted speed along this corridor was reduced in 2019 which I consider contributed to the improved safety performance at the intersection.
- 20 Throughout his evidence Mr Swears maintains the position set out in the JWS that development on the PC37 site is preferable to some other appropriately zoned locations to the north of the Control Gate Bridge based on its close proximity to the town centre being attractive for walking and cycling. As noted in paragraph 5.14 of my evidence, I agree with this statement subject to providing high-quality and safe infrastructure such as that sought by Mr Sapsford.

COMMENTS ON MS CUI’S EVIDENCE

- 21 In paragraph 31 of Ms Cui’s evidence and paragraph 43 of Mr Swears evidence a statement is made with respect to the performance of the local transport network that “*the Bridge itself is not necessarily the constraint.*” In my view, neither Ms Cui or Mr Swears provide a detailed assessment to support this position, although Appendix B to Ms Cui’s evidence includes captions referring to constraints based on a model which is neither calibrated or validated. I do not consider these provide an evidential basis to support the conclusion that the bridge is not necessarily the constraint.
- 22 I have observed the operation of the Norman Smith Street signals in the morning peak in 2019. My observations were that the southbound merge on Wairakei Drive immediately north of the Control Gate Bridge is of insufficient length such that traffic can not be discharged from the Wairakei Drive or Norman Smith Street approaches efficiently. The exit merge length is between 20-30 metres which limits the number of vehicles that can stack to merge during one phase of the traffic lights. This blocks upstream southbound vehicles from progressing through the intersection as the exit lanes are full. Subsequently I have concluded that this exit lane merge is a downstream constraint limiting the efficient operation of the Norman Smith Street signals.
- 23 If the Control Gate Bridge was duplicated there would be a second continuous southbound lane to the town centre and this merge movement which I believe is the constraint in the morning peak would not exist. Therefore, by proxy the bridge is the constraint in the morning peak.

- 24 However, based on my observations in 2019 of the operation of the Tongariro Street / Spa Road roundabout, I consider that this intersection (and not the bridge) is the constraint in the evening peak period.
- 25 I consider this is also evidenced by the traffic volumes recorded on the bridge and the analysis of these counts presented in Annexure 1 to my evidence in chief. The southbound traffic flows in the morning peak hour are currently nearly 1500 vehicles per hour which I estimate the bridge to be 93% of the theoretical capacity of the bridge. By contrast in the evening peak the bridge has northbound traffic flows of between 1200-1300 vehicles per hour which I estimate to be 73% of the bridge's theoretical capacity. I believe based on my site observations that this lower volume (compared to the morning) is due to the traffic held back by the upstream constraint that is the current Spa / Tongariro roundabout.
- 26 The provision of a second control gate bridge would in my view remove the current network constraint in the morning peak period,. I consider that the second bridge in isolation would not address the current constraint in the evening peak and upgrades to the Tongariro / Spa Road roundabout are required in addition to a second bridge, unless a second bridge were to connect to another location in the town centre, such as Opepe Street.
- 27 In paragraph 43, Ms Cui provides a visual depiction of the extent of the routes included in my travel time reporting presented in Annexure 1 to my evidence, and the travel time reporting Ms Cui has extracted from her modelling. I do not disagree that the extents of the corridors are different but consider this to be inconsequential to the assessment. I have accepted in the JWS that despite the modelling assessment being based on an uncalibrated and unvalidated model (a matter all experts agree on refer JWS 2.2(a)), I have accepted that the modelled delays and travel times are "in the right ballpark" (refer JWS 6.5) based on my experience working with the Taupō Traffic Model (which Ms Cui has based her assessment on) over the past 20 years.

REVIEW OF ADDITIONAL MODELLING MEMORANDUM

- 28 Ms Cui prepared the "Nukuhau Plan Change : Additional Modelling" memorandum dated 8th November 2021 which presents updated modelling based on residential development scenarios from Mr Heath's property economics evidence.
- 29 I consider that this is a helpful scenario to understand how much development can be established as of right to the north of the bridge which provides a permitted baseline for the assessment of traffic effects on the Control Gate Bridge and adjacent intersections. I have reviewed the results presented by Ms Cui and I accept that they are consistent with those presented in earlier modelling iterations and provide a representative and appropriate basis for this assessment.

- 30 My interpretation is that the 997 households included in Table 2 of Ms Cui's memorandum can happen as of right and therefore form a permitted baseline, and Ms Cui has modelled the effects of traffic generated by 140 lots on PC37 against this baseline.
- 31 Establishing 140 households adds up to 45 seconds travel time in the morning peak and 55 seconds in the evening peak to travel across the bridge. By 2030 under the permitted baseline this trip is taking 5-6 minutes (up from the 2.5 minutes modelled in 2021) in the morning peak southbound and 12 minutes (from Spa Road up from the 2.5 minutes modelled in 2021) in the evening peak northbound. As such the 140 households on PC37 which generate 63 vehicles in peak flow direction per hour (which is one vehicle a minute) are adding approximately 20% to travel times in the morning and 10% in the evening, and inconveniences other drivers by no more than a minute on average.
- 32 My analysis of the current travel times through a similar (but slightly longer corridor) presented in Annexure 1 of my Evidence in Chief, indicates that the congestion currently experienced in the morning peak and evening peak occurs for around a 30 minute period with the remainder of the 'peak hour' experiencing relatively free flow conditions. Ms Cui's assessment tells us that travel times in the vicinity by 2030 without PC37 will be very different from what is experienced today with considerably longer travel times which will also be spread over a longer period (Ms Cui's analysis are averages over a full 60 minutes).
- 33 I have considered whether the modelled effects of 140 lots are acceptable in the context of a future permitted baseline with considerably worse performance than what is experienced today. I consider that this increase in traffic (one vehicle per minute) and travel time (up to 55 seconds per journey) would be at the threshold of being perceptible to general traffic that consistently experiences the 'permitted baseline' 5-6 minute and 12 minute travel times across the bridge in the morning and evening peak respectively.
- 34 I also note from Mr Cui's level of service summary on page 5 of the memorandum that two key intersection approaches in the evening peak change from LoS E to LoS F with the 140 lots of development traffic. This means these now exceed capacity and any further development traffic would continue to exacerbate delays and increase travel times at an increasingly deteriorating rate. The relationship between traffic volumes and delay is not linear and in congested conditions follows an exponential curve. This means that whilst 140 lots creates up to 55 seconds of additional travel time, a further 140 lots (or 280 in total) would not create a further 55 seconds of travel time but instead would result in far greater increments of potentially several minutes.
- 35 I note Mr Swears' in paragraph 174 of his evidence summarises his position whereby if trips generated by PC37 replace trips generated by other households to the north of the bridge (that is the PC37 development replaces other competing development) the effect would be neutral. If this hypothesis

holds true at least until such time as a second bridge was available, then this would neutralise the up to 55 seconds per journey increase in travel time. If the hypothesis were only realised in part then the effects would be no worse than as modelled by Ms Cui. Irrespective, I consider that the cumulative effects of the 997 lots in the permitted baseline and the 140 PC37 lots is the appropriate basis for the assessment of effects. I also agree with Mr Swears that the effects also have the potential to be lessened further through peak spreading and support of active modes through the provision of high quality, direct and safe infrastructure.

CONCLUSION

36 I have reviewed the evidence prepared by Mr Swears and Ms Cui on behalf of the applicant and Mr Sapsford on behalf of Bike Taupo. I am of the view that extensive residential development of the Plan Change can not be supported until such time as the lack of capacity of the Control Gate Bridge is resolved. However, there may be opportunities to establish a modest level of residential activity without a step change increase in delays and travel times across the Control Gate Bridge, which would be further supported through appropriate provision for active modes.



Dave Smith

9 November 2021