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Addendum 1: Lower Hunter Land Development, Minmi/Link Road, Traffic Implication of the Hunter Expressway

1 Overview

Hyder Consulting has previously assessed the network impact from the Minmi/Link Road sites in support of the concept plan application that was lodged with the Department of Planning, in February 2009. The previous traffic and transport report details the impact from the residential development in the northern area comprising Minmi / Link Road, located north and south of the Newcastle Link Road. A concept plan for the subject site has been developed containing approximately 3,300 dwelling units, which are planned for release in five stages over the next 25 years. Detail modelling assumptions and results for the Minmi/Link Road sites are documented in the following Hyder traffic report:

1 *Lower Hunter Land Development, Traffic and Transport, Northern Estate, Minmi/Link Road,* Hyder Consulting, November 2008.

The above traffic analysis was undertaken without the Hunter Expressway (previously known as F3 to Branxton Link). During May 2009, the Federal Government approved the funding for the Hunter Expressway. RTA has now asked Hyder to remodel the network impact from the Minmi/Link Road sites in conjunction with the Hunter Expressway.

In reviewing the concept plan application, RTA commented on Hyder's traffic report *Traffic and Transport, Northern Estate, Minmi/Link Road.* RTA advised Hyder to revise the traffic modelling assumptions by deleting unfunded future projects in the assessment. Following confirmation from the RTA, we have summarised the modelling assumptions which form the basis of this traffic modelling investigation:

- Inclusion of Hunter Expressway in all modelling scenarios;
- Deletion of RTA unfunded future roads documented in Section 4, page 31 of Hyder's traffic report, November 2008. Two unfunded roads including Fredrick Street extension and Glendale Drive extension will influence traffic on the Newcastle Link Road, Main Road (MR527) and Minmi Road, Edgeworth.
- Inclusion of the proposed F3 to Raymond Terrace Link bearing in mind that construction of the F3 to Raymond Terrace Link is not expected until after 2026;
- Reporting intersection performance at two additional sites including Minmi Road/Main Road signals, Newcastle Link Road/Lake Road (MR217)/Thomas Street roundabout.

Following the Hunter Expressway approval, RTA is now proposing to construct the new freeway from the Newcastle Link Road interchange on the F3 Freeway, to the New England Highway at Branxton. The project involves 40 km of new high standard dual carriageway road. The project will be delivered under two separate packages of works, and will be opened as one project on completion of both packages of works. It is anticipated that this new freeway will open to traffic by 2013. The construction

of the Hunter Expressway will redistribute traffic on the John Renshaw Drive, F3 Freeway and Newcastle Link Road corridors.

This addendum 1 provides an overview of our modelling investigation on the future traffic impact on the Newcastle Link Road and associated key intersections with the Hunter Expressway in place. The Hunter Expressway is expected to increase traffic on the Newcastle Link Road. Previously determined upgrading works at key intersections including Newcastle Link Road/Minmi Road/Minmi Boulevard, Newcastle Link Road/Woodford Street, and Minmi Road/Northlakes Drive were re examined and tested using both the SIDRA and Paramics models.

Figure 1 shows Minmi/Link Road development in the context of the regional network and the proposed Hunter Expressway.

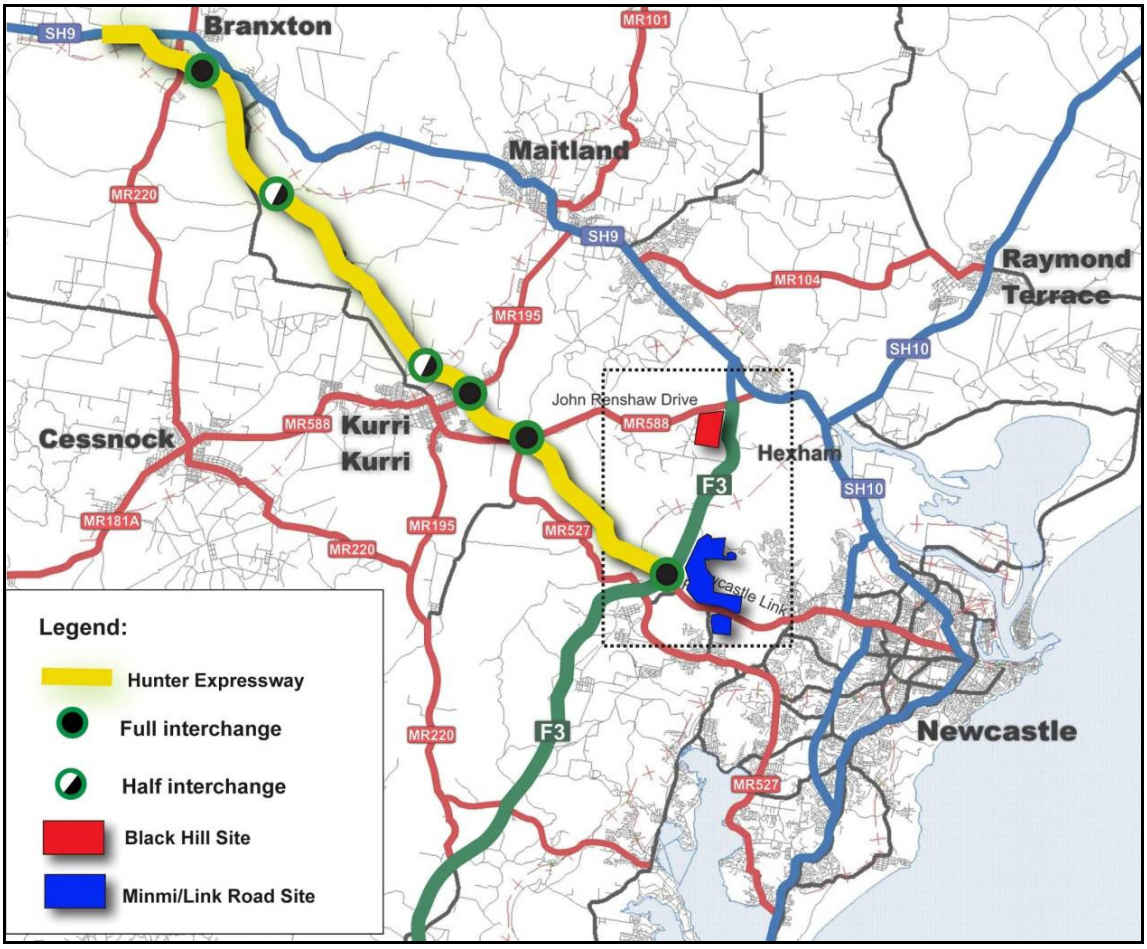


Figure 1 Coal and Allied Northern Developable Lands in the context of Hunter Expressway

2 Traffic Modelling Approach

In assessing the Minmi/Link Road development impact with the Hunter Expressway in place, Hyder adopted a similar modelling technique and methodology to that documented in Chapters 4 and 5 of traffic and transport report, *Lower Hunter Land Development, Traffic and Transport, Northern Estate, Minmi/Link Road*, Hyder Consulting, November 2008. The traffic model was run for the ultimate future year 2031, with the Hunter Expressway, and assuming full development of the Minmi/Link Road site. We ran three traffic models (viz TransCAD, Paramics, SIDRA) for the future year assessing the impact of the Minmi/Link Road development.

3 Traffic Distribution

Traffic distribution to/from the Minmi/Link Road residential development was a key input in determining the performance of the key intersections on the Newcastle Link Road corridor. Future growth and associated traffic distribution to the Newcastle Link Road corridor from the Hunter Expressway was determined using the Lower Hunter Traffic Model (TransCAD). The 2031AM peak outbound traffic from the Minmi/Link Road residential development suggests the following trend:

- About 40% of traffic to the east via Newcastle Link Road is accessing both Newcastle and Greater Lake Macquarie areas;
- About 15% traffic to the south via Minmi Road/Main Road (MR527) is accessing Glendale;
- About 10% to the west via Hunter Expressway is accessing Cessnock/Kurri Kurri and the Upper Hunter;
- About 10% traffic is forecast to use F3 Freeway;
- Minor traffic is expected to use Cameron Park Drive (about 6%);
- Minor traffic is expected to use Minmi Road via Fletcher (about 7%);
- About 12% of traffic is forecast to use Lenaghans Drive accessing Black Hill and Beresfield. At RTA's request, we have undertaken further investigation to determine why a relatively high proportion of Minmi/Link Road residential traffic uses Lenaghans Drive. Our modelling investigation suggests that in 2031 increased congestion on the Newcastle Link Road, particularly between the F3 Freeway and Woodford Street, leads some traffic to use the alternative Lenaghans Drive instead of the F3 Freeway. Further future investigation is required to quantify the actual traffic increase on the Newcastle Link Road following the opening of the Hunter Expressway in year 2013. This can then lead to the next level of future investigation on whether there is a need to widen the Newcastle Link Road. This Link Road widening issue is outside of the Coal & Allied responsibility and hence beyond the scope of this traffic modelling work.

4 Model Results

This section documents the operational performance of key intersections along the Newcastle Link Road corridors. In 2031, the traffic model forecasts about 27 percent traffic increase on the Newcastle Link Road corridor with the Hunter Expressway in place (see Figure A1 in Appendix A for location of Link Road Cordon Line). The most likely traffic increase is forecast on the Newcastle Link Road and Minmi Road (Edgeworh). The impact on other roads in the corridor will be minimal including Minmi Road through Minmi/Fletcher. The increasing traffic on the Newcastle Link Road triggers the need to revise the previously determined traffic operation/lane configuration at Newcastle Link Road/Woodford Street, and Newcastle Link Road/Minmi Road/Minmi Boulevard intersections. The new Expressway is forecast to increase traffic on Minmi Road (Edgeworth) by about 12 percent. This increasing trend on Minmi Road (Edgeworth) from Hunter Expressway, coupled with deletion of the proposed Fredrick Street extension and Glendale Link Road extension, necessitates the reassessment of the roundabout at the Northlakes Drive/Link Road south access.

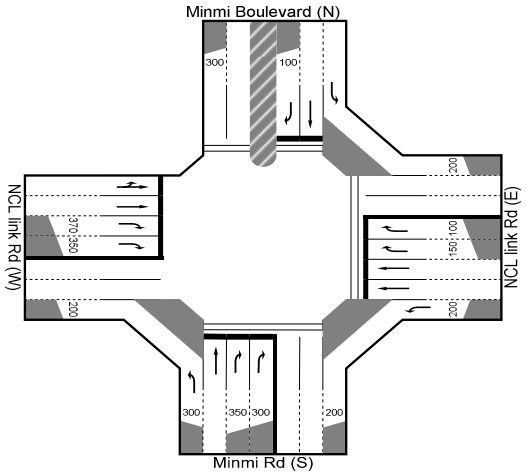
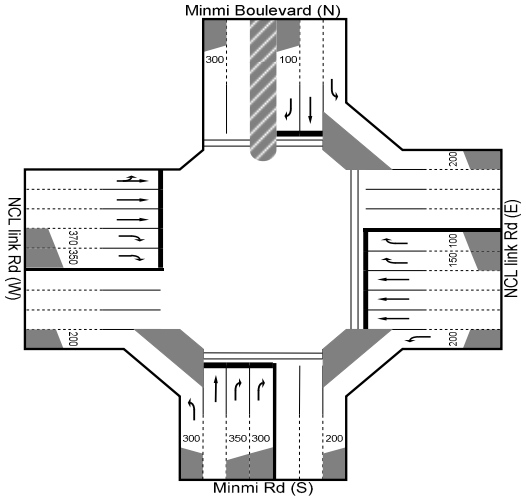
At RTA's request Hyder also reported on intersection performance at two additional remote locations from the Minmi/Link Road development including Minmi Road/Main Road signals and Newcastle Link Road/Lake Road (MR217)/Thomas Street roundabout.

Consistent with the previous scenarios, this revised modelling with the Hunter Expressway was undertaken for background growth and cumulative growth separately. The model assumed expected background growth on the Newcastle Link Road corridor up to 2031 combined with other planned developments contained in the Lower Hunter Regional Strategy.

Hyder therefore adopted an iterative modelling process to determine the optimum lane configuration at Newcastle Link Road/Woodford Street, Newcastle Link Road/Minmi Road/Minmi Boulevard intersections. The intersection configuration was modified until a satisfactory level of service was achieved. The expected queue length on the Newcastle Link Road corridor was examined using the Paramics model (see Appendix A). A similar process was adopted for assessing key intersections with Minmi Road (Edgeworth).

Table 1 below shows possible improvements at the Newcastle Link Road/Minmi Road/Minmi Boulevard intersection. Intersection performance results are also summarised in Table 1. In all cases, the model assumed 100% of Minmi/Link Road development by 2031. The 2031 modelling result suggests that this intersection with the Hunter Expressway will require major upgrade with full traffic control signals. We have tested two scenarios with a double right turn, and two or three through lanes on the Newcastle Link Road. The additional through lane on the Link Road may be required as a result of increased traffic from the Hunter Expressway. Results from Table 1 indicate that in 2031 the signals at Newcastle Link Road/Minmi Road/Minmi Boulevard will provide LoS E/F with the Hunter Expressway in place. The model predicted a satisfactory LoS C should Link Road be upgraded to three lanes.

Table 1 Summary of LOS at Newcastle Link Road/Minmi Road/Minmi Boulevard intersection in 2031 with Hunter Expressway

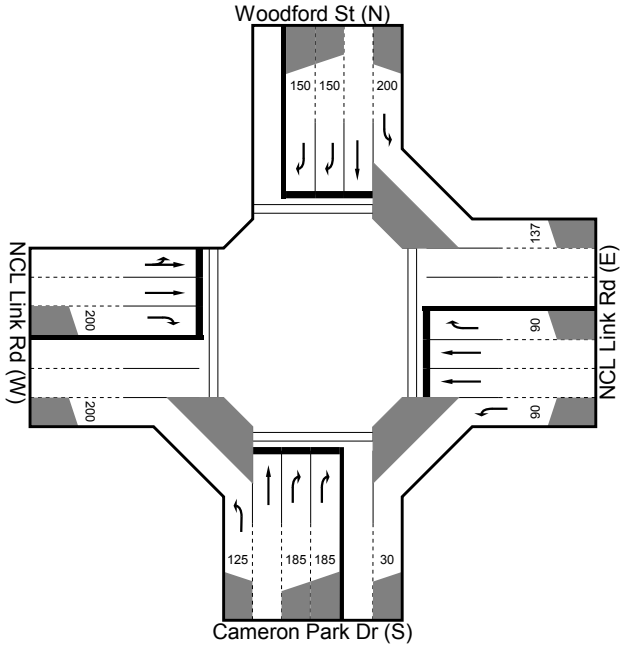
Scenarios	AM Peak			PM Peak		
	DoS	Delays (Secs)	LoS	DoS	Delays (Secs)	LoS
2031S7D-ImpE 2 (2 through lane on Link Rd)	1.0	74.2	F	1.0	65.9	E
2031S7D-ImpE3 (3 through lane on Link Rd)	0.8	41.5	C	0.8	39.9	C
2031S7D-ImpE2 (2 through lane on Link Rd) Indicative Layout						
2031S7D-ImpE3 (3 through lane on Link Rd) Indicative Layout						

Scenario Definition: 2031S7D: Background growth upto 2031plus 100% Minmi/Link Rd development plus Hunter Expressway

As with the Newcastle Link Road/Minmi Road/Minmi Boulevard intersection, we have also assessed intersection performance at Newcastle Link Road/Woodford Street/Cameron Park Drive. The performance of this intersection will be largely determined by additional traffic from the Hunter Expressway along with cumulative traffic growth. The Paramics model shows significant queuing on the Newcastle Link Road. Table 2 below shows possible improvements at the Newcastle Link Road/Woodford Street/Cameron Park Drive intersection. The modelling suggests that in the future with Hunter Expressway, this intersection will require a major upgrade with full traffic control signals.

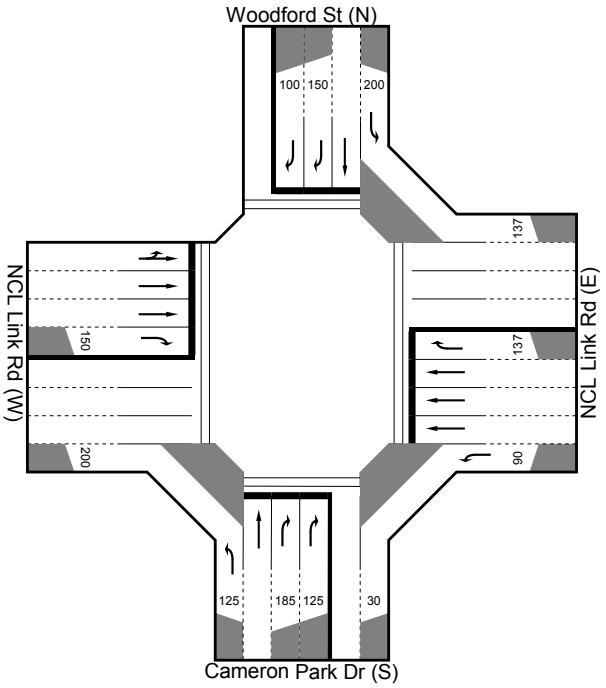
- Intersection performance at Newcastle Link Road/Minmi Road/Minmi Boulevard and Newcastle Link Road/Woodford St/Cameron Park Drive intersections was also tested for other (cumulative) traffic growth. The forecast suggests lower LoS F for both proposed signals. Further future modelling is required to determine the optimum lane configuration on the Newcastle Link Road once the Hunter Expressway is open to traffic in 2013, and the timing of other development is known more accurately.

Table 2 Summary of LOS at Newcastle Link Road/Woodford St/Cameron Park Dr intersection in 2031 with Hunter Expressway

Scenarios	AM Peak			PM Peak		
	DoS	Delays (Secs)	LoS	DoS	Delays (Secs)	LoS
2031S7D-ImpE2 (2 through lane on Link Rd)	0.96	52	D	1.05	89.3	F
2031S7D-ImpE3(3 through lane on Link Rd)	0.81	38.2	C	0.84	45.4	D
2031S7D-ImpE2 (2 through lane on Link Rd) Indicative Layout						

2031S7D-ImpE3 (3 through lane on Link Rd)

Indicative Layout



Scenario Definition: 2031S7D- Background growth up to 2031plus 100% Minmi/Link Rd development plus Hunter Expressway

The proposed two lane roundabout at Minmi Road/Northlakes Drive, with the Link Road south development access, was reassessed with the Hunter Expressway in place. The proposed roundabout is expected to operate at a good LoS A (See Table 3).

The existing and future intersection performance of the Minmi Road/Main Road (MR527) signalised intersection, and the Newcastle Link Road/Lake Road (MR217)/Thomas Street roundabout are summarised in Table 3. The impact of the Minmi/Link Road development on both intersections is forecast to be low. Regional (cumulative) traffic growth is likely to trigger the need to upgrade both intersections.

Table 3 Summary of LOS on Other Intersections in 2031 with Hunter Expressway

Scenarios/ Intersections	**AM Peak**			**PM Peak**		
	DoS	**Delays (Secs)**	**LoS**	**DoS**	**Delays (Secs)**	**LoS**
Main Road (MR527) / Minmi Road Signal						
Existing	0.94	33.2	C	1.03	26.9	B
2031S7D-ImpE	1.23	>90	F	1.03	56.5	D
2031BH6G (Cumulative)	1.25	>90	F	1.26	>90	F
Newcastle Link Road / Lake Road Roundabout						
Existing	1.42	>90	F	1.24	56.3	D

Scenarios/ Intersections	AM Peak			PM Peak		
	DoS	Delays (Secs)	LoS	DoS	Delays (Secs)	LoS
2031S7D-ImpE	3.59	>90	F	3.04	>90	F
2031BH6G (Cumulative)	2.67	>90	F	5.33	>90	F
Proposed Minmi Road / Northlake Dr / Link Road South Access Road Roundabout						
2031S7D-ImpE	0.47	7	A	0.52	7	A
2031BH6G (Cumulative)	0.56	7	A	0.61	7	A

Scenario Definition: 2031S7D- Background growth up to 2031plus 100% Minmi/Link Rd development plus Hunter Expressway, 2031BH6G –Cumulative growth up to 2031plus 100% Minmi/Link Rd development plus Hunter Expressway

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5 Findings

The *Addendum 1* details the traffic impact on the Newcastle Link Road, and associated key intersections considering additional traffic from the Hunter Expressway. In 2031, the traffic model forecasts an approximate 27 percent traffic increase on the Newcastle Link Road corridor. The most likely traffic increase will be on Newcastle Link Road and Minmi Road (Edgeworth). The impact from Hunter Expressway on other roads in the corridor will be minimal, including Minmi Road through Minmi/Fletcher. The increasing traffic on the Newcastle Link Road from Hunter Expressway triggers the need to revise the previously determined traffic operation/lane configuration at the Newcastle Link Road/Minmi Road/Minmi Boulevard intersection. The 2031 modelling results suggest that with Hunter Expressway, this intersection will require a major upgrade with full traffic control signals. The analysis determined that three through lanes will be required at Newcastle Link Road/Minmi Road/Minmi Boulevard intersection to achieve a satisfactory LoS C. The additional through lane on the Newcastle Link Road may be required as a result of increased traffic from the Hunter Expressway. The Link Road widening issue and timing when widening will be required are outside of the scope of this traffic modelling work. The traffic model suggested low impact at other intersections on the Newcastle Link Road as a result of the Minmi/Link Road development.

Appendix A

325DA160;1
09/269

Team Leader, Strategic Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Anna Johnston

STATE SIGNIFICANT SITE LISTING AND CONCEPT PLAN – MINMI, NEWCASTLE LINK ROAD NORTH & SOUTH RESIDENTIAL DEVELOPMENT (MP 08_0125)

Dear Ms Johnston

I refer to your letter dated 12 February 2009 (Your reference: MP 08_0125) requesting RTA comment for the subject proposal.

The RTA's primary interests are in the road network, traffic and broader transport issues, particularly in relation to the efficiency and safety of the classified road system, the security of property assets and the integration of land use and transport.

It is understood that this application proposes to identify the site in State Environmental Planning Policy (Major Projects) as a State Significant Site (Schedule 3) and rezone the land associated with the proposal.

The RTA has assessed the proposed rezoning / LEP amendment and proposed State Significant Site and has no objections in principle to the proposal subject to the following being addressed prior to any approval being granted:

- The RTA requires the proponent to resolve State road infrastructure issues, consistent with other LEP amendment proposals occurring in the area. In this regard the RTA will require the developer to enter into a Voluntary Planning Agreement (VPA) / Deed Containing Agreement (DCA) for contributions towards designated State public infrastructure (State roads) prior to any development / subdivision proceeding on the site. Until such an agreement is executed, the RTA does not consider that satisfactory arrangements have been established for State public infrastructure.

  Comment: The proponent's State of Commitments notes that there is an expectation for State Road contributions to be required. It is requested that the Department advise the RTA as to the mechanism by which this will be completed and that the RTA be afforded opportunity for input into the scheme.

- Broader contributions to State road infrastructure will be required and will be consistent with other developments in the Hunter Region and to a fair and reasonable level to contribute to future requirements.

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Given the scale (3,300 lots) and the location of the development at Minmi, the proposal will have a major impact on key arterial routes in the Hunter, particularly the Newcastle Link Road / Thomas Street (MR82) corridor. The RTA has estimated that future works in this area alone could be in the order of $150M+ to cater for future traffic volumes.

Given the Department of Planning is currently determining State Infrastructure Contributions for other developments in the Hunter Region (Bellbird ~2,500 lots@$10,000/lot = $25M and North Cooranbong ~2,500 lots@$12,000/lot = $30M), it is considered that this development proposal should be contributing a similar amount in the order of $15,000/lot. This would equate to State Road infrastructure contributions of up to $49.5M for upgrading the adjacent section of the arterial road network.

- Additionally, the RTA's preference is for a works-in-kind contribution to be determined in lieu of a cash contribution. These works can be negotiated at a latter stage of the development process and various thresholds may be able to be determined to ensure infrastructure is constructed when required.

- The traffic study submitted has several issues which need to be addressed. The following issues are critical to the traffic impact assessment and a revised traffic study is required prior to concept plan approval:

  - Several road infrastructure projects have been assumed to be completed at various stages through the development. The study identified the Frederick Street extension between Main Road, Edgeworth and North Lakes Drive, Cameron Park and Glendale Drive to Newcastle Link Road as future projects. The RTA has no programmed works or plans in place to undertake either of these projects so unless these works are to form part of the proponent's proposal they should be deleted from any assessment.

  - Noting the above, the impacts the intersections along Newcastle Link Road, Main Road, Edgeworth (MR527) at Minmi Road and Newcastle Link Road (MR82) at Lake Road (MR217) are likely to be increased in the traffic modelling. The traffic study shall be amended to include assessment of these two critical junctions in the arterial network. The impacts on these intersections may also require further upgrades by the proponent.

  - The broader model suggests that in the order of 15-20% of future traffic generated will be using Lenaghans Drive. The RTA wishes to review this aspect of the study. Select link analysis should be undertaken to determine whether this high proportion of the traffic generated is appropriate.

  - The traffic study currently considers several scenarios of future traffic growth. The Lower Hunter Traffic Model, which was licensed for assessment of the project, considers the ultimate land use growth and the subsequent impacts on road infrastructure. In the long term scenario testing, the impacts on the network should be consistent with the Lower Hunter Regional Strategy.

- The proposal will have a direct impact upon the intersection of Newcastle Link Road / Minmi Road / Minmi Boulevarde. This intersection is considered to be affected directly by this proposal and therefore any upgrade works required should not be considered as part of the broader State Road contributions outlined above.

  The intersection will require major upgrade, most likely to a minimum of full traffic control signals, with major capacity upgrades including double right turns and possibly three through lanes on Newcastle Link Road.

- The staging and details of any road infrastructure upgrade requirements would be determined when the traffic study is revised.

- The proponent has proposed an additional access onto Newcastle Link Road. The RTA will not approve any additional access / intersections onto Newcastle Link Road. Any such proposals shall be deleted from the application.

  Comment: Dependant upon emergency services requirements, an emergency access may be considered but would be subject to the requirements of the emergency authorities. It would be appreciated if the Department could further advise on this matter.

- No direct property accesses will be permitted to the proposal from Newcastle Link Road. All property access shall be to the local road network with no property accesses or intersections within a minimum of 400m of Newcastle Link Road along any of the adjoining local roads.

- The RTA has previously advised the proponent that land is required for the purposes of future road infrastructure near the F3 Freeway. It appears as though this land has been excised from the proposal and it will be required to be consistent with the current RTA request and negotiations for the acquisition of the land. The applicant should confirm that this is the case.

Notwithstanding the above, the Department should consider the following prior to approving the proposal:

- The developer should take into account DIPNR's Integrating Land Use and Transport Planning Policy and draft SEPP 66 – Integration of Land Use and Transport in relation to the provision of adequate access to public transport, especially for the elderly and opportunities for pedestrians and cyclists connections to the surrounding area should be considered.

- The Department should ensure that the developer is aware of the potential for road traffic noise to impact on future development of the site. In this regard, the developer, not the RTA, is responsible for providing noise attenuation measures in accordance with the Environmental Protection Authority's (1999) Environmental Criteria for Road Traffic Noise, should the developer or subsequent individual land owner seek assistance at a later date.

The above matters need to be resolved prior to this application. In this regard it would be appreciated if the Department could advise how it is intended to progress these matters.

Should you require any further advice please contact Brad Parkes on (02) 4924 0337.

Yours faithfully

Colin Nunn
Manager, Infrastructure Development
Hunter Operations and Engineering Services

30 March 2009

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11 JUN 2009
...egic Assessments

RTA

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Team Leader, Strategic Assessment
Department of Planning
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SYDNEY NSW 2001

Attention: Ms Anna Johnston

STATE SIGNIFICANT SITE LISTING AND CONCEPT PLAN – MINMI, NEWCASTLE LINK ROAD NORTH & SOUTH RESIDENTIAL DEVELOPMENT (MP 08_0125)

Dear Ms Johnston

I refer to the email dated 2 June 2009 from the proponent's traffic consultants Hyder and the RTA's previous response dated 30 March 2009 for the proposed Concept Plan at Minmi.

As discussed with you and further to RTA's letter, I wish to advise you that the Hunter Expressway, has been granted funding. At this stage it is anticipated that Hunter Expressway will open to traffic by 2013.

The construction of Hunter Expressway will have significant impact on the road network adjacent to the proposal at Minmi along the Newcastle Link Road corridor. The previous traffic study submitted did not consider impacts of the construction of Hunter Expressway as part of the C&A development proposal. The revised traffic study and modelling for the C&A development will now be required to include the Hunter Expressway.

All previous other comments still apply.

Should you require any further advice please contact Brad Parkes on (02) 4924 0337.

Yours faithfully

Colin Nunn
Manager, Infrastructure Development
Hunter Operations and Engineering Services

9 June 2009

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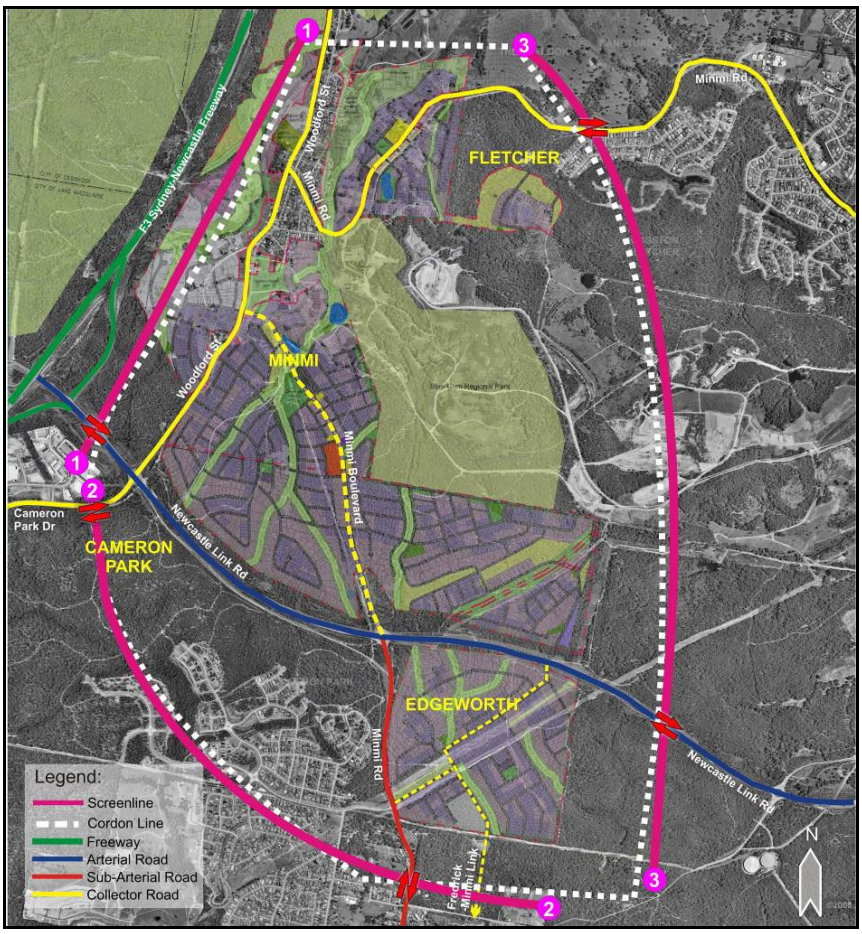

Figure A1 Location of Newcastle Link Road Corridor

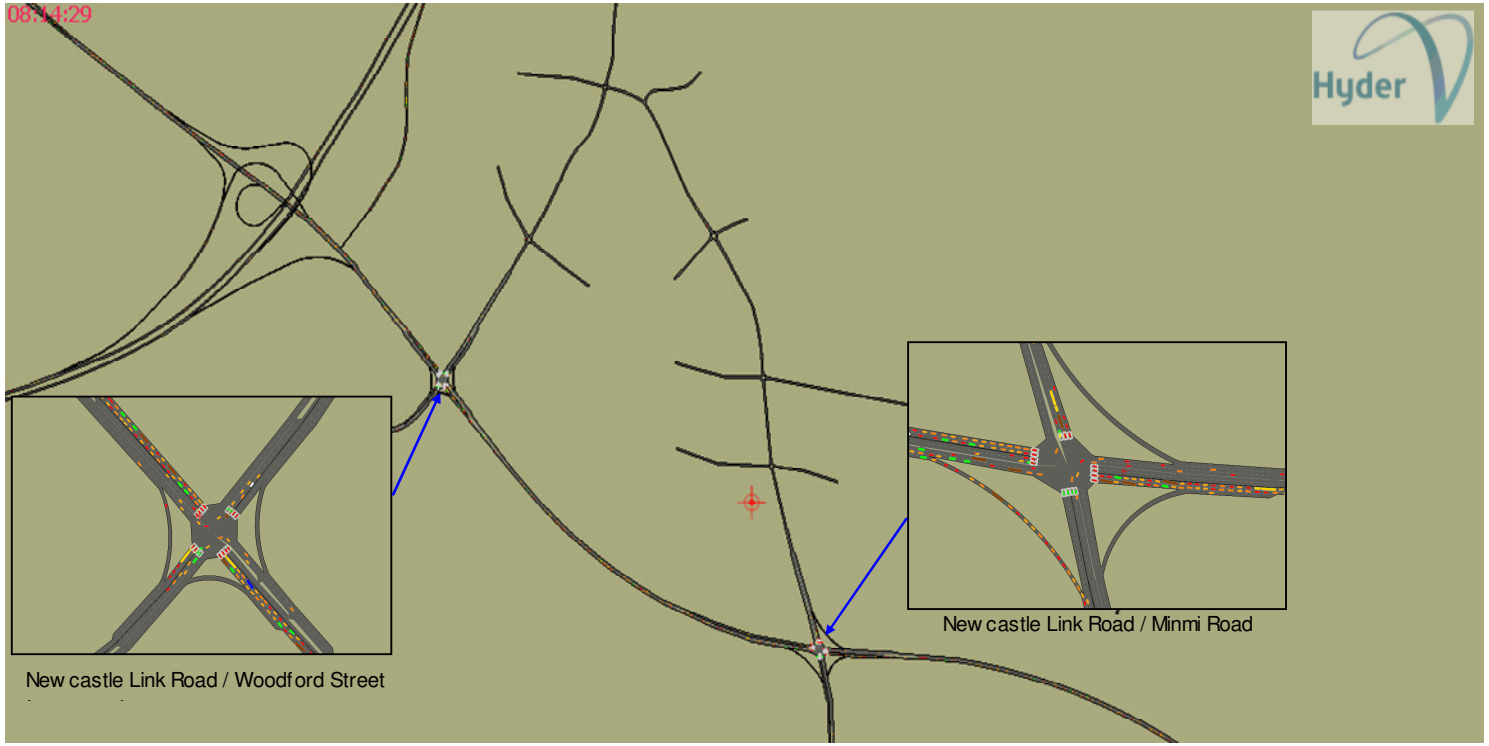

Figure A2 Paramics Screen Capture of Minmi Site for Cumulative Traffic