Technical Response

To:	Ian Munro	From:	Mike Smith
	QLDC Planning		Addington
Project/File:	310003230	Date:	26 July 2023

As requested by the Commissioners, I submit below a further full outline of my closing summation for the hearing undertaken 24th July & 25th July.

This document is a written response to what I have heard through the hearing proceedings.

The material below will provide a summary that addresses the following matters:

1. An outline of my credentials with respect to Temporary Traffic Management.
2. A statement on matters relating to the PC 54 development proposal.
3. An outline of large vehicle definition and implications for tools for controls.
4. Tools available under Temporary Traffic Management
5. Impacts of cumulative effect of traffic generation.
6. Localised calming treatments – Lammermoor Street.
7. Road Pavement and impacts of HCV use (Logging)
8. Traffic / Transportation Management Plans
9. Use of vehicle mass restrictions
10. Conclusions

1 Credentials

To assist the Commissioners, my experience relating to temporary traffic management consists of the following:

- Previously a trainer for Temporary Traffic Management for over 10 years
- Waka Kotahi Expert Technical Advisor (Traffic Management) to the Christchurch Transport Operations Centre post Christchurch Earthquake (2.5 years operations)
- Temporary Traffic Management Planner qualification
- Temporary Traffic Management Auditor

Reference: PC 54 Northlake – Written summary of Mike Smith

2 PC 54 – Matters of Agreement to proposed development impacts.

As presented by Mr Carr, with regard to the impacts of the proposed PC 54 development, we are generally in agreement that the additional 64 lots will not have a negative impact on the transportation network.

3 Large Vehicle Definitions

3.1 High Productivity Motor Vehicles (HPMV)

- High productivity motor vehicles (HPMV) including 50MAX are trucks that are able to operate above the current 44 tonne weight limit under permit.
- Has specific rules and requirements with regards to operation and approvals; requires approval for route and impacts on a road network, approvals by RCA.
- I maintain my position that NO HPMV use be allowed through the NIL road network due to significant negative impacts of this vehicle type.

3.2 HCV

- Covers a wide range of vehicles, from 3.5 T Gross Vehicle Weight (GVW) through to 44 T GVW.
- As an example, a 3.5 T GVW vehicle is similar to a Ford Transit van. A 44 T GVW vehicle is similar to a 12 m dual axle truck, semi- truck
- Legally, there are very few mechanisms to control movement and access, as these vehicle types are legally allowed to operate on the road network.
- With regard to Temporary Traffic Management (TTM) and the movement of HCV, this is typically restricted to the use of signs “TRUCKS”, speed limits (only possible reduction is to 30 km/h), stop go control at the initial junction with the road network. I present on TTM further in Matter 4 below.

4 TTM Tools

- Mr Carr presented that TTM has no requirement for the assessment of amenity value, and the need for consultation. I concur with that statement.
- Reference has been made to the Code of Practice for Temporary Traffic Management (CoPTTM) as being the guiding document. That is true, however NZ is currently transitioning to a new regime, being a risk-based assessment that is less prescriptive in the design and layout of the TTM, as compared to CoPTTM.
- This requires the TTM planner to consider all risks associated with the activity, and apply controls. My experience is that without malice, many planners don’t know what they don’t know.
- My experience as a TTM auditor has revealed that the basic plan is a MINIMUM acceptable standard, however on site it is regarded as the maximum acceptable standard. Should a work site be found to be deficient, or presents safety concerns to the user, the RCA can through the auditing process close the site. If the contractor continues to operate in an unsafe manner, then notification would be required to go to Worksafe. This places the burden of proof on QLDC to demonstrate unsafe activities.

- The level of TTM that could be applied is minimal. For a route such as that from Sticky Forest to Outlet Road, this would typically consist of a level of STOP / GO or traffic control at the initial junction with the NIL road network, and signs “TRUCKS CROSSING” / “TRUCKS” along the route. Speed reduction signs would consist of 30 km/h “TEMPORARY” signs every 400 m along the route.
- As there is no worksite along the route, cones or other lane controlling devices would not be deemed suitable. Cones are utilised to provide a level of protection to a work site.

5 Impacts of Cumulative effects of traffic generation

- My assessment of 9 June 2023 detailed an assessment of potential traffic generation for the development of Sticky Forest, considering different lot sizes, and levels of residential development. This demonstrated a wide range of traffic volumes.
- This assessment further considered the existing road formation widths, and their comparisons to form standards and typical traffic volumes.
- As presented yesterday by Ms Purton (stormwater), similar to stormwater, we need to consider the cumulative effects of traffic volumes through the system, and its impacts.
- An assessment of impacts cannot be undertaken only at the source of the traffic generation.
- Many residential roads within NIL are not fit for purpose for an increase in traffic volume, as they have been designed, and built in full consideration of NIL development only. The road network never envisioned the potential impacts of an additional 50 ha land development area.
- My assessment of the existing NIL development was undertaken on the number of lots and did not consider any additional traffic generation as a result of flats or higher density housing. Should these be considered, my assessment would be lower than actual, with the resulting traffic volumes being greater than that stated.
- An assessment of the Sticky Forest land area has indicated that even with a low number of lots, and considering a proportion of multiple unit development, the traffic volume that would be traversing through the NIL development area is high. This would add on top of the existing network volume.
- As volume increases, access and movement to and from residential properties would be negatively impacted.

6 Localised calming treatments – Lammermoor Street.

- Mr Carr presented yesterday, in response to the Commissioners question regarding the traffic narrowing currently installed on Lammermoor Street, that this was a style utilised to slow through traffic.
- Mr Carr was correct in his presentation that conflicting / opposing traffic flows would require one driver to yield.
- However, Mr Carr did no present that traffic flow would be generally tidal, being;
    - Dominant movement from PC 54 to Wanaka etc in the morning
    - Dominant movement from Wanaka to residences in PC 54 in the evening.
- Under the scenario above, Lammermoor would be by far the shortest / easiest route.

7 Road Pavement and impacts of HCV use (Logging)

To assist the commissioners, I present below on the impacts of high HCV use and the formed infrastructure.

- Pavements are designed for specific life, considering the number of design axles that will pass over that pavement within a typical design life of 20 years

- A design axle is an 8.2 T axle load – tis is typical of a single HCV axle.
- Multiple rear axles of a truck therefore have an increased number of axle passes per vehicle movement.
- Cars form a fraction of a standard axle. Multiple passes of cars are needed to meet a single design axle.
- When a pavement is designed, the designers considers what is the likely composition of traffic for the pavement, and therefore the resulting number of Standard Design Axle passes over the pavement. This then informs the designer on the required pavement depth to account for the loads over the pavements anticipated life (typically 20 years).
- Submitters presented that under the NES-PF, there was a requirement for 20 day's notice of any forestry activity commencing.
- Considering the implications of potential damage to pavement life and testing regimes required, I present that 20 day's notice is insufficient for QLDC to establish the required framework and actions agree between all parties.
- I consider that the 20 days notice may be applicable for rural road networks, but is considered insufficient for a densely populated residential environment such as NIL.

7.1 Considering the impact of logging trucks:

- Without seeing the pavement design, I would anticipate that the road formations never considered the high-volume movement of logging trucks over the pavement. Discussions with Mr Bretherton at the end of proceedings yesterday (25th July) revealed that my statement on HCV logging trucks being considered was correct.
- A high number of movements of logging trucks greatly impacts on the life of the pavement. This can result in premature failure of a pavement. Post hearing Mr Bretherton advised me that at present, NIL have a 5-year maintenance defects liability requirement on the pavement.
- An increase in standard design axle movements over a pavement may not result in immediate failure. More specifically, the loss of pavement life may result in the requirement to replace the pavement far earlier than its anticipated design life. This would not have been scheduled in any of QLDC's forward works programs. Early loss of life and replacement would be a large financial burden on QLDC, for what is regarded as a new pavement.
- Early failure could result in failure modes such as rutting, shoving (pavement being "pushed" sideways / longitudinally), Asphaltic Cement (AC) tear / shoving / deformation, isolated subgrade failure resulting in loss of waterproofing of the pavement surface, pothole formation.
- All of the above significantly degrade the economic life of the pavement.
- Multiple axle and tight turns result in:
    - Damage to kerb lines and associated road asset infrastructure

  - Shear in the AC surface / loss of waterproofing due to large skew loads on the surface. This is compounded when the movement occurs in summer months where the AC surface is move “lively”, that is, the heat softens the AC to a point where skew damage could occur.
  - Had logging been anticipated, then the top surface layer may have been changed to accommodate the high skew loads. In this instance I am informed that this had not been a consideration.
  - Shoving / rutting in locations where HCV brake on the lead into the intersections, acceleration out of intersections. This is amplified where a wheel set on one side turns at a slower rate than the opposite pair.

- A standard method of assessment of pavement life would be to establish the current pavement life utilising procedures such as Falling Weight Deflectometer (FWD) testing. This process requires a comprehensive testing program prestart of an activity, and then reassessing pavement life at the end. This will therefore, within the limitations of the test, determine loss of pavement life.
- Loss of pavement life has a financial cost. I am unaware of QLDC’s procedures (if any) for the determination of the financial cost of loss of pavement life.
- Any activity that could cause significant pavement damage would need to have suitable agreements and contracts for rates, and costs to be paid (if any).
- Failure to have any agreement such as that above, and should damage occur, would result in a significant unanticipated cost to QLDC.

8 Traffic / Transportation Management Plans

If it would assist the commissioners, I would like to clarify terms used in the hearing.

8.1 Temporary Traffic Management Plan (TTMP)

- This is a term that describes the method and application of the use and operation of temporary traffic management devices to ensure both the public and worker are kept safe in and around a work site.
- This is commonly referred to a Traffic Management Plan (TMP)

8.2 Forestry Traffic Management Plan

- If I may – this is best described as a Forestry Transportation Management Plan. This removes the dual use of the term traffic management plan, and its potential confusion between the required documents.
- A Transportation Management Plan should describe the operation to be undertaken, the environment that would be affected, the methods of assessment, evaluation, and applied mitigations to address the issues identified.
- Items should have elements that are directly measurable, and therefore enabled to be enforceable by Council. As an example: No HCV movements or pre-start engine warm up activities can be commenced prior to 0730 hrs on any weekday, or Saturday. No activity is permitted on Sundays or public holidays.
- I present that a transportation management plan may be one of a series of tools for the requirement for the quantitative and qualitative assessment of pavement age, pre-commencement of the activity, and post activity. It could also include the mechanisms for both

immediate pavement repair, and the longer-term activities / impacts. It would refer the reader back to a contractual agreement entered into.

9 Vehicle mass restrictions

- Where restricting use is considered, the general tool is a weight class restriction (ie no vehicle over 3.5 T)
- A weight class restriction is typically imposed through the Bylaw process, and may be subject to public consultation.
- Anyone applying for a dispensation to that class restriction would be required to demonstrate the reason for the dispensation, and the mechanisms to address any concerns raised by the road controlling authority.
- QLDC could at that stage assess the proposed operation that is requesting the dispensation and consider the assessment matters and detailed investigations pre and post dispensation. This could include pre and post pavement life assessments.
- Council would be required to develop a framework for the assessment of financial costs associated with any pavement age loss, and the mechanism of cost retrieval if appropriate.

10 Conclusions

In considering all matters presented, that for all of the above reasons that I have expressed, and in response to the submitters that sought reliance on LGA or Road Controlling Authority-type methods instead of the District Plan rule proposed in the s.42A report, I feel that the proposed rules as set out in the s.42A supplementary report of Ian Munro are the most appropriate and that a resource consent can manage the technical engineering / pavement-type aspects, amenity aspects, notification to adjacent residents (where appropriate), and cost-allocation / responsibility-allocation for any interim or permanent road changes, repairs and reinstatements, or other works required.

Ngā mihi nui,

Stantec New Zealand

Mike Smith
Senior Principal Transportation Engineer, Road Safety
Phone: +64 3 343 8768
Mobile: +64274374963
mike.a.smith@stantec.com