Memorandum

To	Nick Jessen
Copy	David Murphy
From	Sam Thornton
Office	Wellington
Date	22 October 2020
File/Ref	5-C4104.00
Subject	Abby Road NoR - Section 92 (October 2020)

Dear Nick

Please find below my response to the transportation questions in the Section 92 – further information request dated 7 October 2020 in relation to the Notice of Requirement by Palmerston North City Council for Abby Road.

Regards

Sam Thornton
Principal Transportation Engineer

WSP
Wellington
L9 Majestic Centre
100 Willis Street
Wellington 6011, New Zealand
+64 4 471 7000
wsp.com/nz

1 Matters identified

The following maters have been identified by Harriet Fraser, Transportation Engineer acting on behalf of Council in its regulatory capacity:

(a) In Section 4.2 of the TA the comment is made that the 'existing section of Abby Road which may or may not need to be upgraded'. I am interested to know if there would be trigger for upgrading, for instance if traffic flows reached a certain level. With the existing section having an 8m carriageway, parking on both sides could reduce sections to a single traffic lane width which is typically acceptable with traffic flows of up to around 1,000vpd. If indented parking were added, around how many parking spaces could be achieved along the existing section of Abby Road compared with the existing kerbside provision?

(b) In Section 4.3 of the TA there is reference to a maximum grade of 6% and a minimum horizontal curve of 50m. Do either of these factors or their combination result in safety effects in terms of sight lines for the existing accesses to 26, 28, 39 and 41 Abby Road or for available sight lines at a future intersection between Abby Road and the developable land to the north?

(c) In Section 5.1 future transport demands without Johnstone Drive connected are discussed. Confirmation is sought that the expectation is that no or very little traffic that currently travels south along Johnstone Drive to access Pacific Drive and head north is expected to divert onto the Abby Road link.

(d) In Section 5.4 intersection modelling of Abby Road/ Pacific Drive is discussed. Given that Abby Road and its intersection with Pacific Drive are key to this NOR assessment, I am surprised that traffic flows have not been counted on Abby Road or at the intersection with Pacific Drive. In my view as a minimum a weekday morning peak traffic count should be undertaken and provided for the intersection to validate the assumptions regarding both the link and turning traffic volumes.

(e) Confirmation sought that the intersection modelling included in the TA is for the weekday morning peak hour.

(f) In Figures 19 and 21 it is unclear from the titles what the difference between the scenarios is. In Table 8 it is unclear from the Scenario titles how they relate to Figures 18 to 22.

The following sections respond to these questions.

2 Question (a)

2.1 Question

In Section 4.2 of the TA the comment is made that the 'existing section of Abby Road which may or may not need to be upgraded'. I am interested to know if there would be trigger for upgrading, for instance if traffic flows reached a certain level. With the existing section having an 8m carriageway, parking on both sides could reduce sections to a single traffic lane width which is typically acceptable with traffic flows of up to around 1,000vpd. If indented parking were added, around how many parking spaces could be achieved along the existing section of Abby Road compared with the existing kerbside provision?

2.2 Response

Expected future traffic demands on the existing section of Abby Road under different scenarios are presented in Table 1 below. The table shows that the only situation where demands are expected to significantly exceed 1,000 vehicles per day is the where Abby Road extension is constructed, with full development occurring and Johnstone Drive remains unconnected. This situation is not expected to eventuate in reality with Johnstone Drive expected to be connected before the construction of the Abby Road extension.

Table 1: Expected future traffic demands on the existing section of Abby Road (vehicles per day)

	Johnstone Drive not connected[1]	Johnstone Drive connected
Abby Road link not connected	1,010	1,010[2]
Abby Road link connected	2,025	820[3]

Parking occurring on both sides of Abby Road along a significant length of the road is unlikely given all dwellings appear to have multiple off-street parks. Arguably some on-street parking along Abby Road is desirable to reduce vehicle speeds in accordance with the desirable operating characteristics[4] of a residential local road.

If on-street parking was identified as an issue for capacity and or safety in the future, there are multiple possible options to create two unimpeded traffic lanes:

- Indented parking one side;
- Half indented parking both sides;
- Indented parking both sides; and
- Restricting parking to one side of the road only.

All of the options listed above are expected to result in some reduction in on-street parking capacity, the extent of reduction would depend on the option chosen.

No issues are expected to occur with the most likely future scenario (Johnstone Drive connected and Abby Road link connected.

[1] From Table 4 of the Transportation Assessment
[2] Same as Abby Road link not connected.
[3] 2025 vehicles per day factored by the difference in expected peak hour demand from Table 7 of the Transportation Assessment
[4] Page 68 of https://www.pncc.govt.nz/media/2867364/pncc_street_design_manual_2013.pdf

3 Question (b)

3.1 Question

In Section 4.3 of the TA there is reference to a maximum grade of 6% and a minimum horizontal curve of 50m. Do either of these factors or their combination result in safety effects in terms of sight lines for the existing accesses to 26, 28, 39 and 41 Abby Road or for available sight lines at a future intersection between Abby Road and the developable land to the north?

3.2 Response

There are no anticipated adverse safety effects in terms of sightlines to the accesses identified based on the following assessment.

The grade on the existing Abby Road link is expected to be transitioned to the 6% grade using an appropriate vertical curve which will meet visibility requirements. The concept design assumed a K value of 6.8 which corresponds to the desirable minimum[5] for a 50km/h design speed.

Assuming a desirable minimum[6] Stopping Sight Distance of 55m (at 50km/h), approximately 6.5m lateral offset[7] is required (on a 50m radius horizontal curve) to an obstruction from the centreline of the lane. As long, as the berm between the footpath and the road is not planted, there should not be any permanent obstructions to visibility on the inside of the curve (the back of the footpath is approximately 6.5m from the centre of the lane). No stopping lines or similar may also be required to prevent parking on the inside of the curve.

There is flexibility as to the configuration of a future intersection between Abby Road and the land to the north. The Abby Road as proposed could be the priority route or the Abby Road extension could be the "side-road". Either configuration is expected to be able to be accommodated safely.

4 Question (c)

4.1 Question

In Section 5.1 future transport demands without Johnstone Drive connected are discussed. Confirmation is sought that the expectation is that no or very little traffic that currently travels south along Johnstone Drive to access Pacific Drive and head north is expected to divert onto the Abby Road link.

4.2 Response

The expectation is that without Johnstone Drive connected there will be negligible use of Abby Road as a link to Pacific Drive for the current users of Johnstone Drive. As per Figure 15 of the Transportation Assessment, future development on the northern section of Johnstone Drive (south of its missing connection) would be expected to use Abby Road to access Pacific Drive if Johnstone Drive was not connected.

[5] Table 8.7, Austroads Guide to Road Design Part 3: Geometric Design, 2017.
[6] Table 5.5, Austroads Guide to Road Design Part 3: Geometric Design, 2017.
[7] Figure 5.4, Austroads Guide to Road Design Part 3: Geometric Design, 2017.

5 Question (d)

5.1 Question

In Section 5.4 intersection modelling of Abby Road/ Pacific Drive is discussed. Given that Abby Road and its intersection with Pacific Drive are key to this NOR assessment, I am surprised that traffic flows have not been counted on Abby Road or at the intersection with Pacific Drive. In my view as a minimum a weekday morning peak traffic count should be undertaken and provided for the intersection to validate the assumptions regarding both the link and turning traffic volumes.

5.2 Response

The assumptions used in the modelling have been tested as follows:

- The directional split (30%/70%) has been validated against February 2020 link counts on Pacific Drive in the AM peak (PM peak is approximately 40%/60%).
- The proportion of trips on Abby Road heading north (towards Palmerston North) is assumed to be 95%. There are no current trip generators for Abby Road traffic east / south of the intersection along Pacific Drive.
- A trip generation of 7.4 one-way trips per day and 1.0[8] peak hour trips (per dwelling) was calculated for the area in 2007[9] (which was used as the basis for the current demand on Abby Road). The trip generation for new areas was more conservative assuming 10.7 one-way trips per day and 1.3 peak hour trips (per dwelling)[10].
- The latest information for the area (2020) calculated by Palmerston North City Council indicates that the actual demands are 10 one-way trips per day and 0.9-1.0 peak hour trips (per dwelling). Whilst the daily trips for the current use may have been slightly underestimated, the peak hour demands are likely to be lower than calculated providing a level of conservatism.

The Abby Road / Pacific Drive intersection currently has relatively low demands and unsurprisingly shows current performance to be very good[11].

The key question around the Abby Road / Pacific Drive intersection is not its current intersection performance but its future performance with all expected development in place. Figure 18 of the Transportation Assessment shows that the total hourly demand through the intersection currently is estimated to be 200 vehicles. In the future scenarios the total hourly demand through the intersection is between 1,200-1,660 vehicles per hour[12]. The key determinant of the future intersection performance is the future demand (which is significant) and the current demands and performance are less relevant.

6 Question (e)

6.1 Question

(e) Confirmation sought that the intersection modelling included in the TA is for the weekday morning peak hour.

[8] Note there is an inconsistency between the tables 1 and 4 in the Transportation Assessment. Table 4 peak hour trips have been used in the assessments.
[9] Table 2 of the Transportation Assessment
[10] Page 20 of the Transportation Assessment
[11] Refer Table 8 of the Transportation Assessment
[12] Figures 22 and 19 of the Transportation Assessment

6.2 Response

Modelling is for the weekday morning peak hour.

7 Question (f)

7.1 Question

In Figures 19 and 21 it is unclear from the titles what the difference between the scenarios is. In Table 8 it is unclear from the Scenario titles how they relate to Figures 18 to 22.

7.2 Response

The difference between the scenarios is whether or not Abby Road is extended to Johnstone Drive and whether the two ends of Johnstone Drive are connected. These assumptions are identified in the captions of each figure. Figure 21 is incorrectly labelled and should read: "Forecast demands – no Abby Road extension, Johnstone Drive connected".

This information is provided in a matrix format in Table 8 (rows 2-3).

For ease of comprehension, a cross reference between figures and scenario labels in the table is provided below:

- Figure 18 – Current
- Figure 19 – Future 1A
- Figure 20 – Future 1B
- Figure 21 – Future 1C
- Figure 22 – Future 1D