EDQ Ref: DEV2023/1458

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2023/1458
Date: 2 August 2024

Queensland Government

Tom Hadden
Development Manager – Master Planned Communities Stockland,
Level 1, 1 Edwards Terrace, Baringa, Qld, 4551
Sent via email: tom.hadden@stockland.com.au

20 June 2024

Subject: Response to Items 2 and 6 (VISUM modelling) - EDQ Reference DEV2023/1458

Dear Tom,

We refer to your communication from Economic Development Queensland (**EDQ**) on 29 May 2024 regarding the "*Further Issues Letter - PDA Development Permit for Material Change of Use, Reconfiguring a Lot and Operational Work in accordance with a Context Plan and Plan of Development at Lot 3 Bells Creek Road, Gagalba described as Part Lot 3 on SP333886, Lot 1 on SP332399 & Lot 2 on SP334580"*.

The information below outlines the response / actions undertaken for Item 2 (Acoustic Barrier and Road Traffic Noise Assessment) and Item 6 (Road Network & Traffic Model) that relate to the VISUM traffic modelling.

Item 2: Acoustic Barrier and Road Traffic Noise Assessment

d) In Table 5.1, Segment B2, B3, B5 and B6 has significantly lower traffic volume compared to Segment B1 and B4. Please provide a technical memo from PWC with the traffic volume outputs (AADT) from the VISUM model.

e) The traffic volume on Trunk Connector is reasonably high and is required to have noise assessment undertaken. Amend the Traffic Noise Assessment, including a technical memo from PWC confirming traffic volume.

Table 1 overpage provides a summary of the modelled traffic flows and assumptions used to expand the peak hourly volumes to daily traffic for input to the acoustic assessment. The corresponding locations of Segments A1 to A4, B1 to B6, E1 to E2, and the Trunk Connectors (Segments C1 to C2, and D1 to D2) are illustrated in Figure 1.

Table 1: Traffic Volumes on Segments A1 to A4, B1 to B6, E1 to E2, and Trunk Connectors (Segments C1 to C2, and D1 to D2)

Segment	VISUM Hourly Traffic Volumes [1]		Daily Traffic Volumes	
	AM peak hour	PM peak hour	AADT [2]	18 hours (6am to midnight) [3]
A1	2,454	1,754	23,144	21,755
A2	2,322	3,091	29,772	27,985
A3	471	452	5,077	4,772
A4	421	237	3,619	3,402
B1	697	696	7,662	7,202
B2	755	746	8,256	7,760
B3	755	746	8,256	7,760
B4	1,109	1,031	11,770	11,064
B5	768	712	8,140	7,652
B6	768	712	8,140	7,652
C1	292	327	3,405	3,200
C2	375	242	3,394	3,190
D1	189	195	2,112	1,985
D2	174	151	1,788	1,680
E1	2,404	1,539	21,687	20,385
E2	1,866	2,541	24,239	22,784

Notes:

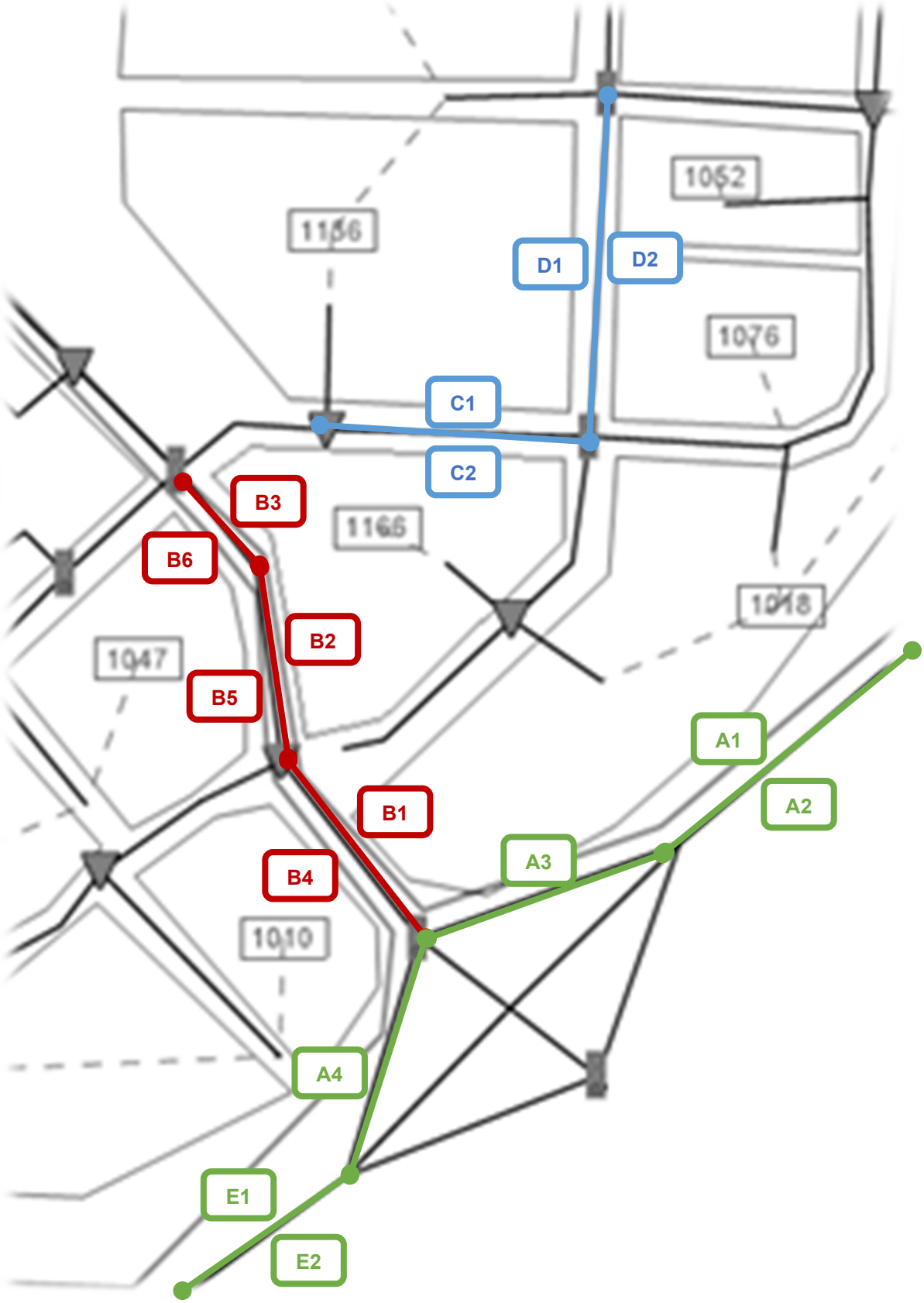
[1] Traffic flows sourced from the VISUM modelling. See also '240618 Aura P17-19_Traffic Modelling Report', Figures 4 and 5 for the corresponding peak hour link volumes plots.

*[2] Average Annual Daily Traffic (AADT) calculated using the following formula: **(AM Peak Hour Volumes + PM Peak Hour Volumes) x 5.5.** The daily expansion factor (5.5) has been estimated for hours corresponding to the modelled peak hours based on observed traffic counts sourced from the Queensland Government's Open Data Portal, where:*

- *The 2021 AADT data along the Bells Creek Arterial Road (**BCA**) has been sourced from the traffic census (https://www.data.qld.gov.au/dataset/traffic-census-for-the-queensland-state-declared-road-network.). 2021 is the most recent count data available for the BCA.*
- *The 2021 hourly counts along the BCA have been sourced from the traffic data average by day (all vehicle) (https://www.data.qld.gov.au/dataset/5334361b-3d7b-476d-9776-04dcd4a2d388/resource/44fe23b4-8519-4b3f-a24c-6a76b0076c81/download/qld-traffic-data-average-by-hour-by-day-2021_updated.csv)*
- *The traffic count station is located 1.6km South of Caloundra Road, which is the only data source available along BCA.*

[3] The 18 hours volume has been assumed to be approximately 0.94 of the AADT. Refer to 'TMR Road Noise CoP Volume 1'.

Figure 1: Segment Map Reference



Base map source: VISUM modelled network plot

Item 6: Road Network & Traffic Model

b) The following is required to be clarified on the traffic model refresh: In Section 2.3 Road Network, provide a diagram which indicates the restricted traffic movement of priority-controlled intersections.

c) Update Table 1 Detailed land use assumptions for Precinct 18 as it only shows one location of Local Community Centre. This is inconsistent with the POD i.e. Local Community Centre in zone 1016.

d) Update Table 2 Comparison of land use assumption to correct the GFA stated incorrectly for the Neighbourhood Centre and Local Community Centre i.e. 77,750m².

e) Demonstrate the previous and proposed trip generation at each traffic zone and each precinct.

The traffic modelling report ('*240618 Aura P17-19_Traffic Modelling Report'*) has been updated to reflect the above. The following report sections were amended:

- **Table 1: Detailed land use assumptions:** Updated zone 1016 to include Local Community Centre.
- **Table 2: Comparison of land use assumptions:** Updated P18 'Neighbourhood Centre and Local Community Centre' area (i.e., 17,000m^2).
- **Table 3: Comparison of vehicle trip generation**: A new table to compare previous and proposed trip generation. Due to the changes made to the proposed layouts for each development lots, this comparison has been undertaken at the precinct level only.
- **Figure 3: Road network summary:** Updated plot to show intersection layout where movements are restricted.
- **Section 3: Modelling Results:** Updated modelling results to reflect the above changes.

Aura Precinct 17-19 Traffic Modelling Refresh

Stockland

Aura P17-19 Traffic Modelling Refresh

June 2024

pwc

Disclaimer

This report is not intended to be read or used by anyone other than Stockland.

We prepared this report solely for Stockland's use and benefit in accordance with and for the purpose set out in PwC's proposal dated 6th September 2023. In doing so, we acted exclusively for Stockland and considered no-one else's interests.

We accept no responsibility, duty or liability:

- to anyone other than Stockland in connection with this report
- to Stockland for the consequences of using or relying on it for a purpose other than that referred to above.

We make no representation concerning the appropriateness of this report for anyone other than Stockland. If anyone other than Stockland choose to use or rely on it, they do so at their own risk. Without limiting the above, the report was not intended to be used in connection with any transaction.

The forecasts contained in the report were produced using the Aura Visum Model and data (Licensed Data) as supplied by Stockland, Government agencies, and, from other sources identified in this report. PwC did not verify or audit the information (Licensed Data) provided to us and we make no representation as to its accuracy.

It's also important to appreciate that Traffic and Transport Models and Forecasts are not a precise science and are only an indication of what might happen in the future and may not be achieved. They rely upon complex sets of data, assumptions and numerous factors which can influence actual demand, many being beyond the control or reasonable foresight of the forecaster. Any traffic forecast or other information contained in this report is based on the information provided by Stockland, Government agencies and obtained from the sources identified, and the assumptions Stockland has agreed, and therefore is inherently subject to uncertainties. Inevitably, some assumptions used to develop our report will not be realised and unanticipated events and circumstances may occur.

Therefore, PwC cannot provide any form of assurance that the forecasts documented in the Report will be achieved and no warranty should be implied as to the accuracy of the forecasts.

The Report is intended to be read in its entirety including this disclaimer and any assumptions set out in the Report.

This disclaimer applies:

- to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute; and
- even if we consent to anyone other than Stockland receiving or using this report.

Liability limited by a scheme approved under Professional Standards legislation.

Contents

1 Introduction

The Caloundra South Priority Development Area (PDA) is one of the largest master planned communities in Australia, set to house a population of approximately 50,000 persons and provide 20,000 dwellings over the next 30 years. The site, which is located to the south of the Caloundra Urban Area on the Sunshine Coast is set to become one of the largest greenfield developments across Australia. The Caloundra South PDA has 19 precincts with a broad range of land uses including residential dwellings, retail developments, commercial/ showroom precincts, an industrial precinct, integrated sports uses, schools and numerous active transport pathways.

To assess the traffic demand from this development significant transport modelling has been undertaken, the history of model developed for the Caloundra South PDA is summarised below.

1.1 Model history

This report represents the latest step in the transport modelling undertaken for the Caloundra South PDA. The history of the modelling work is summarised in Figure 1 and outlined below[1]:

- **Late 2012 (*Ultimate Caloundra South Transport Model Development Report*):** An initial model was developed late 2012 with a report released for comment in February 2013. This model was based on data from SCTFM v3.5.

- **June 2013 (*No documentation*):** Following the release of SCTFMv5, the model was refined and released to Department of Transport and Main Roads (TMR) and Sunshine Coast Regional Council (SCRC) for comment in June 2013. No documentation accompanied the model at this time.

- **October 2013 (*UCTSM Revised Model Development Report Rev 7*):** A report was released in October which was based on the June 2013 release of the model. There were some minor network changes to the model to remove some route choice issues. The modifications included removing u-turns.

- **November 2013 (*UCTSM Revised Model Development Report Rev 7.11*):** Further modifications were made to the model and associated reporting documents.

- **January 2016 (*Caloundra South Town Centre Visum Modelling Report*):** Additional modifications were made to the model approved in November 2013 as part of the Caloundra South Town Centre project based on the discussions with TMR, SCRC, Department of Infrastructure, Local Government and Planning (DILGP) and Stockland. These updates focussed on the Town Centre, refining the model within Precincts 7 and 8. The updated model was submitted in October 2015 for approval to all stakeholders. Based on the comments received in December 2015 and January 2016 by SCRC and TMR, the model was revised and re-submitted in March 2016. The final model was approved by SCRC on 8th April 2016 and TMR on 7th April 2016.

- **November 2018 (*Aura Precinct 11-14 Traffic Modelling Report*):** This transport assessment was completed for Aura Precincts 11-14 as part of the approvals

[1] Further details on model history are provided in MWH Australia (2016), *Caloundra South Town Centre Visum Modelling Report*.

process for the Caloundra South PDA. It provided an update to the January 2016 report and associated Visum model to represent changes in Stockland's planning assumptions.

- **February 2019 (*Aura Precinct 10 Traffic Modelling Report*):** This report outlined a transport assessment as part of Condition 12 in the PDA decision notice requiring a simulation model developed prior to the first stage of the Town Centre. This model is referred to as the Aura Vissim Model and focussed on Precinct 10. In February 2019 this report and associated models were endorsed by EDQ.

- **October 2019 (*Aura Precinct 9-10 Traffic Modelling Report*):** This report was completed as part of Stockland's development approval process. The modelling undertaken as part of this report included the latest planning assumptions from Stockland. This report summarises the latest modelling of the Aura development to be undertaken (both from the Aura Visum Model and the Aura Vissim Model). This report and associated models were endorsed by EDQ on 15 April 2020 as part of DEV2013/469.

- **July 2020 (*Aura Town Centre Traffic Modelling Report*):** This report was commissioned by Stockland to form part of the ROL application. The report summarised the modelling results (both from the Aura Visum Model and the Aura Vissim Model) due to changes in Stockland's planning assumptions in the Town Centre (Precincts 7-8).

- **July 2020 (*Aura Precinct 11-14 Traffic Modelling Refresh*):** This report provided a refresh to the November 2018 traffic assessment for Precinct 11-14 to ensure the traffic assessment aligned with the latest Stockland planning assumptions.

- **September 2021 (*Aura Precinct 7-14 Traffic Modelling Refresh*):** This report provided a refresh to previous traffic assessments across Precincts 7-14 to ensure alignment with the latest Stockland planning assumptions.

- **October 2021 *(Aura Precinct 15 Traffic Modelling Report)*:** This transport assessment was completed for Aura Precinct 15 as part of the approvals process for the Caloundra South PDA.

- **December 2021 *(Aura Precinct 17-19 Traffic Modelling Report)*:** This transport assessment was completed for Aura Precincts 17-19 as part of the approvals process for the Caloundra South PDA. This report and associated models represent the latest version and underpin the Precinct 15 refresh.

- **July 2022 (Aura Town Centre Traffic Modelling Refresh):** This assessment was completed for Aura Precincts 7-9 as part of the approvals process for the Caloundra South PDA. This report summarised the modelling results (both for the Aura Visum Model and the Aura Vissim Model) due to changes in Stockland's planning assumptions in the Town Centre (Precincts 7-8).

- **October 2022 (Aura Precinct 15 Traffic Modelling Refresh):** This assessment provided a refresh to previous traffic assessments across Precinct 15 to ensure alignment with the latest Stockland planning assumptions.

- **August 2023 (Aura Precinct 15 Traffic Modelling Refresh):** This assessment provided a refresh to previous traffic assessments across Precinct 15 to ensure alignment with the latest Stockland planning assumptions.

- **September 2023 (Aura Precincts 3-5 Traffic Modelling Refresh):** This transport assessment was completed for Aura Precincts 3-5 to update the Aura Visum model to reflect Stockland's latest planning assumptions.

- **November 2023 (Aura Precincts 17-19 Traffic Modelling Refresh):** This transport assessment provided a refresh to previous traffic assessments across Precincts 17-19 to ensure alignment with the latest Stockland planning assumptions.
- **December 2023 (Aura Precincts 11-14 Traffic Modelling Refresh):** This transport assessment was completed for Aura Precincts 11-14 to update the Aura Visum model to reflect Stockland's latest planning assumptions.
- **April 2024 (Aura Precincts 17-19 Traffic Modelling Refresh):** This transport assessment was completed for Aura Precincts 17-19 to update the Aura Visum model to reflect Stockland's latest planning assumptions.

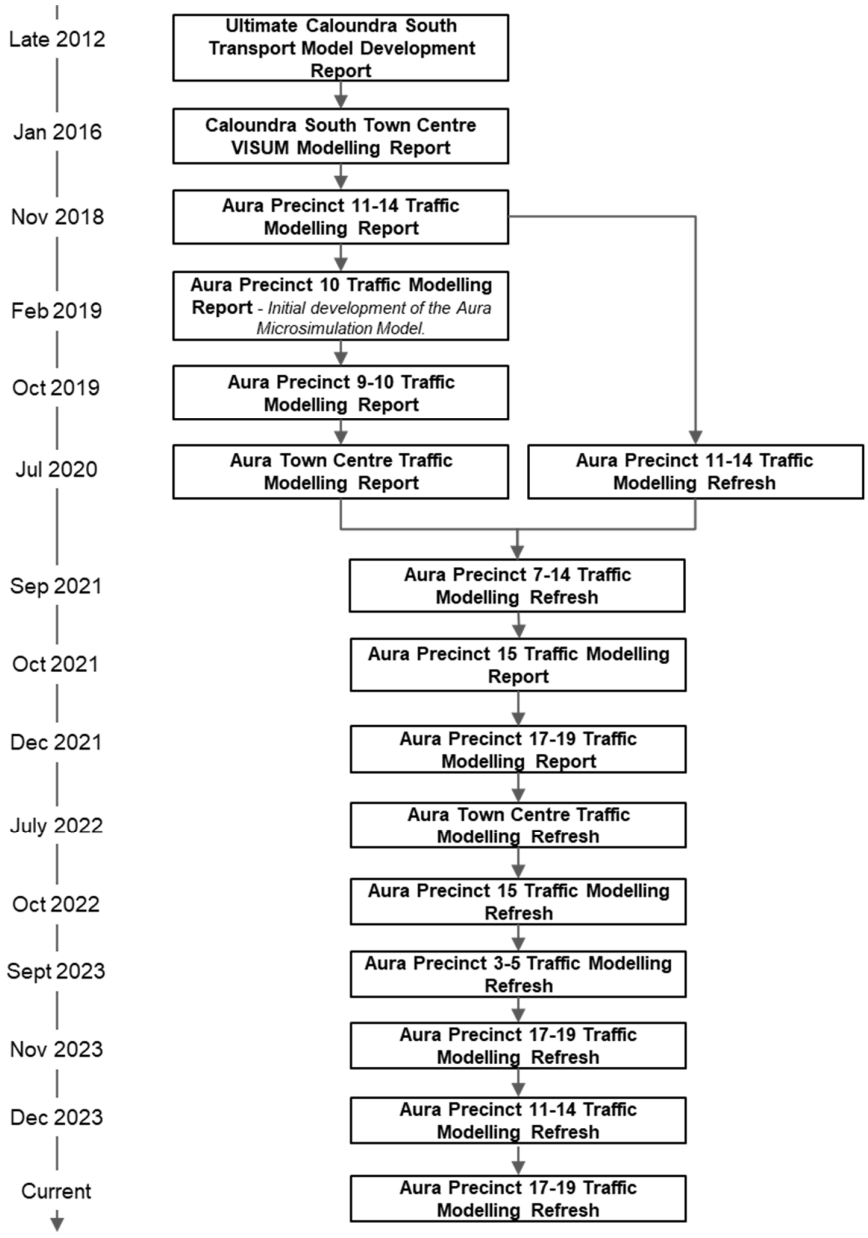


Figure 1: Aura traffic modelling history

1.2 Purpose of this report

PwC have been engaged by Stockland to assist in the transport assessment and associated approvals process for the Caloundra South PDA. As part of Stockland's ROL Application for Aura Precinct 17-19 the following requirements must be met under the Local Government Infrastructure Agreement (LGIA):

Clause 2.8: *At the time of lodging the first application for an ROL Approval for a Precinct, the Developer must provide to MEDQ and Council, a Precinct Traffic Analysis.*

"Precinct Traffic Analysis" means an analysis of the transport network for a Precinct, where that analysis identifies:

a) The volume and capacity of road links; and

b) The capacity and operation of key intersections,

For road Classifications of Neighbourhood Connector, Centre Connector, Industrial Connector, Trunk Collector, Sub-Arterial and above.

This report and the accompanying transport models meet the following tasks as part of Stockland's ROL Application:

1. Updates made to the MWH Aura Visum Model to ensure it is reflective of the latest planning assumptions within Precincts 17-19.
2. A Precinct Traffic Analysis to be completed for Precinct 17-19.

2 Modelling approach and assumptions

The modelling approach used for this assessment is based on the following process:

1. Update model inputs with latest Stockland planning assumptions.
2. Update demand matrices.
3. Perform traffic assignment in updated model.

The key assumptions used within this process are further outlined in the following sections.

2.1 Study area

This assessment uses the Aura Visum Model as last updated in December 2023, with planning assumptions for Precincts 17-19 reviewed as part of this process. Figure 2 highlights Precincts 17-19 of the Aura development.

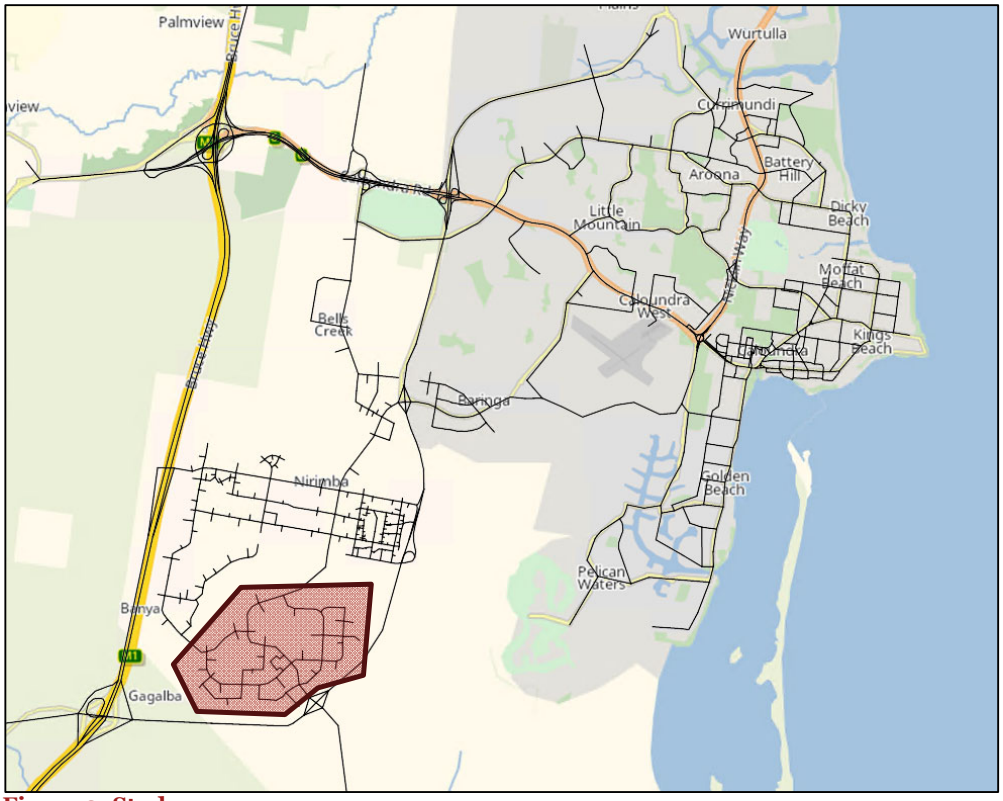


Figure 2: Study area
Source: Aura Visum Model

2.2 Land use assumptions

To reflect Stockland's latest land use planning assumptions, updates have been made to the existing model for Precincts 17-19.

Table 1 provides the zone level land use assumptions. For comparative purposes, the precinct-level comparison between the prior (November 2023) versus updated land use assumptions and trip generation is shown in Table 2 and Table 3

The key changes to land use across Precincts 17-19 include:

- Redistribution of dwellings and density across the site.
- Redistribution of floorspace, including district/local community centres and neighbourhood centres, across the site.
- Redistribution of sports parks across the site.
- Addition of childcare centre (120 places) in Precinct 18.
- Addition of private school (1,800 students) in Precinct 19.

All other precincts maintained the same land use assumptions as per the existing model version.

Table 1: Detailed land use assumptions

Precinct	Zone	Land Use	Yield	Unit
17	1048	Residential	150	dwellings
		Emerging Sports Park	55,000	m²
	1063	Residential	448	dwellings
	1159	Residential	470	dwellings
	1160	Residential	272	dwellings
18	1161	Residential	396	dwellings
	1135	Neighbourhood Centre	4,500	m²
		Residential	600	dwellings
	1016	Residential	405	dwellings
		Childcare Centre	120	children
		Local Community Centre	5,000	m²
	1136	Residential	405	dwellings
		Neighbourhood Centre	2,500	m²
	1166	Residential	272	dwellings
		Childcare Centre	120	children
	1165	Residential	254	dwellings
		Local Community Centre	5,000	m²
	1052	State Primary School	1,100	students
	1170	Residential	406	dwellings
	1018	Residential	600	dwellings
	1076	Neighbourhood Sports Park (incl. 750 m² for	65,750	m²

Precinct	Zone	Land Use	Yield	Unit
		Neighbourhood Meeting Room)		
19	1014	Residential	35	dwellings
		Childcare Centre	120	children
		Local Community Centre	5,000	m²
	1121	State Primary School	1,100	students
	1162	Residential	419	dwellings
		Neighbourhood Centre	2,500	m²
	1163	Residential	234	dwellings
	1172	Residential	269	dwellings
	1066	Residential	300	dwellings
		District Centre	7,000	m²
		Childcare Centre	120	places
	1047	State High School	1,500	students
	1173	District Sports Park (incl. 750 m² for Neighbourhood Meeting Room)	93,250	m²
		District Community Centre	10,000	m²
	1010	Private School	1,800	students
	1164	Residential	968	dwellings
	1171	District Rec Park	60,000	m²
	1072	District Sports Park	72,500	m²

Source: Stockland

Table 2: Comparison of land use assumptions – prior (November 2023) versus updated (June 2024)

Category	Precinct	Land Use Assumptions	
		Prior	Updated
Residential (no. dwellings)	17	918	1,340
	18	3,656	3,338
	19	2,223	2,225
	Total	***6,797 dwellings***	***6,903 dwellings***
Non-residential	17	-	• Sports Park
	18	• Sports Park • Neighbourhood Centre, District Centre and District Community Centre (11,000 m²) • 1x Childcare Centre (120 children capacity)	• Sports Park • Neighbourhood Centre and Local Community Centre (17,000 m²) • 2x Childcare Centre (120 children capacity) • 1x State Primary School

Category	Precinct	Land Use Assumptions	
		Prior	Updated
		• 1x State School (1,100 children)	(1,100 children)
	19	• Sports Park • Neighbourhood Centre and Local Community Centre (10,600 m²) • 2x Childcare Centre (120 children capacity) • 2x State School (1,100 children) • 1x State School (1,500 students)	• Sports and Recreational Park • Neighbourhood Centre, Local Community Centre and District Community Centre (24,500 m²) • 2x Childcare Centre (120 children capacity) • 1x State Primary School (1,100 children) • 1x State High School (1,500 students) • 1x Private School (1,800 students)

Table 3: Comparison of vehicle trip generation – prior (November 2023) versus updated (June 2024)

Precinct	Prior				Updated			
	AM Trips in	AM Trips out	PM Trips In	PM Trips Out	AM Trips in	AM Trips out	PM Trips In	PM Trips Out
17	109	296	265	137	281	343	299	191
18	806	1,010	910	650	616	890	814	573
19	1,005	750	644	578	1,253	834	738	770
Total	***1,920***	***2,056***	***1,820***	***1,365***	***2,151***	***2,066***	***1,852***	***1,534***

2.3 Road network

The Aura Visum Model network was reviewed to ensure it represents the latest Stockland planning assumptions within Precinct 17-19. This section outlines the road network updates that have been incorporated within the Aura Visum Model.

Figure 3 summarises the Precincts 17-19 road network, updated to align with Stockland's latest planning assumptions.

These changes were undertaken to align with the updated structure plan, which largely fall within the following categories:

- Realignment of major roads and precinct boundaries.
- Additional signalised intersections.
- Additional access/egress points to zones (where relevant).

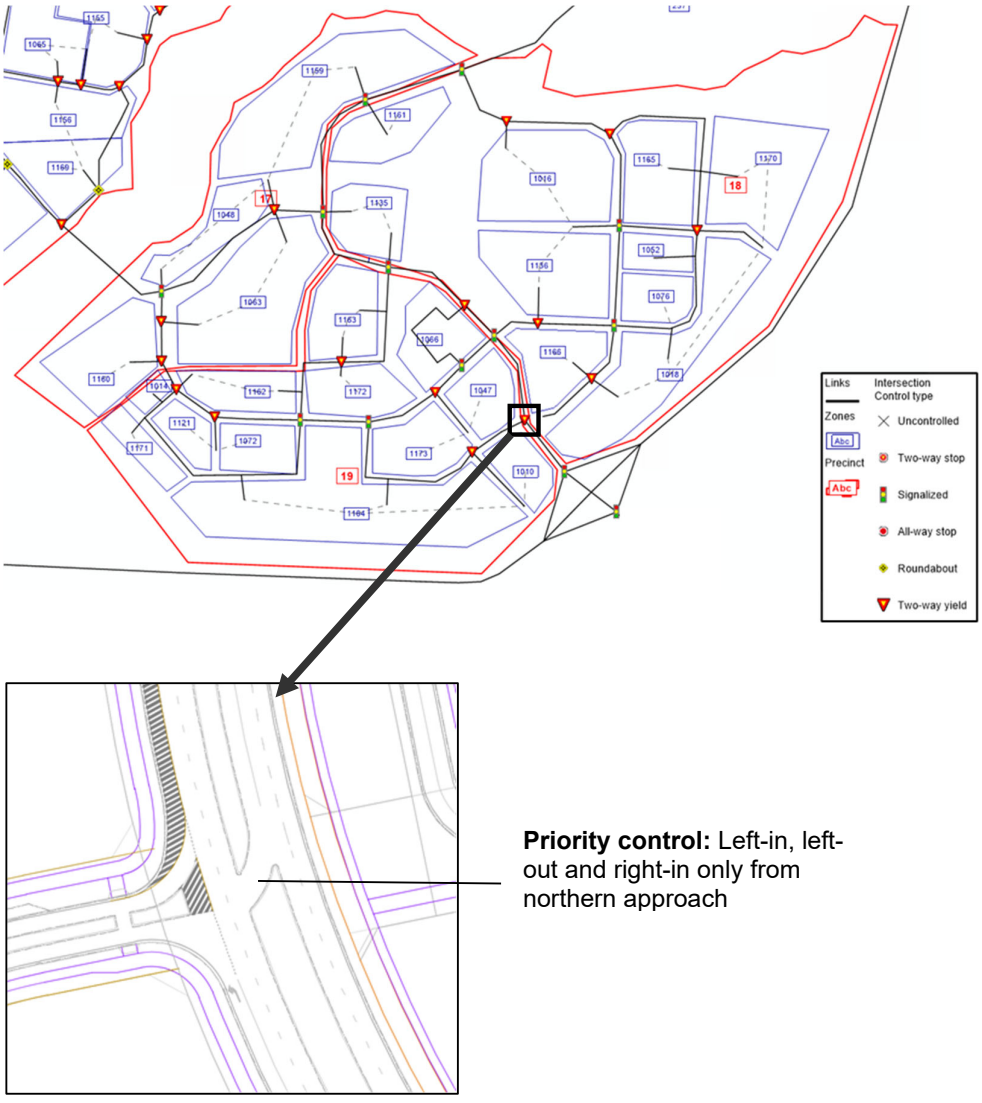


Figure 3: Road network summary

3 Modelling results

The demand modelling process has remained consistent with the process used for the MWH Aura Visum Model. This was based on the 2031+ UCSTM modelling which utilises an ultimate demographic dataset for the Aura Development. This represents a 'full build' or 'Ultimate' scenario as the most likely representation of the ultimate scenario, AM and PM peak periods in the 2031+ forecast year. For this assessment, the 2031+ forecast scenario was modified to incorporate the most up to date land use data (as outlined in Section 2.3).

The following four step approach was undertaken:

1. Trip Generation.
2. Mode Share.
3. Trip Distribution.
4. Assignment.

The following section outlines key results of the modelling process.

3.1 Model convergence

To test the stability of the model, convergence tests were performed on both peak period models. Model convergence criteria remains as per previous modelling[2] which states that:

1. The last batch of equilibrium assignment iterations has reached a gap of 0.001.
2. 95% of assigned turn flows between two successive loop iterations have converged within 1%.
3. 90% of turn delays from calibrated turn volume delay functions are within 5% of turn delays calculated from the junction capacity analysis module.

The model convergence results are shown below in Table 4 and Table 5.

Table 4: AM peak period model convergence summary

Iteration	Criteria 1		Criteria 2		Criteria 3	
	Value	Achieved	Value	Achieved	Value	Achieved
1	9.38×10^{-6}	✓	0.446	✗	0.108	✗
2	9.10×10^{-6}	✓	0.324	✗	0.518	✗
3	4.35×10^{-6}	✓	0.486	✗	0.640	✗
4	3.11×10^{-6}	✓	0.799	✗	0.754	✗
5	8.92×10^{-6}	✓	0.909	✗	0.875	✗
6	7.59×10^{-6}	✓	0.913	✗	0.938	✓
7	6.59×10^{-6}	✓	0.967	✓	0.966	✓

Source: Model outputs

[2] MWH Australia (2016), *Caloundra South Town Centre VISUM Modelling Report*.

Table 5: PM peak period model convergence summary

Iteration	Criteria 1		Criteria 2		Criteria 3	
	Value	Achieved	Value	Achieved	Value	Achieved
1	6.02 x 10^{-6}	✓	0.471	✗	0.112	✗
2	9.04 x 10^{-6}	✓	0.347	✗	0.533	✗
3	8.66 x 10^{-6}	✓	0.475	✗	0.643	✗
4	3.63 x 10^{-6}	✓	0.827	✗	0.772	✗
5	5.66 x 10^{-6}	✓	0.907	✗	0.882	✗
6	5.61 x 10^{-6}	✓	0.947	✗	0.940	✓
7	7.41 x 10^{-6}	✓	0.984	✓	0.966	✓

Source: Model outputs

The model convergence results outlined above suggest that the updated models have converged to an appropriate level of granularity.

3.2 Link volumes

Figure 4 and Figure 5 outline the link volumes for the AM and PM peak period models respectively[3].

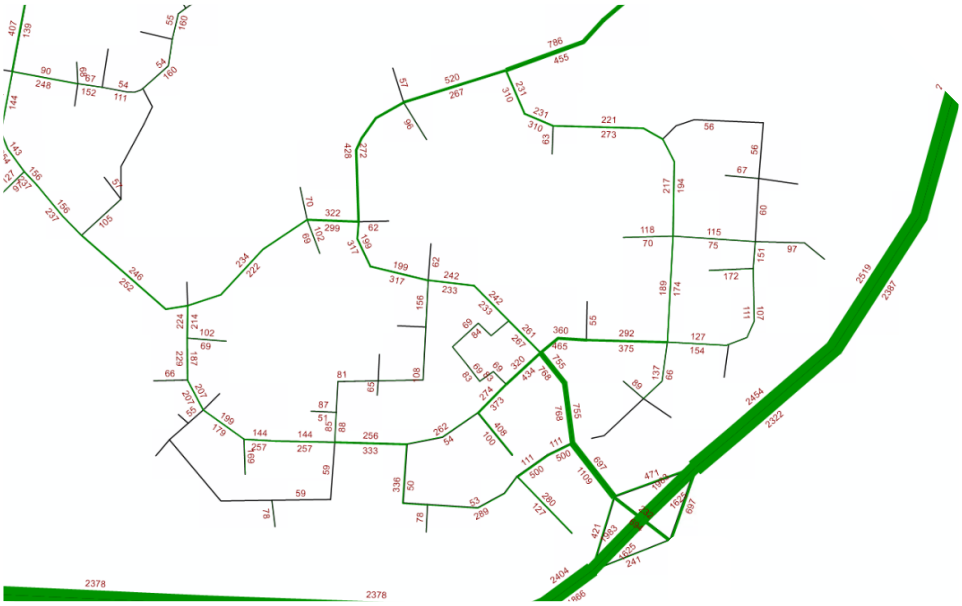


Figure 4: AM peak hour link volumes
Source: Model outputs

[3] Links with Volume < 50 vph have been excluded for clarity.

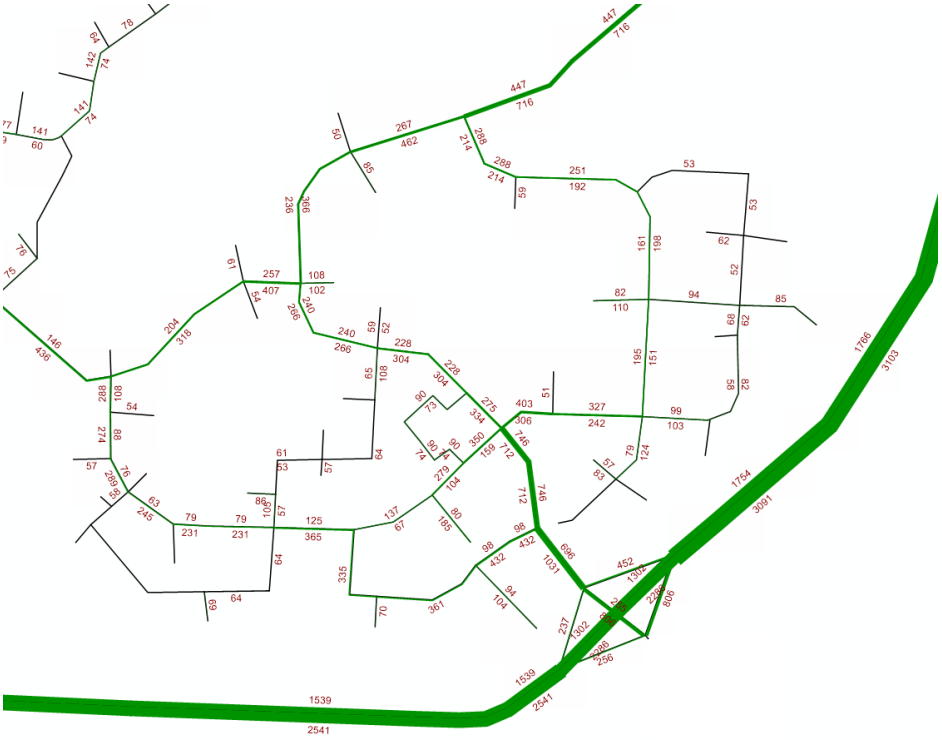


Figure 5: PM peak hour link volumes
Source: Model outputs

3.3 Link level of service

The link LOS thresholds are based on Austroads[4] and Transport Research Board[5] and are consistent with previous traffic assessments for the Caloundra South development. Table 6 outlines the link LOS thresholds based on the Volume on Capacity (V/C) ratio.

Table 6: Link LOS thresholds

Level of Service	V/C
A	≤35%
B	35% ≤ 55%
C	55% ≤ 80%
D	80% ≤ 95%
E	95% ≤ 100%
F	>100%

Source: Highway Capacity Manual, Austroads

Figure 6 and Figure 7 show that links in Precincts 17-19 operate at LOS D or better during the AM and PM peak period.

[4] Austroads (2017), *Guide to Traffic Management Part 3: Traffic Studies and Analysis.*

[5] Transport Research Board (2010), *Highway Capacity Manual.*

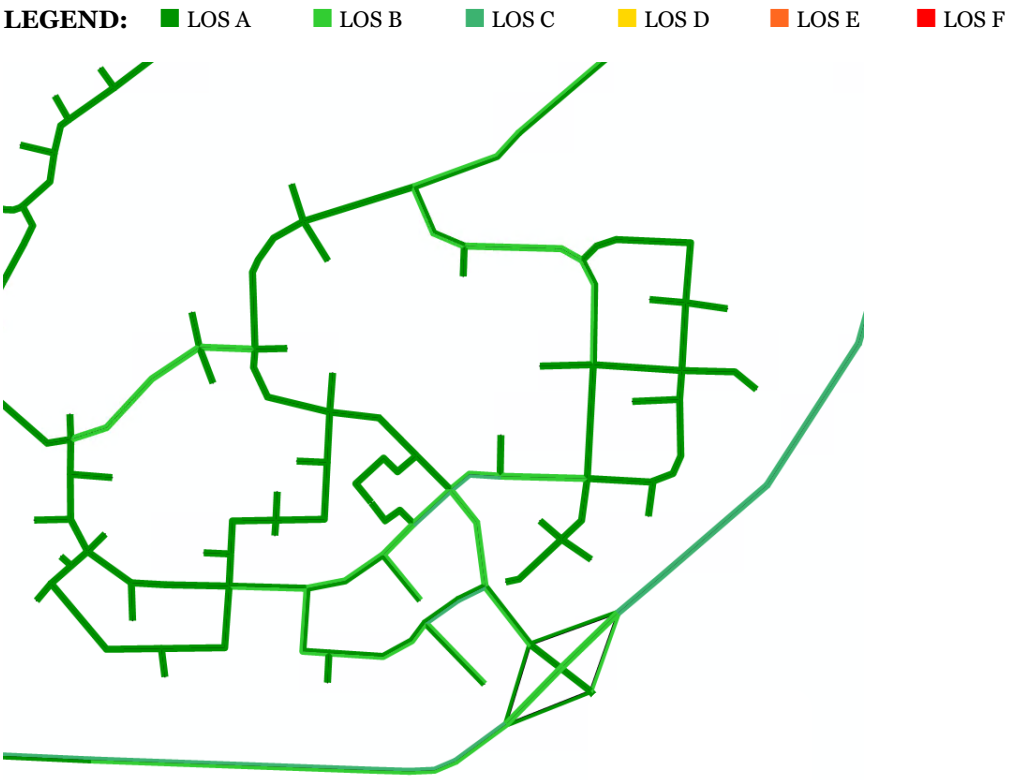


Figure 6: AM peak link LOS
Source: Model outputs

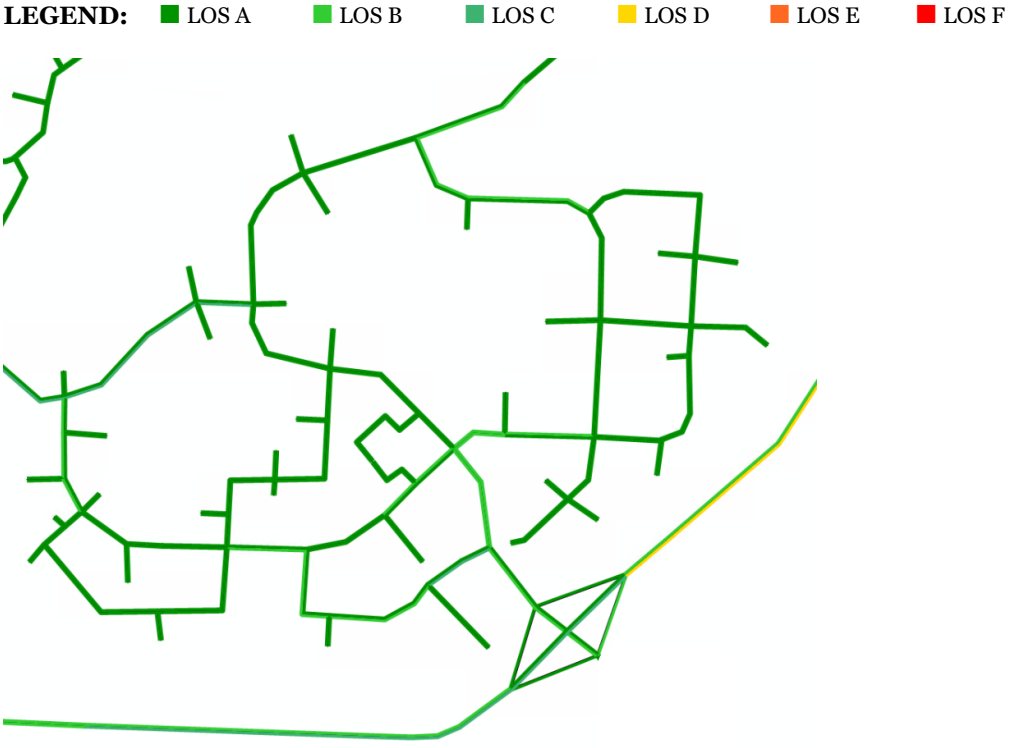


Figure 7: PM peak link LOS
Source: Model outputs

3.4 Intersection level of service

Table 7 provides intersection LOS thresholds which are based on the Highway Capacity Manual[6].

Table 7: Intersection LOS thresholds (average delay, seconds)

Level of Service	Signalised Intersection	Unsignalised Intersection[7]
A	≤10	≤10
B	10 ≤ 20	10 ≤ 15
C	20 ≤ 35	15 ≤ 25
D	35 ≤ 55	25 ≤ 35
E	55 ≤ 80	35 ≤ 50
F	>80	>50

Source: Highway Capacity Manual

The following figures show that all intersections within Precincts 17-19 operate at LOS C or better in both the AM and PM peak period. Figure 8 and Figure 9 summarise the signalised intersections LOS in the AM and PM peak period models respectively.

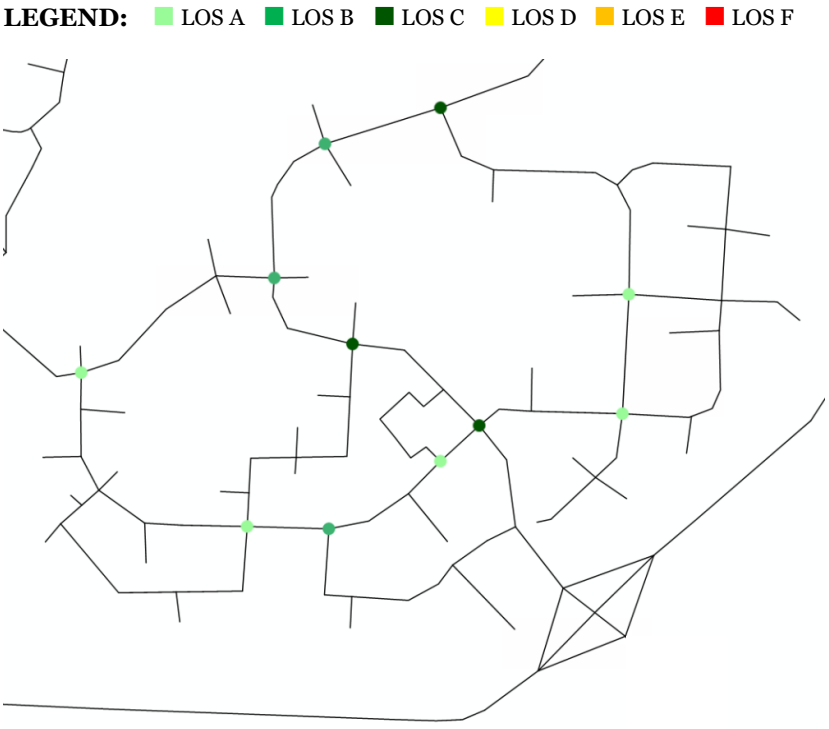


Figure 8: AM peak signalised intersection LOS
Source: Model outputs

[6] Transport Research Board (2010), *Highway Capacity Manual.*

[7] Includes roundabouts and priority intersections.

Figure 9: PM peak signalised intersection LOS
Source: Model outputs

Figure 10 and Figure 11 summarise the unsignalised intersections LOS in the AM and PM peak period models respectively.

LEGEND: LOS A LOS B LOS C LOS D LOS E LOS F

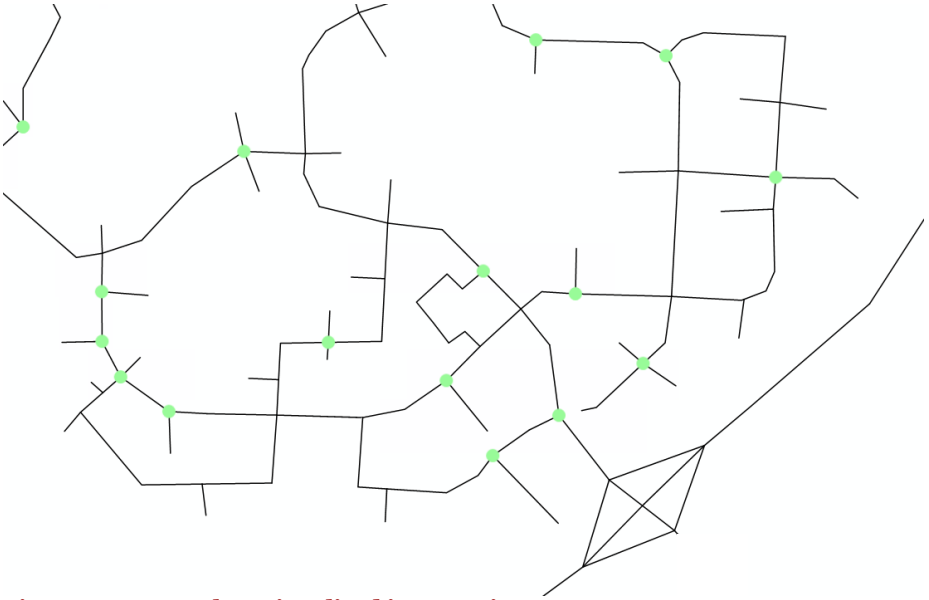


Figure 10: AM peak unsignalised intersection LOS
Source: Model outputs

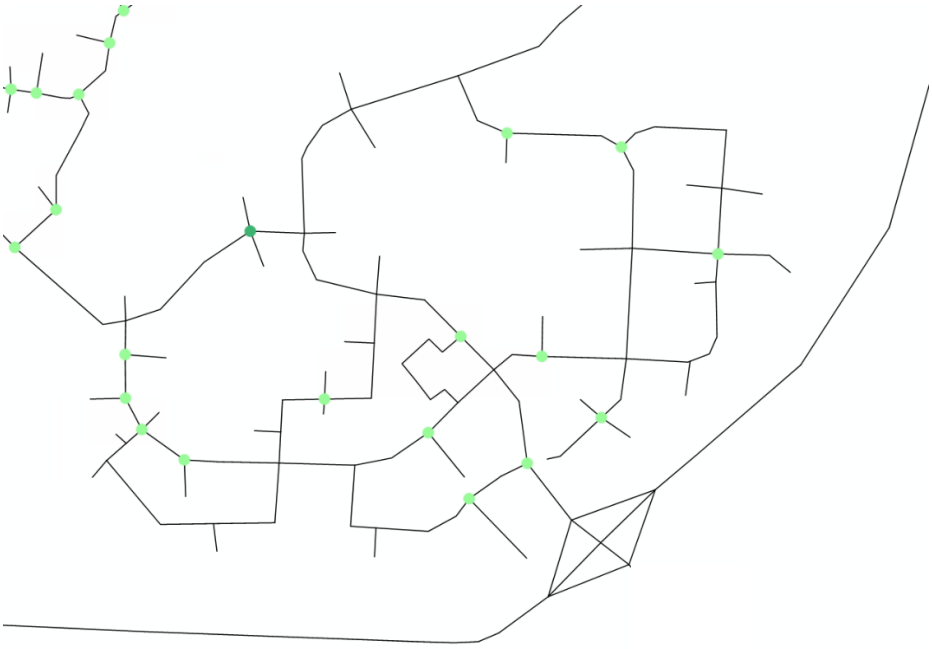


Figure 11: PM peak unsignalised intersection LOS
Source: Model outputs

3.5 Intersection degree of saturation

Intersection Degree of Saturation (DOS) thresholds were based on Volume on Capacity (V/C) values from the LGIA, which are:

- Signalised Intersections: V/C ≤ 90%.
- Roundabouts: V/C ≤ 85%.
- Other priority intersections: V/C ≤ 80%.

Figure 12 and Figure 13 show that intersections within Precincts 17-19 meet the DOS criteria as outlined above in both the AM and PM peak period[8].

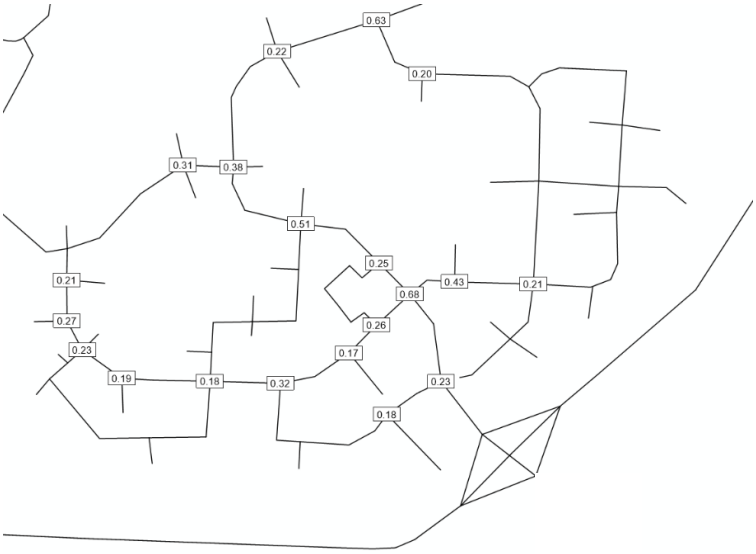


Figure 12: AM peak intersection DOS
Source: Model outputs

[8] Intersections with DOS < 15% have been excluded for clarity.

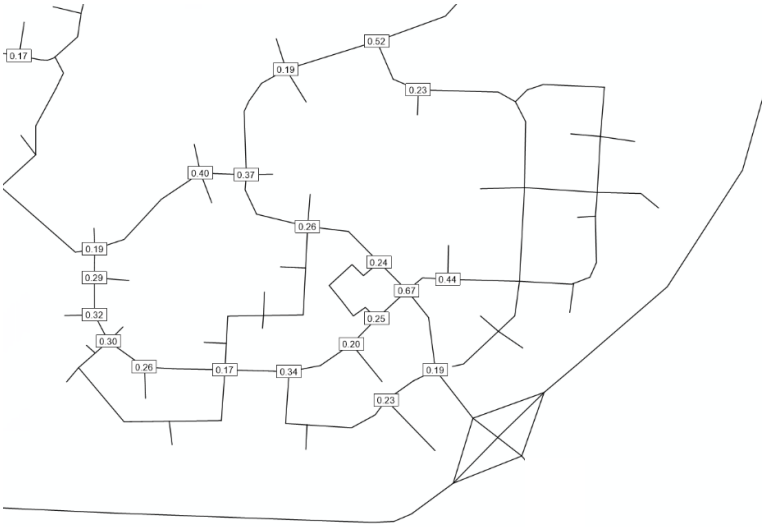


Figure 13: PM peak intersection DOS
Source: Model outputs

4 Conclusion

The Aura Visum Model has been updated within Precincts 17-19 for use within this study. As part of this assessment, updates have been made to the modelled assumptions to reflect Stockland's latest planning (including land use and road network). The demand modelling process (including trip generation, distribution, and mode choice parameters) has remained consistent with the previously approved approach.

For this assessment, Precincts 17-19 and the surrounding network has been analysed in the updated model for road classifications of Neighbourhood Connector, Centre Connector, Industrial Connector, Trunk Collector, Sub-Arterial and above. The updated model results indicate that the proposed traffic network for Precincts 17-19 operate efficiently with the model forecasting:

- Each link operates at LOS D or better in both peak periods.
- Each intersection operates at LOS C or better in both peak periods (with respect to average delay).
- Each intersection operates at a level that meets the benchmarks from the LGIA.

As such, the proposed road infrastructure for Precincts 17-19 is considered appropriate to support the development's target land use.