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27 July 2018

P1226 LWP Huntlee Stage 1 Modification

LWP Property Group
1 Triton Boulevard
North Rothbury NSW 2335

Attn: Glenn Swan

Dear Glenn,

Stage 1 Modification - Huntlee, NSW.

Further to your recent email, we have reviewed the details provided for the proposed modification of the Stage 1 development to include a school site and retirement village. We provide the following advice regarding the impacts of traffic associated with this proposed modification.

With reference to our correspondence attached, provided to LWP Property Group on 4th June 2018, Seca Solution Pty Ltd has previously assessed the traffic impacts associated with the proposed changes to the development boundary which included the school site and retirement village. This assessment concluded that with the construction of a secondary access onto HEX Link Road (allowing for left turns only), the local roads and intersections will provide adequate spare capacity to support the additional traffic demands created by the additional development.

Whilst specific details relating to the proposed school and retirement village have not yet been confirmed, the traffic demands associated with each use was determined as follows:

Retirement Village

- Assumed average lot size of 400 m^2 which gives a total of 250 lots over the site area. The total area for the retirement site is comparable to Stage 4 which comprises approximately 165 lots, however lots for retirees are likely to be smaller giving an increased yield.
- RMS Guide to Traffic Generating Developments gives a trip rate of 0.4 trips per dwelling during the evening peak hour, giving 100 trips. Daily trips are allowed at the rate of 2.1 per dwelling.

School (K-12)

- The proposed school is expected to cater for mostly local demands created by the Huntlee development as well as the nearby suburbs of Rothbury and Branxton.
- An allowance of 150 trips was provided during the afternoon peak which was considered conservation as the school peak would typically occur earlier in the afternoon with minimal trips generated during the road network peak.

This allowed for an additional 250 trips in the PM peak to be included in the assessment, allowing for a robust assessment given the different peak operating times of the two facilities.

The proposed school and retirement village will each be subject to a separate development application, which shall include a review of parking and access. It is therefore concluded that no further assessment of traffic shall be required at this time.

Please feel free to contact me on 4032, 7979, should you have any queries.

Yours sincerely,

Sean Morgan
Director

Attachment:

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4 June 2018

P1226 LWP Huntlee Traffic Review - Stage 1

LWP Property Group
1 Triton Boulevard,
North Rothbury NSW 2335

Attn: Glenn Swan

Dear Glenn,

Review of Traffic Matters, Huntlee, NSW.

Further to our recent meeting, we have reviewed the documentation provided for the Stage 1 development at Huntlee and provide the following comments and assessment of the proposed changes to the development boundary and access arrangements. The following assessment has been completed in accordance with the RMS Guide to Traffic Generating Developments and the relevant sections of the Austroads Guides.

References

- Huntlee New Town Stage 1 Preferred Project Report (PPR), Traffic Modelling Report, prepared by Hyder Consulting, July 2012.
- Project Design Note, Prepared by Better Transport Futures, April 2017.

Background

The Huntlee Masterplan allows for the construction of up to 7,500 dwellings and approximately 200 hectares of mixed-use employment lands to the south of Branxton in the Hunter Valley of New South Wales. Of this, approximately 2,350 dwellings and 55 hectares of Town Centre are included within Stage 1 of the development.

Traffic modelling for Stage 1 of the development has previously been undertaken by Hyder Consulting Pty Ltd (Hyder) in July 2012. This study reviewed the proposed access arrangements and recommended the timing of road infrastructure upgrades to support the predicted traffic volumes throughout the various stages of the development. This included upgrades to the single lane roundabout at the intersection of Wine Country Drive / HEX Link Road / Bridge Street (the roundabout) to provide two circulating lanes after the development of 500 lots.

A secondary northern access is to be constructed onto HEX Link Road (between Wine Country Drive and the Hunter Expressway) to coincide with the development of 1,500 lots.

More recently, further traffic modelling was completed by Better Transport Futures (BTF) to review the capacity of the roundabout and increase the required timing for the upgrade to dual circulating lanes to coincide with the development of 900 lots.

The proposed changes being considered in this assessment are seeking to construct the new northern access as a simple T-intersection allowing for left in and left out turns only, with the intersection to be upgraded to signal or roundabout control at 1,500 lots. The timing for the upgrade to the roundabout controlled intersection at Wine Country Drive / HEX Link Road / Bridge Street will be adjusted to align with this 1,500 lot timeframe.

The following assessment reviews the capacity of these interactions to support these proposed changes.

Existing Traffic Flows

Traffic surveys were completed at the intersection of Wine Country Drive / Bridge Street over several days between 17th and 24th March 2016 with the peak hour traffic volumes summarised below.

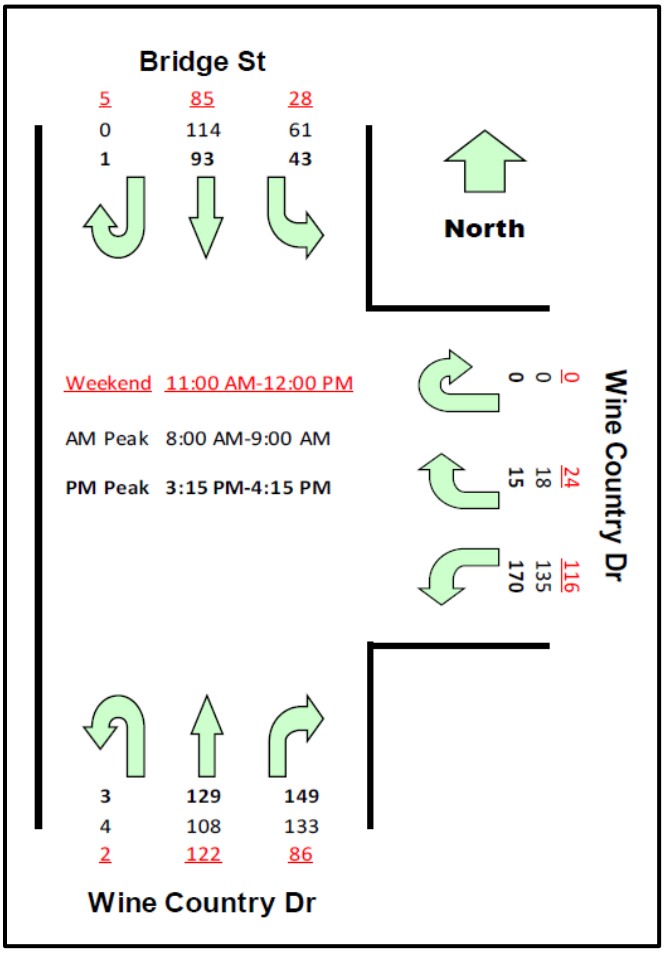


Figure 1 - 2016 Peak Hour Traffic Flows at Wine Country Drive / HEX Link Road / Bridge Street

At the time these surveys were completed most homes were still under construction with only four dwellings within the Katherine's Landing Estate having been completed. As such, the above flows do not account for the traffic associated with the Stage 1 development.

Traffic Assessment

Trip Generation

Trip generation associated with Stage 1 of the development has been calculated for the various uses in accordance with the standard rates provided by the RMS Guide to Traffic Generating Developments and updated trip rates specified within the RMS Technical Direction TD2013-04a. A summary of the development proposed as part of Stage 1 has been provided by the LWP Property Group who is delivering the project.

Table 1 -Stage 1 Trip Generation up to 1,500 residential lots

Proposed Development	**Lots / GFA, GLFA / Spaces**	**RMS Trip Rate**		**Peak Hour Trips**	
		AM	PM	AM	PM
Village One Residential Dwellings	1,500	0.71 per dwelling	0.78 per dwelling	1,065	1,170
Retirement Village	100,000 m^2	N/A [1]	0.4 per dwelling	-	100 [2]
Huntlee Town Centre Stage 1					
Supermarket & Associated Retail	3,600 m^2	N/A [1]	12.3 / 100 m^2 GLFA	-	443
Tavern	1,200 m^2	N/A [1]	N / A [1, 3]	-	88
Commercial Office Space	1,000 m^2	N/A [1]	2 / 100 m^2 GFA	-	20
Café and Restaurants	400 m^2	N/A [1]	5 / 100 m^2 GFA	-	20
Child Care Centre	160	0.8 per child	0.7 per child	128	112
K-12 School					150 [4]
Other Uses					1,000 [5]
Total Town Centre Peak Hour Trips				**128**	**833**

Notes: [1] N/A: No rate specified

[2] Retirement Village: Assumed average lot size of 400 m^2 (giving 250 lots). The total area for the retirement site is comparable to Stage 4 which comprises approximately 165 lots, however lots for retirees are likely to be smaller giving an increased yield.

[3] Tavern - Assumed 15 staff maximum, 1 trip per two staff, plus 1 per 15 m^2 licenced area with 100% turnover over parking in peak hour (consistent with BTF report)

[4] The proposed school is expected to cater for mostly local demands created by the Huntlee development as well as the nearby suburbs of Rothbury and Branxton. As specific details regarding the development of this school are not known at this stage, an allowance of 150 trips has been provided during the afternoon peak. This is considered a conservative estimate with the school peak typically occurring earlier in the afternoon with minimal trips during the road peak hour.

[5] Provisional allowance of 1,000 trips (500 inbound / 500 outbound) to represent potential additional development within the Stage 1 Town Centre. T

The RMS Guide does not provide trip generation rates for most land uses in the morning peak period, noting that traffic demands for these uses are significantly lower during this period. Accordingly, the following analysis has concentrated on the afternoon peak period, which is likely to give the worst-case operation at the various intersections.

Trip Distribution and Assignment

No recent surveys have been completed at the intersection of Wine Country Drive / HEX Link Road / Bridge Street following the completion of dwellings within the initial land releases. For consistency, the overall trip distribution and assignment has therefore been adopted as applied within the previous reports, summarised below:

Village One Residential Trips

- 72% of trips via Branxton (Hunter Expressway) interchange, further split between:
  - 40% of trips travel east via Hunter Expressway;
  - 20% of trips travel via New England Highway to Maitland;
  - 12% of trips travel west via Hunter Expressway to Singleton and the Upper Hunter;
- 22% trips travel south via Wine County Drive to Cessnock;
- 6% of trips travel north via Wine Country Drive to Branxton.

During the evening peak, 80% of trips are expected to be inbound, with the balance (20%) being outbound.

Town Centre Trips

- 22% of trips travel to / from the north via Wine Country Drive to Branxton;
- 36% of trips travel via New England Highway / Hunter Expressway to / from the east (Greta, Lochinvar);
- 42% of trips travel to / from the south via Wine Country Drive (Village One, North Rothbury, Rothbury).

For the commercial and office uses, 80% of trips are expected to be outbound during the afternoon peak with the balance (20%) inbound. The proposed supermarket, childcare centre and retail uses are expected to generate a greater turnover of vehicles, with trips being reasonably equally split between inbound and outbound movements during the afternoon peak. Cafés, restaurants and the tavern are expected to attract a bias in inbound trips (80%) during the afternoon / evening associated with customers arriving prior to dinner, although these trips may occur slightly later than the overall road peak.

It is also important to note that 42% of the trips associated with the town centre are from / to the south of the site and will not need to use the roundabout. There are traffic signals that cater for left in and right out movements from the commercial precinct which allow vehicles to access / egress the town centre without passing through this roundabout. A small number of trips to/from the south (for the proposed school and childcare centre) have been applied to the roundabout, together with the balance of trips (58%) north towards Branxton or Greta / Lochinvar.

For sensitivity purposes, all trips associated with other uses in the town centre (1,000 trips), have been applied to Tollbar Avenue based on the above traffic distribution and assignment. This makes no allowance for passing trade or vehicles using alternate routes to access the town centre as described above.

An allowance of 10% trip containment has been adopted, consistent with the previous traffic assessments. This rate has previously been agreed with the RMS, although it is expected that the overall level of containment will be greater as the development footprint and land uses continues to grow. Sensitivity testing has also been completed to determine the potential impacts associated with a lower rate of containment or an increase in traffic volumes.

Applying the above considerations, the assignment of traffic through the two access points is summarised below. The modelling has allowed for the construction of the secondary access onto HEX Link Road (left in / left out) with no changes to the existing single circulating lane roundabout at Wine Country Drive / HEX Link Road / Bridge Street.

Only trips associated with Sub-Stages 2-15 and the retirement village, with an origin/destination via Branxton Interchange are expected to use the proposed secondary access onto HEX Road. All other uses would access via the roundabout intersection at Wine Country Drive / Bridge Street / HEX Link Road.

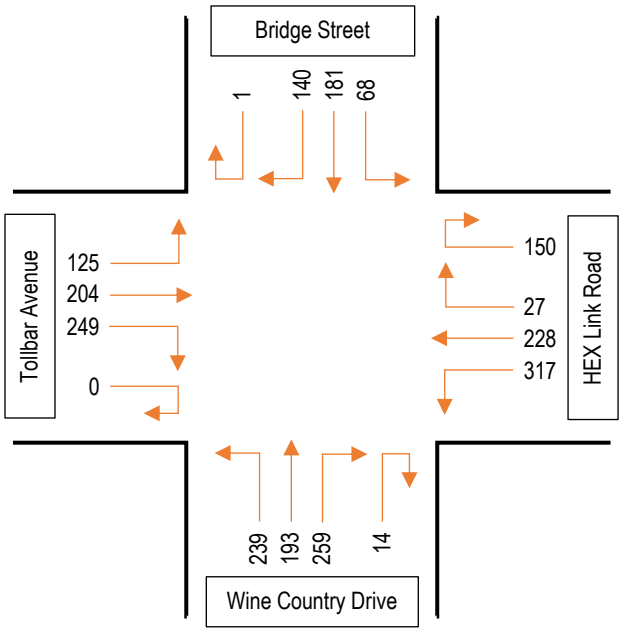


Figure 2 – Stage 1 traffic flows with secondary access (left in / left out) to HEX Link Road (up to 1,500 dwellings) - PM Flows.

Intersection Operation

The operation of the intersection of Wine Country Drive / HEX Link Road / Bridge Street has been assessed using *Sidra Intersection 8* allowing for the construction of up to 1,500 dwellings. The results of this assessment are summarised below.

Table 2 – Sidra Results – Stage 1 to 1,500 dwellings – With Secondary Access

Approach	Level of Service	Average Delay (s)	95% Queue (m)
Wine Country Drive	A	14.3	92.1
HEX Link Road	B	15.4	97.3
Bridge Street	B	17.3	51.1
Tollbar Avenue	A	7.2	27.6

The above results demonstrate that with the construction of a secondary access onto HEX Link Road, the existing single lane roundabout at Wine Country Drive / Bridge Street / HEX Link Road provide sufficient spare capacity to support the Stage 1 development beyond the construction of 1,500 dwellings. All approaches operate with an overall Level of Service (LoS) A with acceptable delays and queuing.

Sensitivity modelling of this roundabout demonstrates that the demands for passing traffic through the roundabout (excluding demands on Tollbar Avenue) could increase by up to 30% before any upgrades are required. As such, the existing roundabout control can therefore accommodate development beyond the first 1,500 dwelling, which is the revised development threshold being proposed.

The provisional allowance of 1,000 trips (500 inbound, 500 outbound) on Tollbar Avenue has been allowed for to ensure robust assessment of the potential further development within the Huntlee Town Centre associated with Stage 1 works. It has been assumed that all trips will pass through this roundabout, with no allowances for southbound traffic to use alternate routes when accessing or departing the town centre. Similarly, there has been no allowance for diverted trips associated with passing trade which could see the overall demands through the roundabout decrease.

Based on standard RMS rates and allowing for 50% passing trade, these trips would allow for more than 16,000 m^2 of mixed retail or up to 100,000 m^2 of commercial / offices to be constructed off Tollbar Avenue.

There is no reported crash history for this roundabout, with no accidents recorded at this intersection from its construction through to 2016 (Transport for New South Wales Crash Statistics - Online).

Layout of Secondary Access

The requirements for turn treatments at unsignalised intersections are described within the Austroads Guide to Road Design Part 4A – Unsignalised and Signalised Intersections. Warrants for the provision of a left turn deceleration lane are summarised in Figure 5 below (Figure 4.9 of Austroads Guide – Warrants for turn treatments on the major road at unsignalised intersections).

Based on the predicted traffic flows through this intersection during the morning and evening peak (Figure 4), a left turn deceleration lane would be required for the left turn off HEX Link Road.

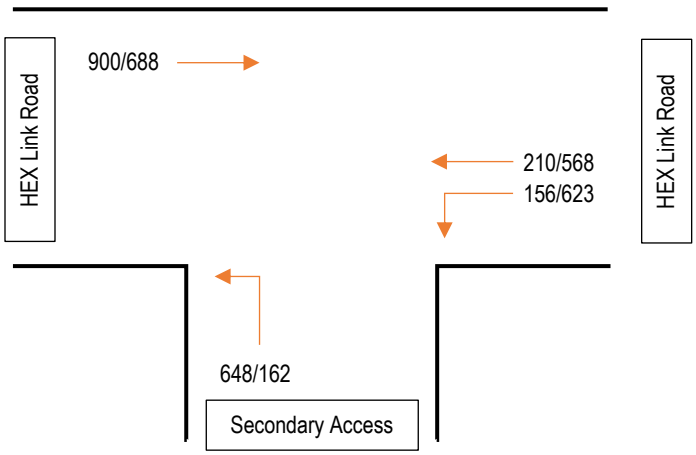


Figure 3 –Traffic flows through secondary access (left in / left out) onto HEX Link Road (up to 1,500 dwellings) – (AM/PM)

Austroads Guide indicating that acceleration lanes are usually only provided where:

- Insufficient gaps existing for vehicles to enter the traffic stream;
- Turning volumes are high (e.g. 300 to 500 vph)
- The observation angle falls below the requirements of minimum gap sight distance model (for example, inside of horizontal curves);
- Heavy vehicles pulling into the traffic stream would cause excessive slowing of major road vehicles.

The proposed access is located to the west of a curve, with the frontage road providing a mostly flat road alignment. Sight distance requirements at an intersection are specified by the Austroads Guide to Road Design, which for the

posted speed limit of 80 km/hr along HEX Link Road, requires a minimum intersection sight distance (SISD) of 181 metres. Sight lines in this location have been reviewed on site and with Nearmap, with the sight distance available being greater than 180 metres. Sight distances would therefore be available to suit the posted speed limit of 80 km/h and this will need to be confirmed as part of the intersection design and construction work.

The traffic flows along the HEX Link Road (westbound) are reasonably low (210/568 in the AM/PM peak) giving large gaps in the through traffic stream allowing for drivers to safely and conveniently merge from the new access road. The proposed access is expected to attract a high demand for left turning vehicles onto HEX Link Road during the morning peak which would satisfy the above condition, however the lower demands for through traffic (168 in the AM peak) ensure that vehicles departing the site can complete this movement with minimal delays. Sidra modelling has been completed to confirm the overall operation of this intersection, with an overall LoS A reported for left turning movement onto HEX Link Road.

Excluding the occasional waste vehicle, there will be minimal demands for heavy vehicles associated with the residential dwellings serviced by this new access and as such, it is considered that the provision of an acceleration lane is not required on the ground of road safety or efficiency.

Conclusion

Overall with the construction of a secondary access onto HEX Link Road, the existing single lane roundabout at Wine Country Drive / HEX Link Road / Bridge Street / Tollbar Avenue provides adequate spare capacity to support the Stage 1 development beyond the first 1,500 dwellings. It is therefore concluded that the proposed modification to the development conditions allowing for the upgrade of this roundabout to coincide with the construction of 1,500 dwellings should be supported on capacity grounds.

The provision of an interim secondary access onto HEX Link Road is required to reduce the overall traffic demands through this roundabout whilst also improving access for the various residential dwelling associated with the Stage 1 development. The provision of left in / left out movements only will ensure satisfactory operation of this secondary access, with no requirement for an acceleration lane onto HEX Link Road. A left turn deceleration lane will however be required for vehicles turning into the site.

Please do not hesitate to contact me on 4032 7979 should you have any queries or concerns.

Yours sincerely

Sean Morgan

Director

Attachment A – Crash History

LGA Summary | Crashes - characteristics | Crashes - contributing factors | Crashes - map | Casualties - characteristics | Casualties - contributing factors | MVCs - characterist

Transport for NSW

Crashes Map - Cessnock

Navigation and Help

Select your LGA:

Cessnock

Reporting year: (All)

Degree of crash: (All)

Type of crash: All

Speed limit: (All)

RUM code group: (All)

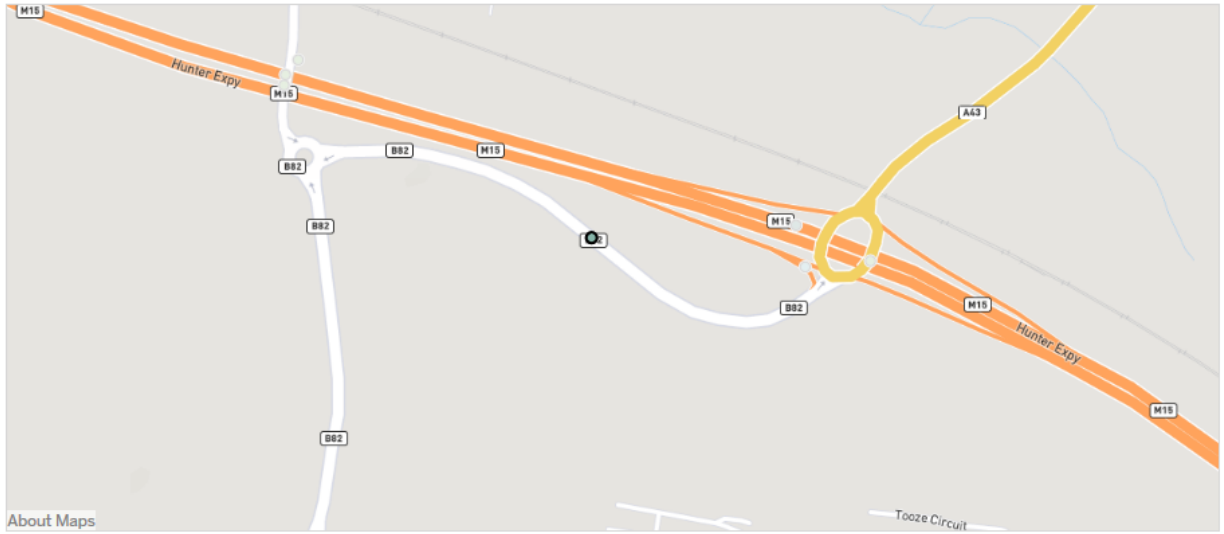
Type of location group: (All)

Speeding involved in crash: (All)

Fatigue involved in crash: (All)

Road classification: (All)

DATA AVAILABILITY
Finalised data is available for the 5 year period 2012 to 2016



Degree of crash
Fatal | Serious Injury | Moderate Injury | Minor/Other Injury | Non-casualty (towaway)

Report..	Crash ID	Degree of crash	RUM - code	RUM - description	Type of location	Natural lig..	Longitude	Lattitude	No Ki..	No Injured
2015	1075810	Moderate Injury	40	U turn	2-way undivided	Daylight	151.356913	-32.668161	-	1