Transport Impact Assessment

PRESTON INDUSTRIAL ESTATE - PRECINCT 2 STRUCTURE PLAN

PROJECT	81113-956-FLYT-TIA-0003 Rev1			
TITLE	Transport Impact Assessment			
Revision	Description	Originator	Review	Date
0	Reviewed	CAS	CXS/Project	27/11/2025
1	Revised	CAS	CXS	04/05/2026

Contents

1. INTRODUCTION

1.1 Structure Plan Introduction

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the Precinct 2 Structure Plan for the Preston Industrial Estate area. The Structure Plan will establish the strategic context at the broader scale, with that Plan identifying the need for more detailed planning to be undertaken at the individual lot or subdivision level once the land uses for the area have been determined by DevelopmentWA.

The Structure Plan area sits within the Shire of Dardanup, although the road on the western side of the Structure Plan, Giorgi Road, forms the boundary with the City of Bunbury. The boundary of the Precinct 2 Structure Plan and the Local Government boundaries is shown in Figure 1.

As the landowner of the Precinct 2 Structure Plan area, DevelopmentWA (DevWA) has been tasked by the State Government to establish a vision for the site to facilitate industrial development that will provide economic and employment opportunities within the South West region. The land uses proposed within the site are yet to be defined, therefore the final layout of the Structure Plan area is not down to the level of internal lot boundaries or associated transport networks.

As indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Gnaala Karla Booja Region. The location and boundary of the PSP site on aerial image is shown in Figure 2.

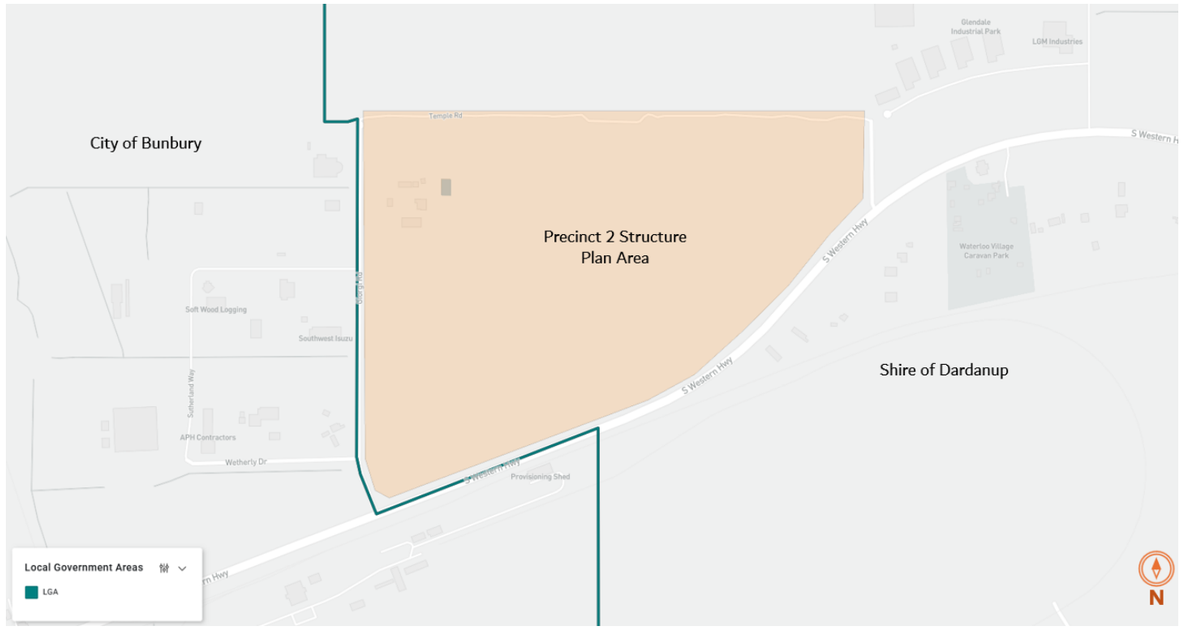

Figure 1 Preston Industrial Estate – Precinct 2 boundary (source: Planwisely)

Figure 2 Preston Industrial Estate – Precinct 2 boundary (source: Metromap)

1.2 Transport Impact Assessment

This TIA has been prepared in keeping with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans). The Guidelines promote a layered approach to transport assessment for broad areas or scheme amendments as shown in Figure 3.

Overall, this TIA has been prepared to confirm the capability of the site for future industrial development from a transport and movement perspective. As noted in the introduction, the land uses proposed within the site are yet to be defined, therefore the final layout of the Structure Plan area is not down to the level of internal lot boundaries or associated transport networks.

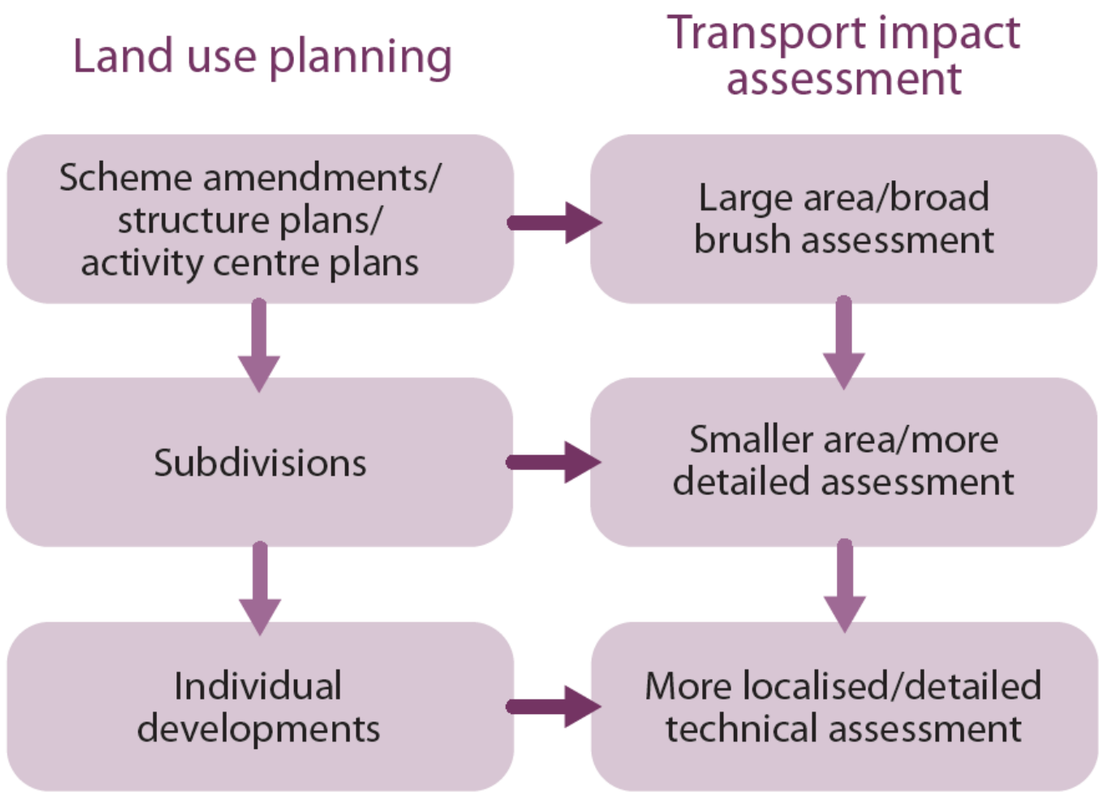

Figure 3 Land use / transport planning process (source: WAPC Transport Impact Assessment Guidelines, 2016)

As set out within the WAPC Transport Impact Assessment Guidelines (Volume 2 – Planning Schemes, Precinct Structure Plans and Activity Centre Plans), the following establishes the level of assessment that would be required for this proposed Structure Plan:

> "*Structure planning forms a critical stage of the land use planning process. It involves planning at a strategic level, often over large areas, and provides the basis of zoning and subdivision of land. Structure plans can be prepared at a district and local level, and for activity centres. The district structure plan generally addresses the "fatal flaws' for a potential development area and provides for the major structural elements such as major roads, open space, commercial and industrial areas and environmental conditions. A district structure plan may apply to several suburbs or all or part of a town-site, for example the local structure plan would deal with residential density, subdivisions and the coordination of infrastructure at a neighbourhood level of smaller scale.*
>
> *It is therefore important that the transport aspects and in particular the land use/ transport integration, are also adequately assessed at this stage in the land use planning process. The assessment should then be used to provide direction on the later, more localised and detailed, planning stages of subdivisions and individual developments."*

This TIA is set out to address these key issues to establish the appropriateness of the site to cater for the proposed level of development and complete a review and assessment of the transport network that will inform the WAPC, Shire of Dardanup, City of Bunbury and other key stakeholders as to the appropriateness of the Structure Plan.

1.3 Report Structure

The report is structured as per the items set out in the previous section taken from the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans), with the following sections included in the TIA:

- Structure plan outline (Section 2)
- Existing transport network situation (Section 3)
- Proposed changes to the network (Section 4)
- Trip generation and traffic volumes (Section 5)
- Summary (Section 6).

2. STRUCTURE PLAN OUTLINE

2.1 Introduction

The Preston Industrial Estate area is identified as an Industrial area within the Greater Bunbury Region Scheme (GBRS), as shown in Figure 4. The immediate areas around the Structure Plan are generally zoned as Industrial within the GBRS, with existing Industrial development flanking the area to the west, south and east. The Precinct 2 Structure Plan will provide a finer grained level of planning for the area and be in keeping with the existing strategic planning framework.

Figure 4 Greater Bunbury Region Scheme (source: WAPC)

The internal formation of land use areas and the proposed connections at a high level are shown in Figure 5. The nature and configuration of lot yields and resultant road network within the Structure Plan area is not resolved. There are three road connection points proposed as part of the Structure Plan:

- A T-intersection with Giorgi Road of a new east-west road that runs parallel to South Western Highway. The intersection will be approximately 240m north of the intersection of Giorgi Road and South Western Highway
- A T-Intersection with Giorgi Road of the extension of Temple Road at a point approximately 780m north of the intersection of Giorgi Road and South Western Highway
- A new T-intersection of the Temple Road extension with South Western Highway approximately 200m west of the existing intersection of Temple Road and South Western Highway.

Figure 5 Precinct 2 Structure Plan – Preston Industrial Estate (source: TBB)

Future internal road connections, if any are required, would utilise access off the two road corridors shown and potentially Giorgi Road. There would be no other connections from the site to South Western Highway. There is also the potential for the area to be developed as single large lots within the Structure Plan negating the requirement for any internal road network, with access points to development lots being covered within Development Application processes.

There is no interface with rail infrastructure within the Precinct 2 Structure Plan area.

The general areas set aside for land uses and reserves within the Precinct 2 Structure Plan, which have been utilised in this assessment, are:

- Industrial land use – 39.4ha
- Open Space / drainage – 12ha
- Conservation area – 0.6ha
- Road reserves – 3ha

Although the Primary Regional Road reservation for the South Western Highway is shown within the Precinct 2 Structure Plan boundaries, that land is already set aside within the GBRS and therefore is not considered within the land use yield proposition.

3. EXISTING SITUATION

3.1 Existing Site Use

The subject area is largely vacant with cleared grazing land, some remnant vegetation and vehicle tracks through the area. In the north-western corner of the site on the existing Lot 2009, there is a 750m^2 shed and associated hardstand areas, residual development footprint and yard as shown in Figure 6.

Figure 6 Existing built form on site (source: Metromap)

That lot had historically been used for industrial development in the form of a fuel depot and storage / maintenance shed. The development included a site office and significant fuel tank and miscellaneous structures. There were two crossovers into Giorgi Road constructed as part of the development, with a historical Google image of the development and crossovers shown in Figure 7. Each crossover is 15m wide at the intersection of Giorgi Road, with 6m internal carriageways.

There were six formed car parking bays on site when the lot was in full operation. The crossovers were designed to operate as a one-way pair, with the northern access being inbounds. The site was decommissioned in 2024, with only the shed remaining.

Figure 7 Crossovers into existing development site on Lot 2009 (source: Google)

3.2 Structure Planning

The overall area has been subject to broader levels of planning. The 2009 District Structure Plan (DSP) for Precinct 2 is shown in Figure 8. Whilst there is no internal detail relating to the road network, which would have been subject to the sort of detailed consideration that is the case with this Structure Plan exercise, the precinct being considered by DevelopmentWA had notations specific to the transport network.

For Precinct 2 (Lot 2010), the transport notations that the LSP had to address were:

- "*an internal road and landscape buffer to be provided between any individual lot and South Western Highway (i.e. no lots to back directly onto South Western Highway)*
- *Intersection modifications for the two southern access roads to South Western Highway (*nominally Giorgi Road and Temple Road*)".*

As noted within the Precinct 2 Structure Plan shown in Figure 5, the provision of a buffer road between development and the landscaped buffer is included within the Structure Plan and the form of intersections proposed is discussed in section 4.

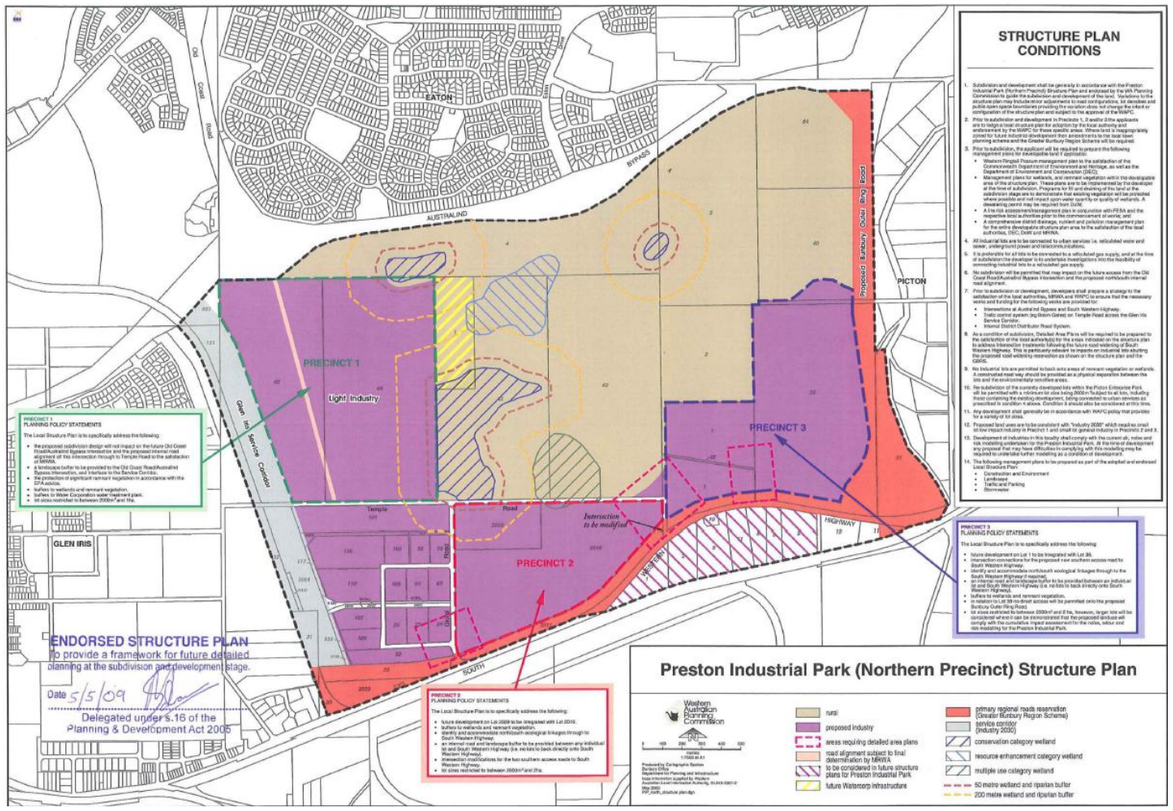

Figure 8 2009 District Structure Plan (source: Shire of Dardanup)

South of the subject area, the Picton Industrial Park Southern Precinct DSP was formalised in 2021 as is set out in Figure 9. There are no proposed new connections that are directly adjacent to the subject sites, with the sub-regional linkage along the eastern boundary of that DSP area with Willinge Drive (existing and future alignments) providing the north-south regional road connection. There are a series of internal Local Distributor Roads within that DSP area.

In 2025, a Local Structure Plan over part of the Southern Precinct DSP was submitted for approval to the WAPC. The area subject to the LSP, Lot 105 Columbas Drive, Picton East, is shown in Figure 10. Although that development is proximate to Precinct 2, access for that LSP area will come from the south and therefore not impact the movements to and from the subject site.

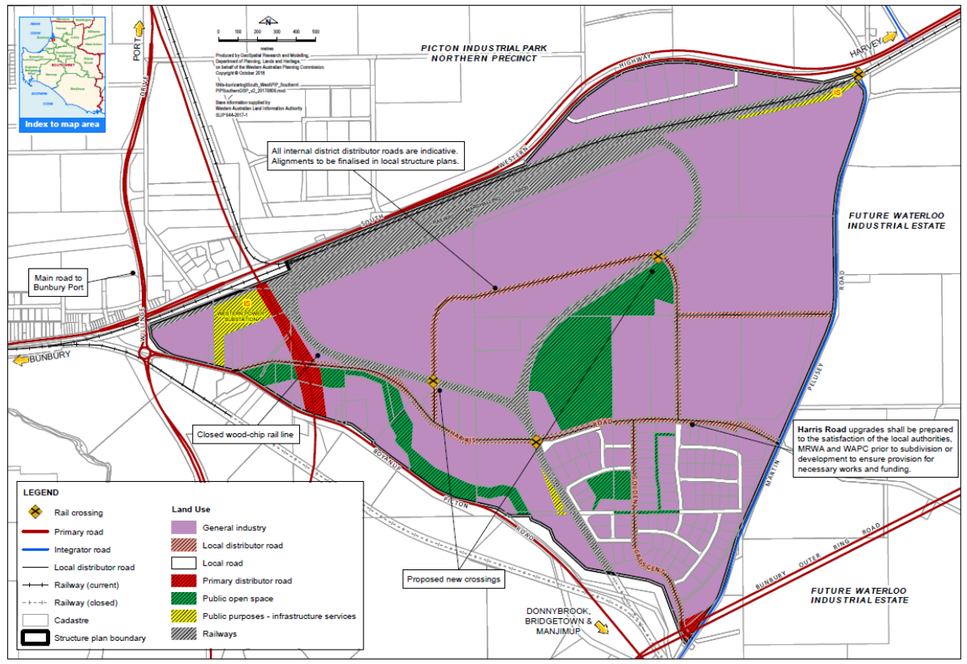

Figure 9 Picton Industrial Park Southern Precinct district structure plan (source: WAPC)

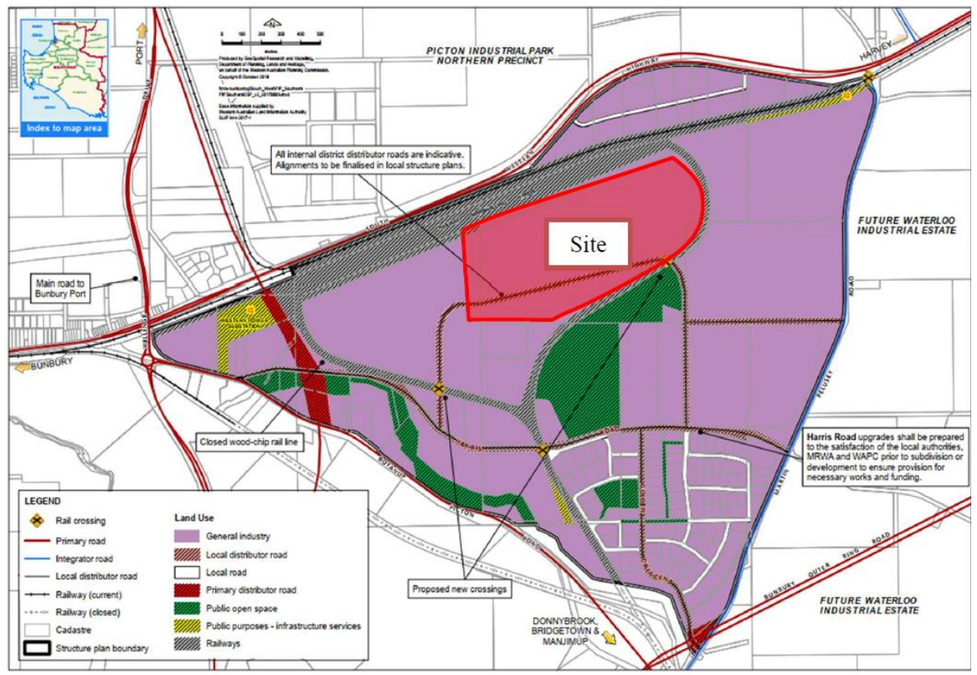

Figure 10 Lot 105 Columbas Drive, Picton East LSP area (source: DVC)

3.3 Surrounding Road Network

The precinct is bounded by South Western Highway to the south, Giorgi Road to the west and the Temple Road reserve to the east and north. It should be noted that although Temple Road is formed along the eastern boundary of the site, it is not open for general use. The Main Roads WA defined road hierarchy surrounding the Structure Plan area is shown in Figure 11 and posted speed limits are shown in Figure 12.

The area is within an Industrial precinct and therefore access to the site by Restricted Access Vehicle (RAV) networks is a key consideration. The existing RAV network is shown in Figure 13. South Western Highway forms part of a key corridor into and out of Bunbury Port and has a RAV Network 7 classification. Giorgi Road and internal industrial roads within the developed area to the west of the Precinct 2 Structure Plan have a RAV Network 4 classification.

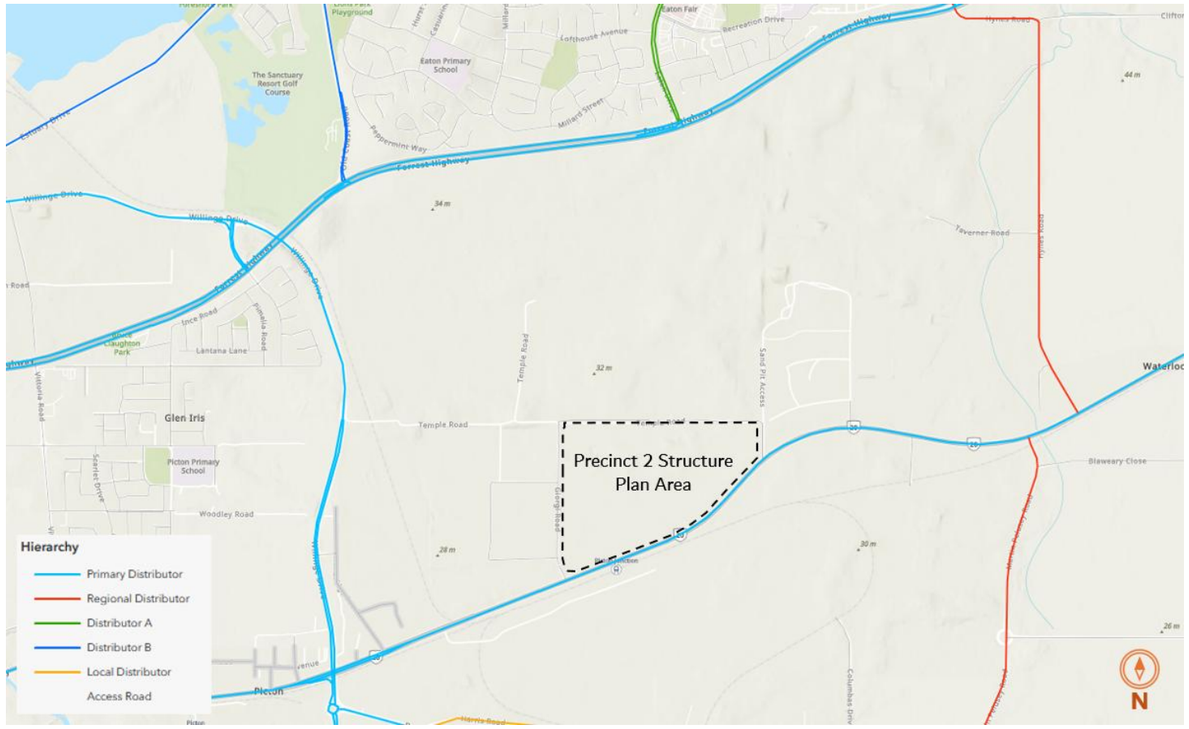

Figure 11 Road hierarchy surrounding the Structure Plan area (source: Main Roads WA)

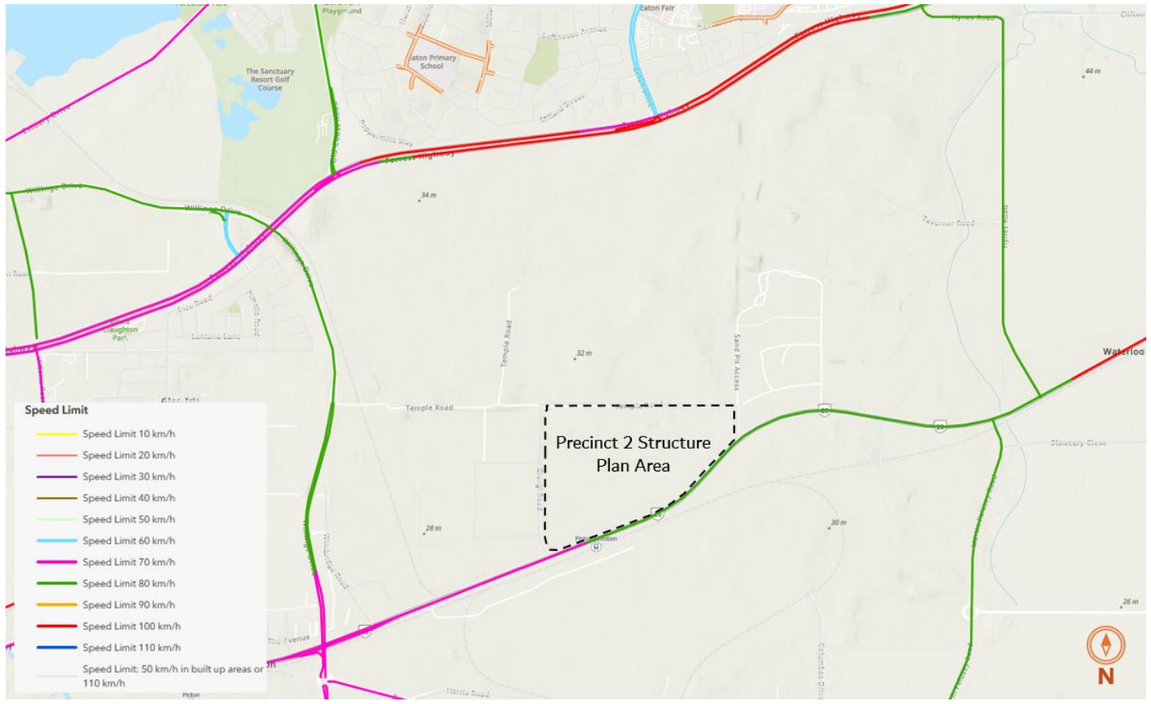

Figure 12 Speed zoning surrounding the Structure Plan area (source: Main Roads WA)

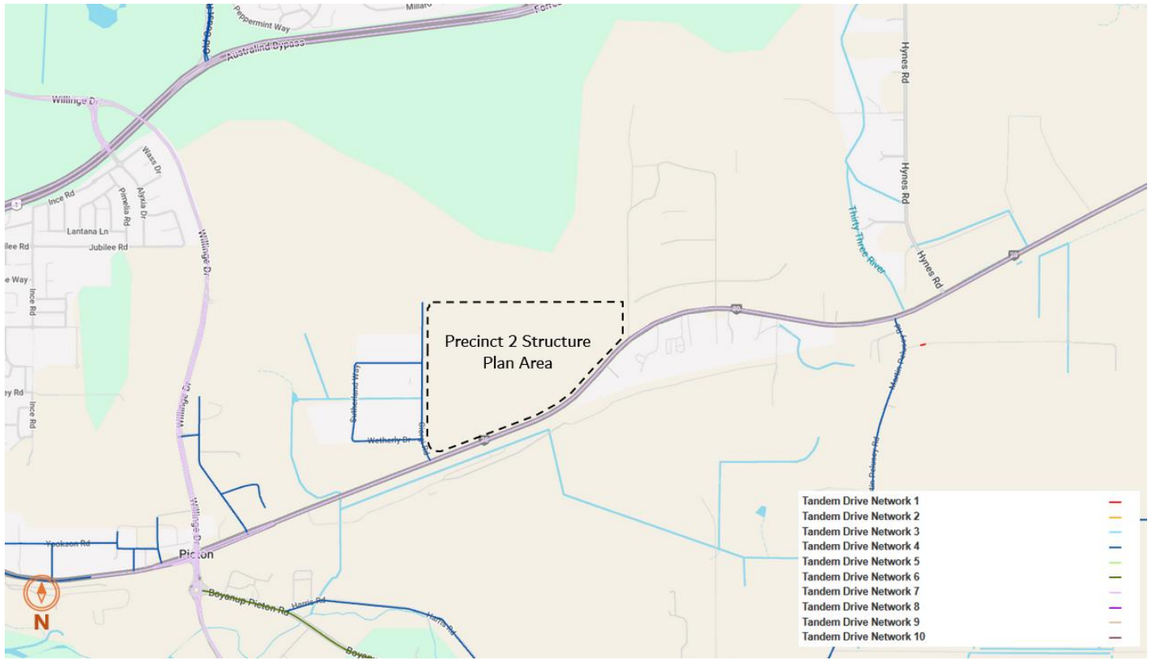

Figure 13 Restricted Access Vehicle (RAV) network (source: Main Roads WA)

3.3.1 South Western Highway

South Western Highway is a Primary Distributor Road and is under the control and management of Main Roads WA. The carriageway is typically constructed to a 7m wide carriageway formed of a single lane in each direction of 3.5m. There are 2m hard shoulders and variable centre line marking controls. As noted, South Western Highway has a RAV 7 classification.

The alignment of South Western Highway near the intersection of Giorgi Road is shown in Figure 14. At that intersection there is an existing Basic Auxiliary Left (BAL) and Basic Auxiliary Right (BAR) treatment which provides for safe turning movements of vehicles from South Western Highway into Giorgi Road from both approaches.

Figure 14 South Western Highway near Giorgi Road looking west (source: Google)

Further east of the Giorgi Road intersection, there are some existing property access points from the Highway into properties to the south. This is shown near the proposed location of a T-Intersection for the Precinct Plan in Figure 15. The posted speed limit along the section of South Western Highway that sits adjacent to the site changes from 70 km/h to 80 km/h approximately 230m east of the intersection with Giorgi Road.

There are no formed footpaths or pedestrian infrastructure, no bicyclist infrastructure and no bus stops along South Western Highway in this area.

Figure 15 South Western Highway near potential intersection with Temple Road alignment looking east (source: Google)

3.3.2 Giorgi Road

Giorgi Road is an Access Road, constructed as a single carriageway with a width of 9m. There are no road markings on Giorgi Road except for the approach to the intersection of South Western Highway. The carriageway sits within a reserve that is generally 25m across. Local power lines run along the western side of the reserve and there are no pedestrian or cycling paths along the alignment. It is kerbed, with semi-mountable kerbs along the western side with drainage on the eastern side.

A cross section of Giorgi Road adjacent to the Precinct 2 Structure Plan area is shown in Figure 16. There are eight formed crossovers on the western side of the alignment which service four separate lots. As noted, there are two formed crossovers on the western side of the carriageway which were constructed to provide access for Lot 2009. It has a 50 km/h posted speed limit and has a RAV4 network classification.

There are two formed T-intersections with Wetherly Drive (115m north of South Western Highway) and Sutherland Way (515m north of South Western Highway). These are shown in Figure 17 and Figure 18. Both side roads have RAV4 classification and have been designed accordingly.

At the northern end of Giorgi Road, the alignment intersects with Temple Road where there is a formed cul-de-sac head to allow for turning movements. Temple Road provides access to a waste water treatment facility, with a gate in place to the east of the connection with Giorgi Road. Temple Road does not extend through to Forrest Highway.

Figure 16 Giorgi Road cross section looking south (source: Flyt)

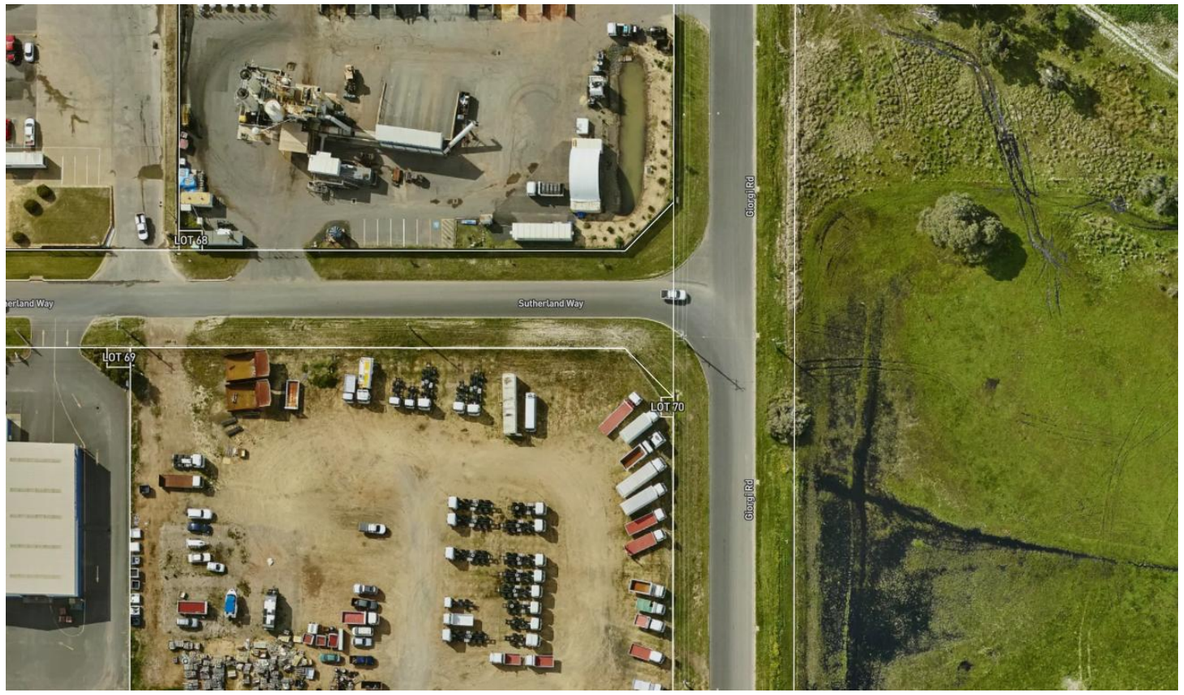

Figure 18 Intersection of Giorgi Road and Sutherland Way (source: Metromap)

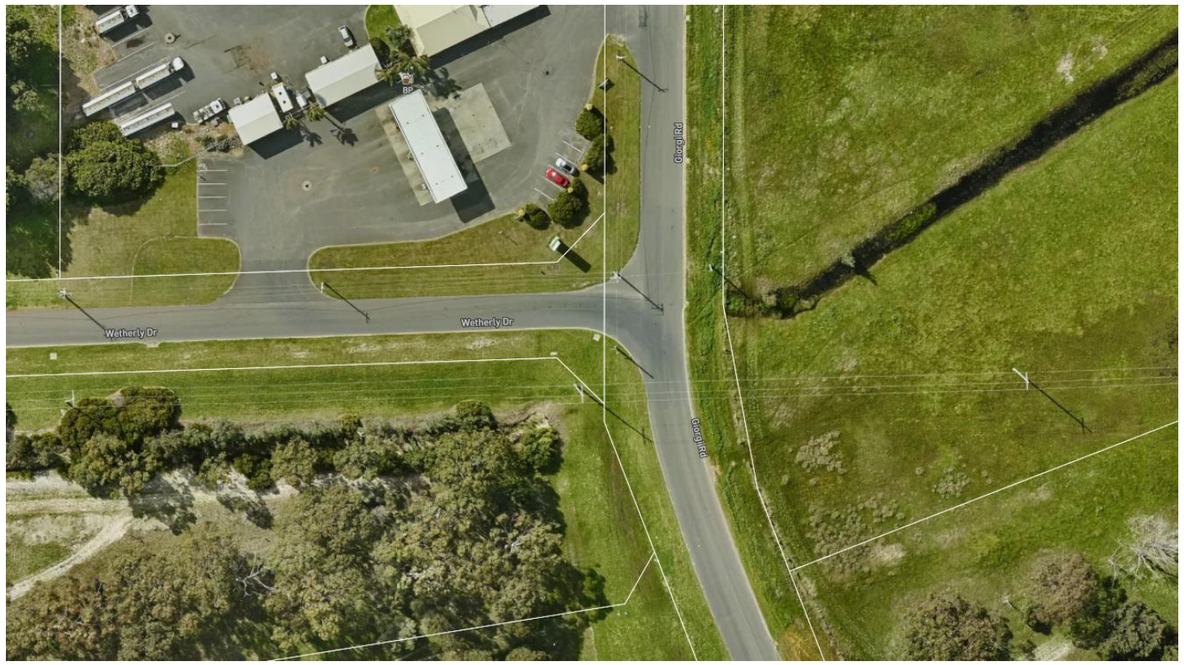

Figure 17 Intersection of Giorgi Road and Wetherly Drive (source: Metromap)

Figure 19 Alignment of Giorgi Road into Temple Road (source; Metromap)

3.3.3 Temple Road

Temple Road is classified as an Access Road however the formal carriageway is closed north of the intersection of South Western Highway. The constructed section of Temple Road is shown in Figure 20. The carriageway is a loose bitumen construction which changed from a gravel surface in 2022 and it sits within a 20m reserve. It was used as an access route for an adjoining industrial development that sits to the east of the Precinct 2 Structure Plan area.

Approximately 185m north of the intersection of South Western Highway, the Temple Road reserve takes a 90 turn towards the west and forms the northern boundary of the Precinct 2 Structure Plan area. The road reserve for Temple Road exists however there is no formed surface with dirt trails running along the reserve and intersecting it. There is an existing power line that is situated in the northern half of the road reserve.

Figure 20 Temple Road alignment north of South Western Highway (source: Metromap)

As set out in the previous section, the sealed surface of Temple Road commences at the intersection of Giorgi Road and then turns north within a lot to provide access to a waste water treatment plant. The road reserve of Temple Road continues to the west to connect up to Willinge Drive over the rail line that runs to Bunbury Port. Aside from an initial 200m paved section, there are dirt tracks through the area and cleared vegetation leading towards the rail corridor.

The Temple Road reserve extends to Willinge Drive where there is a formed T-Intersection including turning pockets on both approaches along Willinge Drive. The form of the intersection and the proximity to the rail corridor is shown in Figure 22

Figure 21 Temple Road reserve west of Precinct 2 Structure Plan area (source: Metromap)

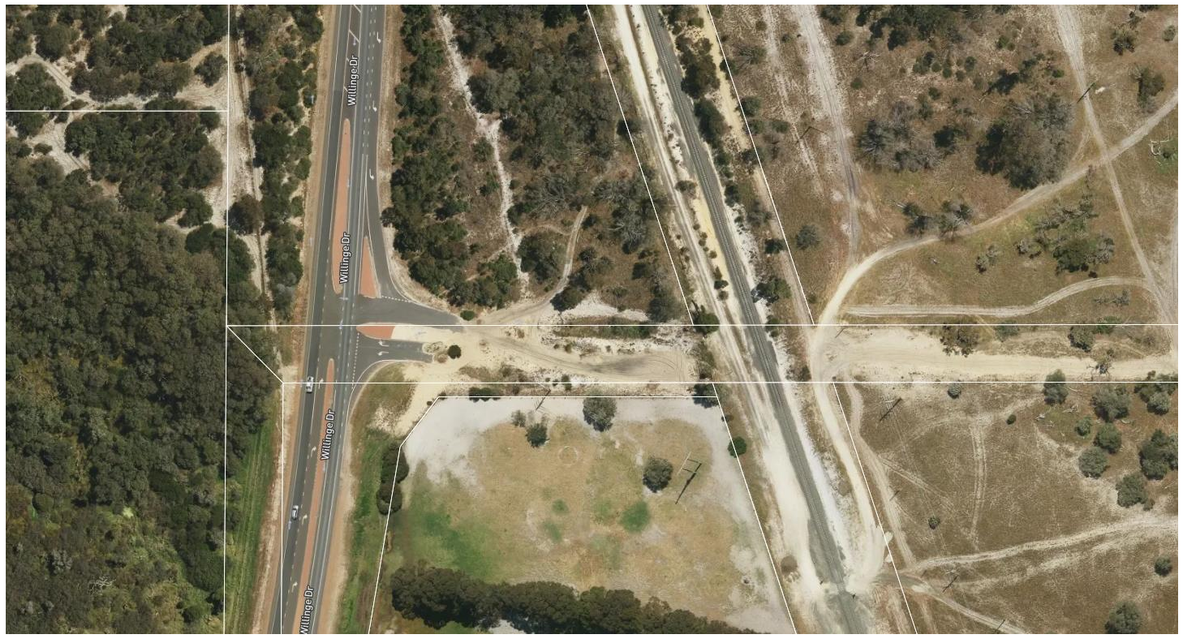

Figure 22 Intersection of Willinge Drive and Temple Road (source: Metromap)

3.4 Existing Traffic Volumes

Traffic data was extracted for the surrounding network from Main Roads WA TrafficMap (Figure 23) and the most recent traffic volumes are reflected in Table 1. This data includes 2025 counts from the intersection of Willinge Drive which shows a relatively consistent volume along this corridor when compared to 2021 survey volumes. Of note is the high proportion of heavy vehicle movements which is consistent with observed data.

Table 1 Traffic data on surrounding network (source: Main Roads WA)

Road	Location	Year of Data	Daily (vpd)	HV %	AM Peak (vph)	PM Peak (vph)
South Western Highway	West of Martin Pelusey Rd	2021	7,377	15.3%	557	666
	Willinge Drive	2025	8,011	16%	600	707

Figure 23 TrafficMap data collection locations (source: Main Roads WA)

To supplement the existing data on the regional road network, peak hour counts were undertaken at Giorgi Road in 2025 to allow for analysis of the intersection. An example of the intersection count location images is shown in Figure 24. Observed values for counts completed in 2025 are shown in Figure 25 and Figure 26.

Figure 24 Example of Giorgi Road count location images (source: Flyt)

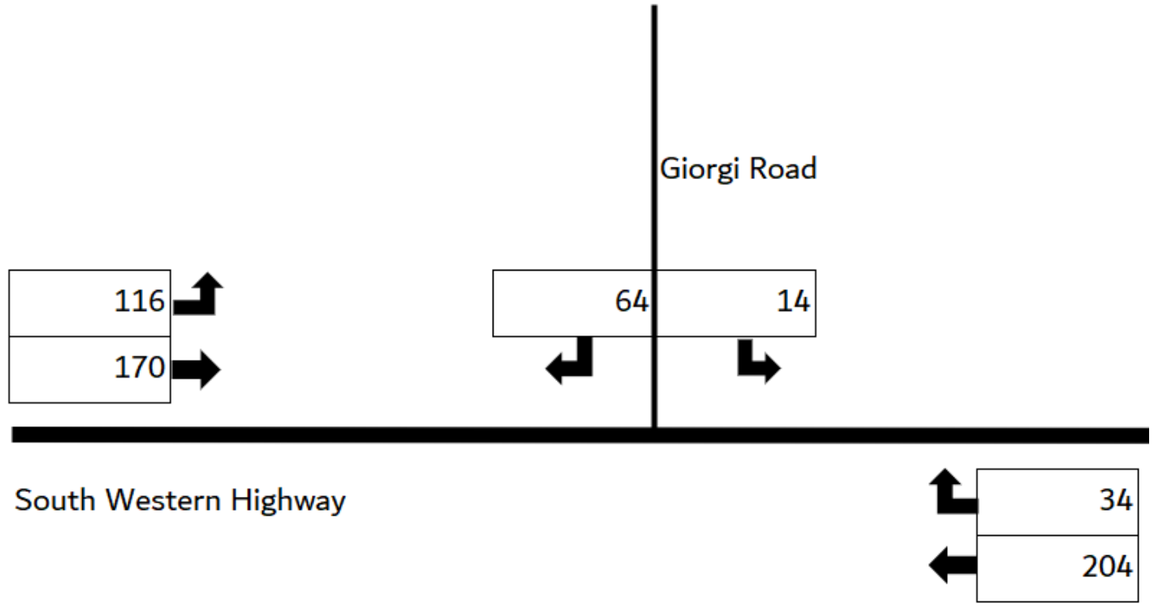

Figure 25 AM observed peak hour values 2025 - Giorgi Road and South Western Highway

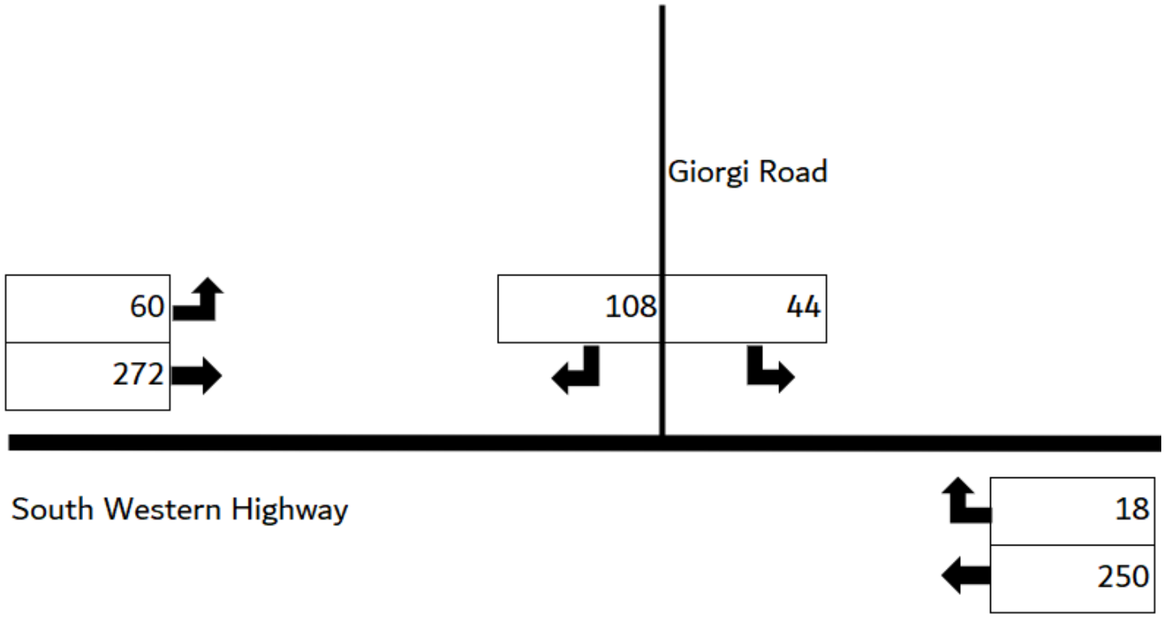

Figure 26 PM observed peak hour values 2025 - Giorgi Road and South Western Highway

The nearest counts on South Western Highway to the east at Martin Pelusey Road show a correlation of 80% of the AM recorded values at this location and 97% of these values in the PM peak hour. There is significant industrial development to the east of Precinct 2 Structure Plan area so these values observed can be considered reflective of volumes on South Western Highway.

3.5 Traffic Flow Conditions

Information from Google Maps can be used to understand general traffic flow conditions through any given area of a road network. The mapping information provides an indication of typical conditions using a simplistic traffic signal type measurement ranging from “fast” to “slow”.

An extract showing typical Monday conditions within the vicinity of the Structure Plan (in the morning peak at around 8.00am and the afternoon at 4.00pm), indicates that the area has low levels of congestion in the AM and PM peak hour when vehicle volumes are highest on the overall network. The typical AM peak period conditions are reflected in Figure 27 and the PM peak period conditions in Figure 28.

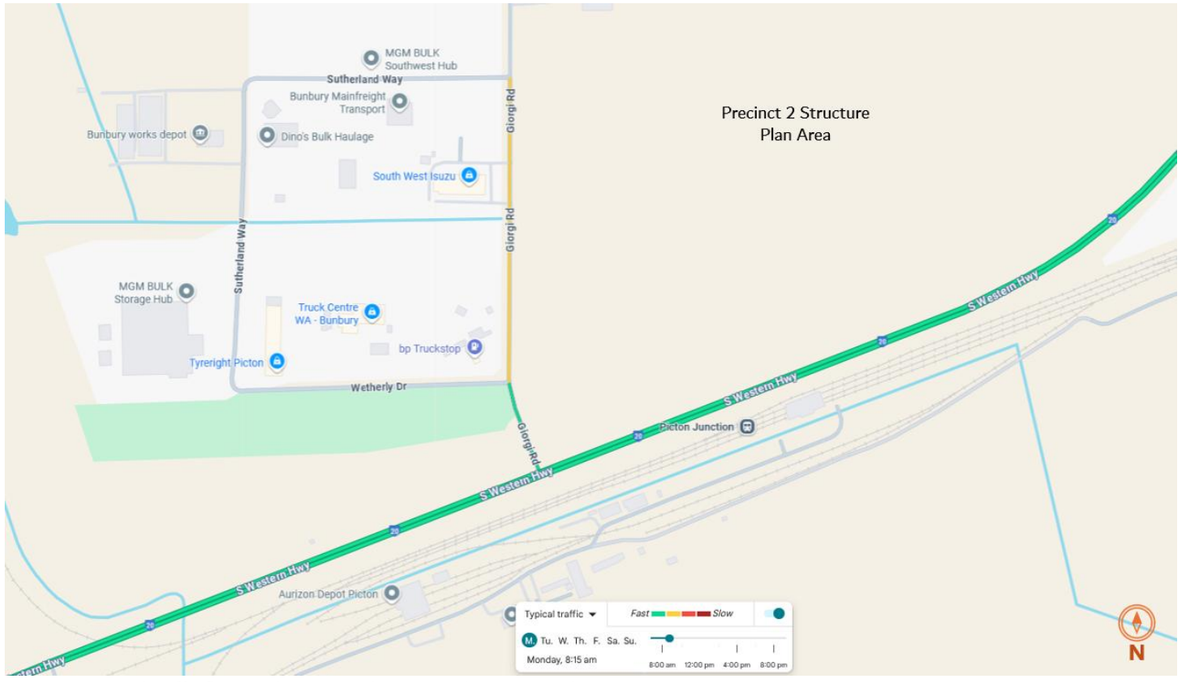

Figure 27 Typical traffic flow conditions Monday 8.00am (source: Google)

Figure 28 Typical traffic flow conditions Monday 4.00pm (source: Google)

3.6 Existing Intersections

There are limited intersections with the surrounding road network given the vacant nature of the site,. The individual intersections are described in section 3.2 and their locations are illustrated in Figure 29. Neither of the intersections on Giorgi Road are signposted or line marked but are Give-Way on the minor legs by default.

Figure 29 Road intersections with the surrounding road network (source: Metromap)

3.7 Existing Parking Provision and Usage

There is no parking on-site as the area is vacant except for an existing shed which has six marked bays associated with it.

3.8 Existing Public Transport Network

The Precinct 2 Structure Plan area has no access to existing bus services. All TransBunbury routes are shown in Figure 30. Nearest bus routes, either regular services or school services, are not proximate to the site and therefore not a consideration for the assessment.

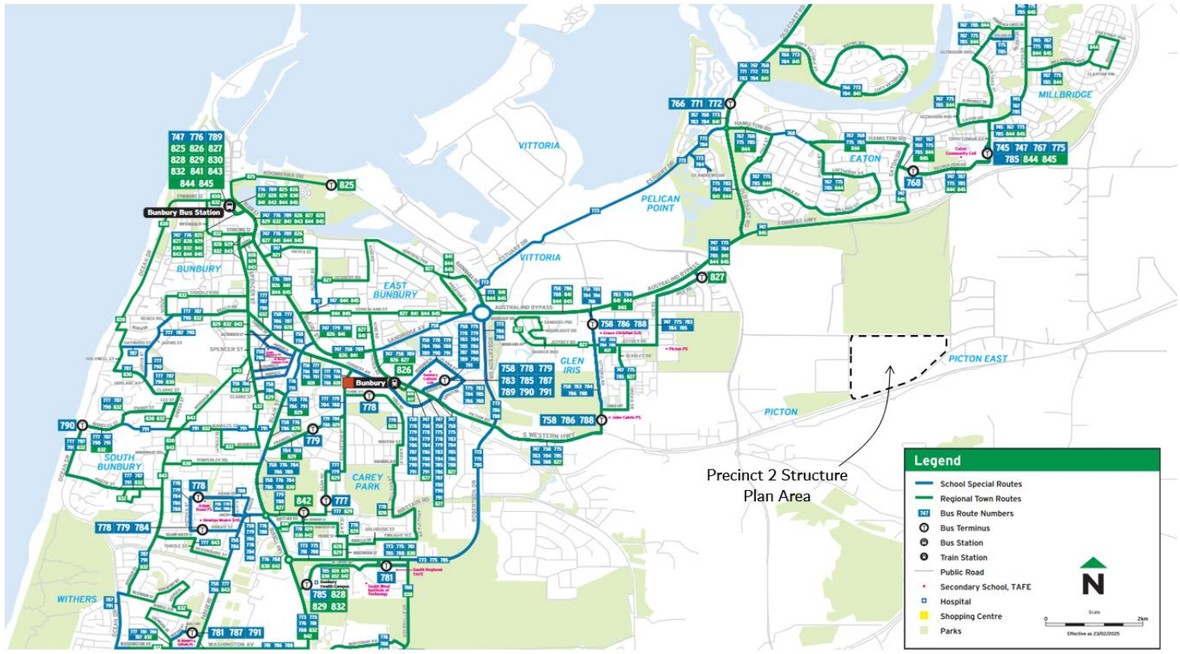

Figure 30 30 minute AM peak weekday public transport catchment - western side of project area (source: Planwisely)

3.9 Existing Pedestrian Network

There are no pedestrian networks in proximity of the site or within the adjoining industrial developments. There are no regional path networks in the area which could accommodate pedestrian networks.

3.10 Existing Cyclist Network

There is no dedicated bicyclist infrastructure within the immediate area or on the adjoining network. The lack of a footpath network would also mean that any local access by bicycle would be limited to using South Western Highway to move to and from the site. Planning for the future network has evolved through the Bunbury Wellington Cycle Strategy 2050 and the Long Term Cycle Network, with the proposed routes in the area shown in Figure 31.

There are no routes relative to the site with the exception of a proposed Primary Route that would run to the south of Picton Junction and the rail corridor along an existing drainage reservation.

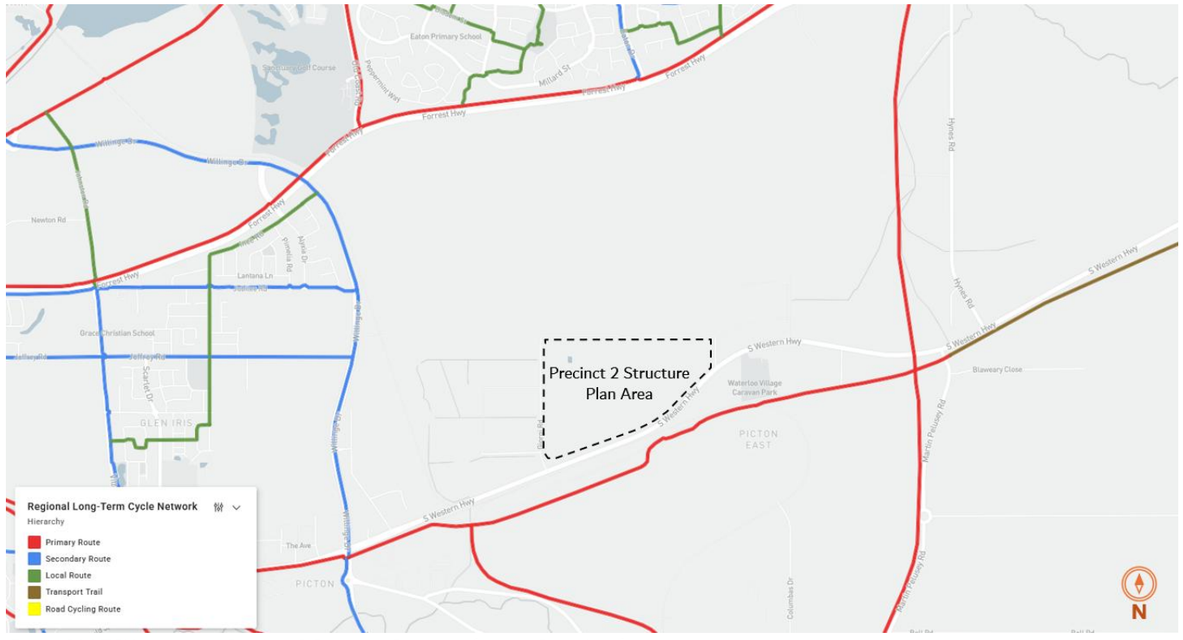

Figure 31 LTCN network – Precinct 2 Structure Plan area (source: Planwisely)

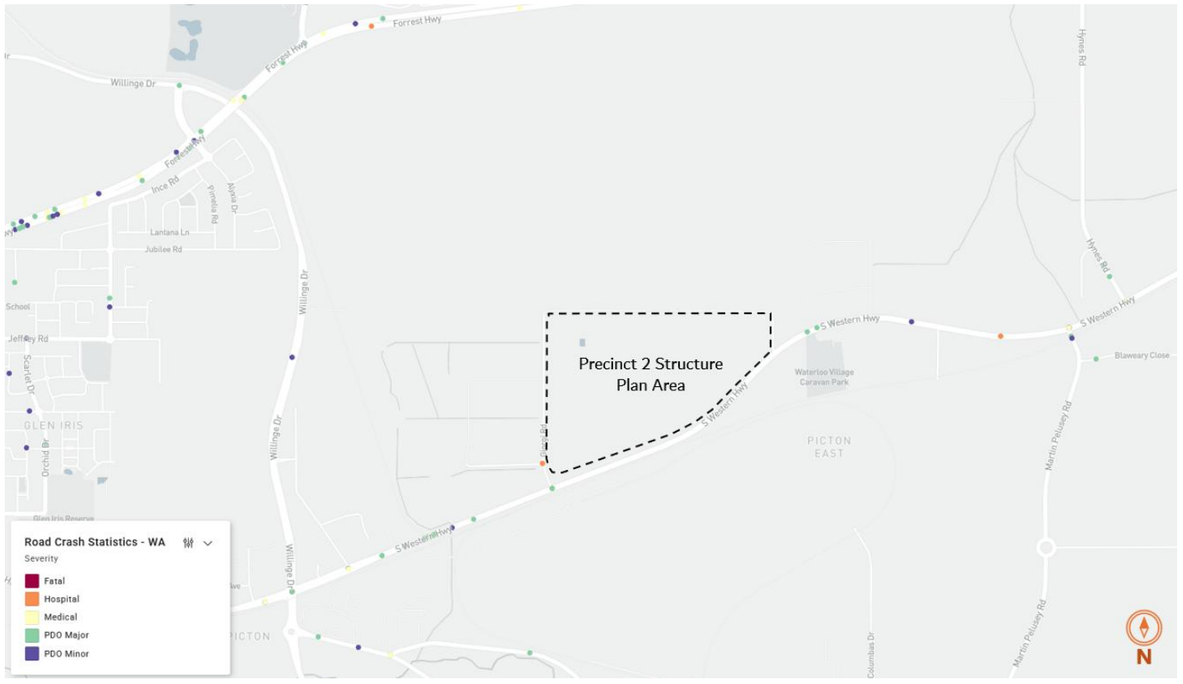

Figure 32 Crash Reporting tool - area of query and distribution of crashes (source: Planwisely / Main Roads WA)

3.11 Road Safety

In the five-year period ending December 31st 2024, there were a total of two crashes within and surrounding the precinct, as shown in Figure 32. Both crashes were during the afternoon peak period between 5.00pm and 5.45pm. One was a driver leaving Giorgi Road and hitting a pole and the other was a right-angled crash on South Western Highway. The majority of crashes along South Western Highway near the site are Property Damage Only (PDO) type crashes.

4. PROPOSED CHANGES TO NETWORK

4.1 Structure Plan Changes

The Precinct 2 Structure Plan is reproduced in Figure 33. Given the high level nature of planning for the site, it proposes one main internal road connection at this stage of planning, and three connection points with the existing road network. There are no pedestrian/cycle connections to the external road network or new internal pedestrian/cycle connections proposed as part of the plan.

Figure 33 Precinct 2 Structure Plan (source: TBB)

4.2 Proposed New External Roads and Intersections

There are no new external roads considered within the Precinct Structure Plan. For external connections, there are three proposed:

Intersection 1 - A new road connection is proposed north of Wetherly Drive with the intersection a simple priority controlled T-intersection. This connection is proposed to provide a link to the southern east-west road within the Structure Plan area. It has been staggered to be a point approximately 240m north of the intersection of Giorgi Road and South Western Highway

Intersection 2 - A T-Intersection with Giorgi Road of the extension of Temple Road at a point approximately 780m north of the intersection of Giorgi Road and South Western Highway

Intersection 3 - A new T-intersection of the Temple Road extension with South Western Highway approximately 200m west of the existing intersection of Temple Road and South Western Highway.

The first two intersections would be formed as simple T-intersections on an existing internal Access Road. The last connection is a new intersection of Temple Road on South Western Highway that has been formulated after discussion with Main Roads WA South-West Office. The location of the proposed intersection is such that it would tie-in with longer term strategic plans that Main Roads WA has for the area and also allow for the proposed widening and ultimate configuration of South Western Highway through the area.

Temple Road has an existing formed intersection but north of South-Western Highway it is an unpaved surface and then is a dirt track within a 20m reserve as it heads west. The approach to the intersection from the west is widened out but not wide enough to be considered a dedicated turning pocket.

Given the lack of formed network and limited existing intersections, there exists an opportunity to provide appropriate connections into Precinct 2 Structure Plan area from the regional road network or facilitate through movements that have considered more regional demands and linkages. Those through movements and patterns would need to be resolved as part of a more regional based traffic demand exercise.

For this proposed intersection, ultimate planning for the corridor would mean that RAV7 would be an appropriate design vehicle given the nature of the network and the type of development that may be located within Precinct 2. An example of a recent intersection configuration for this corridor is to the west of the subject site at Vittoria Rd and South Western Highway, as seen in Figure 34. This has an external diameter of 70m and an internal diameter of 43m.

Figure 34 RAV7 configured roundabout - Vittoria Road and South Western Highway (source: Metromap)

A simple comparison exercise using this external kerb diameter footprint of 70m was completed for the intersections along the South Western Highway ultimate reserve at Giorgi Road (Figure 35) and Temple Road (Figure 36). The width of the reserve area can cater for those types of intersections, meaning that signalised intersections would fit as well.

Separately, a review of four-way RAV7 intersections in the South-West was undertaken using the existing intersection at Wilman Wadandi and Willinge Drive and the three-way intersection at Estuary Drive and Leschenault Drive. The outer diameter of the four-way intersection is shown in Figure 37 and the three-way intersection is shown in Figure 38. The larger external diameter roundabout is superimposed on the intersection of South Western Highway and Giorgi Road shown in Figure 39. The outer diameter of the four-way intersection fits within the existing reserve for the Primary Regional Road, with the three-way intersection diameter easily being accommodated.

Given any future intersection would involve a local connection and the South-Western Highway, much of the slip lane configuration and approach lane configurations at Wilman Wadandi and Willinge Drive would not likely form part of the design outcome. Separately, a staged approach to this intersection configuration could be utilised depending on how any project through this corridor takes shape. Approach lanes from Giorgi Road could be contained within the existing road reserve and design optimisation could ensure that a compliant intersection design could be provided in the future when Main Roads WA examines this corridor.

Given that the ultimate configuration for a compliant roundabout could be accommodated and that there were no other strategic considerations put forward during discussions on the proposed connections which would vary substantially, it is assumed that the area of the Primary Regional Road within the GBRS is sufficient to cater for longer term reconfiguration of South-Western Highway.

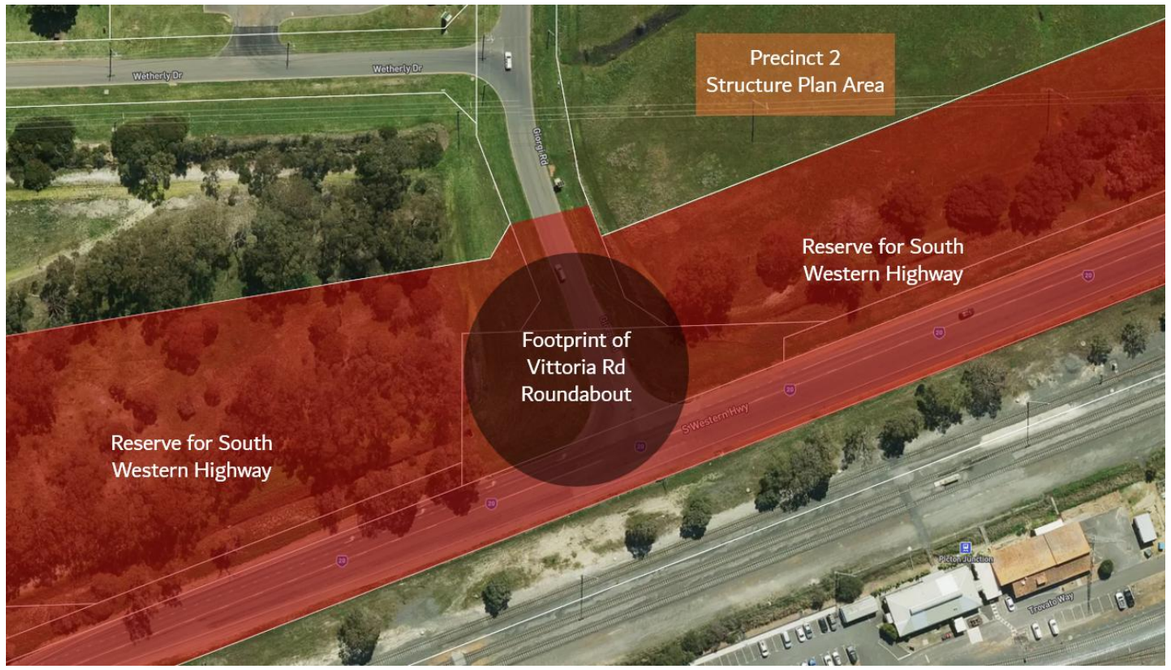

Figure 35 Comparison roundabout intersection at existing Giorgi Road intersection (source: Metromap)

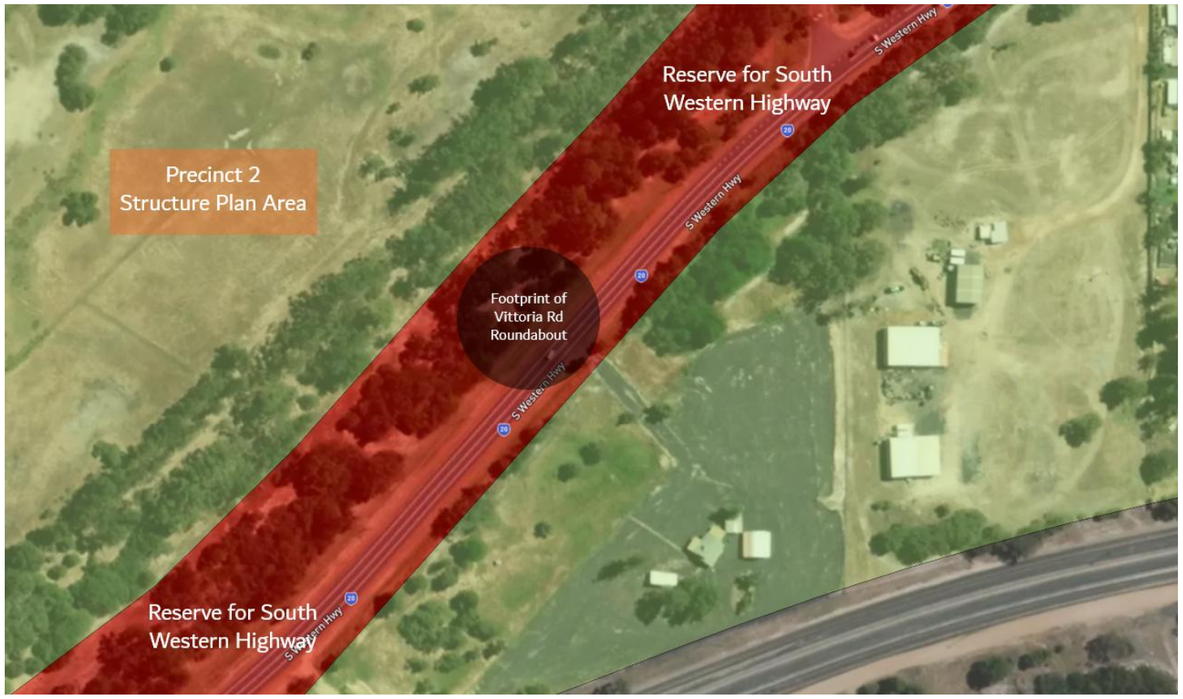

Figure 36 Comparison roundabout intersection at new Temple Road intersection (source: Metromap)

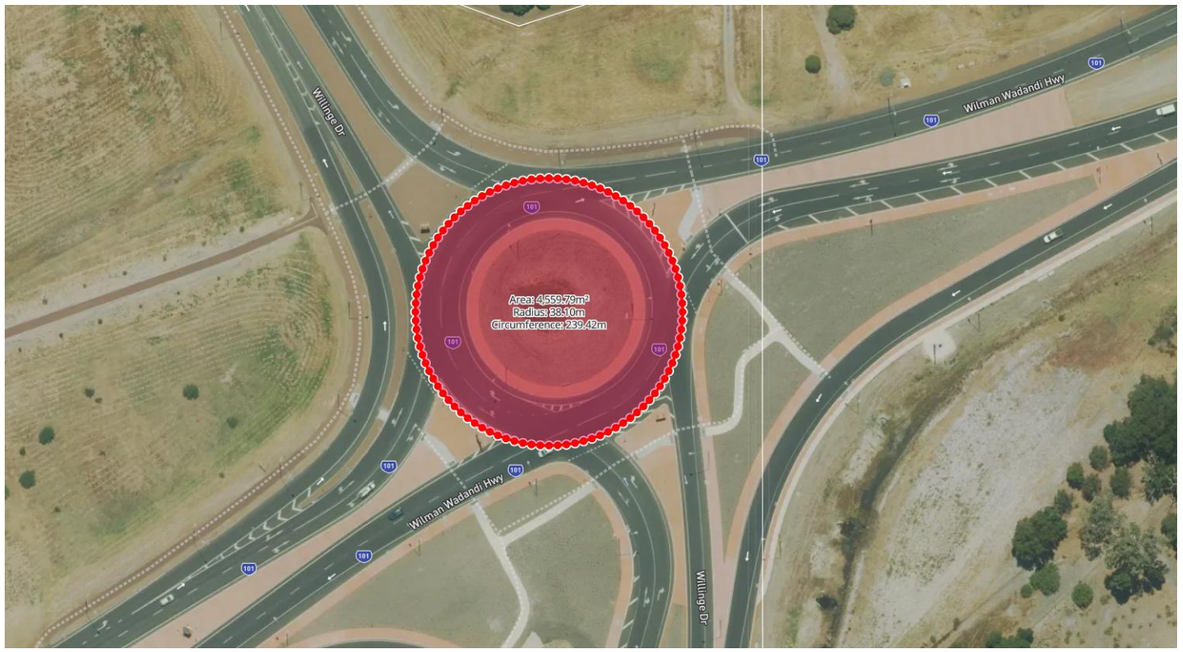

Figure 37 RAV7 roundabout configuration for four-way intersection on Wilman Wadandi (source: Metromap)

Figure 38 RAV7 roundabout configuration for three-way intersection on Estuary Drive at Bunbury Port (source: Metromap)

Figure 39 Example of space requirement for four way RAV7 roundabout intersection at Giorgi Road (source: Metromap)

For the purposes of this assessment, BAL and BAR configurations for both intersections along South Western Highway were utilised for the purposes of design, assessment and informing this analysis. The ultimate form of intersection along this corridor would be subject to significant assessment and design development through Main Roads WA.

It was also noted in the assessment that there are plans for adjustment to the line marking at the South Western Highway and Giorgi Road intersection however the form of those changes is not available for this analysis. As with the general approach to the roads within the Precinct 2 Structure Plan, it is proposed that all roads are capable of catering for RAV7 movements.

4.3 Proposed New Internal Streets

There are two planned connections for the internal street network as set out in the Precinct 2 Structure Plan, with all internal roads capable of catering for RAV7 movements. These roads provide for internal connectivity and access into the site. They would also form the basis for any future subdivision-level alterations or additions to the road network once land use outcomes had been defined through a commercial process led by DevelopmentWA.

The connections are:

Connection 1 – A reconfiguration of Temple Road extending from a new intersection with South Western Highway in the east through to Giorgi Road. The road reserve would vary, with a general width of 25m being able to accommodate the carriageway and connections into lots to the south, with some sections of 30m in width to cater for stormwater sw[illegible]. The alignment of Temple Road would sit part within the existing road reserve for part of its alignment, with other sections in a new reserve. Portions of the existing reserve would then be reclassified to sit within Public Open Space or a Conservation area. There would be no connection or frontage of Temple Road for the existing industrial land uses to the east of the site, with access crossovers allowed on the southern or western side of the reserve.

Connection 2 – A new internal connection road as required from the DSP level of planning which would form a buffer between the industrial land uses and the vegetation buffer alongside South Western Highway. This road would link Temple Road with Giorgi Road and provide lot access. This road would be triggered where ten or more lots are proposed (including cumulative subdivision application)

In relation to general design parameters for the internal road network, DCP 4.1 sets out broad parameters for consideration within Industrial development, being:

"*3.5.1 Good access to and from the subdivision is imperative and the optimal number of access points should be provided.*

3.5.2 Generally a simple layout providing a clear hierarchy of roads is desirable. Roads which may attract unrelated fast-moving traffic from nearby congested routes should be avoided.

3.5.3 Access from individual lots to major roads should be minimised. The use of minor roads for such access is desirable whenever practical.

3.5.4 To facilitate the movement of large and cumbersome vehicles, culs-de-sac and battleaxe lots should generally be avoided, curves should not be abrupt, and corners will normally be provided with a minimum truncation of 14m for primary and district distributors, and 8.5m for all other roads.

3.5.6 In industrial areas, a minimum road reserve width of 20 metres is no~ required to provide for safe and efficient traffic movement. For heavily trafficked/major through routes, a minimum road reserve width of 25metres is required. Carriageway widths of 10 metres are favoured".

In relation to the internal intersections and spacing, much of that detail would be subject to other design parameters such as sight line distances as well as swept paths for RAV7 design vehicles.

The layout of internal roads and their configuration would be assessed through the subdivision stage of the project.

4.4 Proposed External Pedestrian / Cyclist Connections

There are no new proposed external pedestrian or cycling connections proposed as part of the Precinct 2 Structure Plan. The road reserves for the internal street network would be capable of catering for footpath infrastructure if required in the future.

4.5 Proposed Internal Pedestrian/Cyclist Connections

There are no new proposed internal pedestrian or cycling connections proposed as part of the Precinct 2 Structure Plan. The road reserves for the internal street network would be capable of catering for footpath infrastructure if required in the future.

4.6 Proposed Public Transport

There are no proposed public transport routes within the Structure Plan however the design and nature of the roads within the area would easily accommodate any bus routes should the PTA seek to extend services to the area in the future.

5. VEHICLE NETWORK AND IMPACTS

5.1 Assessment

Assessment for the Precinct 2 Structure Plan has been high level to understand the general implications for the internal road network connections as well as the key linkages to South Western Highway. Traffic generation has been developed from the existing land uses within the Giorgi Road area given that traffic counts and volumes can be attributable to development outcomes.

Traffic generation for Industrial areas is difficult given the scale and type of land uses that could be considered within the area. As noted in this assessment, those land uses and individual lot configurations are yet to be established.

5.2 Modelling Approach

The approach to understanding the base and forecast year implications for the Precinct 2 Structure Plan road network was as follows:

- Extract the relevant outputs from other assessments in proximity to the site (such as the Columbas Road LSP) including network volumes, intersection configurations and trip distribution considerations
- Collect relevant baseline information for the existing network through undertaking on-site turning movement counts and using other resources including counts from Main Roads WA
- Undertake traffic generation and distribution exercise for the project to understand the forecast year inputs
- Develop intersection models within SIDRA 9.1 for the Precinct 2 interface with South Western Highway for the base year (2025) and ten year scenarios using an indicative full build land use set of parameters
- Reporting on the modelling outcomes.

The following sections cover these elements.

5.3 Model Inputs

The following were used as inputs to the modelling process for the Precinct 2 Structure Plan:

- Surveyed peak hour traffic data for local network in 2025
- Geometry of existing network based on Metromap measurements
- TrafficMap data from Main Roads WA for locations on the network on South Western Highway, including peak hour specific proportions for heavy vehicle movements
- Network information such as posted speed limits.

For the traffic distribution patterns, the existing turning movements at Giorgi Road were utilised to determine logical based distribution patterns. Internally, proximity to egress locations was used as a generic determinant of trip distribution. Existing volumes at Giorgi Road were retained as is for the base and forecast year scenarios.

5.4 Traffic Generation

Given the land uses being considered for the area differ markedly, two separate traffic generation profiles were created using different methodologies to ensure validation of forecast volumes.

The methodologies were:

- Developing an AM and PM peak hour profile of traffic generation based on the existing volumes on Giorgi Road related to the lot areas already developed. This provides ratios for all movements based on development lot areas
- Using the WAPC traffic generation ratios when applied to a GFA calculation of lot coverage. Lot coverage was taken from the bulk of the lots already developed west of Giorgi Road, with a general GFA coverage of 10% of lot area.

For the first methodology, traffic counts completed in May 2025 for the peak hours were used, with the lot development areas calculated by aerial images from September 2025 from Metromap, as shown in Figure 40.

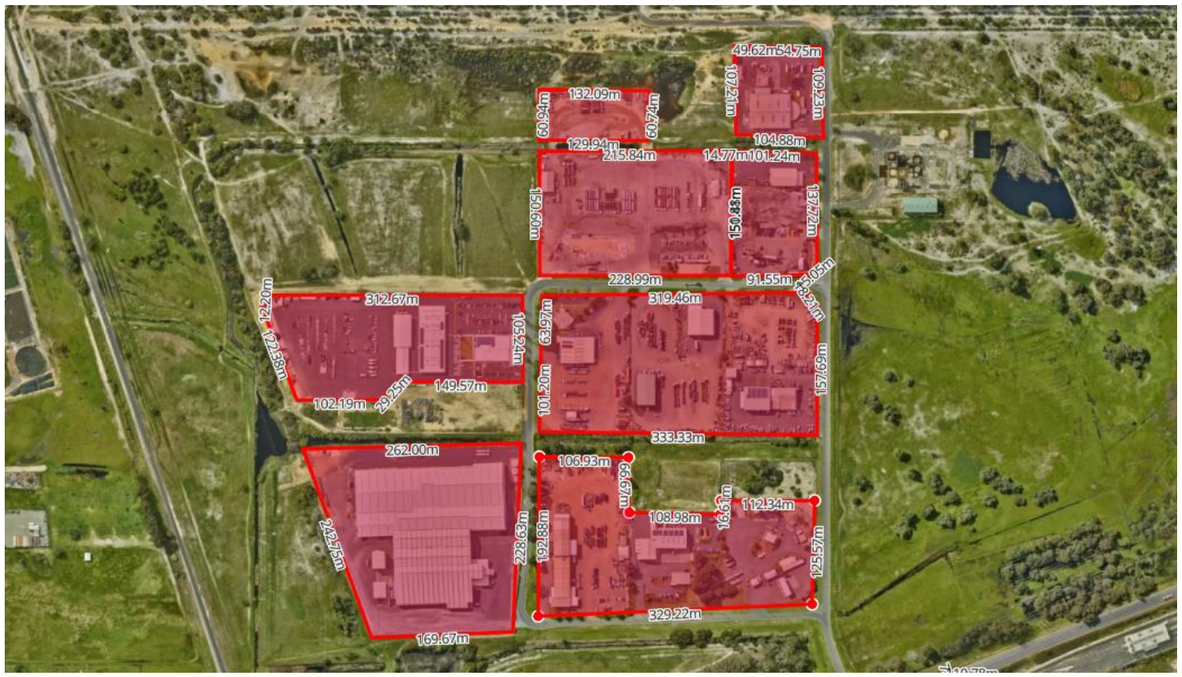

Figure 40 Developed area for industrial land uses west of Giorgi Road (source: Metromap)

Given that the peak hour volumes at the Giorgi Road intersection are very tidal, the ratios that resulted were reflective of peak movements:

- AM In – 17 trips per 100m^2 of development area AM Out – 33 trips per 100m^2 of development area
- PM In – 33 Trips per 100m^2 of development, PM Out – 17 trips per 100m^2 of development area.

The WAPC traffic generation ratios for Industrial land use are based on the GFA calculation for site development. The total area for Industrial development at Precinct 2 (which would be lower than this level given the need for internal roads) is 39.4ha with the GFA

of site coverage for built form then being 10% site coverage average based on sites to the west of Giorgi Road. Per 100m^2 of GFA, the WAPC rates are:

- AM In – 0.8 trips per 100m^2 GFA, AM Out – 0.2 trips per 100m^2 GFA
- PM In – 0.2 trips per 100m^2 GFA, PM Out - 0.8 trips per 100m^2 GFA.

Using these two calculations, the forecast build out traffic generation for both methods is set out in Table 2. Both methodologies show potential traffic generation in peak hours of between 350-395 vehicles per hour. Given the uncertainty over land uses and the proximate nature of the development on Giorgi Road, the observed ratios have been applied to this assessment. For the subdivision stage of the project or individual development applications, more refined trip generation can be applied for known sites.

Table 2 Traffic generation for forecast scenarios by both methodologies

Period	Existing Development Method	WAPC Trip Generation Rates Method
AM In	228	315
AM Out	119	79
Total AM	**347**	**394**
PM In	119	79
PM Out	231	315
Total PM	**350**	**394**

5.5 Traffic Distribution

As noted, existing distribution at Giorgi Road has been applied given that this is reflective of existing localised patterns for the same type of land uses being proposed. This distribution is shown in Table 3.

For the forecast year, a further redistribution was undertaken to split the volumes of traffic associated with the Precinct 2 Structure Plan between the two access points. This was based on a proximity split of 80% / 20% from both directions, meaning that if demands were coming from the west to access the site, 80% would use the first entrance point (at Giorgi Road) and 20% would use the second entrance point (Temple Road). The respective values for the peak hour movements per intersection and direction for the full build forecast year are shown in Table 4 and Table 5.

For background traffic, 10% increases were applied for the ten year period for movements on South-Western Highway. No growth was applied to Giorgi Road given the existing site development in the area.

Table 3 Traffic distribution for existing movements at Giorgi Road

Period	From West	From East	To West	To East
AM In	77%	23%	-	-
AM Out	-	-	82%	18%
PM In	77%	23%	-	-
PM Out	-	-	71%	29%

Table 4 Traffic distribution for forecast year modelling – Giorgi Road access

Period	From West	From East	To West	To East
AM In	141	35	-	-
AM Out	-	-	78	19
PM In	73	18	-	-
PM Out	-	-	33	131

Table 5 Traffic distribution for forecast year modelling – Temple Road access

Period	From West	From East	To West	To East
AM In	11	42	-	-
AM Out	-	-	4	17
PM In	5	22	-	-
PM Out	-	-	13	54

5.6 Assessment Years and Time Periods

As set out, the base year modelling network was completed for 2025. The overall timeframe of the Structure Plan is ten years, therefore the full build scenario countenances a build out within that period. The completion of this assessment is based on the requirements of the WAPC Guidelines and provides an indication of potential impacts.

The AM and PM peak hours were modelled for the network given the nature of the location and incidence of peak periods for the industrial land uses. Although there were variations, the typical AM peak hour was a 60 minute period between 7.00am and 9.00am and then the PM peak was a 60 minute period between 3.00pm and 6.00pm. The highest recorded values for the observations were used to reflect a conservative approach.

Using fluctuating peaks meant that values had to be adjusted in the networks to take into account differences in background volumes. This would not impact the outcomes of the assessment as the majority of cases this resulted in a conservative outcome. Where practical, the adjustments were made to through movements in the network and not turning movements in to smaller links.

5.7 Modelled Intersections

There were two separate intersections modelled for the assessment:

- 2025 base for AM and PM peaks modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection
- 2035 forecast year for the AM and PM peak modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection and a new intersection at Temple Road was also modelled with a BAR / BAL configuration for testing purposes.

5.8 2025 Base Year

The Movement Summary results for the intersection performance for each of the peak hours is shown in Figure 41 and Figure 42.

In terms of the existing performance of the network, there are no issues evident in traffic engineering metrics for peak hour movements. The right hand turn movement from Giorgi Road into South Western Highway shows the greatest delays, with that turn showing average delays of between 11.2 and 13.2 seconds within the peak hours.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	%	Arrival Flows [Total HV] veh/h	%	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	215	19.2	215	19.2	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	36	19.2	36	19.2	0.040	7.5	LOS A	0.2	1.2	0.41	0.62	0.41	47.7
Approach			251	19.2	251	19.2	0.124	1.1	NA	0.2	1.2	0.06	0.09	0.06	57.8
North: Giorgi Road															
7	L2	All MCs	15	19.2	15	19.2	0.015	5.7	LOS A	0.1	0.4	0.29	0.52	0.29	47.7
9	R2	All MCs	67	19.2	67	19.2	0.153	11.2	LOS B	0.6	4.5	0.59	0.80	0.59	44.6
Approach			82	19.2	82	19.2	0.153	10.2	LOS B	0.6	4.5	0.54	0.75	0.54	45.1
West: South Western Highway															
10	L2	All MCs	122	19.2	122	19.2	0.074	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	179	19.2	179	19.2	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			301	19.2	301	19.2	0.103	2.4	NA	0.0	0.0	0.00	0.23	0.00	56.5
All Vehicles			634	19.2	634	19.2	0.153	2.9	NA	0.6	4.5	0.09	0.24	0.09	55.2

Figure 41 Movement summary - 2025 base year AM peak hour - Giorgi Road and South Western Highway

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	%	Arrival Flows [Total HV] veh/h	%	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	263	10.2	263	10.2	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	19	10.2	19	10.2	0.021	7.4	LOS A	0.1	0.6	0.42	0.62	0.42	47.8
Approach			282	10.2	282	10.2	0.144	0.5	NA	0.1	0.6	0.03	0.04	0.03	58.9
North: Giorgi Road															
7	L2	All MCs	46	10.2	46	10.2	0.051	6.1	LOS A	0.2	1.3	0.37	0.59	0.37	47.9
9	R2	All MCs	114	10.2	114	10.2	0.278	13.2	LOS B	1.1	8.7	0.67	0.88	0.77	43.7
Approach			160	10.2	160	10.2	0.278	11.2	LOS B	1.1	8.7	0.58	0.80	0.65	44.8
West: South Western Highway															
10	L2	All MCs	63	10.8	63	10.8	0.036	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	52.4
11	T1	All MCs	286	10.8	286	10.8	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			349	10.8	349	10.8	0.157	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.4
All Vehicles			792	10.5	792	10.5	0.278	2.9	NA	1.1	8.7	0.13	0.22	0.14	55.2

Figure 42 Movement summary - 2025 base year PM peak hour - Giorgi Road and South Western Highway

5.9 2035 Forecast Year

The forecast year analysis was undertaken for both intersections and included all traffic volumes calculated for the Precinct 2 area, background traffic with a growth rate of 10% applied from 2025 and distribution of volumes as set out in this assessment. The Temple Road intersection used a BAL / BAR configuration with a 170m left turn pocket (replicating Giorgi Road) and a 120m right turn area on approach from the east. The movement summaries for each intersection are shown in:

- Figure 43 for the 2035 AM peak at Giorgi Road and South Western Highway
- Figure 44 for the 2035 PM peak at Giorgi Road and South Western Highway
- Figure 45 for the 2035 AM peak at Temple Road and South Western Highway
- Figure 46 for the 2035 PM peak at Temple Road and South Western Highway.

None of the forecast year movement summaries indicate issues with the volumes forecast to move through the intersections, with the right hand turns at both sites recording delays that would be considered as being similar to the current intersection performance and expectations. This analysis has indicated that the development of industrial land uses within Precinct 2 can be accommodated within the existing and proposed network, with the intersection of Temple Road requiring design engagement with Main Roads WA to ensure that its configuration satisfies all relevant requirements.

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway													
5	T1	All MCs	244 19.2	244 19.2	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	73 19.2	73 19.2	0.102	9.1	LOS A	0.4	3.1	0.53	0.74	0.53	46.7
Approach			317 19.2	317 19.2	0.141	2.1	NA	0.4	3.1	0.12	0.17	0.12	56.3
North: Giorgi Road													
7	L2	All MCs	153 19.2	153 19.2	0.159	6.0	LOS A	0.6	5.0	0.34	0.58	0.34	47.6
9	R2	All MCs	149 19.2	149 19.2	0.461	19.2	LOS C	2.2	17.9	0.78	1.03	1.14	40.6
Approach			302 19.2	302 19.2	0.461	12.5	LOS B	2.2	17.9	0.56	0.80	0.74	43.9
West: South Western Highway													
10	L2	All MCs	271 19.2	271 19.2	0.164	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.0
11	T1	All MCs	197 19.2	197 19.2	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			467 19.2	467 19.2	0.164	3.4	NA	0.0	0.0	0.00	0.33	0.00	55.1
All Vehicles			1086 19.2	1086 19.2	0.461	5.5	NA	2.2	17.9	0.19	0.41	0.24	51.7

Figure 43 Movement summary - 2035 forecast year AM peak hour - Giorgi Road and South Western Highway

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway													
5	T1	All MCs	305 10.2	305 10.2	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	38 10.2	38 10.2	0.048	8.2	LOS A	0.2	1.3	0.49	0.68	0.49	47.3
Approach			343 10.2	343 10.2	0.167	0.9	NA	0.2	1.3	0.05	0.08	0.05	58.2
North: Giorgi Road													
7	L2	All MCs	66 10.2	66 10.2	0.075	6.4	LOS A	0.3	2.0	0.40	0.61	0.40	47.7
9	R2	All MCs	148 10.2	148 10.2	0.459	19.2	LOS C	2.2	16.4	0.79	1.03	1.15	40.8
Approach			215 10.2	215 10.2	0.459	15.2	LOS C	2.2	16.4	0.67	0.90	0.92	42.7
West: South Western Highway													
10	L2	All MCs	140 10.8	140 10.8	0.080	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	52.4
11	T1	All MCs	315 10.8	315 10.8	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			455 10.8	455 10.8	0.173	1.8	NA	0.0	0.0	0.00	0.18	0.00	57.4
All Vehicles			1013 10.5	1013 10.5	0.459	4.3	NA	2.2	16.4	0.16	0.30	0.21	53.7

Figure 44 Movement summary - 2035 forecast year PM peak hour - Giorgi Road and South Western Highway

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway													
5	T1	All MCs	313 19.2	313 19.2	0.180	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	44 19.2	44 19.2	0.054	8.1	LOS A	0.2	1.6	0.46	0.67	0.46	47.3
Approach			357 19.2	357 19.2	0.180	1.0	NA	0.2	1.6	0.06	0.08	0.06	58.0
North: Giorgi Road													
7	L2	All MCs	18 19.2	18 19.2	0.023	6.9	LOS A	0.1	0.6	0.43	0.60	0.43	47.1
9	R2	All MCs	4 19.2	4 19.2	0.015	15.8	LOS C	0.0	0.4	0.70	0.79	0.70	42.2
Approach			22 19.2	22 19.2	0.023	8.6	LOS A	0.1	0.6	0.48	0.64	0.48	46.1
West: South Western Highway													
10	L2	All MCs	12 19.2	12 19.2	0.007	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	349 19.2	349 19.2	0.202	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			361 19.2	361 19.2	0.202	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			740 19.2	740 19.2	0.202	0.9	NA	0.2	1.6	0.04	0.07	0.04	58.3

Figure 45 Movement summary - 2035 forecast year AM peak hour - Temple Road and South Western Highway

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway													
5	T1	All MCs	329 19.2	329 19.2	0.190	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	23 19.2	23 19.2	0.030	8.2	LOS A	0.1	0.9	0.47	0.66	0.47	47.2
Approach			353 19.2	353 19.2	0.190	0.6	NA	0.1	0.9	0.03	0.04	0.03	58.9
North: Giorgi Road													
7	L2	All MCs	57 19.2	57 19.2	0.078	7.4	LOS A	0.3	2.2	0.46	0.67	0.46	46.9
9	R2	All MCs	14 19.2	14 19.2	0.053	17.2	LOS C	0.2	1.3	0.73	0.87	0.73	41.5
Approach			71 19.2	71 19.2	0.078	9.3	LOS A	0.3	2.2	0.51	0.71	0.51	45.7
West: South Western Highway													
10	L2	All MCs	5 19.2	5 19.2	0.003	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	382 19.2	382 19.2	0.220	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			387 19.2	387 19.2	0.220	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			811 19.2	811 19.2	0.220	1.1	NA	0.3	2.2	0.06	0.08	0.06	57.8

Figure 46 Movement summary - 2035 forecast year PM peak hour - Temple Road and South Western Highway

5.10 Traffic Assessment Outcomes

Assessment for the Precinct 2 Structure Plan has been high level to understand the general implications for the internal road network connections as well as the key linkages to South Western Highway. Traffic generation has been developed from the existing land uses within the Giorgi Road area given that traffic counts and volumes can be attributable to development outcomes.

The approach to understanding the base and forecast year implications for the Precinct 2 Structure Plan road network was as follows:

- Extract the relevant outputs from other assessments in proximity to the site (such as the Columbas Drive LSP) including network volumes, intersection configurations and trip distribution considerations
- Collect relevant baseline information for the existing network through undertaking on-site turning movement counts and using other resources including counts from Main Roads WA
- Undertake traffic generation and distribution exercise for the project to understand the forecast year inputs
- Develop intersection models within SIDRA 9.1 for the Precinct 2 interface with South Western Highway for the base year (2025) and ten year scenarios using an indicative full build land use set of parameters
- Reporting on the modelling outcomes.

The following were used as inputs to the modelling process for the Precinct 2 Structure Plan:

- Surveyed peak hour traffic data for local network in 2025
- Geometry of existing network based on Metromap measurements
- TrafficMap data from Main Roads WA for locations on the network on South Western Highway, including peak hour specific proportions for heavy vehicle movements
- Network information such as posted speed limits.

For the traffic distribution patterns, the existing turning movements at Giorgi Road were utilised to determine logical based distribution patterns. Internally, proximity to egress locations was used as a generic determinant of trip distribution. Existing volumes at Giorgi Road were retained as is for the base and forecast year scenarios.

Given the land uses being considered for the area differ markedly, two separate traffic generation profiles were created using different methodologies to ensure validation of forecast volumes.

The methodologies were:

- Developing an AM and PM peak hour profile of traffic generation based on the existing volumes on Giorgi Road related to the lot areas already developed. This provides ratios for all movements based on development lot areas
- Using the WAPC traffic generation ratios when applied to a GFA calculation of lot coverage. Lot coverage was taken from the bulk of the lots already developed west of Giorgi Road, with a general GFA coverage of 10% of lot area.

The methodologies produced similar forecast year volumes attributable to the development area, with those volumes reflective of existing patterns used in this assessment.

There were two separate intersections modelled for the assessment:

- 2025 base for AM and PM peaks modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection
- 2035 forecast year for the AM and PM peak modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection and a new intersection at Temple Road was also modelled with a BAR / BAL configuration for testing purposes.

The forecast year analysis was undertaken for both intersections and included all traffic volumes calculated for the Precinct 2 area, background traffic with a growth rate of 10% applied from 2025 and distribution of volumes as set out in this assessment. The Temple Road intersection used a BAL / BAR configuration with a 170m left turn pocket (replicating Giorgi Road) and a 120m right turn area on approach from the east.

None of the forecast year movement summaries indicate issues with the volumes forecast to move through the intersections, with the right hand turns at both sites recording delays that would be considered as being similar to the current intersection performance and expectations. This analysis has indicated that the development of industrial land uses within Precinct 2 can be accommodated within the existing and proposed network, with the intersection of Temple Road requiring design engagement with Main Roads WA to ensure that its configuration satisfies all relevant requirements.

6. SUMMARY

6.1 Structure Plan Assessment

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the Precinct 2 Structure Plan for the Preston Industrial Estate area. The Structure Plan will establish the strategic context at the broader scale, with that Plan identifying the need for more detailed planning to be undertaken at the individual lot or subdivision level once the land uses for the area have been determined by DevelopmentWA. As indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Gnaala Karla Booja Region.

The Structure Plan area sits within the Shire of Dardanup, although the road on the western side of the Structure Plan, Giorgi Road, forms the boundary with the City of Bunbury. As the landowner of the Precinct 2 Structure Plan area, DevelopmentWA (DevWA) has been tasked by the State Government to establish a vision for the site to facilitate industrial development that will provide economic and employment opportunities within the South West region. The land uses proposed within the site are yet to be defined, therefore the final layout of the Structure Plan area is not down to the level of internal lot boundaries or associated transport networks.

This TIA has been prepared in keeping with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans). Overall, this TIA has been prepared to confirm the capability of the site for future industrial development from a transport and movement perspective.

The subject area is largely vacant with cleared grazing land, some remnant vegetation and vehicle tracks through the area. In the north-western corner of the site on the existing Lot 2009, there is a 750m^2 shed and associated hardstand areas, residual development footprint and yard.

The overall area has been subject to broader levels of planning, with a District Structure Plan (DSP) completed in 2009 For Precinct 2 (Lot 2010), the transport notations that this Structure Plan had to address were:

- "*an internal road and landscape buffer to be provided between any individual lot and South Western Highway (i.e. no lots to back directly onto South Western Highway)*
- *Intersection modifications for the two southern access roads to South Western Highway (*nominally Giorgi Road and Temple Road*)".*

The provision of a buffer road between development and the landscaped buffer is included within the Structure Plan and the form of intersections proposed is analysed within this assessment.

The precinct is bounded by South Western Highway to the south, Giorgi Road to the west and the Temple Road reserve to the east and north. It should be noted that although Temple Road is formed along the eastern boundary of the site, it is not open for general use. The area is within an Industrial precinct and therefore access to the site by Restricted Access Vehicle (RAV) networks is a key consideration. South Western Highway forms part of a key corridor into and out of Bunbury Port and has a RAV Network 7 classification. Giorgi Road and internal industrial roads within the developed area to the west of the Precinct 2 Structure Plan have a RAV Network 4 classification.

There are no existing networks for cycling, pedestrians or public transport in the area and there are no known strategic plans which would see their introduction. Given the form of land use in the area and the surrounding network (i.e. lack of any formed connections), no proposals are included in the Precinct 2 Structure Plan to introduce them.

There are no new external roads considered within the Precinct Structure Plan. For external connections, there are three proposed:

- Intersection 1 - A new road connection is proposed north of Wetherly Drive with the intersection a simple priority controlled T-intersection. This connection is proposed to provide a link to the southern east-west road within the Structure Plan area. It has been staggered to be a point approximately 240m north of the intersection of Giorgi Road and South Western Highway
- Intersection 2 - A T-Intersection with Giorgi Road of the extension of Temple Road at a point approximately 780m north of the intersection of Giorgi Road and South Western Highway
- Intersection 3 - A new T-intersection of the Temple Road extension with South Western Highway approximately 200m west of the existing intersection of Temple Road and South Western Highway.

There are two planned connections for the internal street network as set out in the Precinct 2 Structure Plan, with all internal roads capable of catering for RAV7 movements. These roads provide for internal connectivity and access into the site. They would also form the basis for any future subdivision-level alterations or additions to the road network once land use outcomes had been defined through a commercial process led by DevelopmentWA.

The connections are:

- Connection 1 – A reconfiguration of Temple Road extending from a new intersection with South Western Highway in the east through to Giorgi Road. The road reserve would vary, with a general width of 25m being able to accommodate the carriageway and connections into lots to the south. The alignment of Temple Road would sit part within the existing road reserve for part of its alignment, with other sections in a new reserve. Portions of the existing reserve would then be reclassified to sit within Public Open Space or a Conservation area. There would be no connection or frontage of Temple Road for the existing industrial land uses to the east of the site, with access crossovers allowed on the southern or western side of the reserve.
- Connection 2 – A new internal connection road as required from the DSP level of planning which would form a buffer between the industrial land uses and the vegetation buffer alongside South Western Highway. This road would link Temple Road with Giorgi Road and provide lot access. This road would be triggered where ten or more lots are proposed (including cumulative subdivision application).

Assessment of traffic impacts for the Precinct 2 Structure Plan has been high level to understand the general implications for the internal road network connections as well as the key linkages to South Western Highway. Traffic generation has been developed from the existing land uses within the Giorgi Road area given that traffic counts and volumes can be attributable to development outcomes. The approach to understanding the base and forecast year implications for the Precinct 2 Structure Plan road network was as follows:

- Extract the relevant outputs from other assessments n proximity to the site (such as the Columbas Drive LSP) including network volumes, intersection configurations and trip distribution considerations

- Collect relevant baseline information for the existing network through undertaking on-site turning movement counts and using other resources including counts from Main Roads WA
- Undertake traffic generation and distribution exercise for the project to understand the forecast year inputs
- Develop intersection models within SIDRA 9.1 for the Precinct 2 interface with South Western Highway for the base year (2025) and ten year scenarios using an indicative full build land use set of parameters
- Reporting on the modelling outcomes.

The following were used as inputs to the modelling process for the Precinct 2 Structure Plan:

- Surveyed peak hour traffic data for local network in 2025
- Geometry of existing network based on Metromap measurements
- TrafficMap data from Main Roads WA for locations on the network on South Western Highway, including peak hour specific proportions for heavy vehicle movements
- Network information such as posted speed limits.

For the traffic distribution patterns, the existing turning movements at Giorgi Road were utilised to determine logical based distribution patterns. Internally, proximity to egress locations was used as a generic determinant of trip distribution. Existing volumes at Giorgi Road were retained as is for the base and forecast year scenarios.

Given the land uses being considered for the area differ markedly, two separate traffic generation profiles were created using different methodologies to ensure validation of forecast volumes.

The methodologies were:

- Developing an AM and PM peak hour profile of traffic generation based on the existing volumes on Giorgi Road related to the lot areas already developed. This provides ratios for all movements based on development lot areas
- Using the WAPC traffic generation ratios when applied to a GFA calculation of lot coverage. Lot coverage was taken from the bulk of the lots already developed west of Giorgi Road, with a general GFA coverage of 10% of lot area.

The methodologies produced similar forecast year volumes attributable to the development area, with those volumes reflective of existing patterns used in this assessment. There were two separate intersections modelled for the assessment:

- 2025 base for AM and PM peaks modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection
- 2035 forecast year for the AM and PM peak modelled the intersection of Giorgi Road and South Western Highway using the current configuration of the intersection and a new intersection at Temple Road was also modelled with a BAR / BAL configuration for testing purposes.

The forecast year analysis was undertaken for both intersections and included all traffic volumes calculated for the Precinct 2 area, background traffic with a growth rate of 10% applied from 2025 and distribution of volumes as set out in this assessment. The Temple Road intersection used a BAL / BAR configuration with a 170m left turn pocket (replicating Giorgi Road) and a 120m right turn area on approach from the east.

None of the forecast year movement summaries indicate issues with the volumes forecast to move through the intersections, with the right hand turns at both sites recording delays that would be considered as being similar to the current intersection performance and expectations. This analysis has indicated that the development of industrial land uses within Precinct 2 can be accommodated within the existing and proposed network, with the intersection of Temple Road requiring design engagement with Main Roads WA to ensure that its configuration satisfies all relevant requirements.

APPENDIX A

Modelling Outputs

MOVEMENT SUMMARY

Site: 101 [Giorgi and SW Hwy AM 2025 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	215	19.2	215	19.2	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	36	19.2	36	19.2	0.040	7.5	LOS A	0.2	1.2	0.41	0.62	0.41	47.7
Approach			251	19.2	251	19.2	0.124	1.1	NA	0.2	1.2	0.06	0.09	0.06	57.8
North: Giorgi Road															
7	L2	All MCs	15	19.2	15	19.2	0.015	5.7	LOS A	0.1	0.4	0.29	0.52	0.29	47.7
9	R2	All MCs	67	19.2	67	19.2	0.153	11.2	LOS B	0.6	4.5	0.59	0.80	0.59	44.6
Approach			82	19.2	82	19.2	0.153	10.2	LOS B	0.6	4.5	0.54	0.75	0.54	45.1
West: South Western Highway															
10	L2	All MCs	122	19.2	122	19.2	0.074	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	179	19.2	179	19.2	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			301	19.2	301	19.2	0.103	2.4	NA	0.0	0.0	0.00	0.23	0.00	56.5
All Vehicles			634	19.2	634	19.2	0.153	2.9	NA	0.6	4.5	0.09	0.24	0.09	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Giorgi and SW Hwy PM 2025 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	263	10.2	263	10.2	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	19	10.2	19	10.2	0.021	7.4	LOS A	0.1	0.6	0.42	0.62	0.42	47.8
Approach			282	10.2	282	10.2	0.144	0.5	NA	0.1	0.6	0.03	0.04	0.03	58.9
North: Giorgi Road															
7	L2	All MCs	46	10.2	46	10.2	0.051	6.1	LOS A	0.2	1.3	0.37	0.59	0.37	47.9
9	R2	All MCs	114	10.2	114	10.2	0.278	13.2	LOS B	1.1	8.7	0.67	0.88	0.77	43.7
Approach			160	10.2	160	10.2	0.278	11.2	LOS B	1.1	8.7	0.58	0.80	0.65	44.8
West: South Western Highway															
10	L2	All MCs	63	10.8	63	10.8	0.036	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	52.4
11	T1	All MCs	286	10.8	286	10.8	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			349	10.8	349	10.8	0.157	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.4
All Vehicles			792	10.5	792	10.5	0.278	2.9	NA	1.1	8.7	0.13	0.22	0.14	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Giorgi and SW Hwy PM 2035 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	305	10.2	305	10.2	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	38	10.2	38	10.2	0.048	8.2	LOS A	0.2	1.3	0.49	0.68	0.49	47.3
Approach			343	10.2	343	10.2	0.167	0.9	NA	0.2	1.3	0.05	0.08	0.05	58.2
North: Giorgi Road															
7	L2	All MCs	66	10.2	66	10.2	0.075	6.4	LOS A	0.3	2.0	0.40	0.61	0.40	47.7
9	R2	All MCs	148	10.2	148	10.2	0.459	19.2	LOS C	2.2	16.4	0.79	1.03	1.15	40.8
Approach			215	10.2	215	10.2	0.459	15.2	LOS C	2.2	16.4	0.67	0.90	0.92	42.7
West: South Western Highway															
10	L2	All MCs	140	10.8	140	10.8	0.080	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	52.4
11	T1	All MCs	315	10.8	315	10.8	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			455	10.8	455	10.8	0.173	1.8	NA	0.0	0.0	0.00	0.18	0.00	57.4
All Vehicles			1013	10.5	1013	10.5	0.459	4.3	NA	2.2	16.4	0.16	0.30	0.21	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Giorgi and SW Hwy AM 2035 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	244	19.2	244	19.2	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	73	19.2	73	19.2	0.102	9.1	LOS A	0.4	3.1	0.53	0.74	0.53	46.7
Approach			317	19.2	317	19.2	0.141	2.1	NA	0.4	3.1	0.12	0.17	0.12	56.3
North: Giorgi Road															
7	L2	All MCs	153	19.2	153	19.2	0.159	6.0	LOS A	0.6	5.0	0.34	0.58	0.34	47.6
9	R2	All MCs	149	19.2	149	19.2	0.461	19.2	LOS C	2.2	17.9	0.78	1.03	1.14	40.6
Approach			302	19.2	302	19.2	0.461	12.5	LOS B	2.2	17.9	0.56	0.80	0.74	43.9
West: South Western Highway															
10	L2	All MCs	271	19.2	271	19.2	0.164	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.0
11	T1	All MCs	197	19.2	197	19.2	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			467	19.2	467	19.2	0.164	3.4	NA	0.0	0.0	0.00	0.33	0.00	55.1
All Vehicles			1086	19.2	1086	19.2	0.461	5.5	NA	2.2	17.9	0.19	0.41	0.24	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Temple and SW Hwy AM 2035 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	313	19.2	313	19.2	0.180	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	44	19.2	44	19.2	0.054	8.1	LOS A	0.2	1.6	0.46	0.67	0.46	47.3
Approach			357	19.2	357	19.2	0.180	1.0	NA	0.2	1.6	0.06	0.08	0.06	58.0
North: Giorgi Road															
7	L2	All MCs	18	19.2	18	19.2	0.023	6.9	LOS A	0.1	0.6	0.43	0.60	0.43	47.1
9	R2	All MCs	4	19.2	4	19.2	0.015	15.8	LOS C	0.0	0.4	0.70	0.79	0.70	42.2
Approach			22	19.2	22	19.2	0.023	8.6	LOS A	0.1	0.6	0.48	0.64	0.48	46.1
West: South Western Highway															
10	L2	All MCs	12	19.2	12	19.2	0.007	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	349	19.2	349	19.2	0.202	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			361	19.2	361	19.2	0.202	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			740	19.2	740	19.2	0.202	0.9	NA	0.2	1.6	0.04	0.07	0.04	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Temple and SW Hwy PM 2035 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

NA
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: South Western Highway															
5	T1	All MCs	329	19.2	329	19.2	0.190	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	23	19.2	23	19.2	0.030	8.2	LOS A	0.1	0.9	0.47	0.66	0.47	47.2
Approach			353	19.2	353	19.2	0.190	0.6	NA	0.1	0.9	0.03	0.04	0.03	58.9
North: Giorgi Road															
7	L2	All MCs	57	19.2	57	19.2	0.078	7.4	LOS A	0.3	2.2	0.46	0.67	0.46	46.9
9	R2	All MCs	14	19.2	14	19.2	0.053	17.2	LOS C	0.2	1.3	0.73	0.87	0.73	41.5
Approach			71	19.2	71	19.2	0.078	9.3	LOS A	0.3	2.2	0.51	0.71	0.51	45.7
West: South Western Highway															
10	L2	All MCs	5	19.2	5	19.2	0.003	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.1
11	T1	All MCs	382	19.2	382	19.2	0.220	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			387	19.2	387	19.2	0.220	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			811	19.2	811	19.2	0.220	1.1	NA	0.3	2.2	0.06	0.08	0.06	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.