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PJA

Super Lifestyle Custodian Pty Ltd ATF The Sequeria Unit Trust

Glen Iris Local Centre

Transport Impact Assessment

December 2024

Project Code: 06606/E

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Version Control and Approval

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1 Introduction

1.1 Project Background

PJA has been engaged by *Windsor Knight Pty Ltd* ("the applicant") in care of *Super Lifestyle Custodian Pty Ltd ATF The Sequeria Unit Trust* ("the client") to prepare a Transport Impact Assessment (TIA) to assist with the Development Application (DA) for the proposed Glen Iris Local Centre ("the Site"). The Site, comprising 7,001m^2, is located within the suburb of Jandakot under the *City of Cockburn* Local Government Area (LGA), approximately 20km south of the Perth CBD, as shown in **Figure 1-1**.

Figure 1-1: Site Locality Context

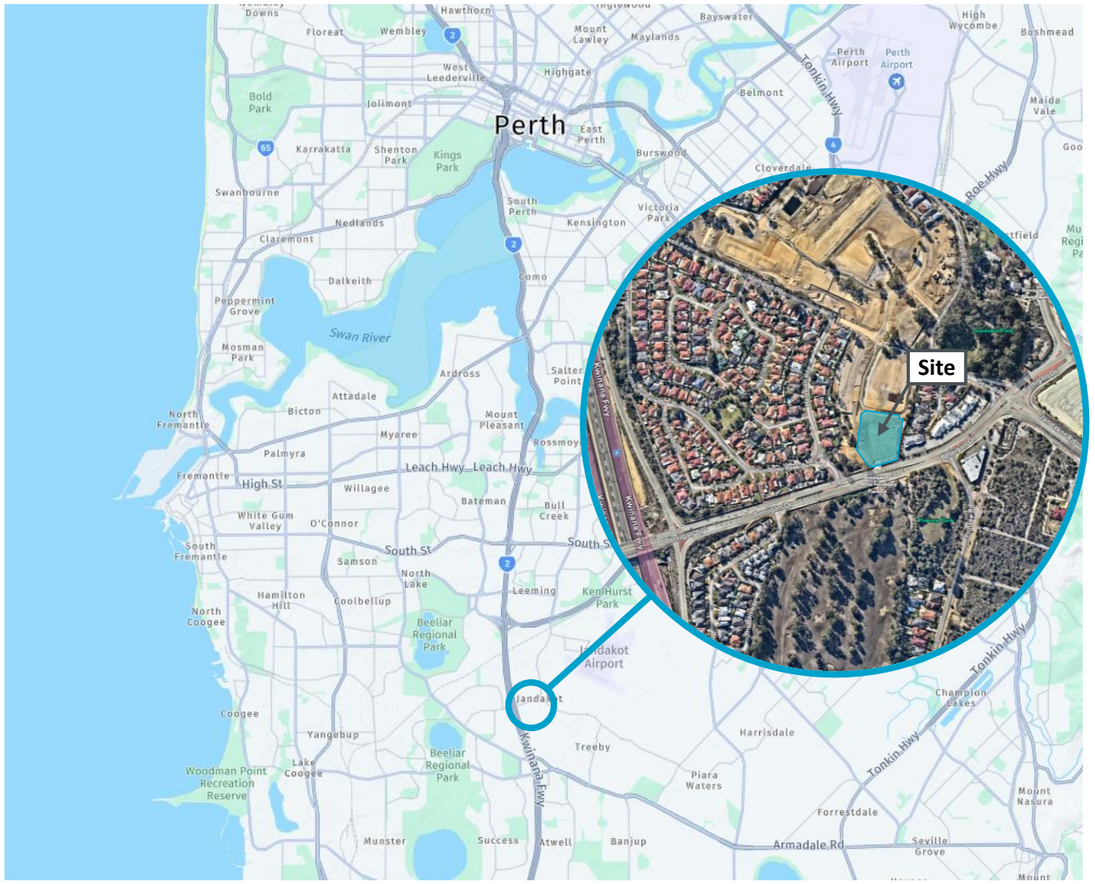


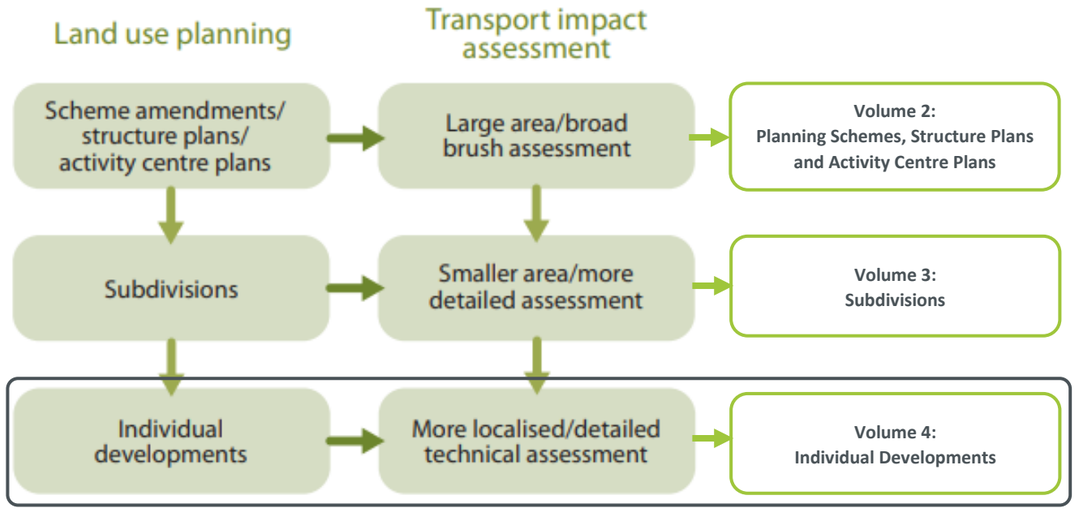
Image Source: Nearmap (June 2024)

The Site was formerly part of the Glen Iris Golf Course and has been approved under the *City of Cockburn Town Planning Scheme No. 3* (TPS3) *Amendment No. 152* to be redeveloped for Urban Development. As part of TPS3 Amendment No. 152, the local centre is to be delivered to anchor and support the approved urban development.

1.2 Purpose of a Transport Impact Assessment

The planning system in Western Australia stipulates that all developments go through a process of stages to ensure that the statutory planning is consistent with the strategic planning. A more detailed assessment of the transport networks for developments is required within the land use planning stages. The *Western Australian Planning Commission* (WAPC) *Transport Impact Assessment* (TIA) *Guidelines* (August 2016) indicate the level of detail required at each stage as shown in **Figure 1-2**.

Figure 1-2: WAPC Land Use / Transport Planning Process



Source: Western Australian Planning Commission (WAPC)

The proposed Glen Iris Local Centre forms part of a Development Application (DA) and would fall under *Volume 4* of the WAPC Guidelines. This means that the level of detail required at this stage allows for a *more localised/detailed technical* assessment of the existing and proposed transport networks to be undertaken.

The intent of this TIA is to "*demonstrate that the proposal is consistent with the overall structure and subdivision planning; provide a greater level of technical detail on the development and its immediate surrounds; and provide details of any transport issues specific to the development not covered in the subdivision assessment*".

The key components and extent of the analysis required of a TIA for a structure plan are to "*assess the proposed access arrangements for all modes, that is, vehicle, public transport, pedestrian and cyclists; assess the level of transport integration between the development and the surrounding land uses;*

determine the impacts of the traffic generated by the development on the surrounding land uses; determine the impacts of the traffic generated by the development on the surrounding transport networks".

The level of assessment required is dependent upon the number of vehicle trips the proposed development is considered to generate within the peak hour of the development. As detailed further in **Section 6.3**, the Site is considered to generate more than 100 vehicle trips within the peak hour. Therefore, the development requires a level of assessment associated with a high impact on the transport network. Hence this TIA will follow *Part C* of the WAPC TIA Guidelines *Volume 4*, which outlines the area to be covered within this TIA as a minimum:

- *All sections of road where the development traffic would be likely to increase traffic on any lane by more than 100 vehicles per hour.*
- *All intersections where flows on any leg would increase by 10%, or any movement by 20%.*
- *Existing and proposed public transport routes.*
- *Pedestrian routes to the nearest bus stop (for all bus routes passing within 400 metres of the development).*
- *Pedestrian routes to the nearest train station(s), (if within 800 metres of the development).*
- *Pedestrian routes to any major attractors within 400 metres, (five-minute walk), of the development.*
- *Cycle routes to any major attractors within 1,200 metres, (five-minute cycle), of the development*.

The appropriate WAPC TIA checklist is provided in **Appendix A**.

1.3 Local Structure Plan Context

The Site is included under the Glen Iris Estate Local Structure Plan ("the LSP") as a 2,500m^2 commercial lot with Berrigan Drive as the east-west frontage road and Abundant Boulevard as the north-south frontage road, as shown in **Figure 1-3**.

Figure 1-3: Local Structure Plan Context

Source: Rowe Group (May 2023)

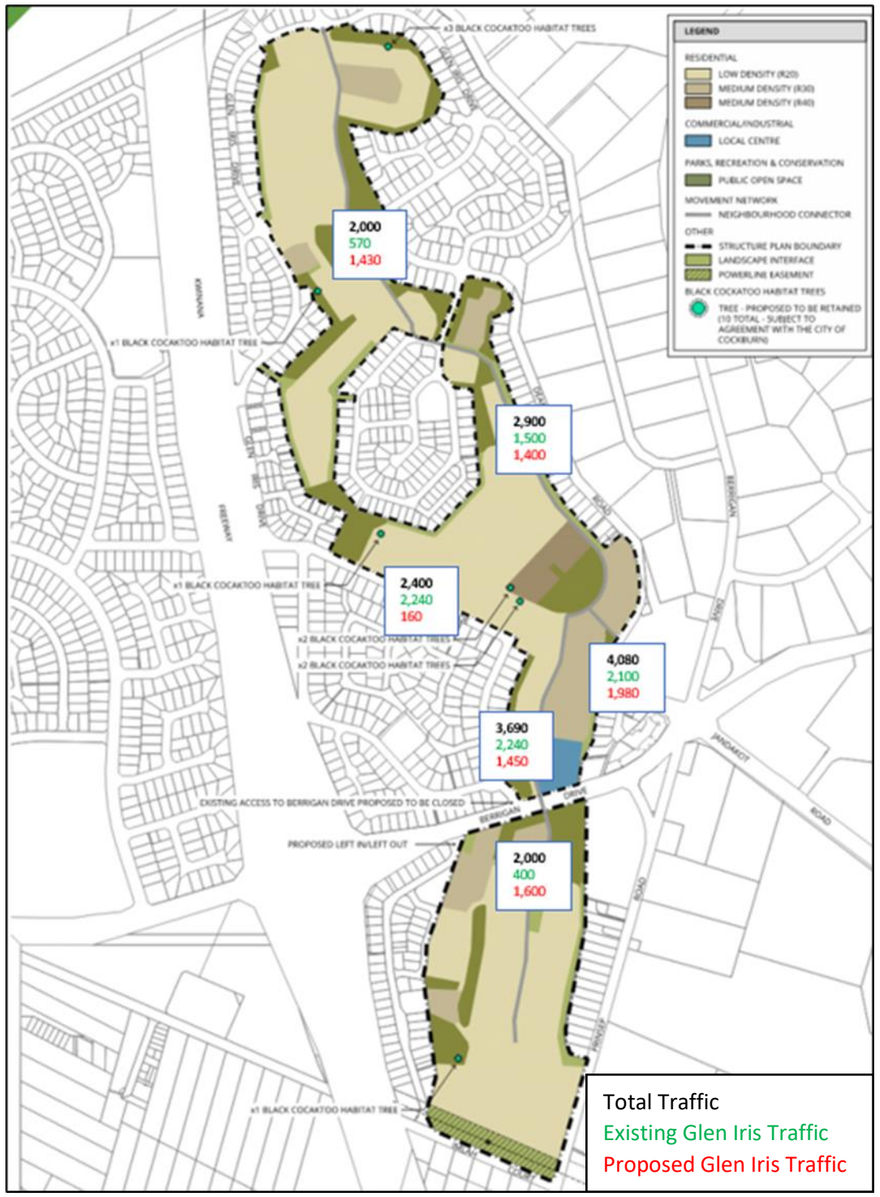
1.4 Prior Transport Impact Assessment

The TIA prepared for the LSP application was in accordance with WAPC Guidelines *Volume 2* by *PJA* in August 2023. A summary of the assessment with respect to the Glen Iris Local Centre commercial area is provided in **Table 1-1** with the design daily traffic flows shown in **Figure 1-4**.

Table 1-1: Glen Iris Estate LSP TIA Summary

Criteria	Proposed Local Centre Context
Land Use and Yields	Small supermarket-based local centre totalling 2,500sqm of Gross Floor Area (GFA).
Existing Road Network	Berrigan Drive, Dean Road, Prinsep Road, Turnbury Park Drive, Hartwell Parade, The Lakes Boulevard, Glen Iris Drive, Imlah Court.
Existing Public Transport Network	Bus service – route 515 with terminus stops on Berrigan Drive
Existing Active Travel Network	Shared path on Berrigan Drive, paths on Dean Road, Glen Iris Drive, Hartwell Parade and Turnbury Park Drive.
Existing Trip Generation	Nil
Existing Car Parking	Nil
Estimated Trip Generation of Local Centre	• 1,150 vehicle trips per day • 25 vehicle trip per hour (AM peak) – 16 inbound trips, outbound 9 trips • 100 vehicle trips per hour (PM peak) – 48 inbound trips, 52 outbound trips
Adopted Trip Distribution	• 80% internal trips / 20% external trips to Glen Iris Local Centre • 60% westbound trips / 40% eastbound trips on Berrigan Drive
Proposed Road Network	• Abundant Boulevard – Neighbourhood Connector A (western boundary road) • Plateau Crescent - Access Street C/D (northern boundary road) • Main Roads WA Armadale Road to North Lake Road Bridge project (completed)
Proposed Intersections and Controls	• Closure of Berrigan Drive and Turnbury Park Drive T-intersection • New signalised 4-way intersection at Beeliar Drive and Abundant Boulevard • Modification of Berrigan Drive and The Lakes Boulevard intersection to Left-In, Left-Out (LILO)
Proposed Public Transport Network	• Potential modification to bus route 515 with connection to Cockburn Central Train Station, including through the Structure Plan area
Proposed Active Travel Network	• Dual use path on both sides of Neighbourhood Connector A roads • Pedestrian path on one or both sides of Access Streets
Proposed Car Parking	• Potential on-street parking on Neighbourhood Connector A roads • Local Centre parking provision not included at this stage
Assessed Intersection Performance	Dean Road / Jandakot Road / Berrigan Drive (2020 modelled year) • AM peak: 0.90 volume to capacity ratio, 30s average delay • PM peak: 0.78 volume to capacity ratio, 32s average delay Berrigan Drive / The Lakes Boulevard (2020 modelled year) • AM peak: 0.53 volume to capacity ratio, 7s average delay • PM peak: 0.44 volume to capacity ratio, 1s average delay Berrigan Drive / Turnbury Park Dr (2020 modelled year) • AM peak: 0.53 volume to capacity ratio, 7s average delay • PM peak: 0.49 volume to capacity ratio, 4s average delay Berrigan Drive / Prinsep Road (2020 modelled year) • AM peak: 1.13 volume to capacity ratio, 26s average delay • PM peak: 1.34 volume to capacity ratio, 18s average delay The impacts of Glen Iris Structure Plan were assessed under a separate Berrigan Drive Corridor Study project.

Figure 1-4: LSP Estimated Total Vehicular Trips (two-way) Daily Volumes



Source: PJA (August 2023)

This indicates that the area north of Berrigan Drive accounts for some 65% of the total *Glen Iris Estate*. Hence, providing a suitable 65% north / 35% south split for the traffic distribution of the proposed Glen Iris Local Centre outlined further in **Section 6.4**.

2 Existing Situation

2.1 Land Uses

The Site is currently vacant with no existing land uses. However, the existing *Glen Iris Local Centre* is directly east of the Site, as shown in **Figure 2-1**, which consists of complementary land uses and associated operating hours outlined in **Table 2-1**, and informed by a site visit and a website desktop review.

Figure 2-1: Existing Site Context

Source: Google (June 2024)

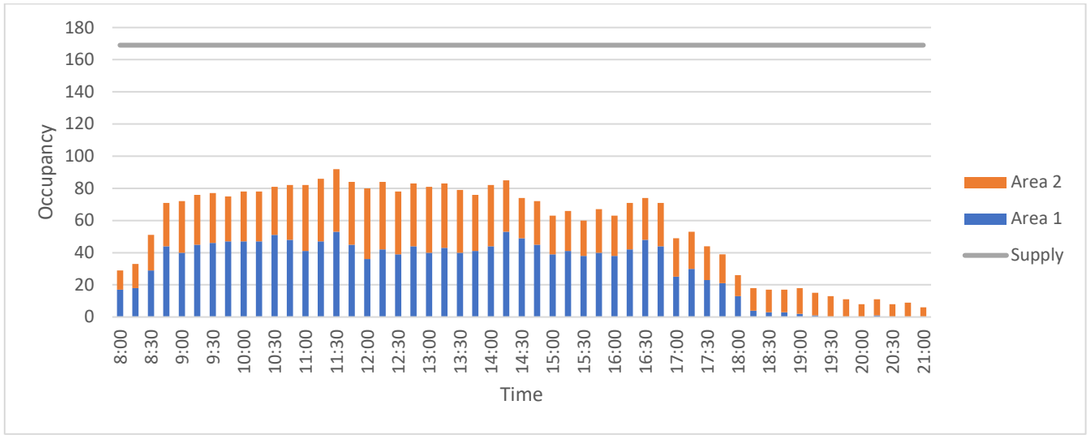
Table 2-1: Existing Glen Iris Local Centre - Existing Land Uses and Operating Hours

Tenant	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Clinipath Pathology Jandakot	8am – 12pm, 12.30pm – 4pm	8am – 12pm, 12.30pm – 4pm	8am – 12pm, 12.30pm – 4pm	8am – 12pm, 12.30pm – 4pm	8am – 12pm, 12.30pm – 4pm	Closed	Closed
Berrigan Family Medical Centre	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	Closed	Closed
Berrigan Drive Pharmacy	9am – 5pm	9am – 5pm	9am – 5pm	9am – 5pm	9am – 5pm	Closed	Closed
Koko's Drycleaners Jandakot	9am – 5pm	9am – 5pm	9am – 5pm	9am – 5pm	9am – 5pm	Closed	Closed
Perth Pet Vet	9am – 6pm	9am – 6pm	9am – 5pm	9am – 6pm	9am – 6pm	9am – 12pm	Closed
Berrigan Physiotherapy	9am – 6pm	9am – 6pm	9am – 6pm	9am – 6pm	9am – 6pm	Closed	Closed
Jandakot Chiropractic Clinic	8am – 6.30pm	8am – 6pm	2pm – 6.30pm	8am – 6pm	8am -12pm	8am -12pm	Closed
Ballast Financial Planning Pty Ltd	8.30am – 5pm	8.30am – 5pm	8.30am – 5pm	8.30am – 5pm	8.30am – 5pm	Closed	Closed
Digident Laboratory	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	Closed	Closed
Perth Oral Medicine & Dental Sleep Centre	8am – 4.30 pm	8am – 4.30 pm	8am – 4.30 pm	8am – 4.30 pm	8am – 4.30 pm	Closed	Closed
Chatpatta Kitchen	11.30am – 2.30pm, 5.30pm – 9pm	Closed	11.30 am – 2.30 pm, 5.30pm – 9 pm	11.30 am – 2.30 pm, 5.30pm – 9 pm	11.30 am – 2.30 pm, 5.30pm – 9 pm	11.30 am – 2.30 pm, 5.30pm – 9 pm	11.30 am – 2.30 pm, 5.30pm – 9 pm
Rihanna's Cafe & Lunch Bar	5am – 2.30pm	5am – 2:30pm	5am – 2:30pm	5am – 2:30pm	5am – 2:30pm	Closed	Closed
Jandakot Podiatry	8am – 4pm	9am – 1pm	Closed	Closed	9am – 1pm	Closed	Closed
Sushi n Kor	11am – 2.30pm, 5pm – 9 pm	11am – 2.30pm, 5pm – 9 pm	11am – 2.30pm, 5pm – 9 pm	11am – 2.30pm, 5pm – 9 pm	11am – 2.30pm, 5pm – 9 pm	5pm – 9 pm	Closed
Jojo Jandakot Convenience Store	9am – 7pm	9am – 7pm	9am – 7pm	9am – 7pm	9am – 7pm	9am – 7pm	Closed
Studio Sage	Closed	10am – 8pm	10am – 6pm	10am – 8pm	10am – 4pm	Closed	Closed
PathWest Jandakot	8am –12pm, 1pm – 4.30 pm	8am –12pm, 1pm – 4.30 pm	8am –12pm, 1pm – 4.30 pm	8am –12pm, 1pm – 4.30 pm	8am –12pm, 1pm – 4.30 pm	8am –12pm	Closed
Korindo Kitchen	11.30am – 3pm, 5.30pm – 9pm	11.30am – 3pm, 5.30pm – 9pm	11.30am – 3pm, 5.30pm – 9pm	11.30am – 3pm, 5.30pm – 9pm	11.30am – 3pm, 5.30pm – 9pm	11.30am – 3pm, 5.30pm – 9pm	Closed
Naser Haircuts	9am – 6pm	9am – 6pm	9am – 6pm	9am – 6pm	9am – 6pm	9am – 6pm	Closed
Mercury Money Pty Ltd	10am – 5pm	10am – 5pm	10am – 5pm	10am – 5pm	Closed	Closed	Closed

2.2 Parking Provision and Demand

PJA engaged *Matrix Traffic and Transport Data* to undertake a carpark occupancy survey of the existing carpark at the *Berrigan Drive Local Centre*. The operating hours indicated that most tenants were open on Thursdays between 8am and 9pm which also captured commuter peaks. Therefore, the occupancy survey was undertaken on Thursday 13 June 2024 in 15-minute intervals over the 13-hour period between 8am and 9pm. The extent of the existing carpark survey was inclusive of the total parking supply of 169 bays, of which 106 bays are within 150m of the Site boundary ("**Area 1**") and 63 bays are beyond 150m of the Site boundary ("**Area 2**"). The results are shown in **Figure 2-2**.

Figure 2-2: Existing Carpark Occupancy Survey Results



The **peak occupancy was observed at 11.30am, where 54% of the total supply was occupied** (50% of Area 1 and 62% of Area 2). This indicates that there is a supply surplus of 53 bays (50%) in Area 1 and 24 bays (38%) in Area 2, **or a total of 77 bays available across the local centre at peak parking demand**.

2.3 Access Arrangements

The Site is currently inaccessible. However, the access arrangements to the adjacent existing Berrigan Drive Local Centre are shown in **Figure 2-3**.

Figure 2-3: Existing Berrigan Drive Local Centre Access Arrangements

Image Source: City of Cockburn (August 2023)

2.4 Traffic Generation

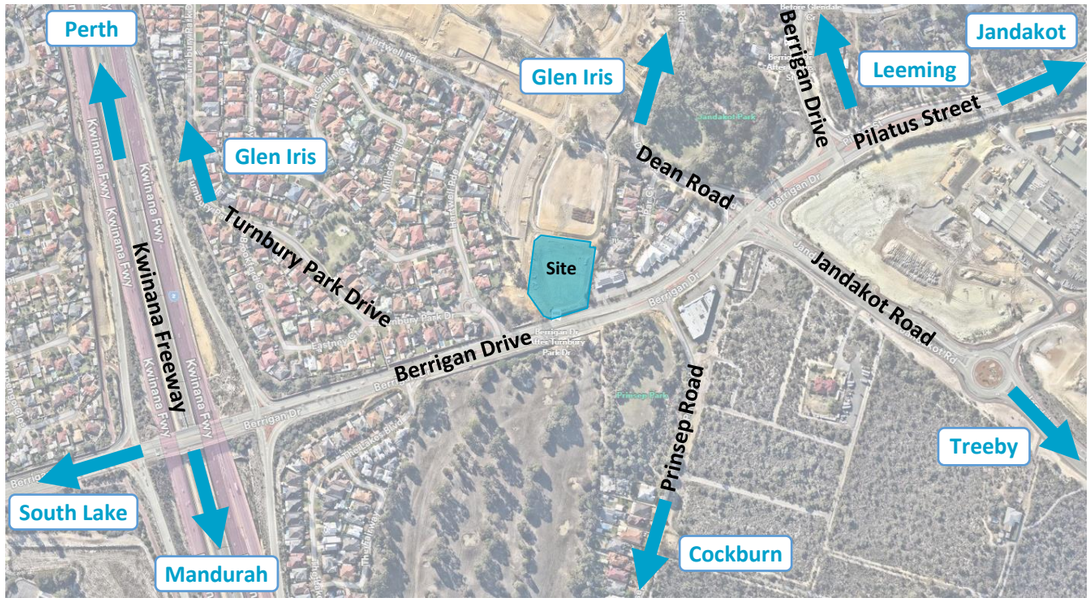
The vacant Site is assumed to have no existing traffic generation.

The LSP TIA estimates that the Site would generate 25vph in the AM peak (62% in, 38% out) and 100vph in the PM peak (48% in, 52% out) with 80% of these associated with residents of the Glen Iris Estate. Similarly, the existing local centre to the east of the Site was also estimated to generate 25vph to 100vph in the AM and PM peaks, respectively, due to the sites having the same gross floor area (GFA). The rates adopted were for a shopping centre (land use code 820) from the *Institute of Transportation Engineers* (ITE) *Trip Generation Manual – 9th Edition*.

2.5 Surrounding Road Network

The surrounding major road network (Local Distributor and higher order roads) is shown in **Figure 2-4**.

Figure 2-4: Surrounding Major Road Network



Base Image Source: Nearmap (June 2024)

2.5.1 Kwinana Freeway

Kwinana Freeway is classified as a *Primary Distributor* under the *Main Roads WA (MRWA) Functional Road Hierarchy Classification* with a 100km/h posted speed limit. Kwinana Freeway is under the jurisdiction of MRWA and is an 8-lane divided road (near Berrigan Drive) with two-way weekday traffic volumes of 127,615vpd (recorded in 2018-19 at MRWA Site 50094). The Restricted Access Vehicle (RAV) network permits up RAV 7 and below on Kwinana Freeway. To the north, Kwinana Freeway converts to Mitchell Freeway via the Perth CBD and converts to Forrest Highway to the south, via Mandurah.

2.5.2 Berrigan Drive

Berrigan Drive is a 4-lane divided *Distributor A* under the *MRWA Functional Road Hierarchy Classification* with a 70km/h posted speed limit and falls under the jurisdiction of the City of Cockburn. The two-way weekday traffic volumes of around 22,500vpd (recorded in August 2024 by the City of Cockburn). Berrigan Drive converts to a north-south road and links to Karel Avenue on the north, where two-way weekday traffic volumes are 9,255vpd (recorded in 2021-22 at MRWA Site 7017). To the west, Berrigan Drive links to North Lake Road.

2.5.3 Jandakot Road

Jandakot Road is a 4-lane divided *Regional Distributor* under the *MRWA Functional Road Hierarchy Classification* with a 70km/h posted speed limit and falls under the jurisdiction of the City of Cockburn. The two-way weekday traffic volumes of 25,970vpd (recorded in 2019-20 at MRWA Site 8278). Jandakot Road forms part of the RAV 4 network. Jandakot Road connects to Warton Road to the south via the suburb of Treeby.

2.5.4 Prinsep Road

Prinsep Road is a 2-lane undivided *Local Distributor* under the *MRWA Functional Road Hierarchy Classification* with a 60km/h posted speed limit and falls under the jurisdiction of the City of Cockburn. Prinsep Road (south of Berrigan Drive) is not permitted on the RAV network. The two-way weekday traffic volumes are 5,010vpd (recorded in October 2019 by the City of Cockburn). Prinsep Road connects to Verde Drive to the south via an industrial estate.

2.5.5 Turnbury Park Drive

Turnbury Park Drive is a 2-lane undivided *Local Distributor* under the *MRWA Functional Road Hierarchy Classification* with a 50km/h default speed limit and falls under the jurisdiction of the City of Cockburn. The two-way weekday traffic volumes are 1,065vpd (recorded in 2018 by the City of Cockburn). Turnbury Park Drive is not permitted on the RAV network.

2.5.6 Dean Road

Dean Road is a 2-lane undivided *Local Distributor* under the *MRWA Functional Road Hierarchy Classification* with a 50km/h default speed limit and falls under the jurisdiction of the City of Cockburn. The two-way weekday traffic volumes are 2,185vpd (recorded in November 2021 by the City of Cockburn). Dean Road is not permitted on the RAV network.

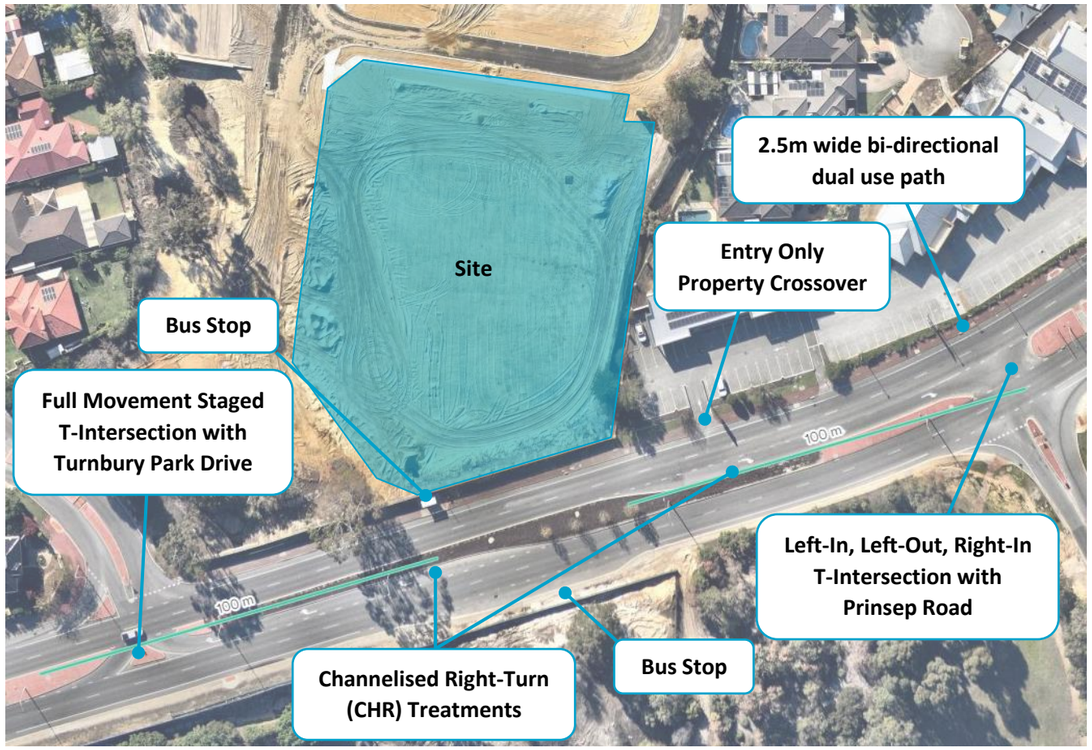
2.5.7 Pilatus Street

Pilatus Street is a 2-lane undivided road and does not appear on the *MRWA Functional Road Hierarchy Classification* as the jurisdiction falls under Jandakot Airport. The two-way weekday traffic volumes of around 7,560vpd (recorded in 2019-20 at MRWA Site 52398). Pilatus Street forms part of the RAV 4 network, connecting to Karel Avenue via the Jandakot Industrial Estate and Jandakot Airport.

2.6 Traffic Management on Frontage Streets

The extent of the frontage streets is inclusive of all boundary roads and 100m either side of the development boundary. This entails Berrigan Drive only, over the Straight-Line Kilometre (SLK) section of 2.14 to 2.39, as shown in **Figure 2-5**. This section of Berrigan Drive is within a 35m wide road reserve with 3.5m wide traffic lanes and a 1.5m wide sealed shoulder/on-road cycle lane. The traffic directions are separated by a 7.0m wide median (excluding intersection turn lanes). Berrigan Drive is the major road to a staggered T-intersection with Turnbury Park Drive to the west and Prinsep Road to the east, both with Channelised Right-Turn (CHR) treatments on Berrigan Drive. Over this section there is a single entry-only crossover to the existing Berrigan Drive Local Centre. On the northern side, there is a 2.5m wide bi-directional dual use path fronting the site. There is a Transperth bus stop on both sides of Berrigan Drive, serving both directions of travel.

Figure 2-5: Berrigan Drive Traffic Management Fronting Site

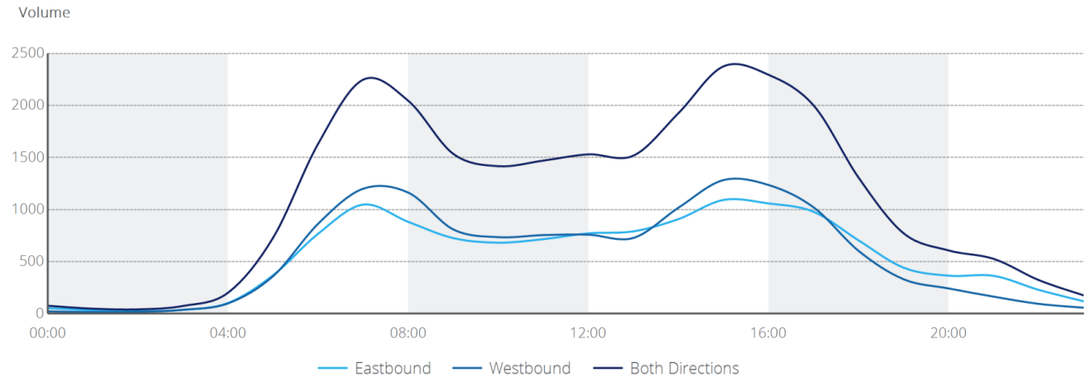


Base Image Source: Nearmap (June 2024)

2.7 Available Traffic Data

MRWA Traffic Map average annual daily traffic (AADT) on Berrigan Drive show that the AM peak occurs at 7.15am, in which 2,296vph (two-way) were recorded and the PM peak occurs at 3.30pm, in which 2,427vph (two-way) were recorded.

Figure 2-6: Berrigan Drive MRWA Count Site 6770 Monday to Friday (2021/22) Hourly Traffic Volume



Source: Main Roads WA

The *City of Cockburn Traffic Counts Map* shows two traffic counts on Berrigan Drive (35m west of Turnbury Park Drive) from 3 November 2021 and 27 August 2024 as provided in **Table 2-2.**

Table 2-2: City of Cockburn Traffic Count Data (Two-Way)

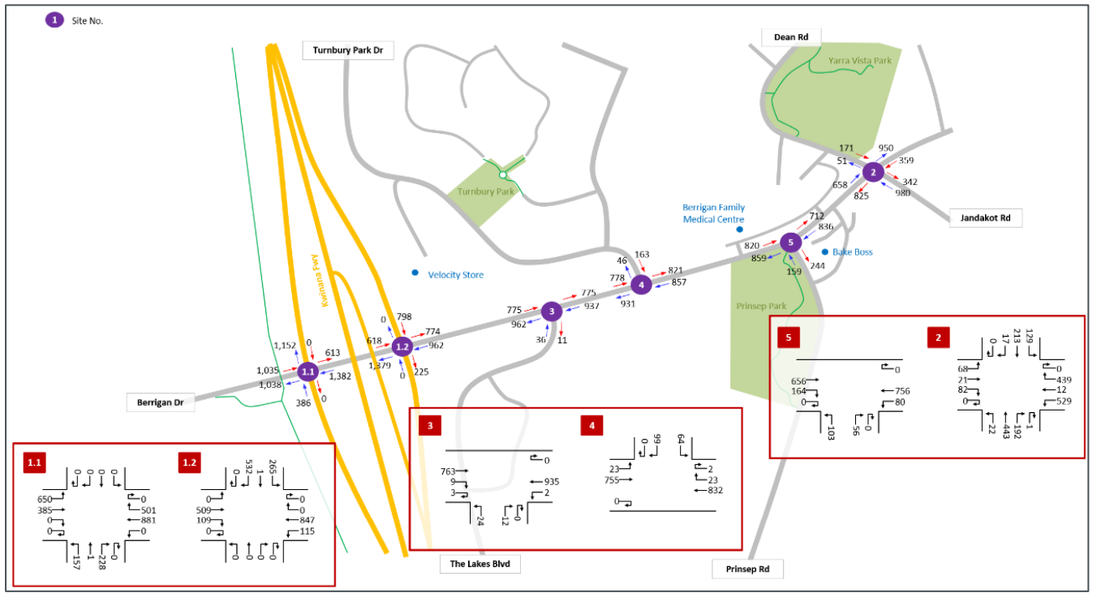
Date	Daily Traffic	Heavy Vehicles	AM Peak	PM Peak
03/11/2021	28,926vpd	9.3%	2,352vph (7am – 8am)	2,647vph (4pm – 5pm)
27/08/2024	22,499vpd	9.4%	1,831vph (7am – 8am)	2,047vph (4pm – 5pm)
Indicative Growth per Annum	**- 8.1%**	**+ 0.4%**	**- 8.1%**	**- 8.2%**

Matrix Traffic and Transport Data conducted a classified intersection traffic volume survey on Thursday 28 July 2022 from 6am to 9am and 3pm to 6pm in which the road network identified the following time periods where traffic volumes peak:

- AM Peak: 7.30am to 8.30am
- PM Peak: 3.30pm to 4.30pm.

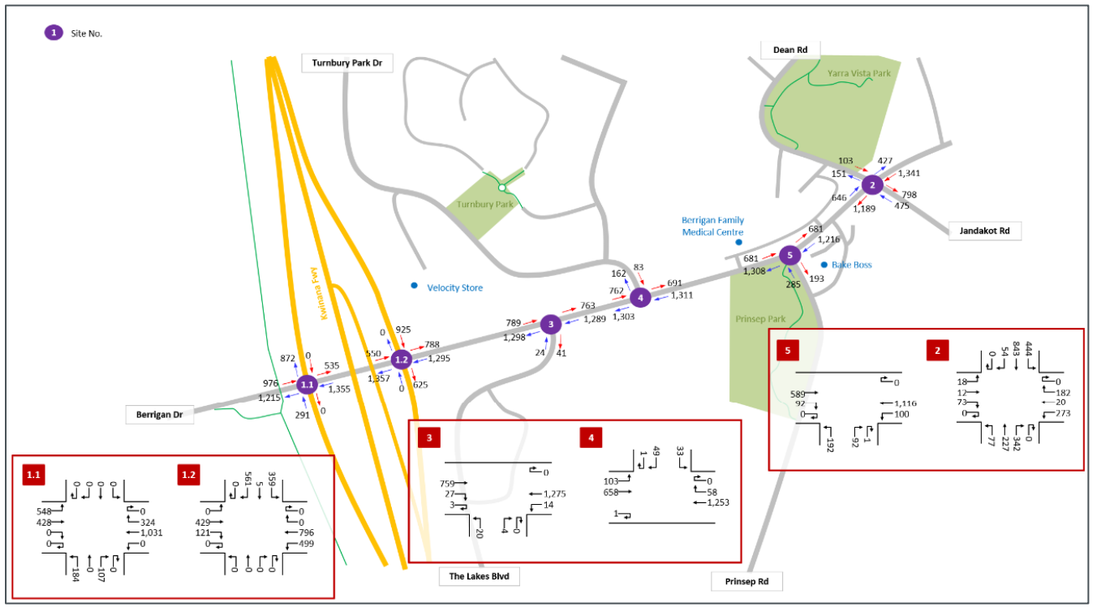
The traffic volumes recorded during these times are shown in **Figure 2-7** and **Figure 2-8**, respectively.

Figure 2-7: AM Peak Traffic Volume Survey (28/07/2022)



Source: Matrix Traffic and Transport Data

Figure 2-8: PM Peak Traffic Volume Survey (28/07/2022)



Source: Matrix Traffic and Transport Data

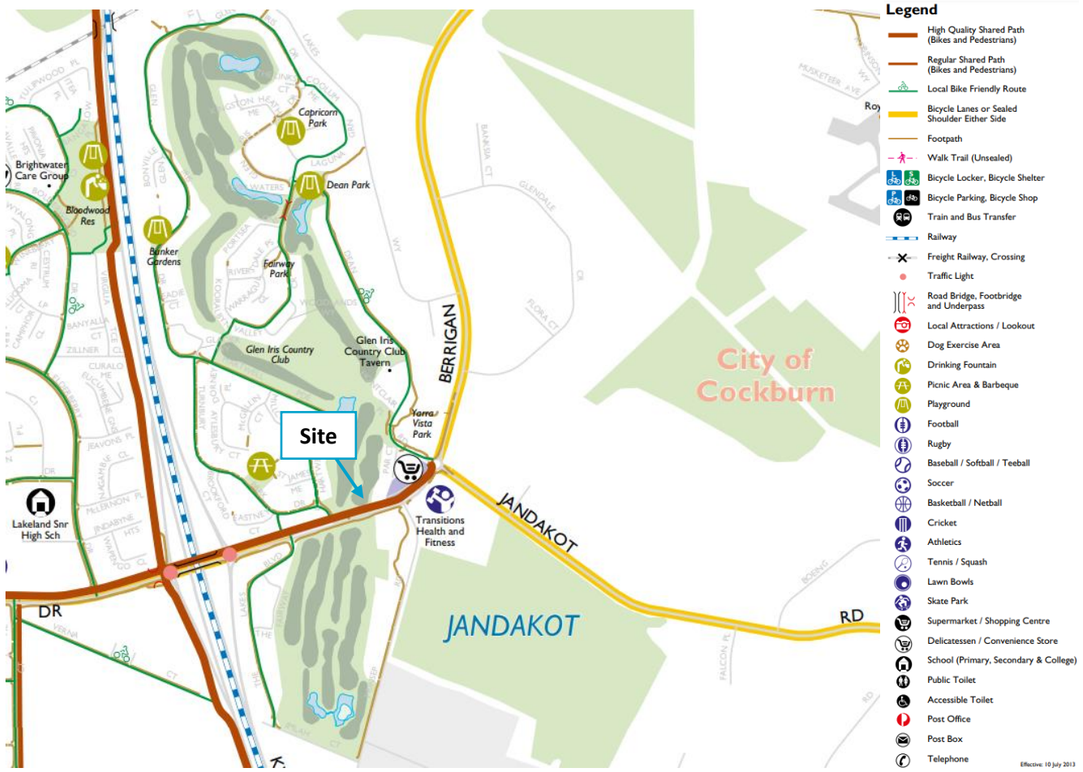
2.8 Operation of Surrounding Intersections

The MRWA endorsed *Traffic Signal Approval Policy Stage 2 - Base Model Report* (PJA, September 2023) for the existing Berrigan Drive & Jandakot Road/Dean Road traffic signals showed signals are operating at a Level of Service (LOS) C in both the AM and PM peak with a Degree of Saturation (DoS) of 0.86 in the AM peak and 0.75 in the PM peak.

2.9 Pedestrian and Cycle Networks

The surrounding active travel network is shown in **Figure 2-9** which consists of a high-quality shared path (for bikes and pedestrians) on the northern side of Berrigan Drive and a footpath on the southern side of Berrigan Drive, which connect to local bike friendly routes/footpaths.

Figure 2-9: City of Cockburn Active Travel Network Map

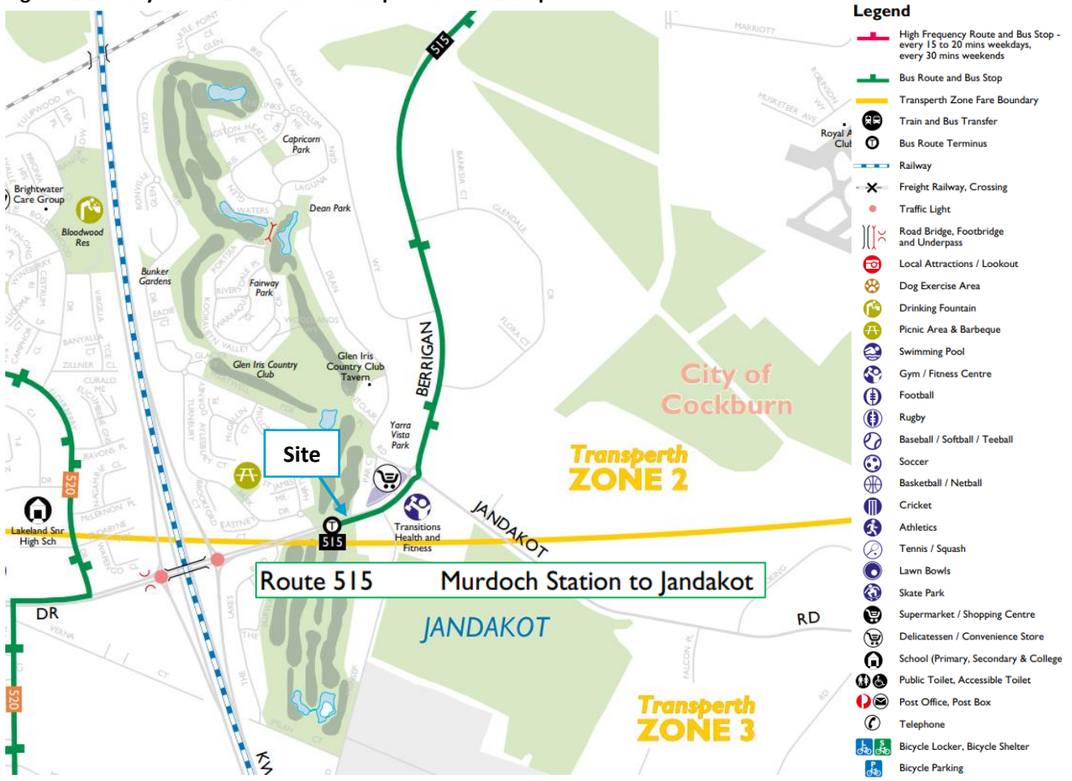


Source: Department of Transport WA (July 2013)

2.10 Public Transport Networks

The nearby public transport service to the Site is limited to Bus Route 515, which links to Murdoch Train Station. Murdoch Train Station is on the Mandurah train line which operates services between Mandurah and Perth with Perth being a transfer station to other rail networks. The Site with respect to the wider Cockburn Public Transport Network is shown in **Figure 2-10**.

Figure 2-10: City of Cockburn Public Transport Network Map



Source: Department of Transport WA (July 2013)

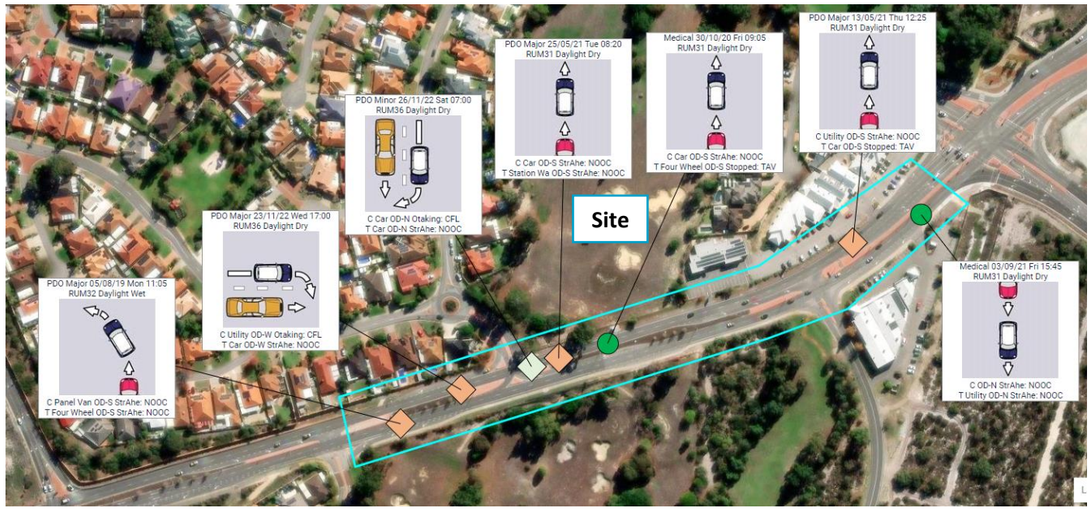
The Cockburn Central Railway Station is accessible via cycling along the PSP on the western side of the Kwinana Freeway, this trip is approximately 3.0km from the bus stops on Berrigan Drive, or 5.0km from the northern residencies.

The Cockburn Central Railway Station park-and-ride facility is an 8-minute drive or 15-20-minute cycle, to/from the Site via Prinsep Road or the Kwinana Freeway.

2.11 Historic Recorded Crash Statistics

A crash history extract of crashes recorded over the last 5-years (2019-2023) was undertaken for Berrigan Drive between The Lakes Boulevard and Jandakot Road (midblock section). The crash map extract is shown in **Figure 2-11**.

Figure 2-11: Historic Crash Data Extract (01/01/2019 – 31/12/2023)



Source: Main Roads WA

The results found that a total of seven crashes were recorded within this section in the last 5-year period, five of which were rear-end crash types and two were sideswipe crash types. Two resulted in medical treatment being required, where the other five were property damage only (PDO). Zero crashes were recorded in 2023, and one crash was recorded in 2022. Of the rear end and sideswipe crashes recorded, none of the recorded details relate to vehicles turning into a development crossover.

3 Development Application Proposal

3.1 Development Layout

The proposed Glen Iris Local Centre layout is shown in **Figure 3-1**, with the DA plans provided in **Appendix B**.

Figure 3-1: Proposed Development Application Plan

Source: Place Fabric (Rev P – 19/12/2024)

3.2 Land Uses

The applicant for this DA also owns and operates the *Preston Street IGA* (*The Karalee on Preston* and *Liquor Barons)* on Angelo Street in Como, WA. With the experience of the local centre operations from The Karalee and Liquor Barons, this DA proposes a similar arrangement as in Como, with an IGA supermarket, a family-style bistro, a liquor store and speciality retail stores/food and beverage (F&B)/health and wellness tenancies.

A breakdown of the proposed land uses yields is provided in **Table 3-1**.

Table 3-1: Proposed Land Uses and Yields

Proposed Land Use	Tenancy	Total Gross Leasable Area (GLA)	Potential Public Floorspace
Supermarket	T01	1,000 m²	650 m²
Bistro with Alfresco and Child Play Area	T05	615 m²	340 m²
Food and Beverage (F&B)	T03, T04 & T09	290 m²	135 m²
Health and Wellness	T08	200 m²	200 m²
Speciality Shop	T02 & T07	180 m²	180 m²
Liquor Store	T06	115 m²	115 m²

The Site also proposes a new community parklet on the northwest corner, nominates end of trip facilities (toilets/changerooms), a separated site servicing/loading area, landscaping and a waste storage area, as complimentary amenities of the local centre.

3.3 Hours of Operation

The operating hours are considered to be indicative of the times detailed in **Table 3-2**.

Table 3-2: Indicative Hours of Operation

Land Use	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Supermarket	7am - 9pm	7am - 9pm	7am - 9pm	7am - 9pm	7am - 9pm	7am - 9pm	7am - 9pm
Liquor Store	9am - 7pm	9am - 7pm	9am - 7pm	9am - 7pm	9am - 7pm	9am - 7pm	9am - 7pm
Tavern	11am - 10pm	11am - 10pm	11am - 10pm	11am - 10pm	11am - 10pm	11am – 12am	11am – 12am
F&B	6am – 9pm	6am – 9pm	6am – 9pm	6am – 9pm	6am – 9pm	6am – 9pm	6am – 9pm
Retail	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm	8am – 5pm
Health & Wellness	7am – 7pm	7am – 7pm	7am – 7pm	7am – 7pm	7am – 7pm	7am – 7pm	7am – 7pm

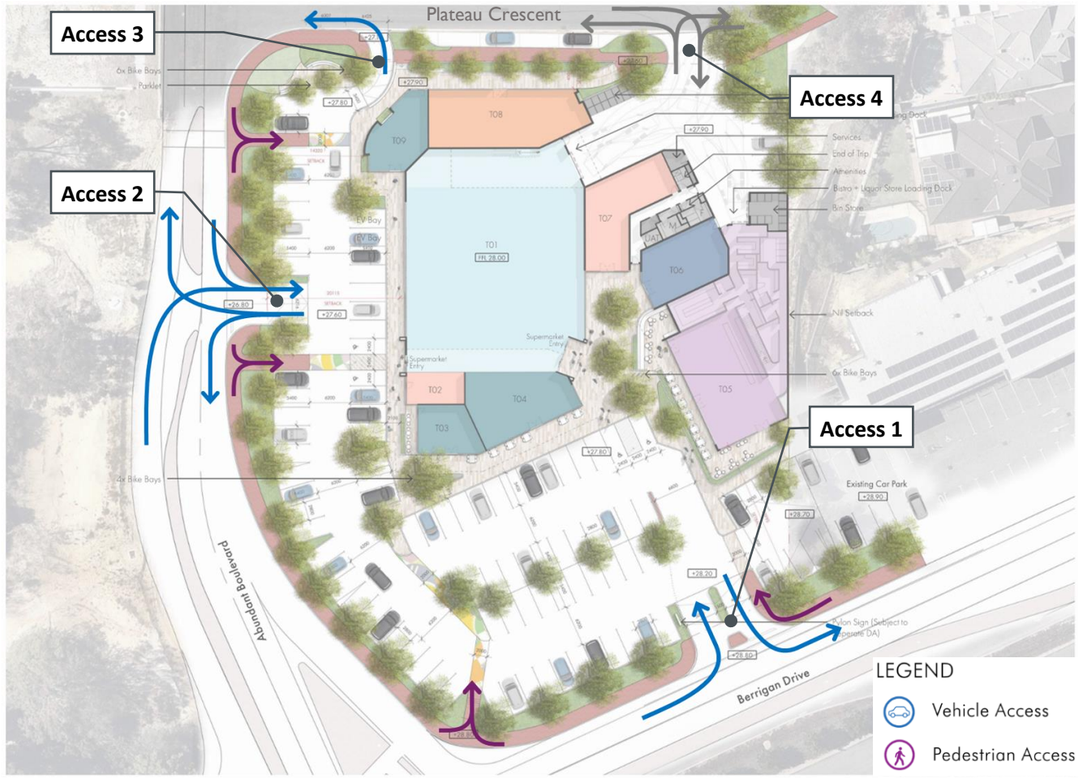
It is noted that some of the land uses proposed would overlap in operational hours, where some may be closed while others are open.

3.4 Vehicle Access Arrangements

A total of four (4) vehicular accesses are proposed, with one access via Berrigan Drive, one via Abundant Boulevard and two accesses on Plateau Crescent, as described below and shown in **Figure 3-2**.

- **Access 1**: Left-In, Left-Out (LILO) crossover on Berrigan Drive, primarily facilitating the access of vehicles via the west of the Site, which is likely to be external and pass-by traffic, in addition to some traffic from the south within the Glen Iris Estate.
- **Access 2**: Full movement crossover on Abundant Boulevard, primarily facilitating the access of vehicles via the north, east and south of the Site, which is likely to primarily be traffic internal to the Glen Iris Estate with some external traffic from the east.
- **Access 3**: Left-Out Only crossover on Plateau Crescent, primarily facilitating the access of vehicles via the north of the Site, which is likely to be traffic internal to the Glen Iris Estate.
- **Access 4**: Full movement crossover on Plateau Crescent for staff parking and service vehicles accessing the loading/waste facilities.

Figure 3-2: Proposed Access Arrangements



Base Image Source: Place Fabric (Rev P – 19/12/2024)

An assessment of the public transport and pedestrian (including people with disabilities) access to the Site are covered in **Sections 6.11** and **6.12,** respectively.

An analysis of the access locations and forms has been undertaken and provided in **Section 6.6**.

3.5 Parking Provision and Layout

A total of 100 new car parking bays (wholly on the Site) and 4 on-street car parking bays are proposed as part of the DA, with their allocations and details provided in **Table 3-3**.

Table 3-3: Proposed Parking Provisions

Proposed	Off-Street (UC1)	Off-Street (UC3A)	Off-Street (UC4)	On-Street	Bicycle
Bay Provision	5	91	4	4	16
Bay Type	90-degree angled	90-degree angled	90-degree angled	Parallel	Bicycle Racks
Bay Width	2.4m *	2.8m	2.4m	2.1m	0.5m
Bay Length	5.4m	5.4m	5.4m	6.0m (inside bays) 6.2m (outside bays)	1.8m
Aisle Width	6.2m	6.2m	6.2m	3.0m	1.0m

**Plus 0.3m for bays bound by a vertical obstruction preventing door opening AND 1.0m aisle clearance beyond last bay.*
User Class 1 (UC1): Employee and commuter parking (generally, all-day parking) – proposed within the loading zone.
User Class 3A (UC3A): Short-term, high turnover parking at shopping centres – proposed within the public carpark.
User Class 4 (UC4): Parking for people with disabilities – as per AS/NZS 2890.6.

There is potential for another 6 off-street (User Class 3A) car parking bays to be provided at the boundary of the Site and the adjacent lot, taking the total parking provision to 110 car parking bays and 16 bicycle bays, if needed. The parking provision requirements have been assessed in **Section 7.1**. Two bays are allocated for electric vehicle (EV) parking in the northern section of the carpark between T01 and T09.

The proposed parking geometry and layout, from **Table 3-3**, have been reviewed and assessed in accordance with the relevant parts of the *Australian and New Zealand Standard 2890: Parking Facilities* (AS/NZS 2890) series is detailed in **Table 3-4**.

Table 3-4: Required Parking Layout and Geometry AS/NZS 2890 Compliance Check

Required	Off-Street (UC1)	Off-Street (UC3A)	Off-Street (UC4)	On-Street	Bicycle
Bay Width	2.4m (✓) *	2.7m (✓)	2.4m (✓)	2.1m (✓)	0.5m (✓)
Bay Length	5.4m (✓)	5.4m (✓)	5.4m (✓)	6.0m (inside bays) (✓) 6.2m (outside bays) (✓)	1.8m (✓)
Aisle Width	6.2m (✓)	6.2m (✓)	6.2m (✓)	3.0m (✓)	1.0m (✓)

**0.4m clearance beyond last bay proposed AND 5.2m aisle clearance proposed beyond last bay.*

The geometries of all parking areas checked is deemed to comply with the relevant parts of AS/NZS 2890. There is potential for the detailed design stage to include wheelstops within the car parking bays adjacent to the shop frontages in order to control kerb overhang and maintain an effective path width throughout.

3.6 Pedestrian Facilities

The Site appropriately connects to the existing shared path on the Berrigan Drive frontage and continues on the western and northern boundaries of the Site through a 2.0m wide path. The proposed development is highly accessible via multiple locations of the adjacent path through pavement treatments within the carpark.

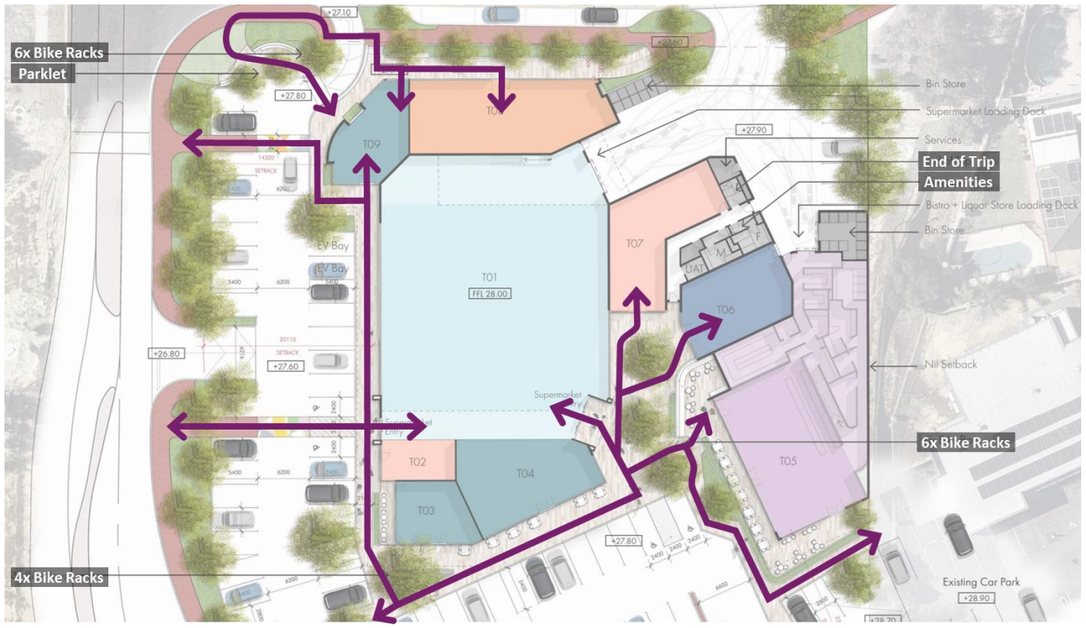
End-of-trip amenities are proposed between the main carpark and the staff carpark.

Pedestrian crossing facilities are proposed within the Site between the frontage path network and the buildings. Additionally, a midblock crossing with pedestrian refuge (2.25m - 2.8m wide) is proposed on Abundant Boulevard.

A parklet is proposed on the northwest corner of the Site with seating and shade. Additionally, alfresco seating is proposed for the F&B land uses, providing pedestrians with places to sit and rest.

The location of the proposed pedestrian facilities are shown in **Figure 3-3**.

Figure 3-3: Proposed Pedestrian Facilities

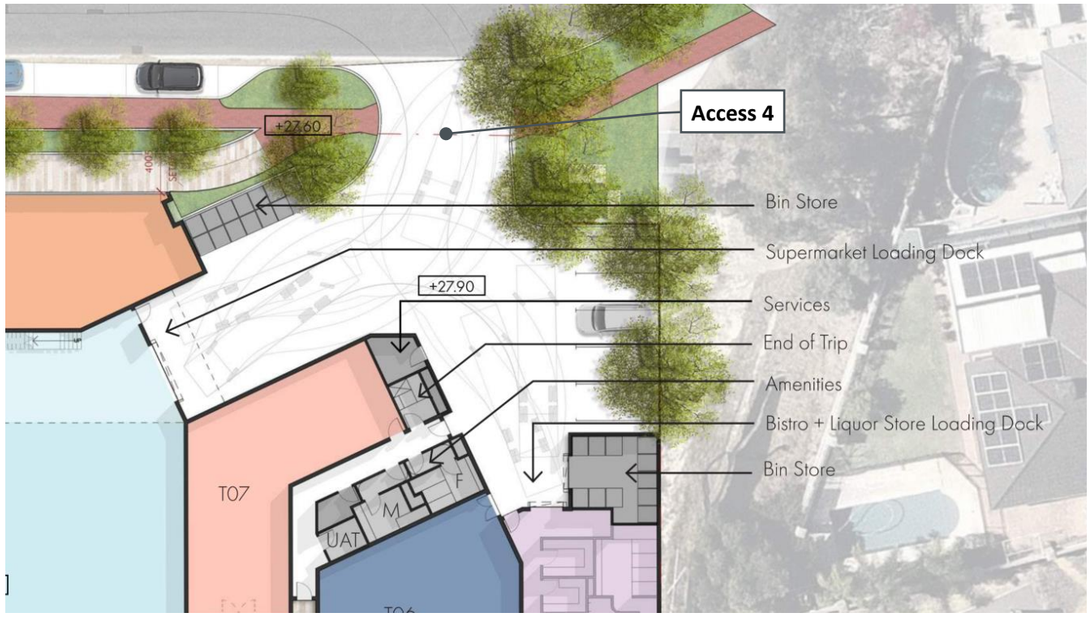


Base Image Source: Place Fabric (Rev P – 19/12/2024)

3.7 Site Servicing

The land uses would require to be serviced by waste collection and retail stock delivery trucks via an allocated service area proposed on the northeast corner of the Site, as shown in **Figure 3-4**.

Figure 3-4: Site Servicing Arrangements



Base Image Source: Place Fabric (Rev P – 19/12/2024)

A swept path analysis of the service vehicle movements using a Heavy Rigid Vehicle (HRV) design vehicle for a 5km/h design speed and a 300mm body clearance envelope has been undertaken and provided in **Appendix C**.

All movements have been resolved through the DA design process and any minor modifications can be addressed during the detailed design stage.

The frequency of deliveries would typically comprise of 2-3 trucks per week outside of morning and afternoon peak hours and this will be confirmed post the DA process.

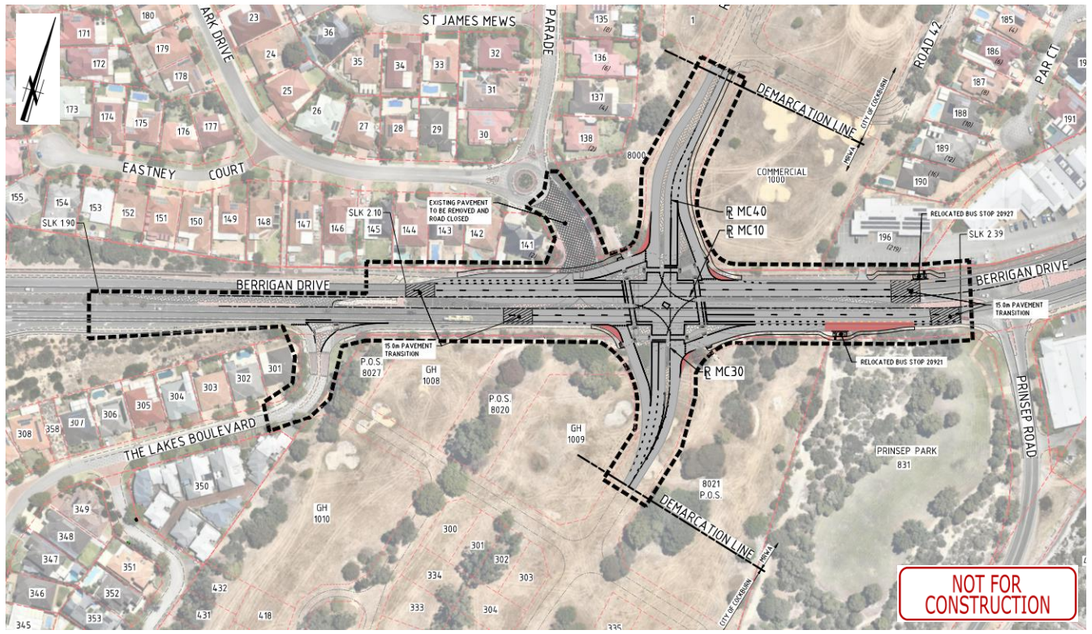
4 Changes to External Transport Network

4.1 Berrigan Drive Corridor Modifications

As part of the approved LSP, Berrigan Drive is proposed to undergo a series of modifications, including a MRWA endorsed new four-way signalised intersection at Abundant Boulevard adjacent to the southwest corner of the Site. Additionally, Turnbury Park Drive will become a cul-de-sac at Berrigan Drive, The Lakes Boulevard will be converted to a Left-In/Left-Out (LILO) intersection at Berrigan Drive and *Bus Stops 20921* and *20927* will be slightly relocated.

The current concept scheme plan for the works are shown in **Figure 4-1**.

Figure 4-1: Berrigan Drive Corridor Modifications Scheme Plan (Not for Construction)



Source: JDSi Consulting Engineers (May 2024)

4.2 Development Proposals to Modify the External Transport Network

In order to facilitate full movement of vehicles at Access 2 and improve the access and amenity of the Site, a break in the median on Abundant Boulevard with the provision of an auxiliary right-turn treatment (AUR) of around 12m is proposed. This arrangement has been shown to work well considering overall operational modelling, swept paths and traffic engineering requirements assessed on the DA plans.

Given Access 1 is proposed as a Left-In/Left-Out (LILO) on Berrigan Drive, there is potential for the existing Left-In entry only crossover on Berrigan Drive (around 30m east of Access 1) to the existing *Glen Iris Local Centre* to be removed as Access 1 forms a consolidated main access for the Site and the medical precincts directly adjacent to the Site.

Figure 4-2: Development Proposals to Modify the External Transport Network

Base Image Source: Place Fabric (Rev P – 19/12/2024)

5 Integration with Surrounding Area

5.1 Surrounding Trip Generating Land Uses

The Site will be an attractor for the trips generated by the surrounding residential areas. The active travel desire lines between the Site and the surrounding *Glen Iris Estate* is shown in **Figure 5-1**.

Figure 5-1: Active Travel Desire Lines Linking the Site to the Glen Iris Estate

Source: Emerge Associates (November 2024)

The travel desire lines by road would likely align with the road hierarchy of the *Glen Iris Estate* LSP TIA, as shown in **Figure 5-2**, in which the *Neighbourhood Connector* roads would be higher order roads with higher traffic volumes and the *Access Streets* would be lower order residential streets.

Dual use paths are proposed within the typical form of the Neighbourhood Connector roads which complement the pedestrian travel desire lines through the Public Open Spaces (POS) shown in **Figure 5-1**, above.

Figure 5-2: Glen Iris Estate LSP TIA Road Hierarchy

Base Image Source: Rowe Group (2021)

5.2 Surrounding Trip Attractor Land Uses

The Site is adjacent to the west of the existing *Glen Iris Local Centre* on the northern side of Berrigan Drive, which extends to the south of Berrigan Drive and east of Prinsep Road. The proposed extension of the Glen Iris Local Centre is considered to complement the existing land uses and encourage reciprocal use between existing and new sites. Additionally, there are some future trip attractor land uses surrounding the Site as shown in **Figure 5-3**.

Figure 5-3: Surrounding Existing and Future Potential Land Uses

Base Image Source: Emerge Associates (17/12/2024)

The pedestrian/cyclist desire lines between each side of the existing Glen Iris Local Centre (and the proposed development) on Berrigan Drive is accommodated via the existing midblock crossing, east of Prinsep Road, which provides a 2.5m wide median refuge and crosses 3-lanes (12m) westbound and 2-lanes (9m) eastbound. The crossing amenity at this location is assessed further in **Section 6.12**.

The vehicle desire lines between carparks would likely involve travelling via Prinsep Road and Abundant Boulevard utilising the intersections on Berrigan Drive.

The travel desire lines between the sites are shown in **Figure 5-4**.

Figure 5-4: Travel Desire Lines Between Surrounding Trip Attractor Land Uses

Base Image Source: Nearmap (June 2024) / Google (April 2023)

6 Analysis of Transport Network

6.1 Assessment Years and Time Periods

The transport assessment is based on the following development forecast years:

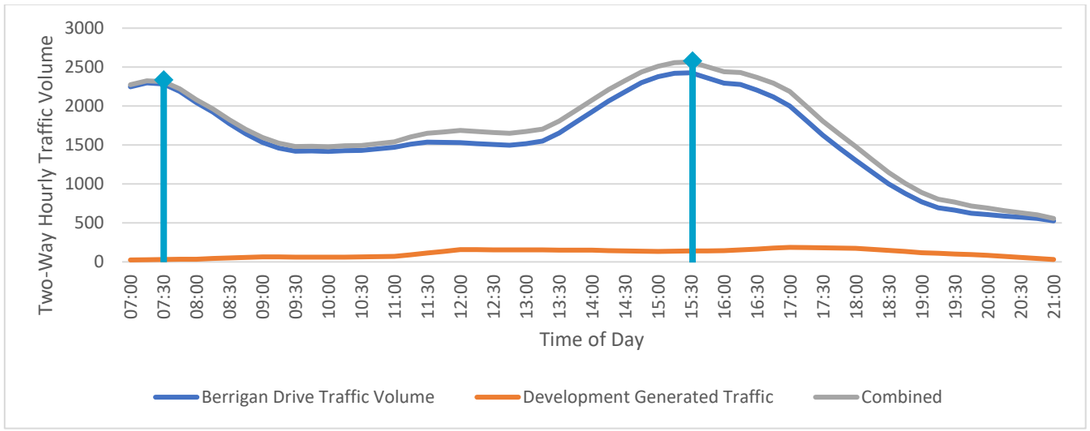
- Opening year: 2026
- 10-year post development: 2036.

The assessment of these years includes an AM peak and PM peak for the likely vehicular trips generated by the development at full build-out. An assessment of the LSP at full build-out was excluded from the LSP TIA due to a *Berrigan Drive Corridor Study* being undertaken separately (per due process).

The time periods adopted for the assessment were selected based upon a traffic volume distribution profile of Berrigan Drive and the estimated total vehicle trip generation of the Site, as detailed in the following sections. This shows that the peak hours, representing the worst-case impact scenario on the road network corresponds to the following peak hours as shown in **Figure 6-1**.

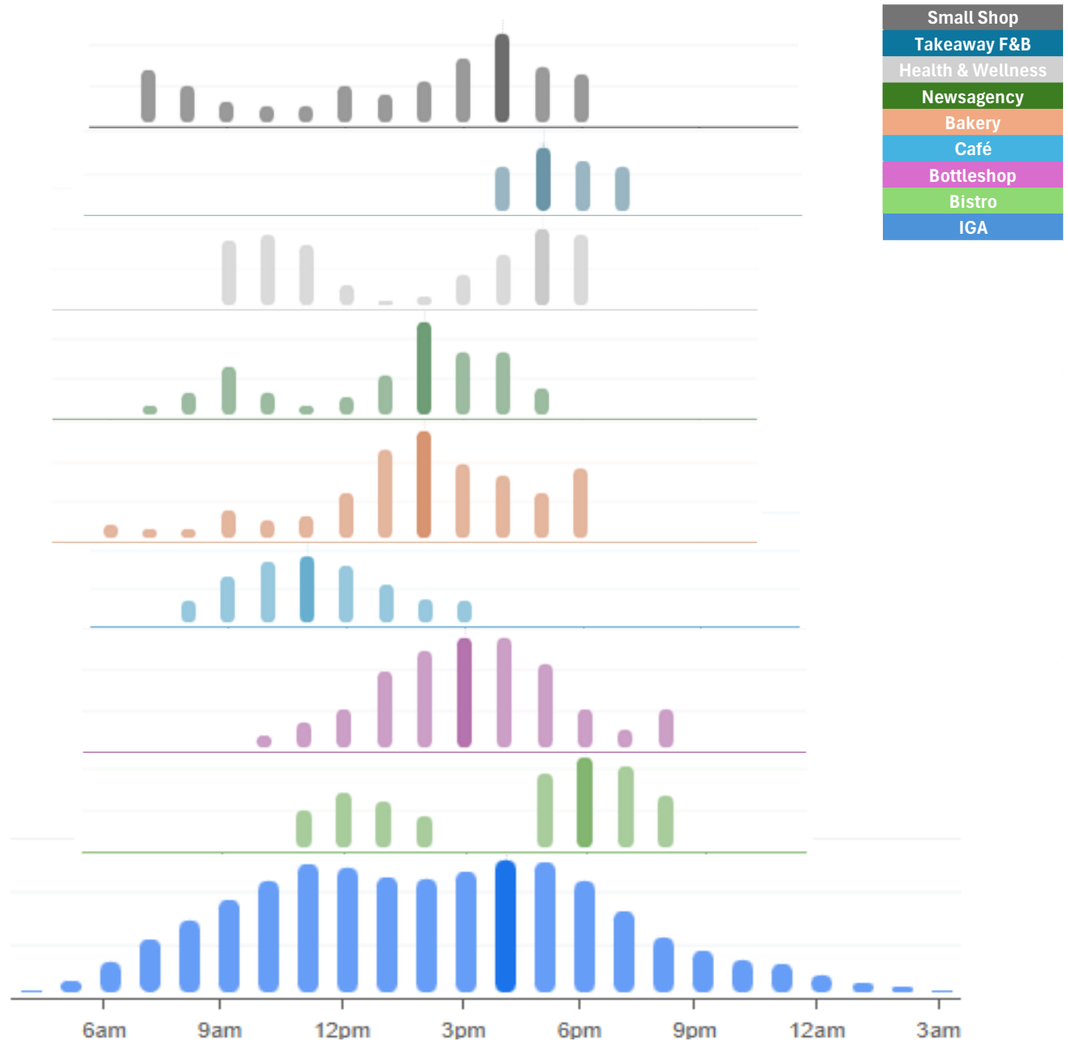
- AM Peak: 7.30am to 8.30am
- PM Peak: 3.30pm to 4.30pm.

Figure 6-1: Berrigan Drive Traffic Volumes and Total Site Trip Generation Correlation



It is worth noting that not all of the vehicle trips generated by the proposed development will be distributed onto Berrigan Drive (as the Site serves a local centre function). Additionally, each of the proposed land uses have differing peak periods. Therefore, a demand graph for similar indicative land uses was sourced from *Google Popular Times* data as shown in **Figure 6-2** to determine the level of traffic generated by each local centre land use over the day and the likely traffic impacts.

Figure 6-2: Time of the Day Land Use Demand



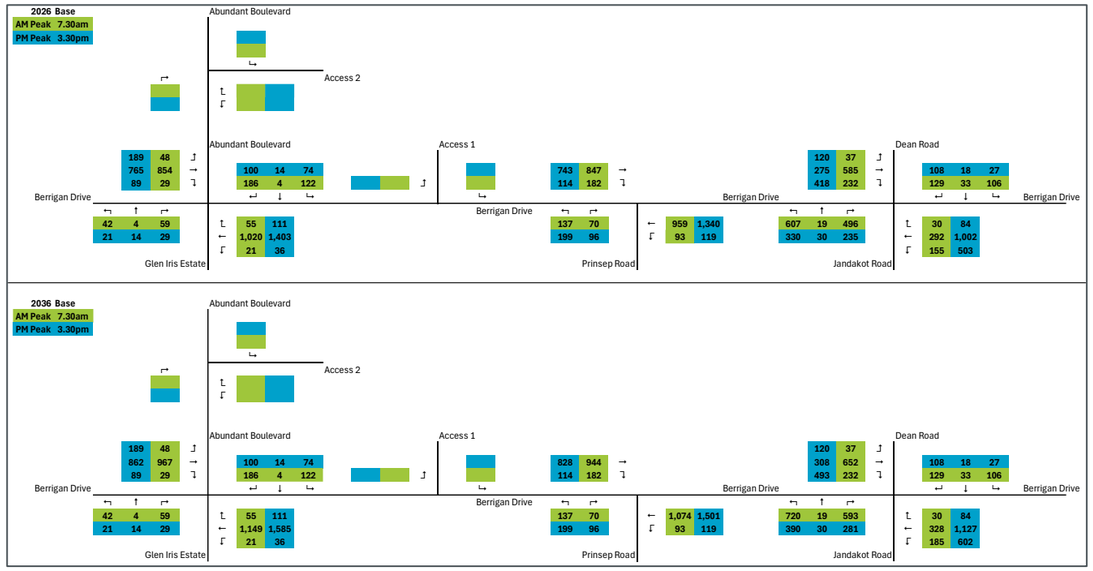
Data Source: Google Popular Times

The proportion of demand for each time of the day was calculated based upon the scale against the AM and PM peak, assuming the graph peak represents 100% of demand.

6.2 Base Traffic Flows

The base year peak traffic flows reference the traffic volumes adopted in the *Berrigan Drive Corridor Study* as part of the new traffic signals operational modelling, minus the trips associated with the Glen Iris Local Centre under the LSP TIA to avoid double counting. This is summarised in **Figure 6-3** (refer also to Appendix D). Growth rates of 1.4%pa on Berrigan Drive and 2.14%pa on Jandakot Drive were provided by MRWA.

Figure 6-3: 2026 and 2036 Peak Hour Background Traffic Volumes



6.3 Development Vehicle Trip Generation

The estimated trip generation of the development is based upon unit trip generation rates from the *International Traffic Engineers Traffic Generation Manual 9th Edition* (ITE 9th Ed.) and converted to unit rates per 100m² of gross floor area (GFA), where appropriate, as provided in **Table 6-1**.

Table 6-1: ITE 9th Ed Trip Generation Rates (Converted from 1000ft² Unit Rate)

Land Use (LU Code)	Units	Weekday	AM Peak	PM Peak	AM - In	Am - Out	PM - In	PM - Out
Supermarket (850)	Per 100m²	110.05	3.66	10.20	62%	38%	51%	49%
Quality Restaurant (931)	Per Seat	2.86	0.03	0.26	100%	0%	67%	33%
High Turnover/Sit Down Rest (932)	Per 100m²	136.86	11.64	10.60	55%	45%	60%	40%
Health/Fitness Club (492)	Per 100m²	35.45	1.52	3.80	50%	50%	57%	43%
Speciality Retail Centre (826)	Per 100m²	47.71	7.36	2.92	48%	52%	44%	56%
Liquor Store (899) - 11th Ed.	Per 100m²	-	-	17.89	50%	50%	49%	51%

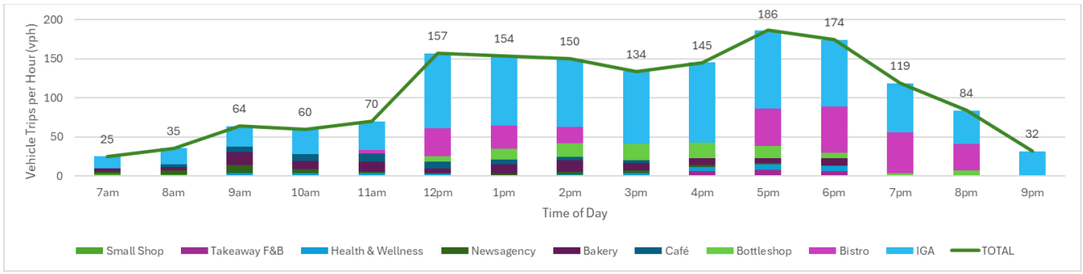
Applying these rates to the proposed development yields, the estimated trip generation of each individual land use is provided in **Table 6-2**.

Table 6-2: Estimated Trips Generated by the Proposed Development

Land Use	Yield	Weekday	AM Peak	PM Peak	AM - In	Am - Out	PM - In	PM – Out
IGA Supermarket	1,000m² GFA	1,101	37	102	23	14	52	50
Family-Style Bistro	225 seats	644	7	59	7	0	39	19
F&B	290m² GFA	397	34	31	19	15	18	12
Health and Wellness	200m² GFA	71	3	8	2	2	4	3
Speciality Shops	180m² GFA	86	13	5	6	7	2	3
Liquor Store	115 m² GFA	-	-	21	0	0	10	10

The total vehicle trips per land use over the day based on **Figure 6-2** are shown in **Figure 6-4**.

Figure 6-4: Development Vehicle Trip Generation per Time of Day



At the AM peak of the road network (7.30am) the development is estimated to generate around 35vph, and at the PM peak of the road network (3.30pm) the development is estimated to generate around 145vph. The AM peak of the local centre is considered to occur between 9am and 11am where vehicle trips are steadier in the morning with an estimated peak of around 70vph. A midday peak is expected to occur (in alignment with a general lunchtime peak) where around 160vph are estimated to be generated by the development. This car parking surveys also showed a peak at 11.30am servicing the lunch time traffic. The PM peak is considered to occur at 5pm where around 185vph are estimated to be generated by the development, which aligns with a potential dinnertime peak and other shops closing. At 12 noon, Berrigan Drive carries around 750vph less than at 7.30am and around 425vph less at 5pm than at 3.30pm. Hence, the external road network peak has been adopted for the assessment.

The total vehicle trips have been split into the following three trip types:

- **Pass-by trips**: vehicle trips on the surrounding road network directly passing the development and simply turning in before continuing their trip.
- **Diverted trips**: vehicles passing close to the development and diverting to the development before continuing their trip.
- **New trips**: vehicle trips generated solely by the development that are new to the surrounding road network.

6.3.1 Pass-By Trips

The proportion of pass-by trips have been estimated based upon the percentages provided in *ITE 9th Edition* for the applicable land uses and calculated as provided in **Table 6-3**.

Table 6-3: Development Vehicle Pass-By Trip Generation

Land Use	Pass-By	Weekday	AM Peak	PM Peak	AM - In	Am - Out	PM - In	PM – Out
IGA Supermarket	36%	285	5	26	3	2	13	13
Family-Style Bistro	44%	192	0	13	0	0	9	4
F&B	43%	188	4	7	2	2	4	2

Pass-by vehicle trips are estimated to comprise of 850vpd on a weekday, 11vph in the AM peak and 43vph in the PM peak. The inbound and outbound splits are the equivalent of 60% in and 40% out in the AM peak and 52% in and 48% out in the PM peak.

6.3.2 Diverted Trips

It has been conservatively assumed that the development would not generate any diverted trips, with all non-pass-by trips considered as new trips.

6.3.3 New Trips

The new trips generated by the development would be equal to the difference between the total vehicle trip generation and the pass-by trips, as provided in **Table 6-4**.

Table 6-4: Development Vehicle Trip Generation of New Trips

Land Use	Weekday	AM	PM	AM - In	Am - Out	PM - In	PM – Out
IGA Supermarket	704	13	65	8	5	33	32
Family-Style Bistro	360	0	0	0	0	0	11
F&B	226	5	8	3	2	5	3
Health and Wellness	71	0	5	0	0	3	2
Speciality Shops	86	7	4	3	3	2	2
Liquor Store	-	-	21	0	0	10	10

The total number of new trips is estimated to be 1,450vpd on a weekday, 25vph in the AM peak and 102vph in the PM peak. The inbound and outbound splits are the equivalent of 57% in and 43% out in the AM peak and 46% in and 54% out in the PM peak.

A comparison to the trip generation estimated in the LSP TIA is provided in **Table 6-5**.

Table 6-5: Site Vehicle Trip Generation Comparison to LSP TIA

Planning Stage	Weekday	AM	PM	AM - In	Am - Out	PM - In	PM – Out
Structure Plan	1,150	25	100	16	9	48	52
Development Application	2,298	35	145	20	15	75	70
Difference	**+1,148**	**+10**	**+45**	**+4**	**+6**	**+27**	**+18**

6.4 Traffic Distribution

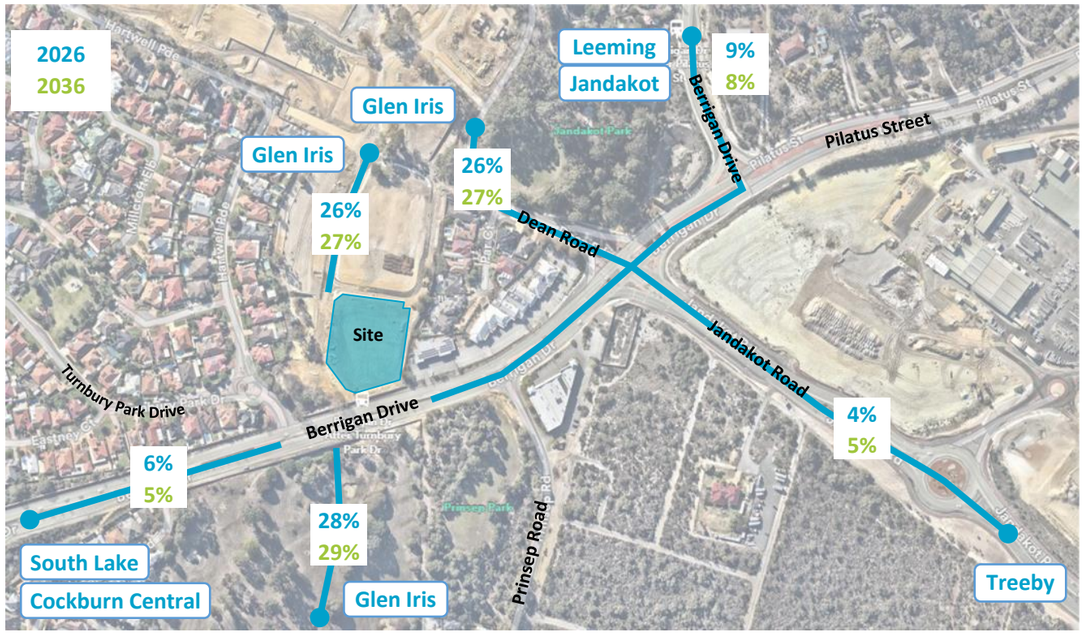
The LSP TIA adopts the traffic distribution of the *Glen Iris Estate Retail Needs Assessment* (Taktics4, February 2022) which outlines the following catchment areas contribution to the sales, based on an analysis of similar surrounding land uses to the proposed Glen Iris Local Centre (as a small supermarket with 5-10 shops (1,500-2,500m^2)) for each forecast year is noted in **Table 6-6**.

Table 6-6: Glen Iris Estate Retail Needs Assessment Catchment Area Distribution

Forecast Year	Jandakot/Glen Iris (existing)	Glen Iris (new)	South Lake	Cockburn Central	Leeming	Treeby
2026	71%	10%	6%	1%	9%	4%
2031	63%	19%	5%	1%	8%	5%
2036	58%	25%	5%	1%	7%	5%
2041	58%	25%	5%	1%	7%	5%

For the assessment years, 81% (in 2026) and 82% (in 2036) of the Site trips are via the Glen Iris Estate (north and south of Berrigan Drive). As discussed in **Section 1.4**, the proportion of residential traffic on Abundant Boulevard, north and south of Berrigan Drive, is estimated within the LSP TIA as 65% and 35%, respectively. Additionally, noting that the percentages equate to 101% and the direction of traffic for South Lake and Cockburn Central is via the west, the 1% for Cockburn Central has been removed and grouped with the proportion of traffic via South Lake. A summary of the adopted distribution percentages are shown in **Figure 6-5**.

Figure 6-5: Adopted Trip Distribution Splits for Each Assessment Year



Base Image Source: Nearmap (June 2024)

6.4.1 New Trips

The new trips have been distributed accordingly with **Figure 6-5** and the calculated inbound/outbound splits of 57/43 in the AM peak and 46/54 in the PM peak.

6.4.2 Pass-By Trips

The pass-by trips are assumed to comprise of vehicle trips between the residential catchment areas and traffic on Berrigan Drive. The LSP TIA adopts a distribution split of new trips on Berrigan Drive of 60% west and 40% east, based on surveyed travel patterns. These splits have been used to form the basis of pass-by trips, using the calculated inbound/outbound splits of 58/42 in the AM peak and 52/48 in the PM peak.

6.5 Proposed Development Traffic Flows

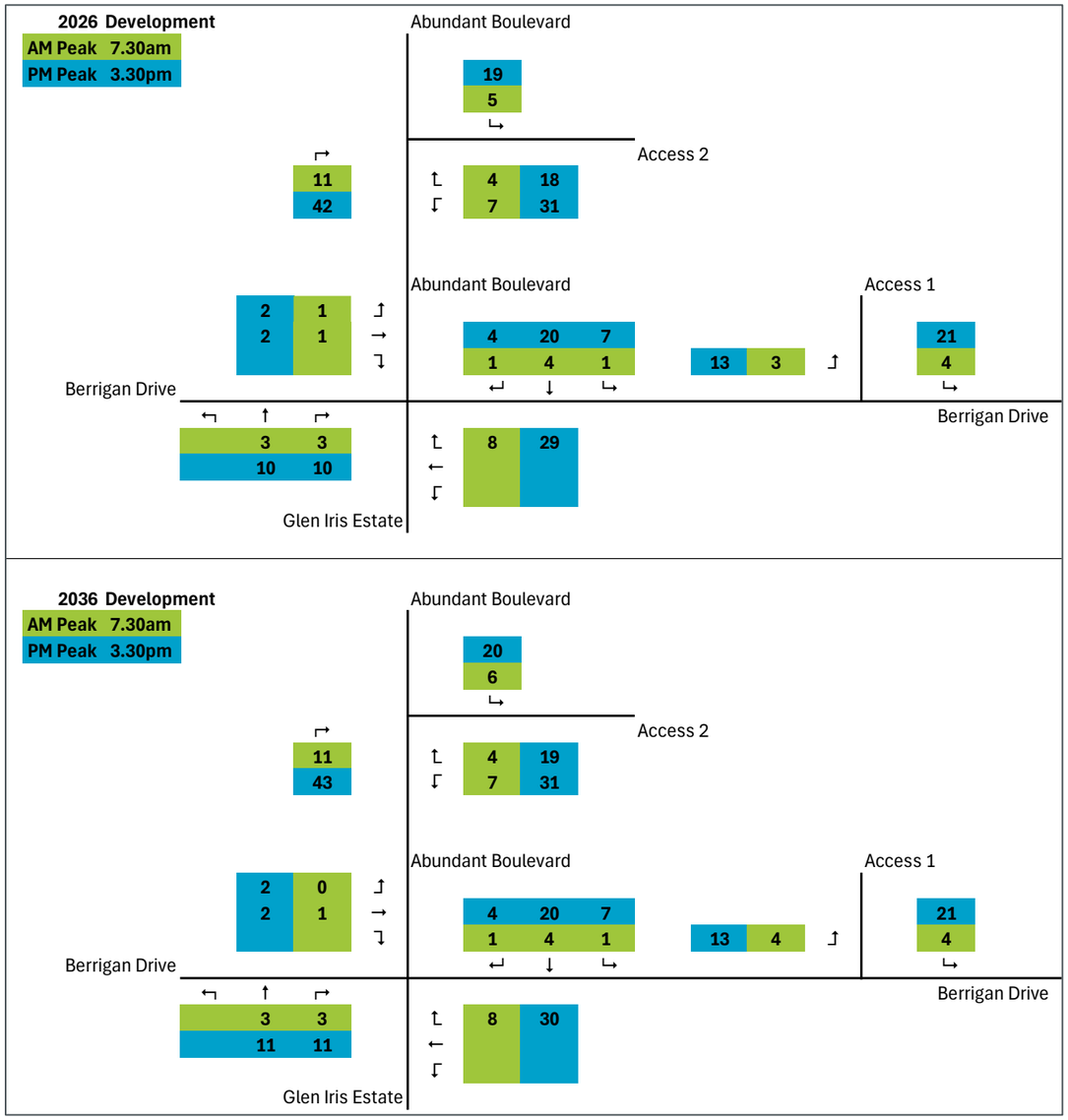
The estimated total vehicle traffic volumes generated by the proposed development have been distributed across Access 1 and Access 2 via the new Berrigan Drive and Abundant Boulevard traffic signals accordingly as provided in **Table 6-7**.

Table 6-7: Site Access Distribution

Traffic Signals Approach	Access 1 - IN	Access 1 - OUT	Access 2 - IN	Access 2 - OUT
Abundant Boulevard North	0%	0%	100%	100%
Berrigan Drive East	0%	75%	100%	25%
Glen Iris Estate South	50%	0%	50%	100%
Berrigan Drive West	50%	0%	50%	100%

The resulting AM and PM peak traffic flows at the accesses is shown in **Figure 6-6** for the 2026 and 2036 forecast assessment years.

Figure 6-6: 2026 Peak Hour Total Estimated Traffic Generation of Proposed Development



6.6 Analysis of Development Accesses

The estimated traffic generation of the Site accessing (in and out trips) via Access 1 is 8vph in the AM peak and 34vph in the PM peak (around 0.6 vehicles per minute). Whereas the estimated traffic generation of the Site accessing via Access 2 is 28vph in the AM peak and 113vph in the PM peak (around 1.8 vehicles per minute). Therefore, the impacts of the Site on the two frontage roads are perceived to be minor.

The indicative access geometry requirements outlined in AS/NZS 2890 *Part 1: Off-Street Car Parking* (AS/NZS 2890.1:2004) for each access design is provided in **Table 6-8**.

Table 6-8: Access Driveway Requirements

Requirement	Access 1	Access 2	Access 3	Access 4
Access Category	3	2	2	1
Entry Width	6.0m	6.0m - 9.0m	6.0m - 9.0m	3.0m - 5.5m
Exit Width	4.0m - 6.0m	Combined with Entry	Combined with Entry	Combined with Entry
Entry/Exit Separation	1.0m - 3.0m	N/A	N/A	N/A
Sight Distance	97m (desirable), 85m (minimum)	69m (desirable), 45m (minimum)	69m (desirable), 45m (minimum)	69m (desirable), 45m (minimum)

Access 1 is proposed with a 5.0m wide entry, 1.5m separation median and a 4.0m exit. Access 2 is proposed with a combined 6.2m wide entry and exit driveway width. Access 3 is proposed as a 3.4m wide exit only driveway. Access 4 is proposed as a combined 8.4m wide entry and exit driveway. All accesses have been assessed with a swept path analysis of a B99 passenger car design vehicle and all movements are accommodated for as shown in **Appendix C**.

The sight distance requirements are shown in **Figure 6-7** and are perceived to be achievable based on the desktop review of potential obstructions.

Figure 6-7: Desktop Sight Distance Assessment of Access Locations

Base Image Source: Place Fabric (Rev P – 19/12/2024)

6.7 Impact on Surrounding Roads

The latest traffic count on Berrigan Drive is from August 2024 (recorded by the City of Cockburn) in which the average weekday two-way traffic volume recorded 22,499vpd with 9.4% of heavy vehicles and 1,831vph in the AM peak and 2,047vph in the PM peak.

The proposed development is estimated to increase traffic volumes on Berrigan Drive by around 820vpd which is around a 4% increase in the daily two-way traffic volumes. *Liveable Neighbourhoods 2009* indicates that a District Distributor A equivalent (Integrator Arterial A) has an indicative daily traffic volume up to 25,000vpd within centres and up to 35,000vpd outside of centres. Therefore, the additional traffic generated by the development is considered to be adequately accommodated for within the current form of Berrigan Drive.

The local roads within the *Glen Iris Estate* are adequately accommodated for within the proposed road hierarchy of the LSP TIA, and given Abundant Boulevard fronting the Site is estimated to carry only 3,690vpd well below its upper indicative capacity of 7,000vpd.

6.8 Impact on Surrounding Intersections

A capacity-based intersection performance assessment was undertaken in SIDRA Intersection v9.1 for the Berrigan Drive intersections with Abundant Boulevard, Prinsep Road and Dean Road/Jandakot Road for a base case and with development traffic scenarios.

The full movement summary results are provided in **Appendix D**, with a summary of the intersection results in each scenario provided in **Table 6-9** to **Table 6-11**.

Table 6-9: SIDRA Intersection Results Comparison (Berrigan Drive & Abundant Boulevard)

	AM Peak (7.30am)			PM Peak (3.30pm)		
	Degree of Saturation	Average Delay (s)	Level of Service	Degree of Saturation	Average Delay (s)	Level of Service
2026	0.552	31.2	C	0.653	36.6	D
2036	0.605	32.2	C	0.721	38.4	D

Table 6-10: SIDRA Intersection Results Comparison (Berrigan Drive & Prinsep Road)

	AM Peak (7.30am)			PM Peak (3.30pm)		
	Degree of Saturation	Average Delay (s)	Level of Service	Degree of Saturation	Average Delay (s)	Level of Service
2026	0.714	6.3	N/A	1.281	49.1	N/A
2036	0.871	8.7	N/A	0.871	8.7	N/A

Table 6-11: SIDRA Intersection Results Comparison (Berrigan Drive & Dean Road/Jandakot Road)

	AM Peak (7.30am)			PM Peak (3.30pm)		
	Degree of Saturation	Average Delay (s)	Level of Service	Degree of Saturation	Average Delay (s)	Level of Service
2026	0.597	36.9	D	1.111	105.6	F
2036	0.726	38.9	D	1.263	165.9	F

The development is perceived to have little impact on the overall performance of the Berrigan Drive & Abundant Boulevard intersection. However, it is noted that the Prinsep Road and Dean Road/Jandakot Road intersections would be affected by the growth of background traffic (previously highlighted, irrespective of development); however, this is not warranted by the minor increase in traffic volumes from the development.

6.9 Impact on Neighbouring Areas

The proposed development is designed to have a positive impact on the neighbouring areas, providing the approved urban development good access to local shopping and recreational amenity in a safe and equitable manner.

6.10 Road Safety

The new traffic signals to the west of the Berrigan Drive access will provide good opportunity for platooning of traffic and offer gaps in traffic between signal phases to support vehicles exiting from the proposed LILO crossover. The Site has been designed so that vehicles entering the carpark are free-flowing, meaning no blockages into the site are expected. Furthermore, there is around a 50m-90m clearance between the eastbound exit and approach leg, respectively, and the proposed LILO crossover location, which is in alignment with the minimum sight stopping distance for access driveways at 50km/h (differential speed between posted and turning speed) and 70km/h. Therefore, it is considered that sufficient separation distance for vehicles to decelerate appropriately and negotiate the turn has been provided.

6.11 Public Transport Access

Berrigan Drive currently facilitates *Transperth Bus Route 515* with the existing bus stops proposed to be relocated slightly between Prinsep Road and the new traffic signals, on the southwest corner of the Site. Therefore, the access to public transport services would be very convenient with stops around 50m from the Site boundary.

The *Bus Route 515* service runs to and from these stops and Murdoch Train/Bus Station, allowing for a connection to subsequent bus services or the *Mandurah Train Line*, providing staff and/or patrons with convenient linkages between broader public transport hubs and the Site.

6.12 Pedestrian and Cycle Access/Amenity

Table 3 of the *WAPC TIA Guidelines* indicates that hourly two-way traffic volumes above 1,600vph for 4-lane divided roads can affect pedestrian crossing amenity. The midblock crossing shown previously in **Section 5.2** would rely on gaps in traffic from the traffic signals either side to improve amenity given that Berrigan Drive carries over 1,600vph for most parts of the day (refer to **Figure 2-6**, as shown previously). Therefore, the proposed new traffic signals and the existing traffic signals either side would provide pedestrians with a protected crossing point between each side of Berrigan Drive and also Abundant Boulevard. Similarly, indicative hourly two-way traffic volumes above 2,800vph may affect pedestrians crossing Abundant Boulevard. However, as indicated within the LSP TIA, the daily traffic volume on Abundant Boulevard, north of Berrigan Drive is estimated to be in the order of 3,690vpd in which the hourly traffic volumes would be around 10% of (based on the WAPC residential trip generation rates) and falls within the acceptable WAPC guided threshold.

7 Parking

7.1 Parking Requirement

The *City of Cockburn Town Planning Scheme No. 3* (TPS3) *Amendment No. 169* (March 2024) outlines the development parking requirements for various land uses. The land uses proposed within the concept plan have adopted the City of Cockburn land use classes shown in **Table 7-1**.

Table 7-1: City of Cockburn Land Use Classification Definitions

Proposed Land Use	City of Cockburn Land Use Class	City of Cockburn Land Use Definition
IGA Supermarket	Convenience Store	premises used for the retail sale of convenience goods commonly sold in supermarkets, delicatessens or newsagents; and operated during hours which include, but may extend beyond, normal trading hours; and the floor area of which does not exceed 300m^2 net lettable area.
Liquor Store	Liquor Store	a building the subject of a Store Licence granted under the provisions of the Liquor Act.
Food & Beverage (F&B)	Lunch Bar	premises or part of premises used for the sale of takeaway food (in a form ready to be consumed without further preparation) within industrial or commercial areas.
Health & Wellness	Recreation – Private	means premises used for indoor or outdoor leisure, recreation or sport which are not usually open to the public without charge.
Bistro	Tavern	premises licensed as a tavern under the Liquor Control Act 1988 and used to sell liquor for consumption on the premises.
Speciality Shop	Shop	premises used to sell goods by retail, hire goods, or provide services of a personal nature (including a hairdresser or beauty therapist) but does not include a showroom, fast food outlet, bank, farm supply centre, garden centre, hardware store, liquor store and nursery.

Rowe Group has undertaken a review of the car parking requirements associated with the proposed land uses as outlined in the following portion.

Clause 4.9.5 of *TPS3* sets out the minimum requirements for the provision of on-site car parking bays, delivery spaces and bicycle parking depending on land use. The WAPC has recently released the *WA Planning Manual - Non-Residential Car Parking Rates in Perth and Peel Guidelines*, which are intended provide consistent car parking requirements for non-residential land uses and support the review of car parking ratios under individual local planning frameworks.

A parking assessment of the proposed development has been undertaken in relation to the standards set out *TPS3* and draft *LPS13*, along with the standards set out within the *WA Planning Manual*. Given that the precise composition of land uses on the Site is uncertain, the assessment of parking demand for the speciality retail and health and wellness tenancies has been based on the 'Shop' land use, and the food and beverage tenancies based on the 'Restaurant' land use as representative of a 'worst case' scenario.

The findings of this assessment are summarised in **Tables 7, 8** and **9** below.

Tenancy	Land Use	Land Use Class	Parking Ratio	Area	Bays Required
T01	Supermarket	Shop	1 : 12m^2 NLA	1000m^2 NLA	83.3
T02	Speciality Retail	Shop	1 : 12m^2 NLA	40m^2 NLA	3.3
T03	Food and Beverage	Lunch Bar	1 : 15m^2 NLA	65m^2 NLA	4.3
T04	Food and Beverage	Restaurant	1 : 4 seats or 1 : 4 people accommodated*	20 people	5
T05	Bistro	Tavern	1 : 2m^2 NLA of Drinking Area** 1 : 1 employee	340m^2 10 employees	180
T06	Liquor Store	Use Not Listed***	1 : 12m^2 NLA	115m^2 NLA	9.5
T07	Speciality Retail	Shop	1 : 12m^2 NLA	140m^2 NLA	11.6
T08	Health and Wellness	Recreation - Private	1 : 4 seats or 1 : 4 people accommodated*	20 people	5
T09	Food and Beverage	Café**	1 : 12m^2 NLA	85m^2 NLA	7.08
**Whichever is the greater*					
***Assumes all public areas as considered 'drinking areas'*					
****Parking requirement to be determined by the City ('Shop' parking ratio applied for the purposes of assessment)*					
				Total Bays Required	**309**
				Total bays Provided	**104**

Table 7: Car Parking Assessment (TPS3 standards)

Tenancy	Land Use	Land Use Class	Parking Ratio	Area	Bays Required
T01	Supermarket	Shop	1 : 15m^2 GLA	1000m^2 GLA	66.6
T02	Speciality Retail	Shop	1 : 15m^2 GLA	40m^2 GLA	2.6
T03	Food and Beverage	Lunch Bar	1 : 15m^2 NLA	65m^2 NLA	4.3
T04	Food and Beverage	Restaurant/Cafe	1 : 4 people accommodated	20 people	5
T05	Bistro	Tavern	1 : 4 people accommodated	225 people	56.25
T06	Liquor Store	Liquor Store – Small	1 : 15m^2 GLA plus 1 per employee	115m^2 GLA 2 employees	9.6
T07	Speciality Retail	Shop	1 : 15m^2 GLA	140m^2 GLA	9.3
T08	Health and Wellness	Recreation - Private	1 : 4 people accommodated	20 people	5
T09	Food and Beverage	Restaurant/Cafe	1 : 4 people accommodated	10 people	2.5
				Total Bays Required	**161.15 (161)**
				Total bays Provided	**104**

Table 8: Car Parking Assessment (draft LPS13 standards)

Tenancy	Land Use	Land Use Class	Parking Ratio (minimum)	Area	Bays Required
T01	Supermarket	Shop	1 : 50m² FA	1000m² GLA	20
T02	Speciality Retail	Shop	1 : 50m² FA	40m² GLA	0.8
T03	Food and Beverage	Lunch Bar	1 : 100m² FA	65m² NLA	0.65
T04	Food and Beverage	Restaurant/Cafe	1 : 10 people accommodated within the public floorspace	20 people	2
T05	Bistro	Tavern	1 : 100m² of bar and public floorspace	340m²	3.4
T06	Liquor Store	Not Listed*	1 : 50m² FA	115m² GLA	2.3
T07	Speciality Retail	Shop	1 : 50m² FA	140m² GLA	2.8
T08	Health and Wellness	Recreation - Private	1 : 8 people accommodated	20 people	2.5
T09	Food and Beverage	Restaurant/Cafe	1 : 10 people accommodated	10 people	1
**No alternate provisions provided for land uses subject to Appendix A of the Manual / 'Shop' parking ratio applied for the purposes of assessment*				**Total Bays Required**	**35.45 (35)**
				Total bays Provided	**104**

Table 9: Car Parking Assessment (WA Planning Manual – Non-Residential Parking Rates (Appendix A) Standards)

The above demonstrates that the proposed development maintains:

- A parking shortfall of 205 bays when assessed under *TPS3*
- A parking shortfall of 57 bays when assessed under *draft LPS13*
- A parking surplus of 69 bays when assessed under the *WA Planning Manual.*

It is clear from the above that there is a significant variation in parking standards applicable to the Site. It is expected that 'actual' parking demand will sit somewhere in between all three (3) of the above.

Considering the Bistro is proposed as a family-style sit-down food and beverage establishment with a child play area, the car parking rate under *TPS3* for a restaurant is in alignment with the car parking rate for a tavern under the draft *LPS13*. The *TPS3* adopts 1 bay per 2m² plus 1 bay per staff member, which would be more in alignment with a patron standing capacity and assumes one vehicle per patron/seat. Whereas the *draft LPS13* adopts a parking ratio of 1:4 people accommodated (i.e. seats), which is more in alignment with a family of four, travelling in one vehicle. Therefore, a parking shortfall of 57 bays is considered to be more appropriate as a typical 'worst case' scenario where all land uses have a 100% parking demand at the same time. Therefore, a parking demand profile has been undertaken in **Section 7.2**. However, it is also clear from the car parking survey undertaken (refer **Section 2.2**) that during the existing local centre's peak parking occupancy (11.30am), a total of 77 bays were available at peak parking demand. Therefore, in effect, there is no parking shortfall (against the *draft LPS13*) when considering temporal parking demands.

Notwithstanding the above, the project planners from *Rowe Group* also offer the following as justification for a parking supply variation:

a The assessment undertaken is based on a 'worse case' scenario for each of the parking methodologies given the composition of land uses on the site is uncertain except in relation to the supermarket, liquor store and bistro.

b A number of the proposed land uses are not assigned a specific parking requirement under *TPS3* or *draft LPS13*. In these instances, a 'worst case' ratio (typically 'Shop') has been applied for the purposes of assessment.

c A parking ratio for the use class 'tavern' has been applied to the assessment of the bistro (T05) as representative of a 'worse case' scenario. A drinking area of 340m² has been assumed, being the total occupiable public space of the tenancy and given that the term 'drinking area' is not defined. This results in an excessive parking requirement of 309 bays. The bistro is expected to accommodate no more than 225 patrons at full capacity (assuming a ratio of 1 person for every 1.5m² of public area) *[PJA note that this is a conservative approach when comparing to the RTA Guide to Traffic Generating Developments that indicate the mean GFA per seat was 2.1m² from the survey undertaken on similar land uses]*, of which a considerable number will be families with children given the bistro is intended to be developed as a family friendly venue. Whilst the bistro will include a bar and associated drinking area (i.e. where customers purchase a drink without purchasing a meal), the balance of the bistro will operate more like a restaurant in the sense that customers will predominantly purchase a drink with their meal. Actual parking demand is therefore expected to be considerably lower.

d If the parking ratio for a 'restaurant' use class were applied to the bistro, the parking requirement would be considerably lower and in the order of 57 bays under both *TPS3* and *draft LPS13*, based on a maximum patronage of 225 people.

e In regard to the proposed supermarket (T01) only 650m² of the 1,000m² NLA will be used as trading floor, and of that, approximately 50% will consist of fixtures meaning that only around 325m² of floorspace will be accessible to shoppers. If the parking assessment were undertaken on the basis of 'trading floor' (650m²) or 'accessible area' (325m²), the parking requirement under *TPS3* would be 54 bays and 27 bays, respectively.

f It is likely that the health studio (T08) will be occupied by a gymnasium/Pilates studio (or similar) which experiences typical (peak) trading hours between 5.00am and 10.00am and between 5.00pm and 10.00pm.

g Parking assessments based on NLA or GFA figures do not take into account 'back of house' areas, staff amenities and other areas not accessible by the public. For each NLA or GLA figure, actual 'public' floorspace comprises approximately 50%. This is not factored into parking ratios.

h All tenancy-assigned alfresco areas have been included in the assessment of parking demand whether used by the tenant or not.

i Customers attending the site will likely visit multiple tenancies in one trip, thereby reducing the actual demand for car parking. This is not factored into parking ratios.

j The peak parking periods associated with the liquor store and bistro will differ from the peak periods of the supermarket and other tenancies, with the former generally occurring at lunch time and evening periods and the latter occurring during the day, particularly on weekends.

k The location of the site and design of the proposed development with its frontage and access to all three (3) adjoining streets is conducive to walking and cycling, which will assist in reducing car parking demand.

l Retail employees tend to be 'younger' people who don't drive or don't have a vehicle, and fin other means of getting to work.

m The site is located on a public transport route and is serviced by Transperth Bus Route 515 which has two (2) stops either side of Berrigan Drive immediately adjoining the site.

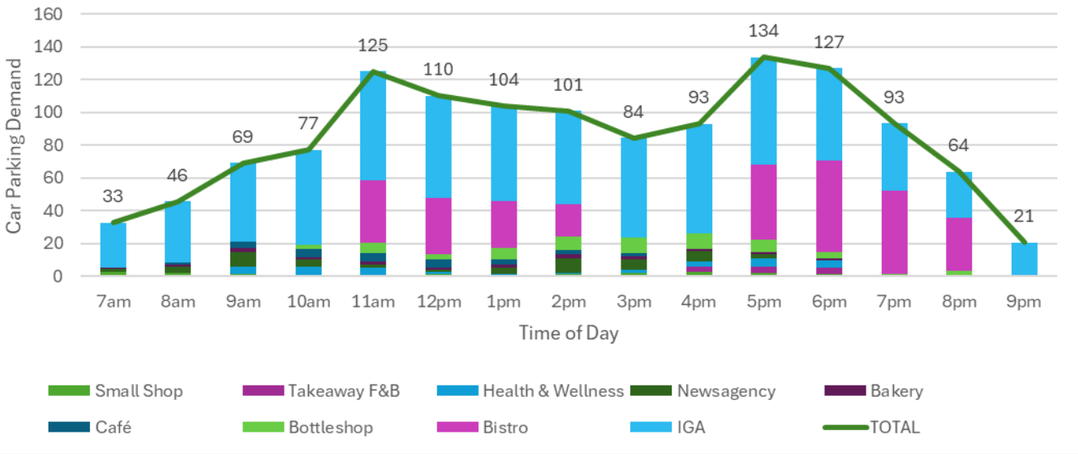
n The parking standards in *TPS3* and *draft LPS13* are generally excessive having regard to the State Government's WA Planning Manual which suggests significantly lower ratios for 'Shop' and 'Restaurant' land use classes.

o Additional or surplus car parking would represent an undesirable outcome from a design perspective and would undermine mode shift in the neighbourhood.

7.2 Parking Demand

In order to estimate the car parking demand for each land use throughout different times of the day/night and determine a suitable supply of car parking bays for the Site, a demand profile using the hourly proportions from **Figure 6-2** and the car parking requirement (under the *draft LPS13*) as the maximum supply, is shown in **Figure 7-1**.

Figure 7-1: Car Parking Demand Profile



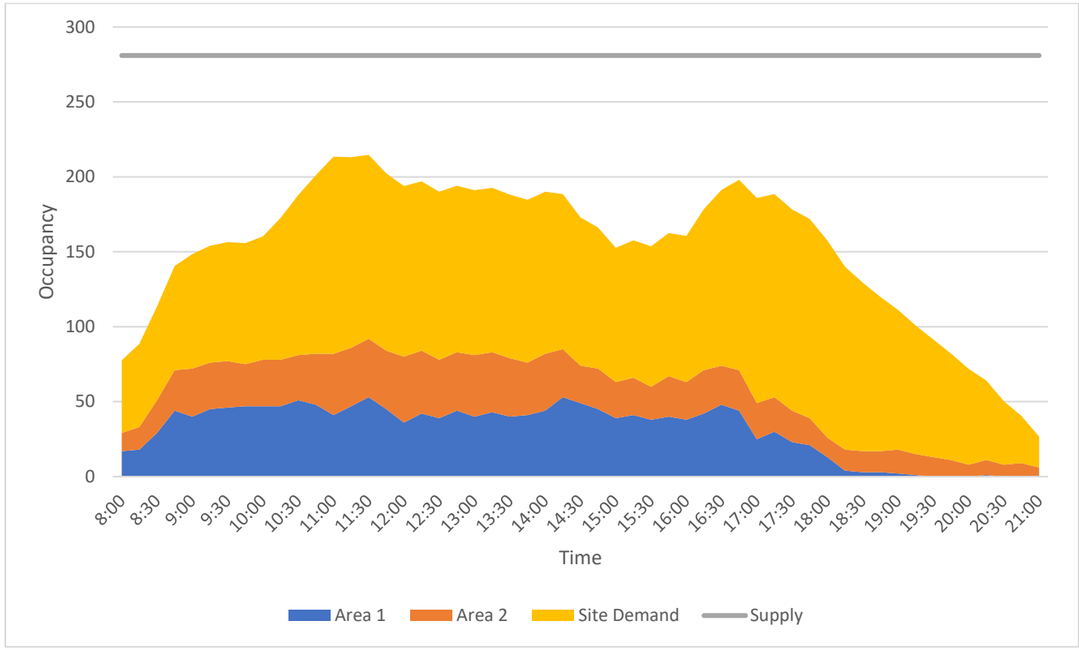
The estimated peak parking demand is estimated to require the provision of 134 car parking bays at around 5pm, noting there is also a lunch time peak (for current land uses) as also confirmed by the parking surveys. Given the development proposes a total of 100 new car parking bays wholly on-site (with the potential for 110 total bays including the 4 new on-street car parking bays and the potential for 6 new car parking bays between the adjacent site), this indicates a potential shortfall of up to 15-25 bays between 11am and 2pm and up to 24-34 bays between 5pm and 7pm. All other times of the day indicate a demand at or below the supply.

It is worth noting that this does not consider the turnover and duration of stay of the car parking bays, which in comparison to the trip generation profile, indicates that around 90 bays would turn-over within the hour (based on the total outbound trips) and only 6 bays would not turn-over within the hour (based on the total inbound trips). Therefore, the proposed parking provision is aligned with the demand. Not overprovisioning parking may also encourage patrons to travel by alternative transport modes with the convenient bus stops located right at the doorstep on Berrigan Drive and good walking/riding paths/trails between the developments in the Glen Iris area and the Site.

7.3 Parking Supply vs Demand

As indicated previously in **Section 2.2**, there is potential for some 77 unutilised bays to be used by the development due to temporal parking with the overall local centre. Including the addition of the parking demands generated by the Site and the supply provision (totalling 279 bays), to the parking survey shown previously in **Figure 2-2**, the car parking impact analysis is shown in **Figure 7-2**.

Figure 7-2: Glen Iris Local Centre (Existing and Proposed) Car Parking Supply vs Demand



Peak parking demand between both sites is considered to occur around 11.30am (210 bays) where the parking supply surplus is around 70 bays[1]. Therefore, it is considered that the car parking provision across both Sites would exceed demand at all times of the day and a sufficient supply of parking is being proposed by the development.

[1] 92 bays of 169 bays occupied by the existing local centre and 118 bays (linearly interpolated between 11am and 12pm) of 110 bays occupied by the proposed local centre.

8 Conclusions & Recommendations

PJA has been engaged by *Windsor Knight Pty Ltd* ("the applicant") in care of *Super Lifestyle Custodian Pty Ltd ATF The Sequeria Unit Trust* ("the client") to prepare a Transport Impact Assessment (TIA) to assist with the Development Application (DA) for the proposed Glen Iris Local Centre ("the Site"). This assessment has been prepared in alignment with the *Western Australian Planning Commission (WAPC) Transport Impact Assessment (TIA) Guidelines Volume 4: Individual Development* (August 2016).

The Site, comprising 7,001m^2 land area, is in the suburb of Jandakot under the City of Cockburn Local Government Area (LGA).

The Site was zoned for commercial land use of up to 2,500m^2 gross floor area (GFA) in the approved wider *Glen Iris Local Structure Plan* (LSP).

This DA application for the Site is proposed with 2,400m^2 of mixed-use development - comprising a supermarket, bistro, liquor store, food and beverage (F&B), small shop retail and health & wellness land uses. In effect, the traffic generation estimates are slightly lower herein this DA than that assumed for the overall LSP, with the endorsed LSP accounting for more intense traffic movements and was subsequently approved.

The road network fronting the Site consists of Berrigan Drive (south), new Abundant Boulevard (west), new Plateau Crescent (north) and the existing Glen Iris Local Centre (east).

A community parklet and alfresco dining area are also proposed with the local centre to improve customer experience, enhance pedestrian amenity and to facilitate pedestrian movement. End of trip facilities (toilets/changerooms) are also provided accessible for all tenancies.

The Site was assessed in accordance with WAPC Guidelines and determined with the following findings for the transport network:

1) Adequate access facilities to bus stops on Berrigan Drive for Transperth Bus Route 515, offering convenient public transport travel options with bus stops only 50m from the Site boundary. The Bus Route 515 service runs to and from these stops and Murdoch Train/Bus Station, allowing for a connection to subsequent bus services or the Mandurah Train Line, providing staff and/or patrons with convenient linkages between broader public transport hubs and the Site.
2) The Site is located on a corner lot, adjacent to the existing Glen Iris Local Centre and Parks with pedestrian linkages provided between the Sites.
3) The estimated peak parking demand throughout the day is considered to require the provision of 134 car parking bays (at 5pm and/or lunch time peak). Given the development proposes a total of 100 new car parking bays wholly on-site (with the potential for 110 total bays including the 4 new on-street car parking bays and the potential for 6 new car parking bays between the adjacent site), this indicates a potential shortfall of up to 15-25 bays between 11am and 2pm and up to 24-34 bays between 5pm and 7pm. All other times of the day indicate a demand at or below the supply.
4) A carpark occupancy survey of the existing carpark of the Berrigan Drive Local Centre was undertaken on a typical Thursday June 2024 between 8am and 9pm which also captured commuter peaks. The occupancy survey at every 15-minute intervals over the 13-hour period noted the peak parking occupancy was observed at 11.30am (lunch time peak), where a total of 77 bays remained available across the local centre at the busiest parking demand.
5) If assuming a parking shortfall is in the order of 57 bays as per the *City of Cockburn draft Local Planning Scheme No. 13* (draft LPS13) parking rates, it is clear from the car parking survey undertaken (Section 2.2) that during the existing local centre's peak parking occupancy, a total of 77 bays were available at peak parking demand. Therefore, in effect, there is no parking shortfall when considering temporal parking demands across the local centre. This is also justified by a parking demand profile across both sites.
6) Not overprovisioning parking is recommended as this will also encourage patrons to travel by alternative transport modes with a convenient bus stops located at the site on Berrigan Drive and good walking/riding paths/trails between the developments in the Glen Iris area and the Site.
7) The proposed access arrangements consist of a vehicular left-in/left-out (LILO) crossover on Berrigan Drive (Access 1), a full movement crossover on Abundant Boulevard (Access 2), a left-out only crossover on Plateau Crescent (Access 3) and an eastern located separated crossover for site servicing with some long-term staff parking on Plateau Crescent (Access 4).
8) The Site layout has been designed so that vehicles entering the carpark are free-flowing, meaning no blockages into the site are expected. Furthermore, there is around a 50m-90m clearance between the eastbound exit and approach leg, respectively, and the proposed LILO crossover location, which is in alignment with the minimum sight stopping distance for access driveways at 50km/h (differential speed between posted and turning speed) and 70km/h. Therefore, it is considered that sufficient separation distance for vehicles to decelerate appropriately and negotiate the turn has been provided.
9) A capacity-based intersection performance assessment was undertaken in SIDRA Intersection v9.1 for the Berrigan Drive intersections with Abundant Boulevard, Prinsep Road and Dean Road/Jandakot Road for a base case and with development traffic scenarios. The new traffic signals to the west of the Berrigan Drive access will provide good opportunity for platooning of traffic and offer gaps in traffic between signal phases to support vehicles exiting from the proposed LILO crossover.
10) The Main Roads WA endorsed new traffic signals at Abundant Boulevard and the existing Dean Road/Jandakot Road traffic signals provide pedestrians with a protected crossing point between each side of Berrigan Drive and also across Abundant Boulevard.

11) An indicative hourly two-way traffic volumes above 2,800vph (28,000vpd) may affect the ability for pedestrians crossing Abundant Boulevard; however, as indicated within the LSP TIA, the daily traffic volume on Abundant Boulevard, north of Berrigan Drive is estimated to only be in the order of 3,690vpd and therefore, falls within the acceptable WAPC guided threshold.

12) The Site is expected to generate new vehicle trips in the order of 1,450vpd, 25vph in the road network AM peak (7.30am) and 100vph in the road network PM peak (3.30pm). These trips are withing the road network theoretical capacity and are found not to have any adverse impacts on the surrounding road network.

13) The separated full movement access crossover on Plateau Crescent for Service Vehicles and longer-term staff car parking has been assessed with Swept Paths and can manoeuvre appropriately to and from the loading areas. The area can facilitate service vehicles up to a 12.5m long heavy rigid vehicle (HRV).

14) The proposed development has been designed to have a positive impact on the neighbouring areas, providing the approved urban development good access to local shopping and recreational amenity in a safe and equitable manner.

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Appendix A

TIA Checklist

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Appendix A TIA Checklist

ITEM	PROVIDED	COMMENTS/PROPOSALS
Summary	Y	
Introduction/background	**Y**	
Name of applicant and consultant	Y	
Development location and context	Y	
Brief description of development proposal	Y	
Key issues	Y	
Background information	Y	
Existing situation	**Y**	
Existing site uses (if any)	Y	
Existing parking and demand (if appropriate)	Y	
Existing access arrangements	Y	
Existing site traffic	N/A	
Surrounding land uses	Y	
Surrounding road network	Y	
Traffic management on frontage roads	Y	
Traffic flows on surrounding roads (usually AM and PM peak hours)	Y	
Traffic flows at major intersections (usually AM and PM peak hours)	Y	
Operation of surrounding intersections	Y	
Existing pedestrian/cycle networks	Y	
Existing public transport services surrounding the development	Y	
Crash data	Y	
Development proposal	**Y**	
Regional context	Y	
Proposed land uses	Y	
Table of land uses and quantities	Y	
Access arrangements	Y	
Parking provision	Y	
End of trip facilities	Y	
Any specific issues	Y	
Road network	Y	
Intersection layouts and controls	Y	
Pedestrian/cycle networks and crossing facilities	Y	
Public transport services	Y	
Integration with surrounding area	**Y**	
Surrounding major attractors/ generators	Y	
Committed developments and transport proposals	Y	
Proposed changes to land uses within 1200 metres	Y	
Travel desire lines from development to these attractors/ generators	Y	
Adequacy of existing transport networks	Y	
Deficiencies in existing transport networks	Y	
Remedial measures to address deficiencies	Y	
Analysis of transport networks	**Y**	
Assessment years	Y	
Time periods	Y	
Development generated traffic	Y	
Distribution of generated traffic	Y	
Parking supply and demand	Y	
Base and 'with development' traffic flows	Y	
Analysis of development accesses	Y	
Impact on surrounding roads	Y	
Impact on intersections	Y	
Impact on neighbouring areas	Y	
Road safety	Y	
Public transport access	Y	
Pedestrian access/amenity	Y	
Cycle access/amenity	Y	
Analysis of pedestrian/cycle networks	Y	
Safe walk/cycle to school (for residential and school site developments only)	N/A	
Traffic management plan (where appropriate)	N/A	
Conclusions	**Y**	

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Appendix B

Development Application Plans

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Appendix C

Swept Path Analysis

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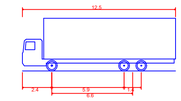
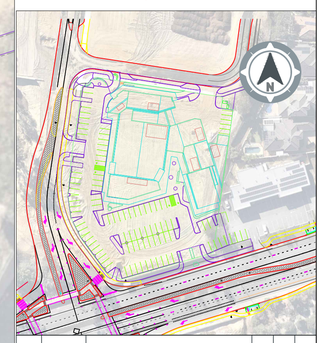
A1 1:250

NOTES

1. DESIGN VEHICLE SET AS HEAVY RIGID VEHICLE (HRV)
2. BODY CLEARANCE SET AT 300mm AS PER AS2890.2:2018 CLAUSE 5.4
3. DESIGN SPEED FOR INTERSECTION TURNING MOVEMENTS SET AT 20km/h
4. DESIGN SPEED FOR OFF-STREET MANEUVERING SET AT 5km/h



HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Rev	Date	Revision Note	Drw	Chk	App
A	19/12/2024	TIA SUPPLEMENTARY SWEPT PATHS	CS	CS	TM

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Client
Windsor Knight Pty Ltd
c/o Super Lifestyle Custodian Pty Ltd

Project
Glen Iris Local Centre

Title
Loading Arrangement Swept Paths

Drawing Issue Status
For Information

PJA Ref	Scale @ A1	Date
06606/E	1:250	19/12/2024

Drawing No.
06606-E-DA-SWPT-01-HRV-A

Revision
A

Primary Contact
tanya.moran@pja.com.au

File name C:\USERS\CAMERONSTEEL\ONEDRIVE - PHIL JONES ASSOCIATES\06606 GLEN IRIS REDEVELOPMENT\4. TECHNICAL\4.4 DRAWINGS\4.4.1 DRAWINGS\LOCAL CENTRE\06606E-DA-SWPT-01-F.DWG, printed on 19/12/2024 3:13:37 PM, by Cameron Steel

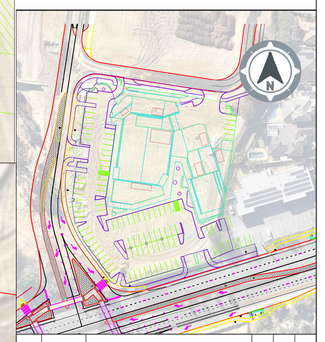
A1 1:250

NOTES

1. ENTRY MOVEMENT AT ACCESS 1 IS UNDERTAKEN AT A 30KM/H DESIGN SPEED
2. BODY CLEARANCE SET AT 300mm AS PER AS2890.2:2018 CLAUSE 5.4
3. DESIGN SPEED FOR INTERSECTION TURNING MOVEMENTS SET AT 20km/h
4. DESIGN SPEED FOR OFF-STREET MANEUVERING SET AT 5km/h
5. PASSENGER CAR DESIGN VEHICLE SET AS B99

B99 Vehicle (8m min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	8.000m



Rev	Date	Revision Note	Drw	Chk	App
A	19/12/2024	TIA SUPPLEMENTARY SWEPT PATHS	CS	CS	TM

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Client
Windsor Knight Pty Ltd
c/o Super Lifestyle Custodian Pty Ltd

Project
Glen Iris Local Centre

Title
Carpark Access Arrangement Swept Paths

Drawing Issue Status
For Information

PJA Ref
06606/E

Scale @ A1
1:125

Date
19/12/2024

Drawing No.
06606E-DA-SWPT-01-D

Revision
A

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File name:C:\USERS\CAMERONSTEEL\ONEDRIVE - PHIL JONES ASSOCIATES\06606 GLEN IRIS RED\DEVELOPMENT\4. TECHNICAL\4.4 DRAWINGS\4.4.1 DRAWINGS\LOCAL CENTRE\06606E-DA-SWPT-01-E.DWG, plotted on 19/12/2024 3:34:08 PM, by Cameron Steel