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<b>FROM</b>	Piran Trethewey (Director, Ason Group)	
<b>CC</b>	Nadim Akari (Senior Development Manager, Frasers)	
<b>SUBJECT</b>	Telopea Concept Plan & Stage 1A Residential, Retail, Child Care, Aged Care – SSD-14378717 Local Road Network Performance Assessment	

## Introduction

Ason Group has been engaged by Frasers Property Telopea Developer Pty Ltd (Frasers) to provide traffic and transport consultancy services in support of the State Significant Development (SSD-14378717) application for the proposed Telopea Concept Plan and Stage 1A Residential, Retail, Child Care and Aged Care (the Proposal) at Adderton Road, Telopea.

Recent discussions with TfNSW regarding the Proposal have focussed on 2 areas, as follows:

1. The proposed New Link Road, its signalised at-grade crossing of the Parramatta Light Rail (PLR) line and intersection with Adderton Road.
2. The proposed signalised upgrades of the local road intersections of Adderton Road with Manson Street, Sturt Road with Manson Street and Evans Road with Shortland Street.

The above topics were discussed at the meeting of 16 August 2023 with TfNSW and NSW DPE. With reference to the minutes of that meeting, TfNSW advised that, *'the removal of link road and the signalised intersections removes the need for TfNSW to have a compliance role in the SSD. Once the plans have been modified to remove the link road and traffic signals, TfNSW would be able to issue a letter of advising [sic] they have no role in the matter, with some clarifications.'*

Regarding the proposed signalisation of the 3 local road intersections, in their email of 14 August 2023 prior to the meeting, TfNSW advised that should the Proposal be modified to remove these signalised upgrades or provide alternative intersection treatments, *'Council should be satisfied that alternative treatments can safely accommodate traffic movements, noting these are local roads under the management of Council.'*

## Concept Plan Modifications

In response to the discussions with TfNSW, the Concept Plan has been modified as follows:

- New Link Road and the signalised at-grade crossing of the PLR line and intersection with Adderton Road have been removed.
- The intersection of Evans Road with Shortland Street is to maintain its existing priority Give Way arrangement.
- The intersection of Sturt Road with Manson Street will be upgraded to a priority Give Way intersection incorporating the new approach of proposed New Marshall Road (Sturt Street major road, Manson Street and New Marshall Road, minor approaches).

- The intersection of Adderton Road and Manson Street will be upgraded to a roundabout with an inscribed diameter and mountable central island design like the relatively new roundabout installed at the nearby junction of Sturt Street with Evans Road.

Reference should be made to the revised Concept Plan drawings provided separately; it is noted that the removal of New Link Road and associated infrastructure represents a modification to both the Concept Plan and the plans for Stage 1A.

## Study Objective & Methodology

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The objective of this latest study is to assess the local road network performance under alternative non-signalised treatments for submission to Council in accordance with the advice provided by TfNSW. Regarding modelling, the following summarises the relatively recent modelling assessments that Ason Group has undertaken to support the Proposal, as well as reports outlining modelling approach, model development, calibration, and validation:

- *RtS Modelling Methodology Report, Telopea Concept Plan and Stage 1A SSDA* – dated 2 September 2022 (ref: P0796tn04v2 – the MMR).
- *Transport Modelling Assessment, Telopea Concept Plan & Stage 1A* – Transport Assessment (TA) dated 21 November 2022 (ref: P0796r06v05 – the Modelling TA).
- *Trip Generation Sensitivity Test, Response to TfNSW Request for Information, Telopea Concept Plan & Stage 1A Residential, Retail, Child Care, Aged Care – SSD-14378717* – Technical Note (TN) dated 22 June 2023 (ref: P0796tn07 – the Sensitivity Test TN).

The Modelling TA and the Sensitivity Test TN set a 2031 design year and modelled several scenarios in SIDRA Network, of relevance is the 2031 'Base case' scenario (no development traffic nor any upgrades) and the 2031 'with development + mitigation' scenario. It is noted that the 'with development' scenarios focused on Stage 1 of the Proposal, with Stages 2 and 3 assumed to be delivered in later years.

This latest study builds upon the foundations established by the earlier studies, with the relevant SIDRA Network 'with development + mitigation' models updated as follows:

- **Mitigation** – Primary to this exercise, the models have been revised to account for the modifications to the concept plan listed above (removal of New Link Road and traffic signals and inclusion of alternative priority control measures).
- **Development Traffic Reassignment** – New Link Road provided a new connection to the wider road network. Accordingly, the removal of this link has required a reassignment of (in particular) development traffic on the local road network. Due to their proximity, all traffic movements previously assigned to the proposed intersection of Adderton Road with New Link Road have been reassigned to the intersection of Adderton Road with Manson Street intersection.
- **Regional Road Intersections** – As part of the discussions with TfNSW, it has been established that any necessary upgrades to the regional/state road network will be dealt with as part of the State VPA framework that comes into effect on 01 October 2023. TfNSW confirmed this framework would be the mechanism used to address pre-existing regional network issue such as those evident at the signalised intersection of Kissing Point Road with Sturt Street, which is a cause of delay within the local road network. Accordingly, for this local road network performance assessment, the model has been modified to limit the influence of the regional road intersections so that a focussed assessment of the local road network can be undertaken.

- **Development Stages** –To provide a conservative assessment, development stages 2 & 3 have been included in this latest assessment.

The remainder of this TN presents the development yield, the traffic generation (using established standard trip rates) for the ‘with development stages 1, 2 & 3’ scenario, and the results of the subsequent modelling.

## Development Yield

**Table 1** outlines the proposed development yield that comprises 4,700 units of residential development plus non-residential / commercial uses. Most of the proposed development would be delivered during Stage 1; Stages 2 and 3 consist entirely of residential development.

**TABLE 1 DEVELOPMENT YIELD BY STAGE**

Zoning	Type	Stage 1	Stage 2	Stage 3	Total Concept Plan
Residential	Social	348 units	236 units	156 units	740 units
	Affordable	149 units	0 units	107 units	256 units
	Market	2,032 units	891 units	781 units	3,704 units
	<b>TOTAL UNITS</b>	<b>2,529 units</b>	<b>1,127 units</b>	<b>1,044 units</b>	<b>4,700 units</b>
Commercial	Community Centre and Library	4,150 sqm	-	-	4,150 sqm
	Church	2,500 sqm	-	-	2,500 sqm
	Child Care	750 sqm	-	-	750 sqm
	Retail	7,785 sqm	-	-	7,785 sqm
	RACF	120 beds	-	-	120 beds

## Traffic Generation

**Table 2** presents the trip rate assumptions that have been adopted for all previous assessments as well as the corresponding forecast traffic generation of the Concept Plan (Stages 1, 2 & 3):

**TABLE 2 CORE PRECINCT TRIP GENERATION**

Zoning	Type	Concept Plan (Stages 1 – 3)	Peak Hour Trip Rate		Trips Generated	
			AM	PM	AM	PM
Residential	Social	740 units	0.04 / unit	0.04 / unit	17	17
	Affordable	256 units	0.12 / unit	0.12 / unit	17	17
	Market	3,704 units	0.25 / unit	0.25 / unit	516	516
Commercial	Community Centre and Library	4,150 sqm	As these are replacing existing facilities, it is assumed no additional trips are generated			
	Church	2,500 sqm				
	Child Care	750 sqm				
	Retail	7,785 sqm	1.75 / 100sqm	3.50 / 100sqm	136	272
	RACF	120 beds	0.0 / bed	0.1 / bed	0	12

## Study Network Performance

### Base Case Assessment

As detailed in the Modelling TA, the 2031 Future Base Case (without development traffic) showed poor performance on Kissing Point Road during the morning peak. Network issues identified in this scenario are as follows:

- Kissing Point Road / Kirby Street operates at Level of Service (LoS) F (AM Peak)
- Kissing Point Road / Sturt Street operates at LoS F (AM Peak)
- Adderton Road / Robert Street operates at LoS F (AM & PM Peak)

It is noted that the Kissing Point Road intersections are part of the regional/state road network that TfNSW has advised that necessary upgrades for state infrastructure will be covered by the state VPA framework that is about to come into effect. The intersection of Adderton Road with Robert Street is a local road intersection under Council's control. Under the earlier Concept Plan proposals – that included the proposed intersection of Adderton Road with New Link Road – this intersection was directly affected by the Proposal. However, under the current Proposal with New Link Road removed, this intersection is no longer affected by the Proposal and accordingly the base case issues forecast for this intersection are not affected or exacerbated by the Proposal.

### With Development Assessment

The Modelling TA established the following criteria against which network performance was to be evaluated:

- For intersections that – under future base case conditions – are forecast to operate at a LoS E or F, development impact mitigation measures were to be provided that maintain the LoS reported in the future base case.
- For intersections that – again under base case conditions – are forecast to operate below LoS E, should the additional development demand cause the intersection to operate at LoS E or F, development impact mitigation measures were to be provided that achieve LoS D or better.

As mentioned, several scenarios have been assessed throughout the course of this SSD application; these scenarios are summarised below, with scenario 3C reflecting the current adopted Concept Plan proposal.

**TABLE 3 SCENARIO SUMMARY**

Scenario	SCENARIO 1 Future Base Case	SCENARIO 2 Previous Concept Plan	SCENARIO 3A Revised Concept Plan 1	SCENARIO 3B Revised Concept Plan 2	SCENARIO 3C Adopted Concept Plan
New Link Road Included	No	Yes	No	No	No
Evans Rd / Shortland St	As Existing	TCS	As Existing	As Existing	As Existing
Sturt St / Manson St / New Marshall Rd	As Existing	TCS	Give-Way	Give-Way	Give-Way
Adderton Rd / Manson St	As Existing	TCS	Give-Way	TCS	Roundabout
Remaining Network	As Existing	As Existing	As Existing	As Existing	As Existing

Error! Reference source not found. shows a summary of the key local intersection performances based on the scenarios above; it is noted that the morning peak hour represents the 'critical' commuter peak. Models have also been developed for the school peak hour; however, these have been omitted for brevity. Findings from the school peak are in line with those of the evening peak, to a lesser magnitude.

**TABLE 4 SIDRA RESULTS SUMMARY**

Intersection	Metric	SCENARIO 1 Future Base Case	SCENARIO 2 Previous Concept Plan	SCENARIO 3A Revised Concept Plan 1	SCENARIO 3B Revised Concept Plan 2	SCENARIO 3C Adopted Concept Plan
AM PEAK						
Adderton Rd / Manson St	Delay	32.7	19.9	572.8	62.7	53.6
	LoS	C	B	F	E	D
Ped Xing North of Robert St	Delay	4.0	129.7	3.9	3.5	4.0
	LoS	A	F	A	A	A
Sturt St / Evans Rd	Delay	9.1	394.7	44.6	35.0	39.6
	LoS	A	F	D	C	C
Sturt St / Manson St	Delay	4.4	35.8	8.5	8.2	8.4
	LoS	A	C	A	A	A
Evans Rd / Shortland St	Delay	2.0	29.3	19.7	13.5	13.6
	LoS	A	C	B	A	A
Adderton Rd / New Link Rd	Delay	-	18.2	-	-	-
	LoS		B			
PM PEAK						
Adderton Rd / Manson St	Delay	35.7	18.8	444.1	43.7	16.4
	LoS	C	B	F	D	B
Ped Xing North of Robert St	Delay	4.0	3.6	3.9	4.0	4.0
	LoS	A	A	A	A	A
Sturt St / Evans Rd	Delay	9.1	10.1	9.9	9.9	9.9
	LoS	A	A	A	A	A
Sturt St / Manson St	Delay	5.4	32.3	9.4	9.1	9.4
	LoS	A	C	A	A	A
Evans Rd / Shortland St	Delay	2.3	26.5	16.4	11.2	11.2
	LoS	A	B	B	A	A
Adderton Rd / New Link Rd	Delay	-	20.9	-	-	-
	LoS		B			

The results of the SIDRA modelling can be summarised as follows:

- Under the latest Concept Plan proposal (Scenario 3C):
  - The local network is forecast to perform satisfactorily under future ‘with development’ conditions for both commuter peak periods.
  - It is noted the modelling includes a ‘potential’ upgrade to the existing intersection of Kissing Point Road with Sturt Street, thereby providing a more appropriate performance assessment of the local road network without external influences of the regional road network. As mentioned, the Kissing Point Road intersections are part of the regional/state road network that TfNSW has advised that necessary upgrades for state infrastructure – and therefore the intersection of Kissing Point Road with Sturt Street – will be covered by the state VPA framework.
- For the intersection of Adderton Road with Manson Street:
  - The reported results demonstrate that the proposed roundabout configuration performs best during both peak periods when compared to the existing layout or a signalised configuration.
  - It is important to note that SIDRA reporting for the performance of a roundabout is to be based on the average delay of the ‘worst’ performing movement. By contrast, SIDRA reporting for the performance of a signalised intersection is to be based on the average delay of ‘all’ movements. However, if the average delay of all movements at the roundabout is considered, the delay drops significantly. For example, during the critical morning peak hour, the average delay of all movements using the roundabout drops to an LoS B (17.6 seconds average vehicle delay), which is significantly better performance than the corresponding LoS E (62.7 seconds average vehicle delay) for the traffic signal configuration.
- For the Adderton Road corridor, comparisons between Scenario 2 (that included New Link Road) and the other scenarios without New Link Road (and specifically without its signalised intersection across the PLR and with Adderton Road), shows that the removal on New Link Road greatly improves the operation of the corridor, most notably with the forecast delay at the pedestrian crossing north of Roberts Street during the critical morning peak hour returning to base case performance forecasts of LoS A.
- Preliminary analysis of the solely residential Stage 1A – which previously included the proposed New Link Road – concludes that based on the forecast performance of the 2031 base case, the existing local road network has sufficient capacity to satisfactorily accommodate the moderate volume of forecast peak hour Stage 1A development traffic.

## Conclusion

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In summary:

- As a result of recent discussions with TfNSW, the Telopea Concept Plan has been modified with the removal of New Link Road and several local road intersections, that were previously proposed for signalisation, to either remain in their existing configuration or receive non-signalised upgrades.
- This TN study provides an assessment of the local road network with the latest modifications. The results of the analysis indicates that the local road network with the latest proposed upgrades would safely accommodate the forecast traffic demand of stages 1, 2 & 3 of the proposed Telopea Concept Plan development.
- High-level analysis of Stage 1A concludes that there is sufficient capacity within the existing local road network to accommodate the moderate volume of forecast peak hour development traffic.