

Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Meeting Number: Meeting Venue: Tuesday, 7 December 2021; 9:30am MOJDAP/140 Electronic Means

To connect to the meeting via your computer - https://zoom.us/i/95309170892

To connect to the meeting via teleconference dial the following phone number - 08 7150 1149

Insert Meeting ID followed by the hash (#) key when prompted - 953 0917 0892

This DAP meeting will be conducted by electronic means (Zoom) open to the public rather than requiring attendance in person.

1 Table of Contents

1.	Opening of Meeting, Welcome and Acknowledgement	.3
2.	Apologies	.3
3.	Members on Leave of Absence	.3
4.	Noting of Minutes	.3
5.	Declarations of Due Consideration	.3
6.	Disclosure of Interests	.4
7.	Deputations and Presentations	.5
8.	Form 1 – Responsible Authority Reports – DAP Applications	.5
	8.1 Lot 1 (No.27) Day Road, East Rockingham	5
	8.2 Lot 27 Bennett Springs Drive, Bennett Springs	5
9.	Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval	.5
	Nil	5
10.	State Administrative Tribunal Applications and Supreme Court Appeals	.6
11.	General Business	.6
12.	Meeting Closure	.6



Government of Western Australia Development Assessment Panels

Attendance

DAP Members

Mr Ian Birch (Presiding Member) Mr Gene Koltasz (A/Deputy Presiding Member) Ms Diana Goldswain (A/Third Specialist Member)

Item 8.1 Cr Mark Jones (Local Government Member, City of Rockingham) Cr Lorna Buchan (Local Government Member, City of Rockingham)

Item 8.2 Cr Mel Congerton (Local Government Member, City of Swan) Cr Rod Henderson (Local Government Member, City of Swan)

Officers in attendance

Item 8.1 Ms Casey Gillespie (City of Rockingham) Mr David Banovic (City of Rockingham) Mr Mike Ross (City of Rockingham)

Item 8.2 Mr Philip Russell (City of Swan) Ms Rebecca Lodge (City of Swan)

Minute Secretary

Ms Megan Ventris (DAP Secretariat)

Applicants and Submitters

Item 8.1 Mr Joshua Carmody (Planning Solutions) Mr Nic Watson (Planning Solutions) Mr Robert Walker (Planning Solutions) Mr Stephen Moore (Ecological Australia) Ms Marina Kleyweg (KCTT) Ms Julie Drago (Proponent)

Item 8.2

Mr Ian Rodgers (Parry and Rosenthal Architects) Mr Leon Slattery (Parry and Rosenthal Architects) Mr Martin Bent (Swan Christian Education Association) Mr Michael Bolan (Swan Christian Education Association) Mr Graeme Cross (Swan Christian Education Association) Mr Rowan Joubert (Swan Christian Education Association)

Members of the Public / Media

Nil.



1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being conducted by electronic means (Zoom) open to the public. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Ms Sheryl Chaffer (Deputy Presiding Member) Cr Deb Hamblin (Local Government Member, City of Rockingham)

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the <u>DAP website</u>.

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.2, received on 6 December 2021.

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.



6. Disclosure of Interests

Member	Item	Nature of Interest
Cr Lorna Buchan	8.1	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Buchan participated in the prior Council decision in accordance with her functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Buchan acknowledges that she is not bound by any previous decision or resolution of the local government. Cr Buchan undertakes to exercise judgment in relation to any DAP application before her, which she will consider on its planning merits.
Cr Mark Jones	8.1	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Jones participated in the prior Council decision in accordance with his functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Jones acknowledges that he is not bound by any previous decision or resolution of the local government. Cr Jones undertakes to exercise judgment in relation to any DAP application before him, which he will consider on its planning merits.
Cr Rod Henderson	8.2	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Henderson participated in the prior Council decision in accordance with his functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Henderson acknowledges that he is not bound by any previous decision or resolution of the local government. Cr Henderson undertakes to exercise judgment in relation to any DAP application before him, which he will consider on its planning merits.
Cr Mel Congerton	8.2	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Congerton participated in the prior Council decision in accordance with his functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Congerton acknowledges that he is not bound by any previous decision or resolution of the local government. Cr Cognerton undertakes to exercise judgment in relation to any DAP application before him, which he will consider on its planning merits.



7. Deputations and Presentations

- **7.1** Mr Joshua Carmody (Planning Solutions) presenting in support of the recommendation for the application at Item 8.1. The presentation will address the support of the RAR and request the deletion of condition 6.
- **7.2** Mr Martin Bent (Swan Christian Education Association) presenting in support of the recommendation for the application at Item 8.2. The presentation will address the development and request to amend conditions.
- 7.3 Mr Michael Bolan (Swan Christian Education Association) presenting in support of the recommendation for the application at Item 8.2. The presentation will address the context and constraints of the proposed development.

The City of Rockingham and City of Cockburn may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 1 (No.27) Day Road, East Rockingham

Development Description:	Proposed industrial development
Applicant:	Planning Solutions
Owner:	Ms M E Pike
Responsible Authority:	City of Rockingham
DAP File No:	DAP/21/02074

8.2 Lot 27 Bennett Springs Drive, Bennett Springs

Development Description:	Proposed Educational Establishment (Primary School)
Applicant:	Parry and Rosenthal Architects
Owner:	Swan Christian Education Association Inc
Responsible Authority:	City of Swan
DAP File No:	DAP/21/02060

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

Nil.



	Current SAT Applications				
File No. & SAT	LG Name	Property	Application	Date	
DR No.		Location	Description	Lodged	
DAP/20/01764	City of	Lot 780 (46)	Proposed Stock	8/09/2020	
DR 204/2020	Swan	Gaston Road,	Feed Grain Mill		
		Bullsbrook			
DAP/21/02000	City of	Lot 642 (104)	Proposed Child	28/09/2021	
DR203/2021	Joondalup	Mullaloo Drive &	Care Centre		
		Lot 643 (20)			
		Stanford Road,			
		Kallaroo			
DAP/21/02016	City of	centre Lot 667 (73)	Child Care Centre	28/09/2021	
DR207/2021	Joondalup	Kingsley Drive &			
		Lot 666 (22)			
		Woodford Wells			
		Way, Kingsley			

10. State Administrative Tribunal Applications and Supreme Court Appeals

F	Finalised SAT Applications* (withdrawn by applicant)				
File No. & SAT DR No.	LG Name	Property Location	Application Description	Date Lodged	
DAP/19/01708 DR 138/2020	City of Kwinana	Lot 108 Kwinana Beach Road, Kwinana	Proposed Bulk Liquid Storage for GrainCorp Liquid Terminals	01/07/2020	

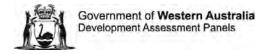
Matters finalised during the last meeting cycle.

11. General Business

*

In accordance with Section 7.3 of the DAP Standing Orders 2020 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

12. Meeting Closure



Direction for Further Services from the Responsible Authority

Regulation 13(1) and DAP Standing Orders 2020 cl. 3.3

Guidelines

A DAP Member who wishes to request further services (e.g. technical information or alternate recommendations) from the Responsible Authority must complete this form and submit to <u>daps@dplh.wa.gov.au.</u>

The request will be considered by the Presiding Member and if approved, the Responsible Authority will be directed to provide a response to DAP Secretariat within the form.

It is important to note that **the completed form containing the query and response will published on the DAP website** as an addendum to the meeting agenda.

DAP Application Details

DAP Name	Metro Outer
DAP Application Number	DAP/21/02060
Responsible Authority	City of Swan
Property Location	Lot 27 Bennett Springs Drive, Bennett Springs

Presiding Member Authorisation

Presiding Member Name	Mr Ian Birch
Signature	Jankort
Date	3 December 2021
Response Due	6 December 2021; 1:00pm

Nature of technical advice or information required*

1	DAP query	Please provide the Traffic Impact Assessment submitted with this application. For future reference, please attach TIAs, together with other relevant supporting technical material (eg. Bushfire Management Plans), to all RARs. Thankyou
	Response	Attached is a copy of the Traffic Impact Assessment provided with the application.



Transport Impact Assessment

Project:	Beechboro Christian School Relocation
Client:	Beechboro Christian School c/o Parry and Rosenthal Architects
Author:	Paul Nguyen
Date:	3 rd August 2021
Shawmac Document #:	2101008-TIA-001

CONSULTING CIVIL AND TRAFFIC ENGINEERS 1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101. PHONE|+61 8 9355 1300 EMAIL| admin@ shawmac.com.au







Document Status: Client Review

Version	Prepared By	Reviewed By	Approved By	Date
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File Reference: Y:Uobs Active 2021\T&T - Traffic & Parking\Parry & Rosenthal_Beechboro Christian School_TIA_2101008\3. Documents\3.2 Reports\Parry & Rosenthal_Beechboro Christian School_TIA_Rev A.docx

i|Page



Contents

1. lı	ntroduction and Background	. 1
1.1.	Proponent	. 1
1.2.	Site Location	. 1
1.3.	Proposed Development	. 2
1.4.	Scope	. 2
2. 5	ite and Surrounding Road Network	. 4
2.1.	Land Uses	. 4
2.2.	Road Network	. 5
2.2.	1. Layout and Hierarchy	. 5
2.2.	2. Road Configuration	. 5
2.2.	3. Traffic Counts	. 6
2.3.	Changes to Surrounding Transport Networks	. 6
3. A	nalysis of Transport Networks	. 7
3.1.	Assessment Parameters	. 7
3.2.	Traffic Generation	. 7
3.3.	Traffic Distribution Assessment and Capacity Analysis	. 8
3.3.	1. Interim Scenario – Current Student Population (269 Students)	. 8
3.3.	2. Long Term Scenario – Ultimate Student Population (440 Students)	11
3.4.	Intersection Capacity Analysis	11
3.4.	1. Sensitivity Analysis	14
4. F	Parking Assessment and Management	16
4.1.	Car Parking Provision	16
4.2.	Car Parking Requirements	16
4.3.	Parking Management	18
4.4.	Bicycle Parking	18
5. V	/ehicle Access	19
5.1.	Access Location	19



6.	Road Safety Assessment	2
6.1.	Crash History 2	2
7.	Pedestrian and Cyclist Assessment	3
8.	Public Transport Accessibility 2	4
9.	Conclusions	5

Figures

Figure 1: Proposed Relocation
Figure 2: Proposed Relocation – Aerial View
Figure 3: Proposed Site Plan
Figure 4: Aerial View of Existing Site (May 2021) 4
Figure 5: Road Layout and Hierarchy
Figure 6: Average Weekday Traffic
Figure 7: School Catchment Area
Figure 8: School Traffic Distribution – Existing Site
Figure 9: School Traffic Distribution – New Site
Figure 10: School Traffic Distribution – Ultimate Student Population 11
Figure 11: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout
Figure 12: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout
Figure 13: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout – Sensitivity 14
Figure 14: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout – Sensitivity15
Figure 15: Existing and Proposed Car Parking
Figure 16: Proposed Access Arrangement
Figure 17: Sight Distance Requirements
Figure 18: Sight Distance Check
Figure 19: Crash History January 2016 to December 2020 22
Figure 20: Existing Path Network



Tables

Table 1: Road Network Details	5
Table 2: School Traffic Generation - 269 Students	7
Table 3: School Traffic Generation - 440 Students	7
Table 4: DoE Car Parking Requirements – Current Students	17
Table 5: DoE Car Parking Requirements – Ultimate Capacity of 460 Students	17





1. Introduction and Background

1.1. Proponent

Shawmac has been engaged by Parry and Rosenthal on behalf of The Beechboro Christian School to prepare a Transport Impact Assessment (TIA) for the proposed relocation of the school in Bennett Springs.

1.2. Site Location

The existing and proposed site is shown in **Figure 1** and **Figure 2**. The existing site is shared with the Cracovia White Eagles Junior Football Club. The proposed site is vacant. The local authority is the City of Swan.

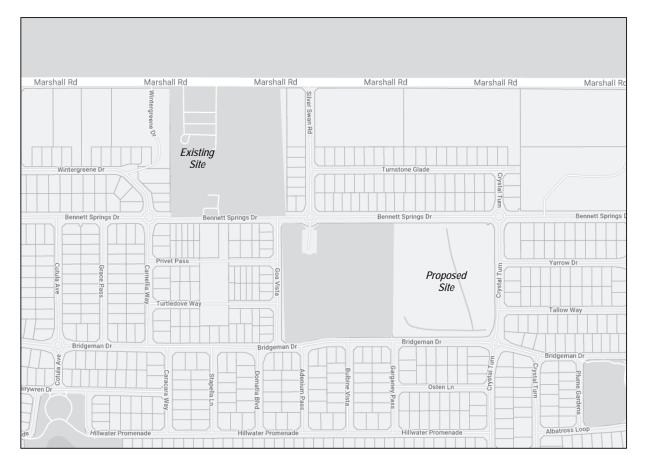


Figure 1: Proposed Relocation





Figure 2: Proposed Relocation – Aerial View

1.3. Proposed Development

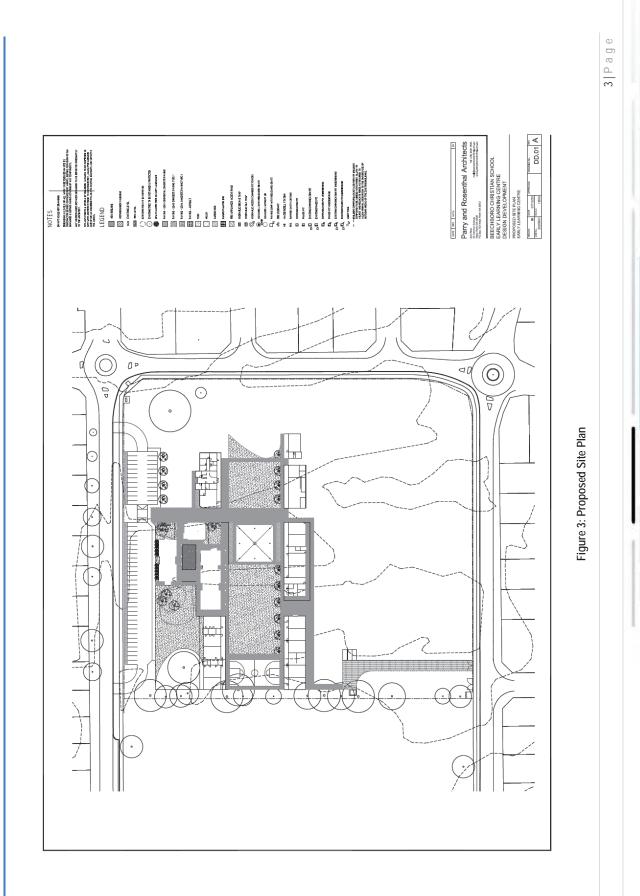
The proposal is to relocate the existing primary school to the new site and to allow room to for potential growth. There are currently 269 students and 37 staff (approximately 28 full time staff on any given day). It is understood that the number of students has remained stable in recent years but that provision is being made to accommodate additional students in the future, subject to demand. The projected capacity of the school is 440 students.

1.4. Scope

This TIA has been prepared in accordance with the Western Australian Planning Commission's (WAPC) *Transport Impact Assessment Guidelines*. According to the TIA guidelines, the key objectives of a TIA are to:

- assess the proposed internal transport networks with respect to accessibility, circulation and safety for all modes, that is, vehicles, public transport, pedestrians 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; and
- determine the impacts of the traffic generated by the development on the surrounding transport networks.

The proposed site plan for the new school site is shown in Figure 3.



CITY OF SWAN STATUTORY PLANNING RECEIVED 18 Aug 2021







2. Site and Surrounding Road Network

2.1. Land Uses

The proposed site is currently vacant as shown in **Figure 4**. The surrounding area is mostly residential development. The adjoining lot is a sporting field



Figure 4: Aerial View of Existing Site (May 2021)





2.2. Road Network

2.2.1. Layout and Hierarchy

The current layout and hierarchy of the surrounding road network is shown in Figure 5.

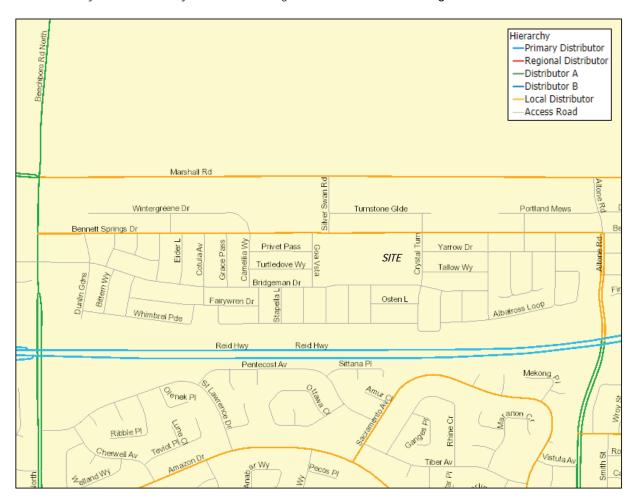


Figure 5: Road Layout and Hierarchy

2.2.2. Road Configuration

The details of the key roads surrounding the site are summarised in Table 1.

Table 1: Road Network Details

Road and Location	Classification / Function	Cross Section	Speed Limit
Bennett Springs Drive	Local Distributor	Single Carriageway – 2 lanes	50km/h
Marshall Road	Local Distributor	Single Carriageway – 2 lanes	70km/h
Bridgeman Drive	Access Road	Single Carriageway – 2 lanes	50km/h
Crystal Turn	Access Road	Single Carriageway – 2 lanes	50km/h
Goa Vista	Access Road	Single Carriageway – 2 lanes	50km/h
Silver Swan Road	Access Road	Single Carriageway – 2 lanes	50km/h





2.2.3. Traffic Counts

The latest available traffic counts were obtained from the MRWA Traffic Map and the City of Swan as summarised in **Figure 6**.

Daily AM Pe	eak Hour PM Peak	Hour					
	Baanchhoiro Rd N						
	Marshall Rd	Marshall Rd 10165	900 979 Marshall Rd	09	Marshall Rd	Altone Rd	Rd
nt Orchid Ave Stylls Pt Orena Rathbas Ave	2260 195 250	Hergreene Dr Wintergreene Dr 2250 185 225 Bennett Springs Dr 40geman Dr Falrywren Dr Nimbrel Parade	2215 195 215 Denniett Springs Dr Denniett Springs Dr Privet Pass Careerana Way Communication Company Communication Company Communication Commu	1675 115 160 Bernett Springs Dr SITE 1390 95 135	2630 240 250 Bernett Springs Dr Varrow Dr Tallow Way Bridgeman Dr Bridgeman Dr Bridgeman Dr Bridgeman Dr Bridgeman Dr	Portland Mews 3320 310 325 Bennett Nor Portland Mews Bennett Alcone R	t Springs Dr Pain Pain Renntt SD Bennett SD
	Beechbors Lawrence	and the second	Pentecost Ave	Reid Hwy stana Pi gg	Sacramento Ave	Pd augryphic throma Ave	Hurrey PI

Figure 6: Average Weekday Traffic

2.3. Changes to Surrounding Transport Networks

The surrounding road network is largely completed and there are no known changes proposed.





3. Analysis of Transport Networks

3.1. Assessment Parameters

The assessment has been based on the following two scenarios:

- Once the school relocation is completed (based on the current 269 students).
- Once the school reaches the maximum design capacity of 440 students).

3.2. Traffic Generation

The vehicular traffic generation rates for primary schools according to the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines* is 0.5 vehicle trips per child to school and 0.5 trips per child from school during each of the morning and afternoon peak hours (i.e. 1 trip per student per peak period) based on the PARTS surveys. The school traffic generation based on the two development horizons is summarised in **Table 2** and **Table 3**.

Table 2: School Traffic Generation - 269 Students

Streams	Units
Student Number	269
Peak Hour Vehicle Trip Generation Rate (Parts Survey Rate)	1 trip per student
Peak Hour Trips	270 (135 in / 135 out)

Table 3: School Traffic Generation - 440 Students

Streams	Units
Student Number	440
Peak Hour Vehicle Trip Generation Rate (Parts Survey Rate)	1 trip per student
Peak Hour Trips	440 (220 in / 220 out)





3.3. Traffic Distribution Assessment and Capacity Analysis

3.3.1. Interim Scenario – Current Student Population (269 Students)

As advised by the school, the existing school population includes students from Beechboro, Bennett Springs, Guildford, Morley, Ellenbrook, Dayton, Brabham, Aveley, Caversham, Noranda and Ballajura. The catchment area is shown in **Figure 7**.

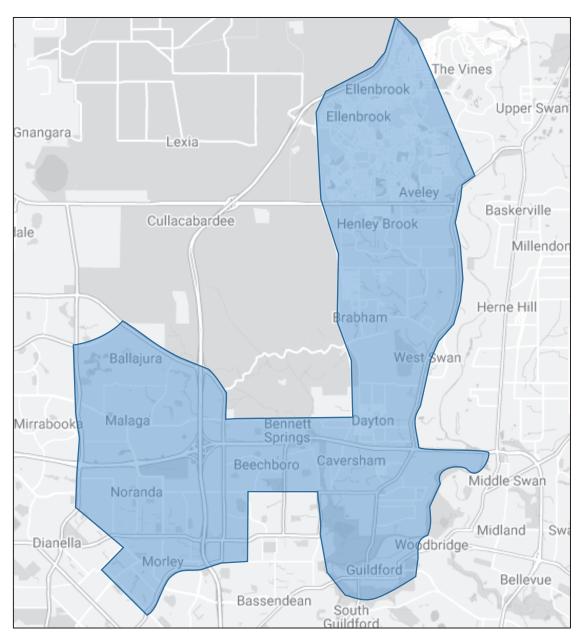


Figure 7: School Catchment Area

The main routes between the catchment area and the school are along Marshall Road, Beechboro Road North, Altone Road, Tonkin Highway and Drumpellier Drive.



Based on the catchment and the likely routes, the assumed distribution of school traffic to the existing school site is shown in **Figure 8**. As observed on-site approximately 80% of school traffic uses the Marshall Road car park and the remainder use Bennett Springs Drive.

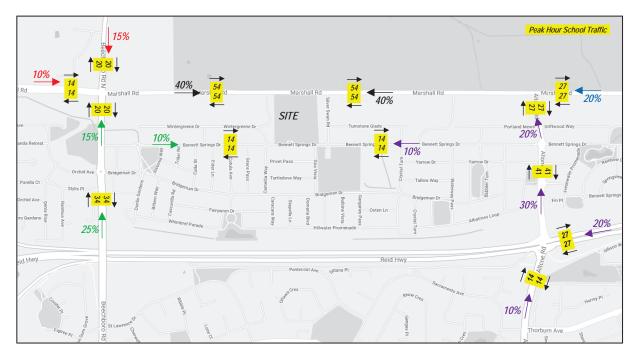


Figure 8: School Traffic Distribution – Existing Site

The revised distribution to the new school site is shown in Figure 9.

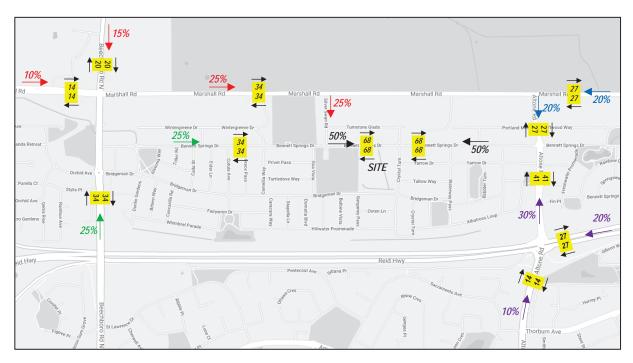


Figure 9: School Traffic Distribution – New Site



As shown, the school relocation will simply result in the redistribution of some school traffic from Marshall Road to Bennett Springs Drive. The increase along Bennett Spring Drive is estimated to be in the order of 108 vehicle movements during each of the school peak hours.

According to the WAPC TIA guidelines, an increase in traffic of less than 10 per cent of capacity would not normally be likely to have a material impact on any particular section of road. The guidelines note that an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 per cent of capacity.

WAPC *Liveable Neighbourhoods* also suggests that the indicative daily traffic volume for a Local Distributor / Neighbourhood Connector B road is 3,000 vehicles per day (vpd). The increased daily traffic volume along Bennett Springs Drive resulting from the school relocation will remain below 3,000vpd and so there is adequate capacity to accommodate the redistribution of school traffic. It is noted there is one section of Bennett Springs Drive immediately west of Altone Road which currently carries 3,320vpd which would increase to approximately 3,536vpd. Although above the indicative daily traffic volumes for a Neighbourhood Connector B road, the expected traffic volume would not warrant upgrading to a Neighbourhood Connector A road (dual carriageway). A Neighbourhood Connector A road has an indicative daily volume range up to 7,000vpd and it is unlikely that the volumes would increase close to this level.





3.3.2. Long Term Scenario – Ultimate Student Population (440 Students)

If and when the school reaches the ultimate student capacity of 440 students, the increase in overall traffic generation is estimated to be 170 vehicle movements (85 in / 85 out). The traffic volume increases on the road network based on the increase to 440 students are shown in **Figure 10**.

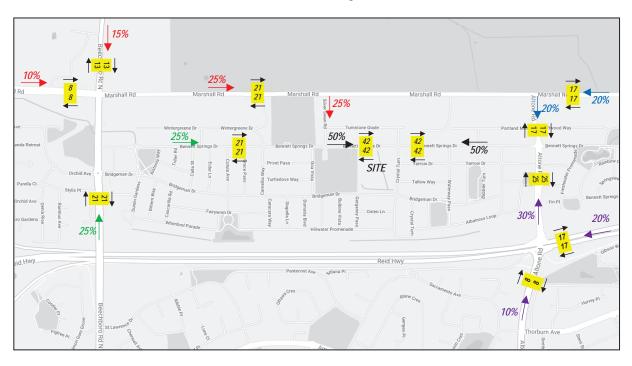


Figure 10: School Traffic Distribution – Ultimate Student Population

As shown, the school traffic is relatively well distributed and so the increase in traffic on any particular section of road is low and unlikely to have a material impact on the road network. It is concluded that the expected volume of school traffic can be accommodated within the capacity of the road network.

3.4. Intersection Capacity Analysis

The two intersections that would be most impacted by the school traffic and future growth are the two roundabout intersections along Bennett Springs Drive at Crystal Turn and Silver Swan Road. A high level peak hour capacity analysis of these two intersections has been undertaken in SIDRA Intersection 9.0.

The peak hour intersection traffic flows were derived from the mid-block traffic count data and the assessment is based on the full student capacity of 440 students.

The results of the assessment are shown in Figure 11 and Figure 12.



MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Crystal Turn - AM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

Vehicl	e Movem	ent Perforn	nance											
Mov ID	Tum	INPUT V [Total veh/h	OLUMES HV] %	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South:	Crystal Tu	m												
1	L2	21	3.3	21	3.3	0.041	5.6	LOS A	0.2	1.5	0.39	0.59	0.39	52.0
2	T1	1	3.3	1	3.3	0.041	5.8	LOS A	0.2	1.5	0.39	0.59	0.39	53.0
3	R2	21	3.3	21	3.3	0.041	9.4	LOS A	0.2	1.5	0.39	0.59	0.39	52.7
Approa	ch	43	3.3	43	3.3	0.041	7.4	LOS A	0.2	1.5	0.39	0.59	0.39	52.4
East: B	ennett Spr	ings Drive												
4	L2	12	6.9	12	6.9	0.144	4.4	LOS A	0.8	5.8	0.07	0.45	0.07	53.9
5	T1	204	6.9	204	6.9	0.144	4.7	LOS A	0.8	5.8	0.07	0.45	0.07	55.0
6	R2	1	6.9	1	6.9	0.144	8.2	LOS A	0.8	5.8	0.07	0.45	0.07	54.6
Approa	ch	217	6.9	217	6.9	0.144	4.7	LOS A	0.8	5.8	0.07	0.45	0.07	55.0
North: (Crystal Tur	n												
7	L2	3	5.1	3	5.1	0.006	5.5	LOS A	0.0	0.2	0.39	0.53	0.39	52.4
8	T1	1	5.1	1	5.1	0.006	5.8	LOS A	0.0	0.2	0.39	0.53	0.39	53.3
9	R2	2	5.1	2	5.1	0.006	9.4	LOS A	0.0	0.2	0.39	0.53	0.39	53.0
Approa	ch	6	5.1	6	5.1	0.006	6.8	LOS A	0.0	0.2	0.39	0.53	0.39	52.7
West: E	Bennett Sp	rings Drive												
10	L2	1	6.8	1	6.8	0.112	4.5	LOS A	0.6	4.7	0.12	0.45	0.12	53.6
11	T1	148	6.8	148	6.8	0.112	4.7	LOS A	0.6	4.7	0.12	0.45	0.12	54.7
12	R2	6	6.8	6	6.8	0.112	8.3	LOS A	0.6	4.7	0.12	0.45	0.12	54.3
Approa	ich	155	6.8	155	6.8	0.112	4.9	LOS A	0.6	4.7	0.12	0.45	0.12	54.7
All Vehi	icles	421	6.5	421	6.5	0.144	5.1	LOS A	0.8	5.8	0.13	0.47	0.13	54.5

MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Crystal Turn - PM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

		ent Perfor												
Mov ID	Tum	[Total	OLUMES HV]	DEMAND [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	[Veh.	OF QUEUE Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m			_	km/h
	Crystal Tu													
1	L2	22	3.3	22	3.3	0.044	5.6	LOS A	0.2	1.6	0.39	0.60	0.39	52.0
2	T1	1	3.3	1	3.3	0.044	5.9	LOS A	0.2	1.6	0.39	0.60	0.39	53.0
3	R2	23	3.3	23	3.3	0.044	9.4	LOS A	0.2	1.6	0.39	0.60	0.39	52.6
Approa	ich	46	3.3	46	3.3	0.044	7.5	LOS A	0.2	1.6	0.39	0.60	0.39	52.3
East: B	lennett Spr	rings Drive												
4	L2	12	6.9	12	6.9	0.149	4.5	LOS A	0.8	6.0	0.07	0.45	0.07	53.9
5	T1	209	6.9	209	6.9	0.149	4.7	LOS A	0.8	6.0	0.07	0.45	0.07	55.0
6	R2	1	6.9	1	6.9	0.149	8.3	LOS A	0.8	6.0	0.07	0.45	0.07	54.6
Approa	ich	222	6.9	222	6.9	0.149	4.7	LOS A	0.8	6.0	0.07	0.45	0.07	54.9
North: (Crystal Tur	m												
7	L2	3	5.1	3	5.1	0.006	5.7	LOS A	0.0	0.2	0.41	0.53	0.41	52.3
8	T1	1	5.1	1	5.1	0.006	5.9	LOS A	0.0	0.2	0.41	0.53	0.41	53.3
9	R2	2	5.1	2	5.1	0.006	9.5	LOS A	0.0	0.2	0.41	0.53	0.41	52.9
Approa	ich	6	5.1	6	5.1	0.006	7.0	LOS A	0.0	0.2	0.41	0.53	0.41	52.7
West: E	Bennett Sp	rings Drive												
10	L2	1	6.8	1	6.8	0.128	4.5	LOS A	0.7	5.5	0.13	0.45	0.13	53.6
11	T1	168	6.8	168	6.8	0.128	4.8	LOS A	0.7	5.5	0.13	0.45	0.13	54.6
12	R2	8	6.8	8	6.8	0.128	8.3	LOS A	0.7	5.5	0.13	0.45	0.13	54.2
Approa	ich	177	6.8	177	6.8	0.128	4.9	LOS A	0.7	5.5	0.13	0.45	0.13	54.6
All Vehi	icles	451	6.5	451	6.5	0.149	5.1	LOS A	0.8	6.0	0.13	0.47	0.13	54.5

Figure 11: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout



MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Silver Swan Road - AM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

Mov	Turn	INPUT V	DLUMES	DEMAND	FLOWS	Dea.	Aver.	Level of	95% BACK	OF QUEUE	Prop.	Effective	Aver, No.	Aver
ID		[Total	HV]	[Total	HV]	Satin	Delay	Service	[Veh.	Dist]	Que	Stop Rate	Cycles	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/l
South: (Car Park													
1	L2	1	0.0	1	0.0	0.003	5.2	LOS A	0.0	0.1	0.34	0.51	0.34	52.0
2	T1	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.1	0.34	0.51	0.34	53.5
3	R2	1	0.0	1	0.0	0.003	9.0	LOS A	0.0	0.1	0.34	0.51	0.34	53.2
Approa	ch	3	0.0	3	0.0	0.003	6.6	LOS A	0.0	0.1	0.34	0.51	0.34	53.1
East: B	ennett Sprir	igs Drive												
4	L2	1	3.7	1	3.7	0.110	4.5	LOS A	0.6	4.5	0.12	0.47	0.12	53.0
5	T1	137	3.7	137	3.7	0.110	4.7	LOS A	0.6	4.5	0.12	0.47	0.12	54.0
6	R2	17	3.7	17	3.7	0.110	8.3	LOS A	0.6	4.5	0.12	0.47	0.12	54.
Approa	ch	155	3.7	155	3.7	0.110	5.1	LOS A	0.6	4.5	0.12	0.47	0.12	54.
North: 5	Silver Swan	Road												
7	L2	19	3.8	19	3.8	0.037	5.5	LOS A	0.2	1.5	0.39	0.58	0.39	52.
8	T1	1	3.8	1	3.8	0.037	5.8	LOS A	0.2	1.5	0.39	0.58	0.39	53.
9	R2	19	3.8	19	3.8	0.037	9.4	LOS A	0.2	1.5	0.39	0.58	0.39	52.
Approa	ch	39	3.8	39	3.8	0.037	7.4	LOS A	0.2	1.5	0.39	0.58	0.39	52.4
West: B	ennett Spri	ngs Drive												
10	L2	29	7.6	29	7.6	0.137	4.5	LOS A	0.7	5.5	0.10	0.46	0.10	53.
11	T1	165	7.6	165	7.6	0.137	4.7	LOS A	0.7	5.5	0.10	0.46	0.10	54.
12	R2	1	7.6	1	7.6	0.137	8.3	LOS A	0.7	5.5	0.10	0.46	0.10	54.
Approa	ch	195	7.6	195	7.6	0.137	4.7	LOS A	0.7	5.5	0.10	0.46	0.10	54.
All Vehi	rles	392	5.6	392	5.6	0.137	5.1	LOS A	0.7	5.5	0.14	0.47	0.14	54.

MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Silver Swan Road - PM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

Vehicl	e Moverne	nt Perform	ance											
Mov ID	Tum	INPUT V [Total veh/h	OLUMES HV] %	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South:	Car Park													
1	L2	1	0.0	1	0.0	0.003	5.3	LOS A	0.0	0.1	0.36	0.52	0.36	52.5
2	T1	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.1	0.36	0.52	0.36	53.5
3	R2	1	0.0	1	0.0	0.003	9.1	LOS A	0.0	0.1	0.36	0.52	0.36	53.2
Approa	ch	3	0.0	3	0.0	0.003	6.6	LOS A	0.0	0.1	0.36	0.52	0.36	53.1
East: B	ennett Sprir	ngs Drive												
4	L2	1	3.7	1	3.7	0.120	4.4	LOS A	0.7	5.0	0.09	0.48	0.09	53.6
5	T1	152	3.7	152	3.7	0.120	4.7	LOS A	0.7	5.0	0.09	0.48	0.09	54.7
6	R2	24	3.7	24	3.7	0.120	8.2	LOS A	0.7	5.0	0.09	0.48	0.09	54.3
Approa	ch	177	3.7	177	3.7	0.120	5.1	LOS A	0.7	5.0	0.09	0.48	0.09	54.6
North: \$	Silver Swan	Road												
7	L2	13	3.8	13	3.8	0.025	5.5	LOS A	0.1	1.0	0.39	0.57	0.39	52.1
8	T1	1	3.8	1	3.8	0.025	5.8	LOS A	0.1	1.0	0.39	0.57	0.39	53.1
9	R2	12	3.8	12	3.8	0.025	9.4	LOS A	0.1	1.0	0.39	0.57	0.39	52.7
Approa	ch	26	3.8	26	3.8	0.025	7.3	LOS A	0.1	1.0	0.39	0.57	0.39	52.4
West: E	ennett Spri	ngs Drive												
10	L2	32	7.6	32	7.6	0.148	4.6	LOS A	0.8	5.9	0.13	0.46	0.13	53.7
11	T1	172	7.6	172	7.6	0.148	4.8	LOS A	0.8	5.9	0.13	0.46	0.13	54.8
12	R2	1	7.6	1	7.6	0.148	8.4	LOS A	0.8	5.9	0.13	0.46	0.13	54.4
Approa	ch	205	7.6	205	7.6	0.148	4.8	LOS A	0.8	5.9	0.13	0.46	0.13	54.6
All Vehi	cles	411	5.6	411	5.6	0.148	5.1	LOS A	0.8	5.9	0.13	0.47	0.13	54.5

Figure 12: Intersection Capacity Analysis - Bennett Springs Drive / Silver Swan Road Roundabout

As shown, both roundabouts would operate at a satisfactory level with all measures of performance well within acceptable thresholds (level of service, degree of saturation, average delay and queueing).



3.4.1. Sensitivity Analysis

A sensitivity analysis has also been undertaken by scaling up all input traffic flows until the intersection reaches practical capacity. The results are shown in Figure 13 and Figure 14.

oundal														
ow sc		. (Decelier)	0	December for F	In the Constant of the				50.0.0/					
	ale Analys	is (Practical	Capacity):	Results for FI	low Scale (cr	iosen as larges	t for any mo	vement) = 5	50.0 %					
<i>l</i> ohicle	Moveme	nt Perform	ance											
lov	Tum	INPUT V		DEMAND	FLOWS	Deg.	Aver.	Level of	95% BACK	OF QUEUE	Prop.	Effective	Aver. No.	Av
D		[Total	HV]	[Total	HV]	Satn	Delay	Service	[Veh.	Dist]	Que	Stop Rate	Cycles	Spee
2		veh/h	%	veh/h	%	v/c	Sec		veh	m				km
	Crystal Turi													
	L2	21	3.3	116	3.3	0.744	48.8	LOS D	9.0	64.5	1.00	1.34	1.94	32
2	T1	1	3.3	6	3.3	0.744	49.1	LOS D	9.0	64.5	1.00	1.34	1.94	32
3	R2	21	3.3	116	3.3	0.744	52.6	LOS E ¹¹	9.0	64.5	1.00	1.34	1.94	32
Approad	ch	43	3.3	237	3.3	0.744	50.7	LOS E ¹¹	9.0	64.5	1.00	1.34	1.94	32
East: Be	ennett Spri	ngs Drive												
Ļ	L2	12	6.9	66	6.9	0.828	5.4	LOS A	16.7	124.1	0.62	0.44	0.62	51
;	T1	204	6.9	1122	6.9	0.828	5.6	LOS A	16.7	124.1	0.62	0.44	0.62	52
;	R2	1	6.9	6	6.9	0.828	9.2	LOS A	16.7	124.1	0.62	0.44	0.62	52
pproad	ch	217	6.9	1194	6.9	0.828	5.6	LOS A	16.7	124.1	0.62	0.44	0.62	52
lorth: C	Crystal Turn													
	L2	3	5.1	17	5.1	0.087	14.7	LOS B	0.6	4.3	0.92	0.85	0.92	46
	T1	1	5.1	6	5.1	0.087	15.0	LOS B	0.6	4.3	0.92	0.85	0.92	47
	R2	2	5.1	11	5.1	0.087	18.6	LOS B	0.6	4.3	0.92	0.85	0.92	46
pproad		6	5.1	33	5.1	0.087	16.1	LOS B	0.6	4.3	0.92	0.85	0.92	46
Voot: P	ennett Spri	nan Driva												
0	L2	1	6.8	6	6.8	0.704	5.9	LOSA	9.0	66.8	0.71	0.57	0.71	5
1	T1	148	6.8	6 814	0.0 6.8	0.704	5.9 6.2	LOSA	9.0	66.8	0.71	0.57	0.71	5
2	R2	140	0.0 6.8	33	0.0 6.8	0.704	6.2 9.7	LOSA	9.0	66.8	0.71	0.57	0.71	5
pproad		155	6.8	853	6.8	0.704	6.3	LOSA	9.0	66.8	0.71	0.57	0.71	52
PPIOR		100	0.0	000	0.0	0.704	0.0	LOOA	0.0	00.0	0.71	0.07	v.r 1	32
All Vehi	cles	421	6.5	2316	6.5	0.828	10.6	LOS B	16.7	124.1	0.70	0.59	0.79	

MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Crystal Turn - PM Peak (Site Folder: Future - Sensitivity)]

Site Category: -Roundabout Flow Scale Analysis (Practical Capacity): Results for Flow Scale (chosen as largest for any movement) = 530.0 %

		ent Perform												
Mov ID	Tum	INPUT V	OLUMES HV 1	DEMAND [Total	FLOWS HV 1	Deg. Satn	Aver. Delay	Level of Service	95% BACK [Veh.	OF QUEUE Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	пvј %	veh/h	нvј %	v/c	sec	Service	veh	m	Que	Зюр кане	Cycles	speed km/h
South: (Crystal Tur	'n												
1	L2	22	3.3	117	3.3	0.784	54.3	LOS E ¹¹	10.1	72.6	1.00	1.39	2.07	30.9
2	T1	1	3.3	5	3.3	0.784	54.5	LOS E ¹¹	10.1	72.6	1.00	1.39	2.07	31.2
3	R2	23	3.3	122	3.3	0.784	58.1	LOS E ¹¹	10.1	72.6	1.00	1.39	2.07	31.1
Approa	ch	46	3.3	244	3.3	0.784	56.2	LOS E ¹¹	10.1	72.6	1.00	1.39	2.07	31.0
East: Be	ennett Spri	ings Drive												
4	L2	12	6.9	64	6.9	0.834	5.6	LOS A	17.1	126.8	0.70	0.46	0.70	51.5
5	T1	209	6.9	1108	6.9	0.834	5.8	LOS A	17.1	126.8	0.70	0.46	0.70	52.5
6	R2	1	6.9	5	6.9	0.834	9.4	LOS A	17.1	126.8	0.70	0.46	0.70	52.1
Approa	ch	222	6.9	1177	6.9	0.834	5.8	LOS A	17.1	126.8	0.70	0.46	0.70	52.4
North: C	Crystal Turi	n												
7	L2	3	5.1	16	5.1	0.103	17.1	LOS B	0.7	5.3	0.97	0.89	0.97	45.1
8	T1	1	5.1	5	5.1	0.103	17.4	LOS B	0.7	5.3	0.97	0.89	0.97	45.8
9	R2	2	5.1	11	5.1	0.103	20.9	LOS C	0.7	5.3	0.97	0.89	0.97	45.6
Approa	ch	6	5.1	32	5.1	0.103	18.4	LOS B	0.7	5.3	0.97	0.89	0.97	45.4
West: B	ennett Spr	rings Drive												
10	L2	1	6.8	5	6.8	0.777	6.3	LOS A	11.4	84.4	0.83	0.59	0.83	50.9
11	T1	168	6.8	890	6.8	0.777	6.5	LOS A	11.4	84.4	0.83	0.59	0.83	51.9
12	R2	8	6.8	42	6.8	0.777	10.1	LOS B	11.4	84.4	0.83	0.59	0.83	51.5
Approa	ch	177	6.8	938	6.8	0.777	6.7	LOS A	11.4	84.4	0.83	0.59	0.83	51.9
All Vehi	cles	451	6.5	2390	6.5	0.834	11.4	LOS B	17.1	126.8	0.78	0.61	0.89	48.7

Figure 13: Intersection Capacity Analysis - Bennett Springs Drive / Crystal Turn Roundabout - Sensitivity



MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Silver Swan Road - AM Peak (Site Folder: Future - Sensitivity)]

Site Category: -Roundabout Flow Scale Analysis (Practical Capacity): Results for Flow Scale (chosen as largest for any movement) = 558.0 %

Mov	Tum	INPUT VOLUMES		DEMAND FLOWS		Deq.	Aver.	Level of	95% BACK	OF QUEUE	Prop.	Effective	Aver, No.	Aver.
ID		[Total	HV]	[Total	HV]	Satn	Delay	Service	[Veh.	Dist]	Que	Stop Rate	Cycles	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/t
South:	Car Park													
1	L2	1	0.0	6	0.0	0.038	12.6	LOS B	0.3	1.8	0.88	0.77	0.88	47.3
2	T1	1	0.0	6	0.0	0.038	12.9	LOS B	0.3	1.8	0.88	0.77	0.88	48.
3	R2	1	0.0	6	0.0	0.038	16.4	LOS B	0.3	1.8	0.88	0.77	0.88	48.
Approa	ch	3	0.0	17	0.0	0.038	14.0	LOS B	0.3	1.8	0.88	0.77	0.88	48.3
East: B	ennett Spri	ngs Drive												
4	L2	1	3.7	6	3.7	0.691	5.7	LOS A	8.8	63.8	0.68	0.56	0.68	51.
5	T1	137	3.7	764	3.7	0.691	6.0	LOS A	8.8	63.8	0.68	0.56	0.68	52.
6	R2	17	3.7	95	3.7	0.691	9.5	LOS A	8.8	63.8	0.68	0.56	0.68	52.
Approach 155 3.7		865	3.7	0.691	6.4	LOS A	8.8	63.8	0.68	0.56	0.68	52.		
North: \$	Silver Swan	Road												
7	L2	19	3.8	106	3.8	0.617	26.4	LOS C	6.2	44.5	1.00	1.16	1.42	40.
8	T1	1	3.8	6	3.8	0.617	26.7	LOS C	6.2	44.5	1.00	1.16	1.42	40
9	R2	19	3.8	106	3.8	0.617	30.2	LOS C	6.2	44.5	1.00	1.16	1.42	40.
Approa	ch	39	3.8	218	3.8	0.617	28.3	LOS C	6.2	44.5	1.00	1.16	1.42	40.
West: E	Bennett Spr	ings Drive												
10	L2	29	7.6	162	7.6	0.848	6.4	LOS A	15.2	113.2	0.88	0.56	0.88	50.
11	T1	165	7.6	921	7.6	0.848	6.6	LOS A	15.2	113.2	0.88	0.56	0.88	51.
12	R2	1	7.6	6	7.6	0.848	10.2	LOS B	15.2	113.2	0.88	0.56	0.88	51.
Approa	ch	195	7.6	1088	7.6	0.848	6.6	LOS A	15.2	113.2	0.88	0.56	0.88	51
All Vehi	icles	392	5.6	2187	5.6	0.848	8.7	LOS A	15.2	113.2	0.81	0.62	0.85	50

MOVEMENT SUMMARY

𝖁 Site: 1 [Bennett Springs Drive / Silver Swan Road - PM Peak (Site Folder: Future - Sensitivity)]

Site Category: -Roundabout Flow Scale Analysis (Practical Capacity): Results for Flow Scale (chosen as largest for any movement) = 510.0 %

Mov	Tum	INPUT V		DEMAND		Deg.	Aver.	Level of		OF QUEUE	Prop.	Effective	Aver. No.	Aver
ID		[Total	HV]	[Total	HV]	Satn	Delay	Service	[Veh.	Dist]	Que	Stop Rate	Cycles	Speed
_		veh/h	%	veh/h	%	v/c	Sec		veh	m				km/h
South: (Car Park													
1	L2	1	0.0	5	0.0	0.033	12.5	LOS B	0.2	1.5	0.85	0.75	0.85	47.9
2	T1	1	0.0	5	0.0	0.033	12.7	LOS B	0.2	1.5	0.85	0.75	0.85	48.7
3	R2	1	0.0	5	0.0	0.033	16.3	LOS B	0.2	1.5	0.85	0.75	0.85	48.5
Approa	ch	3	0.0	15	0.0	0.033	13.8	LOS B	0.2	1.5	0.85	0.75	0.85	48.4
East: Be	ennett Spri	ngs Drive												
4	L2	1	3.7	5	3.7	0.661	5.2	LOS A	8.7	62.8	0.52	0.49	0.52	52.0
5	T1	152	3.7	775	3.7	0.661	5.4	LOS A	8.7	62.8	0.52	0.49	0.52	53.0
6	R2	24	3.7	122	3.7	0.661	9.0	LOS A	8.7	62.8	0.52	0.49	0.52	52.
Approa	ch	177	3.7	903	3.7	0.661	5.9	LOS A	8.7	62.8	0.52	0.49	0.52	53.0
North: S	Silver Swar	n Road												
7	L2	13	3.8	66	3.8	0.353	14.2	LOS B	2.7	19.3	0.99	0.99	0.99	46.5
8	T1	1	3.8	5	3.8	0.353	14.5	LOS B	2.7	19.3	0.99	0.99	0.99	47.3
9	R2	12	3.8	61	3.8	0.353	18.1	LOS B	2.7	19.3	0.99	0.99	0.99	47.0
Approa	ch	26	3.8	133	3.8	0.353	16.0	LOS B	2.7	19.3	0.99	0.99	0.99	46.8
West: B	ennett Spr	ings Drive												
10	L2	32	7.6	163	7.6	0.848	7.5	LOS A	15.0	111.5	0.91	0.63	0.94	50.8
11	T1	172	7.6	877	7.6	0.848	7.7	LOS A	15.0	111.5	0.91	0.63	0.94	51.8
12	R2	1	7.6	5	7.6	0.848	11.3	LOS B	15.0	111.5	0.91	0.63	0.94	51.4
Approa	ch	205	7.6	1046	7.6	0.848	7.7	LOS A	15.0	111.5	0.91	0.63	0.94	51.6
All Vehi	rles	411	5.6	2096	5.6	0.848	7.5	LOS A	15.0	111.5	0.75	0.59	0.76	51.8

Figure 14: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout – Sensitivity

The results show that that the traffic flows could increase by over five times before reaching capacity. It is therefore concluded that there would be adequate long term capacity to accommodate the school traffic and the long term traffic flows as the area develops.





4. Parking Assessment and Management

4.1. Car Parking Provision

The current plans indicate that the development will include approximately 68 on-site car parking bays including a kiss and drive facility with room for approximately 12 cars.

There is also an existing car park on the adjacent sporting field and street parking bays along Bennett Spring Drive and Goa Vista. While these are not technically a part of the school site, they are all within short walking distance of the site and currently available for public use.

As shown in Figure 15, there are 125 bays available for school use.



Figure 15: Existing and Proposed Car Parking

4.2. Car Parking Requirements

The City's Local Planning Policy *Vehicle Parking Standards* (POL-TP-129) requires 1 parking space per classroom for private primary schools.

Based on the 18 proposed classrooms, a minimum of 18 spaces are required. The available 125 bays (68 on-site and 57 off-site) bays exceed the minimum policy requirement.



Although the proposed on-site parking satisfies the City's minimum requirements, the provision of 1 bay per classroom is unlikely to be sufficient and so a comparison has been made to the Department of Education (DoE) parking requirements for public primary schools. The car parking requirements are outlined in **Table 4**.

Вау Туре	Car Parking Requirement	Students	Bays Required				
Staff / Visitor	10 bays per 100 students (on-site)	269	27				
Pick-up / Drop-off	14 bays per 100 students (off-site where possible)	209	38				
	Total Required		65				
	Total Available						

Table 4: DoE Car Parking Requirements – Current Students

Table 5: DoE Car Parking Requirements – Ultimate Capacity of 460 Students

Вау Туре	Car Parking Requirement	Students	Bays Required				
Staff / Visitor	10 bays per 100 students (on-site)	440	44				
Pick-up / Drop-off	14 bays per 100 students (off-site where possible)	440	62				
	Total Required		106				
	Total Available						

As shown, the available 125 bays satisfy the DoE requirements under both scenarios.



4.3. Parking Management

The development plans include a proposed kiss and drive facility within the car park. The proper management of this facility will ensure the safe and efficient operation and will maximise the turnover of vehicle trips which reduces the demand on other regular bays.

It is recommended that a Kiss and Drive Operational Plan is prepared as part of the overall School Management Plan detailing other measures to manage traffic during the peak pick-up and drop-off periods. Such measures could include:

- Promoting of alternative modes of transport such as walking, riding (bicycles and scooters) and taking
 public transport. The Department of Transport Your Move Program which provides tailored information
 on how to get to and from work, school and around the local community using alternative modes of
 transport. There are resources, competitions, events and rewards aimed at promoting active transport.
 The school can be registered via the Your Move website. Parents, students and staff can register
 individually, join the school's network, learn about different ways to travel to and from school and earn
 points and rewards for the school by participating.
- Encouraging carpooling.
- Advising parents who wish to walk their children to/from school to use the street parking bays or bays located slightly further away from the school.

4.4. Bicycle Parking

The City does not specify bicycle parking requirements for private schools. For comparison, the Department of Education (DoE) typically recommends 1 bicycle parking space per 9 students for public primary schools.

Based on the current 269 students, the DoE guidelines would require 30 bicycle parking spaces.

Based on the projected 440 students, the DoE guidelines would require 49 bicycle parking spaces.

It is acknowledged that a lower proportion of students would cycle to and from a private primary school due to there being a wider catchment area and so the parking demand would be lower compared to a public primary school.

It is currently proposed to include 20 bicycle spaces which is considered to be adequate for the current school population considering the wider catchment and lower bicycle parking demand compared to a public school. Additional bicycle spaces can easily be added when there is demonstrated demand.





5. Vehicle Access

5.1. Access Location

The proposed access arrangement of the school is shown in **Figure 16**. The crossovers on Bennett Springs Drive are restricted to entry-only or exit-only to minimise conflicting traffic movements. The internal parking aisle will therefore be restricted to one-way movements only.

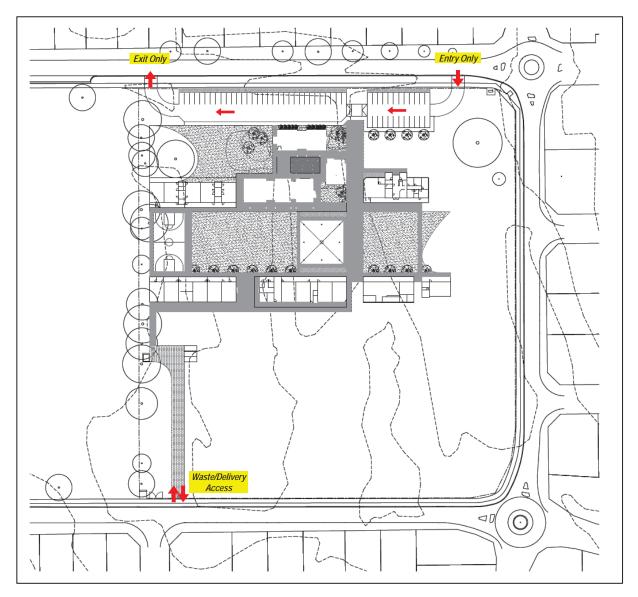


Figure 16: Proposed Access Arrangement



Sight distance requirements from vehicle exit points is defined in Figure 3.2 of Australian Standard AS 2890.1-2004 *Parking Facilities - Off-street car parking* (AS2890.1) as shown in **Figure 17**. Based on the frontage road speed of 40 km/h (school zone speed limit) the minimum required sight distance is 35 metres (55 metres desirable).

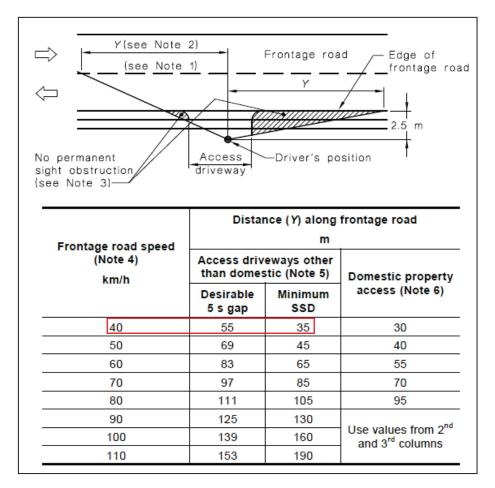


Figure 17: Sight Distance Requirements

As shown in **Figure 18**, the proposed vehicle exit points on Bennett Springs Drive and Bridgeman Drive would have adequate sight distance in both directions.







Figure 18: Sight Distance Check





6. Road Safety Assessment

6.1. Crash History

The crash history of the surrounding roads was obtained from the MRWA Reporting Centre. A summary of the recorded incidents over the five-year period ending December 2020 is shown in **Figure 19**.



Figure 19: Crash History January 2016 to December 2020

The crash history to date does not indicate any major safety issues on the road network and there is no indication that the school will increase the risk of crashes to an unacceptable level.



7. Pedestrian and Cyclist Assessment

The existing path network around the proposed site is well established. The existing path network within an 800m walkable catchment of the school is shown in **Figure 20**.



Figure 20: Existing Path Network

As shown, there are footpaths along one side of most roads including the perimeter of the new site and adjoining lot. The only roads with no paths are short sections of low volume, low speed roads.

The existing path network is considered to be adequate and no additional infrastructure is considered necessary.





8. Public Transport Accessibility

The existing public transport services near the site include:

- Transperth Bus Route 345 which operates between Morley Bus Station and Bennett Springs via Beechboro Road. The closest stops are located on Bennett Springs Drive west of Goa Vista and east of Crystal Turn which are all within short walking distance of the proposed school site.
- Transperth Bus Route 955 which operates between Morley Bus Station and Ellenbrook North. The closest stops are located on Altone Road adjacent to Currawong Court (approximately 650m walking distance from the school).

Public transport use among primary school students is low and so the existing services are considered to be adequate. Once Malaga Station is completed as part of the Morley-Ellenbrook Line, additional bus services may operate in the area from the new station.



9. Conclusions

A Transport Impact Assessment for the proposed relocation of Beechboro Christian School has concluded the following:

- The school relocation will simply result in the redistribution of some school traffic from Marshall Road to Bennett Springs Drive. The increase along Bennett Spring Drive is estimated to be in the order of 108 vehicle movements during each of the school peak hours.
- The increased daily traffic volume along Bennett Springs Drive resulting from the school relocation will remain within the expected capacity of a Local Distributor / Neighbourhood Connector B road and so there is adequate capacity to accommodate the redistribution of school traffic. It is noted there is one section of Bennett Springs Drive immediately west of Altone Road which currently carries 3,320vpd which would increase to approximately 3,536vpd. As this volume is well below the indicative daily traffic volume for a higher order Local Distributor Road (7,000vpd), the upgrade of this road is not warranted.
- If and when the school reaches the ultimate student capacity of 440 students, the increase in overall traffic generation is estimated to be 170 vehicle movements (85 in / 85 out). The school traffic is relatively well distributed and so the increase in traffic on any particular section of road is low and at a level that can easily be accommodated within the capacity of the road network.
- The two adjacent roundabouts along Bennett Springs Drive will have adequate capacity to accommodate the school relocation and future growth in traffic from the school and surrounding area.
- The available 125 bays (68 on-site and 57 off-site) bays exceed the 18 bays required under the City Local Planning Policy. The 125 bays also satisfy the DoE requirements which have been used for comparison.
- It is recommended that a Kiss and Drive Operational Plan is prepared as part of the overall School Management Plan.
- It is currently proposed to include 20 bicycle spaces which would be adequate for the current school population considering the wider catchment and lower bicycle parking demand compared to a public school. Additional bicycle spaces can easily be added when there is demonstrated demand.
- All proposed vehicle exit points would achieve the minimum required sight distance.
- The crash history to date does not indicate any major safety issues on the road network and there is no indication that the school will increase the risk of crashes to an unacceptable level.
- There are footpaths along one side of most roads including the perimeter of the new site and adjoining lot. The existing path network is considered to be adequate and no additional infrastructure is considered necessary.
- Public transport use among primary school students is low and so the existing services are considered to be adequate.



Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

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Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to <u>daps@dplh.wa.gov.au</u>

Presenter Details

Name	Joshua Carmody	
Company (if applicable)	Planning Solutions	
Please identify if you have	YES 🗆 NO 🛛	
any special requirements:	If yes, please state any accessibility or special requirements:	
	Click or tap here to enter text.	

Meeting Details

DAP Name	Metro Outer Joint Development Assessment Panel
Meeting Date	7 December 2021, 9:30am
DAP Application Number	DAP/21/02074
Property Location	Lot 1 (27) Day Road, East Rockingham
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES 🛛
Is the presentation in support of or against the <u>report</u> <u>recommendation</u>)? <i>(contained within the Agenda)</i>	SUPPORT 🛛 AGAINST 🗆
Is the presentation in support of or against the <u>proposed</u> <u>development</u> ?	SUPPORT 🛛 AGAINST 🗆
Will the presentation require power-point facilities?	YES □ NO ⊠ If yes, please attach



Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

In accordance with Clause 3.5.2 of the <u>DAP Standing Orders</u>, your presentation request <u>must</u> also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

We are pleased to receive the officer recommendation for approval and wish to express our support for the officer recommendation. We thank the City's officers for their collaboration throughout the assessment of the application.

I wish to raise only two matters: the deletion of conditions 6 and 10.

Deletion of Condition 6

Condition 6 requires the applicant to submit detailed engineering drawings showing the various pavement types and cross-sectional profiles to be adopted across the development.

We note that this information will be provided as part of both the crossover approval process and the stormwater management plan. Applying the condition therefore results in a duplication of information and places an unnecessary inconvenience on the applicant.

We have raised this concern with the City, and they have agreed that the condition is not required. We therefore respectfully request the JDAP to consider removing Condition 6 from the approval.

Deletion of Condition 10

Condition 10 requires that buildings to be designed to BAL-29 as specified in Australian Standard 3959-2009. This standard does not apply to industrial buildings. BAL ratings and their associated standards are meant for structures in which people sleep and will not be able to receive advanced warning of approaching bushfire. For this reason we request the deletion of Condition 10.

Myself, Daniel Panickar from Ecological and Marina Kleyweg from KCTT are now available to answer any questions the panel members may have.



Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Martin Bent	
Company (if applicable)	Swan Christian Education Association	
Please identify if you have	YES 🗆 NO 🛛	
any special requirements:	If yes, please state any accessibility or special requirements:	
	Click or tap here to enter text.	

Meeting Details

DAP Name	Metro Outer JDAP
Meeting Date	07/12/2021
DAP Application Number	DAP/21/02060
Property Location	Lot 27 Bennett Springs , Bennett Springs
Agenda Item Number	8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES 🛛
Is the presentation in support of or against the <u>report</u> <u>recommendation</u>)? <i>(contained within the Agenda)</i>	SUPPORT 🛛 AGAINST 🖾
Is the presentation in support of or against the <u>proposed</u> <u>development</u> ?	SUPPORT 🛛 AGAINST 🗆
Will the presentation require power-point facilities?	YES □ NO ⊠ If yes, please attach



Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> Click or tap here to enter text.
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In accordance with Clause 3.5.2 of the <u>DAP Standing Orders</u>, your presentation request <u>must</u> also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Dr Martin Bent, Project Manager, Swan Christian Education Association

The relocation and development of Beechboro Christian School is a complex exercise as it incorporates both new buildings and infrastructure and the relocation of existing buildings whilst the current school is in operation and is bursting at the seams.

The planning of the submitted proposal has been detailed and thorough as we have sought to balance these challenges, achieve a highly functional school that is aesthetically pleasing, and also ensure that nothing is incompatible with potential future developments.

The application has received community feedback and a Peer review through the City's planning office which has helped us improve the quality of the plan.

We have valued and appreciated the constructive communications and professional input from the City's Planning Officers, and their efforts to process the application in a challenging timeframe.

In general, we believe their report is concise, fair and balanced. However, we table the introduction to our initial application and the Traffic Engineer's initial Report and their Technical Note in response to the first peer review for completeness of the record.

We note the Officers' comment on page 10 of their report (p 312 of the Agenda)

.... At the close of the secondary review [by wOnder city + landscape], there were no elements which were not supported.

And on page 12 (p314 of Agenda)

It is considered that the remainder of the Peer Reviewer's comments could be incorporated into the development as it establishes into the future. Informal play and street games, landscape design, additional trees, additional nature play and learning objectives are all matters which naturally evolve over time.

This very fairly assesses the development and evolution of a school campus and the easing resource constraints that occur as a school grows and overcomes the initial capital hurdle.

Conditions of Approval

Responsible Authority Recommended Condition

The additional Condition recommended by Council requires a "Kiss and Drive" Operational Plan prepared to the satisfaction of the City of Swan. Whilst not onerous, we question the necessity for this Condition, given that all independent schools in Western Australia have to be Registered with the Department of Education prior to operation. Student safety is a central element of Registration and is closely scrutinised prior to Ministerial approval.

We have a strong reputation for effective policies, risk management and compliance. We have taken expert advice on the design and layout of the parking facility, and it will be carefully managed.

The City's Planning Officers were aware of this matter and were satisfied with the sufficiency of the design and the capacity of the school to effectively manage this aspect of its operations.

Officer Recommendations

Condition 14 – Bike rack weather protection

We appreciate the need for bike racks and 'end of journey' facilities, and this is reflected in the current design. We question the need for weather protection for the bike racks.

Currently only two students cycle to the school (given our wide catchment area), and they do not cycle during inclement weather. In cases where students do cycle in bad weather, the bikes and the students will be exposed to the weather once they leave the bike racks.

Finally, the aesthetics of the street front needs consideration. The placement of the racks is intentional for safe student access to the school and for passive surveillance. We think any weather protection needs to be balanced with the aesthetics of the area and would prefer to see this aesthetic balance reflected in the Condition, or the Condition removed.

Condition 18 – Public Art

In a deputation at the City of Swan Agenda Forum, Principal Michael Bolan requested that Council reconsider the recommendations concerning the Public Art contribution.

The school is effectively not a new development in the area, it is moving about 400metres along the road.

The recommended contribution is based on the full estimated cost of the project. Approximately half the cost relates to the relocation and establishment of transportable buildings that will be replaced in due course. A range of fees and costs have and will be incurred in their initial installation, in their relocation, and then in their replacement. Effectively these costs will be incurred three times.

- (i) The school therefore request that this Condition is removed.
- (ii) If this cannot be removed, we would ask that it is only based on the cost of the new buildings, therefore the public art contribution would be \$30,000.
- (iii) Irrespective of the value of the contribution, we request that the requirement to complete this prior to occupancy be amended to 'within 12 months of building completion' to allow students the opportunity to engage with local artists in developing this artwork. Compliance with this revised Condition could be assured through requiring the deposit of a refundable bond with the City as part of the Condition.

Finally

This project is time-critical given the logistics of synchronising building and relocation with the school year and term dates. We request that JDAP reaches a conclusion at the meeting with respect to the application and our request for condition variations. We do not want our request for condition variations to delay this decision.

PROPOSED PRIMARY SCHOOL: DEVELOPMENT APPLICATION CITY OF SWAN: LOCAL PLANNING SCHEME NO. 17 LOT 27 BENNETT SPRINGS DRIVE, BENNETT SPRINGS



Prepared for: Beechboro Christian School Prepared by: Allerding and Associates





vn Planners, Advocates and Subdivision Designers ABN 24 044 036 646

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TABLE OF CONTENTS

1.0	INTRO	DDUCTION
2.0	BEECH	BORO CHRISTIAN SCHOOL BACKGROUND
2.1	Loca	ality Description4
3.0	SITE D	ETAILS4
3.1	Sub	ject Site4
3.2	Site	Context
3.3	Exis	ting Land Use6
4.0	SITE C	ONDITIONS
4.1	Тор	ography6
4.2	Acio	d Sulphate Conditions
4.3	Gro	und Water6
4.4	Exis	ting Water Course6
4.5	Veg	etation6
5.0	DEVEL	OPMENT DESIGN
5.1	Des	ign Philosophy7
5.2	Des	ign Imperatives7
5.3	Sust	tainability7
5	.3.1	Environmental7
5	.3.2	Economic7
5	.3.3	Social
6.0	DEVEL	OPMENT SPECIFICATIONS
6.1	Earl	y Learning Centre
6.2	Trar	nsportable Classroom Infrastructure8
6.3	Faci	lities and Recreation
6.4	Lan	dscaping9
6.5	Serv	<i>v</i> ices9
6.6	Fen	cing9
6.7	Mat	terials and Finishes9
6.8	Traf	fic9
6	.8.1	Public Transport Infrastructure

6.9	Acoustic Management
7.0	STATUTORY PLANNING FRAMEWORK
7.1	Metropolitan Region Scheme
7.2	City of Swan Local Planning Scheme No. 17 (LPS17)
7.3	Planning and Development (Local Planning Scheme
8.0	PLANNING POLICY
8.1	Local Planning Policy: Vehicle Parking Standards
8.2	Local Planning Policy: Design Review (DR)
8.3	Draft Operational Policy 2.4: Planning for School Si
8.4	State Planning Policy 7.0: Design of the Built Enviro
9.0	PLANNING STRATEGIES
9.1	North East Sub-Regional Planning Framework
10.0	CONCLUSION

ANNEXURES:	TABLES
ANNEXURE 1: PLANNING APPLICATION FORMS	TABLE
ANNEXURE 2: CERTIFICATE OF TITLE	TABLE 2
ANNEXURE 3: FEATURE SURVEY	TABLE 3
ANNEXURE 4: DEVELOPMENT PLANS	
ANNEXURE 5: TRANSPORT IMPACT ASSESSMENT	
FIGURES:	
FIGURE 1: LOCATION PLAN	FIGURE
FIGURE 2: AERIAL LOCATION PLAN	FIGURE
FIGURE 3: AERIAL PLAN	FIGURE
FIGURE 4: ACID SULPHATE SOILS SHOWING MODERATE – LOW RISK	

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	9
	9
	9
')	9
es) Regulations 2015	11
	12
	12
	12
ites	13
onment (DBE)	13
	13
	13
	14

S:

- 1: TITLE DETAILS
- 2: MATTERS TO BE CONSIDERED
- 3: DESIGN OF THE BUILT ENVIRONMENT: DESIGN PRINCIPLES

RE 5 – TREE RETENTION

RE 6: TPS PLAN

RE 7: MRS PLAN

Document ID: BCS MAR GE Planning Report for Proposed Primary School						
Issue	ssue Status Prepared by Approved by:					
			Name	Initials	Name	Initials
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2	05/08/2021	FINAL	Casey Hill	СН	Steve Allerding	SA

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1.0 INTRODUCTION

This report has been prepared on behalf of **Swan Christian Education Association (SCEA)**, the landowners of Lot 27 Bennett Springs Drive, Bennett Springs. The purpose of this application is to seek planning approval to relocate and further develop **Beechboro Christian School (BCS)**. The proposal involves the relocation of transportable classrooms, the construction of a variety of recreational facilities as well as the development of a permanent early learning centre.

Currently, Beechboro Christian School is a lessee of a small portion of land located at Lot 55 (No. 375) Marshall Road, Bennett Springs. Lot 55 is owned by Cracovia Club Inc, with their premises immediately east of the school. The small parcel of land has proved to be of sufficient size from the school's early establishment, however, with school enrolments steadily increasing, the confined area can no longer facilitate the population of the school. As a result, SCEA has purchased a larger, appropriately zoned lot from the Department of Education to relocate their operations. Lot 27 Bennett Springs Drive has been zoned as a primary school reserve and is adjacent to a local government managed sporting oval. BCS's current infrastructure is predominantly transportable classrooms obtained through Commonwealth grants, and as such they plan to continue to utilise these transportable classrooms on the new site. BCS has integrated their transportables in a seamless fashion that constitutes their look and feel like conventional classrooms. In the long-term BCS will transition from transportables to permanent buildings as the financial licencing and practicality of the transportables warrant replacement.

The relocated transportables will provide educational facilities for year 1 to year 6 students. They will be situated around communal courtyards as well as other recreational facilities to encourage positive social interaction between students.

The Kindy and Pre-primary facilities will be newly constructed buildings which will be situated at the front of the school separated from the primary education areas. These classrooms will be constructed as permanent facilities.

Overall, the school aims to be designed and integrated with the adjacent area and will create a cohesive and compatible built form and learning environment.

The application is lodged as a JDAP Application. The relevant planning application forms are included at **Annexure 1**, specifically:

- City of Swan: Application for Development Approval;
- Development Assessment Panel: DAP Form 1
- Metropolitan Region Scheme: MRS Form 1

The Development Plans are included at Annexure 4.

2.0 BEECHBORO CHRISTIAN SCHOOL BACKGROUND

Swan Christian Education Association was established in 1981 by Joan Grosser when a need for a Christian School was identified within the Midland district. As a result, Midland Christian School was formally established and began operating in February 1982. This followed with other Christian schools under the SCEA within the City of Swan district and in 1988, the Beechboro Christian School was founded. Since then, the school has continued to grow and facilitate the local community around it. Since its establishment, the once rural Beechboro area has slowly developed into a bustling urban environment. This in conjunction with BCS's positive education reputation has led to the school reaching capacity at its current premises where there is no opportunity for expansion.







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Beechboro Christian School aims to provide a holistic, Christ-centred education that develops students' God-given talents; in a welcoming environment where every child is loved, accepted and encouraged to explore, inquire and become a life-long learner. Their four key values of kindness, community, courage and excellence help achieve their vision of promoting community fulfillment for all demographics. Beechboro Christian Schools achievements are demonstrated through their students as they leave primary school with discerning characteristics that promote their future success.

The relocation of Beechboro Christian School will allow the school to expand their educational and recreational facilities to ensure current and future students continue to get access to quality education facility. The new site provides feasibility for the school to grow and adapt into the future.

2.1 **Locality Description**

Bennett Springs is a small but rapidly expanding suburb situated between Beechboro and Whiteman Park. The suburb is bounded by Lord Street to the east, Reid Highway to the south, Tonkin Highway to the west and Marshall Road to the north. Originally a subdivision of Beechboro, a campaign was launched to rename the suburb to Bennett Springs due to its growing size and unique locality this was approved in 2011. Currently, BCS is Bennett Springs only primary school with the next closest primary school being Beechboro Primary School (BPS). With Bennett Springs continually expanding east, and Reid highway dividing Bennett Springs from surrounding suburbs, BCS provides an important role as a local school with a walkable catchment for residents of Bennett Springs.

3.0 SITE DETAILS

Subject Site 3.1

The particulars of the subject site are described in Table 1.

Table 1: Title Details

Lot Number	House Number	Deposited Plan	Volume	Folio
27	-	33009	2527	614

A copy of the Certificate of Title and Deposited Plan are included in Annexure 2.

The land area of the subject site is 3.5 hectares.

3.2 Site Context

The subject site is located in the suburb of Bennet Springs approximately 18 kilometres north east of the Perth Central Business District. The subject site is bound by Bennett Spring Drive to the north, Crystal Turn to the east and Bridgeman Drive to the south (Refer Figure 1).

As can be seen in the Aerial Location Plan at Figure 2, Lot 27 sits to the immediate southeast of the site, separated by Bennett Springs Drive, with low density, predominantly single residential dwellings surrounding the site at a density of R20.

The main access to the site is via Bennett's Spring Drive which connects to major roads such as Beechboro Road and Altone Road. Beechboro Road connects to Springs Shopping Centre, the proposed Malaga train station as well as Reid Highway. The existing road connectivity ensures that the proposed development is well situated and will continue to add to the growing suburb of Bennett Springs.

Smaller local roads surrounding the development such as Bridgeman Road link up with surrounding Crystal Turn and other local roads. Overall, the surrounding infrastructure incorporates roundabouts to create a more seamless flow of traffic. Furthermore, the development is in a central location to its residential catchment to encourage students and parents to walk to school.

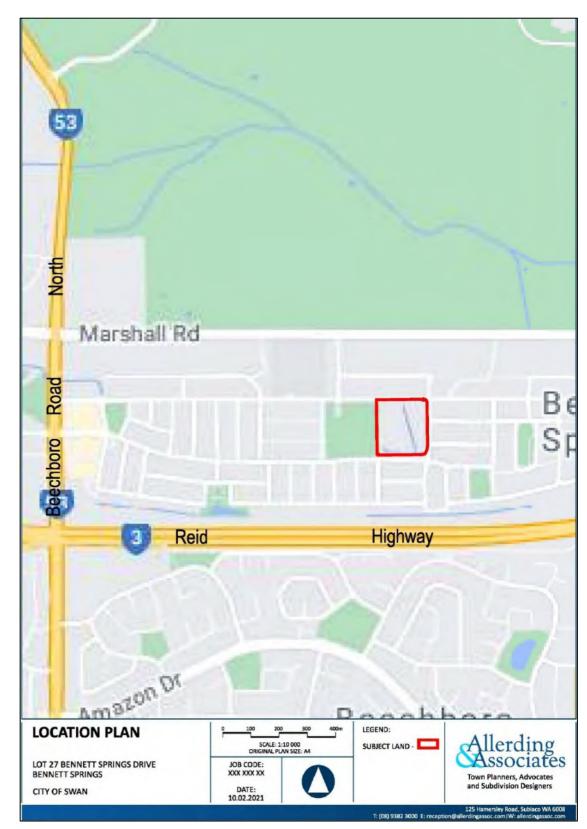


Figure 1: Location Plan



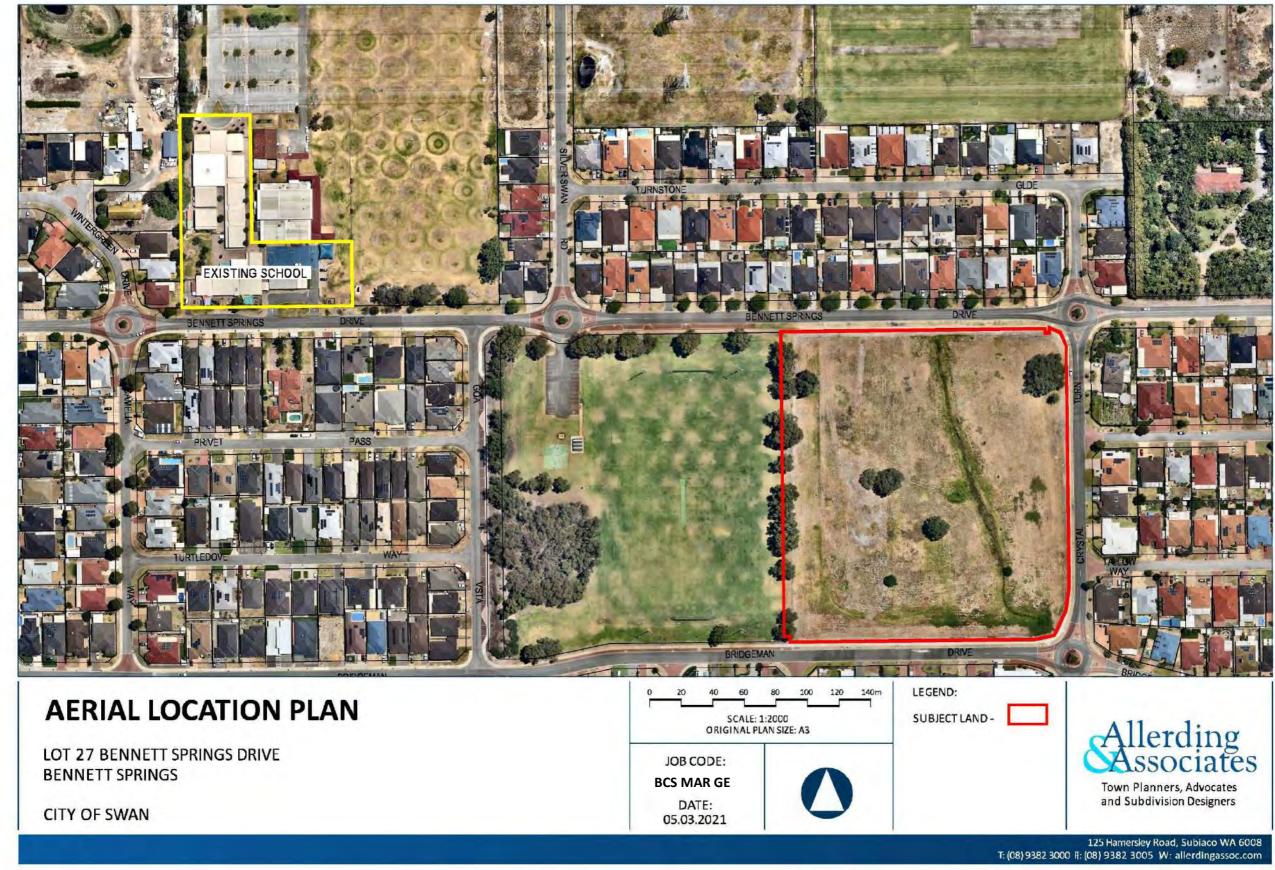


Figure 2: Aerial Location Plan



Existing Land Use 3.3

The aerial photograph at Figure 3 best illustrates the current land uses of the subject site and of immediately abutting land.

The subject site comprises minimal understory vegetation with some mature trees in a parkland setting, otherwise it is entirely vacant. The Lot has a decommissioned open drain traversing from the north to south of the subject site and has no dwelling or other infrastructure on site.

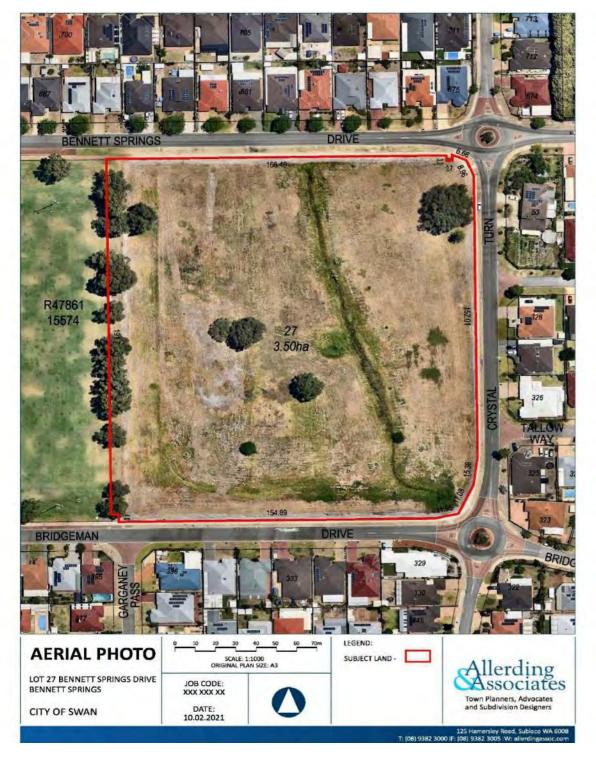


Figure 3: Aerial Photo

SITE CONDITIONS 4.0

4.1 Topography

The site is relatively flat with an elevation of RL 20.0 to RL 22.0 AHD (See Annexure 3). The site's gradient slopes from the north-west to the south-east mimicking surrounding road reserves. The site level and road reserve have only minor differences and as such the site will require some fill to facilitate recontouring to match the surrounding site levels.

Acid Sulphate Conditions 4.2

Acid sulphate soils (ASS) are naturally occurring soils and sediments containing sulphide minerals, predominantly pyrite (an iron sulphide). In an undisturbed state below the water table, these soils are benign and not acidic. However, if the soils are drained, excavated or exposed by lowering of the water table, the sulphides will react with oxygen to form sulphuric acid.

The distribution of acid sulphate soils can be seen in Figure 4. The Subject site consists of Class 2 ASS which can be described as follows:

> Class 2 – Moderate to low risk of Acid Sulphate Soils (ASS) occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface.

The nature of soil disturbance that triggers ASS investigation include:

Class 2 – Works involving lowering of watertable (temporary or permanent), earthworks extending to beyond 3 metres below natural ground surface and works within 500m from adjacent to wetlands.

The soils of the subject site have been determined to be of medium-low risk of acid sulphate levels and are capable of being managed.

Ground Water 4.3

Groundwater might be encountered during construction due to the groundwater levels of the area only siting one metre below natural surface levels. Therefore, underground drainage detention will be coordinated in conjunction with detailed engineering investigations.

Existing Water Course 4.4

As can be seen in the eastern section of Figure 3 a decommissioned open drain traverses north to south of the subject site. The drain was once a part of a larger network used for agricultural purposes. However, due to urban development in the area, the catchment was removed and diverted though the City of Swan stormwater network. Consequently, the water course no longer receives any stormwater from upstream catchments and can be backfilled with all drainage capable of being accommodated on site.

4.5 Vegetation

Under the Department of Water and Environmental Regulation (DWER) register the subject site is not classified as an Environmentally Sensitive Area. The site is predominantly parkland cleared with minimal understory vegetation. The majority of vegetation is located to the western edge and is to be retained with the only trees proposed to be removed under the current application located towards the centre of the lot as seen in Figure 5.





Figure 4: Acid Sulphate Soils Showing Moderate - Low-Risk



Figure 5: Tree Retention

5.0 DEVELOPMENT DESIGN

5.1 Design Philosophy

Beechboro Christian School has been increasingly popular within the local community. The design philosophy is to maintain the simplicity of the existing school but with a large emphasis centred around play spaces associated with the different needs of the school's students. This facilitates age appropriate social and recreational interaction with classrooms designed to accommodate improved learning experiences and spaces for students.

The new buildings will be designed and constructed with energy efficiency in mind and the school will continue to maintain this ideology when transportables are replaced in the future.

5.2 Design Imperatives

The following key design imperatives have been considered in developing the schematic design:

- Site master plan;
- Site factors;
- Orientation;
- Site topography;
- Safety and security;
- Clarity of built form;
- Clearly identifiable points of entry;
- Clear and legible pedestrian circulation;
- Durability and low maintenance;
- Functionality;
- Flexible, adaptable and practical facilities;
- Economy and efficiency; and
- Sustainability

5.3 Sustainability

The sustainable values of this development have been highlighted as a crucial design component to integrate into the development. As such, the developer has ensured a holistic methodology has been adopted to ensure a self-sustaining school though some of the measures described below.

5.3.1 Environmental

Sustainable and efficient design has been an important consideration through the design phase and will continue to be developed through each stage of the project to minimise environmental impact. To achieve this the school will assess the feasibility of integrating a solar panel system in the future to sustain its daily energy requirements. Additionally, the relocation of transportable classrooms from the current campus will minimise waste and allow for greater investment into future classrooms. Other crucial infrastructure such as play equipment and internal decor will be maintained and repurposed on the new campus where possible. These will be replaced when their economic and functional life comes to an end. The site has no specific environmental attributes that warrant protection and all drainage will be self-contained on site.

5.3.2 Economic

The relocation of BCS will allow increased flexibility for the school, allowing it to continue to grow. The repurposing of the existing transportable buildings that are subject to previous Commonwealth grants will minimise ongoing running and maintenance costs.



Currently, BCS pays a lease on the land to the neighbouring Cracovia Club restricting their ability to build permanent structures. The proposal allows the school to invest in permanent structures and will provide an ongoing economic benefit to the school and community. As discussed, this will be done in a staged approach to ensure the functionality and licencing of the transportables, which have functioned well, are not prematurely relinquished.

The potential future integration of solar panel systems will utilise the areas predominant sunny climate towards meeting the school's daily energy requirement minimising energy and operating costs.

5.3.3 Social

The development has been designed in a manner to encourage interaction between students and provide teachers with passive supervision of student activity. The transportables will be integrated around recreational infrastructure such as the central courtyard to encourage interaction between students and embrace the school's values of inclusiveness. The school has undertaken extensive research with the layout design to sustain the school's values, and to enhance learning amongst the students.

For this reason, the early learning centre has been intentionally designed near the car park, a primary entrance to allow parents to walk their young children into the early learning centre and converse with other parents of the community. The early learning centre has been partially separated from the school to enable younger children to converse with their age group whilst minimising disturbance from parents collecting their children during the day.

The school has a culturally diverse cohort with 40 different languages and dialects spoken by the students. This cultural diversity provides for a strong community presence within the Bennett Springs area and will continue to strengthen communal relationships. The integration of a school in central Bennett Springs will revitalise and form part of a communal hub that will allow for greater social interaction with residents of the community. This is consistent with the strategic planning for the area with the existing zoning of the land for education purposes being positioned central in the community. BCS hosts a variety of school events throughout the year, including the Bennett Springs Fair, Compassion Day, Harmony Day, Family Fun Night and the Fathering Project.



6.0 DEVELOPMENT SPECIFICATIONS

The development will comprise of 14 transportable classrooms, the construction of five permanent early learning classrooms, construction of a small administration/reception building and various recreational and communal meeting facilities (Refer to **Annexure 4** for Development Plans).

6.1 Early Learning Centre

The early learning centre will consist of three permanent buildings located to the northern entrance of the school. More specifically, the early learning development will consist of a reception/administration, three kindy classrooms as well as two pre-primary classrooms. All early learning classrooms have access to a central kitchenette, storeroom and toilets.

The location of the early learning centre is situated towards the front of the campus adjacent to the parking area enabling parents the ability to easily accompany their child to their classroom. The classrooms converse around a central play area that opens to a larger more spacious outdoor play area. The outdoor play areas have a variety of shaded areas with the retention and incorporation of landscaping to create nature play areas.

A small administration building will be constructed to service the early learning area and will have a reception, office space and a sick bay for the students.

6.2 Transportable Classroom Infrastructure

The relocation of 14 transportable classrooms will continue to facilitate the temporary needs of the classrooms for year 1 to year 6 students. The transportable buildings will also provide transitionary infrastructure for the library and main office.

The transportable classrooms have been thoroughly maintained and creatively altered to create an ambience similar to that of conventional classrooms. BCS will continue to maintain this configuration by integrating the transportable classrooms adjacent to each other with communal covered areas between each classroom. These areas will traverse into larger shared areas such as courtyards and play areas.

Eventually, BCS will transition from transportable classrooms to permanent classrooms. This will be a gradual transition based upon their economic and functional lifespan with the school then replacing them with permanent structures on site.

6.3 Facilities and Recreation

The new facilities will consist of a variety of outdoor areas to encourage healthy exercise and sporting engagement amongst students. The new facilities will consist of two courtyards, a covered outdoor area as well as a covered multipurpose playing court used for physical education and assemblies. The covered outdoor area will utilise the large tensile canopy currently in use at BCS. Whereas the other courtyards and multipurpose playing court will be newly constructed facilities. The recreational spaces are sufficient to accommodate the immediate needs of the school.

BCS adjoins public open space owned and managed by the City of Swan. The co-location of public open space is a common requirement at State level and formed part of the original planning intention when the land and adjoining parcels were appropriately zoned for their respective purposes. Whilst it does not form part of this application, SCEA is currently in discussions with the City to utilise the open space facilities to accommodate some larger school sporting activities. This is a common arrangement that applies throughout the Perth Metropolitan area as well as Regional Western Australia.



6.4 Landscaping

A preliminary location of the proposed landscaping is illustrated within the development plans located in Annexure 4. It is anticipated that this will be further planned and detailed as part of a landscape management plan that will be undertaken by the school in cooperation with the City. The school has no objection to a condition for a landscape management plan being implemented on approval.

In addition, the school has a variety of existing mature trees along the western boundary which are positioned adjacent to recreation spaces. The retention of these trees will form part of the landscaped aesthetics and provide shaded areas for students.

6.5 Services

The site will be connected to all essential services which are available within the area.

6.6 Fencing

The school is to have a metal garrison style fence around the proposed developed areas of the lot. The fence will be situated around the school buildings and courtyards.

Materials and Finishes 6.7

The new Early Learning Centre will be constructed using face brick and colorbond roofing that are sympathetic to, and harmonious with, the area (Refer to Annexure 4). Key driving factors in material selection for the new construction include but are not limited to the following items:

- Durability;
- Low maintenance through self-finished materials or considered positioning to minimise accidental or • intentional impact damage;
- Timeless nature of the materials;
- Local availability; ٠
- Sustainability; and
- Complementary to the existing buildings.

Where possible, materials will be locally sourced, non-toxic, durable, reusable, renewable and/or recyclable.

Traffic 6.8

Primary access to the school will be via Bennett Spring Drive where the front entrance and car park is located. The proposal will utilise Bennett Springs Drive to access the facility. This redistribution of traffic to Bennett Springs Drive has been assessed and is expected to be minimal and will remain in the capacity requirements for a Local Distributor Road. A Transport Impact Statement (Annexure 5) has been prepared and shows the suitability of the proposed school on the surrounding road infrastructure.

6.8.1 Public Transport Infrastructure

The subject site has two bus stops approximately 300m east and west of its location, situated on Bennett Springs Drive. These bus stops are frequented by the 345 bus that runs approximately every 30 minutes throughout the day. The bus services several suburbs and both start/finishes its journey at either Morley Bus Stand or Bennett Springs Drive.

Bus services within the area are predicted to increase due to sustained local residential growth and the proposed Malaga Train Station located 2km west of the subject site.

6.9 **Acoustic Management**

Acoustic impacts emitting from the proposal is anticipated to have minimal impact on the surrounding properties. The subject site does not share a common boundary with residential dwellings. The school will predominantly operate during the hours of 8:00am – 4:00pm with other occasional activities after hours. This is no different to any conventional school and was accounted for when the land was originally reserved for as Public Purposes -Primary School as further discussed in subsequent paragraph 8.3.

STATUTORY PLANNING FRAMEWORK 7.0

7.1 **Metropolitan Region Scheme**

The subject site is zoned urban under the Metropolitan Region Scheme (MRS), an MRS plan is included as Figure 6. The proposed school use is consistent with that zoning.

City of Swan Local Planning Scheme No. 17 (LPS17) 7.2

The subject site is reserved as a Public Purposes - Primary School under City of Swan Local Planning Scheme No. 17 (LPS17). Refer Figure 7 for a Zoning Plan of the Subject Site and surrounds.

Clause 3.4 of LPS17 provides the use and development objectives of the local reserve. The objectives of the local reserve are:

Except as otherwise provided in clause 8.2, a person must not -

(a) use a Local Reserve;

(b) commence or carry out development on a Local Reserve without first having obtained planning approval under Part 9 of the Scheme.

In determining an application for planning approval the local government is to have due regard to –

(a) the matters set out in clause 10.2; and

(b) the ultimate purpose intended for the Reserve.

In the case of land reserved for the purposes of a public authority, the local government is to consult with that authority before determining an application for planning approval.

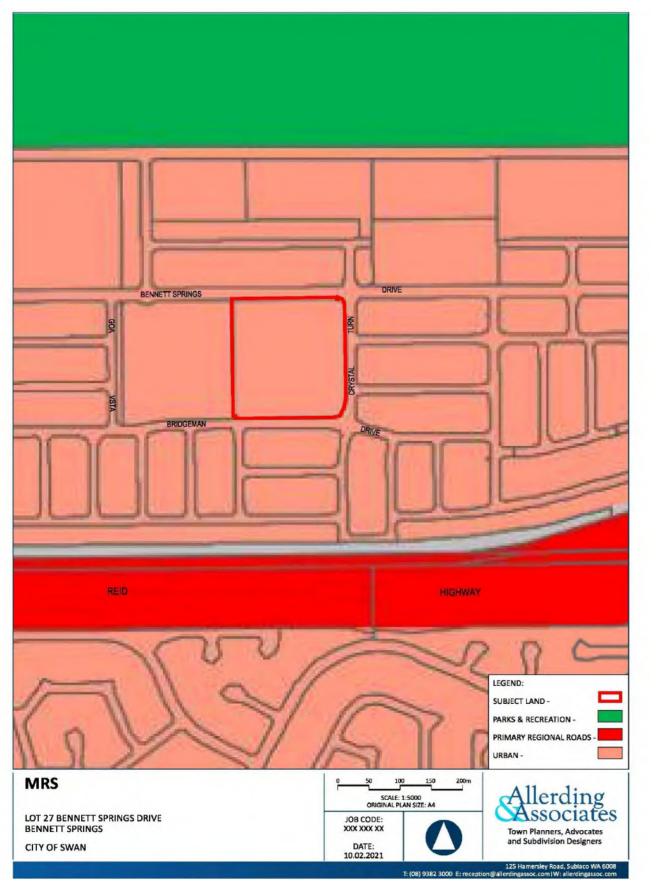
Any land shown as a local reserve that is not at the gazettal of the Scheme owned for the authority for whose purpose the land is reserved, the local government shall deal with that land as if a single residence is permitted and any other land use is permissible on that land in the discretion of the local government.

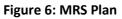
Under the LPS17 a primary school is categorised as:

Educational establishment means premises used for the purposes of education and includes a school, tertiary institution, business college, academy or other educational centre.

The proposed use is fully consistent with the purpose and intent of the reserve.







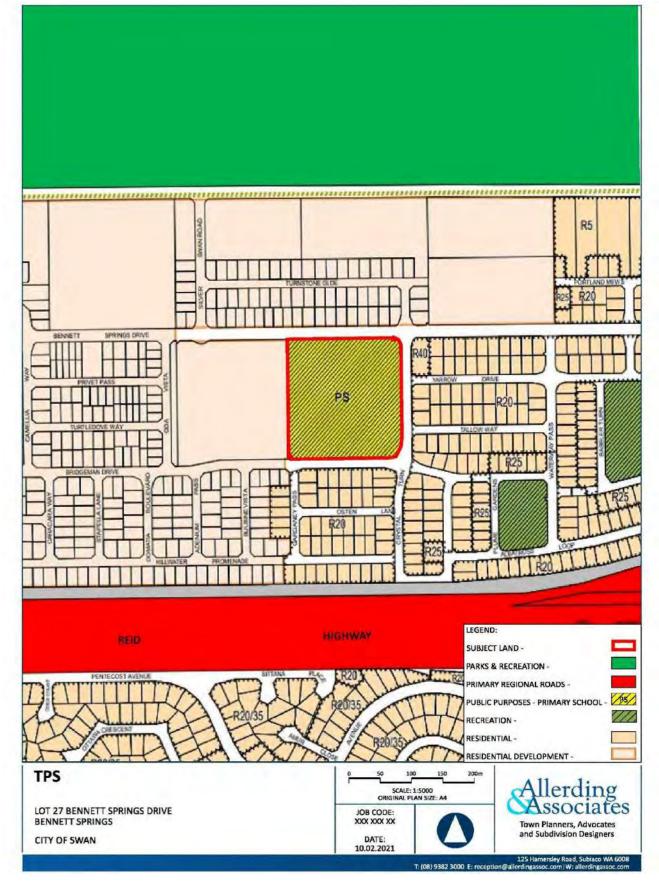


Figure 7: TPS Plan



Planning and Development (Local Planning Schemes) Regulations 2015 7.3

The Planning and Development (Local Planning Schemes) Regulations 2015 (the Regulations) have introduced a set of deemed provisions within Schedule 2 (Deemed Provisions) that automatically form part of LPS17.

Clause 3 of the Deemed Provisions relates to local planning policies, Clause 3 (5) states:

In making a determination under this Scheme the local government must have regard to each relevant local planning policy to the extent that the policy is consistent with this Scheme.

In this regard, the City's Local Planning Policy: Building and Development Standards – Other Zones is a relevant consideration in determining this application.

In addition, Clause 67 of the Deemed Provisions deals with matters to be considered by Local Government and include the following key provisions relevant to this application as detailed below. Table 2 below provides comment in relation to the relevant provisions of Clause 67 of the Deemed Provisions.

Table 2: Matters to be considered.

Matte	rs to be considered	Comment
a)	the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The proposal is consistent with aims and provisions of the Scheme as it proposes an educational establishment on land reserved for such purposes.
b)	the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local	 Approval of the proposal is consistent with the requirements of proper and orderly planning, noting: the zoning of the land the development requirements being adequately met in accordance with council requirements.
	government is seriously considering adopting or approving;	
<i>c)</i>	any approved State planning policy;	State Planning Policy 7.0 Design of the Built Environment and Draft Operation Policy 2.4 Planning for School Sites has been addressed in subsequent paragraph 8.4 and 8.5.
g)	any local planning policy for the Scheme area	The land is compliant with all relevant Local Planning Policies as set out below in paragraphs 8.1 and 8.2.
j)	in the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve;	The lot is reserved as a Public Purpose – Primary School under the Local Planning Scheme. In determining an application local government must have due regard to: (a) the matters set out in clause 10.2; and
		(b) the ultimate purpose intended for the Reserve.
		The proposal is consistent with both attributes and the Local Planning Scheme.

Matter	s to be considered	Comment
m)	 The compatibility of the development with its setting including (i) The compatibility of the development with the desire future character of its setting; and (ii) The relationship of the development to development on adjoining land in the locality including, but not limited to, the likely effect of the development height, bulk, scale, orientation and appearance of its height development. 	The developm the area as it existing cam architectural recreational character of t The developm amount of op is an entimer residential and adjoining land public oval.
n)	the amenity of the locality including the following — (i) environmental impacts of the development; (ii) the character of the locality; (iii) social impacts of the development;	The developm that is clear vegetation. Due to only Springs area modern hous these feature Socially the d by providing walkable dist already posit aim to main relations at it
0)	The likely effects of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or water resource.	The develop environment south of the the area the though the Consequently stormwater f backfilled.
p)	whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	The school h areas to cre students and site have be separate lan complement public vantag
q)	The suitability of the land for the development taking into account the possible risk of flooding, tidal inundation,	Not subject to

BCS MAR GE/ BEECHBORO CHRISTIAN SCHOOL LOT 27 BENNETT SPRINGS DRIVE, BENNETT SPRINGS: PLANNING REPORT FOR PROPOSED PRIMARY SCHOOL

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ment is consistent with the characteristics of t utilises existing approved buildings from its npus. Additionally, the integration of an ly designed early learning centre and new spaces will complement the residential the area.

ment is single storey and integrates a large pen space within the development. A school rely compatible development within a rea and will integrate with the immediate d to the east of the development which is a

ment is situated on a degraded parcel of land ared parkland with minimal understory

recent urban expansion into the Bennett the character of the locality is conventional sing. As such the school is consistent with es.

levelopment will add to the fabric of the area g important education facilities within a stance for local residents. The school has tively contributed to the community and will ntain and encourage positive communal ts new site.

ment has minimal effects on the natural . An historic open drain traverses north to subject site. Due to urban development in e catchment was removed and diverted City of Swan stormwater network. y, the open drain no longer receives any from upstream catchments and can safely be

has incorporated a variety of landscaped eate an aesthetically pleasing space for I residents. Trees on the western edge of the een retained under the application and a indscaping plan will be prepared to the greening of the school grounds and ge areas.

o any risks.

/latters	to be considered	Comment	Matters to be considered Co	omment
	subsidence, landslip, bushfire, soil erosion, land degradation or any other risk			nd provid ne needs
·	the suitability of the land for the development taking into account the possible risk to human health or safety;	No safety concerns.	development is to be located ac	he site w ctivities (onstructe
s)	The adequacy of - i. the proposed means of access and egress from the site; and ii. arrangements for the loading,	Access is provided from Bennett Springs Drive to a car park of 56 bays with a separate entrance and exit. Traffic has been assessed in a Traffic Impact Statement (Annexure 5) and has affirmed the suitability of access arrangements.	sy be re	ollowing ystem be ecame i emnants uperfluor
	unloading, manoeuvring and parking of vehicles;	At the rear of the site, a small road will connect to the school for deliveries, vehicle loading, storage and waste management.	community as a whole notwithstanding the cu impact of the development on particular ed	he devel urrent de ducation ommunit
	the amount of traffic likely to be generated by the development particularly in relation to the capacity of the road system in the locality and the probable effects on traffic flow and safety;	A traffic management plan (Annexure 5) has been undertaken to verify the adequacy of the access and parking arrangements in context with peak trips and has affirmed the suitability of the road system to accommodate the proposed development.	8.0 PLANNING POLICY	
	The availability and adequacy for the development of the following- public transport services; public utility services; storage management and collection of waste; access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities); access by older people and people with disability;	The subject site has two bus stops approximately 300m east and west of its location. These bus stops have the 345 bus that will run on an approximate service of every 30 minutes throughout the day. The school provides bicycle parking for students and teachers. Staff will also have access to a private bathroom for showering and changing. Infrastructure in and around the school have well managed pedestrian pathways in place. Storage and waste facilities are located to the rear of the development. A small access way located off Bridgeman Drive will enable any waste or delivery vehicles to access the site separate from the main entrance/carpark. The development has access for both pedestrians and cyclists with access to school provided on the north, east and western border. The development will provide appropriate access for all people of different ability. More specifically large, sealed footpaths will be located throughout the school to provide access to all areas with ramps integrated where needed for elevated areas.	8.1 Local Planning Policy: Vehicle Parking Stands The objective of this policy is to ensure adequate parking not detract from the amenity of the area, whilst still provide that an education establishment (Primary School) is to have Overall, the development will see the construction of 5 transportable classrooms resulting in a total of 19 classrood bays must be provided. BCS has integrated a total of 68 of the required amount of parking bays. The surplus of bays with a total of 37 staff consisting of a mixture of full-time varying shift times it is expected there will be ample par integrated a dedicated "kiss and drive" within the car par The development has integrated its parking facilities on the entry from the east of Bennett Springs Drive and single been assessed as part of a transport impact stateme movements and the suitability of parking and drop off face 8.2 Local Planning Policy: Design Review (DR) The proposal has been architecturally designed by respendence experience involving educational facilities throughout We	g provision ding ade ave a min operman oms. The car bays i was und me, part- arking fo rk to allo the nort lane exi- ent and cilities.
	the potential loss of any community service or benefit resulting from the development other than potential loss that may result	No community service will be lost. The community will benefit from the development as it improves and expands on the only primary school within the suburb		

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nt

vides an important education facility that services ds of the local community.

was formerly part of a rural area with agricultural s undertaken. Historically a drainage course was cted sometime between 1952 and 1965. In this it was then converted into a small dam between 1965 and 1974. The dam eventually impractical and was largely filled in. Minor ts still consist of the watercourse but are nous and proposed to be removed.

velopment will enhance the area by utilising a degraded site to provide a new contemporary on facility to service the needs of the local nity.

sions are implemented to ensure parking areas do dequate functionality. Table 1 of this policy dictates ninimum of 1 space per classroom.

nanent classrooms as well as the relocation of 14 herefore, under the policy a minimum of 19 parking ys (including 12 Kiss and Drive bays) which exceeds indertaken to reflect staffing numbers at the school art-time and casual. With some employees having for both staff and parents. Furthermore, BCS has illow for efficient and safe drop-offs for parents.

orthern border of the school, utilising a single lane exit to the west of Bennett Springs Drive. This has ad found to be appropriate in relation to traffic

rchitects Parry and Rosenthal who have extensive Australia.

8.3 Draft Operational Policy 2.4: Planning for School Sites

The allocation of school reserves and developments is to be assessed under Operation Policy 2.4 Planning for School Sites. This State-based policy sets out the planning criteria for the location, configuration and design standards for school sites. As the site has already been reserved as Public Purposes – Primary School by the imprimatur of the Western Australian Planning Commission (**WAPC**), it has already met the appropriate policy objectives set out by the WAPC.

8.4 State Planning Policy 7.0: Design of the Built Environment (DBE)

Design of the Built Environment (**DBE**) is a State-based policy that aims to ensure the overall quality and consistency are achieved through a robust design review. Listed in **Table 3** are the ten values that comprise of principles and a response on how the development has fulfilled those requirements.

Table 3: Design of the Built Environment: Design Principles

Design Principle	Comment
Context and Character	The development utilises face brick and colorbond roofing to integrate the school into the modern streetscape and environment of the newly urbanised Bennett Springs area.
Landscape Quality	The development is providing new landscaping and is retaining the existing trees on the western boundary. Stage One will be subject to a landscaping plan that will significantly improve the amenity of the current degraded parcel of land.
Build Form and Scale	The entirety of the development will be one story in height and is in appropriate scale to the surrounding developments.
Functionality and Build Quality	The development has been architecturally designed and purpose built for educational purposes. The design will encourage age appropriate social and recreational interaction within the school's campus. Indoor facilities are orientated around outdoor landscaped areas to improve amenity and allow for passive supervision. All indoor and outdoor structures will be constructed of a high standard and utilise appropriate materials.
Sustainability	The development has highlighted its commitment to sustainable development. The integration of strong design, community engagement, retention of trees and future integration of solar panels will maximise environmental, social and economic values.
Amenity	Due to its central location the development has been designed to enhance the amenity of the area through the repurposing of a degraded parcel of land with a purpose built education facility to service the need of the community.
Legibility	The site is easily accessible with three road interfaces. Accessibility to the development will be provided at its main entrance on Bennett

Design Principle	Comment
	Springs Drive but will also have minor western sides of the development.
Safety	The development will be fenced off dure reasons. The school will be securely lite and provide pedestrian access points safe accessibility.
Community	The location and design will encourag between parents, students and other sports, and social groups.
Aesthetics	The school will be utilising existing inf its current site. New building and facil architecturally designed high standard incorporate artwork into the develop landscaping to improve the currently

9.0 PLANNING STRATEGIES

9.1 North East Sub-Regional Planning Framework

The North East Sub-Regional Planning Framework is a sub-strategy of the Perth and Peel@3.5 million that focuses on Perth's north-eastern corridor. The Perth and Peel@3.5 million is broad a planning strategy that aims to sustainably respond to the Perth and Peel regions rapidly growing population. It aims to relinquish traditional household connotations and generate new ideas in relation to conventional housing in Australia. This is achieved through assessing the social structures of a municipal area and mitigating contemporary issues such as our reliance on motor vehicles, energy use and water consumption.

The strategy separates the Perth and Peel region into four quadrants to specifically address the unique characteristics of the different areas. Each quadrant is to achieve the overarching goals set out within the Perth and Peel@3.5 million strategy.

The North East Sub-Regional Planning Framework addresses a large quadrant of that land has a diverse range of housing, infrastructure, rural and commercial facilities. The sub-framework aims to maintain this diversity of land uses but at a more proportionate level through the introduction of more residential opportunities. As a result, travel infrastructure, educational facilities and commercial opportunities must be expanded.

Areas such as Bennett Springs have been highlighted as an area of expansion and as such require investment from private and public organisations. Currently, the expanding suburb of Bennett Springs has just one primary school which is at capacity and requires an expansion of its current campus to facilitate the higher demand.

To facilitate this demand and help meet targets within the strategy, BCS proposes to relocate to an appropriately zoned primary school reserve within the Bennett Springs area. This will be directly in support of the strategy that aims to create central communal hubs to strengthen sustainable attributes within the community. As discussed throughout the application, the relocation and development of the school will improve accessibility, capacity and facilities whilst also providing a communal asset for the broader community.

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access points on the eastern and

luring of school hours for safety it to minimise antisocial behaviour on all four lot boundaries to enable

ge community engagement r residents through school events,

frastructure already in place within ilities will be constructed to an rd. Additionally, the school will oment, complemented by the degraded land parcel.

10.0 CONCLUSION

We seek the support of the Metro Outer Joint Development Assessment Panel for the proposed relocation and construction of a new campus on Lot 27 Bennett Springs Drive, Bennett Springs. As discussed, the relocation will facilitate BCS to expand and upgrade their campus which is currently at full capacity.

The proposal is capable of approval noting:

- The proposal is in compliance with the State and local planning framework including the purposes and aims of the City of Swan Local Planning Scheme No. 17;
- The form of the development will be consistent with achieving the objectives for the reserve under the City of Swan Local Planning Scheme No. 17 and the objectives under the associated Local Reserves Local Planning Policy;
- Consistent with the development and policy standards requirements;
- The development will be fulfilling the designated purpose of the local reserve;
- Approval of the development would be consistent with the matters to be considered under Clause 67 of the Deemed Provisions;
- The school is architecturally designed to be purpose built and effectively improve on a vacant degraded parcel of land;
- The development will ensure that the Bennett Springs locality continues to have access to a locally popular primary school;

We therefore seek the Metro Outer Joint Development Assessment Panel's favourable consideration and support of this proposal to enable the approval for the relocation and expansion of BCS.











Transport Impact Assessment

Project:	Beechboro Christian School Relocation
Client:	Beechboro Christian School c/o Parry and Rosenthal Architects
Author:	Paul Nguyen
Date:	3 rd August 2021
Shawmac Document #:	2101008-TIA-001

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i | P a g e



Contents

1.1. Proponent	
	1
1.2. Site Location	1
1.3. Proposed Development	2
1.4. Scope	2
2. Site and Surrounding Road Network	4
2.1. Land Uses	4
2.2. Road Network	5
2.2.1. Layout and Hierarchy	5
2.2.2. Road Configuration	5
2.2.3. Traffic Counts	6
2.3. Changes to Surrounding Transport Networks	6
3. Analysis of Transport Networks	7
3.1. Assessment Parameters	7
3.2. Traffic Generation	7
3.3. Traffic Distribution Assessment and Capacity Analysis	
3.3.1. Interim Scenario – Current Student Population (269 Students)	8
3.3.2. Long Term Scenario – Ultimate Student Population (440 Students)	11
3.4. Intersection Capacity Analysis	11
3.4.1. Sensitivity Analysis	14
4. Parking Assessment and Management	16
4.1. Car Parking Provision	16
4.2. Car Parking Requirements	16
4.3. Parking Management	
4.4. Bicycle Parking	18
5. Vehicle Access	19
5.1. Access Location	19



6.	Road Safety Assessment	2
6.1.	Crash History 2	2
7.	Pedestrian and Cyclist Assessment	3
8.	Public Transport Accessibility 2	4
9.	Conclusions	5

Figures

Figure 1: Proposed Relocation 1		
Figure 2: Proposed Relocation – Aerial View		
Figure 3: Proposed Site Plan		
Figure 4: Aerial View of Existing Site (May 2021)		
Figure 5: Road Layout and Hierarchy		
Figure 6: Average Weekday Traffic		
Figure 7: School Catchment Area		
Figure 8: School Traffic Distribution – Existing Site		
Figure 9: School Traffic Distribution – New Site		
Figure 10: School Traffic Distribution – Ultimate Student Population		
Figure 11: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout		
Figure 12: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout		
Figure 13: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout – Sensitivity 14		
Figure 14: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout – Sensitivity15		
Figure 15: Existing and Proposed Car Parking 16		
Figure 16: Proposed Access Arrangement 19		
Figure 17: Sight Distance Requirements		
Figure 18: Sight Distance Check		
Figure 19: Crash History January 2016 to December 2020 22		
Figure 20: Existing Path Network		
iii P a g e		



Tables

Table 1: Road Network Details	. 5
Table 2: School Traffic Generation - 269 Students	. 7
Table 3: School Traffic Generation - 440 Students	. 7
Table 4: DoE Car Parking Requirements – Current Students 1	17
Table 5: DoE Car Parking Requirements – Ultimate Capacity of 460 Students 1	17



1. Introduction and Background

1.1. Proponent

Shawmac has been engaged by Parry and Rosenthal on behalf of The Beechboro Christian School to prepare a Transport Impact Assessment (TIA) for the proposed relocation of the school in Bennett Springs.

1.2. Site Location

The existing and proposed site is shown in **Figure 1** and **Figure 2**. The existing site is shared with the Cracovia White Eagles Junior Football Club. The proposed site is vacant. The local authority is the City of Swan.



Figure 1: Proposed Relocation





Figure 2: Proposed Relocation – Aerial View

1.3. Proposed Development

The proposal is to relocate the existing primary school to the new site and to allow room to for potential growth. There are currently 269 students and 37 staff (approximately 28 full time staff on any given day). It is understood that the number of students has remained stable in recent years but that provision is being made to accommodate additional students in the future, subject to demand. The projected capacity of the school is 440 students.

1.4. Scope

This TIA has been prepared in accordance with the Western Australian Planning Commission's (WAPC) *Transport Impact Assessment Guidelines*. According to the TIA guidelines, the key objectives of a TIA are to:

- assess the proposed internal transport networks with respect to accessibility, circulation and safety for all modes, that is, vehicles, public transport, pedestrians 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; and
- determine the impacts of the traffic generated by the development on the surrounding transport networks.

The proposed site plan for the new school site is shown in Figure 3.



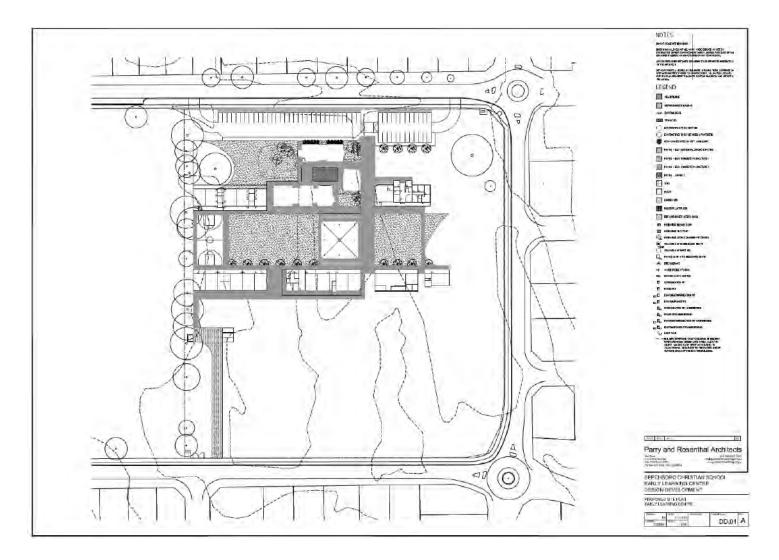


Figure 3: Proposed Site Plan



2. Site and Surrounding Road Network

2.1. Land Uses

The proposed site is currently vacant as shown in **Figure 4**. The surrounding area is mostly residential development. The adjoining lot is a sporting field



Figure 4: Aerial View of Existing Site (May 2021)



2.2. Road Network

2.2.1. Layout and Hierarchy

The current layout and hierarchy of the surrounding road network is shown in Figure 5.

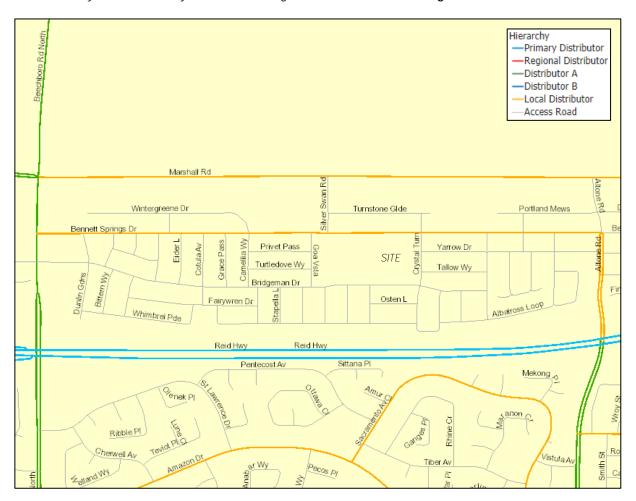


Figure 5: Road Layout and Hierarchy

2.2.2. Road Configuration

The details of the key roads surrounding the site are summarised in Table 1.

Table 1: Road Network Details

Road and Location	Classification / Function	Cross Section	Speed Limit
Bennett Springs Drive	Local Distributor	Single Carriageway – 2 lanes	50km/h
Marshall Road	Local Distributor	Single Carriageway – 2 lanes	70km/h
Bridgeman Drive	Access Road	Single Carriageway – 2 lanes	50km/h
Crystal Turn	Access Road	Single Carriageway – 2 lanes	50km/h
Goa Vista	Access Road	Single Carriageway – 2 lanes	50km/h
Silver Swan Road	Access Road	Single Carriageway – 2 lanes	50km/h



2.2.3. Traffic Counts

The latest available traffic counts were obtained from the MRWA Traffic Map and the City of Swan as summarised in **Figure 6**.

Daily AM Pe	eak Hour PM Pea	ak Hour					
	Beechboro Rd N						
	R Marshall Rd	Marshall Rd 10165	900 979 Marshall Rd		Marshail Rd		≽ Marshall Rd
-				C 222			none Rd.
at	2260 195 <mark>250</mark>	Wintergreene Dr Wintergreene Dr 2250 185 225 Berniett Springe Dr Berniett Springe Dr	2215 195 215 Bannett Springe Dr	1675 115 160 Bennet, Springt Dr	2630 240 25 Remot Springs Dr		325 Banautt Springe Dr
- Orcisid Avg	Bridgeman Dr	Cala Datr avy en	Privet Pase Privet Pase Arm International Arm International	SITE	06 Yarrow.fr 108006 Tallow Way	Yarrow Dr.	Altone Rd
Style P Conserve	13849-1308 1275 Annun Garden Bitterni 4405	Patrywren Dr	Bridge Domato Bild Stepsila Lin Obrecore We	mail Dr 1390 95 135	340 35 35 and lossed 35 35 and lossed 5 and feature	Albanosa Loop	Fin Pl
in Au	13849	Whenthrel Parade	E S E Hilleret	er Promenade	340 3 mn1 10	Aro	1
		1000	Perifectent 4.4p	Reid Guara Pi	Hwy		Altone Pd
Contra D			65m trea		Solution Copy		Honespt
Hara Bara	Beechboro Rd I	Land Cl			Semiges Pl		Thorbum Ave
epj 3	Rdi	Ę.	-		-		Sami S

Figure 6: Average Weekday Traffic

2.3. Changes to Surrounding Transport Networks

The surrounding road network is largely completed and there are no known changes proposed.



3. Analysis of Transport Networks

3.1. Assessment Parameters

The assessment has been based on the following two scenarios:

- Once the school relocation is completed (based on the current 269 students).
- Once the school reaches the maximum design capacity of 440 students).

3.2. Traffic Generation

The vehicular traffic generation rates for primary schools according to the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines* is 0.5 vehicle trips per child to school and 0.5 trips per child from school during each of the morning and afternoon peak hours (i.e. 1 trip per student per peak period) based on the PARTS surveys. The school traffic generation based on the two development horizons is summarised in **Table 2** and **Table 3**.

Table 2: School Traffic Generation - 269 Students

Streams	Units
Student Number	269
Peak Hour Vehicle Trip Generation Rate (Parts Survey Rate)	1 trip per student
Peak Hour Trips	270 (135 in / 135 out)

Table 3: School Traffic Generation - 440 Students

Streams	Units
Student Number	440
Peak Hour Vehicle Trip Generation Rate (Parts Survey Rate)	1 trip per student
Peak Hour Trips	440 (220 in / 220 out)



3.3. Traffic Distribution Assessment and Capacity Analysis

3.3.1. Interim Scenario – Current Student Population (269 Students)

As advised by the school, the existing school population includes students from Beechboro, Bennett Springs, Guildford, Morley, Ellenbrook, Dayton, Brabham, Aveley, Caversham, Noranda and Ballajura. The catchment area is shown in **Figure 7**.

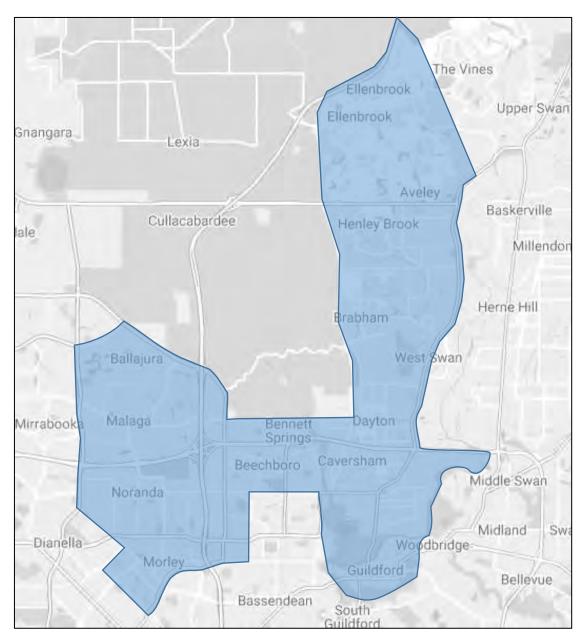


Figure 7: School Catchment Area

The main routes between the catchment area and the school are along Marshall Road, Beechboro Road North, Altone Road, Tonkin Highway and Drumpellier Drive.



Based on the catchment and the likely routes, the assumed distribution of school traffic to the existing school site is shown in **Figure 8**. As observed on-site approximately 80% of school traffic uses the Marshall Road car park and the remainder use Bennett Springs Drive.



Figure 8: School Traffic Distribution – Existing Site

The revised distribution to the new school site is shown in Figure 9.



Figure 9: School Traffic Distribution – New Site



As shown, the school relocation will simply result in the redistribution of some school traffic from Marshall Road to Bennett Springs Drive. The increase along Bennett Spring Drive is estimated to be in the order of 108 vehicle movements during each of the school peak hours.

According to the WAPC TIA guidelines, an increase in traffic of less than 10 per cent of capacity would not normally be likely to have a material impact on any particular section of road. The guidelines note that an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 per cent of capacity.

WAPC *Liveable Neighbourhoods* also suggests that the indicative daily traffic volume for a Local Distributor / Neighbourhood Connector B road is 3,000 vehicles per day (vpd). The increased daily traffic volume along Bennett Springs Drive resulting from the school relocation will remain below 3,000vpd and so there is adequate capacity to accommodate the redistribution of school traffic. It is noted there is one section of Bennett Springs Drive immediately west of Altone Road which currently carries 3,320vpd which would increase to approximately 3,536vpd. Although above the indicative daily traffic volumes for a Neighbourhood Connector B road, the expected traffic volume would not warrant upgrading to a Neighbourhood Connector A road (dual carriageway). A Neighbourhood Connector A road has an indicative daily volume range up to 7,000vpd and it is unlikely that the volumes would increase close to this level.



3.3.2. Long Term Scenario – Ultimate Student Population (440 Students)

If and when the school reaches the ultimate student capacity of 440 students, the increase in overall traffic generation is estimated to be 170 vehicle movements (85 in / 85 out). The traffic volume increases on the road network based on the increase to 440 students are shown in **Figure 10**.



Figure 10: School Traffic Distribution – Ultimate Student Population

As shown, the school traffic is relatively well distributed and so the increase in traffic on any particular section of road is low and unlikely to have a material impact on the road network. It is concluded that the expected volume of school traffic can be accommodated within the capacity of the road network.

3.4. Intersection Capacity Analysis

The two intersections that would be most impacted by the school traffic and future growth are the two roundabout intersections along Bennett Springs Drive at Crystal Turn and Silver Swan Road. A high level peak hour capacity analysis of these two intersections has been undertaken in SIDRA Intersection 9.0.

The peak hour intersection traffic flows were derived from the mid-block traffic count data and the assessment is based on the full student capacity of 440 students.

The results of the assessment are shown in Figure 11 and Figure 12.



MOVEMENT SUMMARY

V Site: 1 [Bennett Springs Drive / Crystal Turn - AM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

		ent Performa					-	-						
Mov ID	Tum	INPUT VOI [Total veh/h	UMES HV] %	DEMAND [Total veh/n	FLOWS HV I	Deg. Sain v/c	Aver. Delay sec	Level al Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Plop. Que	Effective Stop Rate	Aver No. Cycles	Aver Speed km/h
South:	Crystal Tu													
1	L2	21	3.3	21	3.3	0.041	5.6	LOS A	0.2	1.5	0.39	0.59	0.39	52.0
2	T1	1	3.3	1	3,3	0.041	5.8	LOSA	0.2	1.5	0.39	0.59	0.39	53.0
3	R2	21	3.3	21	3.3	0.041	9.4	LOSA	0.2	1.5	0.39	0.59	0.39	52.
Approa	ch	43	3.3	43	3.3	0.041	7.4	LOSA	0.2	1.5	0.39	0.59	0.39	52.4
East B	ennett Spr	ings Drive												
4	L2	12	6.9	12	6.9	0.144	4.4	LOS A	0.8	5.8	0.07	0.45	0.07	53.9
5	T1	204	6.9	204	6,9	0.144	4.7	LOSA	0.8	5.8	0.07	0.45	0.07	55.0
6	R2	1	6.9	1	6,9	0.144	8.2	LOSA	0.8	5.8	0.07	0.45	0,07	54.
Approa	ch	217	6.9	217	6.9	0.144	4.7	LOS A	0.8	5.8	0.07	0.45	0.07	55.0
North: (Crystal Tur	n												
7	L2	3	5.1	3	5.1	0.006	5.5	LOSA	0.0	0.2	0.39	0.53	0.39	52.4
8	T1	1	5.1	1	5.1	0.006	5.8	LOS A	0.0	0.2	0.39	0.53	0.39	53 3
9	R2	2	5.1	2	5.1	0.006	9.4	LOSA	0.0	0.2	0.39	0.53	0.39	53.0
Approa	ch	6	5.1	6	5.1	0.006	6.8	LOS A	0.0	0.2	0.39	0.53	0.39	52.
West: E	Bennett Sp	rings Drive												
10	L2	1	6.8	1	6.8	0.112	4.5	LOSA	0.6	4.7	0.12	0.45	0.12	53.6
11	T1	148	6.8	148	6.8	0.112	4.7	LOSA	0.6	4.7	0.12	0.45	0.12	54.7
12	R2	6	6.8	6	6.8	0.112	8.3	LOSA	0.6	4.7	0.12	0.45	0.12	54.3
Approa	ch	155	6.8	155	6.8	0.112	4.9	LOS A	0.6	4.7	0.12	0.45	0.12	54.7
All Vehi	icles	421	6.5	421	6.5	0.144	5.1	LOSA	0.8	5.8	0.13	0.47	0.13	54.5

MOVEMENT SUMMARY

♥ Site: 1 [Bennett Springs Drive / Crystal Turn - PM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

Vehic	le Movem	ent Perform					-	-				-		
Møv ID	Tum	INFUT VO [Total veh/h	LUMES HV] %	DEMAND [Total veh/h	FLOWS HV]	Deg Satn v/c	Aver Delay Sec	Level of Service	95% BACK O į Velt velt	FOUEVE Dist]	Prop. Que	Effective Stop Rate	Aver. No Cycles	Aver Speed kmi/h
South:	Crystal Tu	m										-		
1	L2	22	3.3	22	3.3	0.044	5.6	LOSA	0.2	1.6	0.39	0.60	0.39	52.0
2	T1	1	3.3	1	3.3	0.044	5.9	LOSA	0.2	1.6	0.39	0.60	0.39	53.0
3	R2	23	3.3	23	3.3	0.044	9.4	LOS A	0.2	1.6	0.39	0.60	0.39	52.6
Approa	ach	46	3.3	46	3.3	0.044	7.5	LOSA	0.2	1.6	0.39	0.60	0.39	52.3
East E	Bennett Spr	ings Drive												
4	L2	12	6.9	12	6.9	0.149	4.5	LOSA	0.8	6.0	0.07	0.45	0.07	53.9
5	T1	209	6.9	209	6.9	0.149	4.7	LOSA	0.8	6.0	0.07	0.45	0.07	55.0
6	R2	1	6.9	1	6.9	0.149	8.3	LOS A	0.8	6.0	0.07	0.45	0.07	54.6
Approa	ach	222	6.9	222	6.9	0.149	4.7	LOS A	0,8	6.0	0.07	0.45	0.07	54.9
North:	Crystal Tur	'n												
7	L2	3	5.1	3	5.1	0.006	5.7	LOSA	0.0	0.2	0.41	0.53	0.41	52.3
8	T1	1	5.1	1	5.1	0.006	5.9	LOSA	0.0	0.2	0.41	0.53	0.41	53.3
9	R2	2	51	2	5.1	0.006	9.5	LOS A	0.0	0.2	0.41	0 53	0.41	52.9
Approa	ach	6	5.1	6	5.1	0.006	7.0	LOS A	0,0	0.2	0,41	0.53	0.41	52.7
West: 6	Bennett Sp	rings Drive												
10	L2	1	6.8	1	6.8	0.128	4.5	LOSA	0.7	5.5	0.13	0.45	0.13	53.6
11	T1	168	6.8	168	6.8	0.128	4.8	LOS A	0.7	5.5	0.13	0.45	0.13	54.6
12	R2	8	6.8	8	6.8	0.128	8.3	LOSA	0.7	5.5	0.13	0.45	0.13	54.2
Approa	ach	177	6.8	177	6.8	0.128	4,9	LOS A	0.7	5.5	0.13	0.45	0.13	54.6
All Veh	icles	451	6.5	451	6.5	0.149	5.1	LOSA	0.8	6.0	0.13	0.47	0.13	54.5

Figure 11: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout



MOVEMENT SUMMARY

♥ Site: 1 [Bennett Springs Drive / Silver Swan Road - AM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

		nt Performa												
Mov D	Tum	INPUT VC [Total veh/h	HV]	DEMAND Total veh/h	FLOWS HV] %	Deg. Satr v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver Speed km/i
South:	Car Park						-		-					
1	L2	1	0.0	1	0.0	0.003	5.2	LOSA	0.0	0.1	0.34	0.51	0.34	52.0
2	T1	1	0.0	1	0,0	0.003	5.5	LOSA	0.0	0.1	0.34	0.51	0.34	53.
3	R2	1	0.0	1	0.0	0.003	9.0	LOSA	0.0	0.1	0.34	0.51	0.34	53.
Approa	ch	3	0.0	3	0.0	0.003	6.6	LOSA	0.0	0.1	0.34	0.51	0.34	53.
East B	ennett Sprir	ngs Drive												
4	L2	1	37	1	3.7	0.110	4.5	LOSA	0.6	4.5	0.12	0.47	0.12	53.6
5	T1	137	3.7	137	3.7	0.110	4.7	LOSA	0.6	4.5	0.12	0.47	0.12	54.0
6	R2	17	3.7	17	3.7	0.110	8.3	LOSA	0.6	4.5	0.12	0.47	0 12	54
Approa	ch	155	3.7	155	3.7	0.110	5.1	LOSA	0.6	4.5	0.12	0.47	0.12	54.6
North: 5	Silver Swan	Road												
7	L2	19	3.8	19	3.8	0.037	5.5	LOSA	0.2	1.5	0.39	0.58	0.39	52.
8	T1	1	3.8	1	3.8	0.037	5.8	LOSA	0.2	1.5	0.39	0.58	0.39	53.
9	R2	19	3.8	19	3.8	0.037	9.4	LOSA	0.2	1.5	0.39	0.58	0.39	52.
Approa	ch	39	3.8	39	3.8	0.037	7.4	LOSA	0.2	1.5	0.39	0.58	0.39	52.
West: E	ennett Spri	ngs Drive												
10	L2	29	7.6	29	7.6	0.137	4.5	LOSA	0.7	5.5	0.10	0.46	0.10	53.
11	T1	165	7.6	165	7.6	0.137	4.7	LOSA	0.7	5.5	0.10	0.46	0.10	54.
12	R2	1	7.6	1	7,6	0.137	8.3	LOSA	0.7	5.5	0.10	0.46	0.10	54.
Approa	ch	195	7.6	195	7.6	0.137	4.7	LOSA	0.7	5.5	0.10	0.46	0.10	54.
All Vehi	cles	392	5.6	392	5.6	0.137	5.1	LOSA	0.7	5.5	0.14	0.47	0.14	54.4

MOVEMENT SUMMARY

♥ Site: 1 [Bennett Springs Drive / Silver Swan Road - PM Peak (Site Folder: Future - 440 Students)]

Site Category: -Roundabout

Vehick	e Moverne	nt Performanc												
Mav ID	Tum	INPUT VOLI [Total vet/h	IMES HV]	DEMAND FL Total veh/n	ows HV] %	Deg. Satr v/c	Aver. Delay sec	Level of Service	95% BACK OI (Veh. velt	CUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South:	Car Park										1.00			
1	L2	1	0.0	1	0.0	0.003	5.3	LOSA	0.0	0.1	0.36	0.52	0.36	52.5
2	T1	1	0.0	1	0.0	0.003	5.5	LOSA	0.0	0.1	0.36	0.52	0.36	53.5
3	R2	1	0.0	1	0,0	0.003	9.1	LOSA	0.0	0.1	0.36	0.52	0.36	53.2
Approa	ch.	3	0.0	3	0.0	0.003	6.6	LOSA	0.0	0.1	0.36	0.52	0.36	53 1
East B	ennett Sprin	igs Drive												
4	L2	1	37	1	3.7	0.120	4.4	LOSA	0.7	5.0	0.09	0.48	0.09	53.6
5	T1	152	3.7	152	3.7	0.120	4.7	LOSA	0,7	5.0	0.09	0.48	0.09	54.7
6	R2	24	3.7	24	3.7	0.120	8.2	LOSA	0.7	5.0	0.09	0.48	0.09	54.3
Approa	ch	177	3.7	177	3.7	0.120	5.1	LOSA	0.7	5.0	0.09	0.48	0.09	54.6
North: 5	Silver Swan	Road												
7	L2	13	3.8	13	3.8	0.025	5.5	LOSA	0.1	1.0	0.39	0.57	0.39	52.1
8	T1	1	3.8	1	3.8	0.025	5.8	LOSA	0.1	1.0	0.39	0.57	0.39	53.1
9	R2	12	3.8	12	3.8	0.025	9.4	LOSA	0.1	1.0	0.39	0.57	0.39	52.7
Approa	ch	26	3.8	26	3.8	0.025	7.3	LOSA	0.1	1.0	0.39	0.57	0.39	52.4
West: E	ennett Spri	ngs Drive												
10	L2	32	7.6	32	7.6	0.148	4.6	LOSA	0.8	5.9	0.13	0.46	0.13	53,7
11	T1	172	7.6	172	7.6	0.148	4.8	LOSA	0.8	5.9	0 13	0.46	0.13	54.8
12	R2	1	7.6	1	7.6	0.148	8.4	LOSA	0,8	5.9	0.13	0.46	0.13	54.4
Approa	ch	205	7.6	205	7.6	0.148	4.8	LOSA	0.8	5.9	0.13	0.46	0.13	54.6
All Vehi	icles	411	5.6	411	5.6	0.148	5.1	LOSA	0.8	5.9	0.13	0.47	0.13	54.5

Figure 12: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout

As shown, both roundabouts would operate at a satisfactory level with all measures of performance well within acceptable thresholds (level of service, degree of saturation, average delay and queueing).



3.4.1. Sensitivity Analysis

A sensitivity analysis has also been undertaken by scaling up all input traffic flows until the intersection reaches practical capacity. The results are shown in Figure 13 and Figure 14.

	e. i [Dei	nett Sprin	ngs Drive	/ Crystal T	urn - AM P	eak (Site Fol	der: Futu	re - Sensit	avity)]					
ounda		iis (Practica	I Capacity):	Results for F	low Scale (ch	osen as larges	t for any mo	vement) = 5	50.0 %					
Vehic	te Moveme	ent Perform	ance	and the second	-								N 7 6	
Mov ID	Tum	INPUT V [Total Veh/h	DLUMES HV] %	DEMANE [Total vetvin	FLOWS HVj	Deg Saln V/c	Aver Delay Sec	Level of Service	95% BACK [Veh veh	OF QUEUE Dist (m	Prop Que	Effective Stop Rate	Aver. No. Cycles	Ave Spee km/
South:	Crystal Tur							-	_		-			
1	1.2	21	3.3	116	3.3	0.744	48.8	LOS D	9.0	64.5	1.00	1.34	1.94	32.
2	T1	1	3.3	6	3.3	0.744	49.1	LOS D	9.0	64.5	1.00	1.34	1.94	32
3	R2	21	3.3	116	3.3	0.744	52.6	LOS E	9.0	64.5	1.00	1.34	1.94	32
Approa	ach	43	3.3	237	3.3	0.744	50.7	LOSE	9.0	64.5	1.00	1.34	1.94	32
East B	Bennett Spri	ngs Drive												
4	1.2	12	6.9	66	6.9	0.828	5.4	LOSA	16.7	124.1	0.62	0.44	0.62	51
5	T1	204	6.9	1122	6.9	0.828	5.6	LOS A	16.7	124.1	0.62	0.44	0.62	52
6	R2	1	6.9	6	6.9	0.828	9.2	LOS A	16.7	124.1	0.62	0.44	0.62	52
Approa	ach	217	6.9	1194	6.9	0.828	5.6	LOSA	16.7	124.1	0.62	0.44	0.62	52
North:	Crystal Tun	1												
7	1.2	3	5.1	17	5.1	0.087	14.7	LOS B	0.6	4.3	0.92	0.85	0.92	46
3	T1	1	5.1	6	5.1	0.087	15.0	LOS B	0.6	4.3	0.92	0.85	0.92	47
9	R2	2	5.1	11	5.1	0.087	18.6	LOS B	0.6	4.3	0.92	0.85	0.92	46
Approa	ach	6	5.1	33	5.1	0.087	16.1	LOS B	0.6	4.3	0.92	0.85	0.92	46
West:	Bennett Spr	ings Drive												
10	L2	1	6.8	6	6.8	0.704	5.9	LOSA	9.0	66.8	0.71	0.57	0.71	51
11	T1	148	6.8	814	6.8	0.704	6.2	LOS A	9.0	66.8	0.71	0.57	0.71	52
12	R2	6	6.8	33	6.8	0.704	9.7	LOS A	9.0	66.8	0.71	0.57	0.71	52
Approa	ach	155	6.8	853	6.8	0.704	6.3	LOS A	9.0	66.8	0.71	0.57	0.71	52
All Vel	viclae	421	6.5	2316	6.5	0.828	10.6	LOS B	16.7	124.1	0.70	0.59	0.79	49

MOVEMENT SUMMARY

V Site: 1 [Bennett Springs Drive / Crystal Turn - PM Peak (Site Folder: Future - Sensitivity)]

Site Category: -Roundabout Flow Scale Analysis (Practical Capacity): Results for Flow Scale (chosen as largest for any movement) = 530.0 %

Mav	Tum	INPUT	DLUMES	DEMANE		Deg	Aver.	Level of		OF QUEUE	Prop.	Effective	Aver No.	Aver
D		į Total	HV1	j Total	HV1	Sain	Delay	Service	[Veh.	Distij	Que	Stop Rate	Cycles	Speed
Coutto	Crystal Tur	veh/h	.%	vehih	25	v/c	392	_	Veh	m	_		_	km/h
30000.							23.5			100				
1	L2	22	3.3	117	3.3	0.784	54,3	LOSE	10.1	72,6	1.00	1.39	2.07	30.5
2	T1	1	3.3	5	3.3	0.784	54.5	LOSE	10.1	72.6	1.00	1.39	2.07	31.2
3	R2	23	3.3	122	3.3	0.784	58.1	LOS E	10.1	72.6	1.00	1.39	2.07	31.1
Approa	ch	46	3.3	244	3.3	0.784	56,2	LOSE	10.1	72.6	1.00	1.39	2.07	31.0
East B	ennett Spri	ings Drive												
4	L2	12	6.9	64	6.9	0.834	5.6	LOSA	17.1	126.8	0.70	0.46	0.70	51.5
5	T1	209	6.9	1108	6.9	0.834	5.8	LOSA	17.1	126.8	0.70	0.46	0.70	52.5
6	R2	1	6.9	5	6.9	0.834	9.4	LOSA	17.1	126.8	0.70	0.46	0.70	52
Approa	ich	222	6.9	1177	6.9	0.834	5.8	LOS A	17.1	126.8	0.70	0.46	0.70	52.4
North:	Crystal Tun	n												
7	L2	3	5.1	16	5.1	0.103	17.1	LOS B	0.7	5.3	0.97	0.89	0.97	45.1
8	T1	1	5.1	5	5.1	0.103	17.4	LOS B	0.7	5.3	0.97	0.89	0.97	45.8
9	R2	2	5.1	11	5.1	0.103	20.9	LOSC	0.7	5.3	0.97	0.89	0.97	45.6
Approa	ich	6	5.1	32	5.1	0.103	18.4	LOS B	0.7	5.3	0.97	0 89	0.97	45.4
West: E	Bennett Spi	ings Drive												
10	L2	1	6.8	5	6.8	0.777	6.3	LOSA	11.4	84.4	0.83	0.59	0.83	50.9
11	T1	168	6.8	890	6.8	0.777	6.5	LOSA	11.4	84.4	0.83	0.59	0.83	51.9
12	R2	8	6.8	42	6.8	0.777	10.1	LOS B	11.4	84.4	0.83	0.59	0.83	51.5
Approa	ich	177	6.8	938	6.8	0.777	6.7	LOS A	11.4	84.4	0.83	0.59	0.83	51.5
All Veh	icles	451	6.5	2390	6.5	0.834	11.4	LOSB	17.1	126.8	0.78	0.61	0.89	48.7

Figure 13: Intersection Capacity Analysis – Bennett Springs Drive / Crystal Turn Roundabout – Sensitivity



MOVEMENT SUMMARY

V Site: 1 [Bennett Springs Drive / Silver Swan Road - AM Peak (Site Folder: Future - Sensitivity)]

Site Category: -Roundabout Flow Scale Analysis (Practical Capacity): Results for Flow Scale (chosen as largest for any movement) = 558.0 %

Mov:	Tum	INPUTV	DLUMES	DEMAND	FLOWS	Deg.	Aver.	Leveloi	95% BACK	OF QUEUE	Prep.	Effective	Aver No.	Aver
ID .		[Total	HV]	[Total	HVI	Sath	Delay	Service	[Veh.	Dist)	Que	Slop Rale	Cycles	Speed
		veh/ii	%	vehih	76	v/c	386	-	wein	m.		-		\$307
South:	Car Park													
1	L2	1	0.0	6	0.0	0.038	12.6	LOS B	0.3	1.8	88.0	0.77	0.88	47 3
2	T1	1	0.0	6	0.0	0.038	12.9	LOS B	0.3	1.8	0,88	0.77	0.88	48.
3	R2	1	0.0	6	0.0	0.038	16.4	LOS B	0.3	1.8	0,88	0.77	0.88	48
Approa	ch	3	0.0	17	0.0	0.038	14.0	LOS B	0.3	1.8	0.88	0.77	0.88	48.
East. B	ennett Spri	ngs Drive												
4	L2	1	37	6	3.7	0.691	5.7	LOSA	8.8	63.8	0.68	0.56	0.68	51
5	T1	137	3.7	764	3.7	0.691	6.0	LOSA	8.8	63.8	0.68	0.56	0.68	52
6	R2	17	3.7	95	3.7	0.691	9.5	LOSA	8.8	63.8	0.68	0.56	0.68	52.
Approa	ch	155	3.7	865	3.7	0.691	6.4	LOS A	8.8	63.8	0.68	0.56	0.68	52
North:	Silver Swar	Road												
7	L2	19	3.8	106	3.8	0.617	26.4	LOS C	6.2	44.5	1.00	1.16	1.42	40
8	TI	4	3.8	6	3.8	0.617	26.7	LOSC	6.2	44.5	1.00	1.16	1.42	40.
9	R2	19	3.8	106	3.8	0.617	30.2	LOSC	6.2	44.5	1.00	1.16	1.42	40
Approa	ch	39	3.8	218	3.8	0.617	28.3	LOS C	6.2	44.5	1.00	1.16	1.42	40
West: E	Bennett Spr	ings Drive												
10	L2	29	7.6	162	7.6	0.848	6.4	LOSA	15.2	113.2	0.88	0.56	0.88	50.
11	T1	165	7.6	921	7.6	0.848	6.6	LOS A	15.2	113.2	0.88	0.56	0.88	51
12	R2	1	7.6	6	7.6	0.848	10.2	LOS B	15.2	113.2	0.88	0.56	0.88	51
Approa	ch	195	7.6	1088	7.6	0.848	6.6	LOS A	15.2	113.2	0.88	0.56	0.88	51
All Veh	icles	392	5.6	2187	5.6	0.848	8.7	LOSA	15.2	113.2	0.81	0.62	0.85	50.

MOVEMENT SUMMARY

9 Site: 1 [Bennett Springs Drive / Silver Swan Road - PM Peak (Site Folder: Future - Sensitivity)]

Vehic	e Moveme	ent Perform	ance											
Mov ID	Tum	INPUT V [Total Veh/h	OLUMES HV] %	DEMAND [Total vetvn	FLOWS HV j %	Deg. Salın V/c	Aver. Delay Sec	Level of Service	95% BACK [Veh veh	OF QUEUE Disi] m	Prop. Que	Effective Stop Rate	Aver. Na. Cycles	Aver Speer km/l
South:	Car Park													
1	L2	1	0.0	5	0.0	0.033	12.5	LOS B	0,2	1.5	0.85	0 75	0.85	47.
2	T1	1	0.0	5	0.0	0.033	12.7	LOS B	0.2	1.5	0.85	0.75	0.85	48.
3	R2	1	0.0	5	0.0	0.033	16.3	LOS B	0.2	1.5	0.85	0.75	0.85	48.
Approa	ich	3	0.0	15	0.0	0.033	13.8	LOS B	0.2	1.5	0.85	0.75	0.85	48,
East E	lennett Spri	ngs Drive												
4	1.2	1	3.7	5	3.7	0.661	5.2	LOSA	8.7	62.8	0.52	0.49	0.52	52
5	T1	152	3.7	775	3.7	0.661	5.4	LOSA	8.7	62.8	0.52	0 49	0.52	53
6	R2	24	37	122	3.7	0.661	9.0	LOS A	8.7	62.8	0.52	0.49	0.52	52
Approa	ich	177	3.7	903	3.7	0.661	5.9	LOSA	8.7	62.8	0.52	0.49	0.52	53
North:	Silver Swar	Road												
7	L2	13	3.8	66	3.8	0.353	14.2	LOS B	2.7	19.3	0.99	0.99	0.99	46.
8	T1	1	3.8	5	3.8	0.353	14.5	LOS B	2.7	19.3	0.99	0.99	0,99	47.
9	R2	12	3.8	61	3.8	0.353	18.1	LOS B	2.7	19.3	0.99	0.99	0.99	47
Approa	ich	26	3.8	133	3.8	0.353	16.0	LOS B	2.7	19.3	0.99	0_99	0.99	46
West: E	Bennett Spr	ings Drive												
10	L2	32	76	163	7.6	0.848	7.5	LOSA	15.0	111.5	0.91	0.63	0.94	50
11	T1	172	7.6	877	7.6	0.848	7.7	LOSA	15.0	111.5	0.91	0.63	0.94	51
12	R2	1	7.6	5	7.6	0.848	11.3	LOS B	15.0	111.5	0.91	0.63	0.94	51
Approa	ich	205	7.6	1046	7.6	0.848	7.7	LOS A	15.0	111.5	0.91	0.63	0.94	51.
All Veh	icles	411	5.6	2096	5.6	0.848	7.5	LOSA	15.0	111.5	0.75	0.59	0.76	51.0
							OLE					THEF		0.00

Figure 14: Intersection Capacity Analysis – Bennett Springs Drive / Silver Swan Road Roundabout – Sensitivity

The results show that the traffic flows could increase by over five times before reaching capacity. It is therefore concluded that there would be adequate long term capacity to accommodate the school traffic and the long term traffic flows as the area develops.



4. Parking Assessment and Management

4.1. Car Parking Provision

The current plans indicate that the development will include approximately 68 on-site car parking bays including a kiss and drive facility with room for approximately 12 cars.

There is also an existing car park on the adjacent sporting field and street parking bays along Bennett Spring Drive and Goa Vista. While these are not technically a part of the school site, they are all within short walking distance of the site and currently available for public use.

As shown in Figure 15, there are 125 bays available for school use.



Figure 15: Existing and Proposed Car Parking

4.2. Car Parking Requirements

The City's Local Planning Policy *Vehicle Parking Standards* (POL-TP-129) requires 1 parking space per classroom for private primary schools.

Based on the 18 proposed classrooms, a minimum of 18 spaces are required. The available 125 bays (68 on-site and 57 off-site) bays exceed the minimum policy requirement.



Although the proposed on-site parking satisfies the City's minimum requirements, the provision of 1 bay per classroom is unlikely to be sufficient and so a comparison has been made to the Department of Education (DoE) parking requirements for public primary schools. The car parking requirements are outlined in **Table 4**.

Вау Туре	Car Parking Requirement	Students	Bays Required
Staff / Visitor	10 bays per 100 students (on-site)	269	27
Pick-up / Drop-off	14 bays per 100 students (off-site where possible)	209	38
	Total Required		65
	Total Available		125

Table 4: DoE Car Parking Requirements – Current Students

Table 5: DoE Car Parking Requirements – Ultimate Capacity of 460 Students

Вау Туре	Car Parking Requirement	Students	Bays Required
Staff / Visitor	10 bays per 100 students (on-site)	440	44
Pick-up / Drop-off	14 bays per 100 students (off-site where possible)	440	62
	Total Required		106
	Total Available		125

As shown, the available 125 bays satisfy the DoE requirements under both scenarios.



4.3. Parking Management

The development plans include a proposed kiss and drive facility within the car park. The proper management of this facility will ensure the safe and efficient operation and will maximise the turnover of vehicle trips which reduces the demand on other regular bays.

It is recommended that a Kiss and Drive Operational Plan is prepared as part of the overall School Management Plan detailing other measures to manage traffic during the peak pick-up and drop-off periods. Such measures could include:

- Promoting of alternative modes of transport such as walking, riding (bicycles and scooters) and taking
 public transport. The Department of Transport Your Move Program which provides tailored information
 on how to get to and from work, school and around the local community using alternative modes of
 transport. There are resources, competitions, events and rewards aimed at promoting active transport.
 The school can be registered via the Your Move website. Parents, students and staff can register
 individually, join the school's network, learn about different ways to travel to and from school and earn
 points and rewards for the school by participating.
- Encouraging carpooling.
- Advising parents who wish to walk their children to/from school to use the street parking bays or bays located slightly further away from the school.

4.4. Bicycle Parking

The City does not specify bicycle parking requirements for private schools. For comparison, the Department of Education (DoE) typically recommends 1 bicycle parking space per 9 students for public primary schools.

Based on the current 269 students, the DoE guidelines would require 30 bicycle parking spaces.

Based on the projected 440 students, the DoE guidelines would require 49 bicycle parking spaces.

It is acknowledged that a lower proportion of students would cycle to and from a private primary school due to there being a wider catchment area and so the parking demand would be lower compared to a public primary school.

It is currently proposed to include 20 bicycle spaces which is considered to be adequate for the current school population considering the wider catchment and lower bicycle parking demand compared to a public school. Additional bicycle spaces can easily be added when there is demonstrated demand.



5. Vehicle Access

5.1. Access Location

The proposed access arrangement of the school is shown in **Figure 16**. The crossovers on Bennett Springs Drive are restricted to entry-only or exit-only to minimise conflicting traffic movements. The internal parking aisle will therefore be restricted to one-way movements only.

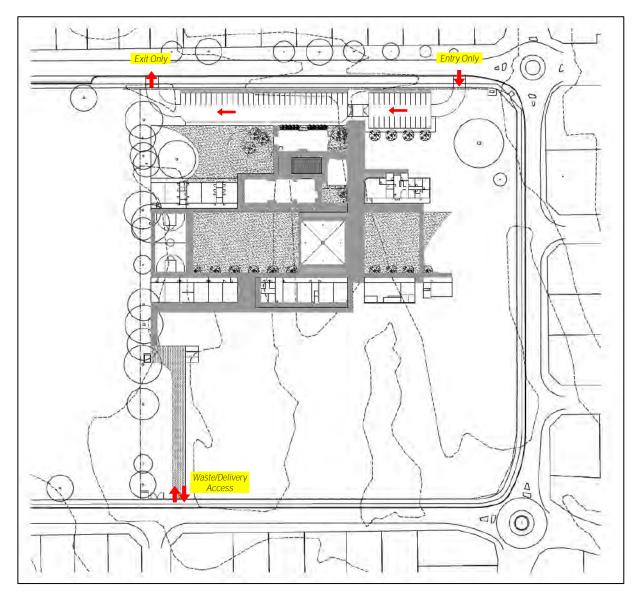


Figure 16: Proposed Access Arrangement



Sight distance requirements from vehicle exit points is defined in Figure 3.2 of Australian Standard AS 2890.1-2004 *Parking Facilities - Off-street car parking* (AS2890.1) as shown in Figure 17. Based on the frontage road speed of 40 km/h (school zone speed limit) the minimum required sight distance is 35 metres (55 metres desirable).

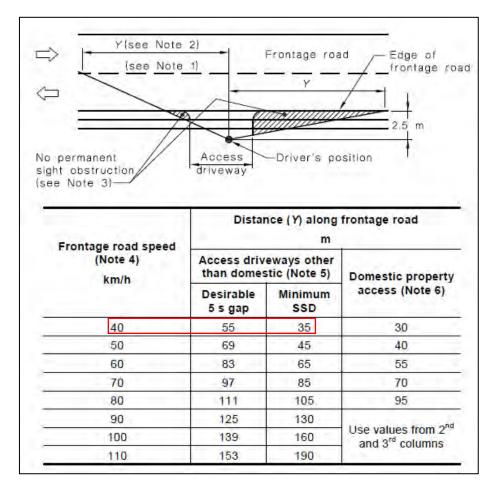


Figure 17: Sight Distance Requirements

As shown in **Figure 18**, the proposed vehicle exit points on Bennett Springs Drive and Bridgeman Drive would have adequate sight distance in both directions.





Figure 18: Sight Distance Check



6. Road Safety Assessment

6.1. Crash History

The crash history of the surrounding roads was obtained from the MRWA Reporting Centre. A summary of the recorded incidents over the five-year period ending December 2020 is shown in **Figure 19**.



Figure 19: Crash History January 2016 to December 2020

The crash history to date does not indicate any major safety issues on the road network and there is no indication that the school will increase the risk of crashes to an unacceptable level.



7. Pedestrian and Cyclist Assessment

The existing path network around the proposed site is well established. The existing path network within an 800m walkable catchment of the school is shown in **Figure 20**.



Figure 20: Existing Path Network

As shown, there are footpaths along one side of most roads including the perimeter of the new site and adjoining lot. The only roads with no paths are short sections of low volume, low speed roads.

The existing path network is considered to be adequate and no additional infrastructure is considered necessary.



8. Public Transport Accessibility

The existing public transport services near the site include:

- Transperth Bus Route 345 which operates between Morley Bus Station and Bennett Springs via Beechboro Road. The closest stops are located on Bennett Springs Drive west of Goa Vista and east of Crystal Turn which are all within short walking distance of the proposed school site.
- Transperth Bus Route 955 which operates between Morley Bus Station and Ellenbrook North. The closest stops are located on Altone Road adjacent to Currawong Court (approximately 650m walking distance from the school).

Public transport use among primary school students is low and so the existing services are considered to be adequate. Once Malaga Station is completed as part of the Morley-Ellenbrook Line, additional bus services may operate in the area from the new station.



9. Conclusions

A Transport Impact Assessment for the proposed relocation of Beechboro Christian School has concluded the following:

- The school relocation will simply result in the redistribution of some school traffic from Marshall Road to Bennett Springs Drive. The increase along Bennett Spring Drive is estimated to be in the order of 108 vehicle movements during each of the school peak hours.
- The increased daily traffic volume along Bennett Springs Drive resulting from the school relocation will remain within the expected capacity of a Local Distributor / Neighbourhood Connector B road and so there is adequate capacity to accommodate the redistribution of school traffic. It is noted there is one section of Bennett Springs Drive immediately west of Altone Road which currently carries 3,320vpd which would increase to approximately 3,536vpd. As this volume is well below the indicative daily traffic volume for a higher order Local Distributor Road (7,000vpd), the upgrade of this road is not warranted.
- If and when the school reaches the ultimate student capacity of 440 students, the increase in overall traffic generation is estimated to be 170 vehicle movements (85 in / 85 out). The school traffic is relatively well distributed and so the increase in traffic on any particular section of road is low and at a level that can easily be accommodated within the capacity of the road network.
- The two adjacent roundabouts along Bennett Springs Drive will have adequate capacity to accommodate the school relocation and future growth in traffic from the school and surrounding area.
- The available 125 bays (68 on-site and 57 off-site) bays exceed the 18 bays required under the City Local Planning Policy. The 125 bays also satisfy the DoE requirements which have been used for comparison.
- It is recommended that a Kiss and Drive Operational Plan is prepared as part of the overall School Management Plan.
- It is currently proposed to include 20 bicycle spaces which would be adequate for the current school population considering the wider catchment and lower bicycle parking demand compared to a public school. Additional bicycle spaces can easily be added when there is demonstrated demand.
- All proposed vehicle exit points would achieve the minimum required sight distance.
- The crash history to date does not indicate any major safety issues on the road network and there is no indication that the school will increase the risk of crashes to an unacceptable level.
- There are footpaths along one side of most roads including the perimeter of the new site and adjoining lot. The existing path network is considered to be adequate and no additional infrastructure is considered necessary.
- Public transport use among primary school students is low and so the existing services are considered to be adequate.



4 October 2021

Ian Rodgers Parry and Rosenthal Architects 43 Ventnor Avenue, West Perth WA 6005

Dear lan,

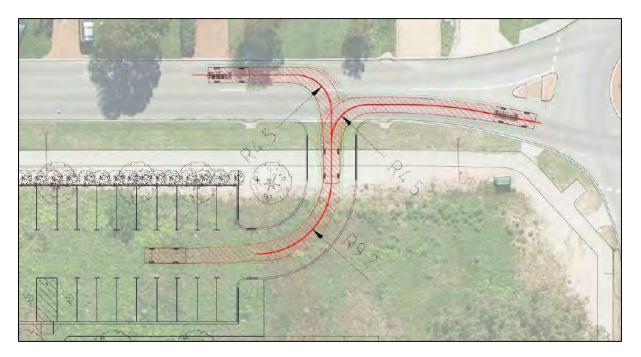
RE: Review of Peer Review Comment on Beechboro Christian School

As requested, we have undertaken a review of the peer review comment relating to the car park entry and exit points on Bennett Springs Drive. For reference, the comment in question states:

4. The parking area should be clearly designed as a low-speed environment. The speed bump in the middle is a good start. Consider continuing the pavement pattern of the central walk on the speed bump. The sweeping connections to Bennett Springs Drive however are implying a high-speed environment, communicating the wrong message. They should be significantly tightened, appropriate to a low-speed, child-safe environment.

Likely Travel Speeds

The likely vehicle turning radius through the Bennett Springs access has been measured from the latest site plan as shown below.





The vehicle speeds through the entry curves has been estimated using Main Roads WA's Supplement to Austroads Part 4B which estimates the vehicle speeds when negotiating roundabouts based on the curve geometry. Although this is used as a guideline for roundabout design, this information can reasonably be used to estimate speeds on other curved roadways.

		dicting Speed and Vehicle Transit Path Rad	ii for a Roundabout
		Vehicle Tran	sit Path Radii
ide Friction Factor	Speed (KPH)	Entry and Exit Curve (m) Based on 3% Superelevation	Circulation (m) Based on -2% Superelevation
0.3	15	5	6
0.3	20	10	11
0,3	25	15	18
0.3	30	21	25
0.3	35	29	34
0.3	40	38	45
0.3	45	48	57

As shown the estimated vehicle speeds would be less than 15km/h for the first curve and then less than 20km/h for the second curve. There is then a speed hump approximately 30 metres after the second curve and so it is unlikely that drivers would increase in speed once inside the car park.

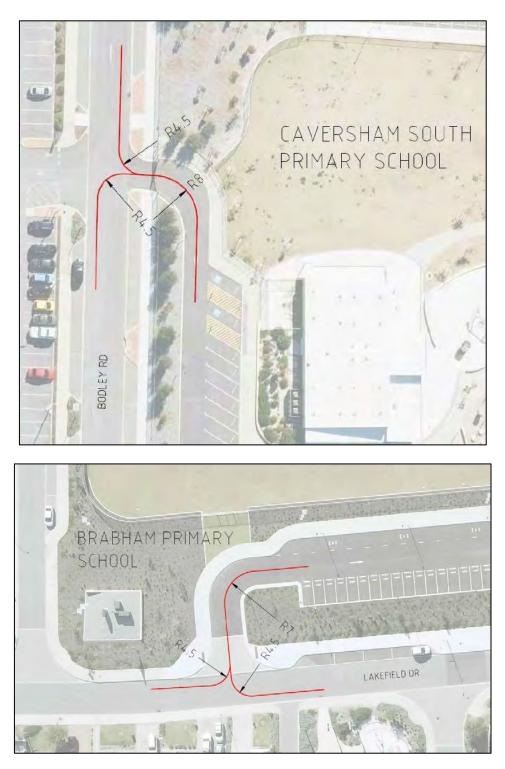
The exit crossover on Bennett Springs Drive has a similar geometry and would therefore induce similar speeds to the entry. It is also unlikely that a driver approaching the car park exit would increase speed significantly as the driver would need to give way to vehicles along the frontage road.

We therefore disagree that the proposed geometry implies a high-speed environment or communicates the wrong message but rather the geometry and design provides a reasonable series of horizontal and vertical deflections which forces drivers to slow down from the travel speed along the frontage road.



Existing Examples

There are several recently completed schools with accesses that have similar geometry as shown below.



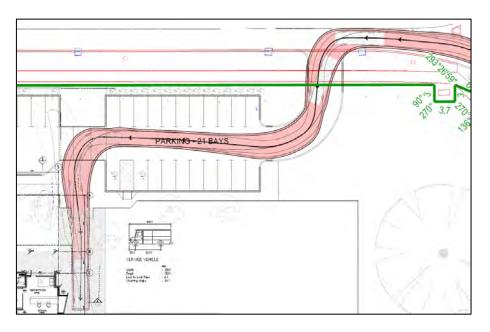
PO Box 1271 East Victoria Park WA 6981

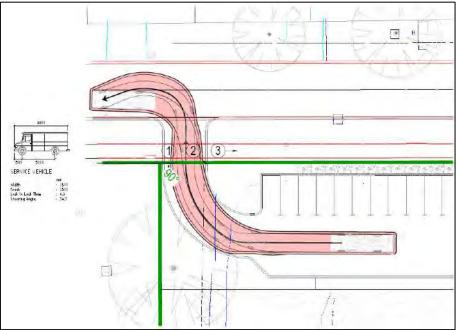


DFES Access

The two accesses in question are also required to accommodate DFES vehicles in the event of emergencies. The swept path assessment undertaken by BPA Engineering indicates that current access geometry will only just accommodate the turning movements of the DFES vehicles. Any further tightening of the accesses may prevent DFES vehicles from entering and exiting the site or may require these vehicles to travel over the kerbs.

The swept paths are shown below.





Yours sincerely,

PO Box 1271 East Victoria Park WA 6981 T +61 08 93551300

admin@shawmac.com.au www.shawmac.com.au Shawmac Pty Ltd ABN:51 828 614 001



For the reasons outlined in this letter, we do not agree with the peer review comment and do not agree that the access geometry needs to be modified to reduce vehicle speeds.

Regards,

Paul Nguyen Traffic Engineer 0455 888 212



Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to <u>daps@dplh.wa.gov.au</u>

Presenter Details

Name	Michael Bolan
Company (if applicable)	Swan Christian Education Association
Please identify if you have	YES 🗆 NO 🛛
any special requirements:	If yes, please state any accessibility or special requirements:
	Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP
Meeting Date	07/12/2021
DAP Application Number	DAP/21/02060
Property Location	Lot 27 Bennett Springs , Bennett Springs
Agenda Item Number	8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES 🛛
Is the presentation in support of or against the <u>report</u> recommendation)? (contained within the Agenda)	SUPPORT 🛛 AGAINST 🗆
Is the presentation in support of or against the <u>proposed</u> <u>development</u> ?	SUPPORT 🛛 AGAINST 🗆
Will the presentation require power-point facilities?	YES □ NO ⊠ If yes, please attach



Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> The context and constraints of the proposed development.
--	---

In accordance with Clause 3.5.2 of the <u>DAP Standing Orders</u>, your presentation request <u>must</u> also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Click or tap here to enter text.

School Principal, Michael Bolan, Beechboro Christian School

Beechboro Christian School is part of Swan Christian Education Association; an association which was formed almost exactly 40 years ago.

Over these 40 years, our association has grown to a network of seven Christian schools; three that serve the communities within the City of Swan :- Swan Christian College, Ellenbrook Christian College and Beechboro Christian School.

For over 30 years, BCS has served the local and wider community, growing from 14 students with one staff member in the first year to just over 300 students and 40 staff today.

This has all been done in a succession of temporary buildings and locations, to where we are currently and have been for over 20 years; on a very small parcel of leased land owned by the members of the Cracovia Club in Bennett Springs.

Our school is now a rich and vibrant multi-cultural community, with over 40 different languages and dialects spoken within the community that we serve.

We have already have good relations with the local community through a range of activities – particularly the annual Bennett Springs Fair, which we envisage continuing on the new site.

However, due to the growth within the local and surrounding suburbs, our school has grown to the capacity of the current buildings and the land that has been leased. We are now at the point where we cannot continue to meet the demands of the rapid growth we are seeing.

The DoE had designated the site in question as a government primary school when the Bennet Springs subdivision was approved, but decided there was already a sufficient supply of government schooling in the area and sold the lot to SCEA in 2020.

This application is to relocate the current purpose-built transportable classrooms, which were partly funded by the Commonwealth 'Building the Education Revolution' initiative in 2011, as well as a newly built permanent Early Learning Centre. In time we plan to replace the transportable classrooms with permanent structures.

We are a relatively low-fee, independent school serving the needs of a broad cross-section of the community. In planning this development, we have sought to balance strategic investment in the quality of the long-term buildings and infrastructure with prudent financial stewardship of the existing buildings. We have also endeavoured to maintain scope for a range of future options for replacement of the transportable classrooms and specialist buildings.

A significant amount of planning and consultation has gone into this proposal. The application has received community feedback and a Peer review through the City's planning office. This process has helped us reassess some of our planning rationale and improve the quality of the plan.

We believe that the City staff statement on page 12 of their report is a fair conclusion of the process and was a strong rationale for the City of Swan to recommend the DA to the Outer Metro JDAP:

Conclusion:

The application has been assessed against all relevant legislation and has undergone a Peer Review. The applicant has amended their proposal in response to Peer Review comments and has demonstrated compliance with Local Planning Scheme No.17 requirements and general compliance with all other requirements of State and Local policies.

At the close of assessment, it is considered that the sum changes made to the original proposal along with the additional justification for the retention of other design considerations is a superior design outcome and will contribute in a positive way to the Bennett Springs community.

We have minor reservations about a couple of the Conditions which the next speaker will address. Otherwise, we request that you approve this application.

LOT 1 (No. 27) DAY ROAD, EAST ROCKINGHAM – PROPOSED INDUSTRIAL DEVELOPMENT

DAP Name:	Metro Outer Joint Development Assessment Panel
Local Government Area:	City of Rockingham
Applicant:	Planning Solution Pty Ltd
Owner:	Mrs M E Pike (at time of lodgement)
Value of Development:	\$5.8 million
	□ Mandatory (Regulation 5)
	☑ Opt In (Regulation 6)
Responsible Authority:	City of Rockingham
Authorising Officer:	Mr Bob Jeans, Director Planning and Development Services
LG Reference:	DD020.2021.00000223.001
DAP File No:	DAP/21/02074
Application Received Date:	9 September 2021
Report Due Date:	25 November 2021
Application Statutory Process Timeframe:	90 Days
Attachment(s):	 Development Plans Development Application Additional Information submitted dated 9 September 2021 Agency Comments Applicant's Response to Request for Further Information dated 21 October 2021

Form 1 – Responsible Authority Report (Regulation 12)

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/21/02074 and accompanying plans as contained within Attachment 1:

- Site Development Plan Drawing No A.03, dated 12 August 2021;
- Administration Office and Workshop Amenities Plan Drawing No A.04; dated 12 August 2021;
- Warehouse/Manufacturing Plan Drawing No A.05; dated 12 August 2021;
- Enlarged Administration Office Street East Elevation Drawing No A.06; dated 12 August 2021; and
- East, West, North, South Elevation B Drawing A.07; dated 12 August 2021.

in accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(b) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2, subject to the following conditions as follows:

Conditions:

- 1. This decision constitutes Development Approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
- 2. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for approval. All stormwater generated by the development must be managed in accordance with *Planning Policy 3.4.3 Urban Water Management* to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.
- 3. Prior to the commencement of works a Construction Management Plan must be submitted and approved by the City of Rockingham. The Construction Management Plan shall include, but not be limited to, the following:
 - (i) A Dust, Noise and Vibration Management Plan;
 - Detail how access roads to and all trafficable areas on the site/s will be treated and maintained to prevent or minimise the generation of airborne dust;
 - (iii) How any stockpiles on site/s are to be managed;
 - (iv) Construction waste disposal strategy and location of waste disposal bins;
 - (v) How materials and equipment will be delivered and removed from the site/s; and
 - (vi) Parking arrangements for contractors.

All works must be carried out in accordance with the approved Construction Management Plan and maintained at all times, for duration of the development.

4. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures must be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.

- 5. The carpark must:
 - (i) provide a minimum of 90 car parking spaces;
 - be designed, constructed, sealed, kerbed, drained and line marked in accordance with User Class 1A for staff parking, User Class 2 for visitor bays, User Class 4 for universal bays of Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to commencement of development;
 - (iii) two (2) car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
 - (iv) be constructed, sealed, kerbed, drained and clearly marked prior to the development being occupied and maintained thereafter;
 - (v) have lighting installed, prior to the occupation of development;
 - (vi) any semi-trailer parking bays shall be clearly line marked and designed in accordance with AS2890.2 for the purposes of parking trailers only at all times; and
 - (vii) confine all illumination to the land in accordance with the requirements of Australian Standard AS 4282-1997, Control of the obtrusive effects of outdoor lighting, at all times.
- 6. Prior to applying for a building permit, the Applicant must submit full detailed engineering drawings showing the various pavement types and cross sectional profiles to be adopted across the entire development site and adjoining road reserves, for review and approval by the City of Rockingham.
- 7. Crossovers shall be designed and constructed in accordance with the City's *Commercial Crossover Specifications*.
- 8. Pavement markings and signage shall be provided at the vehicular crossover locations, to clearly delineate the intended traffic flow within the site as follows:
 - (i) Restricted exit only for heavy vehicles at the most northern crossover;
 - (ii) Full movement entry and exit only for heavy vehicles at the drive-through crossover. No access permitted to staff or visitor vehicles;
 - (iii) Full movement entry and exit for staff and visitor vehicles only at the crossover for the administration building;
 - (iv) Full movement entry and exit for staff vehicles at the southern-most crossover; and
 - (v) Restricted entry only for heavy vehicles at the southern-most crossover.

- 9. In accordance with City of Rockingham Planning Policy 3.3.14 Bicycle parking and End of Trip Facilities, six (6) long-term bicycle parking spaces must be provided for the development. The bicycle parking spaces must be designed in accordance with AS2890.3—1993, Parking facilities, Part 3: Bicycle parking facilities and must be approved by the City of Rockingham prior to applying for a Building Permit and constructed prior to occupancy of the development. The bicycle parking spaces must be retained and maintained in good and safe condition for the duration of the development.
- 10. The buildings must be designed, constructed and maintained to BAL- 29 as specified in Australian Standard AS3959-2009: Construction of Buildings in Bushfire-Prone Areas (AS3959). The building must be maintained in accordance with the specified requirements of the BAL for the duration of the development.
- 11. Prior to occupation of the development, the Asset Protection Zone (APZ), as depicted in the approved Bushfire Management Plan of the Western Australian Planning Commission Subdivision Approval issued (Ref 161809) must be installed on the site. The APZ must not place reliance or impositions on the management of the adjoining Conservation Area (Reserve ID R/52979 Alumina Reserve), be maintained in accordance with these requirements and in a good and safe condition for the duration of the development.
- 12. No vegetation within the Conservation Area (Reserve ID R/52979 Alumina Reserve) shall be removed or disturbed during development works, including any secondary impacts from works to provide infrastructure and drainage.
- No battering, fill or waste shall be deposited within the Conservation Area (Reserve ID R/52979 - Alumina Reserve). The landowner/applicant must immediately report any fill or construction waste that is deposited within the Conservation Area (Reserve ID R/52979 - Alumina Reserve) to the Department of Biodiversity, Conservation and Attractions.
- 14. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:
 - (i) the location of bin storage areas and bin collection areas;
 - (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
 - (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
 - (iv) frequency of bin collections.

All works must be carried out in accordance with the Waste Management Plan and maintained at all times, for the duration of development.

15. Prior to applying for a Building Permit, bin storage area/s must be designed with a size suitable to service the development and screened from view of the street to the satisfaction of the City of Rockingham. The bin storage area/s must be constructed prior to the occupation of the development and must be retained and maintained in good condition for the duration of the Development.

- 16. Prior to applying for a Building Permit, a Landscaping Plan must be submitted and approved to the satisfaction of the City of Rockingham and shall include the following detail:
 - (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
 - (ii) any lawns to be established and areas to be mulched;
 - (iii) any natural landscape areas to be retained;
 - (iv) those areas to be reticulated or irrigated;
 - (v) the provision of shade trees at a ratio of 1 tree per 4 car bays;
 - (vi) use of species consistent with the prescribed plant species list in the East Rockingham Development Guidelines;
 - (vii) fencing type, height and alignment, demonstrating that the street frontage fencing is located behind the extent of the Landscaped setback area;
 - (viii) as required by the Subdivision Approval issued by Western Australian Planning Commission dated 15 August 2021, a fence restricting vehicle, pedestrian, stock access to the Reserve ID R/52979 – Alumina Reserve is to be constructed on the Reserve boundary and is to be maintained at all times;
 - (ix) internal footpath and kerb ramps providing linkages between car parking areas to the main office, including any proposed lighting; and
 - (x) proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas.

The landscaping (including all verge landscaping) must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham.

- 17. Materials, sea containers, goods or bins must not be stored within the carpark areas at any time. Car parks shall remain freely accessible at all times.
- 18. The open air storage area shall not be used for the storage of flammable materials or liquids at any time, unless further approval is obtained.

Advice Notes

- 1. This Approval relates to the details provided in the application; to undertake the development in a different manner to that stated in the application a fresh application for Development Approval must be submitted to the City.
- 2. In relation to Condition 3, dust management is to be in accordance with the Department of Environment and Conservation Guideline: A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.
- 3. The proponent is advised that this approval is not a building permit, which constitutes a separate legislative requirement. Prior to any building work commencing on site, a building permit must be obtained.

- 4. A Sign Permit must be obtained for any advertising associated with the development, including signage painted on the building; the applicant and owner should liaise with the City's Building Services in this regard.
- 5. With respect to the Landscape Plan and Stormwater Management Plan, the applicant is to liaise with the City's Land Development and Infrastructure Services in this regard.
- 6. All works in the road reserve, including construction of a crossover or footpath and any other works to the road carriageway must be to the specifications of the City of Rockingham. The Applicant should liaise with the City of Rockingham's Land and Development Infrastructure Services and Engineering Services in this regard.
- 7. The disposal of wastewater into the Water Corporation's sewerage system must be with approval of the Water Corporation; the applicant and owner should liaise with the Water Corporation in this regard.
- 8. The development must comply with the Environmental Protection (Noise) Regulations 1997; contact the City of Rockingham's Health Services in this regard.
- 9. All vehicle access to the site via Lodge Drive must be provided by the internal access road to be constructed prior to occupation of the development pursuant to the Subdivision Approval issued by WAPC (ref 160809).

Region Scheme	Metropolitan Region Scheme	
Region Scheme - Zone/Reserve	Industrial	
Local Planning Scheme	General Industry	
Local Planning Scheme - Zone/Reserve	Town Planning Scheme No.2	
Structure Plan/Precinct Plan	N/A	
Structure Plan/Precinct Plan - Land Use Designation	N/A	
Use Class and permissibility:	Industry - "D" use	
Lot Size:	13.5393ha	
Existing Land Use:	Vacant land	
State Heritage Register	Yes	
Local Heritage	□ N/A	
	☑ Heritage List	
	Heritage Area	
Design Review	⊠ N/A	
	□ Local Design Review Panel	
	□ State Design Review Panel	
	□ Other	
Bushfire Prone Area	Yes	
Swan River Trust Area	No	

Details: outline of development application

Proposal:

The application is for an Industrial development for the purposes of a 'metal fabrication' type industry (i.e. sheet metal, structural metal products) and includes the following:

- Two manufacturing warehouse buildings with a combined floor area of 7,316m², located centrally within the development site. The warehouse buildings are separated by an 18.3m wide drive through area with a maximum building height of 12.2m;
- An open air storage area located in the south-western section of the development site, comprising an area of 2,139m²;
- Administration and amenities office building located to the east of the southern warehouse, comprising an area of 870m²;
- Four crossovers accessed from the future subdivision road directly to the east, which will be constructed as part of the subdivision works. The four crossovers propose access as follows:
 - Two (2) northern crossovers for unrestricted heavy vehicle access only;
 - Central crossover for staff and visitor access only (unrestricted light vehicles); and
 - The southern crossover to be used by both heavy and light vehicles (unrestricted).
- A total of 93 car parking spaces forward of the buildings, inclusive of two (2) accessible bays;
- 15 parking spaces located in the north-eastern section of the development site, providing a dedicated trailer parking area;
- A landscaping strip along the frontage of the site is proposed for a setback distance of 10m for the length of the eastern boundary; and
- Fire pumps, water tank and electrical transformer are proposed within the landscaped areas forward of buildings.

The development will operate from 6:00am to 10:00pm over two (2) rostered shifts from Monday to Saturday. There will be up to 90 staff on site at any one time (30 office staff and 60 factory staff).

The following reports and supporting material accompany the Development Assessment Panel (DAP) application:

- Development Application Report;
- Development Plans;
- Traffic Impact Statement;
- Approved Subdivision Bushfire Management Plan;
- EPA Separation Guidelines Technical Note; and
- Earthworks and Retaining Wall Plan.

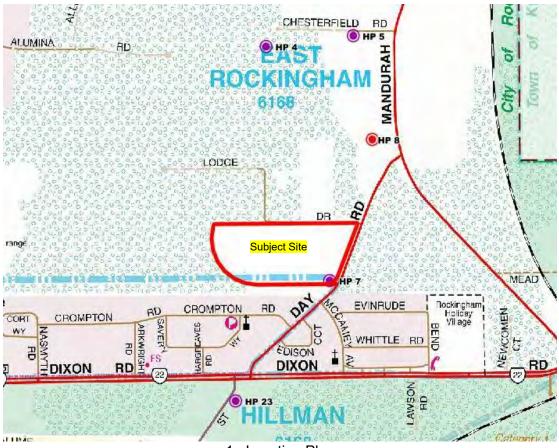
Background:

Site Context

The subject site fronts Lodge Drive at its northern boundary and Day Road at its eastern boundary. Day Road provides a vehicular connection to Mandurah Road to the north-east and Dixon Road to the south.

To the north and west, the subject site abuts a large vacant industrial lot, which is reserved as a Conservation Area (Alumina Reserve). Immediately to the south, land in an east-west alignment is reserved for Railway under the Metropolitan Region Scheme (MRS).

"Day Cottage", a State Heritage listed place is located on the south-eastern portion of the site fronting Day Road. Day Cottage is also on the City's adopted Heritage List pursuant to Town Planning Scheme No.2 (TPS2).



1. Location Plan



2. Aerial Location Showing the Subject Site and Proposed Development Site

Subdivision Application

In May 2021, a Subdivision Application was lodged over the subject site with the Western Australian Planning Commission (WAPC). In August 2021, the WAPC granted Subdivision Approval over the subject site for eight (8) freehold lots and an internal access road.



3. Approved Subdivision Plan

For clarity, future Lot 1 is referred throughout this report as the development site. The lot configuration provides for the creation of the development site, comprising of 2.9448ha.

The development site is located on the western side of the subject site, accessible via a planned internal subdivision road connecting Lodge Drive to the north. The development site abuts Alumina Reserve to the north and west. A drainage basin will be located immediately to the south of the development site.

Access to the development site is contingent on works associated with the subdivision application. No clearances have been granted by the City with respect to subdivisional works over the subject site at this stage.

Subject Development Application

In September 2021, a DAP application was lodged by the Applicant for an industrial development.

The following summarises the application history:

- On 7 October 2021, the City advised the Applicant that a request for further information (RFI) is forthcoming, to enable the Applicant to respond to various matters raised and for the City to complete its assessment and report. Subsequently, the City confirmed the assessment timeframes for reporting and advised timeframe limitations would require the Applicant to agree to a 27 day extension of time to allow the assessment to consider response to the RFI;
- The formal RFI was issued to the Applicant on 12 October 2021, with an advised date of 20 October 2021, confirming the Applicant's acceptance or refusal to respond to the RFI and agreement to an extension of time:
 - The matters related to groundwater and drainage, traffic, access and car parking, bushfire management, landscaping and building design.
- On 19 October 2021, the Applicant refused the extension of time request, however, provided a formal response to the RFI, responding to the City's concerns on 21 October 2021.
- On 25 October 2021, the City confirmed that the subject site had been sold and change of ownership had occurred.

Legislation and Policy:

Legislation

- Planning and Development Act 2005
- Metropolitan Region Scheme
- Town Planning Scheme No.2
- Planning and Development (Local Planning Scheme) Regulations 2015
- Environmental Protection (Noise) Regulations 1997

State Government Policies

- State Planning Policy 3.7 Planning in Bushfire Prone Areas
- State Planning Policy 4.1 State Industrial Buffer Policy
- Environmental Protection Authority (EPA) Separation Distance between Industrial and Sensitive Land Uses No.3 (Guidance Statement)

Structure Plans/Activity Centre Plans

Not Applicable

Local Policies

- Planning Policy 3.3.8 East Rockingham Development Guidelines
- Planning Policy 3.3.14 Bicycle Parking and End of Trip Facilities
- Planning Policy 3.4.3 Urban Water Management

Consultation:

Public Consultation

Pursuant to Clause 64(1)(c) of the Deemed Provisions of TPS2, the local government has the discretion to advertise, or not to advertise an application seeking Development Approval.

As the proposed development is consistent with the applicable planning framework, advertising is not considered to be necessary for this industrial proposal.

Referrals/consultation with Government/Service Agencies

The following government departments were consulted:

- Department of Water and Environmental Regulation (DWER); and
- Department of Biodiversity, Conservation and Attractions (DBCA).

The comments received are summarised as follows:

1. Department of Water and Environmental Regulation (DWER) summarised

DWER recommends that the proponent prepare a detailed Stormwater Management Plan (SMP) as part of the development approval process. The SMP should ensure that:

- Stormwater runoff be fully contained onsite for small and minor storm events (1 and 0.2 Exceedance per Year runoff) and that required storage for each rainfall event, basin sizing and design should be detailed.
- The first 15 mm of stormwater runoff (1 Exceedance per Year runoff) to undergo water quality treatment via bio-infiltration.
- Pre-development and post-development outflow of stormwater from the site be detailed.

City's Comment:

The matter of Stormwater Management (SWM) has been raised separately by the City as part of RFI process. The Applicant had not provided any further information in this regard.

1. Department of Water and Environmental Regulation (DWER) summarised (cont...)

SWM is discussed in detail within the Planning Assessment section of this report, where it is concluded that the SWM can be addressed as a condition of Development Approval in line with DWER advice. It was also clarified separately, that DWER support the Applicant's approach to address SWM post Development Approval.

2. Department of Biodiversity, Conservation and Attractions (DBCA) summarised

DBCA provided comment to the WAPC on the subdivision application and recommended that a hard road edge be provided between the development area and the adjoining conservation reserve to ensure the protection of the reserve. The subdivision was approved without a hard road edge between the development area and the adjoining conservation area. The proposal does not address the management of the interface between the development area and the adjoining conservation area.

An interface management plan should be developed in consultation with DBCA and the City to demonstrate that the conservation area and boundary fence will not be impacted by the development. The design should provide a setback between the base of the batter and the conservation reserve boundary fence to ensure that material does no spill or erode into the reserve and to ensure that the fence can be maintained. Batters should have a slope no steeper than 1 in 6 to ensure material does not erode into the conservation reserve. The interface design should provide a surface treatment for the batter (by revegetation or other methods), that provides permanent stabilisation and prevents erosion material or weeds infiltrating the conservation reserve.

The following condition is suggested to be included:

"Prior to the commencement of works a management plan for the interface between the development and the adjoining conservation area is to be prepared and approved to ensure the protection of the conservation area and its boundary fence, in consultation with DBCA and the City of Rockingham, with satisfactory arrangements for the implementation of the approved plan (DBCA)".

City's Comment:

Considering DBCA recommendations for a hard road edge was not applied as a condition of the Subdivision Approval by the WAPC, the City can only seek consistency, requiring the restrictive fence to be detailed on landscaping plans as a condition of Development Approval. Nevertheless, in accordance with City's Fire Control Notice 2021-2022, the Proponent will be required to install and maintain a 3m wide mineral firebreak along the Conservation Reserve boundary (inside of the batters). On advice of the City's Environmental Officers, such firebreak is likely to reduce the spread of weeds into the Conservation Reserve.

The grade of the batters has already been approved by the City at 1 in 4 as part of the Engineering Drawings pertaining to the Subdivision Approval. As such, the slope recommendation cannot be achieved. A condition of Development Approval confirming the stability of the batters, however, is recommended.

The above recommended measures are considered suitable as a response to the interface concerns raised by DBCA.

A copy of the external comments received from the consulted Government Agencies is within Attachment 4. Design Review Panel Advice

Not Applicable

Swan Valley Planning

Not Applicable

Other Advice

Not Applicable

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies, as outlined in the Legislation and Policy section of this report.

The following matters have been identified as key considerations for the determination of this application:

- Bushfire Management
- Design (landscape quality and vehicle access); and
- Stormwater Management

Bushfire Management

The Applicant submitted a copy of the approved WAPC Bushfire Management Plan (BMP) to accompany the Development Application in lieu of a development specific BMP. The City considered it more appropriate for the Applicant to provide a new BMP for the development on the basis that site conditions pertaining to vegetation classification may have changed over time, of which was not received.

The below tabled comments within the left hand side column were identified by the City in relation to the proposal and the approved BMP for the subdivision. Technical matters relating to the subdivision have not been determined in relation to the drainage area and landscaping requirements which implicate the BMP. Furthermore, the Applicant declined the request to provide an updated Landscaping Plan prior to decision of the Development Application to confirm consistency with any BMP. The table below also provides Applicant responses to matters raised and further comments upon review by the City, which are as follows:

Matter raised in RFI	Applicant Response	City Comment
The Open Air Storage area falls within the Asset protection Zone (APZ) area.	The Open Air Storage area will not be used to store flammable materials.	Noted. This can be managed as a condition of Development Approval.
The BMP suggests that the drainage area will be cleared and landscaped to resemble low threat, maintained vegetation.	The developer of the subdivision intends to clear the drainage area.	The City is yet to resolve the vegetation classification of the drainage area as part of the subdivision conditions.
Matter raised in RFI	Applicant Response	City Comment
The City has no intention of maintaining this drainage reserve at low threat, noting that condition 16 of the subdivision approval states if drainage easements or reserves are required by the City, then this land is to be vested with the local government.	Low threat planting and landscaping is permitted and shall be maintained on the southern boundary.	The City has no intention of maintaining the drainage basin as 'low threat'. In fact, as part of the subdivision process, the City recommended that the basin lot form part of the lot 1 (development site). This limitation binds the City to only achieving landscaping consistent with the approved APZ

		requirements of the site, being low threat.
The Western and Southern portion of the site are subject to APZ treatment, with retaining proposed at 1:4 slope in these locations.	There is adequate separation distance between the buildings and the drainage area to the south. Landscaping to comply with the approved APZ.	Noted. Landscaping within this area to be consistent with the approved APZ.
A site specific BAL assessment for the proposed development be provided.	The proposed buildings will be located within BAL 29, based on approved BMP and mapping for the subdivision.	Noted.

The proposed development relies on the BMP and associated strategies approved as part of the Subdivision Approval to justify the siting and landscaping treatments of the proposal. The City accepts the limitation that the landscaping will be low threat to achieve compliance with the BMP and APZ requirements. On this premise, the proposal is considered to comply with the requirements of SPP3.7.

Landscaping Quality

The PP3.3.8 has been prepared to guide the orderly development of serviced industrial land within the East Rockingham Industrial Park (ERIP). The guidelines relating to landscaping and vehicular access are outlined below and considered in relation to the proposed development:

General Development Provisions	Provided	Compliance
 Lots less than 3,000m2 in area must provide a 5m landscaping strip to the front of the lot; 	 A 10m wide landscaped strip is to be provided, however, lacks a sufficient level of detail; and 	Yes, through conditions of Development Approval, detailed landscaping plans shall ensure tree species comply.

General Development Provisions	Provided	Compliance
 Plant species shall be selected from those listed in Appendix B – Prescribed Plant Species; and Shade trees shall be provided one (1) tree per 4 car parking bays provided on the site. Trees shall be selected from the Appendix B – Prescribed Plant Species. Service and storage areas must be screened behind the front building line and from the street. Landscaping 	 The applicant has been advised that the proposed species to be used in the development is not consistent with the preferred species list. Furthermore, the species list seeks a tiered landscaping outcome which this proposal cannot accommodate for along the front boundary due to APZ bushfire requirements. An open air storage area is proposed adjacent to the car parking area on the southern boundary. Landscaping in 	Yes, through conditions of Development Approval, detailed landscaping plans shall ensure compliance with APZ requirements.

		<u>г</u>
and fencing can be utilised to screen these areas.	this area is constrained with the APZ requirements and possible impacts on the adjoining drainage area.	
Car Parking		ſ
 Roadways and parking within a development must be planned to achieve the following: Separation of service/haulage vehicles from visitor and staff parking areas; The number and locations of vehicle crossovers must consider criteria such as traffic safety, ease of vehicle movement and the location of existing and proposed vegetation; Siting of parking areas adjacent to areas of buildings that are commonly accessed; Provide suitable species of shade trees at a ratio of 1 per 4 car-bays, evenly throughout parking areas; Provide clear paths for pedestrian movement separate from areas of frequent vehicular movement; and Consider the visitor parking areas as an extension of the corporate/market image in terms of its presentation. 	 The site layout and crossovers provide an intention to separate service/haulage vehicles from visitor and staff. Four (4) crossovers are proposed. To minimise points of conflict, the City considers crossovers are required to be clearly marked entry/exit for the vehicle types. Restricting the movements of the most northern crossover as 'exit only' and the southern crossover as 'entry only' for heavy vehicles should be considered on the basis that the development needs to account for safe vehicular movement external to the site and future developments (Refer to figure 4 below for clarity). 	Yes, through conditions of Development Approval. Yes, through conditions of Development Approval.
Restricted exit only for heavy vehicles in the 27331 Restricted full movement for heavy vehicles only Restricted full movement for heavy vehicles only for heavy vehicles only fo	Interview of the second	×

A Stormwater Management Plan was not submitted as part of the Development Application nor is there any mention regarding management principles in the Application.

Whilst the Urban Water management Plan is yet to be approved for the subdivision, the City holds concerns with the development sites ability to contain stormwater on site, due to the significant amount of hardstand and impervious surface proposed.

A Stormwater Management Plan will be required as a condition of Development Approval (as requested by the Applicant). Should the strategy in the Stormwater Management Plan fail to satisfy DWER advice and PP3.4.3, the Applicant will be required to investigate alternatives.

Conclusion:

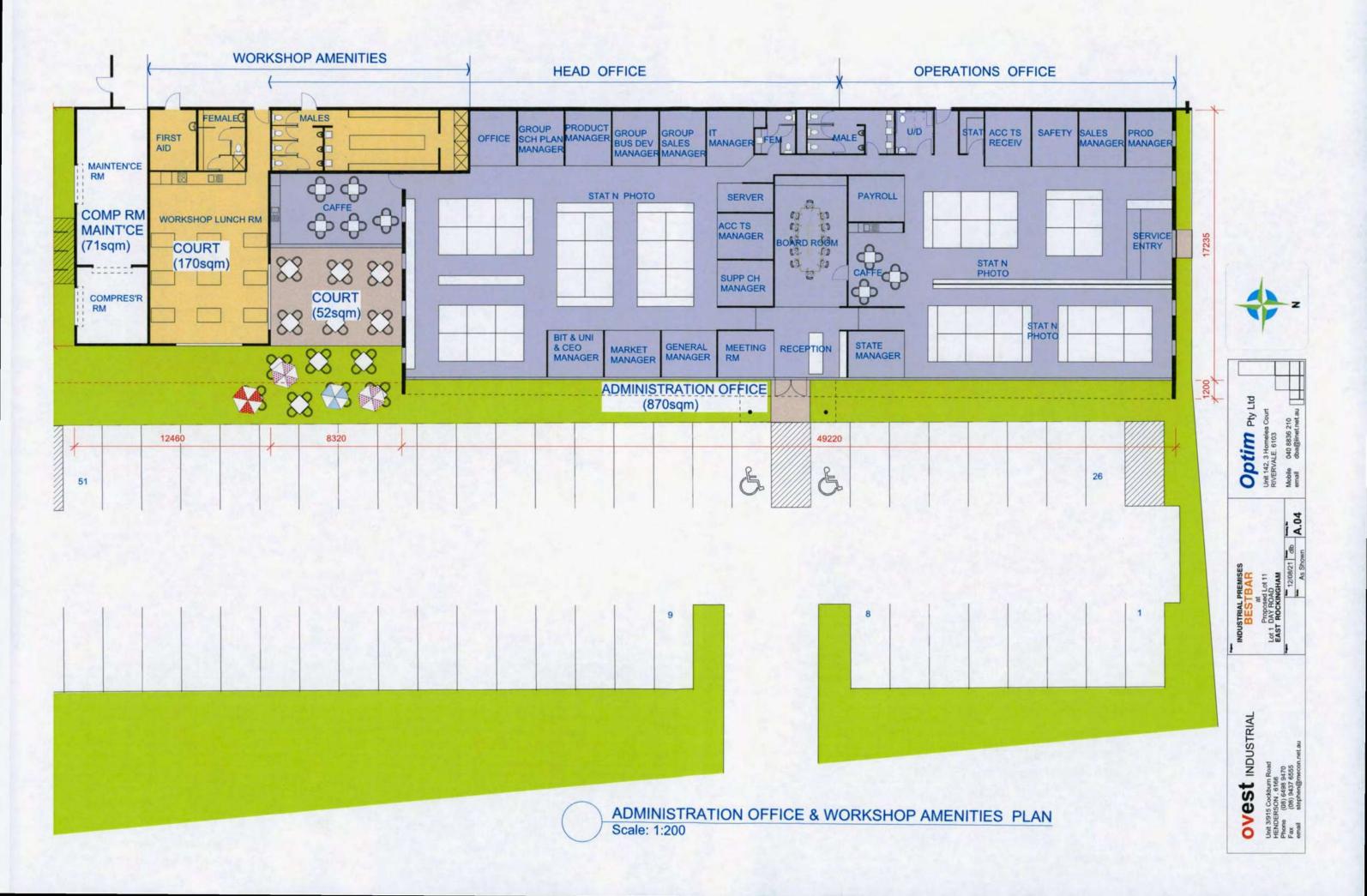
The proposed development is an industrial type land use. The context of the surrounding locality is for a mix of industry land uses. The proposed development is considered compatible with the existing surrounding context of the locality.

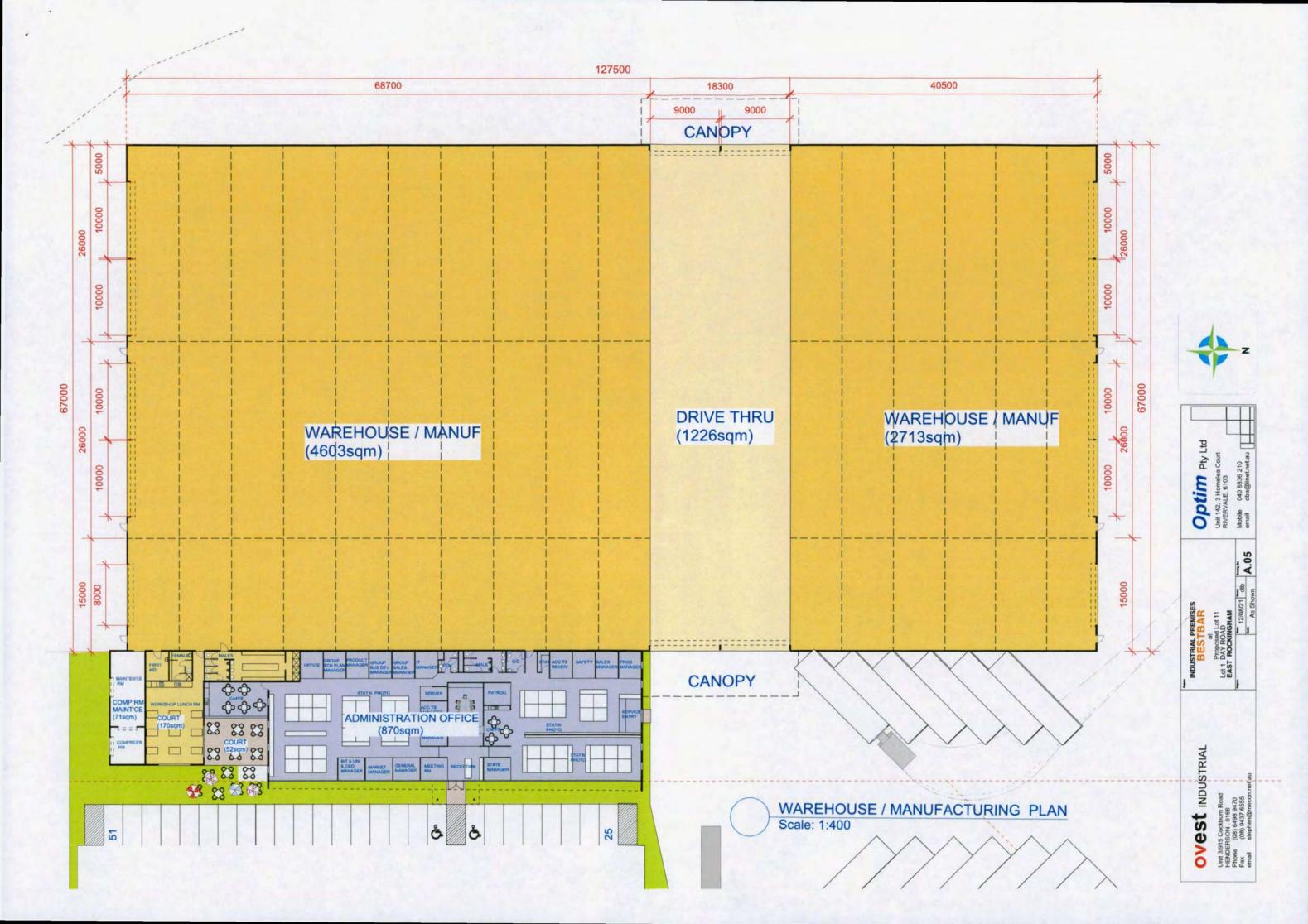
The development "leans" on the clearance of conditions associated with the Subdivision Approval to create the development site as well as construction of the internal access road and formalising bushfire management across the site. Specific details relating to on-site stormwater management have not been provided by the Applicant, despite being requested by the City. Additionally, the details in respect of landscaping require further refinement to ensure there are no conflicts between the approved bushfire management as part of the Subdivision Approval and the allowable landscape treatments.

The City is satisfied that these matters can be addressed by conditions of Development Approval and as such, it is recommended that the application be conditionally approved.

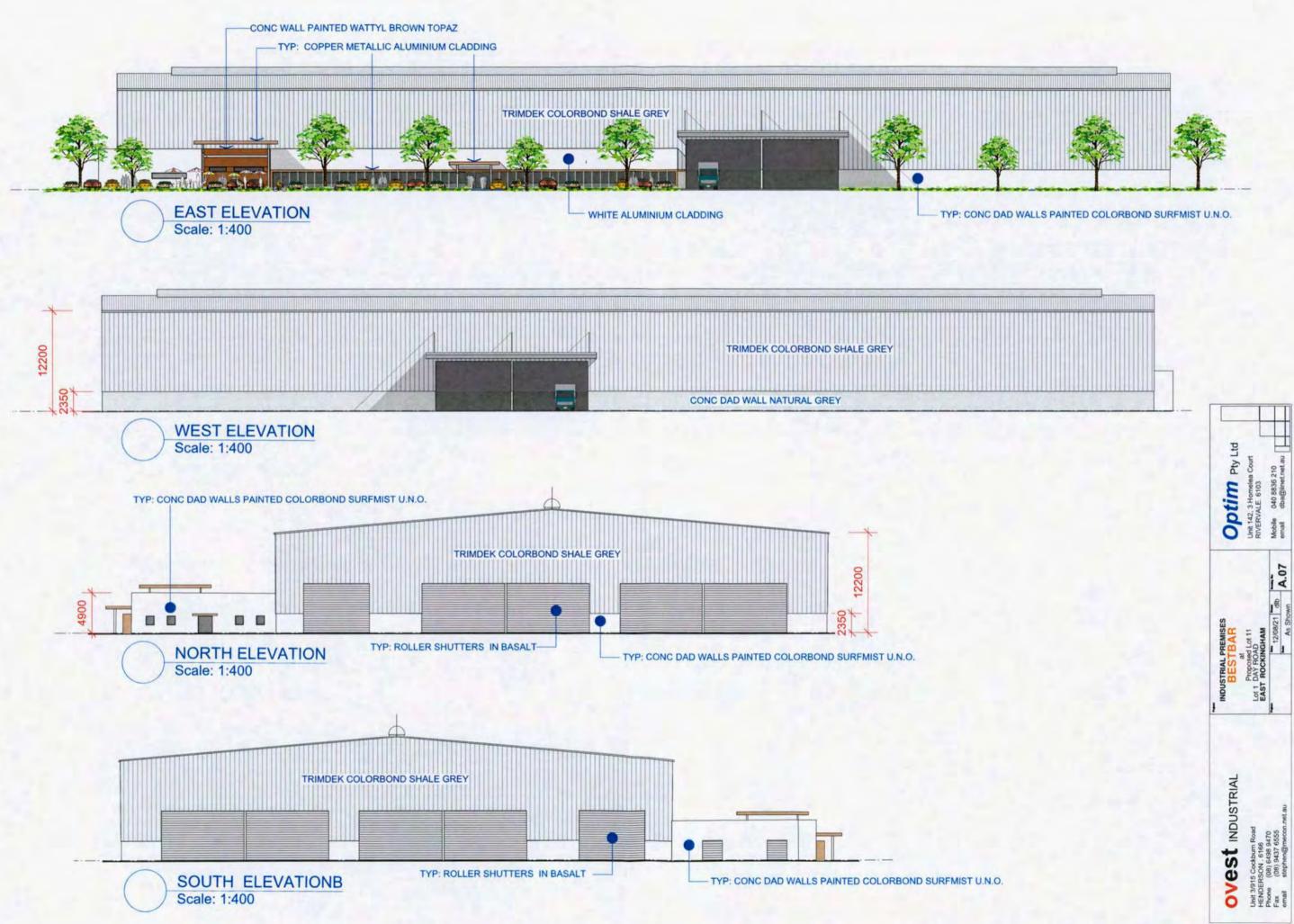














LANDSCAPI Scale: 1:550	65.9 NG PLAN		45.3 19.1	
LANDSCAPE LE PLANT SPEC		QUANTITY	75.46	/
\bigcirc	PLATANUS ACERIFOLIA (LONDON PLANE) 20CM	16		
Θ	CALLISTEMON VIMINALI 20CM	42		
G	ADENANTHOS SERICEA (ALBANY WOOLLYBUSH) 13CM	73		
0	GREVILLEA LEMON SUPREME 17CM	196	ALL LANDSCAPE AREAS OTHER THAN LAWN AREAS SHALL BE COVERED WITH 70MM KARRI MULCH.	
Φ	JUNIPERUS CONFERTA 13CM	101	RETICULATION SHALL BE VIA STREET SUPPLY CONTROLLED WITH AUTO STATION RAINMAKER CONTROLLER WITH SOLENOID VALVES WITHIN	
Ø	GREVILLEA OBTUSIFOLIA 13CM	195	PLASTIC VALVE BOX. GATE VALVE MAIN SUPPLY. POLYPIPE 20MM SUPPLY TO EACH STATION. GURGLER DRIPPERS TO MAIN TREE AND SHRUBS WITH POP UP	
•	GREVILLEA BIPINNATIFIDA 17CM	165	SPRINKLERS TO LAWN AREA.	

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lame :	Mavis Elizabeth Pike		FILE			A/CARD
BN (if applicable)	N/A		OFFIC	ER	COP	Y
ddress :	62 Harrison Street Ro	ckingham		Postcode	6168	
hone: Work:		lome:	Mobile:			
ax:	Ema	il: admin@plannings	olutions.com.au			
	correspondence: Olive			0		
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PROPOSED DEVELOPMENT

Nature of development:	Works	
	Use	
	Works and Use	
Is an exemption from develo	pment claimed for p	eart of the development? Yes 🛛 No 🗹
If Yes, is the exemption for:	Works	
	Use	0
Description of proposed work	ks and/or land use:	Proposed industrial development
Description of exemption cla		N/A
Nature of any existing building	ngs and/or land use	Portion of the site subject to this application is vacant
Approximate cost of propose	ed development (exc	clusive of GST): \$5.8 million
Estimated time of completion	Eollowing devel	lopment approval

DOVERNMENT OF WESTERN AUSTRALIA



Local government reference No.

MRS Form 1 Application for Planning Approval

Owner/s details Registered proprietor/s (landowner/s) or the authorised agent's details must be provided in this section. If there are more than two landowners please provide all relevant information on a separate page. Signature/s must be provided by all registered proprietors or by an authorised agent.

Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.

Full name	Mavis Elizab	eth Pike	An Lit little supervision and starts of A summary		
Company/agency (if applicable)	N/A				
ACN/ABN (if applicable)		exercise of the second second			
Postal address	Land and and and		energie antiques, instantis, instantis		
Town/suburb	I consider the second	STATE OF A STATE OF A STATE		Posto	ode
		authorised agent consets to	the applicant submitting this application	1	
Signature	X ME	lum?			Date 19[8]21
Print name and position If signing on behalf of a company or agenc		beth Pike - So	le landowner		- All
Applicant details		A REAL PROPERTY OF			Sector Sector
Name/company	Planning So	olutions			
Contact person	Oliver Basso	n	manufactory of the second second		
Postal address	GPO Box 27	'09	Cropping and the second second		
Forces to the set	Cloisters Sq	uare PO	and the state of the second second	Postc	ode 6850
own/suburb	Cicicici ci ciq	states in a lot price of the lot of the	specially of the same or of such that had not the		
	(08) 9227 79	the second	Email admin@plar	nningsolutions.co	om.au
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The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the application.

Commission reference No.

Page 1

Additio	nal Information to be provided on the MRS Form 1	
Is the de	velopment within a designated Bushfire Prone Area?	VYes No
	ave bushfire hazard issues been identified and addressed (e.g.by providing a BAL ent(s) or BAL Contour Map and a Bushfire Management Plan with the application)?	✓ Yes No N/A
	elected and the development is in a designated bushfire prone area then a short statement why SPP 3.7 does not apply should be included.	
Does you	r application require determination by a Development Assessment Panel? (DAP)	VYes No
Please re	fer to the following website for DAP requirements: www.dplh.wa.gov.au/daps	
If yes, ple	ase complete DAP Application Form as per DAP requirements.	
Checklist	(supporting information)	
Please co application	emplete the checklist below and ensure that all the relevant information is provided with the m.	
1. Com	oleted Metropolitan Region Scheme (MRS) Form 1	
2. Plans	at a scale not less than 1:500 (A3) showing:-	
	the location of the site including street names, lot number(s), north point and the dimensions of the site;	
	the existing and proposed ground and floor levels over the whole of the land that is the subject of the application, including details of proposed cut and fill, and retaining walls;	
	the location, metric dimensions, materials, finishes and type of all existing and proposed structures, including services, on the land that is the subject of the subject of the application and all existing structures and vegetation proposed to be removed;	
	the existing and proposed use of the site, including proposed hours of operation and buildings to be erected on the site;	
	the existing and proposed means of access and egress for pedestrians and vehicles to and from the site;	
	the location, number, dimensions and layout of all car parking spaces intended to be provided, including provision for the disabled;	
	the location and dimensions of any area proposed to be provided for the loading and unloading of vehicles carrying goods or commodities to and from the site and the means of access to and from those areas;	
	the location, dimensions and design of any open storage or trade display area and particulars of the manner in which it is proposed to develop those areas;	
(ix)	the nature and extent of any open space and landscaping proposed for the site; and	
(x)	proposed external lighting and signage.	
	, elevations and sections, as appropriate, of any building or structure proposed to be erected or d and of any building or structure it is intended to retain;	
	pecialist studies that the responsible authority may require the applicant to undertake in support application such as traffic, heritage, environmental, engineering or urban design studies;	
	nanagement plans the responsible authority may require to support or implement the ation; and	2018)
	ther plan or information that the responsible authority may require to enable the application to termined. This may include scale models or information in digital formats.	Discentee
	Ional Information please refer to Development Control Policy 1.2 .wa.gov.au/getmedia/37533b97-e0ad-4947-9d00-c4d62fa92746/DCP_1-2_general_principles	. Version, 9,2 (Dacember 2016)
	The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the applic Page 2	

PRE LODGMENT CONSULTATION (Optional)

If you have had any pre-lodgment discussions with a City Planning Officer prior to the submission of this Development Application, please confirm the following:

Planning Officer: C	chris Parlane	Date (if known)	10 August 2021	
Matters Discussed	General DA requirements			
Form of communicat	ion: Email 🔀 Phone 🔲 I	Meeting 🔲 Lette	r 🗆	

Should you require further assistance, please call the City's Planning Services on 9527 0748.

Landowner Details (to be completed and signed if landowner is different from applicant)

- · By completing this notice, consent is provided to submitting this application.
- · If there are more than two landowners, please provide all relevant information on a separate page.
- Signatures must be provided by all registered proprietors or by an authorised agent as shown on the Certificate of Title.
- Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.
- Companies, apart from sole directors, are required to provide signatories for two directors, a director and the company seal or a director and a company secretary.

Company (if applicable)	N/A		
Contact Details	Email	Phone	
Address	Street Number/PO Box number, street name, subur 93 Rockingham Road, Rockingham, W	1 3 HOULISON STYPET	6
Name/s	Mavis Elizabeth Pike		
Title/s	Landowner/Sole Director/Director (2 signatures required) Landowner (sole)	Additional Landowner/ Director/Secretary (# applicable)	
Signature/s X	1118 hora		
Date	19/8/21		

Part B - Local government acceptance for assessment

Responsible Authority	Local Government (LG) *Western Australian Planning Commiss *Dual – Local Government and Western Building Management and Works (Depa	
* WAPC/DUAL reporting details	If WAPC or DUAL is selected, please provi	de details of relevant provision (or within covering letter)
Fees for applications (DAP Regulations - Schedule 1)	\$ Amount that has been paid by the applicant \$ Amount to be paid by local government (de	
Statutory Timeframe (regulation 12)	60 days (advertising not required) 90 days (advertising required or other so	theme provision)
LG Reference Number		
Name of planning officer (Report Writer)		
Position/Title		
Contact Details	Email	Phone
Planning Officer's Signature		Date accepted for assessment

Please refer to the Guidance Note: Lodging a DAP Application for further information.

Government of Western Australia Development Assessment Panels

DAP FORM 1

Notice of Development Application to be Determined by a Development Assessment Panel

Planning and Development Act 2005

Planning and Development (Development Assessment Panel) Regulations 2011 - regulations 7, 10 and 21

Application Details

То	Name of local government and/or Western Australian Planning Commission City of Rockingham		
Planning Scheme(s)	Neme of planning scheme(s) that applies to the prescribed land Local Planning Scheme No.2 and the MRS		
Land	Lot number, street name, town/suburb Lot 1 (No.27) Day Road, East Rockingham		
Certificate of Title (provide copy)	Volume Number 254	Folio	
	Location Number	Plan / Diagram Number 37651	
Details of development application made to responsible authority	Summary of Proposal Proposed industrial dev	velopment	
Development Use	Residential / Commercial / Ind Industrial	Residential / Commercial / Industrial / Rural / Mixed Use / Other Industrial	
Estimated cost of development (GST Exc)	\$ 5.8 million		

Part A - Acknowledgement by Applicant and Landowner

Mandatory Application	I give notice that I understand that this is a mandatory Development Assessment Panel application (regulation 5)
Optional Application	I give notice that I have elected to have the development application that accompanies this form determined by a Development Assessment Panel (regulation 6)
Delegated Application	I give notice that I understand that this is an application of a class delegated to a Development Assessment Panel for determination (regulation 9)

Applicant Details (to be completed and signed by applicant)

By completing this notice, I declare that all the information provided in this application is true and correct.
I understand that the information provided in this notice, and attached forming part of the development application will be made available to the public on the Development Assessment Panel and local government websites.

Name		
Company	Planning Solutions	
Address	Street Number/PO Box number, street name, suburb, s GPO Box 2709, Cloisters Square, WA, PO	
Contact Details	Email admin@planningsolutions.com.au	Phone (08) 9227 7970
Signature	Obessen	Date 25 August 2021

Page 1

Development Application Report

Proposed Industrial Development

Lot 1 (27) Day Road East Rockingham, WA

Prepared for Hero Properties Pty Ltd

August 2021

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- 2. use of, or reliance upon, this report in relation to any land other than the subject site; or
- 3. the Client's implementation, or application, of the strategies recommended in this report.

Direct all inquiries to:

Planning Solutions Level 1, 251 St Georges Terrace Perth, WA 6000

All correspondence to: GPO Box 2709 Cloisters Square PO 6850

 Phone:
 08 9227 7970

 Fax:
 08 9227 7971

 Email:
 admin@planningsolutions.com.au

 Web:
 www.planningsolutions.com.au

Project details

Job number	7674	
Client	Hero Properties Pty Ltd	
Prepared by	Planning Solutions	
Consultant Team	Town Planning	Planning Solutions
	Design	Optim Pty Ltd
	Traffic Engineering	Cardno
	Bushfire Management	Eco Logical Australia
	Survey	MNG
	Civil	Tabec Civil Engineering Consultants

Document control

Revision number	File name	Document date
Rev 0	210825 7674 DA Report - East Rockingham Industrial Development	25 August 2021

Appendices

Appendix 1:	Certificate of Title and Diagram
Appendix 2:	Proposed Plan of Subdivision (WAPC ref 160809)
Appendix 3:	Site Feature Survey
Appendix 4:	Development Plans
Appendix 5:	Transport Impact Assessment
Appendix 6:	Bushfire Management Plan
Appendix 7:	Earthworks & Retaining Wall Plan

Contents

1.1 Introduction 1 1.2 Background 1 1.2.1 Pre-lodgement engagement with the City of Rockingham 1 2 Site Details 2 2.1 Land Description 2 2.2 Subdivision 2 2.3 Location 2 2.3.1 Regional Context. 2 2.3.2 Local Context, Land Use and Topography 2 3.3 Proposed Development 4 3.1 Best Bar operations 4 3.2 Proposed Works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million. 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6	1	Preliminary1
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2 Site Details 2 2.1 Land Description 2 2.2 Subdivision 2 2.3 Location 2 2.3 Location 2 2.3.1 Regional Context 2 2.3.2 Local Context, Land Use and Topography 2 3 Proposed Development 4 3.1 Best Bar operations 4 3.2 Proposed works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Statutory Planning framework 6 4.1 Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City'	1.2	
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2.3 Location 2 2.3.1 Regional Context. 2 2.3.2 Local Context, Land Use and Topography 2 3 Proposed Development 4 3.1 Best Bar operations 4 3.2 Proposed Development 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.6 Waste Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme	2.1	Land Description
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2.3.2 Local Context, Land Use and Topography 2 3 Proposed Development 4 3.1 Best Bar operations 4 3.2 Proposed works 4 3.3 Traffic and access 4 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 6 4 Perth and Peel @ 3.5 million 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4	2.3	Location
3 Proposed Development 4 3.1 Best Bar operations 4 3.2 Proposed works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.4 Local Planning Policies 13 5.4 <td>2.3.1</td> <td>Regional Context</td>	2.3.1	Regional Context
3.1 Best Bar operations 4 3.2 Proposed works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 6 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 </td <td>2.3.2</td> <td>Local Context, Land Use and Topography2</td>	2.3.2	Local Context, Land Use and Topography2
3.1 Best Bar operations 4 3.2 Proposed works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 6 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 </td <td>3</td> <td>Proposed Development</td>	3	Proposed Development
3.2 Proposed works 4 3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 6 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3 City of Rockingham Local Planning in Bushfire Prone Areas 7 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 8 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.14 Bicycle Parking and End-o	3.1	
3.3 Traffic and access 5 3.4 Bushfire management 5 3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3.1 Zoning 7 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	3.2	
3.5 Landscaping. 5 3.6 Waste Management. 5 3.7 Stormwater Management. 5 4 Strategic planning framework. 6 4.1 Perth and Peel @ 3.5 million. 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2. 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies. 7 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility. 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered. 13 5.4.1 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.4 Bicst Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	3.3	
3.5 Landscaping 5 3.6 Waste Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.1 State Planning Policies 7 5.2 State Planning Policies 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policies 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19 <td>3.4</td> <td>Bushfire management</td>	3.4	Bushfire management
3.6 Waste Management 5 3.7 Stormwater Management 5 4 Strategic planning framework 6 4.1 Perth and Peel @ 3.5 million 6 4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	3.5	
3.7 Stormwater Management	3.6	
4.1 Perth and Peel @ 3.5 million	3.7	
4.1 Perth and Peel @ 3.5 million	4	Strategic planning framework
4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2 6 5 Statutory Planning Framework 7 5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies. 7 5.2.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	4.1	
5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.2.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	4.2	
5.1 Metropolitan Region Scheme 7 5.2 State Planning Policies 7 5.2.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5	Statutory Planning Framework
5.2 State Planning Policies	5.1	Metropolitan Region Scheme
5.2.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas 7 5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19		
5.3 City of Rockingham Local Planning Scheme No. 2 8 5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.2.1	
5.3.1 Zoning 8 5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.3	
5.3.2 General Industry zone objectives 8 5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.3.1	Zoning
5.3.3 Land use and permissibility 9 5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.3.2	
5.3.4 Local Planning Scheme No.2 Development Standards 9 5.3.5 Matters to be considered 13 5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.3.3	
5.4 Local Planning Policies 15 5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines 15 5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities 19	5.3.4	
5.4.1Local Planning Policy 3.3.8 East Rockingham Development Guidelines155.4.2Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities19	5.3.5	Matters to be considered
5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities	5.4	
	5.4.1	Local Planning Policy 3.3.8 East Rockingham Development Guidelines
6 Conclusion	5.4.2	
	6	Conclusion

Figures

Figure 1:	Aerial Photograph	(wider	context)
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- Aerial Photograph (local context)0 Zoning Map Figure 2: Figure 3:



Proposed Industrial Development Lot 1 (27) Day Road, East Rockingham

1 Preliminary

1.1 Introduction

Planning Solutions acts on behalf of Hero Properties Pty Ltd, the proponent of the proposed industrial development on Lot 1 (27) Day Road, East Rockingham (**subject site**). The proposed development will be located within a 29,491m² land parcel, at the western portion of the subject site, as depicted on the development plans (**development site**).

Planning Solutions has prepared the following report in support of an Application for Development Approval for an industrial development on the subject site.

This report will discuss various issues pertinent to the proposal, including:

- Background.
- Site details.
- Proposed development.
- · Town planning considerations.

This application seeks approval for the use and development of a Best Bar steel reinforcement supplier, with associated head admin and operation office, heavy vehicle drive through access, landscaping, and vehicle parking. The proposed development is suitably located within an emerging industrial area and will expand the offering of services and employment opportunities to the surrounding locality. Furthermore, the subject site forms part of a State-significant strategic industrial area.

Accordingly, Planning Solutions respectfully requests the Metro Outer Joint Development Assessment Panel (JDAP) grant approval to the application.

1.2 Background

1.2.1 Pre-lodgement engagement with the City of Rockingham

Consultation and pre-lodgement engagement has occurred with the City of Rockingham (City) with respect to the proposed development. The following matters were discussed with respect to the proposal:

- The East Rockingham Design Guidelines will be applied under Planning Policy 3.3.8.
- The subject site and surrounds are within the area subject to proposed Scheme Amendment No. 178. A
 revised Planning Policy 3.3.8 East Rockingham Industrial Zones has been prepared to follow the scheme
 amendment.
- The functionality of the site plan layout will need to be demonstrated in terms of traffic movements.
- A Stormwater Management Plan will likely be conditioned in the event development approval is granted.
- A Bushfire Management Plan addressing the planning criteria in the Guidelines for Planning in Bushfire Prone Areas will be required.
- The reporting undertaken as part of the subdivision would largely inform a development application.

The City's comments have been used to inform and finalise this development application.



2 Site Details

2.1 Land Description

Refer to Table 1 below for a description of the land subject to this development application.

Table 1 - Lot details

Lot	Diagram	Volume	Folio	Area (ha)
1	37651	254	30A	13.5393

The subject site is not subject to any limitations, interests, encumbrances and/or notifications materially relevant to the proposed development.

Refer to Appendix 1 for a copy of the Certificate of Title and Diagram.

2.2 Subdivision

On 13 May 2021, a subdivision application was lodged over the subject site by Hesperia with the Western Australian Planning Commission (WAPC) (WAPC ref 160809).

The proposed subdivision configuration provides for the creation of a new lot of approximately 29,491m², which Hero Properties Pty Ltd are now seeking to develop with an industrial development. For clarity, this location will be referred to throughout the report as the development site.

Refer to Appendix 2 for a copy of the proposed plan of subdivision.

2.3 Location

2.3.1 Regional Context

The subject site is located in the City of Rockingham and in the suburb of East Rockingham. The subject site is located approximately 36km south west of the Perth city centre, 4.7km south-west of the Kwinana town centre, and 4.3km east of the Rockingham town centre.

The subject site fronts Lodge Drive (a local road under the jurisdiction of the City) at its northern boundary and Day Road at its eastern boundary. Day Road provides a connection to Mandurah Road to the north east and Dixon Road to the south, both of which are main transport corridors between Rockingham, Kwinana and the surrounding industrial area.

2.3.2 Local Context, Land Use and Topography

The subject site is located within the industrial suburb of East Rockingham. The locality is generally characterised by a range of light industrial, general industrial and service commercial uses.

The land to the north east of the subject site (west of Day Road, north of Lodge Drive, south of Chesterfield Road) is currently undergoing clearing as part of the subdivision for the Development WA Clipper Precinct. A large Conservation Area comprising an area of approximately 98 hectares is located to the west and north of the development site.

The development site is currently undeveloped and vacant, and has previously been cleared as part of the historical semi-rural use of the site. Some insignificant vegetation exists in the northern aspect of the development site. In terms of topography, the development site is generally flat, in accordance with proposed subdivision design levels.

Refer to Figure 1 and Figure 2 below for aerial photographs depicting the subject site and surrounds.



Figure 1: Aerial photograph of the subject site and surrounds from a wider context (Source Nearmap June 2021)



Figure 2: Aerial photograph of the subject site and surrounds from a local context (Source Nearmap June 2021)



3 Proposed Development

3.1 Best Bar operations

The proposal involves the development and use of a Best Bar steel reinforcement supplier, with associated head administration and operation office, access, landscaping, and vehicle parking. Best Bar is a leading Australian Steel reinforcement supplier, supplying some of Australia's largest building and construction companies, with approximately 350+ employees nationwide.

The following sub-sections provide a more detailed description of the components of the proposed development.

3.2 Proposed works

The proposal involves the development of a new industrial building on the development site to accommodate the Best Bar warehouse / manufacturing facility. The proposed development features a modern industrial design, resulting in a functional and attractive industrial built form outcome. In terms of visual amenity, the development will present attractively to the future streetscape and the adjoining developments, with enhanced landscaped areas and provision of shade trees.

The overall development configuration has been carefully and holistically considered to ensure internal operation and site functionality are maximised, while ensuring the facility is designed responsively to the site's location as well as the surrounding locality. Specifically, the proposed development comprises:

- Two warehouses / manufacturing areas with a combined floor area of approximately 7,316m², located centrally within the development site. The warehouses are separated by an 18.3m wide drive through area.
- An open air storage area located in the south western aspect of the development site, comprising an area of 2,139m².
- Head operations office building located to the east of the southern warehouse, comprising an area of 870m². The building comprises the operations office, head office, and workshop amenities.
- Four crossovers to the development site from the future road to the east, which is to be constructed as
 part of the subdivision.
- External car parking areas (which we understand are designed in accordance with the relevant Australian Standards) comprising the following:
 - Ninety-three (93) light-vehicle car parking bays located to the east and south of the head operations office.
 - Fifteen (15) semi-trailer parking bays located in the north eastern aspect of the development site.
 - Two (2) accessible bays and one (1) shared bay are provided at the entrance to the proposed office building.
- Three bicycle racks (space for six bicycles).
- Fire pumps and tanks located in the north eastern aspect of the of the development site.

The proposed building incorporates a range of architectural design features, which results in an attractive modern built form outcome for the subject site. These features include a range of complementary finishes and treatments, contributing positively to the public realm and the industrial East Rockingham locality.

The facility will operate from 0600hrs to 2200hrs, and will accommodate up to 90 staff on site at any one time (30 office staff, 60 factory staff). Refer to **Appendix 4** for the development plans which depict the proposed development.

3.3 Traffic and access

A detailed traffic analysis, in the form of a Transport Impact Assessment (TIA) conducted by Cardno was prepared as part of the subdivision application over the subject site. Refer to Appendix 5 for a copy of the TIA.

Day Road is classified as a 'Distributor A' road by the Main Roads WA Functional Hierarchy, with Lodge Drive classified as an 'Access Road'. In terms of the existing Restricted Vehicle Access Vehicle (**RAV**) Network, both Day Road and Lodge Drive are permitted to accommodate RAV 4 sized vehicles (up to 27.5m in length). In the event the RAV classification is changed to RAV 7, the truncation at the north eastern aspect of the subject site (intersection of Lodge Drive and Day Road) has been sized to accommodate the swept paths of these vehicles. The cul-de-sac at the southern end of the 20m internal road has been designed to accommodate a 180 degree turn of RAV 4 and RAV 7 vehicles.

A 20m wide internal road is proposed to provide access to the western lots within the subdivision and to the development site. Four vehicle access points to the development site are proposed, comprising:

- Three (3) 11m wide crossovers to the future road (to be created as part of the subdivision) for heavy vehicle movements. The two northern 11m wide crossovers are for heavy vehicle movements only, while the southern crossover will accommodate some light vehicle movements from staff who are familiar with the facility.
- One (1) 6m wide full movement crossover to the future road, for light vehicle movements only.

The proposed vehicle crossovers and accessways result in efficient and uninterrupted movements of vehicles through the site. The proposed site layout and access arrangements result in a safe and coordinated circulation system for the overall development and are not expected to result in any adverse impacts on the road network.

The proposed development has been designed to facilitate the safe and efficient movements of industrial vehicles. The swept path movements to the site are analysed in the TIA, and are shown to be satisfactory.

3.4 Bushfire management

As the subject site is located within a designated 'bushfire prone area' in accordance with the Department of Fire and Emergency Services Map of Bushfire Prone Areas, a Bushfire Attack Level (**BAL**) assessment was undertaken over the subdivision area, inclusive of the development site. A Bushfire Management Plan (**BMP**) and associated formal reporting has been prepared in support of the subdivision and new lot creation process, and sets out appropriate mitigation/bushfire protection measures satisfying the relevant requirements of SPP3.7.

Refer to **Appendix 6** for a copy of the Bushfire Management Plan and formal reporting prepared by Eco Logical Australia and to section 5.2 of this report for further bushfire commentary.

3.5 Landscaping

The proposed development provides approximately 2,308m² of soft landscaped areas (7.8% of the development site area). Appendix C – Suggested Plant Species of the East Rockingham Industrial Park Design Guidelines has been used to inform the species of flora. Further detail on landscaping can be provided as a condition of development approval. Refer to the concept landscaping plan in **Appendix 4**.

3.6 Waste Management

Refuse and recycling will be collected on site by a private contractor. Waste collection vehicles are expected to access the site during off peak periods. It is expected a waste management plan can be provided at detailed design, as a condition of development approval, to the satisfaction of the City.

3.7 Stormwater Management

Stormwater runoff will be contained onsite to the extent possible, with a stormwater management plan expected to be provided at detailed design through an appropriately worded condition of development approval.



4 Strategic planning framework

4.1 Perth and Peel @ 3.5 million

Perth and Peel @ 3.5 million expands upon the Directions 2031 and Beyond strategic plan and provides further detailed sub-regional planning frameworks to inform future rezoning, subdivision and development proposals. The South Metropolitan Peel sub-regional Planning Framework identifies the subject site as an 'Industrial Centre'. In this regard, the subject site is appropriately located in an industrial area.

Strategically, it is projected that within the Kwinana Industrial Area and Rockingham Industrial Zone, 775 hectares of land will be required by the time the population in the Perth and Peel regions reach 3.5 million. The economic profile of the area is not expected to change, with manufacturing, fabrication and construction remaining as dominant industries for employment.

4.2 Scheme Amendment No.178 to the City's Local Planning Scheme No.2

In June 2020, the City's Council considered Scheme Amendment No.178 (Scheme amendment) to Local Planning Scheme No.2 for adoption, following the conclusion of public advertising.

During the assessment of the proposed Scheme Amendment, concerns were raised by the officers of the Department of Planning, Lands and Heritage (**DPLH**) with respect to the City's recommended landscape and building setbacks. At the WAPC Statutory Planning Committee (**SPC**) meeting on 24 November 2020, The City requested that the item be deferred to allow for further discussion on setbacks.

On 3 December 2020, the City was advised that the SPC had endorsed the DPLH's recommendation for significantly reduced setbacks to the City 'gateway roads'. The recommendation and the scheme amendment was forwarded to the Minister for Planning for Final Approval. On 14 December 2020, the City wrote to the Minister for Planning prior to her decision on the Scheme Amendment. The Minister for Planning responded to the City on 28 January 2021, advising the following:

"The City's rationale for the proposed 50 and 100 metre building setbacks, and landscaping requirements were considered in the context of the relevant planning framework at the time of my decision. I also gave due consideration to recommendations from both the City and the WAPC, and submissions received during advertising. Accordingly, I determined that a reduced setback is most appropriate and commensurate with development outcomes of adjacent and nearby industrial areas. Additionally, the subject land forms part of a State-significant strategic industrial area, of which the developable land should be optimised."

Accordingly, the Minister has not supported the City's request that the Amendment should be either refused, or at least readvertised.

Scheme Amendment No.178 (East Rockingham Industrial Zones) was re-presented to the City's Planning and Engineering Services Committee meeting on 15 February 2021, and seeks to:

- Include building and landscaping setbacks and provisions for screen landscaping along the gateways of Mandurah Road and Patterson Road. It is also proposed to delete clauses and references to IP14 and include new and revised zone objectives.
- Revised Planning Policy No.3.3.8 East Rockingham Industry Zones will apply to all Industrial zoned land and the three East Rockingham Design Guidelines will be deleted and incorporated into one set of 'Development Standards'.
- Revocation of Planning Policy No.7.1 East Rockingham Industrial Park (PP7.1), as it duplicates existing environmental legislation.

At the time of writing this report, the progress of Scheme Amendment No.178 is unresolved, but importantly does not affect the merits of this proposal.



5 Statutory Planning Framework

5.1 Metropolitan Region Scheme

The subject site is zoned 'Industrial' under the provisions of the Metropolitan Region Scheme (MRS) and is unaffected by any MRS reservations.

Improvement Plan No.14 (IP14) was established in 1988 and applies over the subject site and surrounds. The objectives of IP14 are as follows:

The land the subject of Improvement Plan No.14 represents the remaining land resource available for heavy industry within the Perth Region and is unique in its relationship to existing and future port and rail infrastructure. The aim of the Plan therefore is to ensure that the area is developed in a manner which has regard to potential industries and their infrastructure needs in addition to their pollution and hazard influences on neighbouring urban areas.

IP14 is therefore not expected to preclude any industrial development of the subject site.

The proposed development is considered entirely appropriate under the MRS, being an industrial development to service the surrounding locality within the East Rockingham industrial area.

5.2 State Planning Policies

5.2.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas

The subject site is located within a 'Bushfire Prone Area' under the Department of Fire and Emergency Services (DFES) Map of Bushfire Prone Areas.

State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP3.7) provides the foundation for land use planning to address bushfire risk management in Western Australia. The Guidelines for Planning in Bushfire Prone Areas is a supplementary document used to support SPP3.7. Clause 3.2.1 of the Guidelines provides information relating to the level of information required for designated areas where there is no perceived current hazard.

A BAL assessment was undertaken over the site, confirming the majority of the development site has a rating of BAL-12.5. The western boundary of the development site is subject to a BAL rating of BAL – FZ to BAL - 19. It is worth noting the BAL-40 rating only extends between approximately 5m (northern aspect) and 22m (south western aspect) into the development site.

The proposed warehouse/manufacturing buildings are set back between 24m and 46m from the western lot boundary. We therefore understand BAL rating of BAL-29 or less can be achieved at future habitable buildings based on the proposed development layout.

The BMP prepared in support of the proposed subdivision sets out the appropriate mitigation/bushfire protection measures satisfying the relevant requirements of SPP3.7.

Refer to **Appendix 6** for a copy of the formal bushfire reporting that was undertaken by Eco Logical Australia as part of the subdivision application.



5.3 City of Rockingham Local Planning Scheme No. 2

5.3.1 Zoning

The subject site is zoned 'General Industry' under the City of Rockingham Local Planning Scheme No. 2 (LPS2). Refer to Figure 2, zoning map below.



Figure 3: Zoning map extract of LPS2 (Source: DPLH)

5.3.2 General Industry zone objectives

Pursuant to Clause 4.10.1 of LPS2, the objectives of industrial zoned land within the City are:

- To provide for a range of industrial land uses by establishing guiding principles and policies that are environmentally and socially acceptable;
- b) To encourage and facilitate the establishment of attractive and efficient industrial areas ensuring that acceptable levels of safety and high standards of amenity are provided through the application of appropriate land use design and landscaping controls; and
- c) To ensure that industrial areas are developed in a manner which has due regard to potential industries and their infrastructure needs, and that adjacent urban areas are not subject to pollution and hazards.

The proposed development is considered entirely acceptable and consistent with the objectives of the General Industry zone for the following reasons:

- It will establish an industrial land use that is environmentally and socially acceptable. The use is not a
 prescribed premises and results in no adverse amenity or environmental impacts.
- It facilitates the establishment of an attractive and functional development. Light vehicle parking areas
 have largely been separated from areas of heavy vehicle movements for safety. The proposed substantial
 areas of soft landscaping will ensure a good level of amenity.
- The proposed development is a direct response to the infrastructure needs of a specific industry.

The proposed development is consistent with the objectives of the General Industry zone and warrants approval. The development is appropriately located within an industrial area, zoned Industrial under the MRS and General Industry under LPS2, and is generally consistent with the established built form of the Light Industry zone to the south.

5.3.3 Land use and permissibility

Pursuant to the provisions of Schedule 1 – Interpretations of LPS2, the proposed development seeks approval for an 'Industry' land use, meaning:

Industry: means premises used for the manufacture, dismantling, processing, assembly, treating, testing, servicing, maintenance or repairing of goods, products, articles, materials or substances and includes facilities on the premises for any of the following purposes —

- (a) the storage of goods;
- (b) the work of administration or accounting;
- (c) the selling of goods by wholesale or retail;
- (d) the provision of amenities for employees;
- (e) incidental purposes.

The proposed development is entirely consistent with the general definition of an 'Industry' use, as it provides for the manufacture of goods, products, and materials, and includes facilities for the work of administration or accounting and amenities for employees.

More specifically, the proposed use is defined as 'Industry - General':

Industry – General: means an industry other than a cottage, extractive, general (licensed), hazardous, light, noxious, rural or service industry.

Pursuant to Table No. 1 – Zoning Table of LPS2, Industry – General is a 'D' (discretionary) use within the General Industry zone and is capable of approval at the City's discretion. The proposed use is entirely appropriate and suitable for establishment on the development site in consideration of its zoning under the MRS and LPS2.

5.3.4 Local Planning Scheme No.2 Development Standards

Part 4 of LPS2 outlines the general development standards and requirements for zoned land. Clause 4.10 contains the standards applicable to the industrial zoned land. An assessment against the relevant requirements is provided in **Table 2** below.

Requirement	Provided	Compliance
4.10.2 Form of development		e
In considering an application for development approval on industrial zoned land, the Local Government, in addition to any other aim or objective of the Scheme and to any other matter it is required or permitted to consider, shall have regard to the following:	The proposed development is designed to a high standard, with landscaping and appropriate setbacks to ensure no adverse impacts are experienced by future developments. In addition, the facility features a contemporary built form and design which will be complimentary to the industrial locality.	*
a) promotion of a high standard of building development, landscaping and working environment;	The proposed development will have no adverse impacts on the amenity of residential and open space areas due to its location in an industrial area.	*
 b) protection of the amenity of adjacent residential and open space areas; c) management of drainage systems and land 	It is expected a detailed stormwater management plan can be prepared as an appropriately worded condition of development approval.	*
uses to promote groundwater conservation; and d) to ensure safe movement of vehicular and pedestrian traffic in the area.	The site layout has been designed to ensure efficient, functional, and safe movements of vehicles and traffic. Pedestrian traffic is expected to be minimal.	*

Table 2 - Industrial development requirements

Requirement	Provided	Compliar
4.10.3 Parking		
Provision shall be made for the on-site parking of motor vehicles for all development on industrial zoned land in accordance with the provisions of clause 4.15 and Table No.2.	Industry, Showroom, Warehouse: 1 bay per 50m ² NLA for factory units and showrooms, plus 1 bay per 100m ² NLA for warehouses or 1 bay per employee, whichever is the greater	
	 Warehouse/manufacturing building NLA is 7,316m², requiring 73 bays. A maximum of 90 employees are proposed on 	
	site at any one time, requiring 90 bays. A total of 90 bays are required. The development proposes ninety-three (93) light-vehicle car parking bays, which is sufficient to accommodate the maximum number of staff on site and any visitors. Furthermore, fifteen (15) semi trailer parking spaces are provided. The proposed car parking is acceptable and warrants approval.	*
4.10.4 General development provisions		
On all industrial zoned land within the City, unless otherwise specified in the Industrial Policy or East Rockingham Development Guidelines: a) The facades of all buildings visible from the primary road or open space area shall be of masonry construction or any other material approved by the Local Government in respect of the ground floor level, provided that if concrete panels are used, such panels must have an exposed aggregate or textured finish. The second floor level, or its equivalent may be constructed of any other material in accordance with the Building Code of Australia and to the satisfaction of Local Government.	The construction of the building is to be primarily of grey Colorbond. Various white & copper coloured aluminium cladding, texture and glazing is incorporated to increase amenity of the building. Further details of materials can be provided at the detailed design phase prior to the issue of the building permit if required.	*
b) No fence visible from a road or open space reserve shall be constructed of materials/colours which in the opinion of Local Government are unsightly or detract from the amenity of the locality or be used for signage where the approval of the Local Government has not been granted. Any industrial (e.g. chain wire) fencing forward of the street building setback line shall be landscaped to the satisfaction of the Local Government.	N/A – No fencing is proposed as part of this application. Details of fencing can be provided as part of a detailed landscaping plan at detailed design. It is expected any fencing will be of an industrial nature (i.e. black palisade).	N/A
c) No use of the area between the street alignment and the prescribed building setback line shall be permitted other than for landscaping, or for pedestrian and vehicular circulation and parking, except that not more than 20% of the setback area may be used for trade display purposes, to be approved at the discretion of the Local Government.	The substantial setbacks between the street frontage and the building comprise landscaping, parking, and vehicle access. The office building is set back a minimum of 29.5m from the eastern lot boundary (of the development site), with a 10m wide landscaping strip and car parking area in between.	¥

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Requirement	Provided			
4.10.5 Improvement Plan No.14 (IP 14)				
a) Improvement Plan No. 14, hereinafter referred to as IP14, was initiated in 1988 under the provisions of Section 37A of the Metropolitan Region Town Planning Scheme Act 1959 (as amended) for the purpose of advancing the planning, development and use of the land affected by the Plan for industrial purposes.	The application of IP14 has be considered in this submission.			
b) In considering applications for development approval or otherwise planning for development on industrial zoned land in the East Rockingham Industrial Park (IP14 Area), the local government shall have regard to the Industrial Policy.				

c) The Industrial Policy incorporates both general and specific policy statements. General policy statements address:- The proposed development is suitably located within an industrial area and is not expected to result in any adverse impacts in terms of air quality, noise, risks and hazards, water quality and social environment.

ication of IP14 has been acknowledged and

Proposed Industrial Development Lot 1 (27) Day Road, East Rockingham

Compliance

- Noise;

Air Quality;

- Risks and Hazards;

- Water Quality: and

- Social Environment.

4.10.6 East Rockingham Development Guidelines

a) The East Rockingham Development Guidelines have been prepared to guide the orderly development of serviced industrial land within the East Rockingham Industrial Park (IP14 Area).

The main objectives of the East Rockingham Development Guidelines are:-

(i) To achieve an attractive and unified development which acknowledges the goal of conserving and enhancing the natural environment by emphasising the retention of natural vegetation and the introduction of complementary quality landscaping and welldesigned buildings. An assessment against the East Rockingham Development Guidelines in provided in section 5.4.1 of this report.

Landgate historic aerial imagery suggests the development site has been largely cleared of vegetation from circa 1965 onwards. The vegetation in the northern aspect of the development site is therefore regrowth and is to be removed as part of the proposed subdivision (and this development application).

The proposed development provides approximately 2,308m² of soft landscaped areas (7.8% of the development site area). Refer to the concept landscaping plan in **Appendix 4**.

Appendix C – Suggested Plant Species of the East Rockingham Industrial Park Design Guidelines has been used to inform the species of flora. Further detail on landscaping can be provided as a condition of development approval.

The proposed buildings are well designed, providing a contemporary and functional built form that is purpose built for the proposed tenant and land use.



Proposed Industrial Development Lot 1 (27) Day Road, East Rockingham

Requirement	Provided	Compliance
(ii) To achieve a degree of consistency and compatibility in the built form and landscaping, whilst allowing for individuality and a well presented corporate or market image; and	The proposal is consistent with the expected type of industrial built form envisaged for the locality.	*
(iii) To avoid unsightly and poorly planned development and enhance and protect the investment of all owners within the East Rockingham Industrial Park and the investment of others in the region.	The proposed development provides a substantial investment in the East Rockingham Industrial Park by means of a contemporary and functional industrial development.	1
c) In considering applications for development approval and otherwise planning for development within the East Rockingham Industrial Park, the local government shall have due regard to the East Rockingham Development Guidelines.	Noted. An assessment against the East Rockingham Development Guidelines is provided in section 5.4.1 below.	*
4.10.9 General Industry Zone		
On all land zoned General Industry, unless otherwise specified in the East Rockingham Development Guidelines:- a) Setbacks: A minimum front setback of twenty five (25) metres shall apply for major structures and a minimum front setback of fifteen (15) metres shall apply to offices, gatehouses and amenity buildings. Where a lot has frontage to two or more streets, the prescribed front setbacks of twenty five (25) metres and fifteen (15) metres shall apply to the primary street and the setback to the secondary street shall be determined by the local government, but shall not be less than the prescribed minimum landscaping setback requirement.	The office building is set back a compliant minimum distance of 29.5m from the eastern lot boundary (of the development site).	*
b) Landscaping. Landscaping shall be provided on all street frontages for a distance of not less than 10 metres from each property boundary. At the discretion of local government, additional landscaping may be required on the remainder of the site.	The proposed development provides approximately 2,308m ² of soft landscaped areas (7.8% of the development site area). A 10m wide landscaping strip is provided along the internal road frontage. A conceptual landscape plan is provided as part of the development plans, which indicates the type of planting. Refer to Appendix 4 . The landscaping provision of the proposed development is entirely appropriate, ensuring a good level of amenity and aesthetic to staff and visitors, while achieving its function as an industrial development within an industrial area.	*

Having regard to **Table 2** above, the proposal is consistent with the applicable development requirements of LPS2 and warrants approval accordingly.

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5.3.5 Matters to be considered

Clause 67(2) of the *Planning and Development (Local Planning Schemes) Regulations* 2015 (**Deemed Provisions**) sets out the matters for which due regard shall be given when considering an application for development approval. The relevant considerations are addressed in **Table 3** below.

T	able	3	Matters	to	be	considered	

Matter to be considered	Provided	
 (a) the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area; 	The aims and provisions of LPS2 are considered and addressed throughout this report.	
(b) the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;	This report demonstrates the proposed development is largely compliant with the City's local planning framework. Scheme Amendment No.178 (East Rockingham Industrial Zones) was presented to the City's Planning and Engineering Services Committee meeting on 15 February 2021 and is not considered to affect the merits of this proposal. Refer to section 4.2 of this report for further detail. There are no other known scheme amendments that would affect the merit of this proposal.	
(c) any approved State planning policy;	The relevant State Planning Policies are addressed in section 5.2 of the	
(e) any policy of the Commission;	report.	
(f) any policy of the State;		
(g) any local planning policy for the Scheme area;	Refer to section 5.4 of this report.	
(j) in the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve;	N/A – The subject site is not reserved under LPS2.	
(k) the built heritage conservation of any place that is of cultural significance;(l) the effect of the proposal on the cultural heritage significance of the area in which the development is located;	The development site is not included on the City's Register of Places of Cultural Heritage Significance. The heritage building in the south eastern aspect of the subject site is being considered as part of the subdivision.	
 (m) the compatibility of the development with its setting including – (i) the compatibility of the development with the desired future character of its setting; and (ii) the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development; 	The design of the facility ensures the built form responds appropriately to the site's context within an emerging industrial area. The development features an attractive contemporary built form and is of an appropriate scale for an industrial development. The choice of materials, colours and finishes is appropriate for an industrial development at this location and is respectful of the site's context. The subject site is zoned General Industry under the City's LPS2 and forms part of the East Rockingham Industrial Park. The proposed development is industrial in nature, consistent with this classification. The nature of the proposed development is compatible with its surroundings and poses no undue impact on the locality.	

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Proposed Industrial Development Lot 1 (27) Day Road, East Rockingham

Matter to be considered	Provided		
 (n) the amenity of the locality including the following — (i) environmental impacts of the 	As outlined above, the proposed development responds to the character of the industrial area through the use of various colours, materials, textures and landscaping.		
development; (ii) the character of the locality; (iii) social impacts of the development;	The proposed development will have positive social impacts for the locality and its surrounds, through the provisions of important industrial services within an industrial area. An increased level of passive surveillance in the area will also result from the proposal.		
(o) the likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource;	Stormwater runoff will be contained onsite to the extent possible, with a stormwater management plan expected to be provided at detailed design through an appropriately worded condition of development approval.		
(p) whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	The subject site does not contain any existing trees of significance. A variety of low growing native vegetation and trees are proposed within the site, along the street frontage. Refer to the concept landscape plan in Appendix 4 .		
(q) the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;	Bushfire risk has been considered in sections 3.4 and 5.2.1 of this report.		
(r) the suitability of the land for the development taking into account the possible risk to human health or safety;	The proposed development is suitably located within an industrial area, away from any sensitive land uses, and is a discretionary use within the Industry zone.		
 (s) the adequacy of — (i) the proposed means of access to and egress from the site; and (ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles; 	A TIA has been prepared (in support of the subdivision of the parent lot) which demonstrates the proposed development is sound from a traffic and access perspective – refer Appendix 5 . Access to the site from Lodge Drive and the future internal road is entirely appropriate. The proposed crossover widths and internal vehicle accessways allow for the appropriate manoeuvring of vehicles through the site.		
(t) the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic	A TIA has been prepared (in support of the subdivision of the parent lot) which demonstrates the subdivision is sound from a traffic and access perspective – refer Appendix 5 .		
flow and safety;	In total, 1,010 trips are estimated to be generated by the subdivision of the subject site on a typical weekday. Any additional traffic generated by the development is minimal and will not impact on the surrounding road network, with Lodge Drive currently only used by the existing development to the north.		
 (u) the availability and adequacy for the development of the following — (i) public transport services; (ii) public utility services; 	The availability of alternative transport options near the development site is considered in the TIA included at Appendix 5 . The details of the storage and collection of waste / management		
 (ii) public utility services; (iii) storage, management and collection of waste; 	procedures can be provided at detailed design, as an appropriately worded condition of development approval.		
 (iv) access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities); 	Two accessible bays are provided for the development in accordance with Australian Standards.		
 (v) access by older people and people with disability; 			



Mat	ter to be considered	Provided
(v)	the potential loss of any community service or benefit resulting from the development other than potential loss that may result from economic competition between new and existing businesses;	The proposed development will not result in the loss of a community service. Rather, the proposed development will contribute to the delivery of a critically important service (steel manufacturing) and amenities for the East Rockingham Industrial Park.
(w)	the history of the site where the development is to be located;	The development site is currently undeveloped and appears to have been used for semi-rural lifestyle purposes. The site is now earmarked for industrial development.
(x)	the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;	It is noted the proposed development will increase employment opportunities in the locality and provide important services to the community.
(y)	any submissions received on the application;	Submissions will be considered during the assessment of the application. However, we note this is a discretionary use that doesn't require mandatory public advertising.

Having regard to **Table 3** above, it is considered that the proposed development meets the relevant due regards of the Regulations and warrants approval accordingly.

5.4 Local Planning Policies

5.4.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines

Local Planning Policy 3.3.8 East Rockingham Development Guidelines (**Development Guidelines**) sets out the development standards applicable to land within the East Rockingham Industrial Park. The subject site is located within Precinct Four – General Industry, as depicted in Figure 1 (Structure Plan) of the Development Guidelines.

Clause 4.4 - General Industry of the Development Guidelines states that:

The land set aside for general industry provides a transitional buffer zone between heavy and other land uses. The priority use of this precinct is for general industries which are ancillary to or bear a support relationship in precincts 1,2 and 3. Examples would be steel fabrication, engineering workshops, specialist equipment supply, repairs and maintenance and warehousing and distribution.

An assessment against the relevant requirements of the Development Guidelines is provided in Table 4 below.

Requirement	Provided	Compliance
5.2.1 Site Layout		
 When planning the site layout and design of buildings, various issues are to be considered. These include: Orientation – prevailing winds, sun angles, street 'image' Landform, existing vegetation and required new landscaping – site access, retention of mature trees (plus other native plants of value Adjacent land uses and built form – consider landscaping and complimentary designs 	The layout of the development site has been appropriately considered and designed in consideration of the streetscape, existing and proposed site considerations and future adjoining land uses.	*

Table 4 - Assessment against the relevant provisions of the East Rockingham Development Guidelines

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Requirement	Provided	Complianc
 Contribution to 'streetscape' – buildings 'façade' the street, screening. 		
5.2.2 Setbacks		
Front setbacks As per specific requirements for General Industry zones.		
Type 2 internal roads 15m landscaping 25m setback	A compliant 29.5m front setback is proposed, with a 10m wide landscaping strip.	~
Specific requirements for General Industrial zones 10m landscaping 15 metres for offices, gatehouses, amenity buildings 25 metres for major structures		
<u>Side and Rear Setbacks</u> Side setbacks – 6 metres for one side only. For lots less than 300m ² in area, the setback may be reduced to 3 metres. Rear setbacks – 6 metres. For lots less than 300m ² in area, the setback may be reduced to 3 metres.	The proposed development provides a 22m setback to the northern lot boundary, a 24m setback to the rear (western) lot boundary and a 47m setback to the southern lot boundary.	*
Secondary Street Setbacks Secondary street setbacks are to be in accordance with the Local Authority Town Planning Scheme or at Council's discretion, so long as they are no less than the required depth of landscaping buffer.	N/A – The development site does not adjoin a secondary street.	N/A
5.2.3 Height Limit		
There is generally no height limit applicable within the Park. High structures are best located towards the centre of the lot to avoid overshadowing and suchlike. Restrictions on building and structure heights will be at Council's discretion and in accordance with the Building Code of Australia.	The proposed 15.2m maximum height of the building (apex) is considered entirely acceptable for an industrial building within an industrial area, which is not in proximity to any sensitive land uses. The building is located centrally within the development site.	*
5.2.4 Site Coverage/Plot Ratio		
Site coverage and plot ratio is to be in accordance with the Local Authority Scheme Text Requirements and as determined by setbacks, landscaping, parking, and the Building Code of Australia.	There is no plot ratio applicable to the development site under LPS2. The proposed development (structures) covers approximately 8,542m ² (29%) of the development site and is considered appropriate site coverage.	*
5.2.5 Orientation and Shading		



	Lot 1 (27) Day Road, Ea	ast Rockingha
Requirement	Provided	Compliance
Site layout and building orientation, should as much as possible, take into consideration the benefits and/or detrimental effects of sun angles, prevailing breezes, and vision to and from the site.	The building is located centrally within the development site, facing the street frontage.	*
5.2.6 Site Levels		
The sites within the park are generally flat, however, with some large buildings envisaged, even shallow gradients can mean substantive earthwork. The intent should be to minimise the extent of earthmoving and 'site interference'. It should be understood that earthworks adjacent to existing mature trees may affect their ability to survive and should therefore be avoided.	The extent of earthworks proposed on the development site are proposed to be kept to a minimum. A finished surface level (FSL) of 3.3m AHD is proposed for the development site. This is generally in accordance with the existing site levels which range from 2.8m AHD to 3.4m AHD. Refer to Appendix 7 for the Earthworks & Retaining Wall Plan prepared by Tabec.	*
5.2.7 Carparking, Vehicular and Pedestrian Mov	vement	
The number of car parking bays required will be in accordance with the Local Authority Scheme Text. Car parking can be replaced between the landscape setback and the building line. Similarly, bay sizes. Driveway widths and turning circles are to suit these and other functional requirements. Street parking is discouraged within the park; the service roads are likely to be used by large trucks and other heavy vehicles and street parking would impede manoeuvrability and safety.	The proposed parking arrangement and number of car parking bays is compliant with Table 2 – Parking requirements of LPS2, as demonstrated in Table 3 of Section 5.3.4 of this report. We understand car parking bays will be constructed in accordance with the Australian Standards.	*
 Roadways and parking within a development must be planned to achieve the following: Separation of service/haulage vehicles from visitor and staff parking areas; Siting of parking area adjacent to areas of buildings that are commonly accessed; Provide suitable species of shade trees at a ratio of 1 per 4 car bays, evenly throughout parking areas; Provide clear paths for pedestrian movement separate from areas of frequent vehicular movement; and Consider the visitor parking areas as an extension of the corporate/market image in terms of its presentation. 	The vehicle access locations (crossovers) are appropriately located to minimise any conflict with staff and visitors of the development. 93 car parking bays are proposed (24 trees required). 58 shade trees are proposed, of the London Plane and Callistemon varieties. Specific locations can be refined at detailed design if required. The car parking layout has been considered, to limit any light vehicle or pedestrian interaction with the heavy vehicle movements. The vehicle circulation pattern minimises any conflict and is best practice design.	*
5.2.8 Fencing		
Security fencing will be permitted along side and rear boundaries; front fencing to any street frontage should be limited to a minimum. Where security fencing is required to a street frontage, the fence line is preferably to be setback to the building line but as a minimum, must be set behind the required landscaping buffer strip. The minimum standard for fencing is black PVC coated galvanised link mesh.	N/A – No fencing is proposed as part of this application. However, it is anticipated that any fencing will be of an industrial nature (i.e. black palisade fencing). The specific fencing details can be confirmed at detailed design.	*

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Requirement	Provided	Compliance
5.2.9 Service, Storage & Display Areas		
All service and storage areas are to be setback behind the front building line and screened so as not to be visible from the street. Landscaping and obscure (approved) fencing can be utilised to screen these areas. Landscaped display areas can be incorporated into the forward areas of the site. Approval is required for any loose or permanent display and will be at the discretion of Landcorp and Council.	The service areas and storage areas are screened from the street frontage. The open air storage air in the south western aspect of the site is substantially set back from the street and is partially sleeved by the buildings and the proposed landscaping. Furthermore, the storage area fronts a drainage reserve to the south.	*
5.3.1 Architectural Form and Massing		
 Buildings should be sited to deal appropriately with the sun, prevailing weather conditions and pre-existing site levels. vegetation, and landscaping. Consider views to and from the building to enhance: Visual appeal Market or corporate 'image' Safety / security / access and egress Property value Buildings should be designed to 'address' the street with consideration given to the impression from the street and a point of entry. The main entrance to the building itself should be clearly visible or 'signalled' in the design. Designs should incorporate porticos or 'entry statements' and glazed areas rather than 'blank' facades facing the street. 	The building is appropriately sited in consideration of existing site conditions, with landscaping to enhance visual appeal. The building addresses the street frontage to the east and provides a clear and legible entrance.	*
5.3.3 Outbuildings and Other Structures		
Where there are numerous separate buildings on the site, the design of each should be considered with the 'whole of the site' planning so that they may present as an integrated development. Where possible future expansion and staging should be considered so as to integrate these buildings. Also use of colours, form and materials should be consistent amongst all these buildings.	The proposal presents as an integrated development, with consistent colours and materials Refer to the elevations within Appendix 4 .	*
5.3.4 Signage and Graphics		
 Exposed signage and graphics should be of constant form, lettering type and colour; Free standing screen walls or suchlike, displaying signage at entry points and elsewhere should utilise forms and materials/colours that those form building on the site; No flags, banners, bunting, revolving signs, sandwich boards or signage on otherwise transparent fencing are permitted; 	N/A – No signage is proposed as part of this development application. Any proposed signage will form part of a separate development application (unless exempt).	*



Requi	irement	Provided	Compliance
lo re	Give consideration to signage and graphics ocations in the building design process, ather than applying them 'randomly; to a inalised building.		
5.4.1	Landscape Theme		
b s, V c c c c c c c c c c c c c c c c c c	Provision of reticulated verges and landscape puffer strips adjacent to street boundaries as specified; Where practicable, existing trees are to be etained; andscaping is to be provided within parking areas to provide shade for parked cars and to soften the impact of paced carparking viewed rom adjacent sites and roads; andscaping is to be used to screen service and storage areas (until such landscaping is sufficiently established, interim screening is to be provided); The landscape theme for the Park is based predominantly on the use of hourly native trees, shrubs and ground covers.	The development site is largely cleared from vegetation (except for existing turf), with no existing vegetation to be retained. The proposed concept landscape plan provides soft landscaping around car parking areas, including shade trees. Landscaping will assist in softening the development from the street, including the open air storage area. Specific flora species can be confirmed at detailed design, however, the proposed species are predominantly native and have been selected from the species list with the East Rockingham Industrial Park Design Guidelines.	*

As demonstrated in the above table, the proposed development is consistent with the Development Guidelines for the industrial precinct, warranting approval.

5.4.2 Local Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities

Planning Policy 3.3.14 Bicycle Parking and End-of-Trip Facilities (**PP3.3.14**) applies to all applications for Development Approval. Table 1 of PP3.3.14 prescribes the bicycle parking rates for various land uses. The Industry land use does not require the provision of short term spaces, only requiring 0.1 long term spaces per 100m² NLA.

Having regard to the provisions of PP3.3.14, the proposed development is considered acceptable, with an appropriate number of bicycle parking spaces able to be provided as a condition of development approval (if required) noting 6 bicycle spaces are already proposed.

6 Conclusion

This application seeks approval for the development and use of an industrial development on the development site, including associated access, landscaping, and car parking. The development is suitably located within the East Rockingham industrial area and will provide essential industry support services and employment opportunities to the community.

The development has been designed in a manner that responds appropriately to the surrounding (future) industrial context, with an overall bulk, scale and material palette integrating the development into its setting. Access and circulation arrangements provide for a high level of functionality, convenience and safety. An appropriate level of supporting information is provided to demonstrate any potential amenity impacts are capable of being managed.

The development appropriately responds to all relevant aspects of the planning framework and has been demonstrated to be satisfactory from a bushfire and traffic perspective. Having regard to the above, the proposal clearly demonstrates the suitability of the industrial development on the development site.

We respectfully request the Application for Development Approval is approved by the Metro Outer Joint Development Assessment Panel (JDAP).



Appendix 1 Certificate of Title and Diagram

AUSTRALIA	DUPLICATE EDITION 1		
FICATE OF TI	TLE	VOLUME 254	FOLIO 30A
		1/ DUPLICATE EDITION	AUSTRALIA 15/5/

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

LAND DESCRIPTION:

LOT 1 ON DIAGRAM 37651

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

MAVIS ELIZABETH PIKE OF 93 ROCKINGHAM ROAD, ROCKINGHAM

(ND I460187) REGISTERED 28/4/2003

BGROBETS

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

 *I120923 MEMORIAL. HERITAGE OF WESTERN AUSTRALIA ACT 1990. AS TO PORTION ONLY. LODGED 29/5/2002.

 Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
 * Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title. Lot as described in the land description may be a lot or location.

------END OF CERTIFICATE OF TITLE------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: PREVIOUS TITLE: PROPERTY STREET ADDRESS: LOCAL GOVERNMENT AUTHORITY: 254-30A (1/D37651) 700-42, 785-48, 801-169 27 DAY RD, EAST ROCKINGHAM. CITY OF ROCKINGHAM

NOTE 1: A000001A CORRECTION MADE ON ORIGINAL CERTIFICATE OF TITLE - BUT NOT SHOWN ON CURRENT EDITION OF THE DUPLICATE.

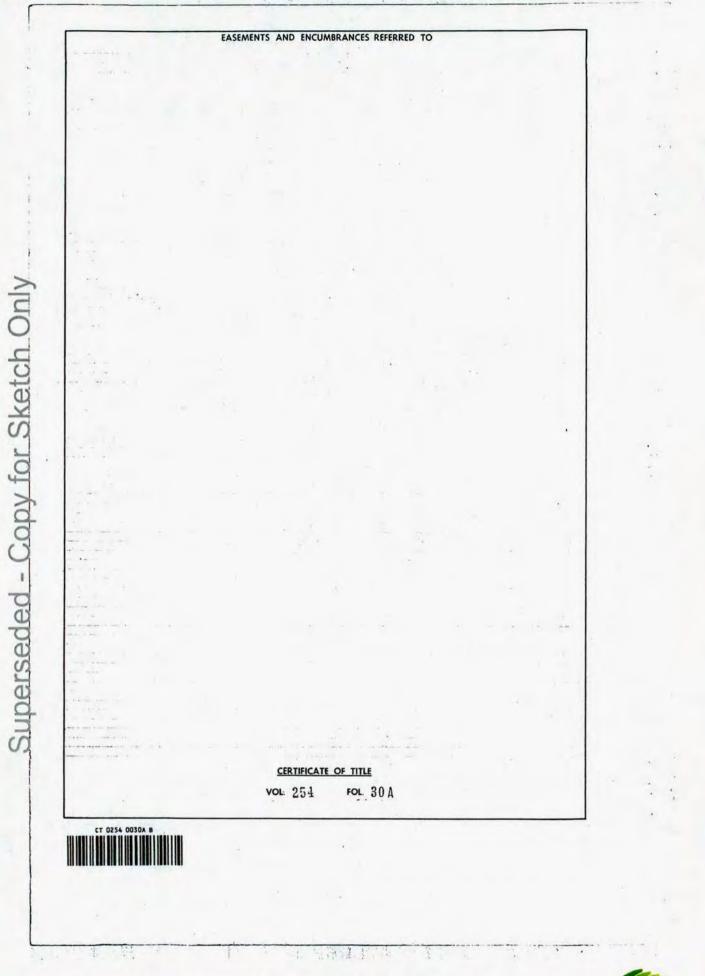


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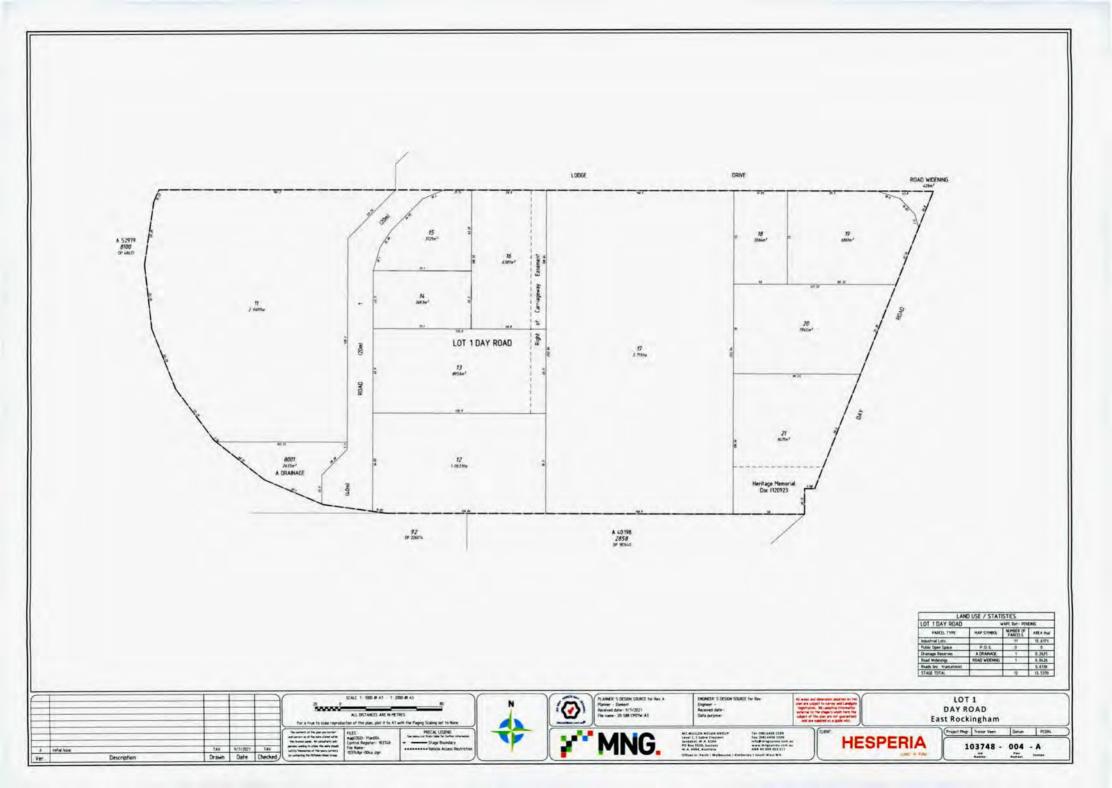


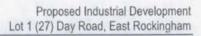
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Appendix 2 Proposed Subdivision Plan (WAPC Ref 160809)







Appendix 3 Site Feature Survey



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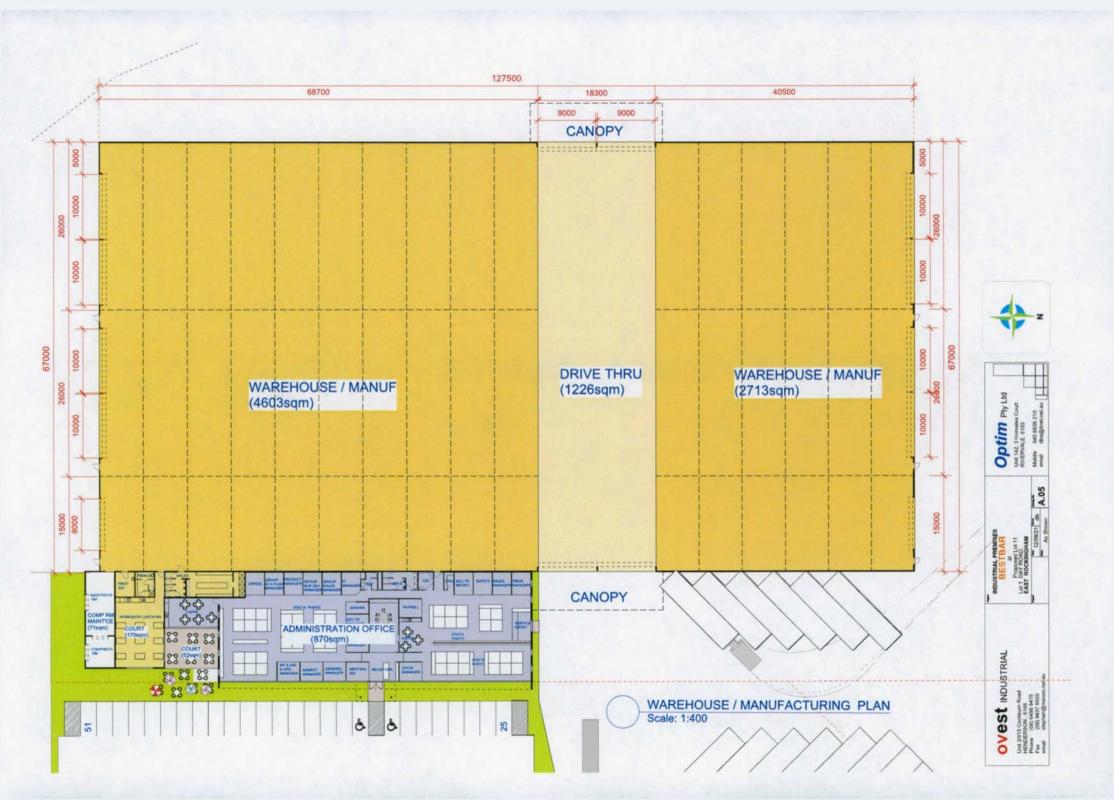




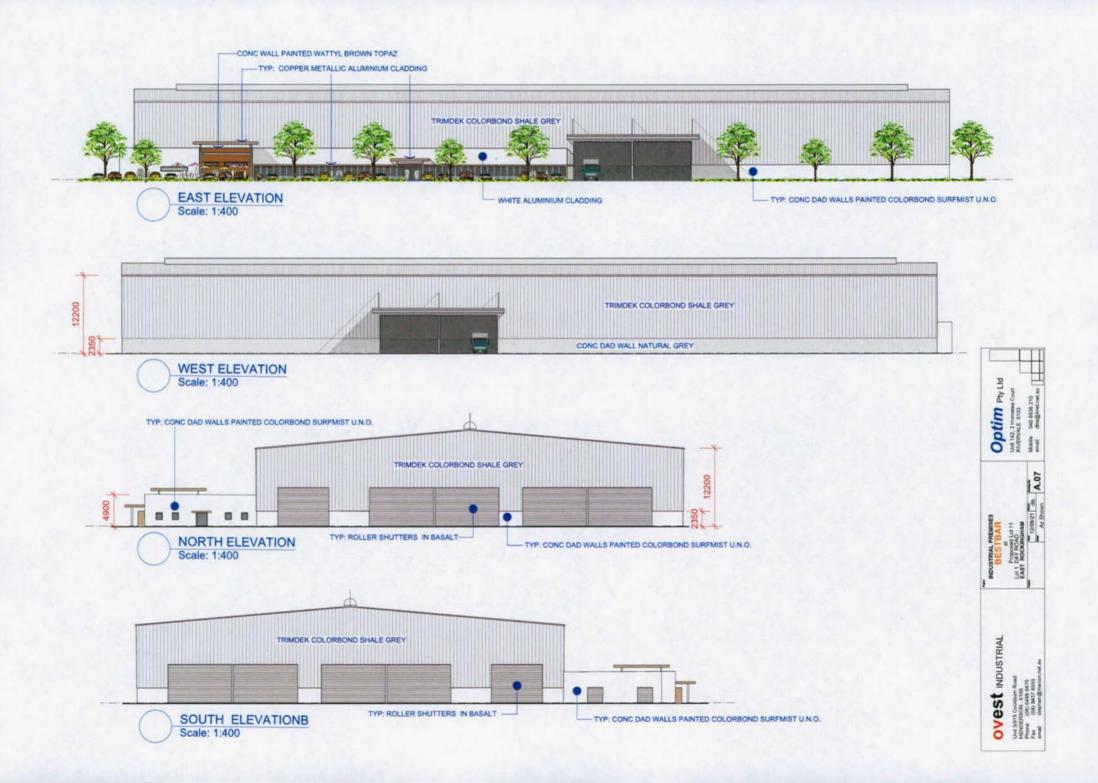














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Appendix 5 Transport Impact Assessment

Transport Impact Assessment

Lot 1, Day Road

CW1167500

Prepared for Hesperia Projects Pty Ltd

13 August 2021







Transport Impact Assessment Lot 1, Day Road

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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Transport Impact Assessment Lot 1, Day Road

Table of Contents

1	Introd	uction	1
	1.1	Background	1
	1.2	City of Rockingham Referral Comments	2
2	Existin	ng Site Situation	3
	2.1	Site Location	3
	2.2	Regional Context	4
	2.3	Surrounding Land Use	5
	2.4	Existing External Road Network	5
	2.5	Existing Traffic Volumes	7
	2.6	Existing Public Transport Facilities	7
	2.7	Existing Pedestrian/ Cycle Network Facilities	8
	2.8	Existing Restricted Access Vehicle (RAV) Network	8
	2.9	Crash Assessment	9
3	Devel	opment Proposal	11
	3.1	Proposed Land Use	11
	3.2	Major Attractors/ Generators	11
	3.3	Access Arrangement	12
4	Chang	ges to Surrounding Area	18
	4.1	Road Network	18
	4.2	Pedestrian/ Cycle Networks	18
	4.3	Public Transport	18
5	Analy	sis of Transport Network	20
	5.1	Analysis Overview	20
	5.2	Assessment Assumptions	20
	5.3	Development Trip Generation and Distribution	20
	5.4	Traffic Volume and Distribution	22
	5.5	Intersection Performance	23
	5.6	Intersection Turn Warrant Assessment	25
6	Summ	nary	29

Appendices

Appendix A WAPC Checklist

Appendix B Site Development Plans

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Tables

Table 1-1	Summary of CoR Referral Comments and TIA Update	2
Table 2-1	Road Network Description	6
Table 2-2	Existing Traffic Volumes (two-way) – MRWA volumes	7
Table 2-3	Bus Route Frequency	7
Table 2-4	Day Road SLK 0.00 to 3.06 (Mandurah Road to Dixon Road)	9
Table 5-1	Trip Generation rates	20
Table 5-2	Trip distribution	20
Table 5-3	Total Trips Generated by the Proposed Development	20
Table 5-4	Level of Service (LoS) Performance Criteria	23
Table 5-5	Lodge Drive/ Day Road - Scenario 1	24
Table 5-6	Lodge Drive/ Day Road - Scenario 2	25

Figures

Figure 2-1	Site Location	3
Figure 2-2	Aerial Image	4
Figure 2-3	Zoning	5
Figure 2-4	Existing Road Network Classification	6
Figure 2-5	Public Transport Network in the Vicinity of the Site	7
Figure 2-6	Pedestrian and Cycling Network in the Vicinity of the Site	8
Figure 2-7	Existing RAV Network	8
Figure 2-8	Crash Map	9
Figure 3-1	Proposed Concept Plan	11
Figure 3-2	Proposed Vehicular Access Points	12
Figure 3-3	Potential Crossover Locations for Lot 8 (Assuming 60km/h Frontage Road Speed)	13
Figure 3-4	Potential Crossover Locations for Lot 8 (Assuming 70km/h Frontage Road Speed)	14
Figure 3-5	Potential Day Road / Lodge Drive Intersection Modification - RAV7 Swept Path	15
Figure 3-6	U-Turn Envelope for RAV4	16
Figure 3-7	U-Turn Envelope for RAV7	16
Figure 3-8	RAV7 Egress Movement from One-Way Easement	17
Figure 4-1	Existing and Proposed Rail Freight Network	18
Figure 4-2	Existing Cadastre Boundaries near Day Road Showing Proposed Freight Rail Corridor	19
Figure 5-1	Assumed Trip Distribution (Inbound)	21
Figure 5-2	Trip Distribution (Outbound)	21
Figure 5-3	Scenario 1: 2021 Assessment Year	22
Figure 5-4	Scenario 2: 2027 Assessment Year + Development Traffic	22
Figure 5-5	SIDRA Representation of Lodge Drive/ Day Road	24
Figure 5-6	Intersection Turn Warrant Requirements for 2027 AM Peak hour	26

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Figure 5-7	Intersection Turn Warrant Requirements for 2027 PM Peak hour	26
Figure 5-8	Simplified Representation of BAL Treatment on Major Road	27
Figure 5-9	Simplified Representation of AUR Treatment on Major Road	27
Figure 5-10	Existing AUR Treatment in Southbound Direction on Day Road	28

1 Introduction

1.1 Background

Cardno has been commissioned by Hesperia Project Pty Ltd to prepare a Transport Impact Assessment (TIA) for the proposed Lot 1, Day Road subdivision located within the City of Rockingham.

This report has been prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 3 – Subdivision (2016) and the checklist is included in **Appendix A**.

1.2 City of Rockingham Referral Comments

Revision C of this TIA was submitted to the City of Rockingham (CoR) as part of the overall Development Application (DA) for the proposed subdivision. A total of 5 comments related to traffic and transport was provided by the City's staff. **Table 1-1** summarises these 5 comments, along with Cardno's responses to each of the comments, and includes a description of where these comments have been addressed in this revision (Rev E) of the TIA.

	City of Rockingham Referral Comment	Response and Update of TIA
1	Direct vehicle access from Day Road is not supported due to not meeting spacing requirements between Accesses for Lots 8, 9 and 10. Further a rear access arrangement will allow for future proofing of the bridging Day Road over the Kwinana Rail Loop	As it was unclear which "spacing requirements" the City has referred to, it was assumed that the City referred to the SSD that would be required for crossovers along Day Road. While the updated subdivision layout doesn't rely on direct access off Day Road, Section 3.3.1 of Rev E of the TIA includes discussion relating to the SSD requirements in the instance access is proposed in the future. This includes a scenario where the posted speed limit of Day Road is assumed to be reduced to 60km/h, as well as a scenario where the existing post speed of 70 km/h has been retained. As demonstrated in the TIA, the relevant SSD can be achieved under both of these scenarios.
2	Swept path analysis for the lodge drive/day road intersection has not been provided to accommodate intended design vehicles. Given its for industrial activities.it should cater for large type vehicles. The Consideration should also be given to the intended intersection upgrades that Development WA are looking at installing to facilitate subdivision to the north of Lodge Drive	Swept paths for RAV7 vehicles turning to/from Lodge Drive and the northern section of Day Road has been included in Section 3.3.2 of Rev E of the TIA.
3	Lodge Drive only currently allows for RAV4 network vehicles. The TIA proposed RAV 7 – is there an intention to upgrade the road to meet RAV7 network	The road network within the subdivision Site has been "future-proofed" in the event that Day Road (north of Lodge Drive) is approved for RAV7 vehicles. Swept paths for RAV7 vehicles turning to/from Lodge Drive and the northern section of Day Road has included in Section 3.3.2 of Rev E of the TIA.
4	Intersection analysis is required for the intersection of Day Road/Dixon Road as the current level of service at this location is unsatisfactory.	Assessment of this intersection is not required under the WAPC Transport Impact Assessment guidelines - this was agreed during a meeting with DPLH on 28/7/2021.
5	The TIA relies on 60kmph speed limit. MRWA control speed limits and advice would be needed to confirm the any approval to reduce speed	As demonstrated in Section 3.3.1 in Rev E of TIA, sufficient SSD can still be achieved to accommodate direct access off Day Road in the event that the 70km/h posted speed limit is retained.

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2 Existing Site Situation

2.1 Site Location

The Site is bounded by Day Road on the east and Lodge Drive on the north. The location of the Site is shown in **Figure 2-1**.



Source: Nearmap (2021)



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2.2 Regional Context

The Site is located in East Rockingham, City of Rockingham, near the border to Kwinana. Figure 2-2 shows the Site in the its regional context.

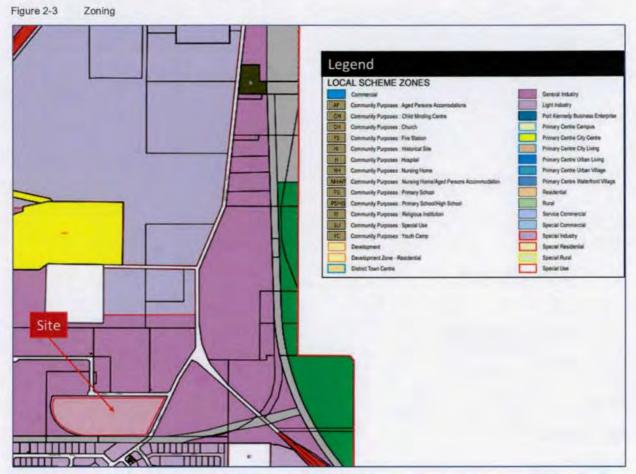
Figure 2-2 Aerial Image



Source: Nearmap (2020)

2.3 Surrounding Land Use

As shown in Figure 2-3 the Site is zoned for 'General Industrial' land use in accordance with the City of Rockingham *Local Planning Scheme*, No. 2.



Source: City of Bunbury Local Planning Scheme No. 8

2.4 Existing External Road Network

The layout and classification of the roads surrounding the Site is shown in Figure 2-4.

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- Primary Distributors (light blue): Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. Primary Distributors are managed by Main Roads.
- Regional Distributors (red): Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. Regional Distributors are managed by Local Government.
- District Distributor A (green): These carry traffic between industrial, commercial, and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. District Distributor A roads are managed by Local Government.
- District Distributor B (dark blue): Perform a similar function to "District Distributor A" but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. District Distributor B roads are managed by Local Government.
- Local Distributors (orange): Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the

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grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. Local Distributors are managed by Local government.

Access Roads (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. Access Roads are managed by Local government.

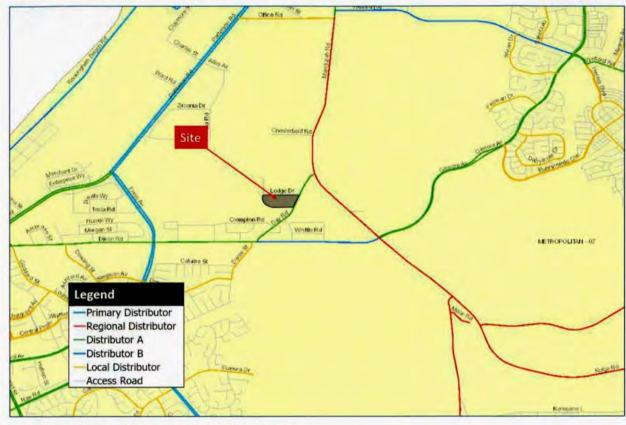


Figure 2-4 Existing Road Network Classification

Source: Main Roads Road Information Mapping System (2020)

The characteristics of the surrounding road network are summarised in Table 2-1.

Table 2-1 Road Network Description

			Road Network			
Road Name	Road Hierarchy	Jurisdiction	No. of Traffic Lanes	No. of Footpaths	Width (m)	Posted Speed Limit (km/h)
Day Road	Distributor A	Local Government	2	0	8.0	60 - 70*
Lodge Drive	Access Road	Local Government	2	0	9.0	50

* The posted speed limit is currently 70km/hr near the site but a section of Day Road to the south of the Site has a posted speed limit of 60km/hr.

Source: Main Roads Road Information Mapping System (2021)

2.5 Existing Traffic Volumes

Existing traffic volumes were sourced from the City of Rockingham and is summarised in **Table 2-2**. Cardno note that while no traffic data was available for Lodge Drive, this road is currently only used by traffic accessing the warehouse facility to the north of the Site.

Table 2-2 Existing Traffic Volumes (two-way) – MRWA volumes

Road Name	Date	Average Weekday Two-way Traffic Volume	Vehicles - AM Peak Hour	Vehicles - PM Peak Hour
Day Road (South of Mandurah Road)	April 2019	2,835	197 (7:00 -8:00)	256 (15:00-16:00)

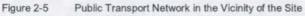
Source: City of Rockingham

2.6 Existing Public Transport Facilities

The nearest bus stop to the Site is approximately 800m to the south of the Site on Dixon Road. This bus stop services Bus Route 549 which operates from Rockingham Station to Fremantle Station, with a service frequency of 15 to 30 minutes during the weekdays.

The location of these bus routes relative to the Site are shown in Figure 2-5 and Table 2-3.





Source: Transperth (2021)

Table 2-3

Bus Route Frequency

Route	Route Description	Weekday	Saturday	Sunday and Public
No.		Frequency	Frequency	Holidays
Route 549	Rockingham Station to Fremantle Station	15-30 mins	30 mins	30 mins

Source: Transperth (2021)

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2.7 Existing Pedestrian/ Cycle Network Facilities

The existing pedestrian / cycle network is not well-developed in the vicinity of the Site, as shown in **Figure 2-6.** A High-Quality Shared Path is also located along Dixon Road, 800m south from the Site.





Source: Department of Transport - Cockburn and Rockingham Bike Map

2.8 Existing Restricted Access Vehicle (RAV) Network

The existing RAV network is shown below in **Figure 2-7**. Up to RAV 4 sized vehicles (vehicles not more than 27.5m in length) are permitted to currently utilise both Day Road and Lodge Drive.

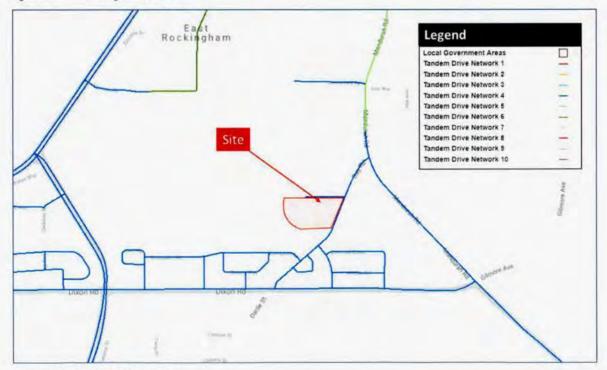


Figure 2-7 Existing RAV Network

Source: Main Roads HVS Network Map

2.9 Crash Assessment

A crash assessment for the roads immediately adjacent to the Site was undertaken. The assessment covers all the recorded accidents in between 1 January 2016 and 31 December 2020 at the following intersections and sections of road:

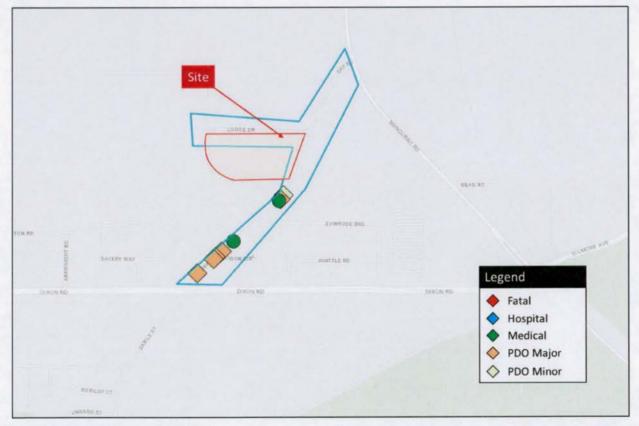
- > Day Road SLK 0.00 to 3.06 (Mandurah Road to Dixon Road)
- > Lodge Drive SLK 0.00 to 0.53
- > Intersection of Lodge Drive and Day Road

The crashes recorded at the intersections and midblock listed above are summarised in Table 2-4.

Table 2-4 Day Road SLK 0.00 to 3.06 (Mandurah Roa

Type of Crash	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Hit Pedestrian	-	-	-	-	1	1
Hit Object		-		1	-	1
Head On	-	-	1	+	-	1
Sideswipe Same Direction	-	-	1	1	-	2
Rear End			-	1	-	1
Right Turn Thru	-	-	-	1	-	1
Total		-	2	4	1	7

Figure 2-8 Crash Map



Source: Main Roads Crash Map (2021)

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From the crash assessment undertaken for the 2016 - 2020 period, the following conclusions were made:

- No crashes were reported along Lodge Drive.
- No crashes were reported at the intersection of Lodge Drive and Day Road.
- No fatal or accidents that resulted to hospital admission was reported near the Site.
- Two crashes were recorded to the south of the Site that required medical attention.
- Five crashes were reported to have resulted in major or minor damage to property. The majority of these crashes were found to have occurred to the south of the Site.

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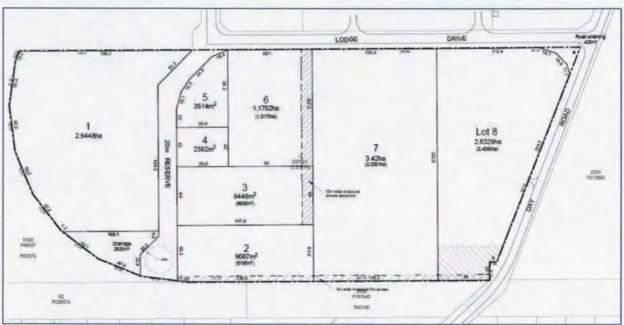
Figure 3-1

Development Proposal 3

Proposed Concept Plan

3.1 **Proposed Land Use**

The proposed subdivision is shown in Figure 3-1 and comprises of a total of 8 lots, with a combined area of 126,120 square meters. Detailed development plans are included in Appendix B.



Source: element

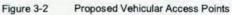
3.2 **Major Attractors/ Generators**

The Site is located within an area that mostly consists of industrial land uses. No major trip attractors or generators will be located within proximity to the site.

3.3 Access Arrangement

The main access to the sub-division is proposed via the existing intersection of Lodge Drive/ Day Road as shown **Figure 3-2**. A 20m wide internal road (with 10m pavement width) is proposed to provide access to the lots within the subdivision, as well as a 12m wide one-way easement that will provide an alternate egress point for Lots 2, 3, 6 and 7. The proposed easement will only allow northbound movements.





Source: element

3.3.1 Potential Access Arrangement for Lot 8

While Day Road is currently classified as a Distributor A road, this is considered to be reflective of its historic function due to its connection with Mandurah Road (a Regional Distributor road). However, as the "catchment" for users on Day Road is relatively limited, the actual function of Day Road is more similar to a Local Distributor road, which is also reflective of the observed traffic volumes on Day Road (approximately 2,850 vehicles per day, as shown in **Table 2-2**). While the proposed subdivision layout doesn't require Lot 8 to have direct access off Day Road, there are no reasons that direct lot access can't be provided to Lot 8 directly off Day Road if the relevant sight-line requirements can be achieved since Day Road isn't a Primary Distributor Road or a Control of Access Road.

Based on AS2890.1, a crossover fronting a road with a posted speed limit of 60km/h requires a minimum Safe Stopping Distance (SSD) of 65m and a desirable SSD of 83m. Based on on-site measurements, the desirable SSD requirements can be achieved for Lot 8 for the sections of Day Road highlighted in green in **Figure 3-3**.



Figure 3-3 Potential Crossover Locations for Lot 8 (Assuming 60km/h Frontage Road Speed)



In the event that the posted speed limit on Day Road is retained at 70km/h, the minimum required SSD is 85m and the desirable SSD is 97m. Based on on-site measurements, the desirable SSD requirements (with Day Road retaining its current posted speed limit of 70km/hr) can be achieved for Lot 8 for the sections of Day Road highlighted in green in **Figure 3-4**. It is noted that the exact crossover locations for these lots will depend on the internal site layouts and subject to a separate crossover approval process.





3.3.2 Swept Paths

As described in Section 2.8, both Day Road and Lodge Drive are currently permitted to be used by up to RAV4 vehicles. However, in the event that the RAV classification for these roads are changed to accommodate up to RAV 7 vehicles, the truncation on the north-eastern corner of the subdivision has been sized to ensure that the Day Road / Lodge Drive intersection can be upgraded to accommodate the swept path of the RAV7 vehicles (note: it is assumed that the section of Day Road to the south of Lodge Drive will remain classified to only permit up to RAV4 vehicles).

While still subject to further design, Cardno has undertaken swept path analysis of a potential modification to the Day Road / Lodge Drive intersection to demonstrate that the proposed subdivision layout includes sufficient land to accommodate the potential RAV7 turn movements to/from the northern part of the intersection. These swept paths are shown in **Figure 3-5**.

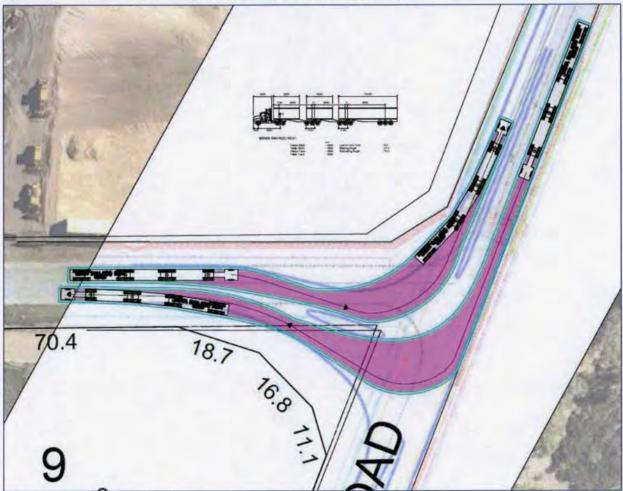


Figure 3-5 Potential Day Road / Lodge Drive Intersection Modification - RAV7 Swept Path



Swept path assessment was also undertaken for the proposed cul-de-sac at the end of Lodge Drive to confirm that both RAV4 and RAV7 vehicles would be able to turn around within the proposed road reserve at this location. The swept path plans for these turns are shown in **Figure 3-6** and **Figure 3-7**.

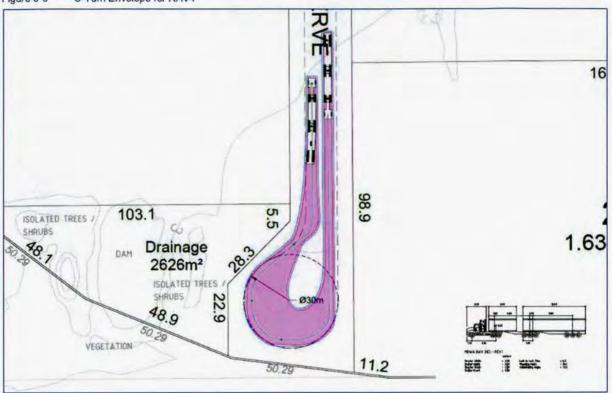
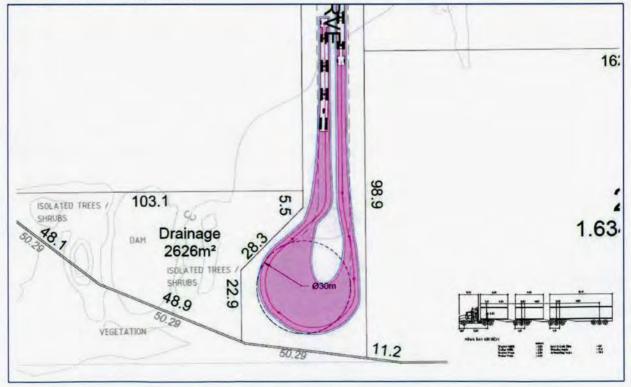


Figure 3-6 U-Turn Envelope for RAV4

Figure 3-7 U-Turn Envelope for RAV7



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Swept path assessment was also undertaken for the egress movement from the proposed easement to Lodge Drive. The swept path plan is shown in **Figure 3-8** and shows that a RAV7 can complete the turn movement within the proposed road reserve.

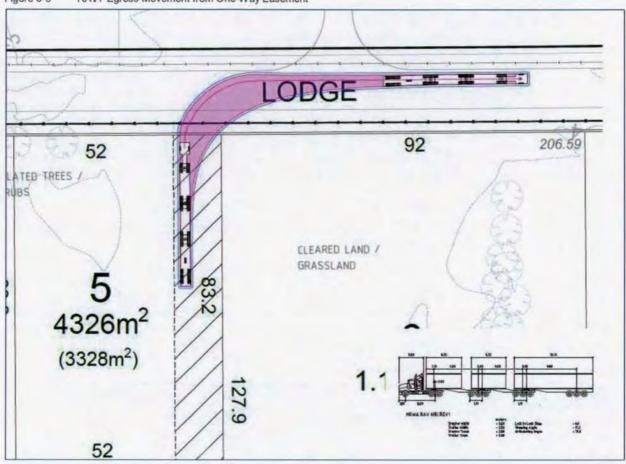


Figure 3-8 RAV7 Egress Movement from One-Way Easement

4 Changes to Surrounding Area

4.1 Road Network

Cardno understand that as part of the approved sub-division for Lots 103 and 106 Chesterfield Road, that a new access road is proposed between Day Road and Chesterfield Road. The intersection of the new access road with Day Road is proposed approximately 180m north of Lodge Drive and will include localised widening of Day Road to accommodate an auxiliary right-turn lane in the southbound direction (i.e. right-in movement). The proposed upgrades have been designed to accommodate up to RAV7s. While still subject to further discussions with the City and Main Roads WA, Cardno understands that there is a preference for the City to reduce the posted speed limited along the northern section of Day Road from 70km/hr to 60km/hr. This change would also be consistent with the City's policy to have consistent posted speed limits on short road to reduce the potential for driver confusion.

Cardno also understand that the section of Mandurah Road between Rockingham Road and Day Road is currently undergoing the referral process to have this section of road re-classified to allow up to RAV7s.

4.2 Pedestrian/ Cycle Networks

Cardno contacted the City of Rockingham and were advised of no changes to the pedestrian and cycle network adjacent to the Site in the immediate future.

4.3 Public Transport

As part of the ongoing Westport investigations, an option for the "Kwinana Rail Loop" is currently under consideration. The purpose of Kwinana Rail Loop is to provide an alternate freight rail access corridor into the Western Trade Coast, which would provide rail network capacity, resilience and enhance the functionality of the entire Kwinana-based rail network. The existing and proposed rail network is shown in **Figure 4-1**.



Figure 4-1 Existing and Proposed Rail Freight Network

Source: Westport Beacon, Issue 4, April 2019, Port Operations and Supply Chain



As this corridor would intersect with a number of existing roads (such as Mandurah Road, Day Road, and Patterson Road, grade-separated structures would be required at these locations to ensure that there will be no interaction between the road users and freight trains. The rail corridor near Day Road is shown in **Figure 4-1**.

While Cardno understands that Westport and PTA are contemplating these grade-separated structures and it is understood that the current preference is for Day Road to go over any potential freight rail at this location. Any potential impacts on sight-lines from the Site in the southern direction is therefore considered likely to be beneficial as any northbound traffic along Day Road over the grade-separated structure would be more visible for vehicles turning in/out of the Lodge Drive intersection.



Figure 4-2 Existing Cadastre Boundaries near Day Road Showing Proposed Freight Rail Corridor

Source: Nearmap, 2021

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5 Analysis of Transport Network

5.1 Analysis Overview

5.1.1 Key Intersections

A SIDRA analysis has been undertaken for the following intersections to assess the potential impact of Sitegenerated traffic on the surrounding road network.

> Lodge Drive/ Day Road

5.1.2 Assessment Years and Time Period

The AM and PM weekday peak hours were assessed. Peak time selected are 7:00 to 8:00 and 15:00 to 16:00 respectively for the morning and afternoon peak periods. For the purpose of this assessment, it is assumed that the Site will be fully developed by 2027.

The following model scenarios have therefore been analysed as part of this assessment:

- Scenario 1 2021 Existing Traffic without Development (AM and PM peak)
- Scenario 2 2027 Future Traffic with Development (AM and PM peak)

5.2 Assessment Assumptions

For the purpose of this assessment, the following assumptions were adopted:

- > The assumed year of full development of the sub-division is nominally anticipated to occur by 2027.
- > A conservative estimate of traffic growth rate of 3% per annum has been adopted for the background traffic volumes.
- > The heavy vehicle proportions for the surrounding road network were based on the traffic data from the Main Roads WA TrafficMap.

5.3 Development Trip Generation and Distribution

In order to determine traffic generation for the proposed development, trip generation rates were applied as shown in **Table 5-1**. The traffic generation rates for the proposed sub-division land uses were based on Cardno's experience on Latitude 32 and involved extensive research on trip generation for industrial land uses. The overall adopted trip generation rate was found to be 52 trips/ha, with 10% of the trips occurring during the AM peak hour and 10% of the trips occurring during the PM peak hour. The assumed directional splits are shown in **Table 5-2**, while the resulting trip generation volumes are shown in **Table 5-3**.

Land Use	ITE Code/So	urce	M Peak	PM Peak
Industrial	130	and the second s	trips per ha	5.2 trips per ha
Table 5-2 Trip distrit	oution			
Table 5-2 Trip distrib Land Use		Peak	f	M Peak
		Peak Out	f In	PM Peak Out

Table 5-3 Total Trips Generated by the Proposed Development

Land Use	AM Pe	ak Hour	PM Peak Hour		
	In	Out	In	Out	
Industrial	88	13	21	80	
Total	1	01	1	01	

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In total, 1010 trips are estimated to be generated by the subdivision on a typical weekday, with approximately 101 of these trips occurring during both the AM and PM peak hours.

Based on the proposed lot layout, and connectivity of the surrounding road network, an assumption of a traffic distribution for the external road network is illustrated in Figure 5-1 and Figure 5-2.

Figure 5-1 Assumed Trip Distribution (Inbound)



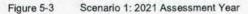
Figure 5-2 Trip Distribution (Outbound)

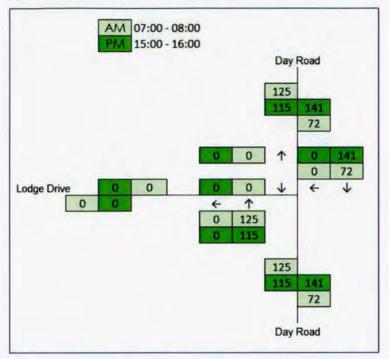


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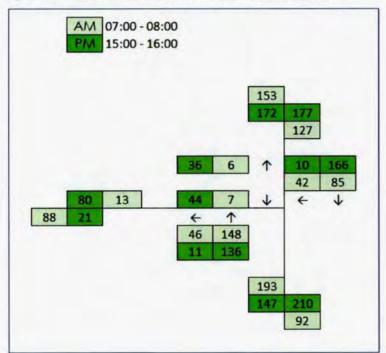
5.4 Traffic Volume and Distribution

The Existing (2021) traffic volumes are summarised in Figure 5-3 while the 2027 (i.e. year of assumed full development) traffic volumes are shown in Figure 5-4.









5.5 Intersection Performance

Analysis of the traffic impacts of the proposed development was undertaken for the intersection of Day Road / Lodge Drive.

The identified intersections have been analysed using the SIDRA analysis program. SIDRA calculates the performance of the intersection based on input parameters, including geometry and traffic volumes. As an output SIDRA provides values for the Degree of Saturation (DOS), queue lengths, delays, level of service, and 95th Percentile Queue. These parameters are defined as follows:

- Degree of Saturation (DOS): is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The theoretical intersection capacity is exceeded for an un-signalized intersection where DOS > 0.80;
- > 95% Queue: is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- Average Delay: is the average of all travel time delays for vehicles through the intersection. An unsignalised intersection can be considered to be operating at capacity where the average delay exceeds 40 seconds for any movement; and
- Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in Table 5-4.

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
В	Reasonable free-flow operations	10-20 sec	10-15 sec
С	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	25-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

Table 5-4 Level of Service (LoS) Performance Criteria

A LOS exceeding these values indicates that the road section is exceeding its practical capacity. Above these values, users of the intersection are likely to experience unsatisfactory queueing and delays during the peak hour periods.

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5.5.2 Scenario 1: 2021 Existing Traffic

The SIDRA representation of the existing intersection is shown in **Figure 5-5**, while the intersection performance summary for Scenario 1 is shown in **Table 5-5**.



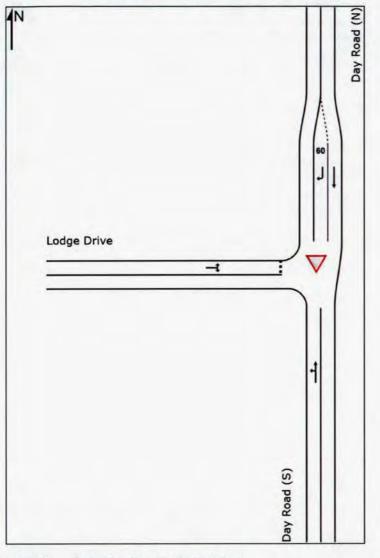


Table 5-5 Lodge Drive/ Day Road – Scenario 1

Intersection Approach		EF-	A	M pea	k		PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)	
	L	0.07	6	A	0	0.08	6	Α	0	
South: Day Road (S)	т	0.07	0	Α	0	0.08	0	А	0	
	Т	0.07	0	Α	0	0.10	0	А	0	
North: Day Road (N)	R	0.07	6	Α	0	0.00	6	Α	0	
	L	0.00	5	Α	0	0.00	5	А	0	
West: Lodge Drive	R	0.00	6	Α	0	0.00	7	Α	0	
All Vehicles		0.07	0		0	0.10	0	-	0	

The model results suggest that the intersection of Lodge Drive/ Day Road currently operates at LOS A (best possible) during both the AM and PM peak hours.

5.5.3 Scenario 2: 2027 Assessment Year + Development

The performance of the intersections for Scenario 2 is shown in Table 5-6.

Intersection Approach		-	A	M pea	k		PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)	
Cauthe Day David (C)	L	0.12	6	А	0	0.09	6	А	0	
South: Day Road (S)	т	0.12	0	А	0	0.09	0	Α	0	
	т	0.05	0	А	0	0.10	0	А	0	
North: Day Road (N)	R	0.03	7	Α	1	0.01	6	А	0	
West Later Dire	L	0.02	5	А	0	0.10	5	Α	3	
West: Lodge Drive	R	0.02	7	А	0	0.10	8	А	3	
All Vehicles		0.12	2		1	0.10	2		3	

Table 5-6 Lodge Drive/ Day Road - Scenario 2

The intersection is expected to operate with LOS A (best possible) for all scenarios assessed due to the relatively low traffic volumes expected along Day Road.

5.6 Intersection Turn Warrant Assessment

An intersection turn warrant assessment was undertaken for the intersection of Day Road / Lodge Drive to confirm the post-development intersection turn treatment warrants.

The assessment was undertaken in accordance with the Main Roads WA Supplement to Austroads Guide to Road Design – Part 4 A.8, with the assessment summaries shown in **Figure 5-6** and **Figure 5-7** for the 2027 AM and PM peak hours respectively.

The results from the turn warrant assessment confirmed that only a Basic Left Turn (BAL, as shown in **Figure 5-8**) treatment was warranted in the northbound direction and an Auxiliary Right Turn (AUR, as shown in **Figure 5-9**) treatment required in the southbound direction. As shown in **Figure 5-10**, an existing AUR treatment is already provided in the southbound direction for right-turning vehicles from Day Road to Lodge Drive and will be retained.

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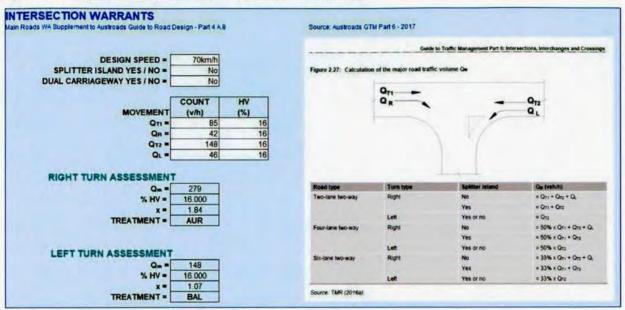
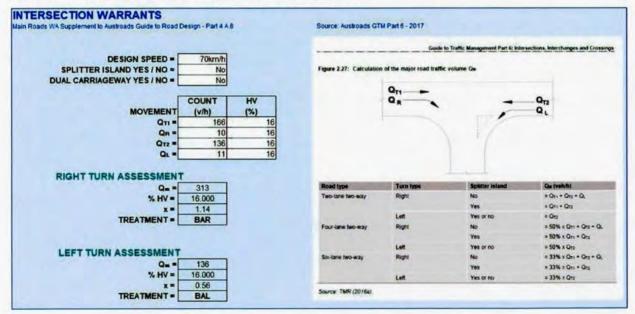
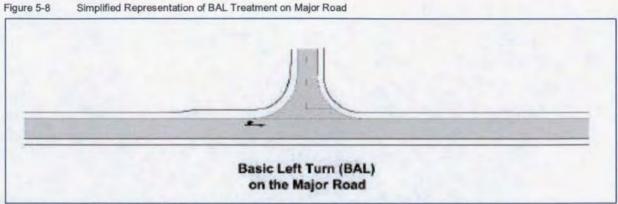


Figure 5-6 Intersection Turn Warrant Requirements for 2027 AM Peak hour

Figure 5-7 Intersection Turn Warrant Requirements for 2027 PM Peak hour







Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (Austroads 2019)

Figure 5-9 Simplified Representation of AUR Treatment on Major Road

Auxiliary Right Turn (AUR) on the Major Road (Two-Lane, Two-Way Road)

Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (Austroads 2019)

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Figure 5-10 Existing AUR Treatment in Southbound Direction on Day Road

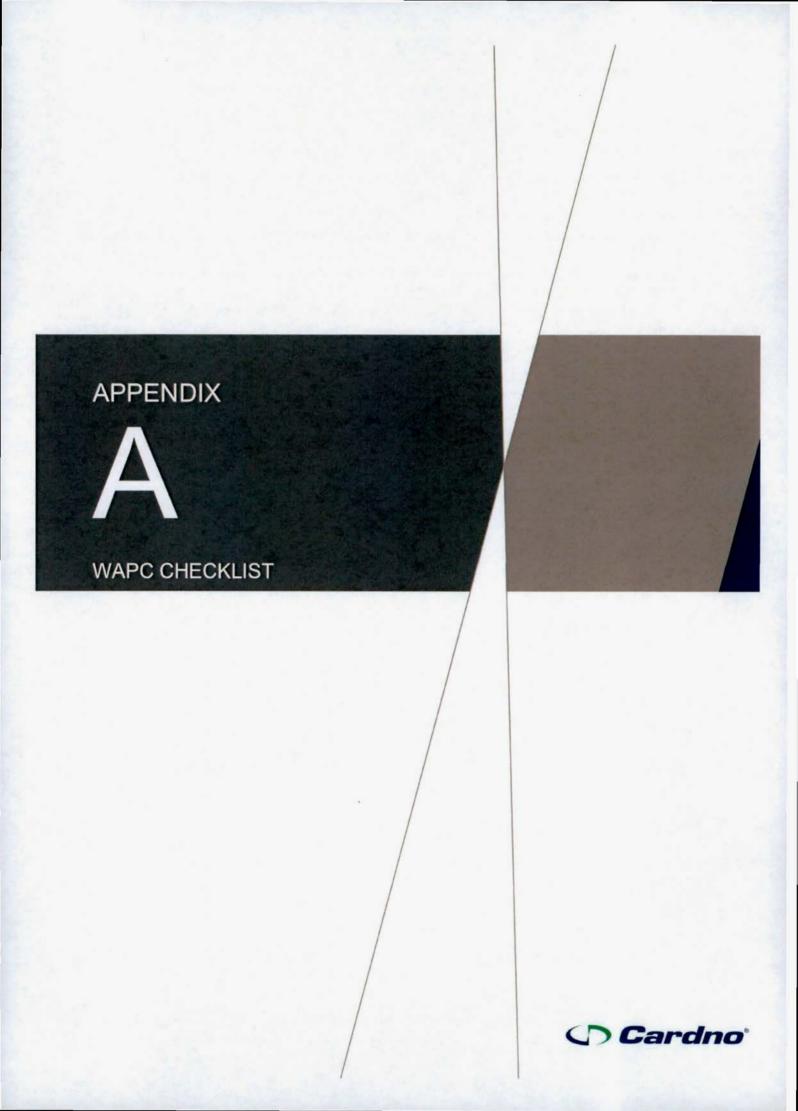
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6 Summary

This report has been prepared in accordance with the Western Australian Planning commission (WAPC) Transport Assessment Guidelines for Developments: Volume 3 – Subdivisions (2016).

The following conclusions have been made in regards to the proposed development:

- The proposed subdivision will consist of a total of 8 industrial lots with a combined area of 126,120 square meters.
- > Cycling and Pedestrian Network near the Site is not well developed as the nearest cycle lanes are located approximately 800m to the south of the Site.
 - Similarly, the nearest public transport stop is along Dixon Road, which is approximately 800m south of the Site.
- > Vehicles up to RAV7 will be able to access the site via the existing RAV network.
- > The Site is anticipated to generate 101 vehicle trips during both the AM and PM peak hours.
- > The intersection of Lodge Drive/ Day Road was found to operate at LOS A (best possible) for all scenarios assessed.





ITEM	PROVIDED	COMMENTS
Summary		
Introduction/Background	Section 1	
Subdivision proposal		
regional context	Section 2.2	
proposed land uses	Section 3.1	
table of land uses and quantities	Section 3.1	
major attractors/generators	Section 3.2	
specific issues	N/A	
Existing situation		
existing land uses within structure plan	Section 2.3	
existing land uses within 800 metres of subdivision	Section 2.3	
existing road network within subdivision	Section 2.4	
existing pedestrian/cycle networks within subdivision	Section 2.7	
existing public transport services within structure plan area	Section 2.6	
existing road network within 2 (or 5) km of subdivision	Section 2.4	
traffic flows on roads within subdivision area (PM and/or AM peak hours)	Section 2.4	
traffic flows on roads within 2 (or 5) km of within subdivision area (AM and/ or PM peak hours)	Section 2.4	
existing pedestrian/cycle networks within 800m of subdivision	Section 2.7	
existing public transport services within 800m of subdivision area	Section 2.6	
Proposed internal transport networks		
changes/additions to existing road network or proposed new road network	Section 3.3	
road reservation widths	Section 3.3	
road cross-sections & speed limits	N/A	
intersection controls	N/A	
pedestrian/cycle networks and crossing facilities	N/A	
public transport routes	N/A	
Changes to external transport networks		
road network	Section 4	
intersection controls	Section 4	
pedestrian/cycle networks and crossing facilities	Section 4	
public transport services	Section 4	
Integration with surrounding area		
trip attractors/generators within 800 metres	Section 3	
proposed changes to land uses within 800 metres	N/A	
travel desire lines from structure plan to these attractors/generators	N/A	
adequacy of external transport networks	N/A	
deficiencies in external transport networks	N/A	

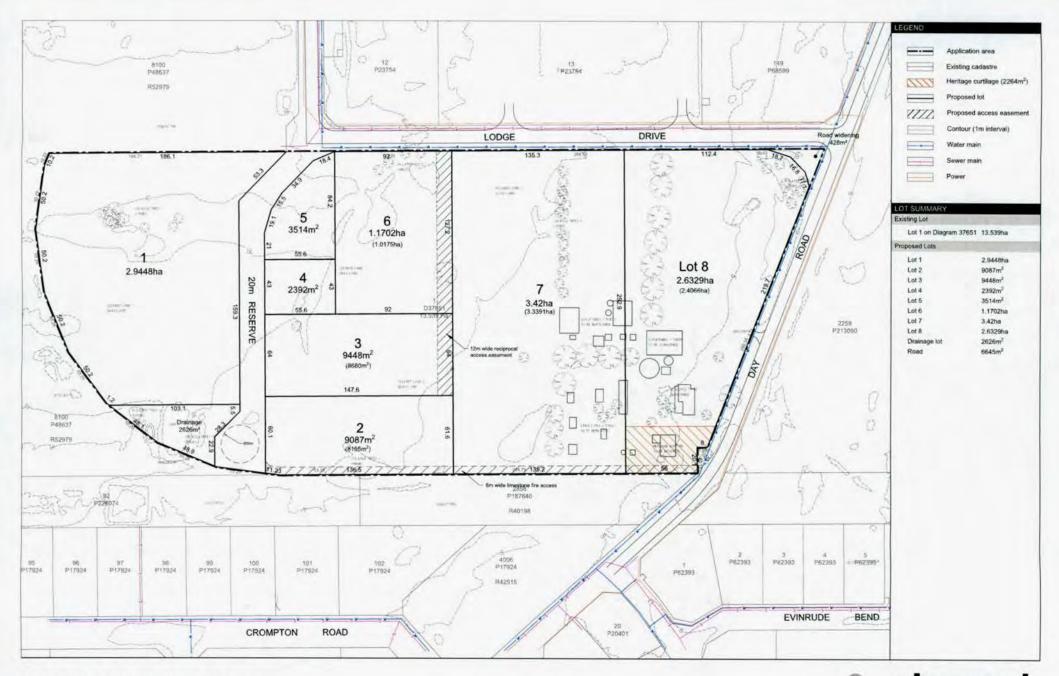
ITEM	PROVIDED	COMMENTS
remedial measures to address deficiencies	N/A	
Analysis of internal transport networks		
assessment year(s) and time period(s)	Section 5	-
subdivision generated traffic	Section 5	
extraneous (through) traffic	Section 5	
design traffic flows (that is, total traffic)	Section 5	
road cross-sections	N/A	
intersection sight distances	N/A	
intersection operation and method of control	N/A	
frontage access strategy	N/A	
pedestrian/cycle networks	N/A	
safe walk/cycle to school assessment (residential subdivisions only)	N/A	
pedestrian permeability & efficiency	N/A	
access to public transport	N/A	
Analysis of external transport networks		
base flows for assessment year(s)	Section 5	
total traffic flows	Section 5	
road cross-sections	N/A	
intersection layouts & controls	Section 5	
pedestrian/cycle networks	N/A	
Safety issues		
Identify issues	N/A	
Remedial measures	N/A	
Conclusions	Section 6	



SITE DEVELOPMENT PLANS







Amended Plan of Subdivision Lot 1 on Diagram 37651 (No. 27) Day Road, East Rockingham

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Proposed Industrial Development Lot 1 (27) Day Road, East Rockingham

PS

Appendix 6 Bushfire Management Plan

Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham

Hesperia





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DOCUMENT TRACKING

Project Name	Bushfire Management Plan:
	Subdivision Application: Lot 1 Day Road, East Rockingham
Project Number	20PER-18557
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Reviewed by	Daniel Panickar (BPAD Level 3 – 37802)
Approved by	Daniel Panickar (BPAD Level 3 – 37802)
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Template 2.8.1

Version control	the second s	
Version	Purpose	
v1	Draft – Submission to client	
v2	Final – Submission to City of Rockingham	

Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham | Hesperia

Contents

1. Introduction	1
1.1 Proposal details	1
1.2 Purpose and application of the plan	1
1.3 Environmental considerations	2
2. Bushfire assessment results	6
2.1 Bushfire assessment inputs	6
2.1.1 Fire Danger Index	6
2.1.2 Vegetation classification and slope under vegetation	6
2.2 Bushfire assessment outputs	8
2.2.1 BAL assessment.	
2.2.2 Method 1 BAL assessment	8
2.3 Identification of issues arising from the BAL assessment	9
3. Assessment against the Bushfire Protection Criteria	12
3.1 Compliance	12
3.2 Acceptable solution A3.1: Assessment	14
3.3 Acceptable solutions A3.3 and A3.6: Assessment	14
4. Implementation and enforcement	16
5. Conclusion	
6. References	
Appendix A – Classified Vegetation Photos	
Appendix B – Standards for Asset Protection Zones	
Appendix C - Vehicular access technical requirements (WAPC 2017)	26

List of Figures

Figure 1: Site overview	3
Figure 2: Site Plan	4
Figure 3: Bushfire Prone Areas	5
Figure 4: Vegetation classification	7
Figure 5: Bushfire Attack Level (BAL) Contours	11
Figure 6: Spatial representation of the bushfire management strategies	15
Figure 7: Illustrated tree canopy cover projection (WAPC 2017)	24

Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham | Hesperia

List of Tables

Table 1: Classified vegetation as per AS 3959: 2018	6
Table 2: Method 1 BAL calculation (BAL contours)	8
Table 3: Summary of solutions used to achieve bushfire protection criteria	12
Table 4: Proposed work program	16

1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Hesperia to prepare a Bushfire Management Plan (BMP) to support a subdivision application for Lot 1 Day Road, East Rockingham (hereafter referred to as the subject site, Figure 1). The proposed subdivision will result in an intensification of land use and involves the development of 10 industrial lots and a drainage area (Figure 2).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2019; Figure 3), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; Western Australian Planning Commission (WAPC) 2015) and reporting to accompany submission of the subdivision application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

The subject site is located in the City of Rockingham and is zoned 'General Industry' under the City of Rockingham Town Planning Scheme No. 2. Proposed lots will be serviced by two existing roads (Day Road and Lodge Drive).

The subject site is currently used for rural purposes, including horse agistment and is bound by:

- Lodge Road and current industrial land to the north;
- Undeveloped, 'General Industry' zoned land to the northwest and west;
- A Railway easement to the south, with current industrial land further south; and
- Day Road and undeveloped, 'General Industry' zoned land to the east.

The subject site also contains a Heritage building, Day Cottage (Place Number 04015) which is listed on the State Register by the Heritage Council of Western Australia and City of Rockingham Municipal Heritage Inventory Review (Heritage Place 7) (Figure 2).

This assessment has been prepared by ELA Senior Bushfire Consultant Alex Aitken (FPAA BPAD Level 2 Certified Practitioner No. BPAD37739) and Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations

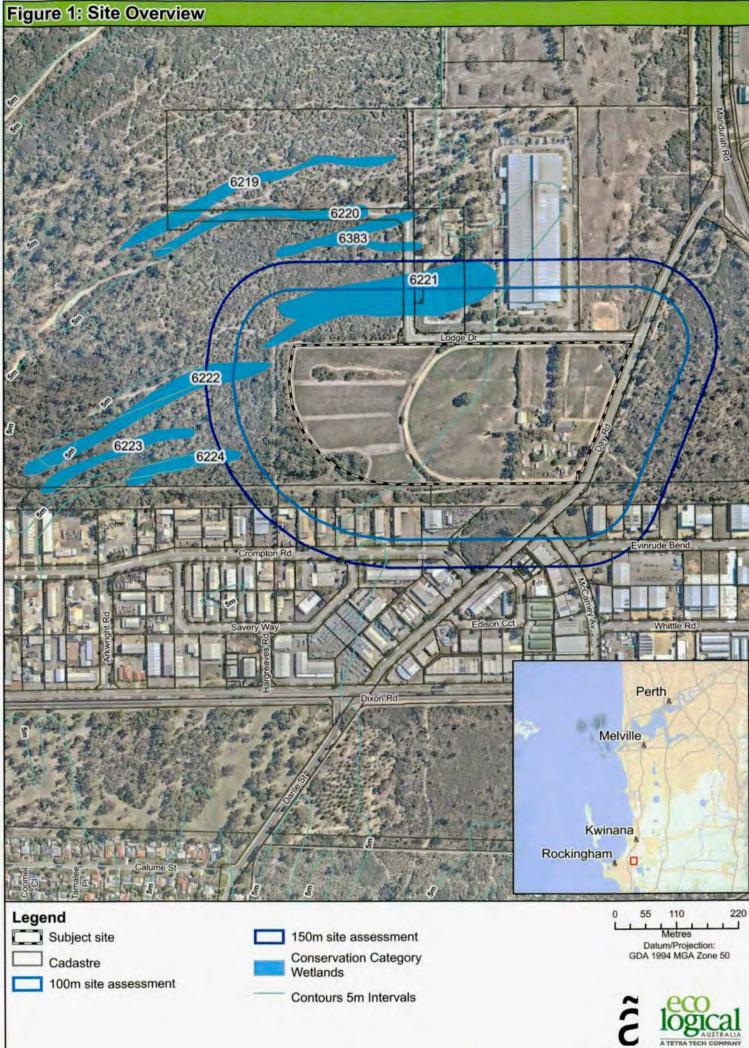
SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

The subject site has been previously cleared, resulting in limited existing native vegetation on site. This vegetation is primarily comprised of scattered paddock trees, windbreaks and screening vegetation. The drainage basin in the southwest of the subject site contains mostly invasive large shrubs and trees which will be removed for development. Removal of vegetation will be facilitated through subdivision approval.

The entirety of the subject site occurs within an Environmentally Sensitive Area (ESA). ESAs are defined in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005 under s. 51B of the State *Environmental Protection Act 1986* (EP Act). ESAs include areas declared as World Heritage, included on the National Heritage List, defined wetlands, and vegetation containing rare (Threatened) flora and Threatened Ecological Communities (TECs). No detail is provided regarding the origin of this ESA, however it is inferred that this ESA is related to the suite of wetlands to the west of the subject site (discussed below) and potential TECs in the same area.

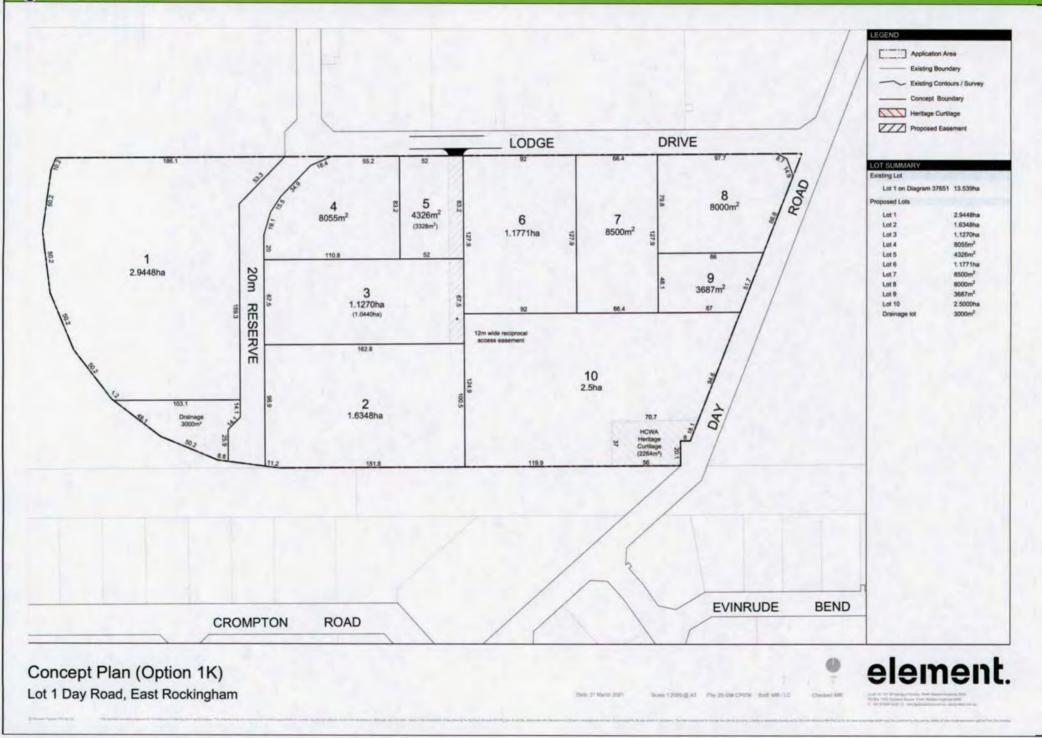
There is a suite of conservation category wetlands situated on undeveloped 'General Industry' zoned land to the west of the subject site (Figure 1). These wetlands are typically surrounded by vegetated buffers between 20-50 m in width, however the purpose of the buffer, existing clearing, rehabilitation requirements etc. are all factored into the determination of whether a buffer is required, and how wide it needs to be. As the subject site is fully cleared and has been historically used for rural purposes, including horse agistment, no revegetated buffers within the site is proposed.

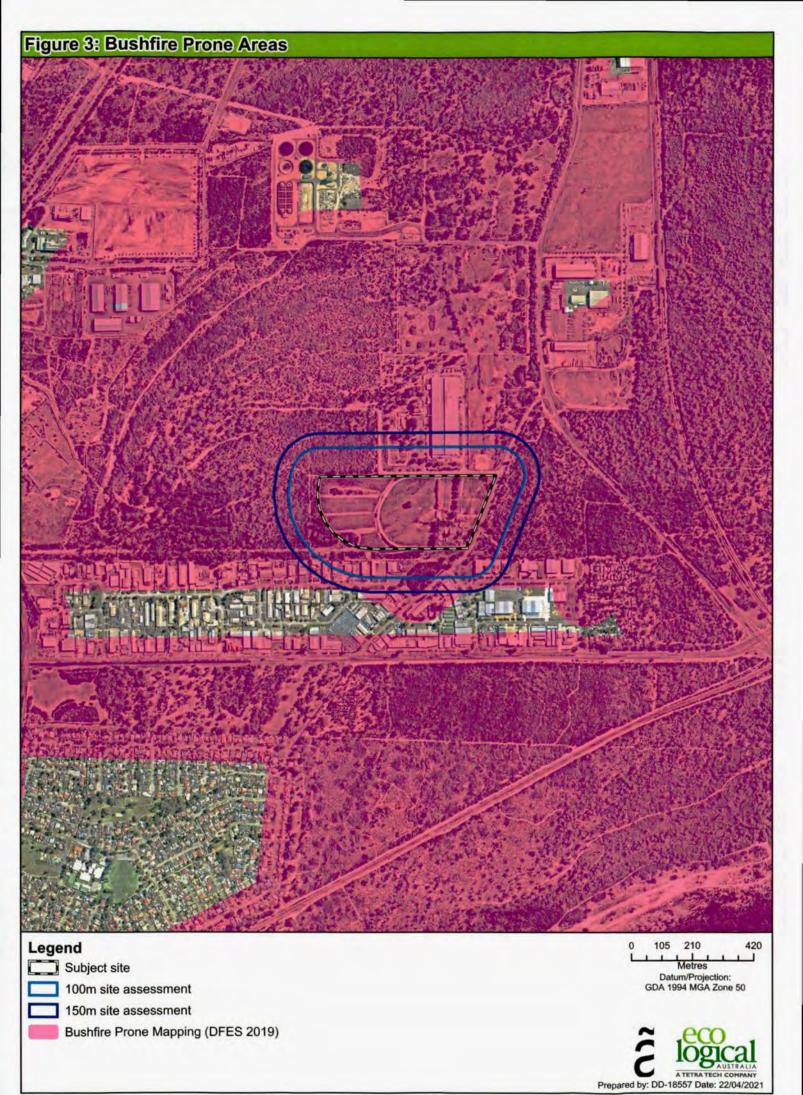
Landscaping within the subject site (including treatment of the drainage area, post-removal of existing vegetation) will be maintained in a low-threat state.



Prepared by: DD-18557 Date: 22/04/2021

Figure 2: Site Plan





2. Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) of FDI 80 is adopted for Western Australia, as outlined in Australian Standard *AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (SA 2018) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 Vegetation classification and slope under vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed in accordance with the Guidelines and AS 3959: 2018 with regard given to the Visual guide for bushfire risk assessment in Western Australia (DoP 2016). Site assessment was undertaken on 19 March 2021.

The classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below, Table 1 and Figure 4.

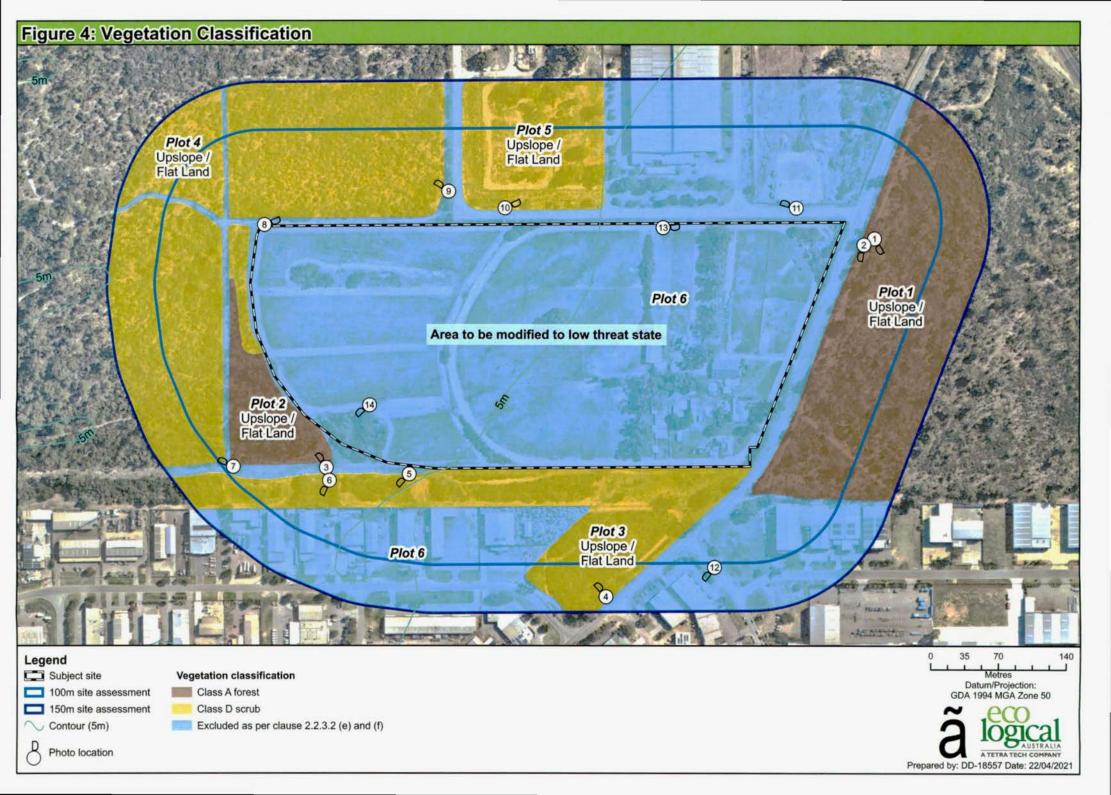
Plot	Vegetation Classification	Effective Slope
1	Class A Forest	All upslopes and flat land (0 degrees)
2	Class A Forest	All upslopes and flat land (0 degrees)
3	Class D Scrub	All upslopes and flat land (0 degrees)
4	Class D Scrub	All upslopes and flat land (0 degrees)
5	Class D Scrub	All upslopes and flat land (0 degrees)
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	

Table 1: Classified vegetation as per AS 3959: 2018

Photographs relating to each area and vegetation type are included in Appendix A.

Plots 3, 4 and 5 are all abutting one another, however have been separated as individual plots due to differences in vegetation composition and structure. Plot 3 is comprised of shrubs within the railway easement south of the subject site. Some areas within this plot have been recently cleared, however vegetation has been classified on its expected mature state (i.e. Class D Scrub). Plot 4 represents the *Banksia, Kunzea* and *Acacia* scrub vegetation that occurs to the west and northwest of the subject site. Plot 5 has recently been cleared, however evidence of *Acacia* regrowth was observed and as such, this Plot has been classified on its expected mature state (i.e. Class D Scrub).

The drainage area in the southeast of the subject site will be cleared and landscaped to resemble low threat, maintained vegetation.



2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 2.1.

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in Figure 4 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development and the classified vegetation.

Based on the identified BAL, construction requirements for future buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL assessment

Table 2 and Figure 5 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed subdivision in accordance with AS 3959: 2018 methodology.

Table 2: Method 1 BAL calculation (BAL contours)

Plot	Vegetation Classification	Effective Slope	Separation distances required					
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5	
1	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100	
2	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100	
3	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100	
4	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100	
5	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100	
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)		N	lo separation	distances req	uired – BAL-L	ow	

Based on the site assessment inputs and BAL assessment, all proposed lots within the subject site can achieve a BAL rating of \leq BAL-29.

2.3 Identification of issues arising from the BAL assessment

Should there be any changes in development design or vegetation/hazard extent that requires a modified bushfire management response, then the above BAL ratings will need to be reassessed for the affected areas and documented in a brief addendum to this BMP.

In relation to the BAL ratings for future buildings, the Guidelines state:

The bushfire construction requirements of the Building Code of Australia only apply to certain types of residential buildings (being Class 1, 2 or 3 buildings and/or Class 10a buildings or decks associated with a Class 1, 2 or 3 building) in designated bushfire prone areas. As such, AS 3959 does not apply to all buildings. Only vulnerable or high-risk land uses that fall within the relevant classes of buildings as set out in the Building Code of Australia will be required to comply with the bushfire construction requirements of the Building Code of Australia. As such, the planning process focuses on the location and siting of vulnerable and high-risk land uses rather than the application of bushfire construction requirements.

As future buildings within the subject site will be for industrial purposes, none of them will be a Class 1, 2 or 3 building and/or Class 10a building or deck associated with a Class 1, 2 or 3 building. Therefore, construction to AS 3959: 2018 is not required for these future buildings.

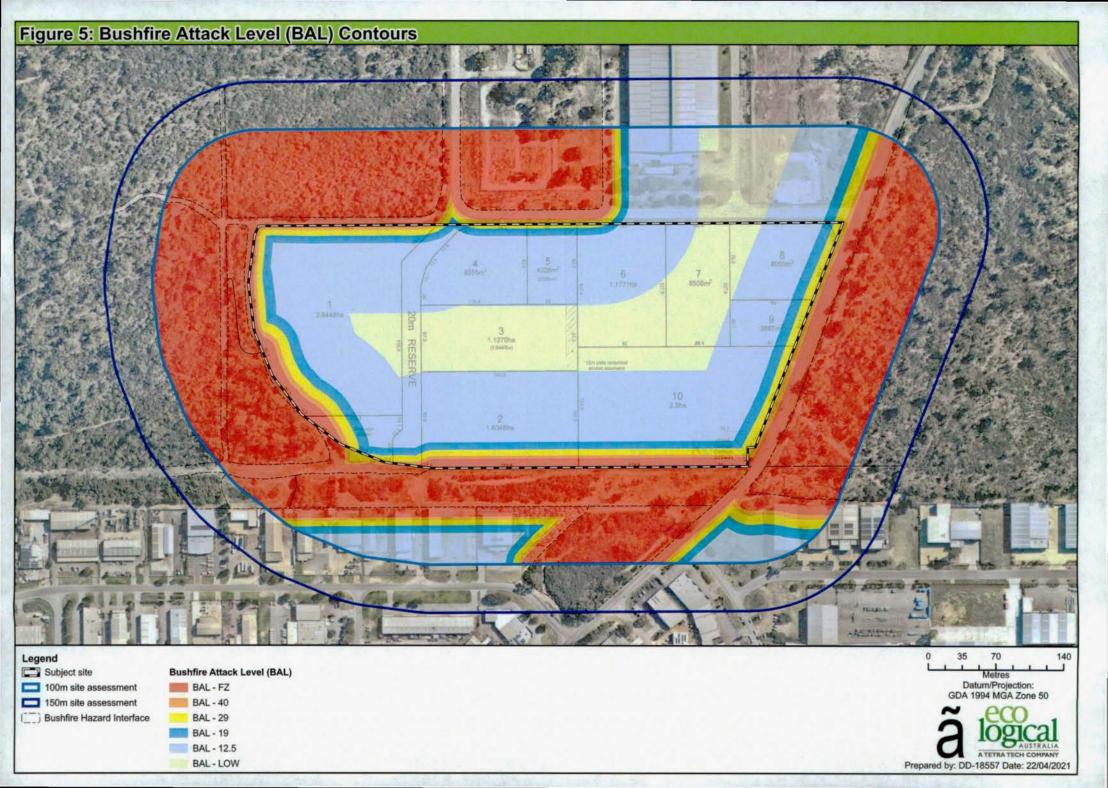
Given the industrial nature of the development, there may be some future purchasers that wish to locate buildings outside of areas designated as ≤BAL-29 (i.e. within BAL-FZ and/or BAL-40). If this is required, consultation and/or approval with/from the authority having jurisdiction will be undertaken/granted. Construction of industrial buildings in areas subject to BAL-FZ and/or BAL-40 is not unprecedented and has been considered for approval in Milpara Industrial Estate in the City of Albany. This consideration takes into account a number of factors including:

- The nature of industrial development which does not result in the same level of intensification as residential development on a landholding (i.e. industrial developments are a less dense development);
- The lower risk of loss of life and property as a result of bushfire in industrial development given high construction standards (detailed below) and shorter duration of occupancy (i.e. buildings are not occupied for the same length of time during a 24-hour period as residential buildings); and
- The construction standard to which industrial buildings are built to, specifically Volume 1, Sections C and D of the National Construction Code 2019 Volume 1 which detail:
 - Fire resistance (including from the external wall of another building [i.e. building to building fire]); and
 - Access and Egress (provision for escape etc.).

Whilst there is no guarantee that future purchasers will apply to construct in BAL-FZ and/or BAL-40 areas, the developer wishes to offer flexibility to purchasers who may wish to do so. In the event that this scenario eventuates, a possible mechanism for the City of Rockingham to explore in relation to approval of this request would be to issue a condition of development approval as detailed below:

No building shall be constructed within an area classified as BAL40 or BAL-FZ (in accordance with AS3959) unless:

- a. The building is designed in accordance with the Building Code of Australia to the appropriate standard to mitigate against the identified Bushfire/Fire risks;
- b. Any elevation of the building within BAL-FZ and/or BAL-40 being constructed with concrete tilt panels and having no windows, doors or openings;
- c. The building design is certified or endorsed by a suitably qualified fire engineer;
- d. The building construction is completed in accordance with the certified designs; and
- e. An emergency evacuation plan is prepared and ready for implementation to the satisfaction of the City of Rockingham.



3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed subdivision is required to comply with policy measures 6.2 and 6.4 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the proposed subdivision in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summaries how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 6 where relevant.

Table 3: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location				All proposed lots within the subject site contain significant areas subject to BAL ratings of ≤BAL-29 (Figure 5; Figure 6).
				The proposed subdivision is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)				The proposed subdivision has an indicative APZ sufficient for the potential radiant heat flux to not exceed 29kW/m ² and will be managed in accordance with the requirements of 'Standards for Asset Protection Zones' (WAPC 2017; Appendix B). These APZs can be refined for future buildings.
				Given the industrial nature of the development, there may be some future purchasers that wish to locate buildings outside of areas designated as <bal-29. and="" consultation="" if="" is="" or<br="" required,="" this="">approval with/from the authority having jurisdiction will be undertaken/granted (refer to section 2.3 for further detail on potential mechanisms for approval).</bal-29.>
				APZs can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state.
				The proposed subdivision is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes				The proposed subdivision is considered to be compliant with A3.1. Refer to Section 0.

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Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.2 Public road				The proposed 20 m wide road reserve in the western portion of the subject site is a public road. This road will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be compliant with A3.2.
A3.3 Cul-de-sac				Not compliant Refer to Section 3.3.
A3.4 Battle-axe				No battle axe lots are proposed.
A3.5 Private Driveway longer than 50 m				The 'reciprocal access agreement' road within the subject site has been treated as a private driveway. This road is 12 m wide and will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be
				compliant with A3.5. Not compliant
A3.6 Emergency Access way	-	-		Refer to Section 3.3.
A3.7 Fire-service access routes				No fire service access routes are required or proposed.
A3.8 Firebreak width				Firebreaks and/or cleared land will be maintained within the subject site during and post-development in accordance with the current City of Rockingham Fire Control Notice.
Element 4: Water A4.1 Reticulated areas				The subject site will be connected to a reticulated water supply.
				The proposed subdivision is considered to be compliant with A4.1.
				A4.2 and A4.3 are not applicable to this proposed subdivision
A4.2 Non-Reticulated areas				Reticulated water is present within the area.
A4.3 Individual Lots within non-reticulated areas				Reticulated water is present within the area.

NOTE - AS- ACCEPTABLE SOLUTION, PS- PERFORMANCE SOLUTION, N/A- NOT APPLICABLE

3.2 Acceptable solution A3.1: Assessment

Access to/from the subject site is limited by legacy planning, road safety, environmental (e.g. Conservation Category Wetlands, possible TECs etc.) and Heritage issues (i.e. the unfinished status of Lodge Drive; inability to provide another access point onto Day Road given road curvatures and traffic densities; and the Heritage listed Day Cottage in the southeast of the site). The proposed design results in the following access arrangements for each lot:

- Lots 8-10 have direct frontage to Day Road which provides access in two directions;
- · Lots 4-7 have direct frontage to Lodge Drive which in turn provides access to Day Road; and
- Lots 1-3 are serviced by a proposed internal cul-de-sac road, approximately 274 m in length which provides access to Lodge Drive and in turn (after approximately 365 m), Day Road.

The proposed internal cul-de-sac road has been extended to a length greater than 200 m to access the proposed drainage area and create a turn-around head that does not impact on industrial lots. All proposed lots however, have direct frontage to the cul-de-sac road within 200 m of its origin at Lodge Drive.

The subject site provides two access points onto Lodge Drive which in turn provides access to Day Road that allows for travel in two directions (Figure 6). Lodge Drive and Day Road are public roads that comply with requirements outlined in the Guidelines (Appendix C).

The proposed subdivision is considered to be compliant with A3.1.

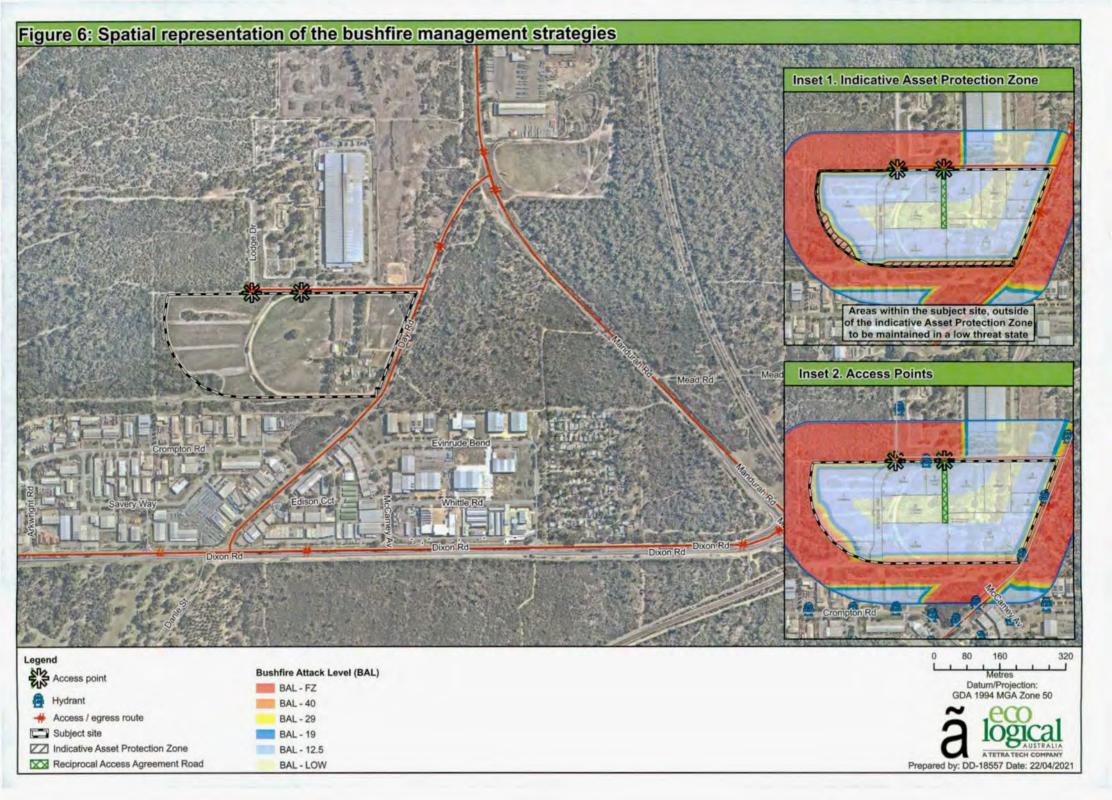
3.3 Acceptable solutions A3.3 and A3.6: Assessment

The proposed subdivision is not compliant with Acceptable Solutions A3.3 and A3.6.

The proposed internal road design will create a cul-de-sac which is approximately 274 m in length. Culde-sacs longer than 200 m are required to be connected to the public road network by an emergency access way, however as detailed in Section 0, this connection is not possible for the subject site given existing legacy planning, road safety and Heritage issues.

In recognition of these constraints, the proposed internal road design has included a 12 m wide 'reciprocal access agreement' road which allows Lots 2, 3 and 5 to have a secondary egress point onto Lodge Drive.

SPP 3.7 and the Guidelines allow for discretion to be applied by decision makers, and in the case of this proposal, ELA considers the application of discretion regarding this non-compliance to be appropriate given the existing site constraints.



4. Implementation and enforcement

Implementation of the BMP applies to the developer, future owners within the subject site and the local government to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in Section 3, as well as a works program, is provided in Table 4. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 4: Proposed work program

No	Bushfire management measure	Responsibility
Prior t	to issue of Titles	14
1	Ensure all indicative APZs and areas to be maintained in a low threat state, depicted in Figure 6 are implemented and maintained, or revised as required.	Developer
2	Ensure that 100 m wide APZs are cleared around each stage of subdivision if the entirety of the development depicted in Figure 6 is not developed in a single stage	Developer
3	Extend reticulated water supply to all lots.	Developer
4	Place Section 165 Notification on Title for all lots within Bushfire Prone Areas.	Developer
5	Construct road network as per plan in Figure 6.	Developer
6	Ensure vegetation within the drainage area has been removed and is maintained either as a non-vegetated area or in a low threat state.	Developer
Prior t	to occupancy	
7	Refine APZs for future buildings and ensure the entirety of these areas maintained to APZ standards in the Guidelines.	Developer
Ongoi	ng management	
8	Maintain APZs to the standard in the Guidelines	Owners

GIVEN THAT NO FUTURE BUILDINGS WILL BE CLASS 1, 2, 3 OR 10A STRUCTURES, AS 3959 DOES NOT APPLY.

Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham | Hesperia

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed subdivision. As such, the proposed subdivision is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

City of Rockingham, 2018, Municipal Heritage Inventory Review (2018). City of Rockingham.

Department of Fire and Emergency Services (DFES), 2019, Map of Bush Fire Prone Areas, [Online],GovernmentofWesternAustralia,availablefrom:http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx

Department of Planning (DoP), 2016, Visual guide for bushfire risk assessment in Western Australia. DoP, Perth.

Standards Australia (SA), 2018, Construction of buildings in bushfire-prone areas, AS 3959: 2018. SAI Global, Sydney.

Western Australian Planning Commission (WAPC), 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC), 2017, Guidelines for Planning in Bushfire Prone Areas Version 1.3 (including appendices), WAPC, Perth.

Appendix A – Classified Vegetation Photos

Plot 1 Classification or Exclusion Clause

Class A Forest

Photo Point 1

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.



Plot 1 Classification or Exclusion Clause

Class A Forest

Photo Point 2

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.





SW

N

NE

Plot 2 Classification or Exclusion Clause

Class A Forest

W

Photo Point 3

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.



NW

Plot 3 Classification or Exclusion Clause

Class D Scrub

Photo Point 4

Classified vegetation within this plot is comprised of shrubs that are currently less than 2 m in height. However, this area appears to have been revegetated and the average height of mature shrubs is expected to be taller than 2 m with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.



O 221°SW (T) ● 32°16'25.14"S, 115°46'23.13"E ±3m ▲ 0m

W

W

3 Classification or Exclusion Clause

Class D Scrub

Photo Point 5

Plot

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas dominated by exotic grasses (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.

Plot 3 Classification or Exclusion Clause

Class D Scrub

Photo Point 6

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas dominated by exotic grasses (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.

O 204°SW (T) ● 32°16'25.10"S, 115°46'19.93"E ±4m ▲ 5m



Bushfire Management Plan:

Subdivision Application: Lot 1 Day Road, East Rockingham | Hesperia

Plot 4 Classification or Exclusion Clause

Class D Scrub

Photo Point 7

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.



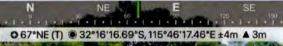
Plot 4 Classification or Exclusion Clause

Class D Scrub

Photo Point 8

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.





Plot 4 Classification or Exclusion Clause

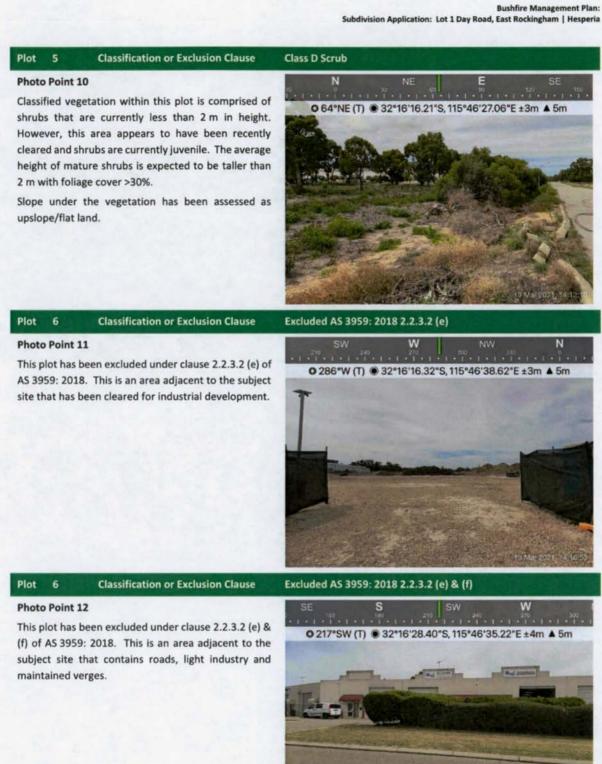
Class D Scrub

Photo Point 9

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.





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18Mac 2021, 18-1 1-12

Subdivision Application: Lot 1 Day Road, East Rockingham | Hesperia



Appendix B – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas* v 1.3 (WAPC 2017).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

a. Width: Measured from any external wall or supporting post or column of the proposed building, and
of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (Figure 7).

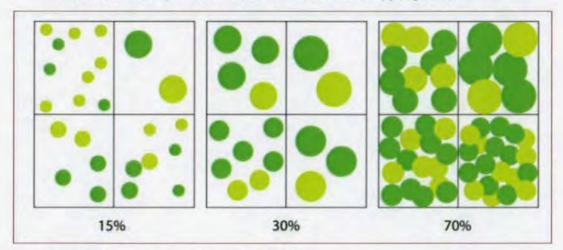


Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

- Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres
 of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should
 be separated from each other and any exposed window or door by at least 10 metres. Shrubs
 greater than 5 metres in height are to be treated as trees
- Ground covers (<0.5 metres in height): can be planted under trees but must be properly
 maintained to remove dead plant material and any parts within 2 metres of a structure, but 3
 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater
 than 0.5 metres in height are to be treated as shrubs
- Grass: should be managed to maintain a height of 100 millimetres or less.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

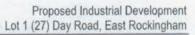
Technical requirements	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access route
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5

Appendix C - Vehicular access technical requirements (WAPC 2017)

* Refer to E3.2 Public roads: Trafficable surface

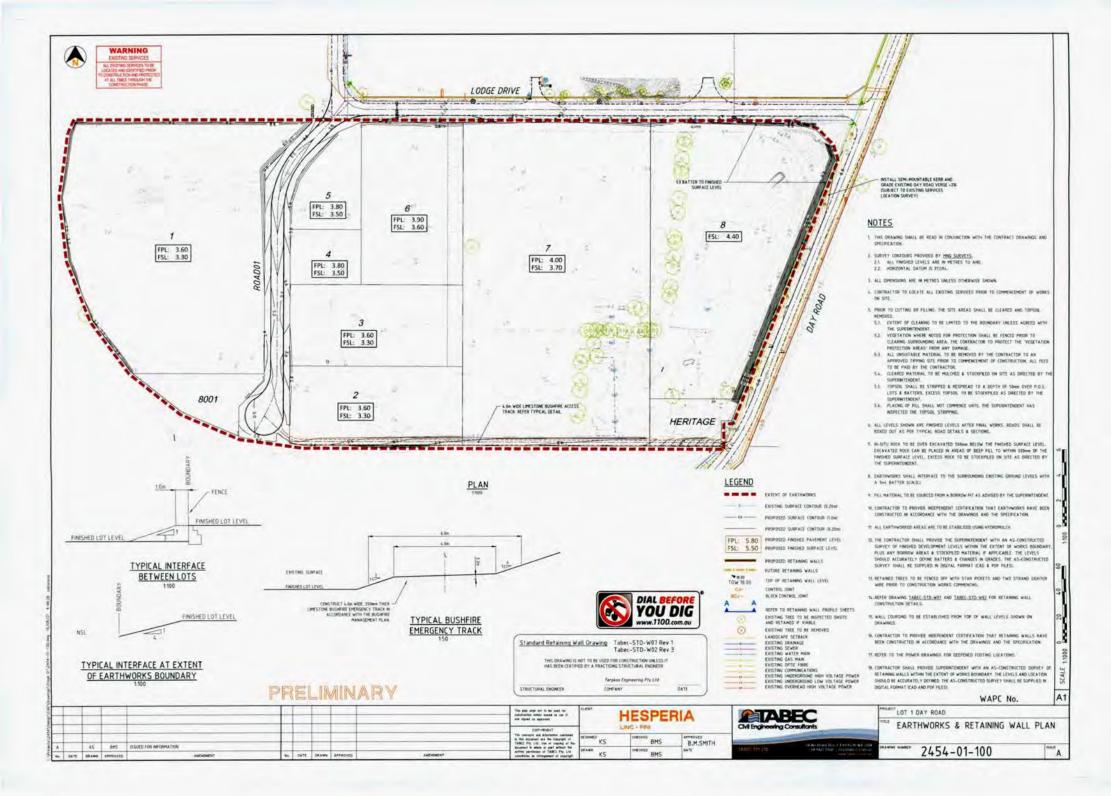


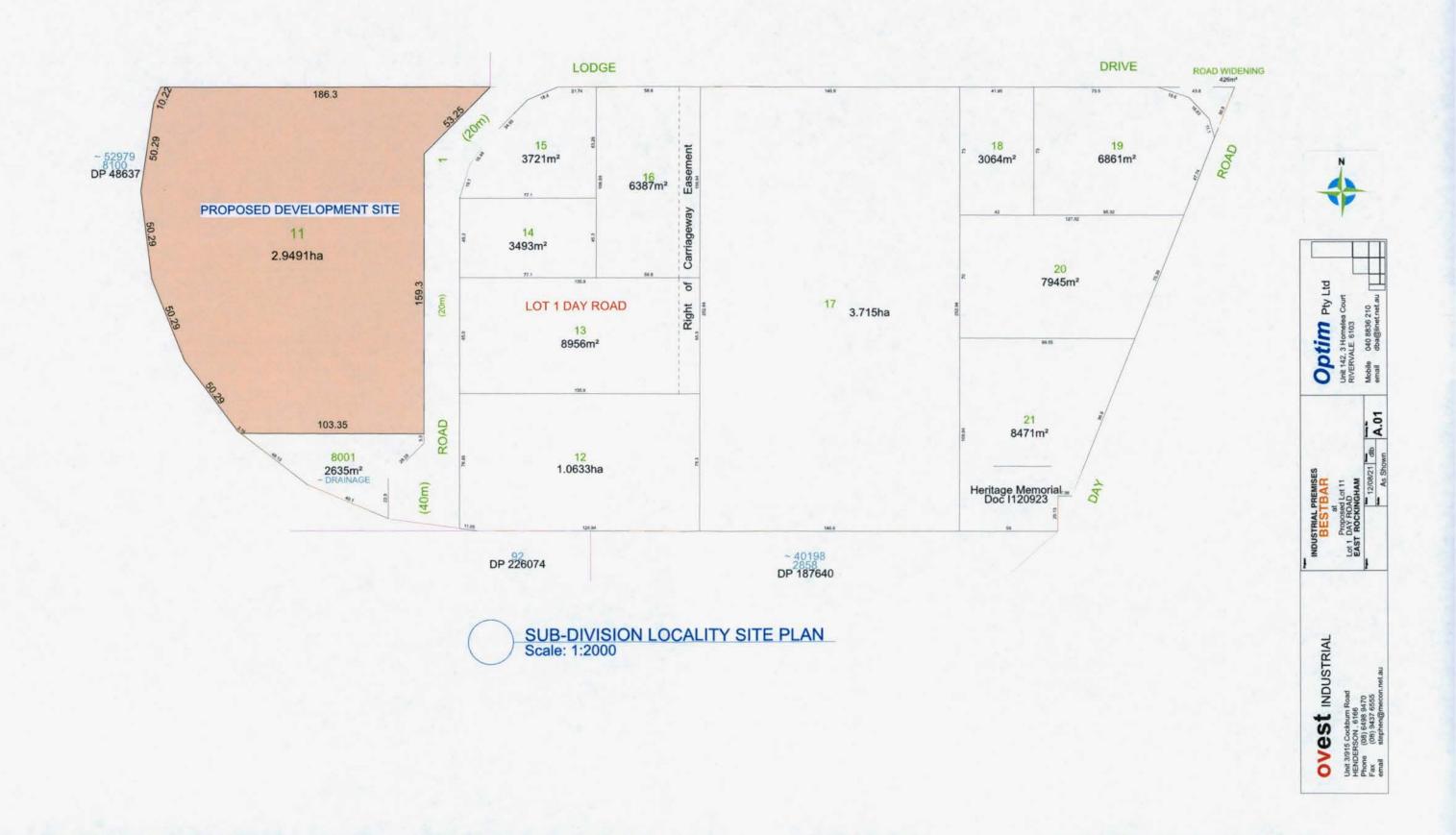


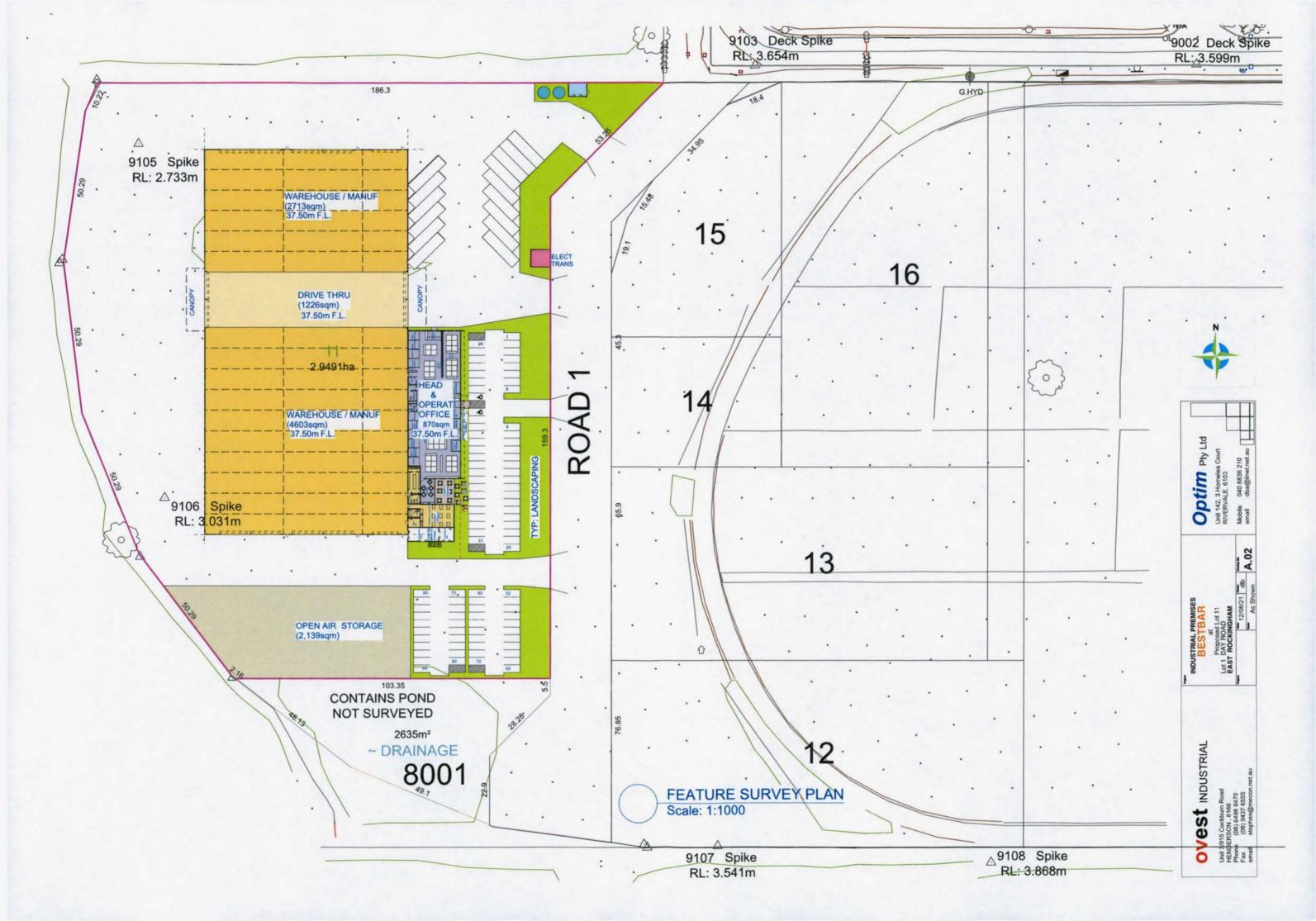


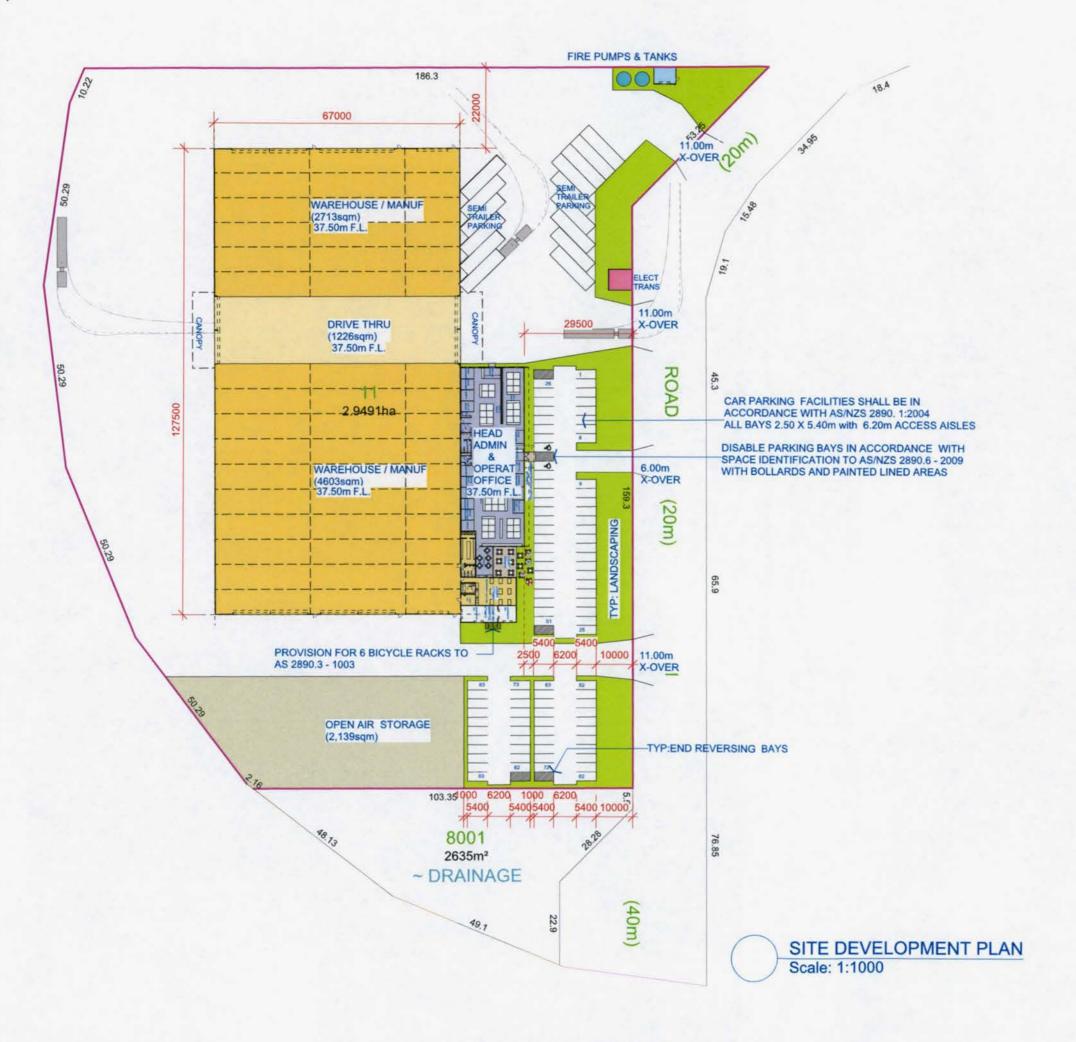


Appendix 7 Earthworks & Retaining Wall Plan

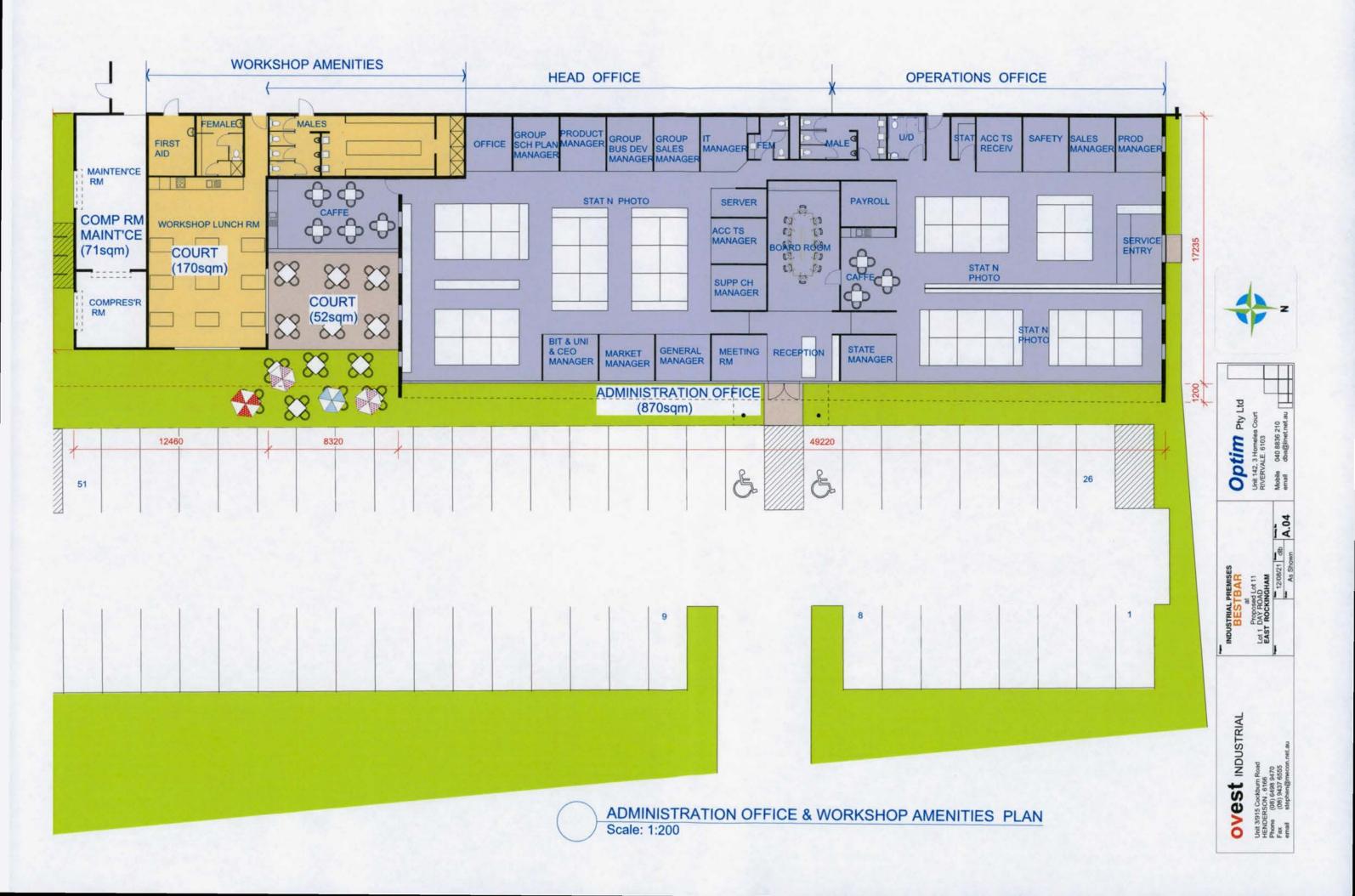


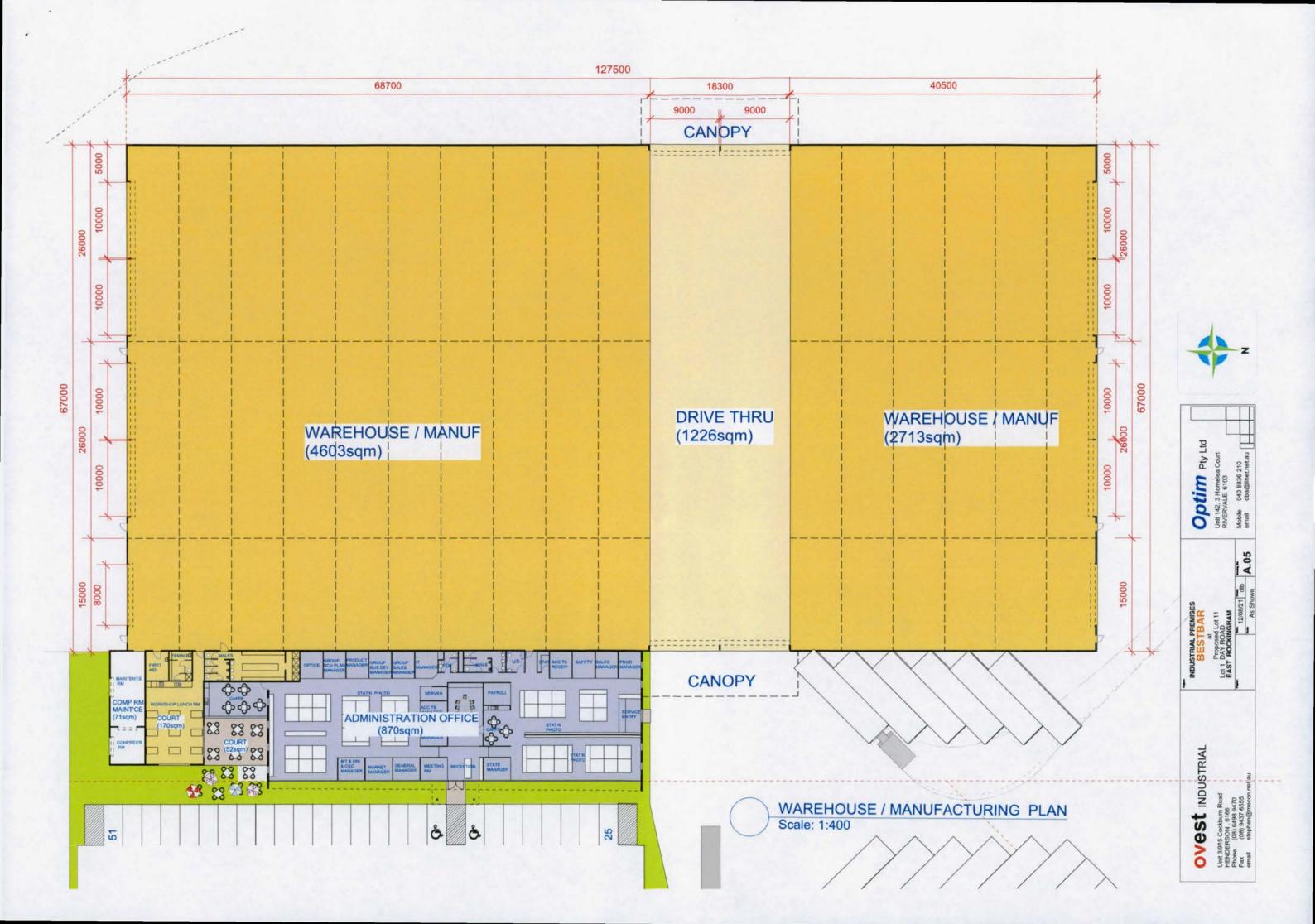






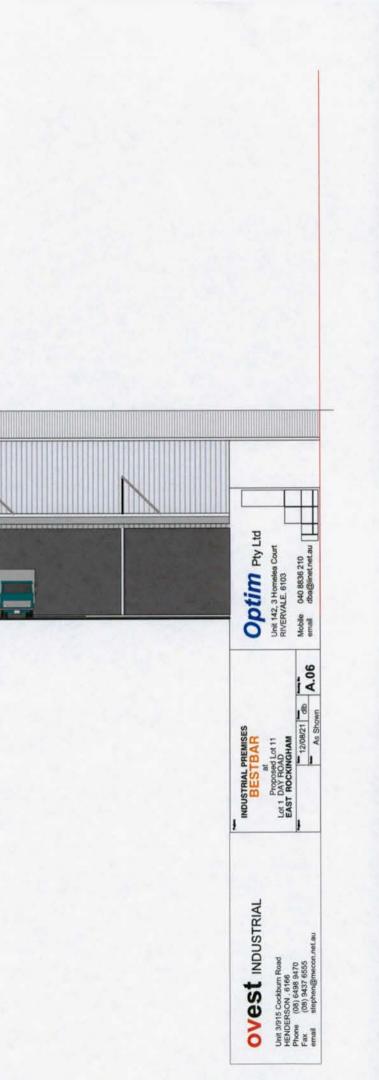


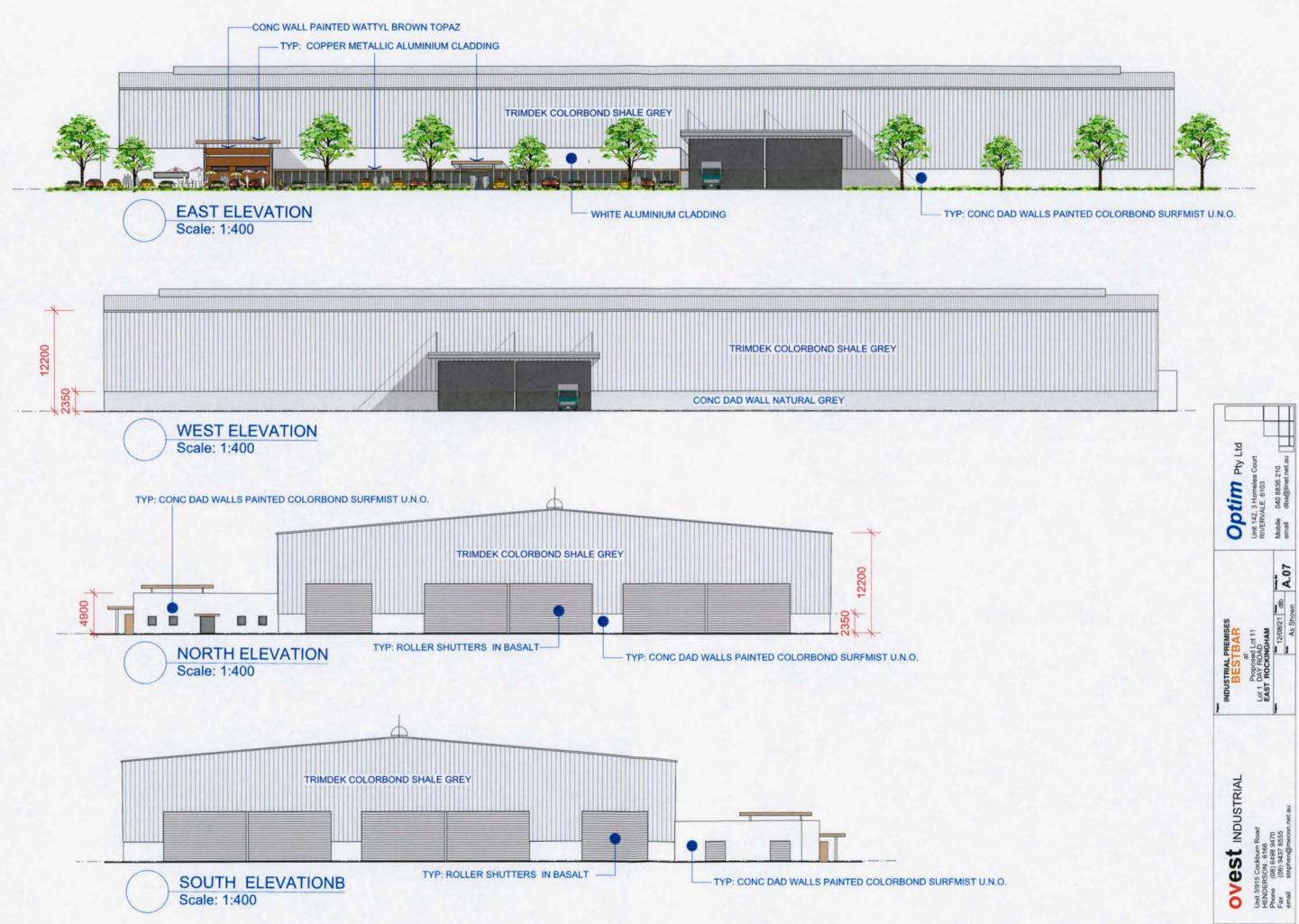






ENLARGED ADMINISTRATION OFFICE STREET EAST ELEVATION Scale: 1:250







.

LANDSCAPI Scale: 1:550	65.9 NG PLAN		45.3	19.1
LANDSCAPE LE		QUANTITY		75.48
	PLATANUS ACERIFOLIA (LONDON PLANE) 20CM	16		
Θ	CALLISTEMON VIMINALI 20CM	42		
Θ	ADENANTHOS SERICEA (ALBANY WOOLLYBUSH) 13CM	73		
0	GREVILLEA LEMON SUPREME 17CM	196	ALL LANDSCAPE AREAS OTHER THAN LAWN AREAS SHALL BE COVERED WITH 70MM KARRI MULCH.	
Φ	JUNIPERUS CONFERTA 13CM	101	RETICULATION SHALL BE VIA STREET SUPPLY CONTR STATION RAINMAKER CONTROLLER WITH SOLENOID	
Ø	GREVILLEA OBTUSIFOLIA 13CM	195	PLASTIC VALVE BOX. GATE VALVE MAIN SUPPLY. PO SUPPLY TO EACH STATION. GURGLER DRIPPERS TO MAIN TREE AND SHRUBS WITH	
	GREVILLEA BIPINNATIFIDA 17CM	165	SPRINKLERS TO LAWN AREA.	

Technical Note

To:	City of Rockingham	Attention:	David Banovic, Senior Projects Officer			
Copy to:	N/A	Date:	9 September 2021			
Subject:	Lot 1 (27) Day Road, East Rockingham Proposed Industrial Development Response to Request for Additional Information (pre-assessment)					

This technical note has been prepared in support of an Application for Development Approval, for the proposed industrial development of the north western portion of Lot 1 (27) Day Road, East Rockingham (subject site). We refer to the City of Rockingham (City) request for further information received via email on 1 September 2021. More specifically, the information contained herein responds to the following:

The application is required to address EPA Separation Guidelines in respect to Noise and Dust impacts. Based on the information at hand, the City considers the proposal constitutes a Metal fabrication type industry (sheet metal, structure metal products) under the EPA Guidelines Statement. Existing sensitive uses including a Caravan Park on Dixon Road and Hillman residential estate (most northern end) are situated within the prescribed EPA Guideline Statement buffer.

State Planning Policy 4.1 – State Industrial Buffer Policy (SPP4.1) identifies the need for land uses commonly associated with off-site amenity impacts (e.g. noise, dust, odour, risk and particulate emissions) to be separated from sensitive land uses to ensure acceptable environmental criteria can be achieved at nearby sensitive receivers. The Environmental Protection Authority's (EPA) *Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses* (EPA Guidance Statement No. 3) provides further guidance on the implementation of SPP4.1, recommending generic buffer distances intended to mitigate impacts of industrial developments on sensitive land uses.

With regard to industrial activities involving 'metal fabrication', the EPA Guidance Statement No. 3 identifies potential impacts as dust and noise, and recommends a generic buffer distance of 500m to 1,000m (depending on size of the facility). The buffers recommended by EPA Guidance Statement No. 3 are not absolute separation distances. An assessment against the relevant amenity impacts identified with the EPA Guidance Statement No.3 is provided below.

PROPOSED INDUSTRIAL DEVELOPMENT

The proposed industrial development is located in the north western portion of the subject site, with all metal fabrication activities occurring internally within the enclosed warehouses. The southern façade of the proposed warehouse building provides roller doors to ensure the building can be enclosed if any particularly noise generating activities are occurring. This also ensures that any potential dust is contained within the building and is managed appropriately. The south eastern façade of the development comprises the office component, which would emit negligible (if any) levels of noise to the south east (i.e. towards the Rockingham Holiday Village).

The location of the proposed development is in excess of 750m north of the Hillman Residential Estate and in excess of 815m from the Rockingham Holiday Village. This distance well exceeds the minimum 500m guiding separation distance specified by EPA Guidance Statement No. 3.

Refer to **Figure 1** below for an aerial of the subject site and surrounds depicting the distance from the nearest sensitive land uses.



Level 1,251 St Georges Tce, Perth WA (08) 9227 7970 GPO Box 2709 Cloisters Square PO 6850



Figure 1 – Aerial Photograph of subject site and surrounds (Source: Nearmap August 2021)

Not only is the proposed development located a minimum of 750m away from the nearest sensitive land uses, it is separated by an established light industrial area (with industrial activities operating and generating noise).

Dixon Road (a four lane dual carriageway Other Regional Road) is also located between the subject site and the Hillman Residential Estate and adjoins the Rockingham Holiday Village. The noise generated by the vehicles on Dixon Road (only 250m north of the residential dwellings) would arguably have a greater amenity impact in terms of noise than an industrial development located in excess of 750m to the north. Main Roads WA traffic data also indicates vehicle movements on Dixon Road commence in the early hours of the morning (i.e. from 4.00am onwards).

Although acknowledging that the applicant is not an acoustic engineer or an expert in the field of noise, meteorological information (i.e. wind speed/direction) also impacts on the way noise carries. The prevailing south westerly winds in summer would cause wind to travel to the north east (instead of south east towards the sensitive land uses). The eastern winds we also experience would take noise westwards into the conservation area.

Furthermore, the operation of the facility is already governed by the *Environmental Protection* (*Noise*) *Regulations 1997* to ensure no adverse impacts on amenity. If deemed absolutely necessary by the City, it is expected a suitably worded condition of development approval can ensure that no adverse amenity impacts are experienced by the aforementioned sensitive land uses. Example wording of such a condition may read:

Following occupation of the development and commencement of onsite operations, ground truthing of all noise sources from the development is to be carried out by a suitably qualified acoustic consultant, and a report provided to the City that demonstrates all noise emissions from the site comply in all respects with the with the Environmental Protection (Noise) Regulations 1997, to the satisfaction of the City.

It must again be highlighted that this is an industrial development located in an industrial area, zoned 'Industrial' under the Metropolitan Region Scheme and 'General Industry' under the City of Rockingham Local Planning Scheme No.2.

The Minister of Planning has said that *"the subject land forms part of a State-significant strategic industrial area, of which the developable land should be optimised."* The subject site is therefore contemplated for industrial development, with the location of existing sensitive land uses considered as part of the planning for this industrial area. It is clear that this is an appropriate (and optimal) location for the proposed development.

CONCLUSION

The proposed industrial development has been configured and designed to respond to the subject site, to mitigate perceived amenity impacts on adjoining properties and the nearest sensitive land uses. This is an industrial development which is suitably located in an industrial area. A pragmatic approach needs to be taken here in consideration of the proposal, its context and EPA Guidance Statement No. 3.

The proposed site layout demonstrates the development is not less than the EPA's generic 500m buffer distance, without the requirement for a site-specific study. Although less than the 1,000m distance, the development is not of a scale large enough to require a separation of that extent (which is again a generic buffer distance).

The proposed industrial development is considered to appropriately address the City's request for information from an environmental separation perspective, warranting the City's support.

We respectfully request the City's accepts the proposed development application for assessment.

Yours sincerely,

Sham

OLIVER BASSON SENIOR PLANNER

TRANSPORT IMPACT STATEMENT

Lot 1 Day Road, East Rockingham

September 2021

Rev A



Transport Impact Statement KC01344.000 Lot 1 Day Road, East Rockingham

HISTORY AND STATUS OF THE DOCUMENT

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Rev A	7.09.2021 M Kleyweg		M Kleyweg	7.09.2021	Amended according to the received comments		

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Table of Contents

1.	Executive Summary	4
2.	Transport Impact Statement	6
2.1	Location	6
2.2	Technical Literature Used	6
2.3	Land Uses	7
2.4	Local Road Network Information	
2.5	Traffic Volumes	
2.6	Vehicular Crash Information and Risk Assessment	
2.7	Vehicular Parking	
2.8	Compliance with AS2890.1:2004 and AS2890.6	
2.9	Bicycle Parking	
2.10	ACROD Parking	
2.11	Delivery and Service Vehicles	
2.12	Calculation of Development Generated / Attracted Trips	
2.13	Traffic Flow Distribution	
2.14	RAV Network Analysis	
2.15	Road Safety	
2.16	Road Cross-Section Requirements	
2.17	Vehicle Crossover Requirements	
2.18	Public Transport Accessibility	
2.19	Pedestrian Infrastructure	
2.20	Cyclist Infrastructure	
2.21	Site-Specific Issues and Proposed Remedial Measures	21

Appendices

- Appendix 1 The layout of the proposed development
- Appendix 2 Transport Planning and Traffic Plans
- Appendix 3 Vehicle Turning Circle Plans

1. Executive Summary

Site Context

- The proposed development site is situated on a western portion of the subject Lot 1 Day Road. This is a 29,491m2 undeveloped land parcel.
- The development proposes establishing a warehouse/manufacturing facility for a Best Bar (one of the leading Australian Steel reinforcement suppliers).
- The subject portion of the Lot 1 is approachable via the 4 crossovers from the proposed cul-de-sac 20m wide road to the east of the subject development. This road and crossovers are planned to be constructed as a part of the proposed subdivision.

Technical Findings

- The proposed development is expected to generate an additional 380 vehicular movements per day with a forecasted impact of around 54 vehicular movements per hour in the peak hour.
- According to WAPC guidelines, all developments generating 10-100 VPH can be deemed to have a moderate impact on the network, with a TIS a suitable level of traffic reporting.
- Development site will be accessed by the future road, created as part of the subdivision. Future road is accessed from Lodge Drive. Two major routes are expected to be utilised for accessing/egressing the subject site:
 - Via Day Road from north
 - Via Day Road from south
- B-Double (27.5m) will be able to use both major routes as up to RAV 4 sized vehicles (max 27.5m in length) are permitted to utilise both Day Road and Lodge Drive currently.

Relationship with Policies

- In accordance with the requirements prescribed for the proposed land use under Local Planning Scheme No 2, 90 parking bays need to be provided. Proposed development plans indicate a total of 93 car bays provided, leading to a nominal surplus of 3 parking bays.
- Keeping in mind that the proposed land use is a warehouse/manufacturing facility for a Steel reinforcement supplier, it is not expected to have many visitors on site. The subject site will have a total of 90 employees which leaves 3 parking bays for visitors. Therefore, KCTT concludes that this development has sufficient parking spaces provided on site.
- In addition, there are 15 semitrailer parking bays provided on a northern portion of the development site.
- In accordance with the City of Rockingham's PP3.3.14, the proposed development requires the provision of 7 Long-term bicycle parking bays for employees of the site and no Short-term Parking bay for visitors. PP's requirement is general and applicable to all "industrial uses". It is highly unlikely

that visitors to the site will utilise cycling as a mode of transportation to access the site, as it is expected they will approach the site for steel reinforcement supplies.

- The proposed development plans indicate a provision of 3 bicycle parking racks with 6 bike bays. As
 the subject development site is located within a predominantly industrial area, KCTT believes most of
 the staff members will use their own vehicles to approach the place of work, and only a minor
 percentage will utilise the bikes. Therefore, KCTT considers the provided bike racks applicable for the
 development's bicycle parking demand and believes it will be beneficial for promoting the use of
 alternative transportation modes around the development.
- The plans for the proposed development shows a loading zone at the northern segment of the subject development site. Conducted swept path analysis indicates there is adequate manoeuvring and drive-thru areas provided.
- Service vehicles are expected to utilise 3 of 4 proposed crossovers in total. The northern 2 crossovers
 are proposed for heavy vehicles access only, while the southern 11m wide crossover is planned to
 accommodate heavy and some light vehicle movements from staff who are familiar with the facility.
- KCTT believe this solution is suitable for the scale and use of the development. It is not likely that any larger delivery vehicles will obstruct functionality of the car parking area in the southern segment of the site.
- Building Code of Australia ACROD Provision the proposed development will meet the requirement for 2 ACROD parking bays.

Conclusion

- The proposed development will comprise oaf warehouse/manufacturing facility for a Best Bar with an office component.
- As stated above, the expected traffic from the proposed development will be 380 VPD and 54 VPH to the surrounding network.
- Lodge Drive is classified as Access Road as per MRWA classification with the maximum desirable volume of 3,000 vehicles per day. There are no existing traffic counts on Lodge Drive. However, it is expected that the capacity of this road with the added traffic from the subject development would remain well under the maximum desirable traffic volume for Access Roads.
- Other surrounding roads would absorb less traffic than Lodge Drive; moreover, the traffic would be dispersed so that the impact can be considered negligible.
- In summary, KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Transport Impact Statement

Note: This document is copyright to KCTT (trading as KC Traffic and Transport Pty Ltd). The information provided in this TIS report has been developed by KCTT over a period of years and has been presented in accordance with the requirements of a number of our clients. The information in this report is therefore intended to be commercial in confidence and is not to be shared with external parties at any time, unless a Director of KCTT provides written authorisation that the document may be shared at a specific time to a specific party, or parties. The terms and conditions associated with the receipt of this material is that it is not shared or distributed without our express, and written consent.

If you have received this information in error, KCTT must be notified immediately. We request the immediate destruction of all formats of this document, inclusive of paper and electronic copies should you have received this document in error.

2.1 Location

Lot Number	1
Street Number	27
Road Name	Day Road
Suburb	East Rockingham
Description of Site	The proposed development site is situated on a western portion of the subject Lot 1 Day Road. This is a 29,491m ² undeveloped land parcel. The development proposes establishing a warehouse/manufacturing facility for a Best Bar (one of the leading Australian Steel reinforcement suppliers). The subject portion of the Lot 1 is approachable via the 4 crossovers from the proposed cul-de-sac 20m wide road to the east of the subject development. This road is planned to be constructed as a part of the proposed subdivision.

2.2 Technical Literature Used

Local Government Authority	City of Rockingham			
Type of Development	Industrial development - Warehouse			
Are the R-Codes referenced?	NO			
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation/attraction rates for various land uses) referenced?	YES			
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments Volume 5 - Technical Guidance			
Are there applicable LGA schemes for this type of development?	YES			
If <u>YES</u> , Nominate:				
Name and Number of Scheme	Local Planning Scheme No. 2			
Are Austroads documents referenced?	YES			

Is the Perth Transport Plan for 3.5 million and Beyond YES referenced?

2.3 Land Uses

Are there any existing Land Uses NO *If <u>YES</u>, Nominate:* -

Proposed Land Uses

How many types of land uses are proposed? Nominate land use type and yield As listed below:

- Offices = 870m² GFA / 653m² NLA* (operations office, head office, and workshop amenities)
- Warehouse/Manufacturing Area
 - Area 1 = 2,713m²GFA / 2,442m²NLA*
 - Area 2 = $4,603 \text{ m}^2 \text{ GFA} / 4,143 \text{ m}^2 \text{ NLA}^*$
 - Total = 7,316 m^2 GFA / 6,584 m^2 NLA*
- Open Air Storage = 2,139m²
- 18.3m wide Drive Through Area
- Up to 90 staff members on-site at any one time (Inclusive of 30 office staff + 60 factory staff)

Note - KCTT used yields as provided on plans received from the architect where applicable. Where yields information was unavailable, the yields were assumed for the purpose of calculations within this report.*

It should be taken into consideration that the terms NLA (Net Lettable Area) and GLFA have the same meaning. The NSW RTA Guide states that as a guide, about 75% of the gross floor area is deemed gross leasable floor area". However, the percentage of NLA in relation to GFA depends on development location and uses.

KCTT have use GFA areas utilising the layout provided by the client and a multiplier of 75% GFA to derive the value of NLA for office are within-subject development, while for the warehouse component, 90% of GFA is considered as equal to the NLA

Note** - Plans for the proposed development have been provided in Appendix 1 of this report.

Are the proposed land uses complementary with the YES surrounding land-uses?

The subject site is zoned 'General Industry' under the City of Rockingham Local Planning Scheme No. 2 and 'Industrial'' under the Metropolitan Region Scheme (MRS).

2.4 Local Road Network Information

How many roads front the subject site?

Name of Roads Fronting Subject Site / Road Classification and Description:

Road Name	Proposed Road (cul-de-sac) *	
Number of Lanes	n/a	
Road Reservation Width	20m	
Road Pavement Width	10m	
Classification	n/a	
Speed Limit	n/a	
Bus Route	NO	
If YES Nominate Bus Routes	-	
On-street parking	NO	

One (1)

Note - the proposed road is planned to be constructed as a part of the proposed subdivision. The information shown above is sourced from the available subdivision plans and documentation*

Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development.

Road Name	Lodge Drive		
Number of Lanes	two way, one lane (no linemarking), undivided		
Road Reservation Width	App.20m		
Road Pavement Width	App.9m		
Classification	Access Road		
Speed Limit	50kph or State Limit		
Bus Route	NO		
If YES Nominate Bus Routes	-		
On-street parking	NO		

Road Name	Day Road		
Number of Lanes	two way, one lane each direction, undivided		
Road Reservation Width	App.20m		
Road Pavement Width	App.7		
Classification	Distributor A		
Speed Limit	60kph/70kph*		
Bus Route	NO		
If YES Nominate Bus Routes	-		
On-street parking	NO		

Note* - The posted speed limit is currently 70km/hr near the site, but a section of Day Road to the south of the Site has a posted speed limit of 60km/hr.

8

Transport Impact Statement

KC01344.000 Lot 1 Day Road, East Rockingham

Road Name	Dixon Road		
Number of Lanes	two way, one lane each direction, undivided		
Road Reservation Width	App.35m		
Road Pavement Width	App.20		
Classification	Distributor A/B (Industrial)		
Speed Limit	60kph		
Bus Route	YES		
If YES Nominate Bus Routes	549		
On-street parking	NO		

2.5 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per P	eak Hour (VPH)	Heavy Vehicle %	Date of Traffic Count	lf older than 3 years multiply with a growth rate
			AM AM Peak - Peak Time VPH	PM PM Peak - Peak Time VPH	If HV count is Not Available, are HV likely to be in higher volumes than generally expected?		
Day Road	South of Mandurah Road*	2,835	8:00 - 197	15:00 - 256	n/a	2019	-
Dixon Road	East of Ennis Avenue (SLK 2.07)	26,676	08:00 - 2,226	15:15 – 2,469	8.3%	2020/2 1	-
Mandurah Road	South of Dixon Road (SLK 3.50)	24,264	07:30 - 2,033	15:45 – 2,427	10.4%	2019/2 0	-
	South of Office Road (SLK 0.47)	10,236	05:30- 1,070	15:45 – 1,100	16.3%	2019/2 0	_

Note - The traffic volumes have been derived from Main Roads.

Note - These traffic counts have been received from the City of Rockingham (taken from Transport Impact Assessment Lot 1, Day Road, prepared for Hesperia Projects Pty Ltd by CARDNO in August 2021)*

2.6 Vehicular Crash Information and Risk Assessment

Is Crash Data Available on Main Roads WA website?	NO KCTT have checked the report data for the below period at the location listed below, and no crash data was recorded in the 5-year period.
If YES, nominate important survey locations:	
Location 1	Lodge Drive - SLK 0.00 to 0.67
Location 2	Intersection of Lodge Drive & Day Road
Period of crash data collection	01/01/2016 - 31/12/2020

2.7 Vehicular Parking

Local Government

Local Government Document Utilised

City of Rockingham Local Planning Scheme No 2

Description of Parking Requirements in accordance with Scheme:

• Industry, Showroom, Warehouse - 1 bay per 50m2 NLA for factory units and showrooms, plus 1 bay per 100m2 NLA for warehouses or 1 bay per employee, whichever is the greater

Calculation of Parking

Land Use	Requirements	Yield	Required
Warehouse / Storage and Distribution Centre	<i>1 bay per 100m² NLA or 1 bay per employee, whichever is the greater</i>	6,584m² NLA 90 employees	Greater of 65.84 and 90
	Total Volume of	Parking Required	90 bays

Total Volume of Parking Provided by Proponent	93 bays
	91 standard car bays 2 ACROD bays
+ 1	15 semitrailer parking bays

Justification

In accordance with the requirements prescribed for the proposed land use under Local Planning Scheme No 2, 90 parking bays need to be provided. Proposed development plans indicate a total of 93 car bays provided, leading to a nominal surplus of 3parking bays.

Given that the subject site will have a total of 90 employees, 3 parking bays leaves for possible visitors. Therefore, KCTT concludes that this development has sufficient parking spaces provided on site.

Have Vehicle Swept Paths been checked for Parking?

YES

If YES, provide description of performance:

KCTT have conducted vehicle swept path analysis to check for navigability of the crossover and internal parking area. A B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a 19m long semitrailer and a B-Double (27.5m) were used for this analysis. The crossovers, drive thru area and internal parking area were found to be fully navigable by nominated vehicles. Please refer to Appendix 3 for vehicle swept path drawings.

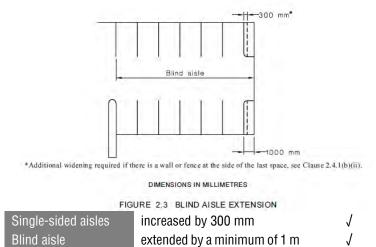
2.8 Compliance with AS2890.1:2004 and AS2890.6

Number of Parking Bays on-site Are Austroads documents referenced? <i>If <u>YES</u>, Nominate</i> :	 93 car bays YES Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - Originated as AS 2890.1—1986. Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities - Originated as AS2890.6
Proposed development User Class	User Class 1A (Residential, domestic and employee parking) User Class 4

AS2890.1:2004 Off-street car parking AS2890.6 Off-street parking for people with disabilities						
Parking Bay	Parking Bay Length		Parking Bay Width		Aisle Width	
Туре	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90°	5.4m	5.4m	2.4m	2.5m	5.8m	6.2m
ACROD Parking	5.4m	5.4m	2.4m–ACROD 2.4m–shared space	2.4m 2.4m	5.8m	6.2m

Name the other requirements in the AS2890.1:2004 document.

At blind aisles, the aisle shall be extended a minimum of 1 m beyond the last parking space, as shown in Figure 2.3, and the last parking space widened by at least 300 mm if it is bounded by a wall or fence.



Does the parking area meet the requirements set in AS2890.1:2004?

Does the parking area meet the requirements set in AS2890.6?

KCTT reviewed the layout for the proposed development and conclude that car parking bays dimensions and aisle width are complying with the Australian Standard AS/NZS 2890.1/2004.

4 provided

Reversing bay

J

2.9 Bicycle Parking

Local GovernmentCity of RockinghamReference Document UtilisedPlanning Policy 3.3.14 – Bicycle Parking & End-of-trip FacilitiesDescription of Parking Requirements in accordance with Scheme:

Industry - Minimum Short-term Parking – n/a

Minimum Long-term Parking - 0.1 spaces per 100m² NLA Note: All rounding of bicycle parking rates is to be calculated by rounding up to the nearest whole number

		Bicycle Parking requirement			
Land Use	Yield	Minimum Long-term Parking Employee Resident Spaces	Req. bays	Minimum Short-term Parking Visitor/Shopper spaces	Req. bays
Warehouse / Storage and Distribution Centre	6,584m² NLA	0.1 spaces per 100m ² NLA	6.58	n/a	0
		Minimum Long-term Parking	7	Minimum Short-term Parking	0

Justification

In accordance with the City of Rockingham's PP3.3.14, the proposed development requires the provision of 7 Long-term bicycle parking bays for employees of the site and no Short-term Parking bay for visitors. PP's requirement is general and applicable to all "industrial uses". It is highly unlikely that visitors to the site will utilise cycling as a mode of transportation to access the site, as it is expected they will approach the site for steel reinforcement supplies.

The proposed development plans indicate a provision of 3 bicycle parking racks with 6 bike bays. As the subject development site is located within a predominantly industrial area, KCTT believes most of the staff members will use their own vehicles to approach the place of work, and only a minor percentage will utilise the bikes. Therefore, KCTT considers the provided bike racks applicable for the development's bicycle parking demand and believes it will be beneficial for promoting the use of alternative transportation modes around the development.

2.10 ACROD Parking

Class of Building Does this building class require a specific provision of ACROD Parking?	Class 5 - An office building Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse); YES
Reference Document Utilised Description of Parking Requirements: Class 5: An office building. • 1 space for every 100 carparking space	Building Code of Australia tes or part thereof

Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse);

• 1 space for every 100 carparking spaces or part thereof.

Parking Requirement in acco	rdance with regulatory documents		
Land Use	Requirements	Yield	Total Parking
Warehouse / Storage and Distribution Centre	1 space for every 100 carparking spaces or part thereof 93 parking bays		1
Warehouse / Office Area	— or part thereof		1
	Total Volume of ACROD	Parking Required	2

Darking Dequirement in accordance with regulatory decuments

The proposed development shows the provision of 2 ACROD parking bays located within the internal parking area and therefore achieves BCA compliance.

2.11 **Delivery and Service Vehicles**

Guideline Document used as reference

NSW RTA Guide to Traffic Generating Developments

Requirements

Wholesale, Industrial (< 8,000m2 GFA) - 1 space per 800m2 Other uses - 1 space per 2,000m2

Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Warehouse / Storage and Distribution Centre	1 space per 800m2	7,316 m² GFA	9.15
Warehouse / Office Area	1 space per 2,000m2	870m ² GFA	0.44
Total	Volume of Service and Deliv	ery Parking Required	10

Total Volume of Service and Delivery Parking Provided by Proponent 15

Justification

The plans for the proposed development shows a loading zone at the northern segment of the subject development site. There are 15 semitrailer parking bays provided on site. Conducted swept path analysis indicates there are adequate manoeuvring and drive-thru areas provided.

Service vehicles are expected to utilise 3 of 4 proposed crossovers in total. The northern 2 crossovers are proposed for heavy vehicles access only. In contrast, the southern 11m wide crossover is planned to accommodate heavy and light vehicle movements from staff familiar with the facility.

KCTT believe this solution is suitable for the scale and use of the development. It is not likely that any larger delivery vehicles will obstruct functionality of the car parking area in the southern segment of the site.

2.12 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation? What are the likely peak hours of operation?	From 06:00 till 22:00 The usage of the facility is expected to be spread across the day with no specific peaks.	
Do the development generated peaks coincide with existing road network peaks?	NO	
Guideline Document Used	WAPC Transport Assessment Guidelines for Developments	
Rates from above document:	Office and Commercial Area - 2 per 100m ² of GFA in the PM Peak hour. The same rate is assumed for the AM peak. An 80% IN / 20% OUT split has been assumed for the AM peak and the reverse for the PM peak;	
Guideline Document Used	NSW RTA Guide to Traffic Generating Developments	
Rates from above document:	Office and Commercial Area – 10 vehicular trips per 100m ² of GFA;	

Warehouse - 4 vehicular trips per 100m² GFA per day and 0.5 vehicular trips in the peak hour per 100m² GFA. KCTT is assumed the same rate for the PM peak.

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation
Warehouse/ Storage and Distribution Centre	4 VPD per 100m² GFA Peak 0.5 VPH per 100m² GFA;	7,316m ² GFA	293	37
Warehouse/ Office Area	10 vehicle trips per 100m ² GFA Peak 2 vehicle trips per 100m ² GFA	870m ² GFA	87	17
Expected	I Traffic Generation from the propose	d development	380 VPD	54 VPH

Does the site have existing trip generation/attraction? What is the total impact of the new proposed development?

NO

The proposed development is expected to generate additional **380 vehicular movements per day** with a forecasted impact of around **54 vehicular movements per hour** in the peak hour.

The proposed development generates between 10 and 100 VPH, and therefore triggers the requirement for a Transport Impact Statement, per WAPC guidelines.

The proposed development can be deemed to have a **moderate** impact on the network

Traffic Flow Distribution 2.13

How many routes are available for access/egress to the Two major routes are expected to be utilised for site?

accessing/egressing the subject site as follows:

Route 1

Provide details for Route No 1	From north via Day Road
Percentage of Vehicular Movements via Route No 1	45%
	further split as follows:
	 - 15% - From north via Mandurah Road >>Day Road>> Lodge Drive >> Proposed Road >: Proposed development site and reverse
	 - 30% - From southeast via Mandurah Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse
Route 2	
Provide details for Route No 2	From south via Day Road
Percentage of Vehicular Movements via Route No 2	55%
	further split as follows:
	 - 40% - From west via Dixon Road >>Day Road>: Lodge Drive >> Proposed Road >> Proposed development site and reverse
	 - 10% - From south via Darlie Road >>Day Road> Lodge Drive >> Proposed Road >> Proposed development site and reverse
	 - 5% - From east via Dixon Road >>Day Road> Lodge Drive >> Proposed Road >> Propose development site and reverse.

Note - For more detailed plans of the estimated vehicular traffic volumes and distribution, please refer to the plans provided in Appendix 2.

Transport Impact Statement KC01344.000 Lot 1 Day Road, East Rockingham

RAV Network Analysis 2.14

Which RAV network is available for reaching the site?	RAV 2, 3 & 4 Networks
What is the largest vehicle allowed on this network?	Up to RAV 4 sized vehicles (max 27.5m in length) currently utilise both Day Road and Lodge Drive. The largest vehicle planned to be used within the proposed development site is a B-Double (27.5m).
Have Vehicle Swept Paths been checked for entering the development with the abovementioned large vehicles?	YES B-Double (27.5m) is the largest vehicle expected to access the development. Refer to Appendix 3 for more detail.
What are the expected routes for large vehicles entering and exiting the site?	As per the above screenshot, the largest vehicle (27.5m) will have to use the route via Mandurah Road > Day Road > Lodge Drive > Proposed Road > Proposed development site
Additional comments	As indicated in the , Transport Impact Assessment Lot 1, Day Road, prepared for Hesperia Projects Pty Ltd by CARDNO in August 2021 ' 'RAV classification for these roads are changed to accommodate up to RAV 7 vehicles, the truncation on the north-eastern corner of the subdivision has been sized to ensure that the Day Road / Lodge Drive intersection can be upgraded to accommodate the swept path of the RAV7 vehicles (note: it is assumed that the section of Day Road to the south of Lodge Drive will remain classified to only permit up to RAV4 vehicles)."

2.15 Road Safety

Are sight distances adequate at proposed intersections? YES

Justification

In order to navigate the access/egress point of the subject site, vehicles must reduce operating speed to a maximum of 20km/h (if not stop fully); therefore, the requirements for ASD and SISD are so low they are not provided in the Austroads tables.

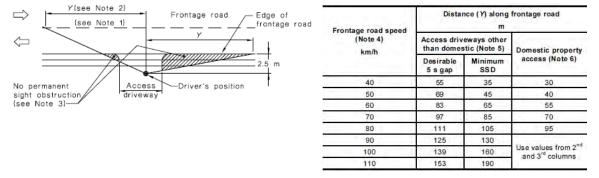
A review of the plan for the proposed development indicates there are sufficient sight distances for safe traffic movements.

According to AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street:

"Entering sight distance - Unsignalized access driveways shall be located so that the intersection sight distance along the frontage road available to drivers leaving the car park or domestic driveway is at least that shown in Figure 3.2."

The proposed cul-de-sac road is expected to have a 50kph speed limit. As shown in the images below from AS 2890.1, the sightline distance should be 45m for the minimum stopping sight distance. This is achieved on both the western and eastern sides of the proposed driveways, measured as per the AS2890.1 specification shown in the image below.

Sight distance is the distance at which the driver leaving the driveway is able to see without any obstructions, and it is not to be confused to the distance from the crossover to intersections.



Road safety internal to the development:

The parking is designed in accordance with AS2890.01 and deemed fully navigable. Navigability is checked with B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a a 19m long semitrailer and a B-Double (27.5m) and no navigability issues have been found. Please refer to Appendix 3 for further details.

In addition, although there are 4 proposed crossovers. Only one of them is 6m wide and planned for light vehicle movements only. Two northern 11m wide crossovers are dedicated for heavy vehicles only, while 11m wide crossover at the southern end is planned to accommodate heavy and light vehicles from staff who are familiar with the facility. Therefore, the possibility that any heavy vehicles will obstruct the functionality of the site is minimised.

2.16 Road Cross-Section Requirements

Does this development propose the construction of new roads? NO *

Note* - proposed cul-de-sac 20m wide road to the east of the subject development is planned to be constructed as a part of proposed subdivision.

2.17 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road YES networks?

How many existing crossovers? 4*

Note * - Proposed development site currently is undeveloped vacant land. However, based on the information provided in *Development Application Report, Proposed Industrial Development, Lot 1 (27) Day Road, East Rockingham, WA, prepared in August 2021, by Planning Solution for Hero Properties Pty Ltd, 'Four crossovers to the development site from the future road to the east ' are planned ' to be constructed as part of the subdivision.'*

How many proposed crossovers?	Crossover 1 – 11m wide unrestricted crossover for heavy vehicles only			
	Crossover 2 – 11m wide unrestricted crossover for heavy vehicles only			
	Crossover 3 – 6m wide unrestricted crossover for light vehicles only			
	Crossover 4 – 11m wide unrestricted crossover for combined movements of heavy and light vehicles			
If there are greater numbers of new crossove	ers, than existing, provide justification:			
Diagon refer to the note chouse				

Please refer to the note above.

How close are proposed crossovers to existing	Each of the proposed crossovers is more than 6m away
intersections?	from the intersection of Lodge Drive and Proposed Road

YES

Does this meet existing standards?

Justification

According to AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking, the user class of the access point is: User Class 1A - Residential, domestic and employee, proposed development plans indicate a total of 91 car parking bays and 2 crossovers dedicated for the use of the light vehicles that will utilise the proposed parking area. Each crossover serves between 25 and 100 parking bays from a local road, making it a ''Category 1 driveway''

Therefore, the following requirements from AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking apply:

"(a) **Driveway Categories 1 and 2:** At unsignalized intersections of sub-arterial, collector or local streets with each other or with an arterial road, access driveways in Categories 1 and 2 (see Table 3.1) shall not be located in the sections of kerb shown by heavy lines in Figure 3.1. This requirement shall not apply to accesses to domestic driveways in the kerb section opposite the entering road at any intersection including signalised intersections.

Furthermore, it shall not apply to any access driveway serving a property which would otherwise be denied access due to the physical impossibility of meeting the requirement.

At signalised intersections, the minimum distance from the intersection, measured from the property boundary along both legs, shall be increased as necessary to locate access driveways beyond the influence of normal queue lengths at the intersections. If this is not practicable, it may be necessary to provide-

(*i*) an arrangement which confines traffic to turning left when either entering or

leaving the car park;

(*ii*) a signalised driveway with signals coordinated with the intersection signals; or

(*iii*) other traffic management means of providing for safe and efficient operation of the driveway."

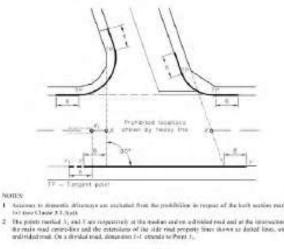
TABLE 3.1
SELECTION OF ACCESS FACILITY CATEGORY

Class of parking facility		1	Å	ccess facility can	tegory	
	Frontage road type	Number of parking spaces (Note 1)				
(see Table I.1)		25	25 to 100	101 to 300	301 to 600	>600
LIA.	Arterial	1	2	3	4	5
	Local	1	1	2	3	1
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	+
3.3A	Arterial	2	3	4	4	5
	Local	1	2	3	4	+

NOTES:

 When a car park has multiple access points, each access should be designed for the number of parking spaces offectively served by that access:

2 This Table does not imply that certain types of development are necessarily suitable for location on any particular frontage road type. In particular, access to acterial roads should be limited as far as practicable, and in some circumstances it may be preferable to allow left-tam-only movements into and out of the access driveway.



DIMENSIONS IN METRICS

FIGURE 3.1 PROHIBITED LOCATIONS OF ACCESS DRIVEWAYS

The proposed crossovers are not located in any of the areas shown by thicker lines and therefore complies with the AS/NZS 2890.1:2004 requirements.

2.18 Public Transport Accessibility

How many bus routes a	One (1)		
How many rail routes a	re within 800 metres of the subject site?		One (1)
Bus / Rail Route	Description	Peak Frequency	Off-Peak Frequency
Bus Route 549	Rockingham Station to Fremantle Station	15 minutes	30minutes on Saturday, Sunday and Public Holiday
Mandurah Line	Railway route passes within 800m radius from the subject development; however, the nearest Rail Station is approximately at 2km distance	5 minutes	60 minutes on Saturday, Sunday and Public Holidays

Note - A Railway easement is located directly adjacent to the south of the subject Lot 1 and proposed subdivision; currently there is an industrial land further south

Walk Score Rating for Accessibility to Public Transport

29 Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?

2.19 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street
Does the site have existing pedestrian facilities	NO
Does the site propose to improve pedestrian facilities?	NO
If YES, describe the measures proposed.	
n/a at this stage of development	
What is the Walk Score Rating?	
7 Car-Dependent. Almost all errands require a car.	

YES

2.20 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the su	YES	
If YES, describe:		
Classification	Road Name	
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street	
" Good Road Riding Environment"	Darlie Street, Unnaro Street	
" Bicycle Lanes or Sealed Shoulder Either Side"	Darlie Street	
Are there any PBN Routes within a 400m radius of the sub	oject site?	YES
If YES, describe:		
Classification	Road Name	
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street	
" Good Road Riding Environment"	Darlie Street	
" Bicycle Lanes or Sealed Shoulder Either Side"	Darlie Street	
Does the site have existing cyclist facilities?	NO	
Does the site propose to improve cyclist facilities?	YES	
If YES, describe the measures proposed.		

Proposed development plans indicate 3 bicycle racks (space suitable for 6 bicycles).

Transport Impact Statement

KC01344.000 Lot 1 Day Road, East Rockingham

2.21 Site-Specific Issues and Proposed Remedial Measures

How many site specific issues need to be discussed? Site-Specific Issue No 1

Remedial Measure / Response

Site Specific Issue No 2

Remedial Measure / Response

Site Specific Issue No 3

Remedial Measure / Response

3

Does the development offer suitable access/egress to the external road network?

Access/egress point locations comply with AS/NZS 2890.1:2004 requirements and allow uninterrupted manoeuvring of the B-Double (27.5m), which is nominated as the largest vehicle that will utilise the site.

Does the development offer a suitable internal road network?

Swept path analysis enclosed in Appendix 3 for clarity confirms that the proposed internal circulation lane safely accommodates the movement of the B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a 19m long semitrailer and a B-Double (27.5m). Furthermore, the car parking layout has been considered to limit any light vehicle or pedestrian interaction with the heavy vehicle movements and minimises any conflict.

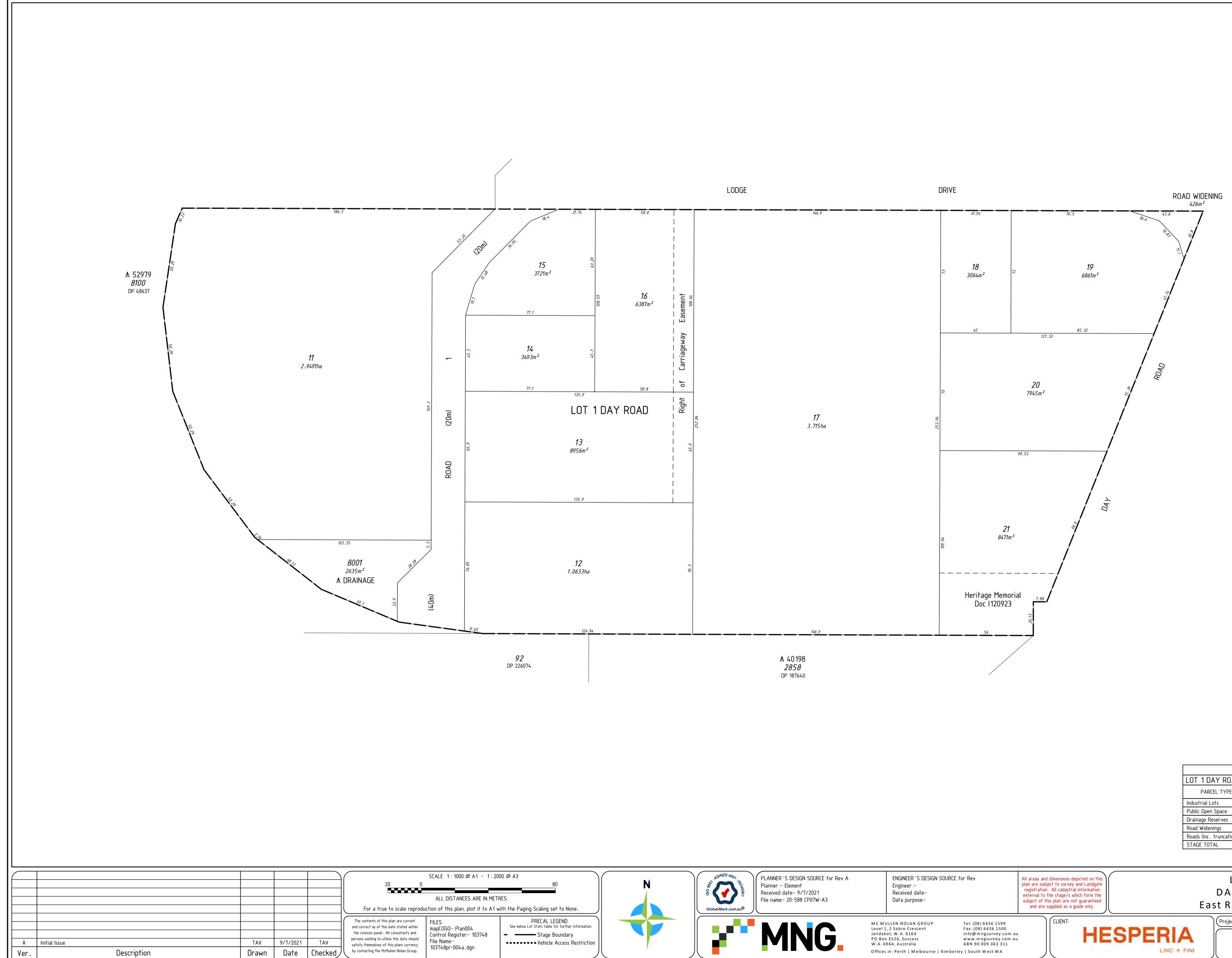
Parking provision

The proposed plans demonstrate the provision of 93 car parking bays (inclusive of 91 standard bays and 2 ACROD bays) within the internal parking area and additional parking spaces for up to 15 heavy vehicles at the northern portion of the development site. KCTT believe that a sufficient volume of parking has been provided for this development. In addition, there are a plethora of available parking areas at the back of the warehouse facility if required.



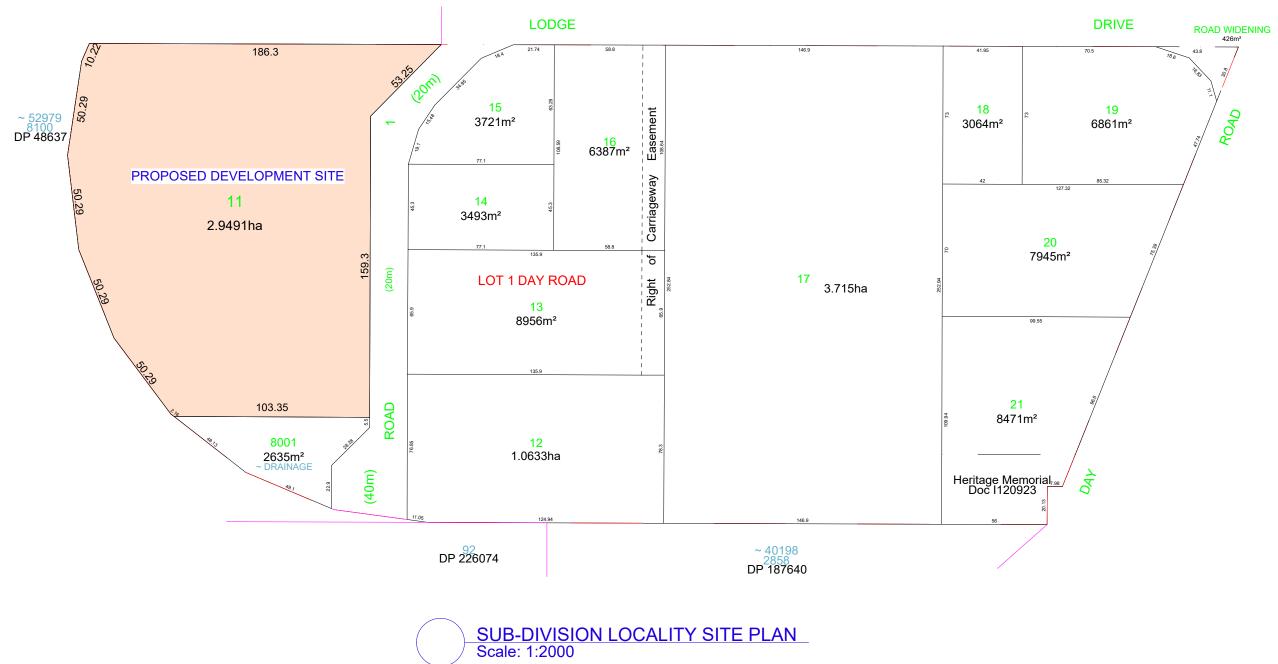
The Layout of the Proposed Development

Transport Impact Statement | KC01344.000 Lot 1 Day Road, East Rockingham



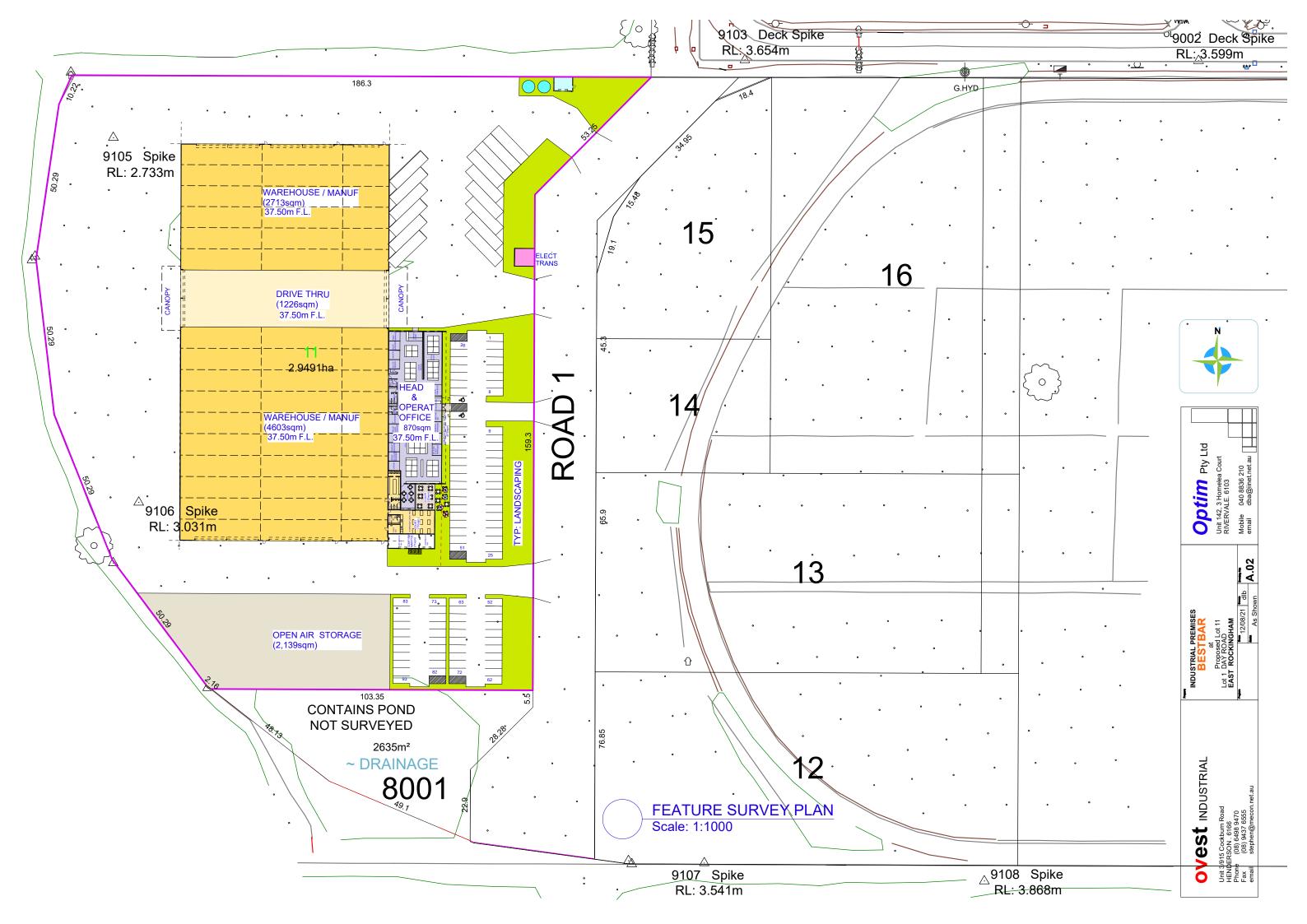
LAND USE / STATISTICS						
LOT 1 DAY ROAD	WAPC Ref:- PENDING					
PARCEL TYPE	MAP SYMBOL NUMBER OF PARCELS		AREA (ha)			
Industrial Lots		11	12.6171			
Public Open Space	P.O.S. 0		0			
Drainage Reserves	∧ DRAINAGE	1	0.2635			
Road Widenings	Road Widening	1	0.0426			
Roads (inc. truncations)			0.6138			
STAGE TOTAL		12	13.5370			

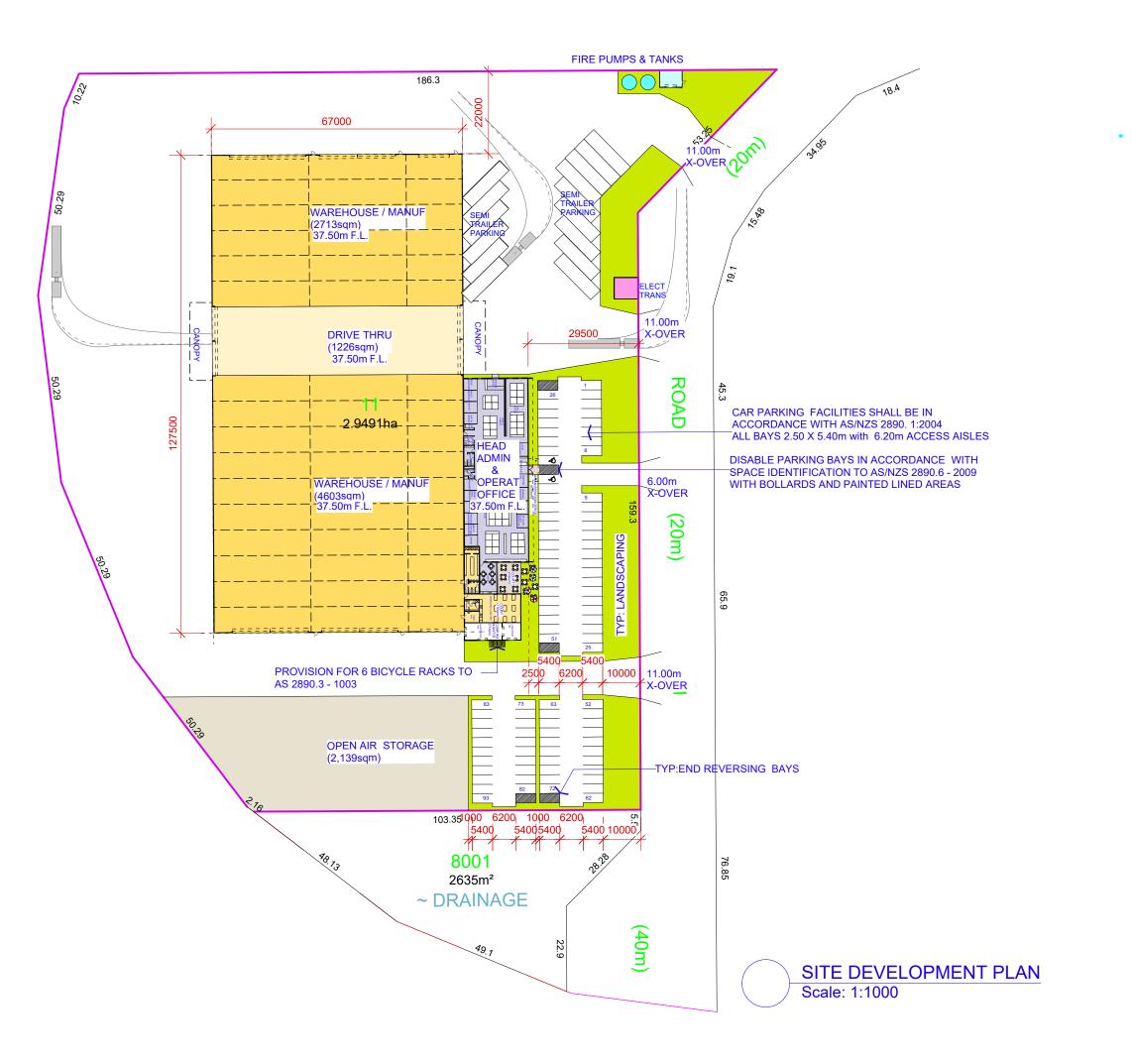
LOT 1 DAY ROAD East Rockingham Project Mngr. Trevor Veen Datum PCG94 103748 - 004 - A Plan Version Number Job Number





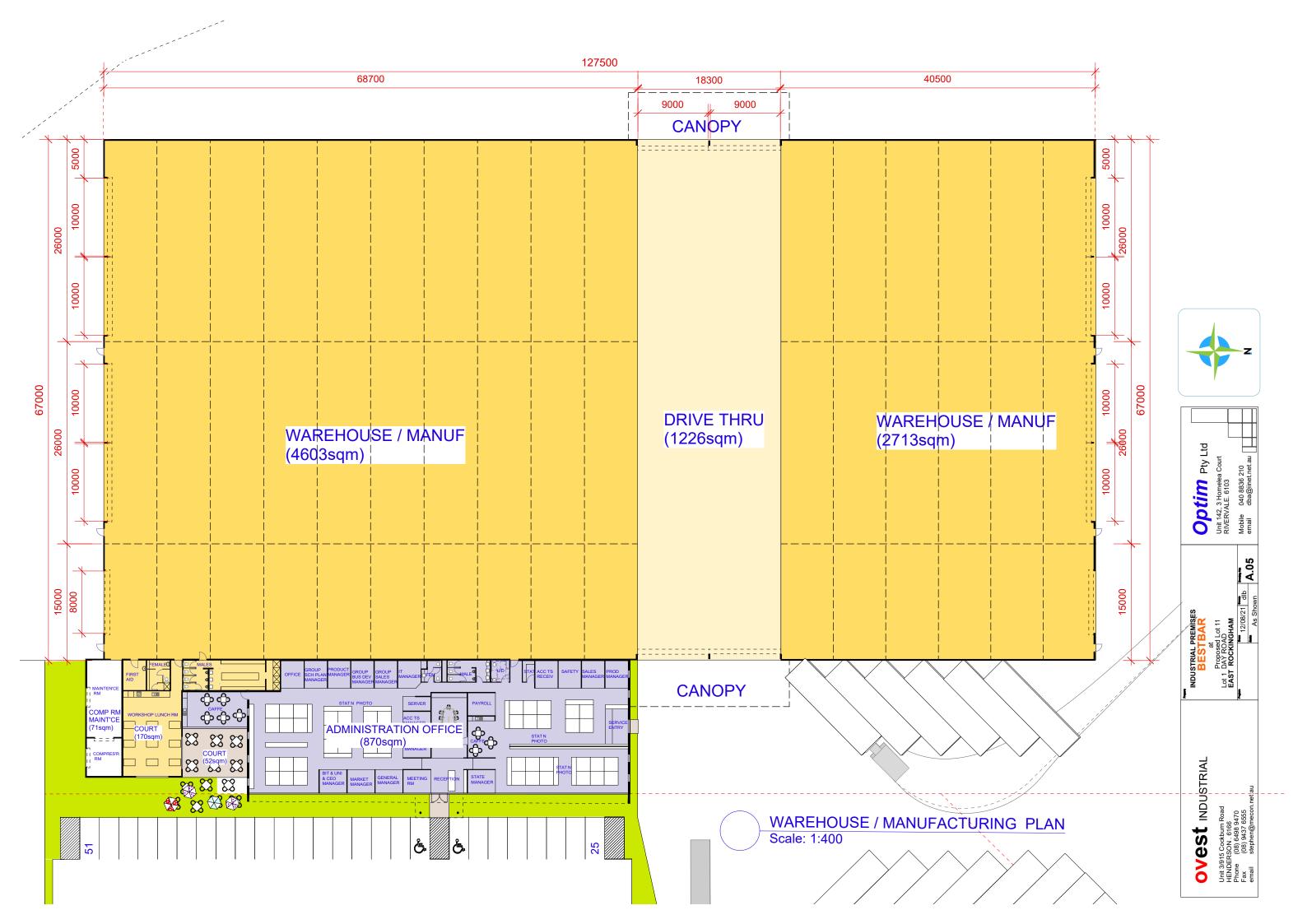


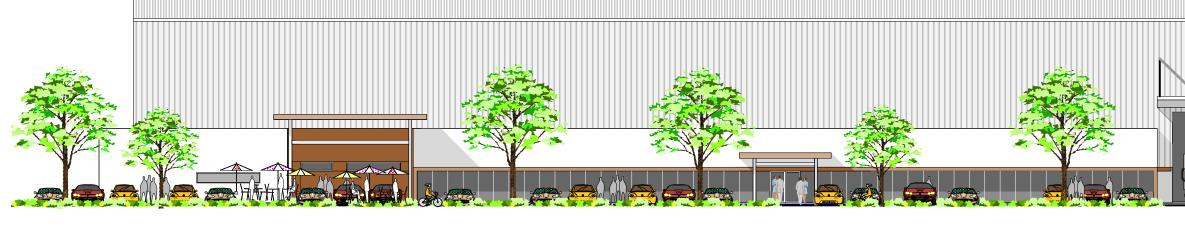




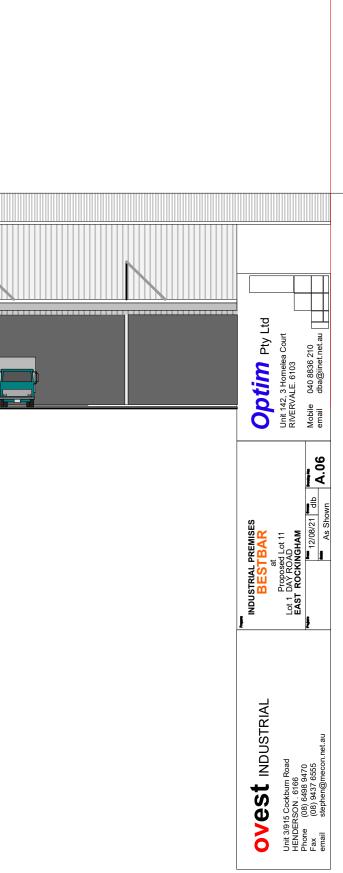


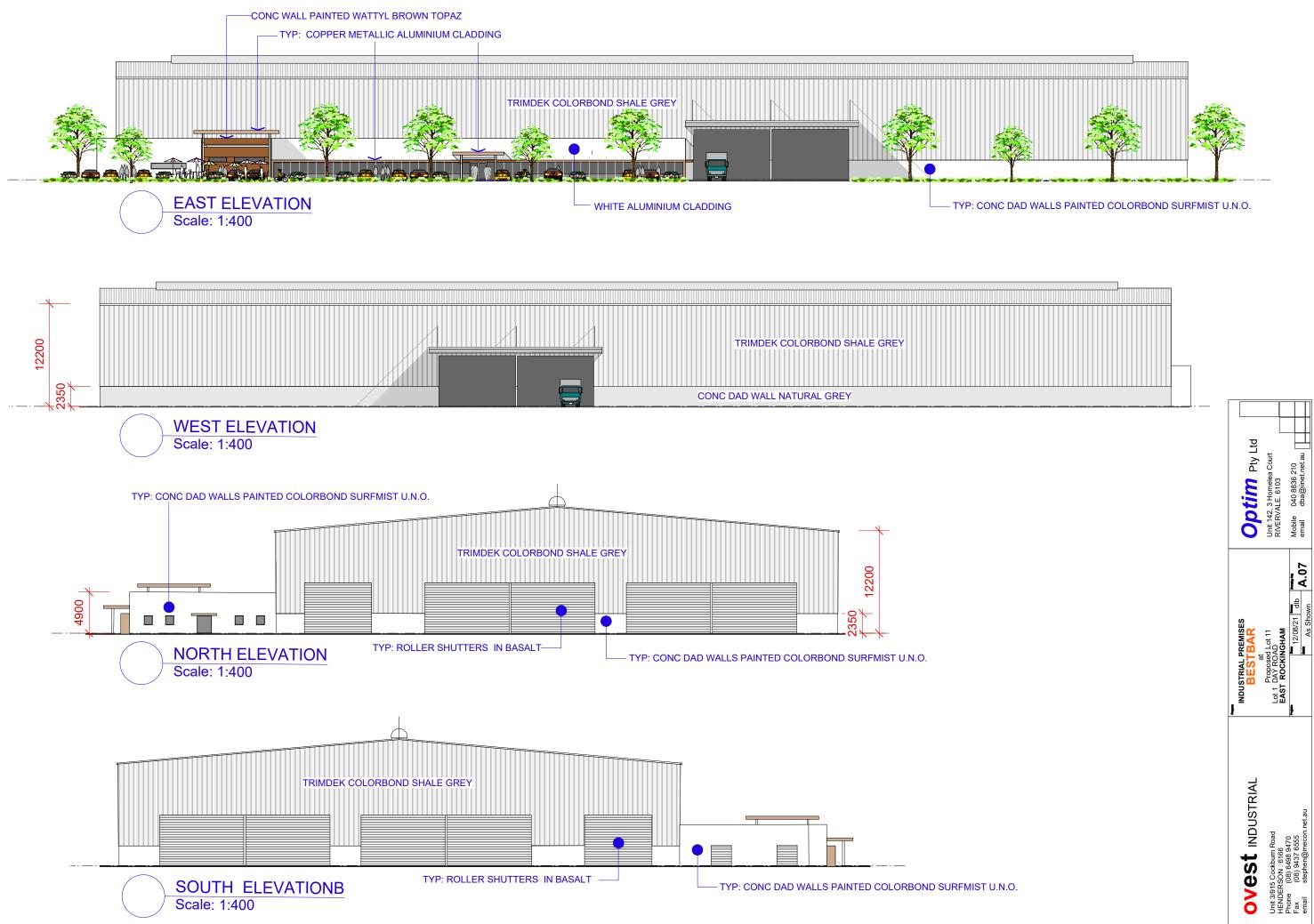


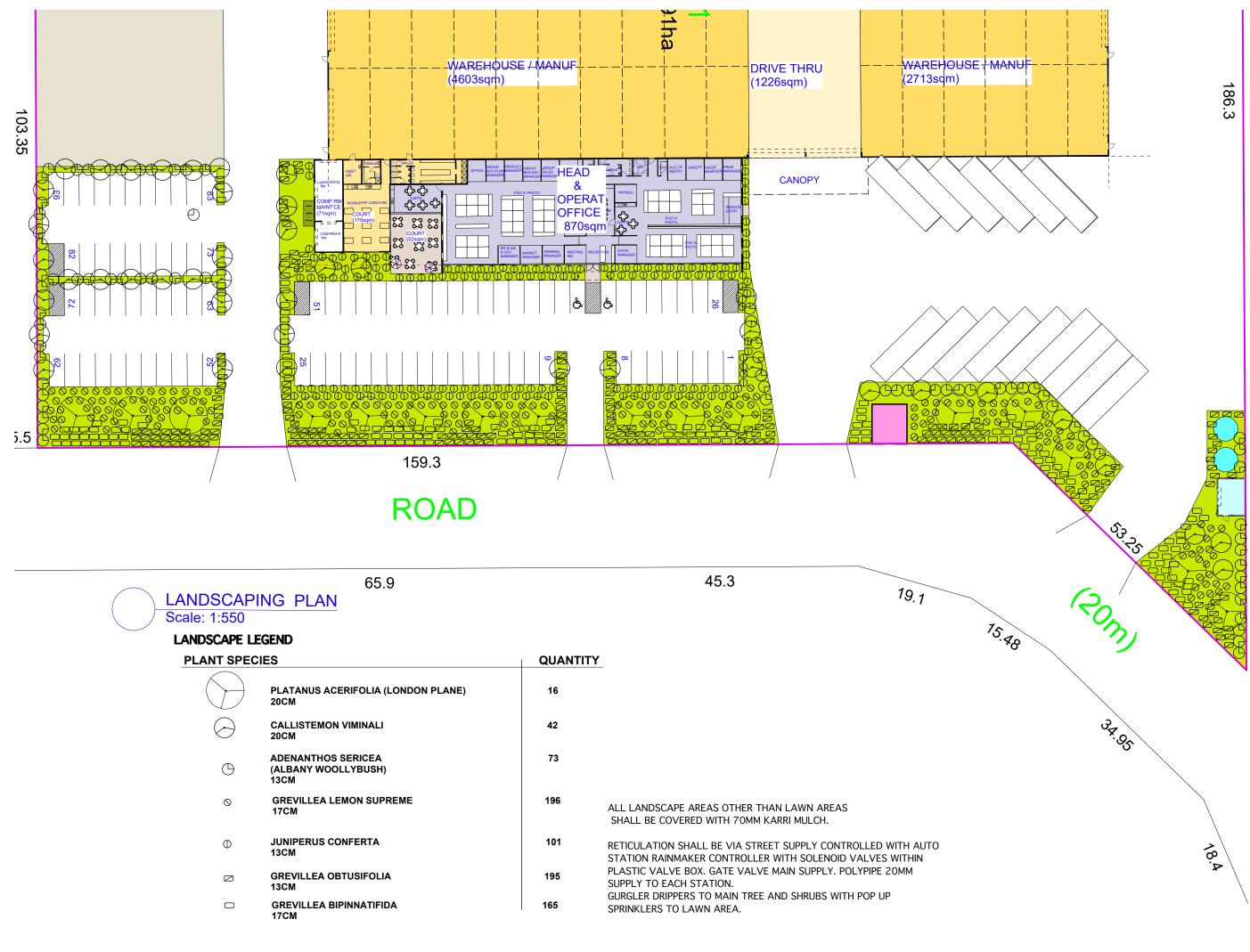




ENLARGED ADMINISTRATION OFFICE STREET EAST ELEVATION Scale: 1:250







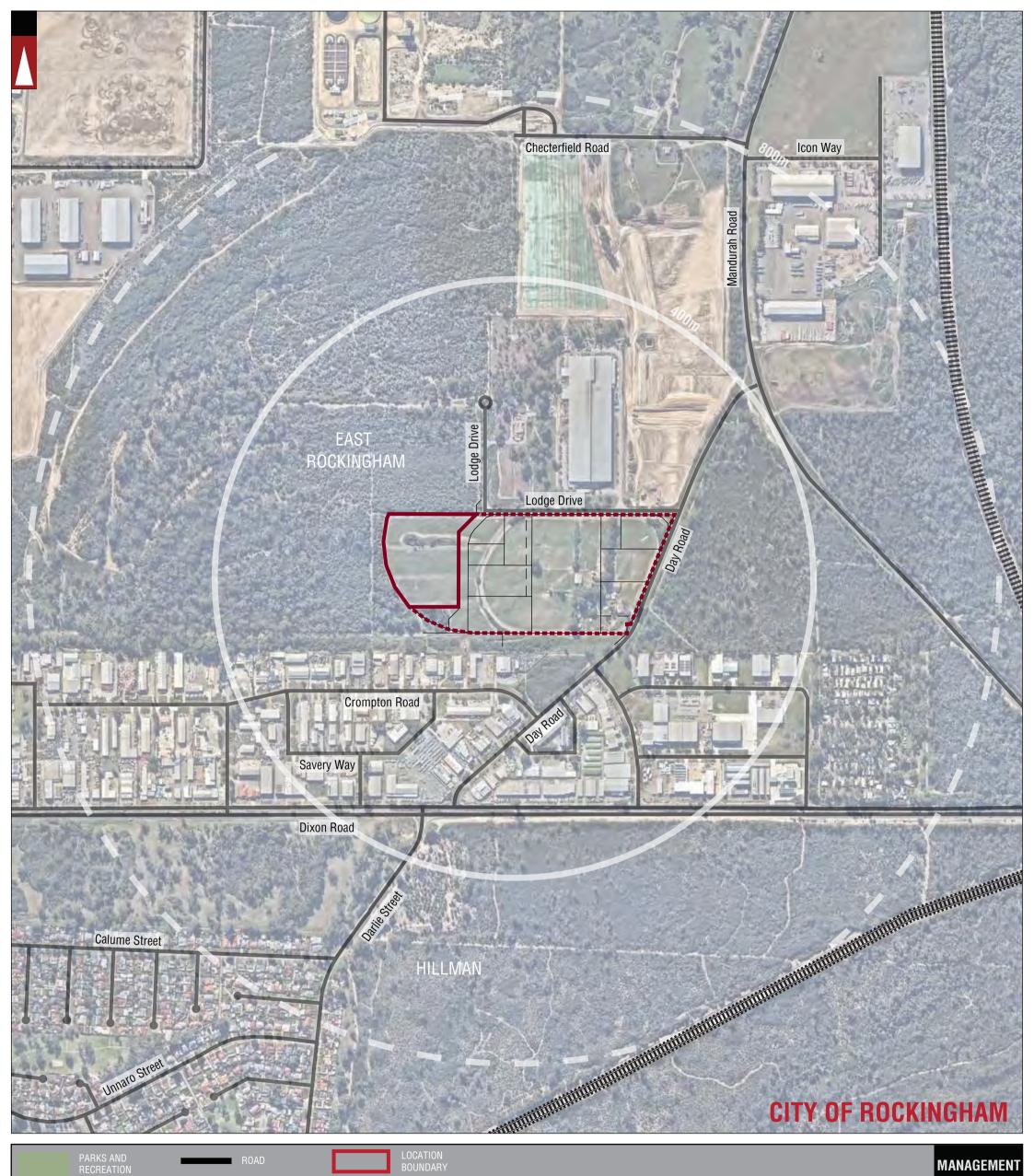
	65.9 ING PLAN		45.3 19 _{.1}	
Scale: 1:550				15
LAND\$CAPE LE	EGEND			15.48
PLANT SPEC	IES	QUANTITY	_	
	PLATANUS ACERIFOLIA (LONDON PLANE) 20CM	16		
\bigcirc	CALLISTEMON VIMINALI 20CM	42		
9	ADENANTHOS SERICEA (ALBANY WOOLLYBUSH) 13CM	73		
0	GREVILLEA LEMON SUPREME 17CM	196	ALL LANDSCAPE AREAS OTHER THAN LAWN AREAS SHALL BE COVERED WITH 70MM KARRI MULCH.	
Φ	JUNIPERUS CONFERTA 13CM	101	RETICULATION SHALL BE VIA STREET SUPPLY CONTROLLED WITH AUTO STATION RAINMAKER CONTROLLER WITH SOLENOID VALVES WITHIN	
	GREVILLEA OBTUSIFOLIA 13CM	195	PLASTIC VALVE BOX. GATE VALVE MAIN SUPPLY. POLYPIPE 20MM SUPPLY TO EACH STATION. GURGLER DRIPPERS TO MAIN TREE AND SHRUBS WITH POP UP	
	GREVILLEA BIPINNATIFIDA 17CM	165	SPRINKLERS TO LAWN AREA.	





Transport Planning and Traffic Plans

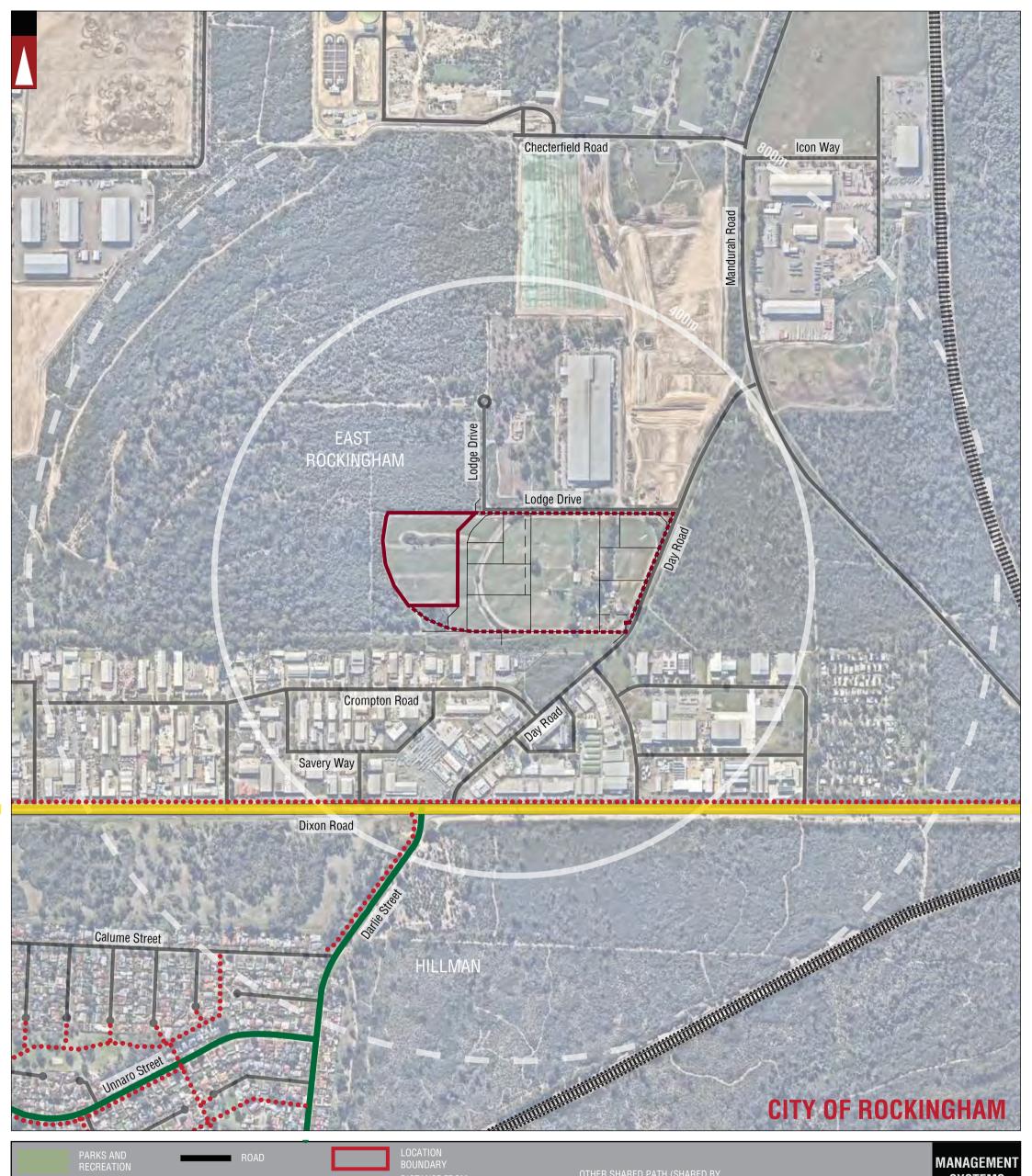
Transport Impact Statement | KC01344.000 Lot 1 Day Road, East Rockingham



PARKS AND RECREATION WATERWAYS PUBLIC PURPOSE SHOPPING AREA	Hay Street STREET NAR Hay Street STREET NAR Hay Street FREIGHT FREIGHT FREIGHT	LOCATION BOUNDARY DISTANCE FROM LOCATION LOCAL GOVERNMENT NAME NORTHBRIDGE SUBURB NAME LOCAL AUTHORITY BOUNDARY	NOTE : THE SUBDIVISION PLAN IS COURTESY OF MC MULLEN NOLAN GROUP LEGEND	MANAGEMENT SYSTEMS REGISTERED TO ISO 9001
		PROJECT:	DRAWN Civil & Traffic Engineering Consultants	

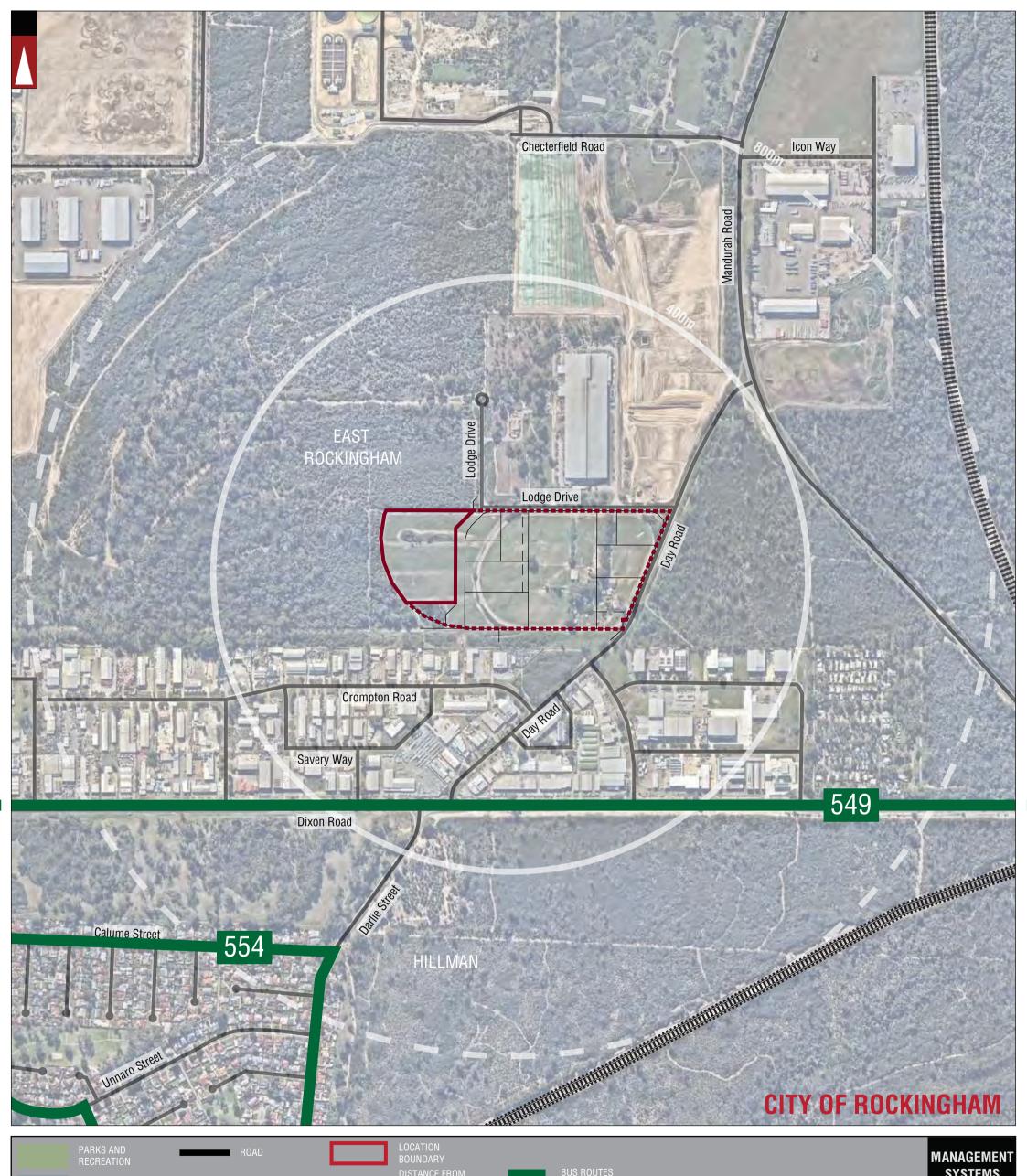
┢				LOT 1 DAY ROAD, EAST ROCKINGHAM	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021		
				LOCALITY PLAN - 800M RADIUS		PH: 08 9441 2700		
	А	03-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	WEB: www.kctt.com.au	KULL	
	No	DATE	AMENDMENT	KC01344.000_ S01			ΝΟΙΙ	

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PARKS AND RECREATION WATERWAYS PUBLIC PURPOSE	ROAD Hay Street STREET NAME	CITY OF PERTH	LOCATION BOUNDARY DISTANCE FROM LOCATION LOCAL GOVERNMENT NAME	•••••	OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS) GOOD ROAD RIDING ENVIRONMENT		MANAGEMENT SYSTEMS REGISTERED TO
SHOPPING AREA	FREIGHT RAILWAY	NORTHBRIDGE	SUBURB NAME LOCAL AUTHORITY BOUNDARY		BICYCLE LANES OR SEALED SHOULDER EITHER SIDE	NOTE : THE SUBDIVISION PLAN IS COURTESY OF MC MULLEN NOLAN GROUP	ISO 9001

			PROJECT: LOT 1 DAY ROAD, EAST ROCKINGHAM	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021	
			TITLE: BICYCLE NETWORK PLAN - 800M RADIUS		PH: 08 9441 2700	
А	03-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	WEB: www.kctt.com.au	Keitt
No	DATE	AMENDMENT	KC01344.000_S02			



			project: LOT 1 DAY F	ROAD, EAST ROCK	KINGHAM		DRAWN BY:	LEGEND Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021	
	DPURPOSE		PERTH	NAME SUBURB NAME LOCAL AUTHORITY BOUNDARY	103	BUS ROUTE NUMBER		OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO THE REPORT. NOTE : THE SUBDIVISION PLAN IS COURTESY OF MC MULLEN NOLAN GROUP	TO ISO 9001
PARKS RECRE WATEF	ATION	ROAD STREET NAME	CITY OF	LOCATION BOUNDARY DISTANCE FROM LOCATION LOCAL GOVERNMENT	_	BUS ROUTES		NOTE : FOR MORE INFORMATION REGARDING THE DESCRIPTION	MANAGEMENT SYSTEMS REGISTERED

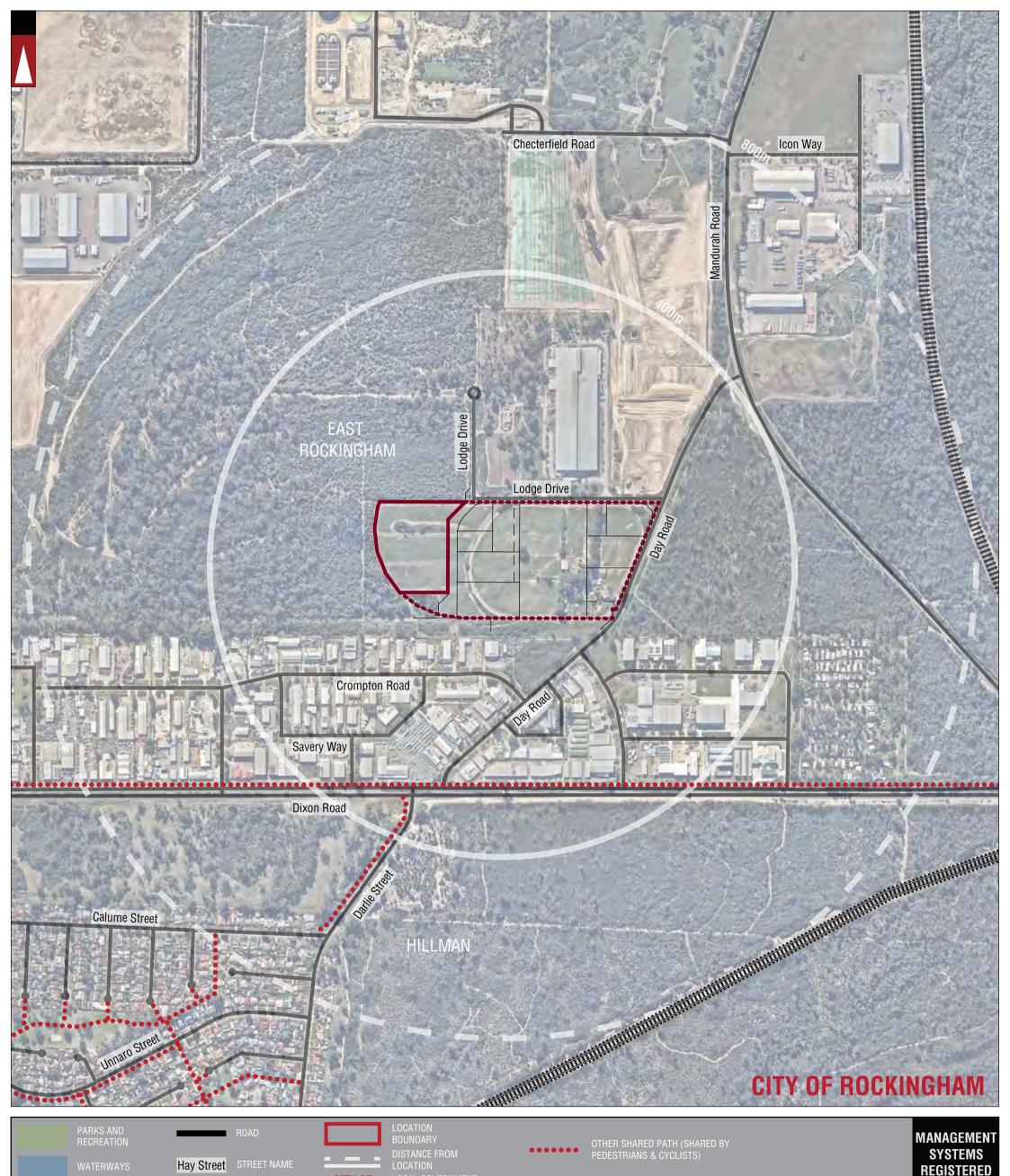
	PUBLIC TRANSPORT PLAN - 800M RADIUS		DU- 02 0441 0700
ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au
AMENDMENT	KC01344.000 S03		

03-09-2021

DATE

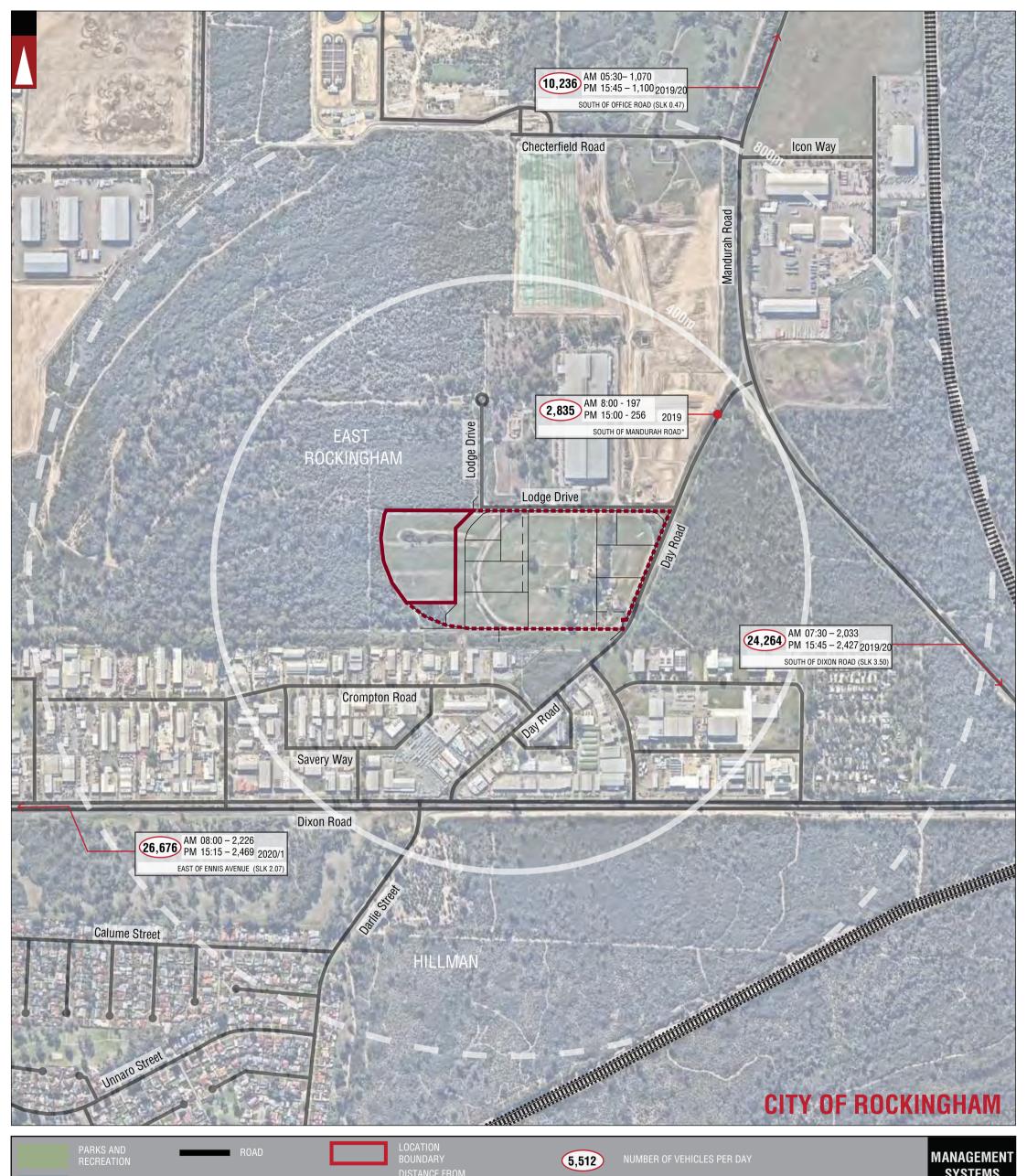
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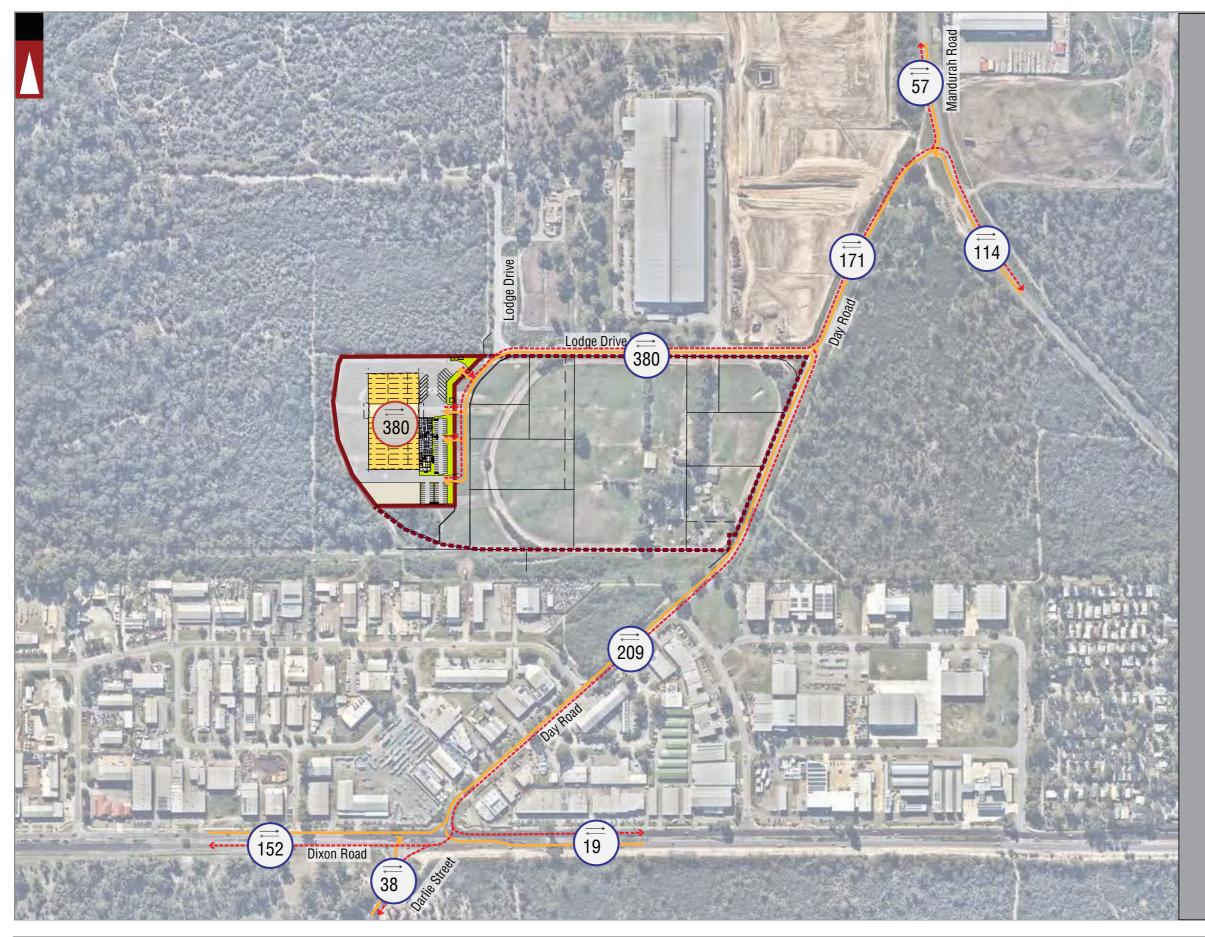
	PARKS AND RECREATION WATERWAY PUBLIC PU SHOPPING	NYS Hay Street	RAILWAY	ME CITY OF PERTH NORTHBRIDGE	LOCATION BOUNDARY DISTANCE FROM LOCATION LOCAL GOVERNMENT NAME SUBURB NAME LOCAL AUTHORITY BOUNDARY	•••••	OTHER SHARED P. PEDESTRIANS & C		ED BY NOTE : THE SUBDIVISION PLAN IS COURTESY OF MC MULLEN NOLAN GROUP LEGEND	MANAGEMENT SYSTEMS REGISTERED TO ISO 9001
				project: LOT 1 DAY F	ROAD, EAST ROCKIN	IGHAM		DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021	
A	03-09-2021 DATE	ISSUED FOR REVIEW		TITLE: PEDESTRIAN DRAWING NUMBER: KC01344.000	I PATHS PLAN - 800)_ S04	M RADIUS		– J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	kctt

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	PARKS AND RECREATION WATERWAY PUBLIC PU SHOPPING	ys Hay Street	RAILWAY	ME LOCATION BOUNDARY DISTANCE FROM LOCATION LOCATION LOCATION LOCATION LOCAL GOVERNMENT NAME NORTHBRIDGE SUBURB NAME LOCAL AUTHORITY BOUNDARY	5,512 AM 1145 - 381 PM 1630 - 480 2014 EAST OF HARLOW ROAD	HICLES P	PER DAY PER AM PEAK HOUR PER PM PEAK HOUR NOTE : THE SUBDIVISION PLAN IS COURTESY OF MC MULLEN NOLAN GROUP	MANAGEMENT SYSTEMS REGISTERED TO ISO 9001
				PROJECT: LOT 1 DAY ROAD, EAST ROCH	KINGHAM	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021	
	03-09-2021	ISSUED FOR REVIEW		EXISTING TRAFFIC COUNTS -	800M RADIUS	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	
A No	DATE	AMENDMENT		drawing number: KC01344.000_ S05		0.0.	WEB, WWW.RGILCOIII.au	KULL

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			PROJECT: LOT 1 (NO.27) DAY ROAD, EAST ROCKINGHAM	DF
A	03-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	1
No	DATE	AMENDMENT	KC01344.000_ S06	



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SUBJECT LOT BOUNDARY

SUBJECT DEVELOPMENT SITE BOUNDARY

Hay Street STREET NAME



Total Expected Traffic Generation from the proposed development



Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT** direction



Traffic Flow IN Direction

Traffic Flow OUT Direction



NOTE: THE PLAN IS COURTEOUSY OF XXX

LEGEND

DRAWN BY:

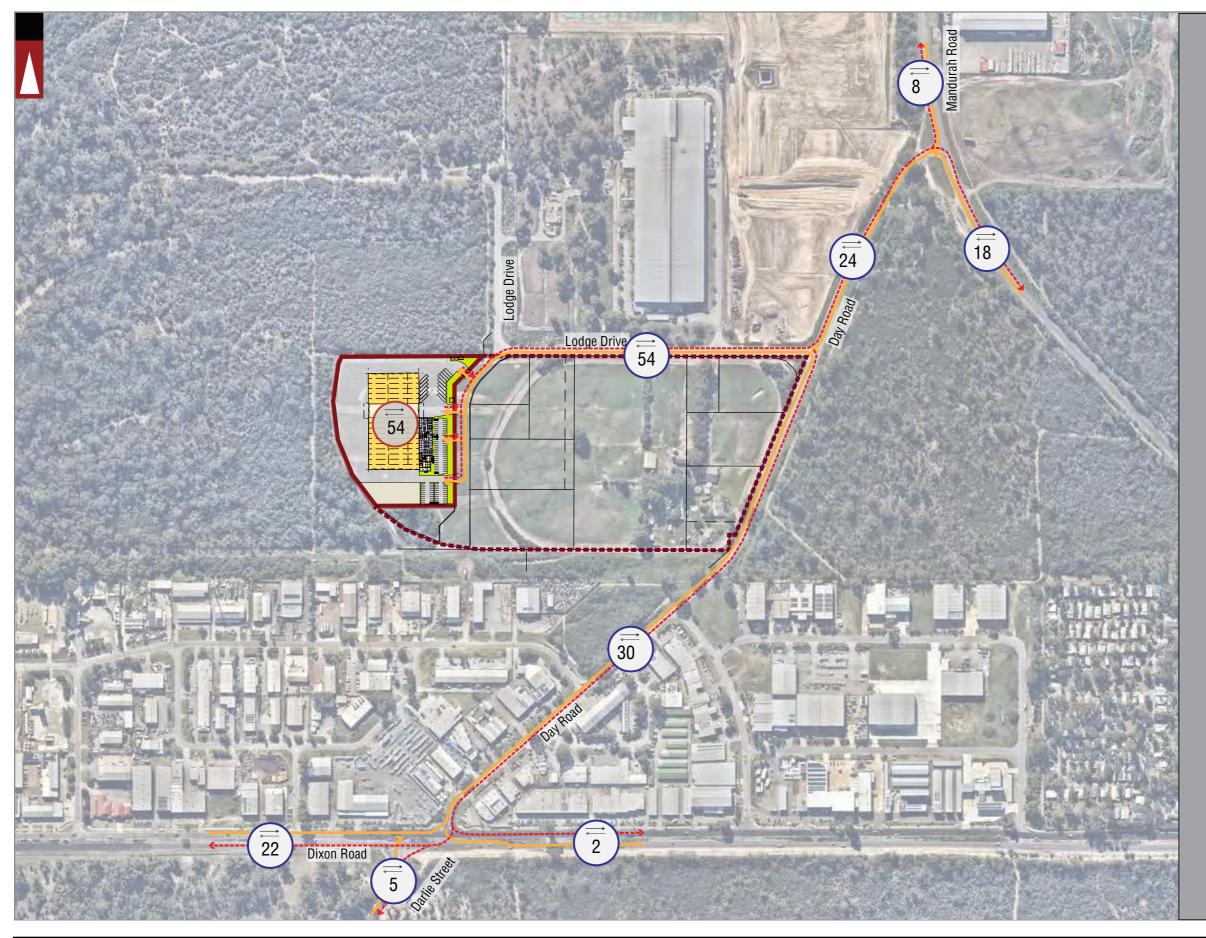
J.S.

uite 7 No 10 Whipple Street Balcatta WA 6

PH: 08 9441 2700 WEB: www.kctt.com.au







			PROJECT: LOT 1 (NO.27) DAY ROAD, EAST ROCKINGHAM	DI
			TRAFFIC FLOW DIAGRAM - PEAK HOUR	
A	03-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	1
No	DATE	AMENDMENT	KC01344.000_ S07	



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SUBJECT LOT BOUNDARY

SUBJECT DEVELOPMENT SITE BOUNDARY

Hay Street STREET NAME



Total Expected Traffic Generation from the proposed development



Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT** direction



Traffic Flow IN Direction

Traffic Flow OUT Directio

MANAGEMENT SYSTEMS REGISTERED TO ISO 9001

LEGEND

DRAWN BY:

Civil & Traffic Engineering Consultants uite 7 No 10 Whipple Street Balcatta WA 6021

> PH: 08 9441 2700 WEB: www.kctt.com.au









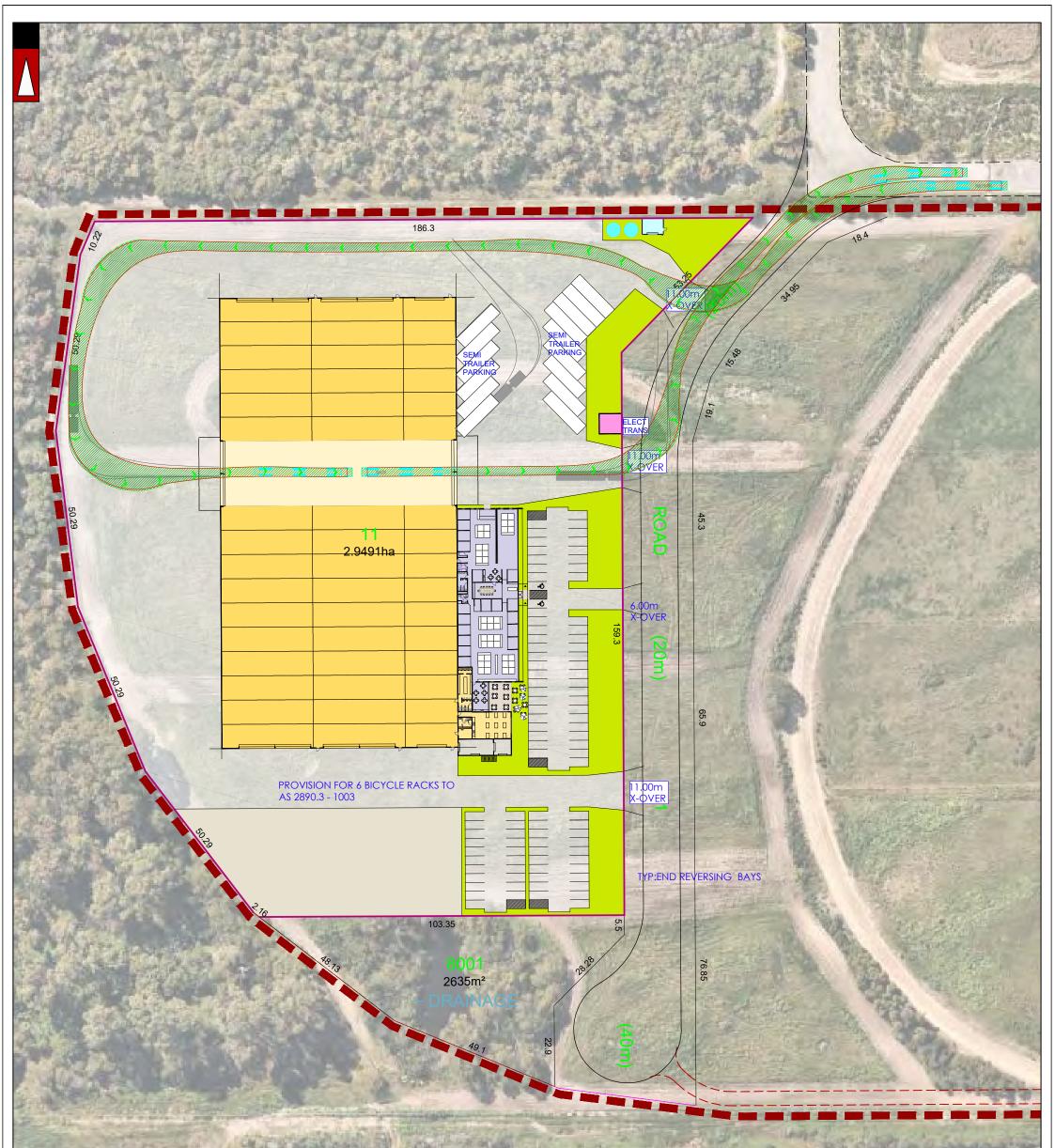
Vehicle Turning Circle Plan

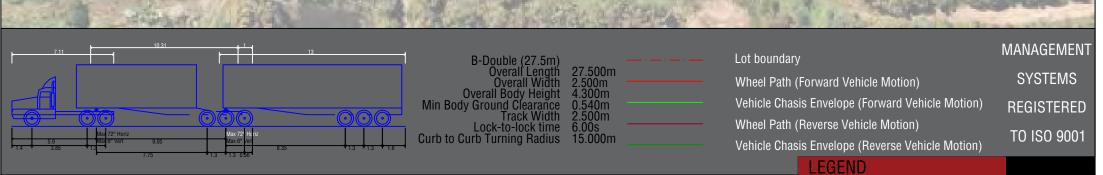
Transport Impact Statement | KC01344.000 Lot 1 Day Road, East Rockingham



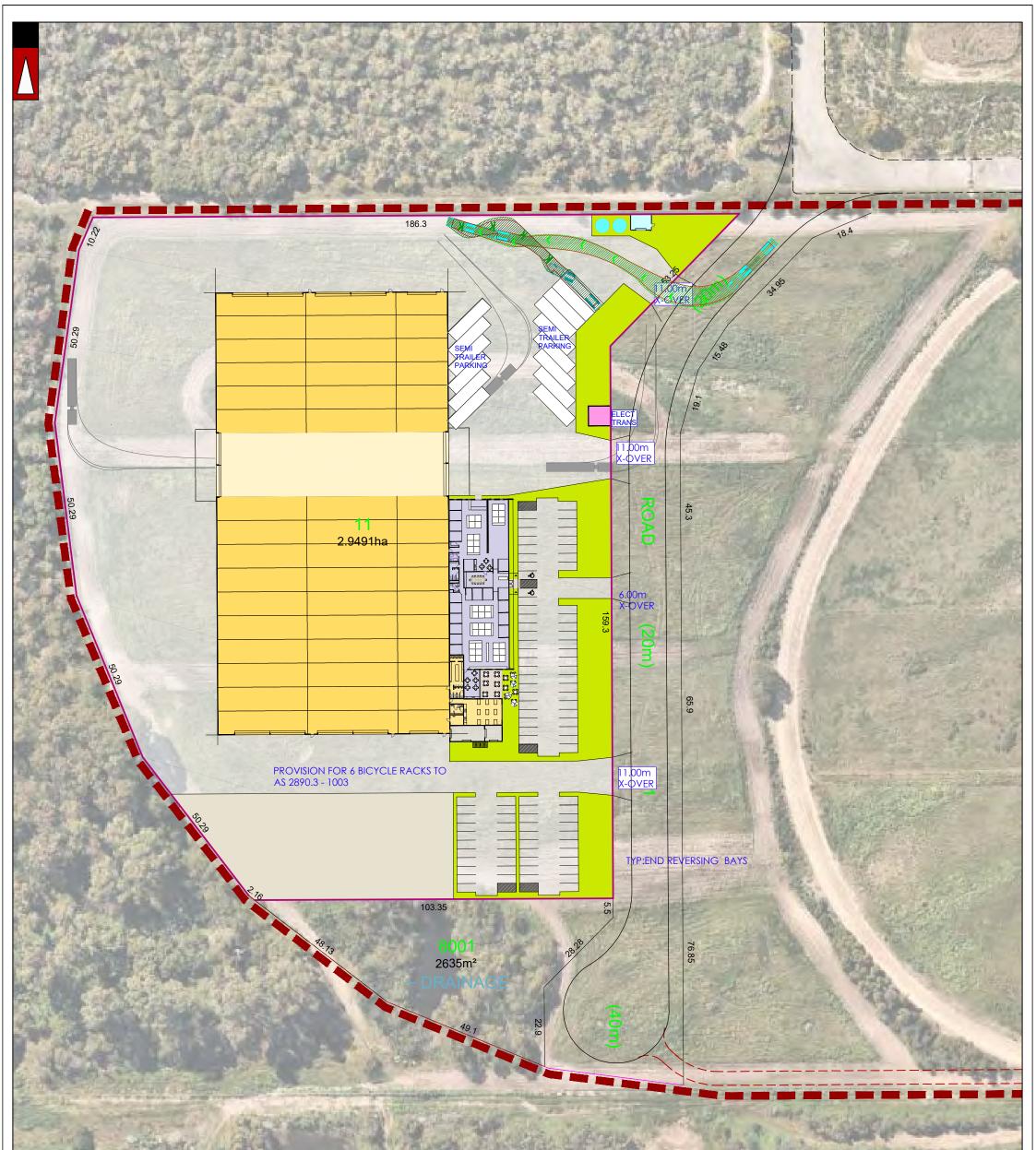


			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
А	08-09-2021	ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - B-Double (27.5m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft		ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700	
NO	DATE	AMENDMENT	KC01344.000_S20		WEB: www.kctt.com.au	NULL





			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	ISSUED FOR REVIEW	TITLE: Vehicle Turning Circle Plan - B-Double (27.5m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft		ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KOT
NO	DATE	AMENDMENT	KC01344.000_S21		WED. WWW.Kott.com.au	INULL



8.2 13.7 15.7 15.7 15.7 15.7 15.7 15.7 15.7 15.7 15.7 1	AV - Articulated Vehicle Overall Length 19.000m Overall Width 2.500m Overall Body Height 4.301m Min Body Ground Clearance 0.418m Track Width 2.500m Lock to Lock Time 6.00s Kerb to Kerb Turning Radius 12.500m	Lot boundary Wheel Path (Forward Vehicle Motion) Vehicle Chasis Envelope (Forward Vehicle Motion) Wheel Path (Reverse Vehicle Motion) Vehicle Chasis Envelope (Reverse Vehicle Motion)	MANAGEMENT SYSTEMS REGISTERED TO ISO 9001
		LEGEND	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	ISSUED FOR REVIEW	TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m) - INBOUND		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
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		LEGEND	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	ISSUED FOR REVIEW	TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m) - OUTBOUND		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
NO	DATE	AMENDMENT	KC01344.000_S22B			NOLL



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		LEGEND	

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A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
NO	DATE	AMENDMENT	KC01344.000_S23A			NOLL



8.2 13.7		 Lot boundary	MANAGEMENT
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	Track Width 2.500m _ Lock to Lock Time 6.00s	 Wheel Path (Reverse Vehicle Motion)	REGISTERED
Max 7:1º Horiz 6.6 Max 6 Vert	Kerb to Kerb Turning Radius 12.500m	Vehicle Chasis Envelope (Reverse Vehicle Motion)	TO ISO 9001
1.6 4.7 1.4 8.1 1.4 1.4 1.5		LEGEND	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
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NO	DATE	AMENDMENT	KC01344.000_S23B			NOLL



Overall Length 19.000m Overall Width 2.500m Overall Width 2.500m Nin Body Ground Clearance 0.418m Track Width 2.500m Lock to Lock Time 6.00s Kerb to Kerb Turning Radius 12.500m Wheel Path (Reverse Vehicle Motion) REGISTERED Wheel Path (Reverse Vehicle Motion) TO ISO 9001	<u>8.2</u> 13.7	AV - Articulated Vehicle	 Lot boundary	MANAGEMENT
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		Lock to Lock Time 6.00s	 Vehicle Chasis Envelope (Reverse Vehicle Motion)	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
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A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
NO	DATE	AMENDMENT	KC01344.000_S24		WED. WWW.Kott.com.uu	NOLL



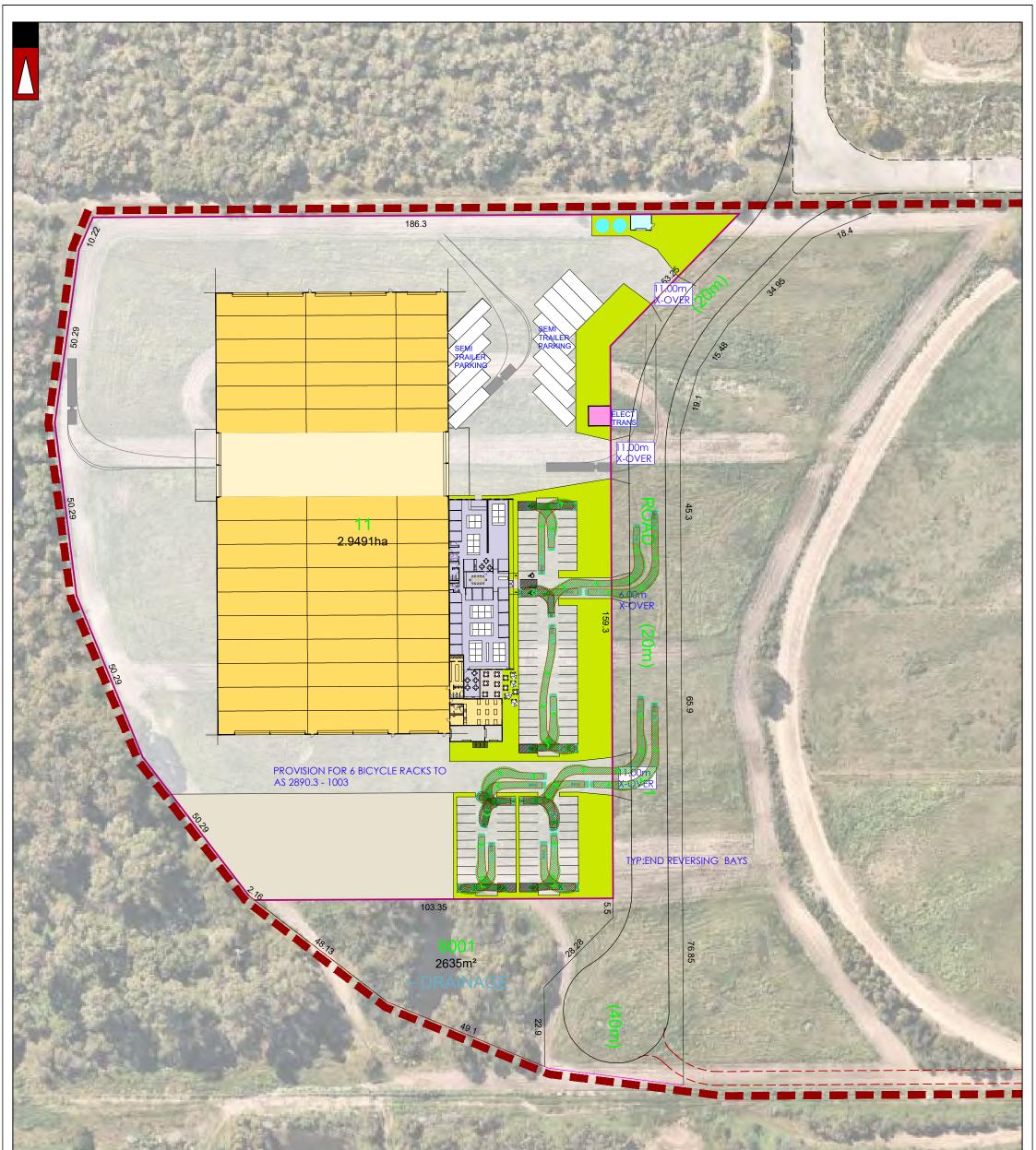
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Lock to Lock Time 6.00s Vehicle Motion)	-FF	Overall Body Height 4.301m Min Body Ground Clearance 0.418m	Vehicle Chasis Envelope (Forward Vehicle Motion)	
		Lock to Lock Time 6.00s	 Vehicle Chasis Envelope (Reverse Vehicle Motion)	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
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A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
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Service Vehicle (8.8 m) Overall Length	0.000m		Lot boundary		MANAGEMENT
Overall Width	2.500m		Wheel Path (Forward Vehicle Motion)		SYSTEMS
Overall Body Height Min Body Ground Clearance Track Wildh	2.500m		Vehicle Chasis Envelope (Forward Vehicle Motion) Wheel Path (Reverse Vehicle Motion)		REGISTERED
Lock to Lock Time Kerb to Kerb Turning Radius	4.00s 12.500m		Vehicle Chasis Envelope (Reverse Vehicle Motion)		TO ISO 9001
▶ <u>1.5</u>				LEGEND	

			PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	ISSUED FOR REVIEW	 TITLE: Vehicle Turning Circle Plan - Service Vehicle (8.8m) 		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	
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Passenger vehicle (5.2 m)	— — — Lot boundary	MANAGEMENT
Overall Length 5.200m Overall Width 1.940m Overall Body Height 1.804m	Wheel Path (Forward Vehicle Motion)	SYSTEMS
Overall Body Height 1.804m Min Body Ground Clearance 0.295m Track Width 1.840m	Vehicle Chasis Envelope (Forward Vehicle Motion)	REGISTERED
Lock to Lock Time 4.00s 4.00s 4.00s Kerb to Kerb Turning Radius 6.300m	Wheel Path (Reverse Vehicle Motion) Vehicle Chasis Envelope (Reverse Vehicle Motion)	T0 ISO 9001
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-				PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
-	А	08-09-2021	ISSUED FOR REVIEW	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
	A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	
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Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham

Hesperia





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DOCUMENT TRACKING

Project Name	Bushfire Management Plan:
	Subdivision Application: Lot 1 Day Road, East Rockingham
Project Number	20PER-18557
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Prepared by	Alex Aitken (BPAD Level 2 – 37739) and Daniel Panickar (BPAD Level 3 –
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Approved by	Daniel Panickar (BPAD Level 3 – 37802)
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This document has been prepared by Eco Logical Australia Pty Ltd with support from Hesperia (the client).

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Template 2.8.1

Version control	
Version	Purpose
v1	Draft – Submission to client
v2	Final – Submission to City of Rockingham
v3	Final – Updated to include revised subdivision plan

Contents

1. Introduction	1
1.1 Proposal details1.2 Purpose and application of the plan1.3 Environmental considerations	1
2. Bushfire assessment results	6
2.1 Bushfire assessment inputs	6
2.1.1 Fire Danger Index 2.1.2 Vegetation classification and slope under vegetation	
2.2 Bushfire assessment outputs	8
2.2.1 BAL assessment 2.2.2 Method 1 BAL assessment	
2.3 Identification of issues arising from the BAL assessment	9
3. Assessment against the Bushfire Protection Criteria	12
3.1 Compliance	12
3.2 Acceptable solution A3.1: Assessment	
4. Implementation and enforcement	16
5. Conclusion	
6. References	
Appendix A – Classified Vegetation Photos Appendix B – Standards for Asset Protection Zones	
Appendix C - Vehicular access technical requirements (WAPC 2017)	

List of Figures

Figure 1: Site overview	3
Figure 2: Site Plan	4
Figure 3: Bushfire Prone Areas	5
Figure 4: Vegetation classification	7
Figure 5: Bushfire Attack Level (BAL) Contours	11
Figure 6: Spatial representation of the bushfire management strategies	15
Figure 7: Illustrated tree canopy cover projection (WAPC 2017)	24

List of Tables

Table 1: Classified vegetation as per AS 3959: 2018
Table 2: Method 1 BAL calculation (BAL contours)
Table 3: Summary of solutions used to achieve bushfire protection criteria12
Table 4: Proposed work program

1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Hesperia to prepare a Bushfire Management Plan (BMP) to support a subdivision application for Lot 1 Day Road, East Rockingham (hereafter referred to as the subject site, Figure 1). The proposed subdivision will result in an intensification of land use and involves the development of 10 industrial lots and a drainage area (Figure 2).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2019; Figure 3), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; Western Australian Planning Commission (WAPC) 2015) and reporting to accompany submission of the subdivision application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

The subject site is located in the City of Rockingham and is zoned 'General Industry' under the City of Rockingham Town Planning Scheme No. 2. Proposed lots will be serviced by two existing roads (Day Road and Lodge Drive).

The subject site is currently used for rural purposes, including horse agistment and is bound by:

- Lodge Road and current industrial land to the north;
- Undeveloped, 'General Industry' zoned land to the northwest and west;
- A Railway easement to the south, with current industrial land further south; and
- Day Road and undeveloped, 'General Industry' zoned land to the east.

The subject site also contains a Heritage building, Day Cottage (Place Number 04015) which is listed on the State Register by the Heritage Council of Western Australia and City of Rockingham Municipal Heritage Inventory Review (Heritage Place 7) (Figure 2).

This assessment has been prepared by ELA Senior Bushfire Consultant Alex Aitken (FPAA BPAD Level 2 Certified Practitioner No. BPAD37739) and Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations

SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

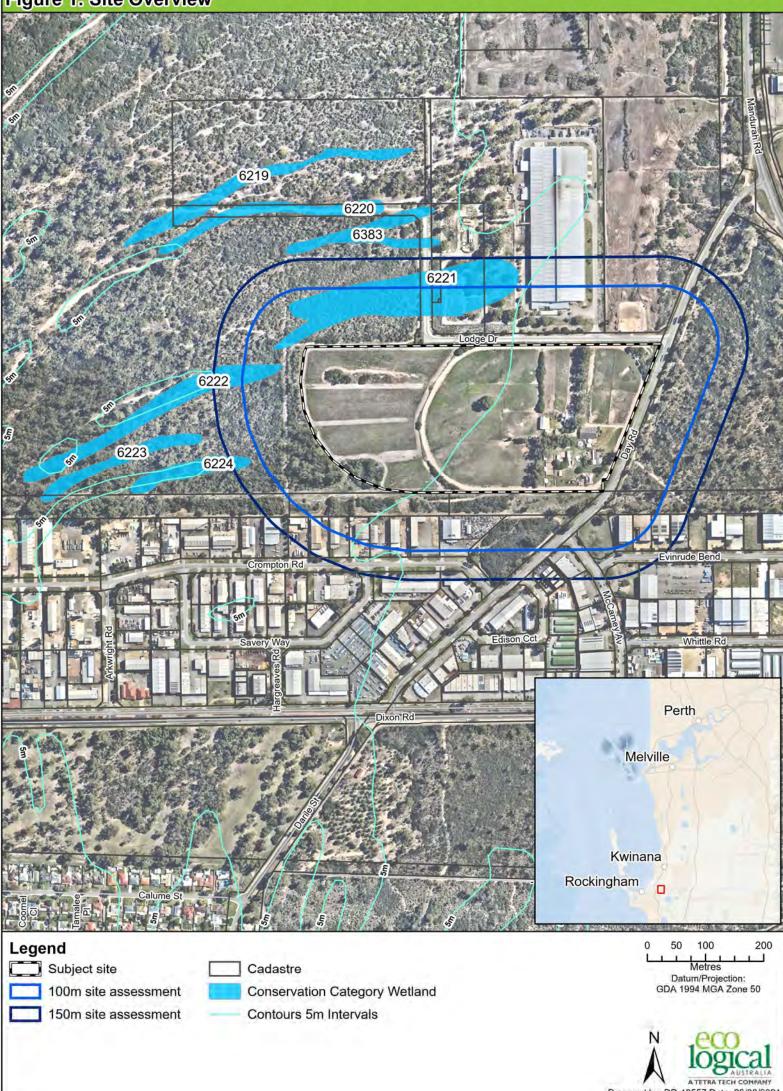
The subject site has been previously cleared, resulting in limited existing native vegetation on site. This vegetation is primarily comprised of scattered paddock trees, windbreaks and screening vegetation. The drainage basin in the southwest of the subject site contains mostly invasive large shrubs and trees which will be removed for development. Removal of vegetation will be facilitated through subdivision approval.

The entirety of the subject site occurs within an Environmentally Sensitive Area (ESA). ESAs are defined in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005 under s. 51B of the State *Environmental Protection Act 1986* (EP Act). ESAs include areas declared as World Heritage, included on the National Heritage List, defined wetlands, and vegetation containing rare (Threatened) flora and Threatened Ecological Communities (TECs). No detail is provided regarding the origin of this ESA, however it is inferred that this ESA is related to the suite of wetlands to the west of the subject site (discussed below) and potential TECs in the same area.

There is a suite of conservation category wetlands situated on undeveloped 'General Industry' zoned land to the west of the subject site (Figure 1). These wetlands are typically surrounded by vegetated buffers between 20-50 m in width, however the purpose of the buffer, existing clearing, rehabilitation requirements etc. are all factored into the determination of whether a buffer is required, and how wide it needs to be. As the subject site is fully cleared and has been historically used for rural purposes, including horse agistment, no revegetated buffers within the site are proposed.

Landscaping within the subject site (including treatment of the drainage area, post-removal of existing vegetation) will be maintained in a low-threat state.





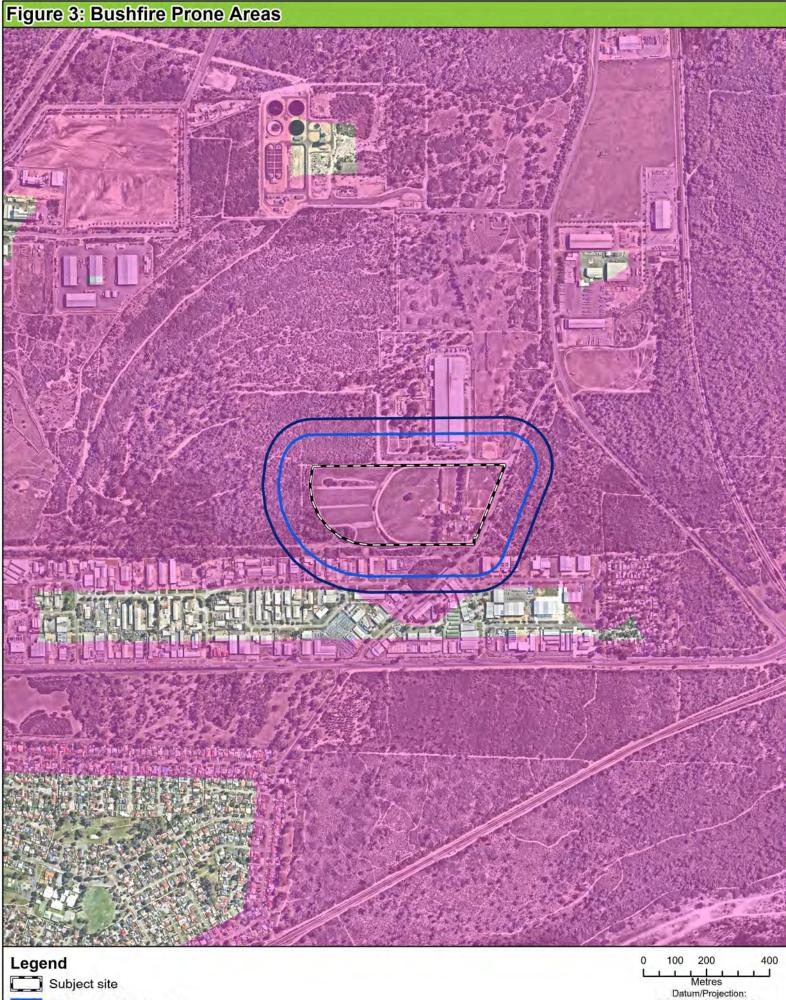
Prepared by: DD-18557 Date: 20/08/2021

Figure 2: Site Plan



Lot 1 on Diagram 37651 (No. 27) Day Road, East Rockingham

the Description of the Constant of the Constan



- 100m site assessment
- 150m site assessment
 - Bushfire Prone Mapping (DFES 2019)

Datum/Projection: GDA 1994 MGA Zone 50



2. Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) of FDI 80 is adopted for Western Australia, as outlined in Australian Standard *AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (SA 2018) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 Vegetation classification and slope under vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed in accordance with the Guidelines and *AS 3959: 2018* with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment was undertaken on 19 March 2021.

The classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below, Table 1 and Figure 4.

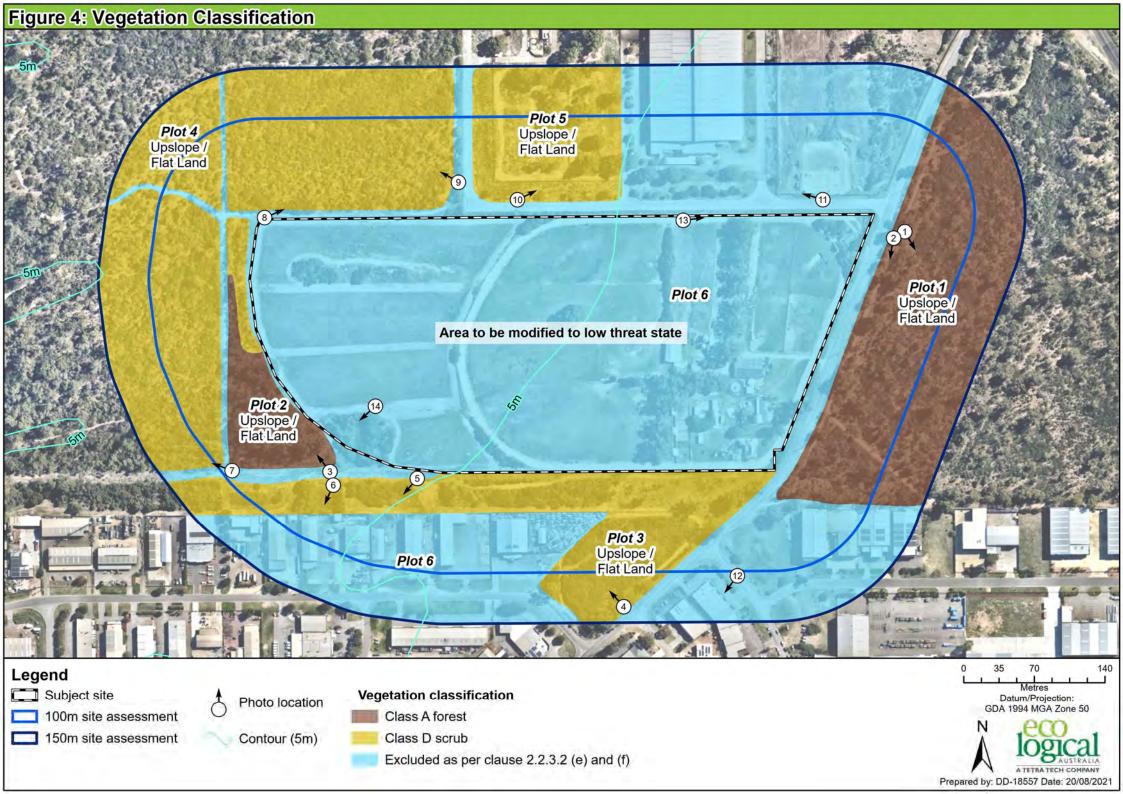
Plot	Vegetation Classification	Effective Slope
1	Class A Forest	All upslopes and flat land (0 degrees)
2	Class A Forest	All upslopes and flat land (0 degrees)
3	Class D Scrub	All upslopes and flat land (0 degrees)
4	Class D Scrub	All upslopes and flat land (0 degrees)
5	Class D Scrub	All upslopes and flat land (0 degrees)
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-

Table 1: Classified vegetation as per AS 3959: 2018

Photographs relating to each area and vegetation type are included in Appendix A.

Plots 3, 4 and 5 are all abutting one another, however have been separated as individual plots due to differences in vegetation composition and structure. Plot 3 is comprised of shrubs within the railway easement south of the subject site. Some areas within this plot have been recently cleared, however vegetation has been classified on its expected mature state (i.e. Class D Scrub). Plot 4 represents the *Banksia, Kunzea* and *Acacia* scrub vegetation that occurs to the west and northwest of the subject site. Plot 5 has recently been cleared, however evidence of *Acacia* regrowth was observed and as such, this Plot has been classified on its expected mature state (i.e. Class D Scrub).

The drainage area in the southeast of the subject site will be cleared and landscaped to resemble low threat, maintained vegetation.



2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 2.1.

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in Figure 4 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development and the classified vegetation.

Based on the identified BAL, construction requirements for future buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL assessment

Table 2 and Figure 5 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed subdivision in accordance with AS 3959: 2018 methodology.

Dist			Separation distances required				
Plot	Vegetation Classification	Effective Slope	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
2	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
3	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100
4	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100
5	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-	٦	No separation	distances req	uired – BAL-L	OW

Table 2: Method 1 BAL calculation (BAL contours)

Based on the site assessment inputs and BAL assessment, all proposed lots within the subject site can achieve a BAL rating of \leq BAL-29.

2.3 Identification of issues arising from the BAL assessment

Should there be any changes in development design or vegetation/hazard extent that requires a modified bushfire management response, then the above BAL ratings will need to be reassessed for the affected areas and documented in a brief addendum to this BMP.

In relation to the BAL ratings for future buildings, the Guidelines state:

The bushfire construction requirements of the Building Code of Australia only apply to certain types of residential buildings (being Class 1, 2 or 3 buildings and/or Class 10a buildings or decks associated with a Class 1, 2 or 3 building) in designated bushfire prone areas. As such, AS 3959 does not apply to all buildings. Only vulnerable or high-risk land uses that fall within the relevant classes of buildings as set out in the Building Code of Australia will be required to comply with the bushfire construction requirements of the Building Code of Australia. As such, the planning process focuses on the location and siting of vulnerable and high-risk land uses rather than the application of bushfire construction requirements.

As future buildings within the subject site will be for industrial purposes, none of them will be a Class 1, 2 or 3 building and/or Class 10a building or deck associated with a Class 1, 2 or 3 building. Therefore, construction to AS 3959: 2018 is not required for these future buildings.

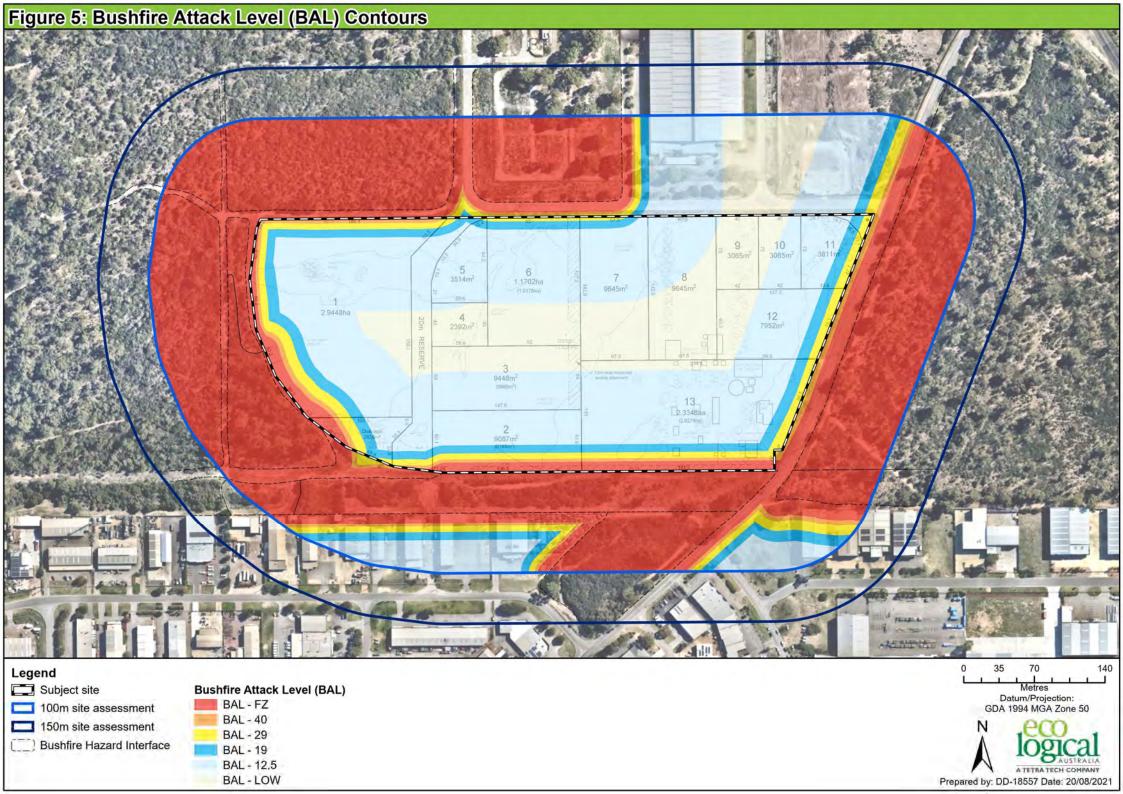
Given the industrial nature of the development, there may be some future purchasers that wish to locate buildings outside of areas designated as ≤BAL-29 (i.e. within BAL-FZ and/or BAL-40). If this is required, consultation and/or approval with/from the authority having jurisdiction will be undertaken/granted. Construction of industrial buildings in areas subject to BAL-FZ and/or BAL-40 is not unprecedented and has been considered for approval in Milpara Industrial Estate in the City of Albany. This consideration takes into account a number of factors including:

- The nature of industrial development which does not result in the same level of intensification as residential development on a landholding (i.e. industrial developments are a less dense development);
- The lower risk of loss of life and property as a result of bushfire in industrial development given high construction standards (detailed below) and shorter duration of occupancy (i.e. buildings are not occupied for the same length of time during a 24-hour period as residential buildings); and
- The construction standard to which industrial buildings are built to, specifically Volume 1, Sections C and D of the *National Construction Code 2019 Volume 1* which detail:
 - Fire resistance (including from the external wall of another building [i.e. building to building fire]); and
 - Access and Egress (provision for escape etc.).

Whilst there is no guarantee that future purchasers will apply to construct in BAL-FZ and/or BAL-40 areas, the developer wishes to offer flexibility to purchasers who may wish to do so. In the event that this scenario eventuates, a possible mechanism for the City of Rockingham to explore in relation to approval of this request would be to issue a condition of development approval as detailed below:

No building shall be constructed within an area classified as BAL40 or BAL-FZ (in accordance with AS3959) unless:

- a. The building is designed in accordance with the Building Code of Australia to the appropriate standard to mitigate against the identified Bushfire/Fire risks;
- b. Any elevation of the building within BAL-FZ and/or BAL-40 being constructed with concrete tilt panels and having no windows, doors or openings;
- c. The building design is certified or endorsed by a suitably qualified fire engineer;
- d. The building construction is completed in accordance with the certified designs; and
- e. An emergency evacuation plan is prepared and ready for implementation to the satisfaction of the City of Rockingham.



3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed subdivision is required to comply with policy measures 6.2 and 6.4 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the proposed subdivision in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summaries how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 6 where relevant.

A1.1 Development location Significant areas subject to BAL ratings of SBAL-29 (Figure 5; Figure 6). The proposed subdivision is considered to be compliant with A1.1. Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ) The proposed subdivision has an indicative APZ sufficient for the potential radiant heat flux to not exceed 29kW/m ² and will be managed in accordance with the requirements of 'Standard' for Asset Protection Zones' (WAPC 2017; Appendix B). These APZs can be refined for future buildings. Given the industrial nature of the development, there may be some future purchasers that wish to locate buildings outside of areas designated a sBAL-29. If this is required, consultation and/or approval with/from the authority having jurisdiction will be undertaken/granted (refer to section 2.3 for further detail on potential mechanisms for approval).	Bushfire Protection Criteria	AS	PS	N/A	Comment
A2.1 Asset Protection Zone (APZ) A3.1 Two access routes A2.1 Asset Protection Zone (APZ) A3.1 Two access routes A3.1 Two access rout					≤BAL-29 (Figure 5; Figure 6). The proposed subdivision is considered to be
A3.1 Two access routes 🛛 🖓 🖓 The proposed subdivision is considered to be					not exceed 29kW/m ² and will be managed in accordance with the requirements of 'Standards for Asset Protection Zones' (WAPC 2017; Appendix B). These APZs can be refined for future buildings. Given the industrial nature of the development, there may be some future purchasers that wish to locate buildings outside of areas designated as ≤BAL-29. If this is required, consultation and/or approval with/from the authority having jurisdiction will be undertaken/granted (refer to section 2.3 for further detail on potential mechanisms for approval). APZs can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state. The proposed subdivision is considered to be
		\boxtimes			The proposed subdivision is considered to be

Table 3: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.2 Public road				The proposed 20 m wide road reserve in the western portion of the subject site is a public road. This road will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be compliant with A3.2.
A3.3 Cul-de-sac				Given site access constraints, a cul-de-sac configuration within the subject site is required. This cul-de-sac will be 274 m in length and is linked to an emergency access way, which therefore complies with the requirements of the Guidelines (refer to Section 3.2). This cul-de-sac will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be compliant with A3.3.
A3.4 Battle-axe			\boxtimes	No battle axe lots are proposed.
A3.5 Private Driveway longer than 50 m				The 'reciprocal access agreement' road within the subject site has been treated as a private driveway. This road is 12 m wide and will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be compliant with A3.5.
A3.6 Emergency Access way				An emergency access way is proposed along the southern boundary of the subject site. Further details regarding this are provided in Section 3.2. This emergency access way will comply with requirements outlined in the Guidelines (Appendix C). The proposed subdivision is considered to be compliant with A3.6.
A3.7 Fire-service access routes				No fire service access routes are required or proposed.
A3.8 Firebreak width				Firebreaks and/or cleared land will be maintained within the subject site during and post-development in accordance with the current City of Rockingham Fire Control Notice.
Element 4: Water A4.1 Reticulated areas	\boxtimes			The subject site will be connected to a reticulated water supply. The proposed subdivision is considered to be compliant with A4.1.
A4.2 Non-Reticulated areas			\boxtimes	A4.2 and A4.3 are not applicable to this proposal. Reticulated water is present within the area.
A4.3 Individual Lots within non-reticulated areas				Reticulated water is present within the area.
NOTE – AS- ACCEPTABLE SOLUTION, PS- PERFORMANCE SC				

3.2 Acceptable solutions A3.1, A3.3 and A3.6: Assessment and details

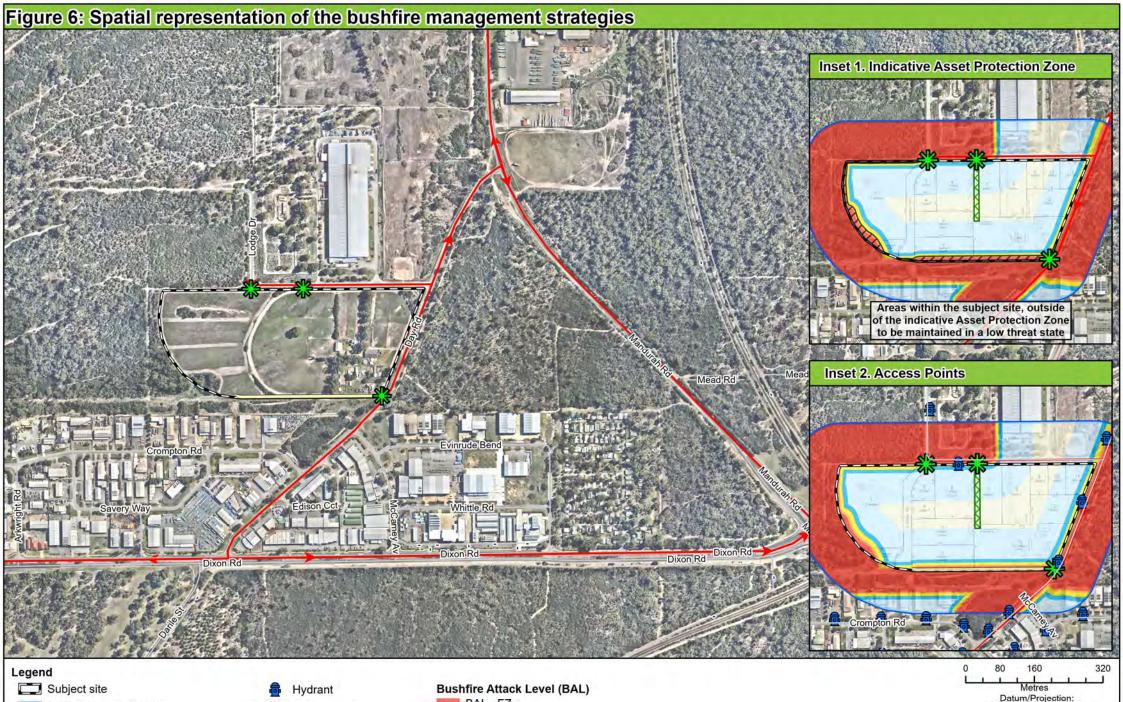
Access to/from the subject site is limited by legacy planning, road safety, environmental (e.g. Conservation Category Wetlands, possible TECs etc.) and Heritage issues (i.e. the unfinished status of Lodge Drive; inability to provide another full-time access point onto Day Road given road curvatures and traffic densities; and the Heritage listed Day Cottage in the southeast of the site). The proposed design results in the following access arrangements for each lot:

- Lots 8-10 have direct frontage to Day Road which provides access in two directions;
- Lots 4-7 have direct frontage to Lodge Drive which in turn provides access to Day Road; and
- Lots 1-3 are serviced by a proposed internal cul-de-sac road, approximately 274 m in length which provides access to Lodge Drive and in turn (after approximately 365 m), Day Road.

The proposed internal cul-de-sac road has been extended to a length greater than 200 m to access the proposed drainage area and create a turn-around head that does not impact on industrial lots.

An emergency access way has been proposed along the southern boundary of the subject site to provide a second form of access from the head of the proposed cul-de-sac within the subject site to Day Road (Figure 6). This emergency access way is less than 600 m long and will be constructed to the specifications in the Guidelines, therefore ensuring that the cul-de-sac and emergency access way both comply with the Guidelines.

The proposed subdivision is considered to be compliant with A3.1, A3.3 and A3.6.



GDA 1994 MGA Zone 50

Prepared by: DD-18557 Date: 20/08/2021

A TETRA TECH COMPANY

- 100m site assessment
- Indicative Asset Protection Zone
- K Reciprocal Access Agreement Road
- Access point
 Access / egress route

Emergency Access Way

BAL - FZ BAL - 40 BAL - 29



4. Implementation and enforcement

Implementation of the BMP applies to the developer, future owners within the subject site and the local government to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in Section 3, as well as a works program, is provided in Table 4. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 4: Proposed work program

No	Bushfire management measure	Responsibility				
Prior to issue of Titles						
1	Ensure all indicative APZs and areas to be maintained in a low threat state, depicted in Figure 6 are implemented and maintained, or revised as required.	Developer				
2	Ensure that 100 m wide APZs are cleared around each stage of subdivision if the entirety of the development depicted in Figure 6 is not developed in a single stage	Developer				
3	Extend reticulated water supply to all lots.	Developer				
4	Place Section 165 Notification on Title for all lots within Bushfire Prone Areas.	Developer				
5	Construct road network as per plan in Figure 6.	Developer				
6	Ensure vegetation within the drainage area has been removed and is maintained either as a non-vegetated area or in a low threat state.	Developer				
7	Construct emergency access way as per plan in Figure 6 to the appropriate specifications in the Guidelines.	Developer				
8	Ensure internal roads are constructed as per plan in Figure 6 to the appropriate specifications in the Guidelines.	Developer				
Prior to occupancy						
9	Refine APZs for future buildings and ensure the entirety of these areas maintained to APZ standards in the Guidelines.	Developer				
Ongoing management						
10	Maintain APZs to the standard in the Guidelines	Owners				

*TYPICALLY, THERE WOULD BE A BUSHFIRE MANAGEMENT MEASURE REGARDING CONSTRUCTION STANDARDS TO AS 3959: 2018, HOWEVER GIVEN THAT NO FUTURE BUILDINGS WILL BE CLASS 1, 2, 3 OR 10A STRUCTURES, AS 3959 DOES NOT APPLY.

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed subdivision. As such, the proposed subdivision is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

City of Rockingham, 2018, Municipal Heritage Inventory Review (2018). City of Rockingham.

Department of Fire and Emergency Services (DFES), 2019, Map of Bush Fire Prone Areas, [Online],GovernmentofWesternAustralia,availablefrom:http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx

Department of Planning (DoP), 2016, *Visual guide for bushfire risk assessment in Western Australia*. DoP, Perth.

Standards Australia (SA), 2018, Construction of buildings in bushfire-prone areas, AS 3959: 2018. SAI Global, Sydney.

Western Australian Planning Commission (WAPC), 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC), 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3 (including appendices),* WAPC, Perth.

Appendix A – Classified Vegetation Photos

Plot 1 Classification or Exclusion Clause

Class A Forest

Photo Point 1

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.



Plot 1 Classification or Exclusion Clause

Photo Point 2

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.





Plot 2 Classification or Exclusion Clause

Class A Forest

Photo Point 3

Classified vegetation within this plot is comprised of trees to 30 m tall with approximately 30 to 70% foliage cover. Understorey is comprised of shrubs and exotic grasses.

Slope under the vegetation has been assessed as upslope / flat land.



Plot 3 Classification or Exclusion Clause

Class D Scrub

Photo Point 4

Classified vegetation within this plot is comprised of shrubs that are currently less than 2 m in height. However, this area appears to have been revegetated and the average height of mature shrubs is expected to be taller than 2 m with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.



© 221°SW (T) ● 32°16'25.14"S, 115°46'23.13"E ±3m ▲ 0m

Plot 3 Classification or Exclusion Clause

Class D Scrub

SE

Photo Point 5

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas dominated by exotic grasses (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.



1 . 1

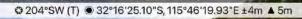
Plot 3 Classification or Exclusion Clause

Class D Scrub

Photo Point 6

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas dominated by exotic grasses (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.



N



NW

Plot 4 Classification or Exclusion Clause

Photo Point 7

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30% (right of image) as well as cleared areas (left of image). Cleared areas are expected to regenerate to resemble surrounding vegetation and as such, have been classified as scrub.

Slope under the vegetation has been assessed as upslope/flat land.



Plot 4 Classification or Exclusion Clause

Class D Scrub

Class D Scrub

Class D Scrub

Photo Point 8

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.



Plot 4 Classification or Exclusion Clause

Photo Point 9

Classified vegetation within this plot is comprised of shrubs that greater than 2 m in height with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.



Plot 5 **Classification or Exclusion Clause**

Class D Scrub

Photo Point 10

Classified vegetation within this plot is comprised of shrubs that are currently less than 2 m in height. However, this area appears to have been recently cleared and shrubs are currently juvenile. The average height of mature shrubs is expected to be taller than 2 m with foliage cover >30%.

Slope under the vegetation has been assessed as upslope/flat land.



Plot **Classification or Exclusion Clause** 6

Photo Point 11

This plot has been excluded under clause 2.2.3.2 (e) of AS 3959: 2018. This is an area adjacent to the subject site that has been cleared for industrial development.



Plot 6 **Classification or Exclusion Clause**

Photo Point 12

This plot has been excluded under clause 2.2.3.2 (e) & (f) of AS 3959: 2018. This is an area adjacent to the subject site that contains roads, light industry and maintained verges.



Plot 6 Classification or Exclusion Clause

Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 14

This plot has been excluded under clause 2.2.3.2 (e) & (f) of AS 3959: 2018. This is the current state of the drainage area within the subject site which will be cleared and maintained in a low threat state by the developer.



Appendix B – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas* v 1.3 (WAPC 2017).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

a. Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of '*Standards for Asset Protection Zones*' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (Figure 7).

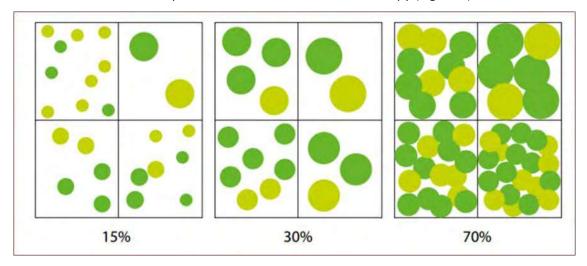


Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

- Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Appendix C - Vehicular access technical requirements (WAPC 2017)

Technical requirements	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access route
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5

* Refer to E3.2 Public roads: Trafficable surface







Government of Western Australia Department of Water and Environmental Regulation

> Your ref: AD21/89957 Our ref: RF2042-06 & PA44684 Enquiries: Mark Hingston

City of Rockingham PO Box 2142 ROCKINGHAM DC, WA, 6967

Attention: Casey Gillespie

Dear Casey

APPLICATION NO: AD21/89957 – LOT 1 DAY ROAD, EAST ROCKINGHAM – PROPOSED INDUSTRIAL DEVELOPMENT

Thank you for providing the abovementioned development application for the Department of Water and Environmental Regulation (the Department) to consider.

The Department has identified that the development proposal has the potential to impact on water resource values and/or management. In principle, the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue: Stormwater Management

Recommendation

DWER recommends the proponent prepare a detailed Stormwater Management Plan (SMP) as part of the development approval process. The SMP should ensure that,

- Stormwater runoff be fully contained onsite for small and minor storm events (1 and 0.2 Exceedance per Year runoff) and that required storage for each rainfall event, basin sizing and design should be detailed.
- The first 15 mm of stormwater runoff (1 Exceedance per Year runoff) to undergo water quality treatment via bio-infiltration.
- Pre-development and post-development outflow of stormwater from the site be detailed.

Issue: Native Vegetation Protection Advice

Under section 51C of the *Environmental Protection Act 1986* (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land

management practices outside of environmentally sensitive areas (ESAs) are contained in the *Environmental Protection (Clearing of Native Vegetation) Regulations* 2004 (the Clearing Regulations).

Based on the information provided, should development approval be issued, the proposal is likely to be exempt from the requirement for a clearing permit under Regulation 5, Item 1 of the Clearing Regulations. Note that this exemption does not apply prior to development approval being issued.

This exemption is described in the Departments '<u>A Guide to the Exemptions and</u> <u>Regulations for Clearing Native Vegetation</u>'. It is the applicant's responsibility to determine compliance with these exemptions and therefore whether a clearing permit is required. If there is uncertainty, then the precautionary principle should be applied, and it is recommended applicants apply for a clearing permit.

If further clarification is required please contact DWER's Native Vegetation Regulation section by email (admin.nvp@dwer.wa.gov.au) or by telephone (6364 7098).

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

Should you require any further information on the comments please contact Mark Hingston on (08) 9550 4209.

Yours sincerely

Man

Jane Sturgess Acting Program Manager – Planning Advice Kwinana Peel Region

13 / 10 / 2021



Department of **Biodiversity**, **Conservation and Attractions**



Your ref:DD020.00000223.001Our ref:PRS 47619Enquiries:Lyndon MutterPhone:9442 0342Email:lyndon.mutter@dbca.wa.gov.au

Secretary Western Australian Planning Commission Locked Bag 2506 PERTH WA 6000

Industrial Development - Lot No 1 Day Road East Rockingham

In reference to your email correspondence dated 13 September 2021, the Parks and Wildlife Service at the Department of Biodiversity, Conservation and Attractions (DBCA) provides the following comments.

DBCA provided comment to the Western Australian Planning Commission (WAPC) on the subdivision application 160809 for Lot 1 Day Road East Rockingham and recommended that a hard road edge be provided between the development area and the adjoining conservation reserve to ensure the protection of the reserve. The subdivision was approved without a hard road edge between the development area and the adjoining conservation area.

Condition

Prior to the commencement of works a management plan for the interface between the development and the adjoining conservation area is to be prepared and approved to ensure the protection of the conservation area and its boundary fence, in consultation with DBCA and the City of Rockingham, with satisfactory arrangements for the implementation of the approved plan (DBCA).

Advice to the City of Rockingham

The development report does not specifically address the management of the interface between the development area and the adjoining conservation area. An interface management plan should be developed in consultation with DBCA and the City of Rockingham to demonstrate that the conservation area and boundary fence will not be impacted by the development. The design should provide a setback between the base of the batter and the conservation reserve boundary fence to ensure that material does no spill or erode into the reserve and to ensure that the fence can be maintained. Batters should have a slope no steeper than 1 in 6 to ensure material does not erode into the conservation reserve. The interface design should provide a surface treatment for the batter (by revegetation or other methods), that provides permanent stabilisation and prevents erosion material or weeds infiltrating the conservation reserve.

The City of Rockingham should ensure that there is adequate separation for bushfire protection between the development and the conservation area, and that all bushfire protection requirements are provided within the development land and do not place reliance or impositions on the management of the conservation reserve.

DBCA would appreciate the opportunity to provide comment on the draft Urban Water Management Plan (UWMP) for the development area. The UWMP will need to ensure that predevelopment hydrology is maintained, and that the wetland and threatened ecological community area within the adjoining conservation reserve are not impacted by the proposed development.

DBCA understands that environmental impacts associated with the western portion of the lot were considered by the Environmental Protection Authority as part of the Rockingham Industrial Zone Strategic Environmental Assessment in 2011. Provided the proposal is in accordance with the EPA's Report and Recommendations (Report 1390) and the Minister for Environment and Water's Ministerial Statement 863, DBCA has no additional comments on the proposal.

Thank you for the opportunity to provide comment. Should you have any queries regarding the above comments, please contact Lyndon Mutter on 9442 0342.

Yours sincerely

Mn

Benson Todd REGIONAL MANAGER

25 October 2021

PS ref: 7674 DAP ref: DAP/21/02074 City's ref: 20.2021.223.1

20 October 2021

City of Rockingham PO Box 2142 Rockingham DC WA 6967

Attention: David Banovic, Senior Projects Officer

LOT 1 (27) DAY ROAD, EAST ROCKINGHAM DAP FORM 1 APPLICATION – PROPOSED INDUSTRIAL DEVELOPMENT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Planning Solutions acts on behalf of Ovest Industrial, the proponent of the proposed industrial development at Lot 1 (27) Day Road, East Rockingham (**subject site**). The following additional information package addresses the various assessment comments provided by the City of Rockingham (**City**) in a letter dated 12 October 2021.

This letter, the accompanying amended swept paths, Traffic Impact Assessment (**TIA**) and commentary from Ecological Australia assists to respond to the above-mentioned requests for further information or comments on the proposed development. The following documentation is attached to this submission in response to the above matters:

- Attachment 1 Letter from Ecological Australia.
- Attachment 2 Preliminary subdivisional road designs.
- Attachment 3 Amended swept paths prepared by KCTT Consulting Engineers;
- Attachment 4 Amended TIA, prepared by KCTT Consulting Engineers; and

The following submission is considered to appropriately address the City's request for additional information. Refer to **Table 1** below for our detailed response to the City's comments.

Table 1: Response to City's planning assessment comments

Groundwater and Drainage		
Comment	Applicant Response	
 The development site is in close proximity to a series of Conservation Category Wetlands (CCWs), located to the north and west, as shown by the Department of Biodiversity, Conservation and Attractions (DBCA's) Geomorphic Wetlands, Swan Coastal Plain dataset. The proposed development may have impacts on the wetlands within the Conservation Area through hydrological changes (water quantity and water quality) caused by Stormwater runoff and groundwater abstraction. The Applicant is requested to confirm whether abstraction of any groundwater will occur as part of the development. 	All stormwater runoff will be contained on site where possible, which will be confirmed through the preparation of a stormwater management strategy. We can confirm that no groundwater abstraction will occur as part of the proposed development.	

Level 1, 251 St Georges Tce, Perth WA (08) 9227 7970 GPO Box 2709 Cloisters Square PO 6850

admin@planningsolutions.com.au www.planningsolutions.com.au ACN 143 573 184 ABN 23 143 573 184 Planning Solutions (Aust) Pty Ltd

2. A Stormwater Management Plan (SMP) is required to be submitted upfront to demonstrate how both the major and minor storm events up to and including the 1% AEP is to be contained within the development site. Groundwater is shown to be at surface for a significant portion of the development area, which is concerning given the extent of impervious surface proposed. The Applicant will need to demonstrate what stormwater storage strategies are to be adopted and how groundwater rise is to be managed. Given the intended land use of the subject site, it highly recommended that opportunities for treatment of the first 15mm of rainfall be explored as part of the overall stormwater strategy.	Noted. The requirement to prepare and provide a stormwater management plan can be addressed with a condition of approval.
3. The 50m buffer of two of the CCW's fall within the development site as shown in figure below. The City acknowledges the buffer within the lot is currently clear, however, the proposal to develop the site may pose an increased risk to the wetlands. Revegetation of the buffer will reduce surface water runoff and maintain water quality. The City awaits DBCA referral response to firm up its position on the matter.	The CCW buffers were considered as part of the approved subdivision application by the DBCA. No conditions requiring revegetation were applied. All stormwater will be retained on site, to ensure runoff is minimised to the wetlands. This will be confirmed through the preparation of a stormwater management plan, to the satisfaction of the City—as described above.
Bushfire Management Plan (BMP)	
	onse to the City's comments on the BMP, which have informed
the applicant's response.	onse to the only s comments on the Divir, which have informed
1. The proposed development relies on the approved Bushfire Management Plan (BMP) associated with the WA approval issued for the site, creating the proposed development lot. The following comments are noted in relation to proposal and the approved BMP for the subdivision:	
• The Open Air Storage area falls within the Asset Protection Zone (APZ) area. This APZ is likely to increase, given the drainage area is to be retained vegetated and/or planted for drainage purposes (shrubland classification). Please provide further information relating to the proposed storage area to ensure all operations are cognizant with the developments' BMP, will flammable material be stored, etc.	Refer detailed comments in Attachment 1 . We can confirm that the open storage area will not be used for the storage of flammable materials, and if necessary, we would accept a condition of approval that addressed this.
• The BMP suggests that the drainage area in the southeast will be cleared and landscaped to resemble low threat, maintained vegetation. The City has no intention of maintaining this drainage reserve at low threat.	The clearing and maintenance of the drainage reserve is the responsibility of the developer, as documented in the approved BMP for the subdivision. Moreover, there is adequate separation distance between the building and the drainage area regardless of the classification of vegetation in the drainage reserve.
• The Western and Southern portion of the site are subject to APZ treatment.	Noted and acknowledged.
• The BMP for the development must be amended to reflect the intentions of a landscape buffer/strip within this Lot 1 industrial development site.	The BMP does not require amendment if the landscape buffer strip is maintained as low threat vegetation. If the City has concerns about this, it can be addressed as a condition of approval—or an advice note relating to the landscaping plan.

• The BMP must be amended to reflect prior to subdivision classification (possibly forest) (See figure 4 identified any need to amend the BMP given that	
Vegetation Classification) to the drainage basin area or a higher vegetation classification, such as shrubland classification to ensure sufficient functioning of the basin.	t the
 The Earthworks and Retaining Wall Plan suggests a 1 in 4 slope to all surrounding natural ground levels at the boundary of the development, however no further information has been provided to suggest the treatment of this slope. Details on how this grade will be managed will need to consider the Western and Southern portion of this slope which is subject to APZ measures. 	ary. ner a
• Vegetation below 500 mm high (low threat vegetation provision/requirements) is not necessarily compatible with the intent of the landscaped areas to provide visual screening to the proposed industrial development lots. Note – it is noted that approximately 15 m from the southern lot boundary would likely need to be low threat or mulch/turf which is not consistent with the landscape plan.	ening bosed e and of a
Figure 1: Excerpt of eastern elevation showing proposed tree plan	nting.
2. An amended BMP is required which includes:	nting.
	o the
 An amended BMP is required which includes: A site-specific BAL assessment for the proposed development. A depiction of the proposed building in relation to previously mapped BAL contours for the site has 	o the been roved DBCA
 2. An amended BMP is required which includes: A site-specific BAL assessment for the proposed development. Classification of the revegetated 50m wetland buffer as Class C - Scrub or other appropriate vegetation classification as demonstrated by concept landscaping A depiction of the proposed building in relation to previously mapped BAL contours for the site has provided. Vegetation classification has been documented and apprint the BMP prepared for the subdivision. Regardless of D advice, there is no reason to consider that the vegetation as demonstrated by concept landscaping 	o the been roved DBCA tation
 An amended BMP is required which includes: A site-specific BAL assessment for the proposed development. Classification of the revegetated 50m wetland buffer as Class C - Scrub or other appropriate vegetation classification as demonstrated by concept landscaping drawings - contingent on DBCA advice. A depiction of the proposed building in relation to previously mapped BAL contours for the site has provided. Classification of the revegetated 50m wetland buffer as Class C - Scrub or other appropriate vegetation classification has been documented and appropriate vegetation classification as demonstrated by concept landscaping drawings - contingent on DBCA advice. 	o the been roved DBCA tation sult in nd do erned,
 An amended BMP is required which includes: A site-specific BAL assessment for the proposed development. Classification of the revegetated 50m wetland buffer as Class C - Scrub or other appropriate vegetation classification as demonstrated by concept landscaping drawings - contingent on DBCA advice. Classification of the vegetation to be planted along the internal road reservation, to form part of the Urban Water Management Plan required under subdivision A depiction of the proposed building in relation to previously mapped BAL contours for the site has provided. Classification of the revegetated 50m wetland buffer as Class C - Scrub or other appropriate vegetation classification has been documented and application to the subdivision. Regardless of D advice, there is no reason to consider that the vege classification would change. Even if the classification were to change, it would not real a BAL rating of BAL-40 of greater. Classification of the vegetation to be planted along the internal road reservation, to form part of the Urban Water Management Plan required under subdivision 	b the been roved DBCA tation sult in and do erned, I.

Landscaping

Landscaping	
 An amended Landscaping Plan is required to be submitted addressing the following: Includes all landscaping verge treatments as part of the proposal; Provision of a minimum 24 shade trees at a ratio of 1 per 4 car bays in accordance with the East Rockingham (ER) Development Guidelines; The City does not consider Callistemon Viminalis or Platanus Acerifolia (London Plane) as suitable shade trees. A substitution/s is recommended, to be chosen from the prescribed list of specifies detailed in Appendix C of the ER Guidelines. A suggestion would be; Eucalyptus gomphocephala (Tuart); Agonis flexuosa (WA Peppermint); Eucalyptus Torquata (Coral Gum); or Casuarina Equisetifolia (Horsetail Shoeak); 	Noted. An updated landscaping plan can be provided as a condition of planning approval, to the satisfaction of the City. The City's comments pertaining to the landscaping are considered acceptable and could be included as advice notes.
• Fire pump(s), tanks and a transformer are indicatively shown to be located within the landscape zone / setback areas. Relocation of these items behind the setback areas should be considered in accordance with the ER Guidelines. Details of these structures to be provided for consideration.	The provision of these utilities / services needs to be within the front setback area for site operational purposes. The proposed setback to the utilities from the site boundary is considered to be adequate, and the visual impact will be softened by landscaping. Furthermore, considering the predominant industrial context the proposed development is situated within, the visual impact of the utilities on the street will not negatively affect the amenity of the area. For these reasons, we have not provided further detail for the utilities as this is considered to form part of the detailed design process.
Traffic, Access and Car Parking	
1. Currently, there is no road that provides vehicular access to the proposed development site, relying on creation of an internal road access through the conditions of the WAPC approval. Notwithstanding this, the Applicant is requested to provide additional information to assess the validity of the provided swept path analysis to confirm concern with encroachment into the opposing traffic lane and clash with kerbing. Please provide more information regarding the cross sectional details for the proposed 20.0m internal road and address matters raised in Appendix 1 (attached).	Please refer to Attachment 2 which includes preliminary road designs.
2. The semi-trailer parking bays have not been designed in accordance with AS2890.2. A minimum semi-trailer parking bay of 3.5m (width) by 20.0m (length) is required.	The bays are not intended to provide parking for semi-trailers. The parking bays will act as storage areas for the trailers, which have been specifically sized to ensure the trailers will fit. Therefore, the existing bays are considered acceptable.
3. The proposed number of crossovers is considered excessive and not supported	 The City has not provided any specific reasons as to why four crossovers are not necessary—only stating that four is considered 'excessive'. Without any specific objections, it is difficult to provide a detailed response. However, we provide the following comments in support: The number of crossovers proposed in this instance are considered necessary to ensure operational safety and efficiency is maximised for the proposed development.

	 The development involves a mixture of vehicle sizes, from cars to 19m semi-trailers, and increasing the number of crossovers allows for maximum flexibility in managing and segregating traffic. The proposed road is a cul-de-sac, which ensures that traffic speed along the road will be slow and reduces the risk of conflict between vehicles entering and existing the site, and other traffic.
4. Further, the following recommendations are provided:	
(a) Pavement markings at the vehicular crossover locations to show the intended traffic flow within the site;	Noted. Additional line markings can be provided, if necessary, via a condition of approval—although it's worth noting that no other industrial development in the area has provided directional line markings.
(b) Pavement markings for visitor bays to clearly differentiate from the staff bays;	Noted. This can be addressed via a condition of approval.
(c) Internal footpath and associated kerb ramps to provide linkages between car parking areas to the main office. These should be down on the landscape plan as hard stand features within the soft landscape elements, including any proposed lighting.	Noted. This can be addressed via an advice note regarding the landscaping plan.
Traffic, Access and Car Parking (Appendix 1)	
 The Executive Summary mentioned that "B-double (27.5m) will be able to use both major routes as up to RAV4 sized vehicles (max 27.5m in length) are permitted to utilise both Day Road Drive currently". This is incorrect because there are the following restrictions for Lodge Drive and the intersection of Day Rad/Lodged Drive. Lodge Drive All operators must carry current written approval from the road asset owner permitting use of the road. Intersection of Day Road/Lodge Drive No right turn permitted into Lodge Drive from Day Road; No left turn permitted into Day Road from Lodge Drive. 	Noted. Lodge drive has conditional approval for RAV 4 as it is currently servicing only one development. Therefore, it is seemed 'last mile' access. Given it is navigable by RAV 4, extension to an unconditional network should not be an issue. Furthermore, the TIA prepared for the subdivision plan (which this development forms part of) mentions the intention to upgrade to a RAV 7 network as part of subdivisional works.
• The Executive Summary mentioned that "Other surrounding roads would absorb less traffic than Lodge Drive; moreover, the traffic would be dispersed so that the impact can be considered negligible". The City understands that the existing intersection at Day Road/Lodge Drive has an unsatisfactory Level of Service therefore further assessment of this intersection is required to determine its impact as well as what upgrades that may be required.	The TIA prepared by Cardno for the subdivision of Lot 1 Day Road contains SIDRA analysis of Lodge Road/Day Road showing LOS A for this intersection.
• Section 2.14 mentioned that current RAV2, 3 and 4 is able to reach the proposed development. This is incorrect because the existing RAV4 network is required to be extended first along Lodge Drive before this can be achieved.	The TIA for the approved subdivision, prepared by Cardno, states the intention to upgrade the network to be accessible by RAV 7 vehicles. We have provided an updated version of the TIA (refer Attachment 3) that states this more clearly.

•	Section 2.14 mentioned that the heavy vehicle route is via "Mandurah Road > Day Road > Lodge Drive > Proposed Road > Proposed development site". This cannot be achieved because there is no right turn permitted into Lodge Drive from Day Road. Please amend heavy vehicle routes accordingly.	Noted, however the restriction pertains to RAV vehicles only, not to all heavy vehicles – vehicles of Austroads Class 3-9 (inclusive of semi-trailers) are "as-of-right" vehicles, therefore are permitted to use this route for access/egress. Further, the TIA prepared by Cardno for the approved subdivision suggests this intersection is likely to be upgraded to cater for RAV 7 vehicles.
•	A sight distance assessment has been mentioned for the standard vehicles. Please also provide the sight distance assessment for commercial vehicles (i.e. heavy vehicles) because they have different sight distance requirements.	Noted.
•	Section 2.21 mentioned that B-double is the largest vehicle that would utilise the site. Please provide information regarding whether there is an intention for these vehicles to park within the site. If there is then parking bays are to be provided and the design of the site is to be changed accordingly to accommodate for these vehicles	It is considered the design does not need to be updated, as vehicles can be stored sufficiently at the rear of the property.
•	The following swept path movements require refinement.	The swept path movements provided are not drawings for construction, and only contain schematic design of crossovers. Once the project moves into the detailed design phase, the crossover splays will be designed to accommodate turning manoeuvres for the largest vehicles that will access the site.
Des	sign	
1.	The preferred façade design intent is the use of concrete panels with exposed aggregate or textured finish consistent with Town Planning Scheme 2. The design intent presented is inconsistent and should be re-visited.	 We disagree—the intent of Clause 4.10.2 of LPS2 is not to require the use of concrete panels with exposed aggregate or textured finish. It is to improve the presentation of <i>concrete panels</i> if used as a façade treatment. We understand the intent of this requirement is to avoid a façade characterised by large expanses of untreated concrete panels. The proposed development achieves this by utilising a range of materials including grey Colorbond, various white & copper coloured aluminium cladding, textures, and glazing, to provide a façade consistent with contemporary expectations for a modern industrial building. Specifically, the proposed development incorporates concrete panels on the ground floor level with the following treatments: On the eastern elevation (fronting the street), the panels are painted and clad with copper coloured aluminium highlights. On the northern and southern elevations, concrete panels have some limited visibility from the street, and will be painted white. On the western elevation, the façade is not visible, and the concrete panels remain untreated. Given that the concrete panels represent a relatively small proportion of the façade, requiring a textured finish would impose an unnecessary additional cost on the development whilst achieving little overall benefit—especially given the isolated nature of the proposed development at the centre of a large industrial area. The proposed design and materials used are considered to consistent with the objectives of LPS2 and entirely suitable to its context.

2.	Due to the large expanse of wall presented by the scale of the proposed warehouse structures, further detail shall be indicatively provided indicating the location of elements such as downpipes, ventilation louvres, mechanical plant, screening, lighting fixtures and signage that will assist to demonstrate how the expanse of wall can be articulated and balanced.	The proposed development is a large-scale manufacturing and warehousing facility at the centre of an industrial estate. The building has been designed to present as a modern industrial facility consistent with contemporary expectations— as detailed in our previous comments. The elements described by the City (excluding signage) will be identified at the detailed design stage following development approval. We do not consider that they should form part of a design assessment. Approval for signage will be sought separately at a later time.
3.	It is also noted that access to the female amenities may need to be re-visited.	Noted. The lodged development plans include an error and do not show an entrance to the female amenities. This can be addressed as a condition of approval, noting that the condition should specify that building plans be updated to show an external entrance to the female amenities.

Table 2: Response to DWER's planning assessment comments

Issue: Stormwater Management		
Comment	Applicant Response	
 DWER recommends the proponent prepare a detailed Stormwater Management Plan (SMP) as part of the development approval process. The SMP should ensure that, Stormwater runoff be fully contained onsite for small and minor storm events (1 and 0.2 Exceedance per Year runoff) and that required storage for each rainfall event, basin sizing and design should be detailed. The first 15 mm of stormwater runoff (1 Exceedance per Year runoff) to undergo water quality treatment via bio-infiltration. Pre-development and post-development outflow of stormwater from the site be detailed. 	Noted. This can be addressed as a condition of approval.	
Issue: Native vegetation clearing		
Based on the information provided, should development approval be issued, the proposal is likely to be exempt from the requirement for a clearing permit under Regulation 5, Item 1 of the Clearing Regulations. Note that this exemption does not apply prior to development approval being issued. This exemption is described in the Departments 'A Guide to the Exemptions and Regulations for Clearing Native Vegetation'. It is the applicant's responsibility to determine compliance with these exemptions and therefore whether a clearing permit is required. If there is uncertainty, then the precautionary principle should be applied, and it is recommended applicants apply for a clearing permit.	Noted.	

CONCLUSION

We trust the above letter and the relevant attachments addresses the City's queries and assists the City in preparing their responsible authority report (**RAR**) to the Metro Outer Joint Development Assessment Panel (**JDAP**). We respectfully request that the City finalise their assessment and make a favourable recommendation to the JDAP at the earliest opportunity.

Should you have any queries, please do not hesitate to contact the undersigned on (08) 9227 7970.

JOSHUA CARMODY SENIOR PLANNER

211021 7674 RFI Letter

ATTACHMENT 1

COMMENTS FROM ECOLOGICAL AUSTRALIA



Level 1, Bishop's See 235 St Georges Terrace Perth WA 6000 t: (08) 6218 2200

18 October 2021 Our ref: 21PER-20467

City of Rockingham PO Box 2142 ROCKINGHAM DC WA 6967

Attention: David Banovic

Dear David,

Re: Reply to City of Rockingham comments (bushfire) – Proposed Industrial Development, Lot 1 (No. 27) Day Road, East Rockingham

Eco Logical Australia (ELA) was requested to prepare responses to comments provided by the City of Rockingham (the City) regarding the bushfire management plan (BMP) submitted as part of the development application for Lot 1 (No. 27) Day Road, East Rockingham (ELA 2021).

ELA reviewed the comments provided by the City and has provided responses to issues raised in Table 1.

These responses and updates to the BMP have been prepared by Daniel Panickar (Principal Bushfire Consultant and Level 3 BPAD accredited practitioner).

RESPONSE TO COMMENTS

ELA's response to the City's comments made in regards to the BMP (ELA 2021) is presented below in Table 1.

Table 1: Response to City of Rockingham comments

City of Rockingham comment	ELA response	
1. The proposed development relies on the approved Bushfire Management Plan (BMP) associated with the WAPC approval issued for the site, creating the proposed development lot. The following comments are noted in relation to the proposal and the approved BMP for the subdivision:		
The Open Air Storage area falls within the Asset Protection Zone (APZ) area. This APZ is likely to increase, given the drainage area is to be retained vegetated and/or planted for drainage purposes (shrubland classification). Please provide further information relating to the proposed storage area to ensure all operations are cognizant with the developments' BMP, will flammable material be stored, etc.	 ELA disagrees with this comment. The developer intends to clear the drainage basin during subdivisional works as documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of the drainage basin would change. Notwithstanding the above, there is 45.4 m between the drainage area and the proposed building which will ensure that the building will not be exposed to BAL-FZ or BAL-40 regardless of what the classification of the drainage area is. The proposed operations will be cognizant with the developments' BMP (including APZs). 	
The BMP suggests that the drainage area in the southeast will be cleared and landscaped to resemble low threat, maintained vegetation. The City has no intention of maintaining this drainage reserve at low threat.	ELA disagrees with this comment. The developer intends to clear the drainage basin during subdivisional works as documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of the drainage basin would change. Notwithstanding the above, there is 45.4 m between the drainage area and the proposed building which will ensure that the building will not be exposed to BAL-FZ or BAL-40 regardless of what the classification of the drainage area is.	
The Western and Southern portion of the site are subject to APZ treatment.	Comment acknowledged.	
The BMP for the development must be amended to reflect the intentions of a landscape buffer/strip within this Lot 1 industrial development site.	ELA disagrees with this comment. Vegetation classifications have been documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of this area would change. The landscape buffer strip will be low threat vegetation maintained as per clause 2.2.3.2 (f) of AS 3959: 2018. Provided this landscaping is undertaken as described, no changes to the BMP are required and the proposed development can be approved.	

City of Rockingham comment	ELA response
The BMP must be amended to reflect prior to subdivision classification (possibly forest) (See figure 4 Vegetation Classification) to the drainage basin area or a higher vegetation classification, such as shrubland classification to ensure sufficient functioning of the basin.	ELA disagrees with this comment. The developer intends to clear the drainage basin during subdivisional works as documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of the drainage basin would change. Notwithstanding the above, there is 45.4 m between the drainage area and the proposed building which will ensure that the building will not be exposed to BAL-FZ or BAL-40 regardless of what the classification of the drainage area is.
The Earthworks and Retaining Wall Plan suggests a 1 in 4 slope to all surrounding natural ground levels at the boundary of the development, however no further information has been provided to suggest the treatment of this slope. Details on how this grade will be managed will need to consider the Western and Southern portion of this slope which is subject to APZ measures.	Landscape treatments along the slopes referred to can comply with APZ standards in <i>Standards for Asset Protection Zones</i> in the <i>Guidelines for Planning in Bushfire Prone Areas</i> . Provided this landscaping is undertaken as described, no changes to the BMP are required and the proposed development can be approved.
Vegetation below 500 mm high (low threat vegetation provision/requirements) is not necessarily compatible with the intent of the landscaped areas to provide visual screening to the proposed industrial development lots. Note – it is noted that approximately 15 m from the southern lot boundary would likely need to be low threat or mulch/turf which is not consistent with the landscape plan.	The landscape buffer strip will be low threat vegetation maintained as per clause 2.2.3.2 (f) of AS 3959: 2018. Vegetation excluded under this clause does not need to be less than 500 mm in height and ELA believe that narrow landscaping strips such as these should not be considered as classified vegetation. Provided this landscaping is undertaken as described, no changes to the BMP are required and the proposed development can be approved.
2. An amended BMP is required which inclue	des:
A site-specific BAL assessment for the proposed development.	A depiction of the proposed building in relation to the previously mapped BAL contours for the site in the approved BMP (ELA 2021) has been enclosed to this response. The proposed building is in an area subject to BAL-29.
Classification of the revegetated 50m wetland buffer as Class C – Scrub or other appropriate vegetation classification as demonstrated by concept landscaping drawings – contingent on DBCA advice.	ELA disagrees with this comment. No revegetation is proposed in these wetland buffers that are current comprised of bare earth and weeds. Vegetation classifications have been documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of this area would change. Notwithstanding the above, there is 50 m and 74.5 m between the wetland buffer areas 6221 and 6222 respectively and the proposed building which will ensure that the building will not be exposed to BAL-FZ or BAL-40 regardless of what the classification of the buffer area is.

City of Rockingham comment	ELA response
Classification of the vegetation to be planted along the internal road reservation, to form part of the Urban Water Management Plan required under subdivision approval.	ELA disagrees with this comment. Vegetation classifications have been documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of this area would change. The road reserve plantings will be low threat vegetation maintained as per clause 2.2.3.2 (f) of AS 3959: 2018. Provided this planting is undertaken as described, no changes to the BMP are required and the proposed development can be approved.
Classification of the proposed landscaping for the development as the appropriate vegetation classification or justify how an appropriate Exclusion under AS 3959 Construction of buildings in bushfire-prone areas applies.	ELA disagrees with this comment. Vegetation classifications have been documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of this area would change. The proposed landscaping will be low threat vegetation maintained as per clause 2.2.3.2 (f) of AS 3959: 2018. Provided this landscaping is undertaken as described, no changes to the BMP are required and the proposed development can be approved.
Classification of the drainage reserve as the appropriate vegetation classification.	ELA disagrees with this comment. The developer intends to clear the drainage basin during subdivisional works as documented in the approved BMP for the subdivision (ELA 2021). Considering the subdivision and supporting BMP were approved (WAPC 160809; 15 September 2021), ELA see no reason why the vegetation classification of the drainage basin would change. Notwithstanding the above, there is 45.4 m between the drainage area and the proposed building which will ensure that the building will not be exposed to BAL-FZ or BAL-40 regardless of what the classification of the drainage area is.

CONCLUSION

ELA have addressed the relevant City comments and believe that development assessment can be progressed without modifications to the existing BMP (ELA 2021).

If you wish to discuss any of the matters above, please contact me via email or phone (details provided).

Regards,

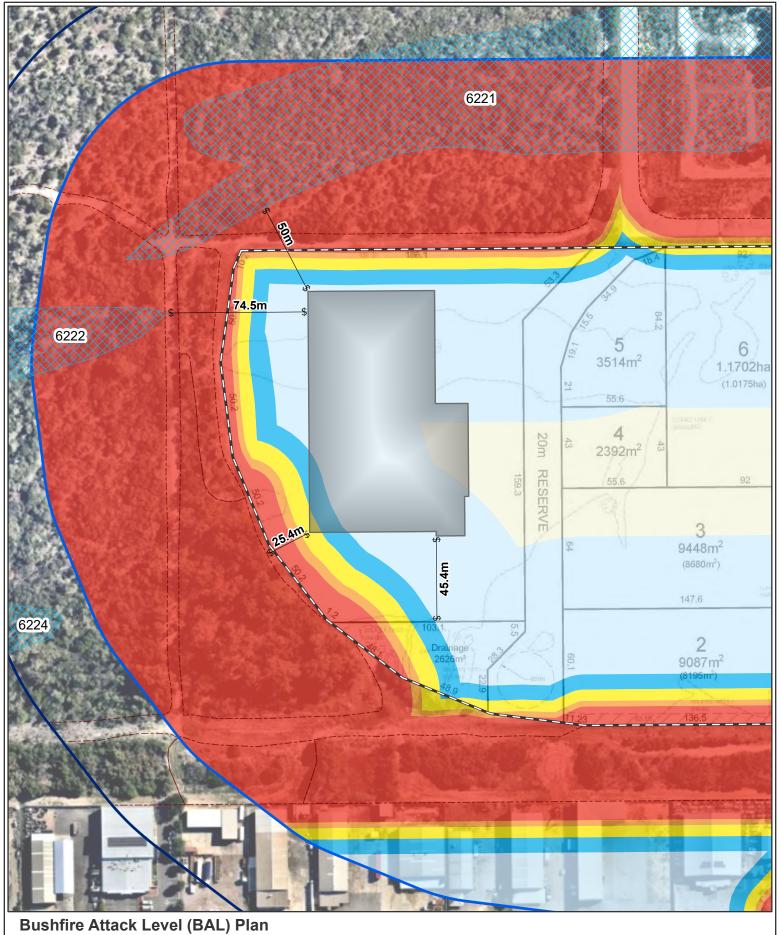
The

Daniel Panickar Principal Bushfire Consultant BPAD Level 3 Practitioner (37802)



REFERENCES

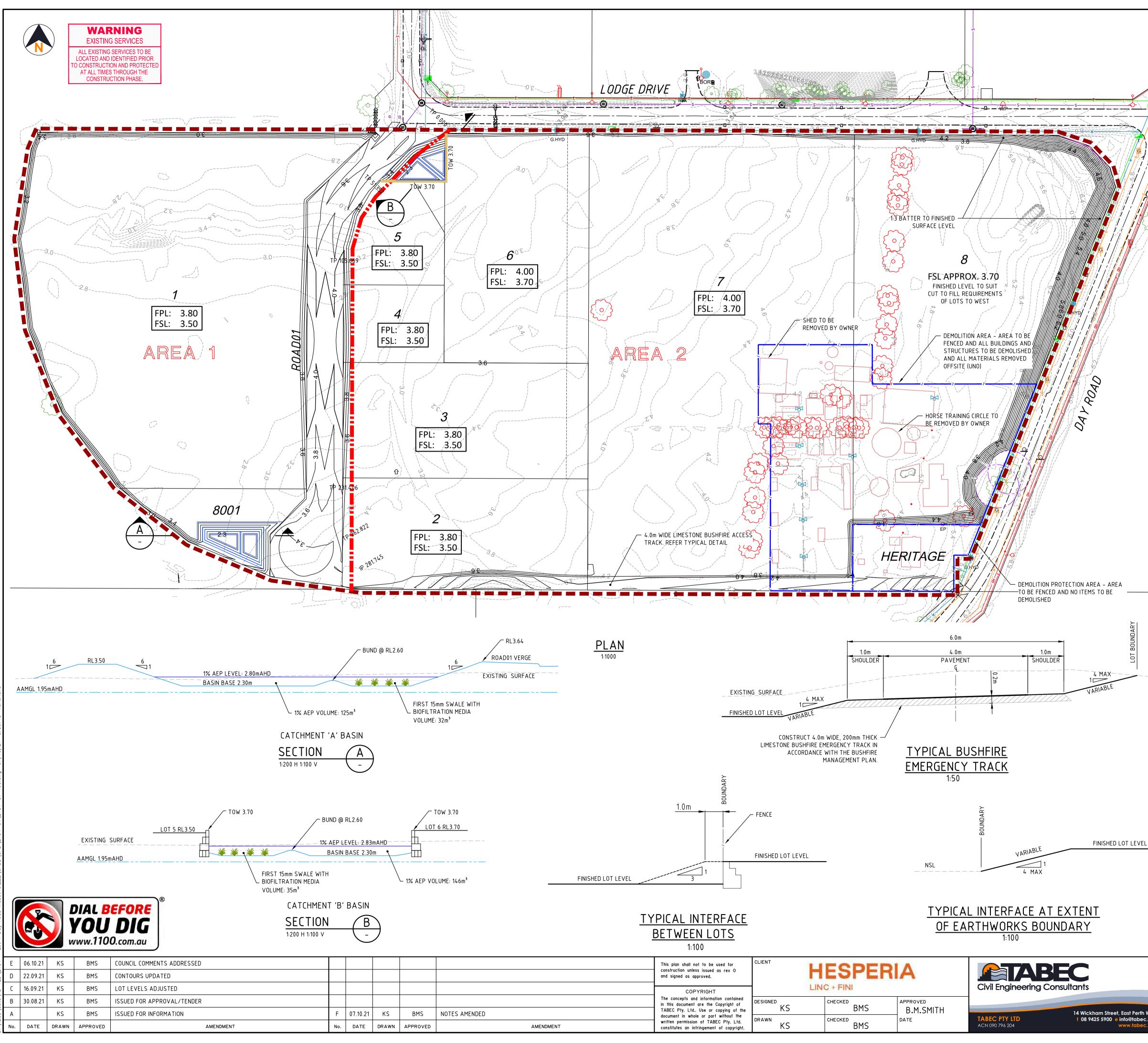
Eco Logical Australia (ELA). 2021. *Bushfire Management Plan: Subdivision Application: Lot 1 Day Road, East Rockingham*. Prepared for Hesperia, August 2021.





ATTACHMENT 2

PRELIMINARY SUBDIVISION ROAD DESIGNS



\TB-12D\2454 - Lot 1 Day Road Industrial_22\CADD\CAD\2454-01\2454-01-100.dwg 07/10/21 3:56:48 ksha

	EGEND	
		EXTENT OF EARTHWORKS
	5	EXISTING SURFACE CONTOUR (0.20m)
	<u> </u>	PROPOSED SURFACE CONTOUR (1.0m)
		PROPOSED SURFACE CONTOUR (0.20m)
	FPL: 4.00	PROPOSED FINISHED PAVEMENT LEVEL
- / ////	FSL: 3.70	PROPOSED FINISHED SURFACE LEVEL
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	$\langle \circ \rangle$	EXISTING TREE TO BE REMOVED
ants		LANDSCAPE SETBACK
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o fi		EXISTING WATER MAIN
	G	EXISTING GAS MAIN
	OF	EXISTING OPTIC FIBRE EXISTING COMMUNICATIONS
	C	EXISTING COMMONICATIONS EXISTING UNDERGROUND HIGH VOLTAGE POWER
}	LV	EXISTING UNDERGROUND LOW VOLTAGE POWER
	ОН	EXISTING OVERHEAD HIGH VOLTAGE POWER
	///	PROPOSED FENCING
<u>NOTES</u>		
1. THIS DRAWING SHAL SPECIFICATION.	.L BE READ IN CONJ	UNCTION WITH THE CONTRACT DRAWINGS AND

- SURVEY CONTOURS PROVIDED BY <u>MNG SURVEYS</u>.
 ALL FINISHED LEVELS ARE IN METRES TO AHD.
 HORIZONTAL DATUM IS PCG94.
- 3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
- 4. CONTRACTOR TO LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS ON SITE.
- 5. PRIOR TO CUTTING OR FILLING, THE SITE AREAS SHALL BE CLEARED AND TOPSOIL REMOVED.
- 5.1. EXTENT OF CLEARING TO BE LIMITED TO THE BOUNDARY UNLESS AGREED WITH THE SUPERINTENDENT.5.2. VEGETATION WHERE NOTED FOR PROTECTION SHALL BE FENCED PRIOR TO
- CLEARING SURROUNDING AREA. THE CONTRACTOR TO PROTECT THE 'VEGETATION PROTECTION AREAS' FROM ANY DAMAGE.
- 5.3. ALL UNSUITABLE MATERIAL TO BE REMOVED BY THE CONTRACTOR TO AN APPROVED TIPPING SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL FEES TO BE PAID BY THE CONTRACTOR.
- 5.4. CLEARED MATERIAL TO BE MULCHED & STOCKPILED ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- 5.5. TOPSOIL SHALL BE STRIPPED, SCREENED & BLENDED WITH CLEAN FILL MATERIAL AS PER THE GEOTECHNICAL DIRECTION. EXCESS TOPSOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
 5.6. PLACING OF FILL SHALL NOT COMMENCE UNTIL THE SUPERINTENDENT HAS
- INSPECTED THE TOPSOIL STRIPPING.
- 6. ALL LEVELS SHOWN ARE FINISHED LEVELS AFTER FINAL WORKS. ROADS SHALL BE BOXED OUT AS PER TYPICAL ROAD DETAILS & SECTIONS.
- 7. IN-SITU ROCK TO BE OVER RIPPED AND RECOMPACTED TO 500mm BELOW THE FINISHED SURFACE LEVEL. EXCAVATED ROCK CAN BE PLACED IN AREAS OF DEEP FILL TO WITHIN 500mm OF THE FINISHED SURFACE LEVEL.
- 8. EARTHWORKS SHALL INTERFACE TO THE SURROUNDING EXISTING GROUND LEVELS WITH A 1in4 BATTER (U.N.O.).
- 9. CONTRACTOR TO PROVIDE INDEPENDENT CERTIFICATION THAT EARTHWORKS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE DRAWINGS AND THE SPECIFICATION.
- 10. ALL EARTHWORKED AREAS ARE TO BE STABILISED USING HYDROMULCH.
- 11. THE CONTRACTOR SHALL PROVIDE THE SUPERINTENDENT WITH AN AS-CONSTRUCTED SURVEY OF FINISHED DEVELOPMENT LEVELS WITHIN THE EXTENT OF WORKS BOUNDARY, PLUS ANY BORROW AREAS & STOCKPILED MATERIAL IF APPLICABLE. THE LEVELS SHOULD ACCURATELY DEFINE BATTERS & CHANGES IN GRADES. THE AS-CONSTRUCTED SURVEY SHALL BE SUPPLIED IN DIGITAL FORMAT (CAD & PDF FILES).
- 12. RETAINED TREES TO BE FENCED OFF WITH STAR PICKETS AND TWO STRAND SIGHTER WIRE PRIOR TO CONSTRUCTION WORKS COMMENCING.
- 13. REFER DRAWING <u>TABEC-STD-W07</u> AND <u>TABEC-STD-W02</u> FOR RETAINING WALL CONSTRUCTION DETAILS.
- 14. WALL COURSING TO BE ESTABLISHED FROM TOP OF WALL LEVELS SHOWN ON DRAWINGS.
- 15. CONTRACTOR TO PROVIDE INDEPENDENT CERTIFICATION THAT RETAINING WALLS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE DRAWINGS AND THE SPECIFICATION.

16. REFER TO THE POWER DRAWINGS FOR DEEPENED FOOTING LOCATIONS.

17. CONTRACTOR SHALL PROVIDE SUPERINTENDENT WITH AN AS-CONSTRUCTED SURVEY OF RETAINING WALLS WITHIN THE EXTENT OF WORKS BOUNDARY. THE LEVELS AND LOCATION SHOULD BE ACCURATELY DEFINED. THE AS-CONSTRUCTED SURVEY SHALL BE SUPPLIED IN DIGITAL FORMAT (CAD AND PDF FILES).

2454-01-100

PROJECT LOT 1 DAY ROAD

reet, East Perth WA 6004 0 <mark>e</mark> info@tabec.com.au	DRAWING	NUMBER

ISSUE

WAPC No. 160809 A1

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	IP Lodge Drive CH 0 VIP: CH 5.676, RL: 3.595					
DATUM R.L3.0	-					
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HORIZONTAL ALIGNMENT						_ T=
CENTRELINE DESIGN LEVEL		3.731	3.595	3.554	3.523	קוס ג
RIGHT GUTTER			I		3.296	רוג ג
LEFT GUTTER			3.445	3.404	3.373	2965
EXISTING SURFACE LEVEL		3.731	3.595	3.699	3.253	000 E
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CENTRELINE CHAINAGE		0	5.676	12.5	20	24, 998
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LODGE DRIVE

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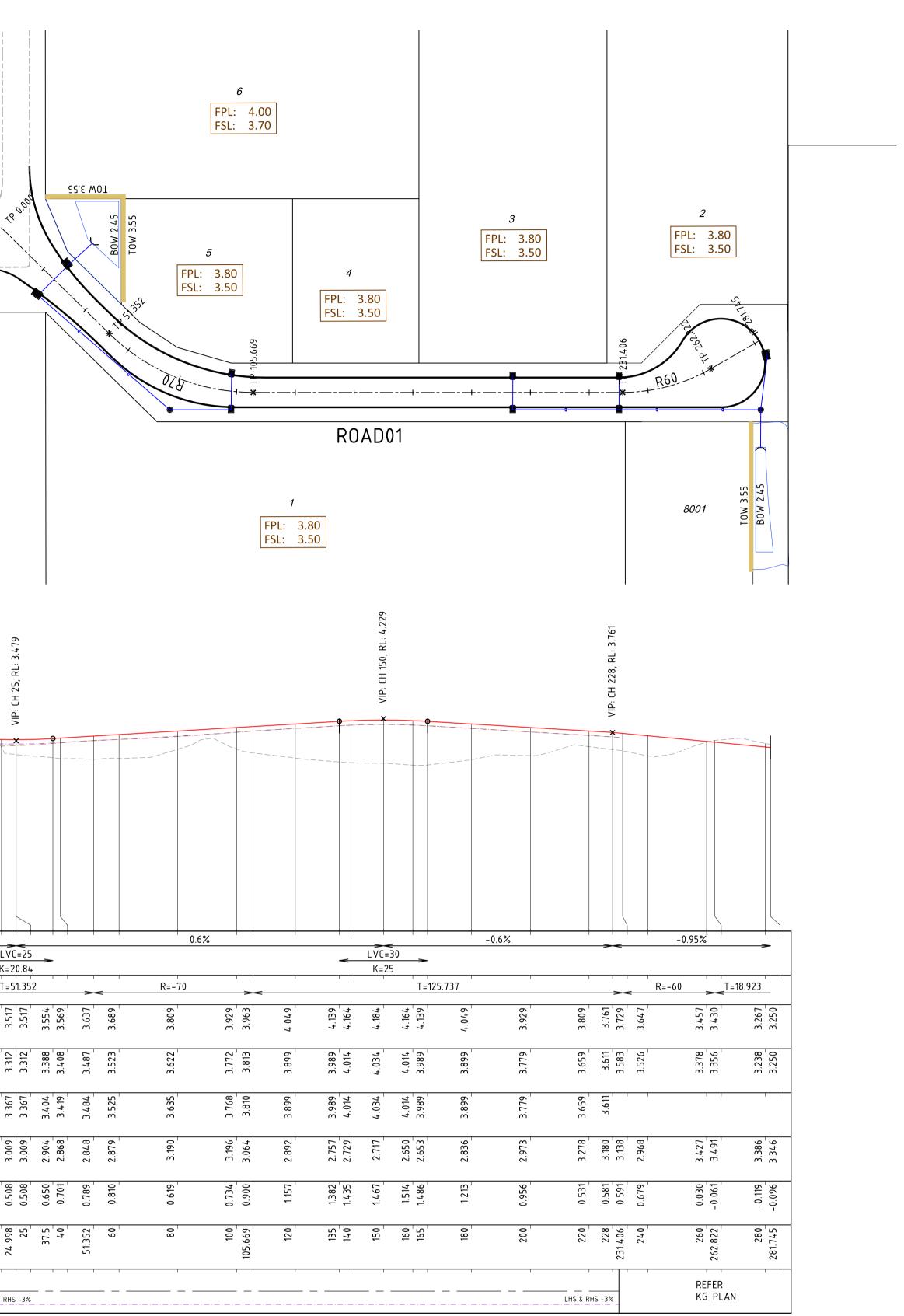
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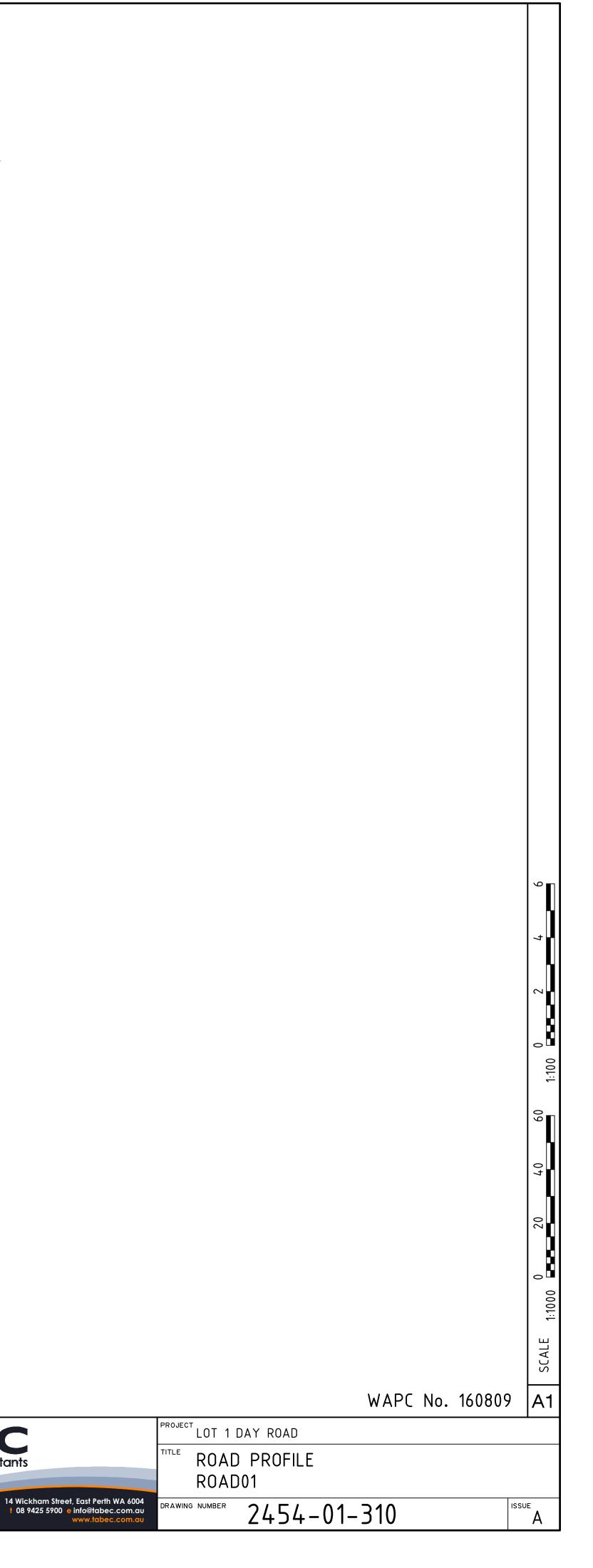
ISSUED FOR INFORMATION

AMENDMENT

No. DATE DRAWN APPROVED







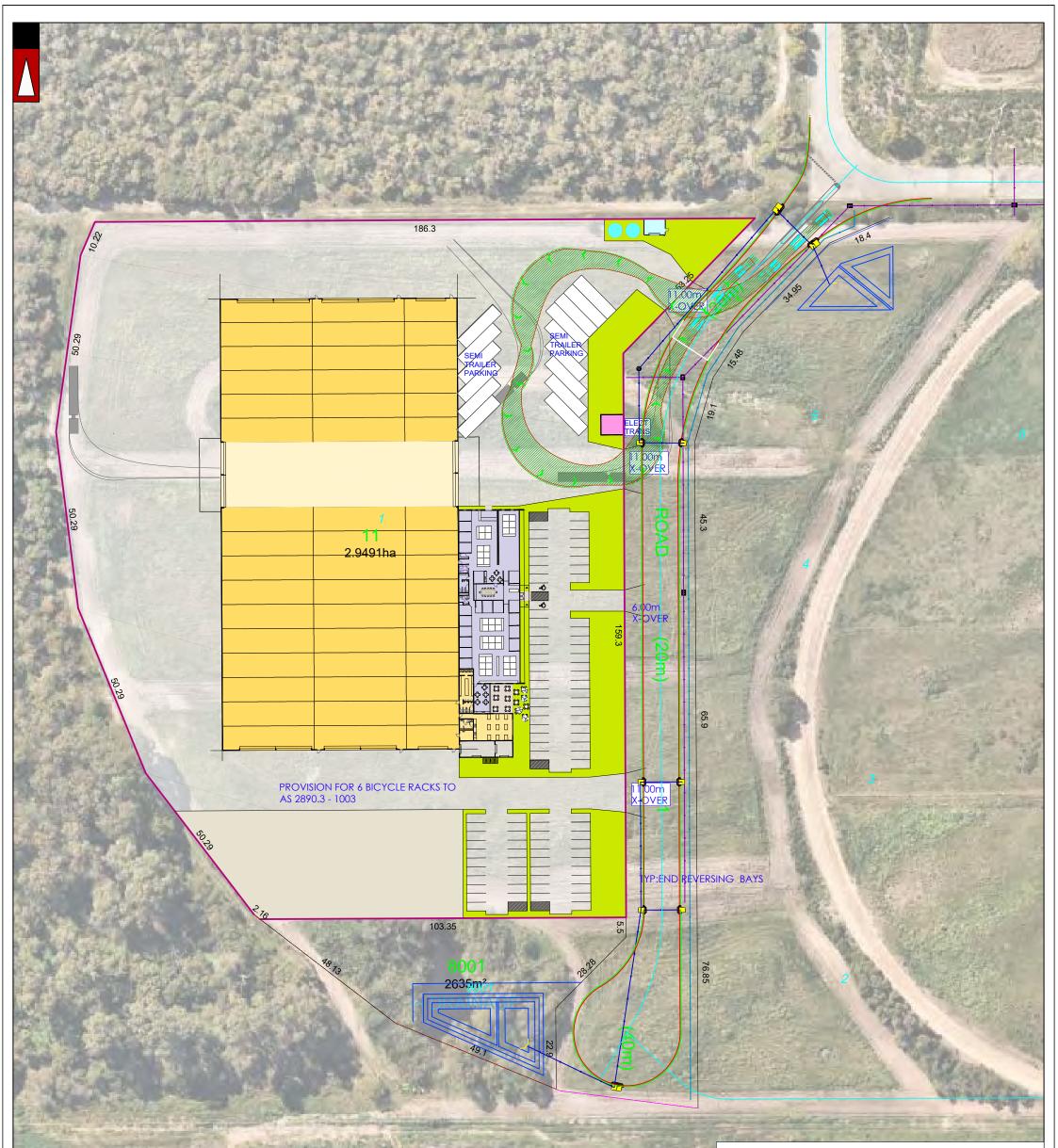
ATTACHMENT 2

AMENDED SWEPT PATHS



Vehicle Turning Circle Plan

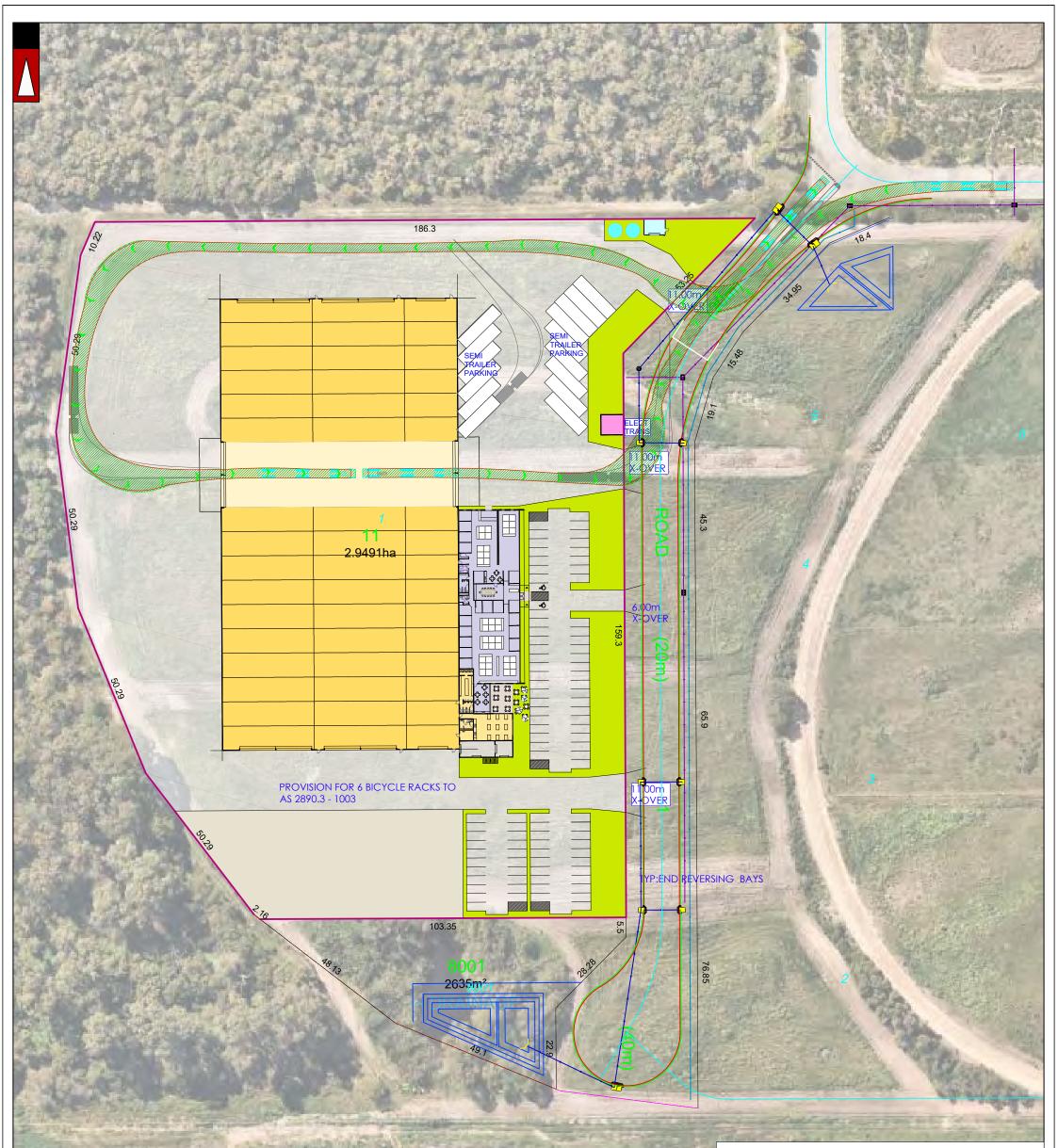
Transport Impact Statement | KC01344.000 Lot 1 Day Road, East Rockingham



Note : Crossovers and cul-de-sac need to be modified to allow the movement of the largest vehicle that will utilize the site



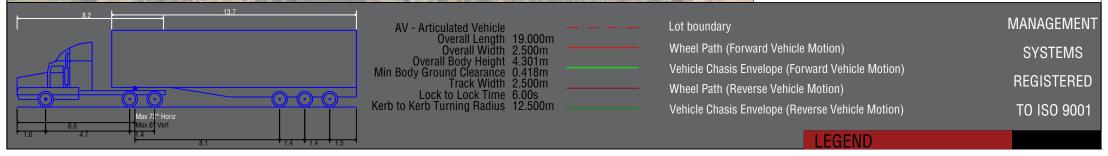
B	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	-
A	08-09-2021	ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - B-Double (27.5m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A	raft 07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KAT
NO	DATE	AMENDMENT	KC01344.000_S20			



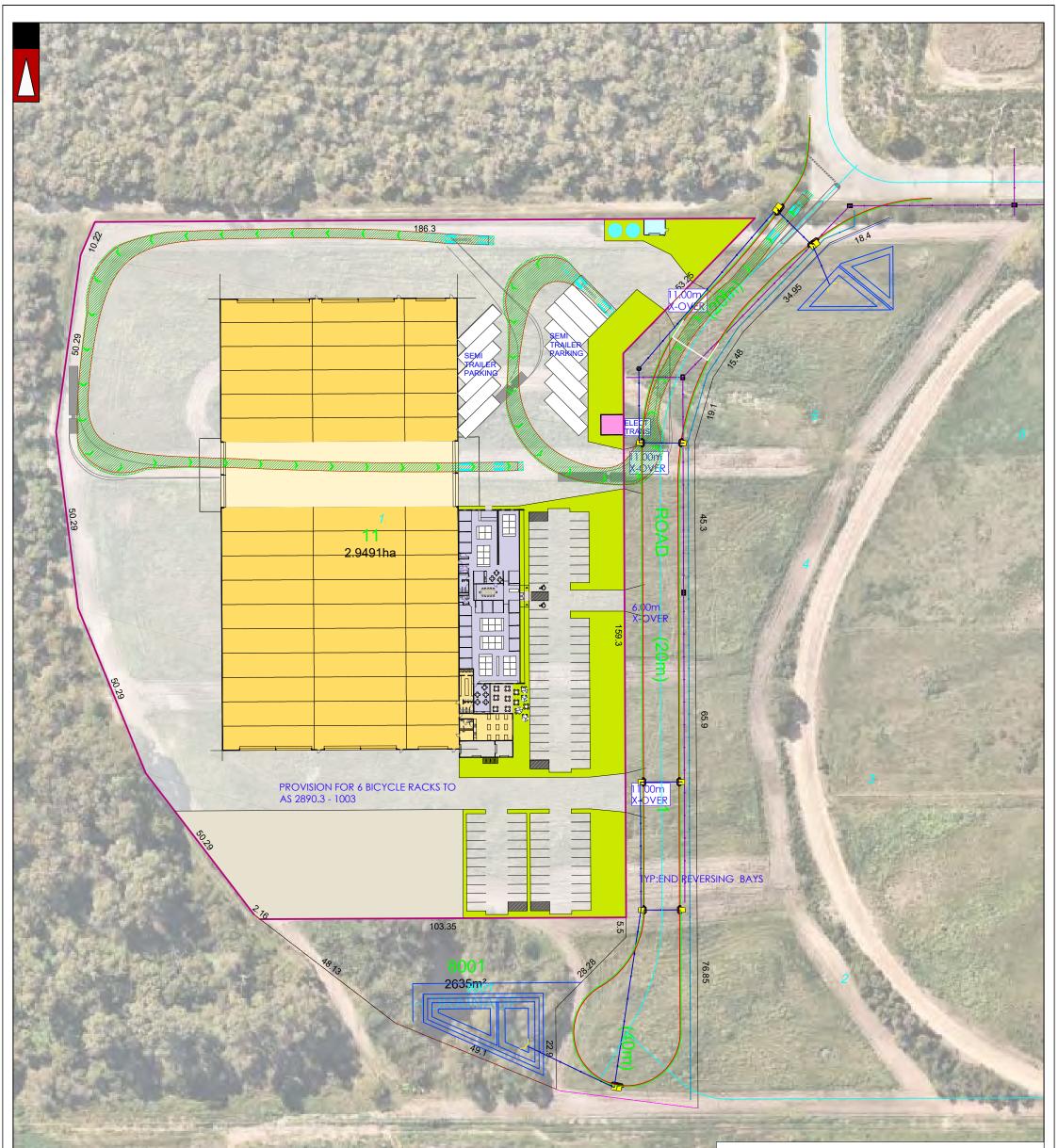
	B-Double (27.5m)		Lot boundary	MANAGEMENT
	B-Double (27.5m) Overall Length 2 Overall Width 2	27.500m 2.500m	Wheel Path (Forward Vehicle Motion)	SYSTEMS
	Overall Body Height Min Body Ground Clearance Track Width	4.300m 0.540m 2.500m	Vehicle Chasis Envelope (Forward Vehicle Motion)	REGISTERED
	Lock-to-lock time 6 Curb to Curb Turning Radius 1	6.00s	Wheel Path (Reverse Vehicle Motion)	TO ISO 9001
5.9 Max 6 ⁻ Vert 9.05 1.4 3.85 1.3 7.75 1.3 1.0 056 7.75 1.3 1.0 056			Vehicle Chasis Envelope (Reverse Vehicle Motion)	101000001
			LEGEND	

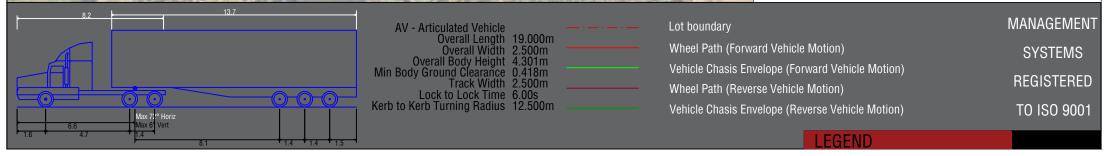
B	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - B-Double (27.5m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	Ken
NO	DATE	AMENDMENT	KC01344.000_S21			



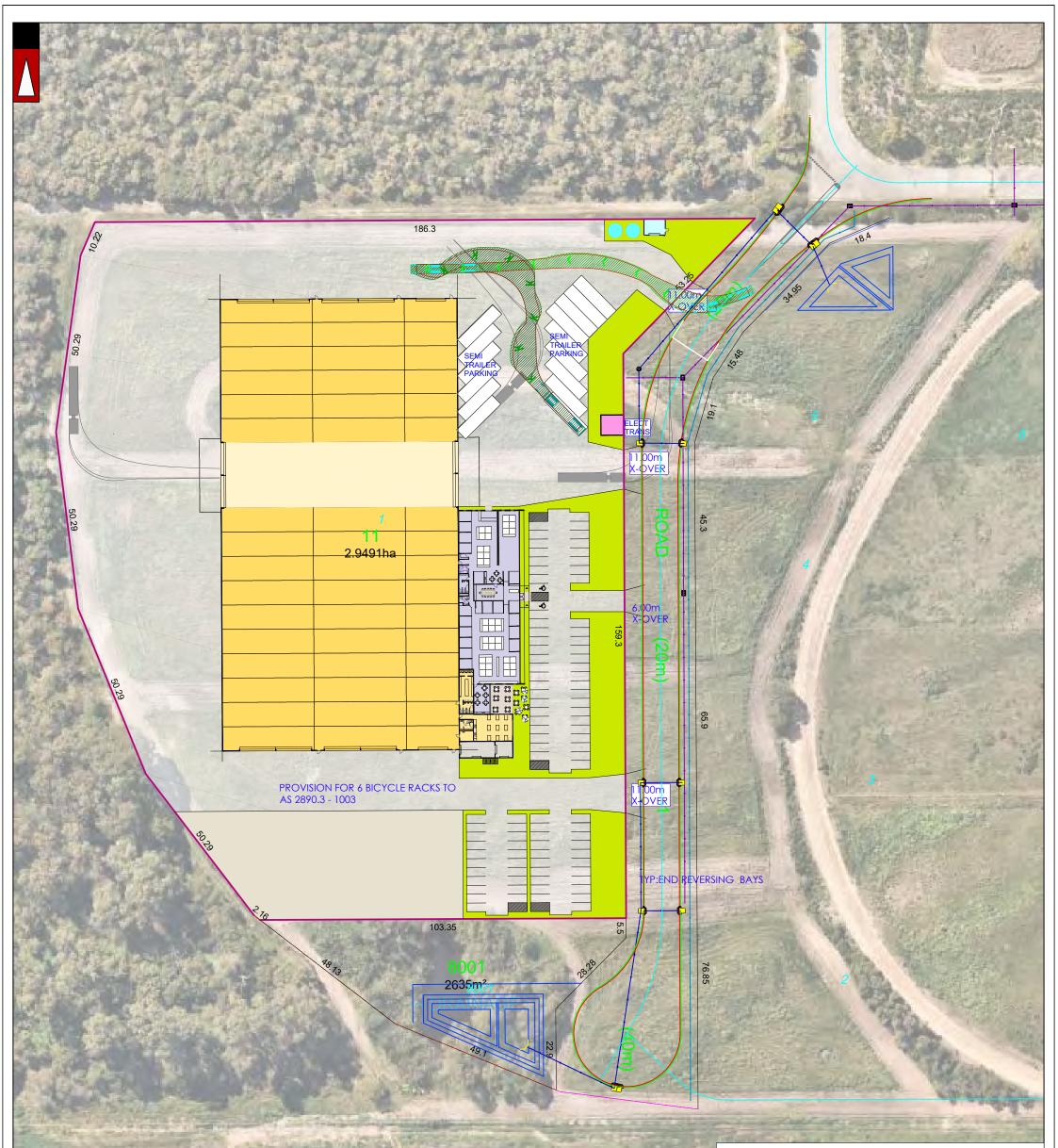


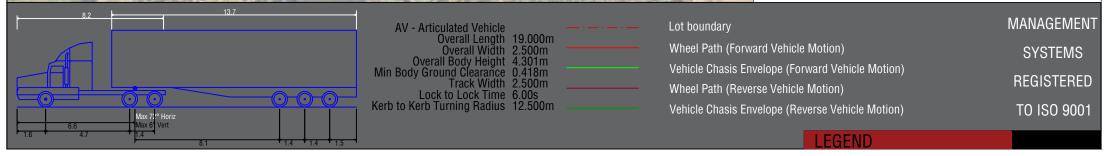
B	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	-
A		ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m) - INBOUND		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KCTT
NO	DATE	AMENDMENT	KC01344.000_S22A			





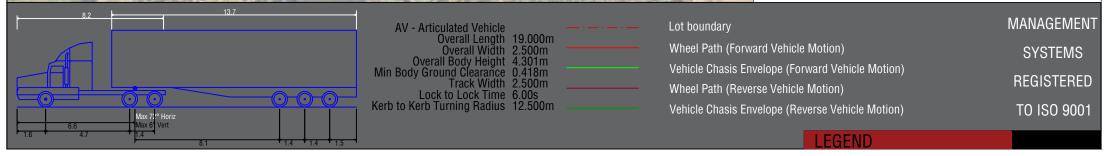
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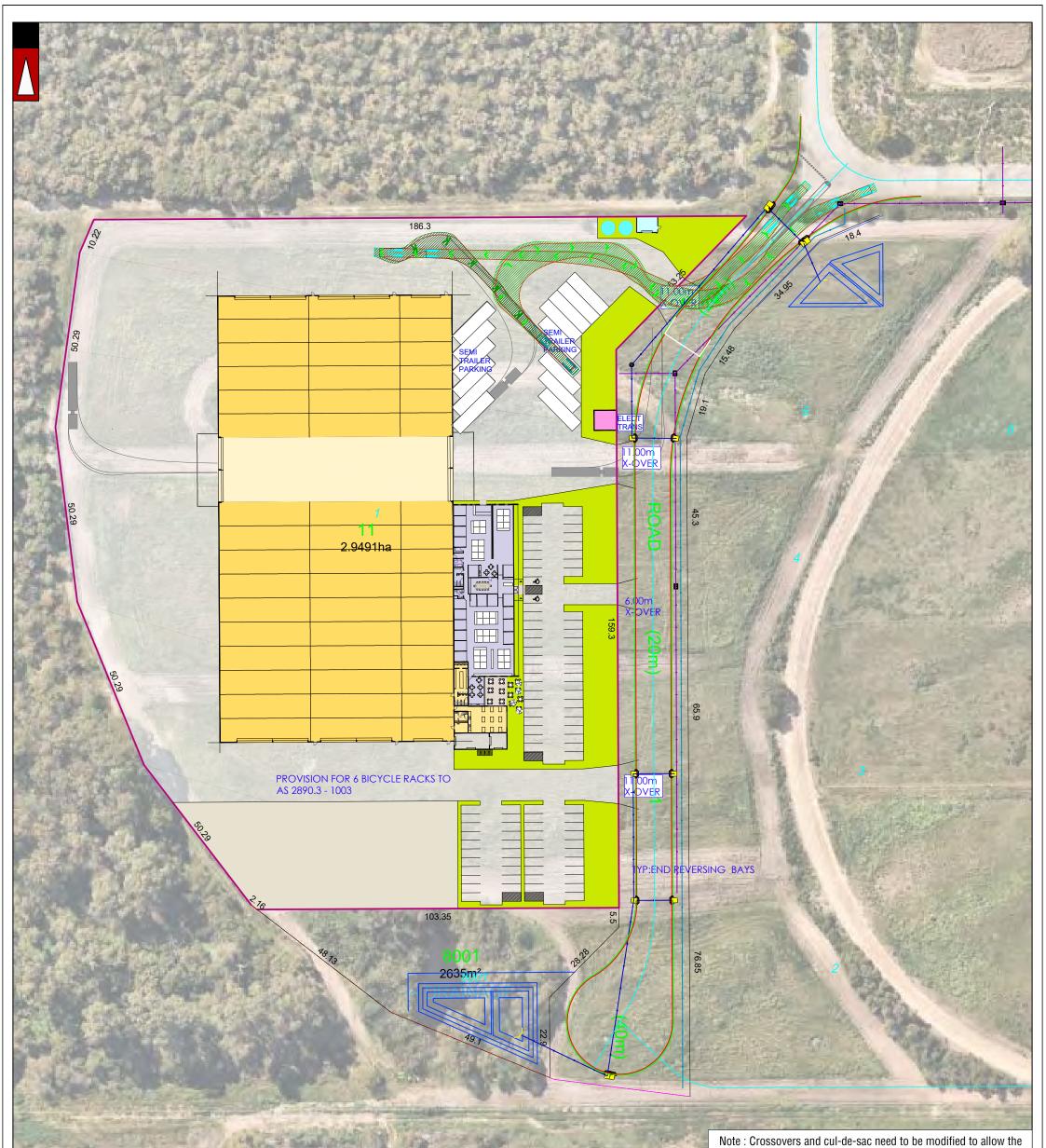


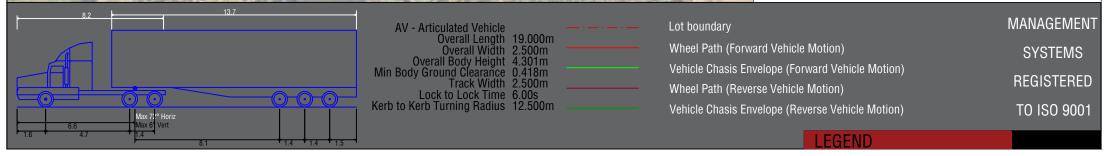
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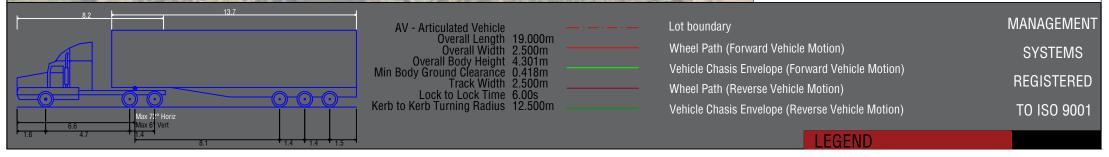
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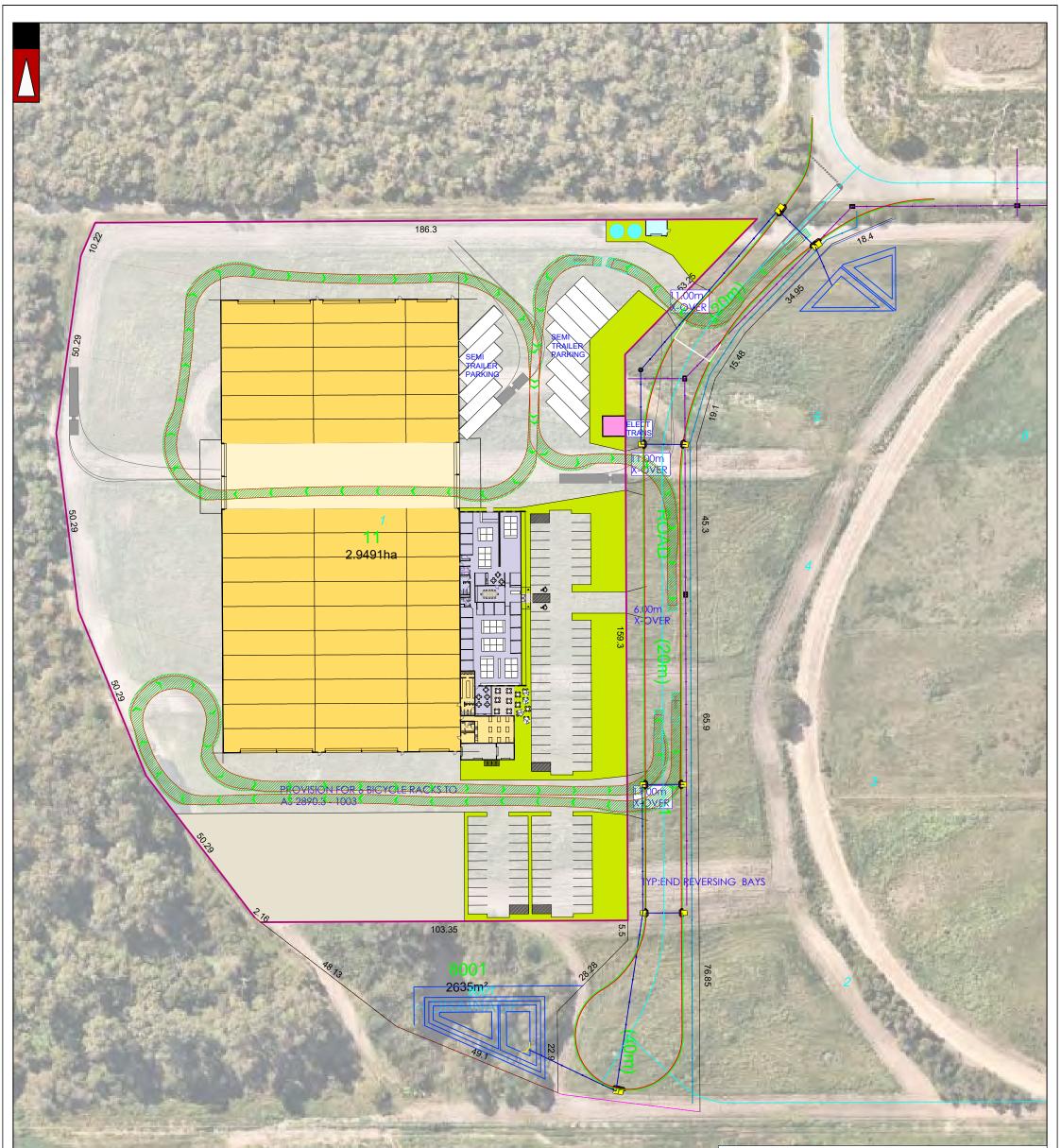


В	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	-
A		ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KGT
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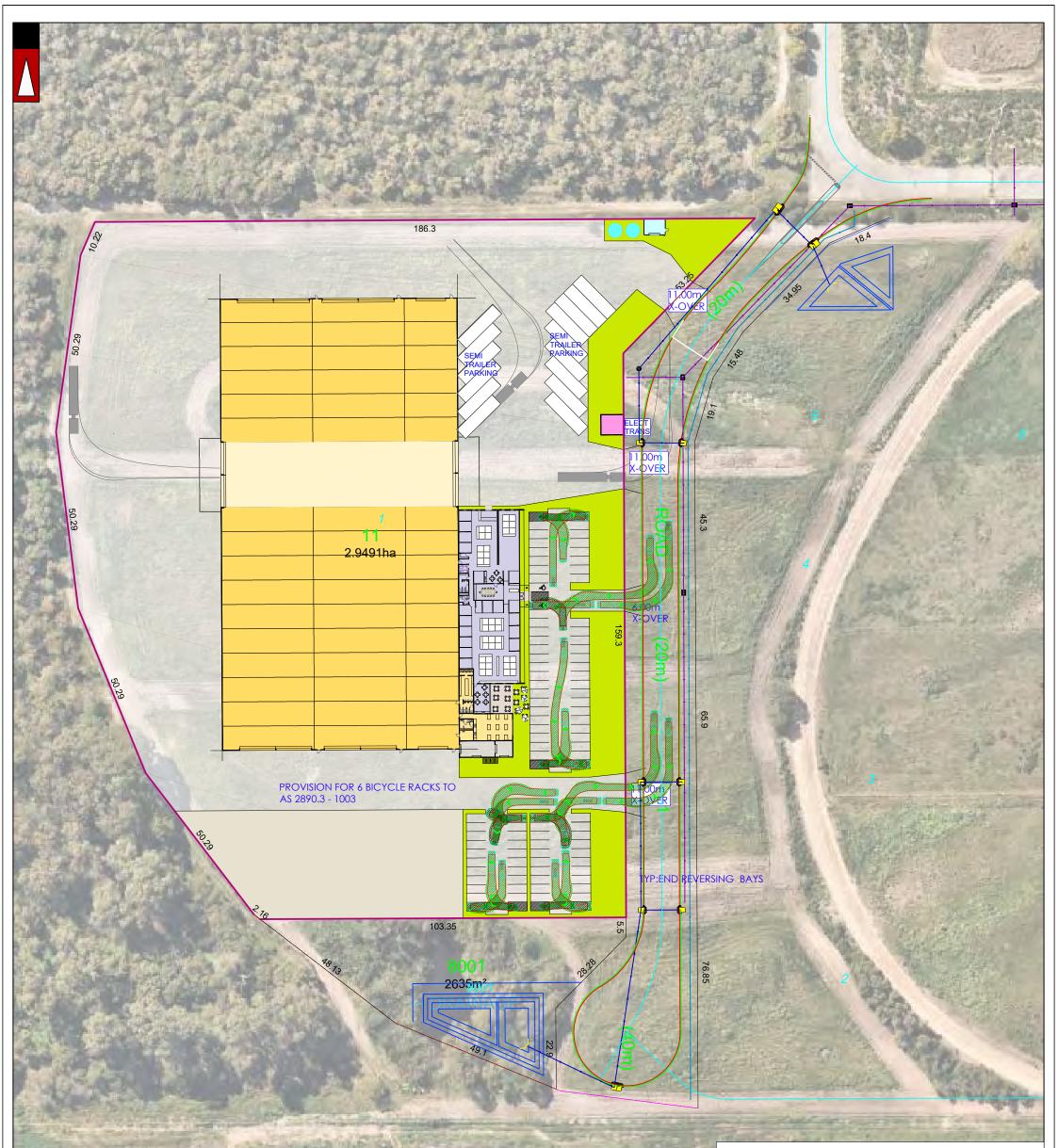


В	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	-
A		ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m)		Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KATT
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	5	Service Vehicle (8.8 Overall Leng Overall Wid Overall Body Heig Min Body Ground Clearar Track Wid Lock to Lock Tir Kerb to Kerb Turning Radi	th 8.800m th 2.500m Wheel F ht 4.300m Vehicle ce 0.427m Vehicle th 2.500m Wheel F ne 4.00s	ndary Path (Forward Vehicle Motion) Chasis Envelope (Forward Vehicle Motion) Path (Reverse Vehicle Motion) Chasis Envelope (Reverse Vehicle Motion)		LEGEND	MANAGEMENT SYSTEMS REGISTERED TO ISO 9001
			PROJECT: Lot 1 Day Road, East Rockingham		DRAWN BY:	Civil & Traffic Engineering Consultants	
В	18-10-2021	PROPOSED LAYOUT AMENDED	TITLE:		D1.	Suite 7 No 10 Whipple Street Balcatta WA 6021	
А	08-09-2021	ISSUED FOR REVIEW	Vehicle Turning Circle Plan - Service Vehi	icle (8.8m)			
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:		J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	
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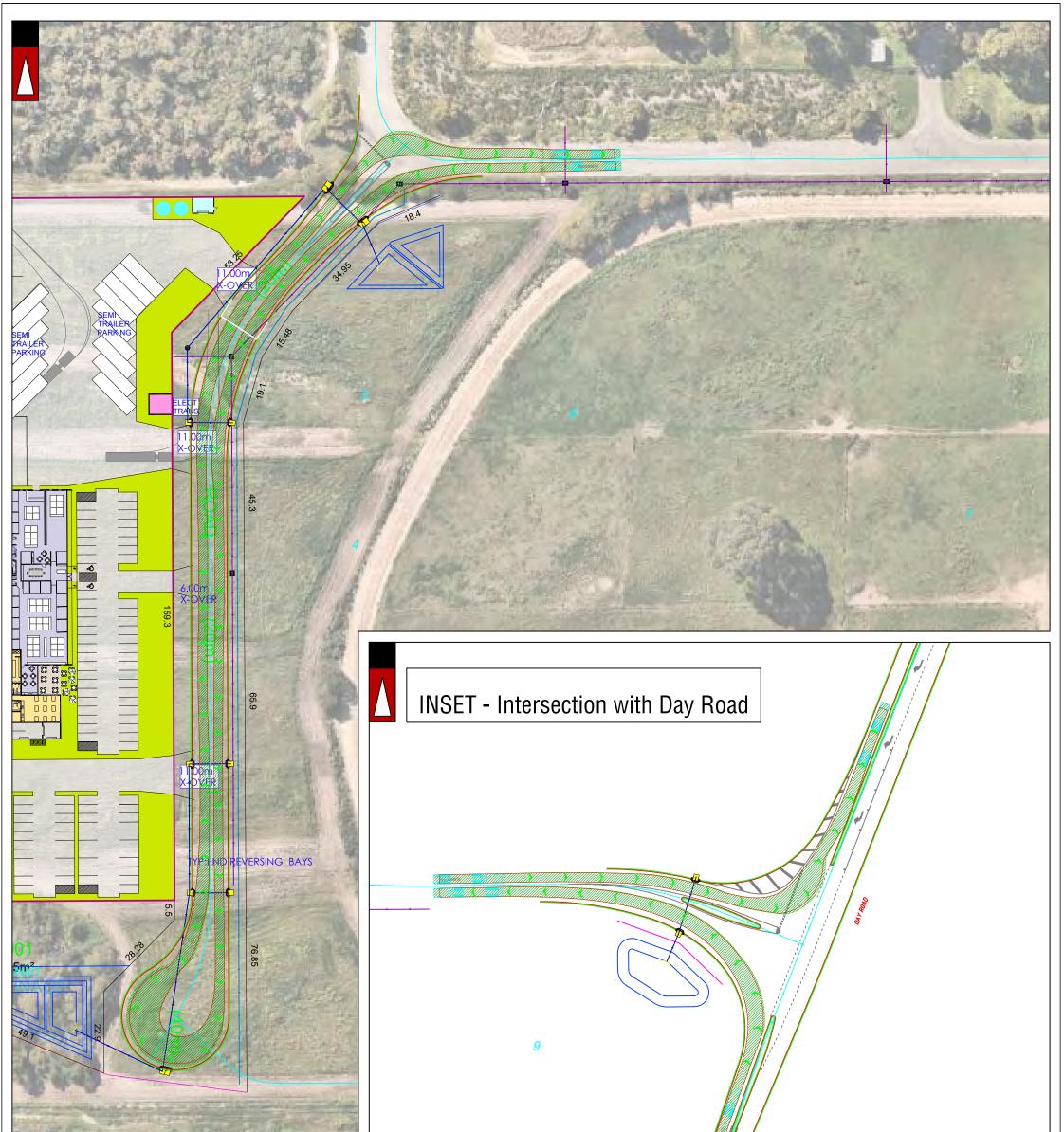




Passenger vehicle (5.2 m)		Lot boundary	MANAGEMENT
Overall Length 5.200r Overall Width 1.940r Overall Body Height 1.804r	1 <u> </u>	Wheel Path (Forward Vehicle Motion)	SYSTEMS
Min Body Ground Clearance 0.295n	า ———	Vehicle Chasis Envelope (Forward Vehicle Motion)	REGISTERED
Lock to Lock Time 4.00s		Wheel Path (Reverse Vehicle Motion)	
	·	Vehicle Chasis Envelope (Reverse Vehicle Motion)	TO ISO 9001

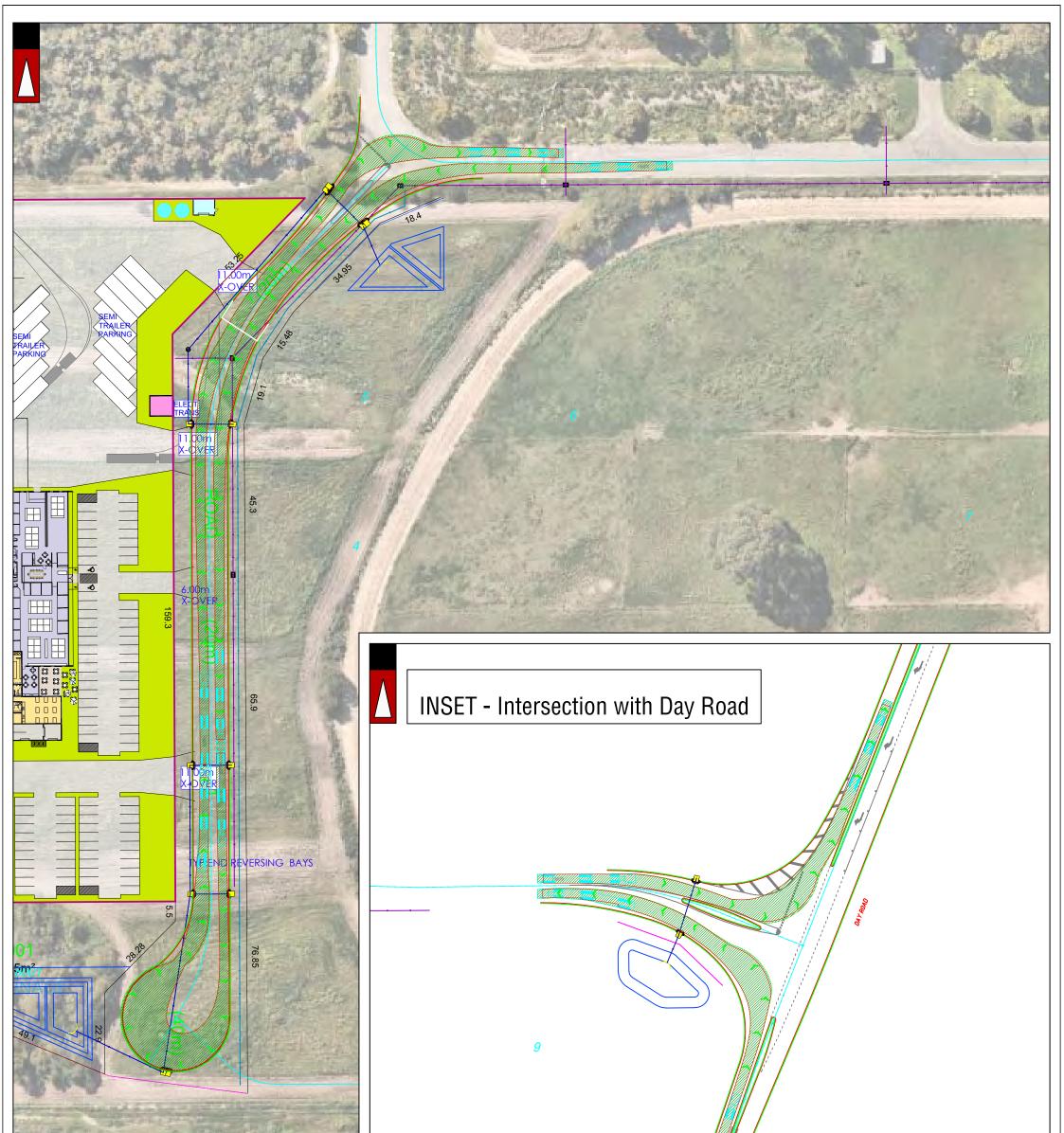
				PROJECT: Lot 1 Day Road, East Rockingham	DRAWN BY:	Civil & Traffic Engineering Consultants	
E	3	18-10-2021	PROPOSED LAYOUT AMENDED	TITLE:	D1.	Suite 7 No 10 Whipple Street Balcatta WA 6021	1
/	4	08-09-2021	ISSUED FOR REVIEW	Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)			1 - 11
	A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:	- J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	
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			8		cul-de-sac need to be modified to allow the st vehicle that will utilize the site
	6.6 4.7	13.7	AV - Articulated Vehicle Overall Length 19.000m Overall Width 2.500m Overall Body Height 4.301m Min Body Ground Clearance 0.418m Track Width 2.500m Lock to Lock Time 6.00s Kerb to Kerb Turning Radius 12.500m	Lot boundary Wheel Path (Forward Vehicle Motion) Vehicle Chasis Envelope (Forward Vehicle M Wheel Path (Reverse Vehicle Motion) Vehicle Chasis Envelope (Reverse Vehicle M LEGEND	REGISTERED
В	18-10-2021	PROPOSED LAYOUT AMENDED	PROJECT: – Lot 1 Day Road, East Rockingham		ic Engineering Consultants
A	08-09-2021	ISSUED FOR REVIEW	TITLE: Vehicle Turning Circle Plan - Semi-trailer (19.0m)		Whipple Street Balcatta WA 6021
A draft NO	07-09-2021 DATE	ISSUED FOR REVIEW AMENDMENT	DRAWING NUMBER: KC01344.000_S30		H: 08 9441 2700 3: www.kctt.com.au

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В	18-10-2021		PROJECT: – Lot 1 Day Road, East Rockingham		DRAWN BY:	Civil & Traffic Engineering Consultants	
A	08-09-2021	PROPOSED LAYOUT AMENDED ISSUED FOR REVIEW	- TITLE: Vehicle Turning Circle Plan - B-Double (27.5m)			Suite 7 No 10 Whipple Street Balcatta WA 6021	
A draft	07-09-2021	ISSUED FOR REVIEW	DRAWING NUMBER:		J.S.	PH: 08 9441 2700 WEB: www.kctt.com.au	KCT
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ATTACHMENT 3

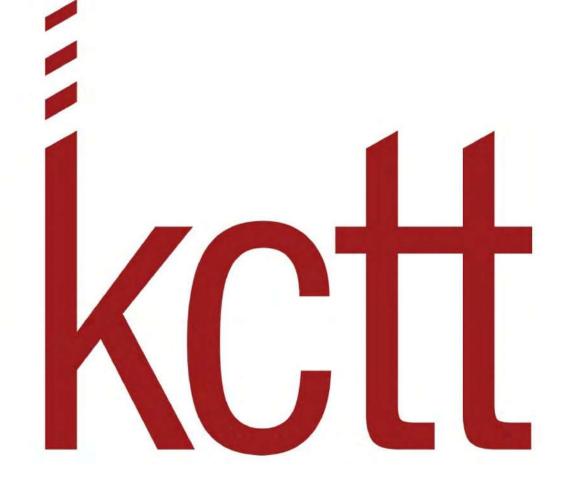
AMENDED TRAFFIC IMPACT ASSESSMENT

TRANSPORT IMPACT STATEMENT

Lot 1 Day Road, East Rockingham

October 2021

Rev B



Transport Impact Statement KC01344.000 Lot 1 Day Road, East Rockingham

HISTORY AND STATUS OF THE DOCUMENT

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Table of Contents

1.	Executive Summary	4
2.	Transport Impact Statement	6
2.1	Location	6
2.2	Technical Literature Used	6
2.3	Land Uses	
2.4	Local Road Network Information	
2.5	Traffic Volumes	
2.6	Vehicular Crash Information and Risk Assessment	
2.7	Vehicular Parking	
2.8	Compliance with AS2890.1:2004 and AS2890.6	
2.9	Bicycle Parking	
2.10		
2.11	Delivery and Service Vehicles	
2.12	F-	
2.13		
2.14		
2.15		
2.16		
2.17		
2.18	·	
2.19		
2.20		
2.21	Site-Specific Issues and Proposed Remedial Measures	22

Appendices

- Appendix 1 The layout of the proposed development
- Appendix 2 Transport Planning and Traffic Plans
- Appendix 3 Vehicle Turning Circle Plans

1. Executive Summary

Site Context

- The proposed development site is situated on a western portion of the subject Lot 1 Day Road. This is a 29,491m2 undeveloped land parcel.
- The development proposes establishing a warehouse/manufacturing facility for a Best Bar (one of the leading Australian Steel reinforcement suppliers).
- The subject portion of the Lot 1 is approachable via the 4 crossovers from the proposed cul-de-sac 20m wide road to the east of the subject development. This road and crossovers are planned to be constructed as a part of the proposed subdivision.

Technical Findings

- The proposed development is expected to generate an additional 380 vehicular movements per day with a forecasted impact of around 54 vehicular movements per hour in the peak hour.
- According to WAPC guidelines, all developments generating 10-100 VPH can be deemed to have a moderate impact on the network, with a TIS a suitable level of traffic reporting.
- Development site will be accessed by the future road, created as part of the subdivision. Future road is accessed from Lodge Drive. Two major routes are expected to be utilised for accessing/egressing the subject site:
 - Via Day Road from north
 - · Via Day Road from south
- The application for the subdivision of Lot 1 Day Road stipulates that the intersection of Lodge Drive and Day Road is to be upgraded to cater for a full movement of RAV 7 vehicles. Once the upgrade is completed, B-Double (27.5m) will be able to use both major routes as up to RAV 4 sized vehicles (max 27.5m in length) are permitted to utilise both Day Road and Lodge Drive. In the interim RAV 4 vehicles are not permitted to turn left from Lodge Drive on Day Road and to turn right from Day Road on Lodge Drive. Therefore, in the interim, RAV 4 vehicles will have to access Day Road via Dixon Road.

Relationship with Policies

- In accordance with the requirements prescribed for the proposed land use under Local Planning Scheme No 2, 90 parking bays need to be provided. Proposed development plans indicate a total of 93 car bays provided, leading to a nominal surplus of 3 parking bays.
- Keeping in mind that the proposed land use is a warehouse/manufacturing facility for a Steel reinforcement supplier, it is not expected to have many visitors on site. The subject site will have a total of 90 employees which leaves 3 parking bays for visitors. Therefore, KCTT concludes that this development has sufficient parking spaces provided on site.
- In addition, there are 15 semitrailer parking bays provided on a northern portion of the development site. These parking bays are intended for storing trailers, not full vehicles.

- In accordance with the City of Rockingham's PP3.3.14, the proposed development requires the provision of 7 Long-term bicycle parking bays for employees of the site and no Short-term Parking bay for visitors. PP's requirement is general and applicable to all "industrial uses". It is highly unlikely that visitors to the site will utilise cycling as a mode of transportation to access the site, as it is expected they will approach the site for steel reinforcement supplies.
- The proposed development plans indicate a provision of 3 bicycle parking racks with 6 bike bays. As
 the subject development site is located within a predominantly industrial area, KCTT believes most of
 the staff members will use their own vehicles to approach the place of work, and only a minor
 percentage will utilise the bikes. Therefore, KCTT considers the provided bike racks applicable for the
 development's bicycle parking demand and believes it will be beneficial for promoting the use of
 alternative transportation modes around the development.
- The plans for the proposed development shows a loading zone at the northern segment of the subject development site. Conducted swept path analysis indicates there is adequate manoeuvring and drive-thru areas provided.
- Service vehicles are expected to utilise 3 of 4 proposed crossovers in total. The northern 2 crossovers
 are proposed for heavy vehicles access only, while the southern 11m wide crossover is planned to
 accommodate heavy and some light vehicle movements from staff who are familiar with the facility.
- KCTT believe this solution is suitable for the scale and use of the development. It is not likely that any larger delivery vehicles will obstruct functionality of the car parking area in the southern segment of the site.
- Building Code of Australia ACROD Provision the proposed development will meet the requirement for 2 ACROD parking bays.

Conclusion

- The proposed development will comprise oaf warehouse/manufacturing facility for a Best Bar with an office component.
- As stated above, the expected traffic from the proposed development will be 380 VPD and 54 VPH to the surrounding network.
- Lodge Drive is classified as Access Road as per MRWA classification with the maximum desirable volume of 3,000 vehicles per day. There are no existing traffic counts on Lodge Drive. However, it is expected that the capacity of this road with the added traffic from the subject development would remain well under the maximum desirable traffic volume for Access Roads.
- Other surrounding roads would absorb less traffic than Lodge Drive; moreover, the traffic would be dispersed so that the impact can be considered negligible.
- In summary, KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Transport Impact Statement

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2.1 Location

Lot Number	1
Street Number	27
Road Name	Day Road
Suburb	East Rockingham
Description of Site	The proposed development site is situated on a western portion of the subject Lot 1 Day Road. This is a 29,491m ² undeveloped land parcel. The development proposes establishing a warehouse/manufacturing facility for a Best Bar (one of the leading Australian Steel reinforcement suppliers). The subject portion of the Lot 1 is approachable via the 4 crossovers from the proposed cul-de-sac 20m wide road to the east of the subject development. This road is planned to be constructed as a part of the proposed subdivision.

2.2 Technical Literature Used

Local Government Authority	City of Rockingham	
Type of Development	Industrial development - Warehouse	
Are the R-Codes referenced?	NO	
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation/attraction rates for various land uses) referenced?	YES	
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments Volume 5 - Technical Guidance	
Are there applicable LGA schemes for this type of development?	YES	
If <u>YES</u> , Nominate:		
Name and Number of Scheme	Local Planning Scheme No. 2	
Are Austroads documents referenced?	YES	

Is the Perth Transport Plan for 3.5 million and Beyond YES referenced?

2.3 Land Uses

Are there any existing Land Uses NO *If <u>YES</u>, Nominate:* -

Proposed Land Uses

How many types of land uses are proposed? Nominate land use type and yield As listed below:

- Offices = 870m² GFA / 653m² NLA* (operations office, head office, and workshop amenities)
- Warehouse/Manufacturing Area
 - Area 1 = 2,713m²GFA / 2,442m²NLA*
 - Area 2 = $4,603 \text{ m}^2 \text{ GFA} / 4,143 \text{ m}^2 \text{ NLA}^*$
 - Total = 7,316 m^2 GFA / 6,584 m^2 NLA*
- Open Air Storage = 2,139m²
- 18.3m wide Drive Through Area
- Up to 90 staff members on-site at any one time (Inclusive of 30 office staff + 60 factory staff)

Note - KCTT used yields as provided on plans received from the architect where applicable. Where yields information was unavailable, the yields were assumed for the purpose of calculations within this report.*

It should be taken into consideration that the terms NLA (Net Lettable Area) and GLFA have the same meaning. The NSW RTA Guide states that as a guide, about 75% of the gross floor area is deemed gross leasable floor area". However, the percentage of NLA in relation to GFA depends on development location and uses.

KCTT have use GFA areas utilising the layout provided by the client and a multiplier of 75% GFA to derive the value of NLA for office are within-subject development, while for the warehouse component, 90% of GFA is considered as equal to the NLA

Note** - Plans for the proposed development have been provided in Appendix 1 of this report.

Are the proposed land uses complementary with the YES surrounding land-uses?

The subject site is zoned 'General Industry' under the City of Rockingham Local Planning Scheme No. 2 and 'Industrial'' under the Metropolitan Region Scheme (MRS).

2.4 Local Road Network Information

How many roads front the subject site?

Name of Roads Fronting Subject Site / Road Classification and Description:

Road Name	Proposed Road (cul-de-sac) *	
Number of Lanes	n/a	
Road Reservation Width	20m	
Road Pavement Width	10m	
Classification	n/a	
Speed Limit	n/a	
Bus Route	NO	
If YES Nominate Bus Routes	-	
On-street parking	NO	

One (1)

Note - the proposed road is planned to be constructed as a part of the proposed subdivision. The information shown above is sourced from the available subdivision plans and documentation*

Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development.

Road Name	Lodge Drive
Number of Lanes	two way, one lane (no linemarking), undivided
Road Reservation Width	App.20m
Road Pavement Width	App.9m
Classification	Access Road
Speed Limit	50kph or State Limit
Bus Route	NO
If YES Nominate Bus Routes	-
On-street parking	NO

Road Name	Day Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	App.20m
Road Pavement Width	App.7
Classification	Distributor A
Speed Limit	60kph/70kph*
Bus Route	NO
If YES Nominate Bus Routes	-
On-street parking	NO

Note - The posted speed limit is currently 70km/hr near the site, but a section of Day Road to the south of the Site has a posted speed limit of 60km/hr.*

Transport Impact Statement

KC01344.000 Lot 1 Day Road, East Rockingham

Road Name	Dixon Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	App.35m
Road Pavement Width	App.20
Classification	Distributor A/B (Industrial)
Speed Limit	60kph
Bus Route	YES
If YES Nominate Bus Routes	549
On-street parking	NO

2.5 Traffic Volumes

		Vehicles Per Day (VPD)	Vehicles per P	eak Hour (VPH)	Heavy Vehicle %		lf older than 3 years multiply with a growth rate
Road Name			AM AM Peak - Peak Time VPH	PM PM Peak - Peak Time VPH	If HV count is Not Available, are HV likely to be in higher volumes than generally expected?	Date of Traffic Count	
Day Road	South of Mandurah Road*	2,835	8:00 - 197	15:00 - 256	n/a	2019	-
Dixon Road	East of Ennis Avenue (SLK 2.07)	26,676	08:00 - 2,226	15:15 – 2,469	8.3%	2020/2 1	-
Mandurah Road	South of Dixon Road (SLK 3.50)	24,264	07:30 - 2,033	15:45 – 2,427	10.4%	2019/2 0	-
	South of Office Road (SLK 0.47)	10,236	05:30- 1,070	15:45 – 1,100	16.3%	2019/2 0	_

Note - The traffic volumes have been derived from Main Roads.

Note - These traffic counts have been received from the City of Rockingham (taken from Transport Impact Assessment Lot 1, Day Road, prepared for Hesperia Projects Pty Ltd by CARDNO in August 2021)*

2.6 Vehicular Crash Information and Risk Assessment

Is Crash Data Available on Main Roads WA website?	NO KCTT have checked the report data for the below period at the location listed below, and no crash data was recorded in the 5-year period.
If YES, nominate important survey locations:	
Location 1	Lodge Drive - SLK 0.00 to 0.67
Location 2	Intersection of Lodge Drive & Day Road
Period of crash data collection	01/01/2016 - 31/12/2020

2.7 Vehicular Parking

Local Government

Local Government Document Utilised

Error! Reference source not found.

Local Planning Scheme No 2

Description of Parking Requirements in accordance with Scheme:

• Industry, Showroom, Warehouse - 1 bay per 50m2 NLA for factory units and showrooms, plus 1 bay per 100m2 NLA for warehouses or 1 bay per employee, whichever is the greater

Calculation of Parking

Land Use	Requirements	Yield	Required
Warehouse / Storage and Distribution Centre	<i>1 bay per 100m² NLA or 1 bay per employee, whichever is the greater</i>	6,584m² NLA 90 employees	Greater of 65.84 and 90
	Total Volume of	Parking Required	90 bays

	Total Volume of Parking Provided by Proponent 93 bays
	 91 standard car bays 2 ACROD bays
	 2 ACROD bays + 15 semitrailer parking bays
	(for trailers)
lustification	

Justification

In accordance with the requirements prescribed for the proposed land use under Local Planning Scheme No 2. 90 parking bays need to be provided. Proposed development plans indicate a total of 93 car bays provided, leading to a nominal surplus of 3parking bays.

Given that the subject site will have a total of 90 employees, 3 parking bays leaves for possible visitors. Therefore, KCTT concludes that this development has sufficient parking spaces provided on site.

Have Vehicle Swept Paths been checked for Parking?

YES

If YES, provide description of performance:

KCTT have conducted vehicle swept path analysis to check for navigability of the crossover and internal parking area. A B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a 19m long semitrailer and a B-Double (27.5m) were used for this analysis. The crossovers, drive thru area and internal parking area were found to be fully navigable by nominated vehicles. Please refer to Appendix 3 for vehicle swept path drawings.

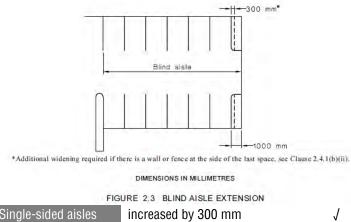
2.8 Compliance with AS2890.1:2004 and AS2890.6

Number of Parking Bays on-site Are Austroads documents referenced? <i>If <u>YES</u>, Nominate</i> :	 93 car bays YES Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - Originated as AS 2890.1—1986. Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities - Originated as AS2890.6
Proposed development User Class	User Class 1A (Residential, domestic and employee parking) User Class 4

AS2890.1:2004 Off-street car parking AS2890.6 Off-street parking for people with disabilities						
Parking Bay	Parking E	Bay Length	Parking Bay	v Width	Aisle	e Width
Туре	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90°	5.4m	5.4m	2.4m	2.5m	5.8m	6.2m
ACROD Parking	5.4m	5.4m	2.4m–ACROD 2.4m–shared space	2.4m 2.4m	5.8m	6.2m

Name the other requirements in the AS2890.1:2004 document.

At blind aisles, the aisle shall be extended a minimum of 1 m beyond the last parking space, as shown in Figure 2.3, and the last parking space widened by at least 300 mm if it is bounded by a wall or fence.



Single-sided aisles	increased by 300 mm	\checkmark
Blind aisle	extended by a minimum of 1 m	\checkmark
Reversing bay	4 provided	\checkmark

Does the parking area meet the requirements set in AS2890.1:2004?

Does the parking area meet the requirements set in AS2890.6?

KCTT reviewed the layout for the proposed development and conclude that car parking bays dimensions and aisle width are complying with the Australian Standard AS/NZS 2890.1/2004.

2.9 Bicycle Parking

Local GovernmentCity of RockinghamReference Document UtilisedPlanning Policy 3.3.14 – Bicycle Parking & End-of-trip FacilitiesDescription of Parking Requirements in accordance with Scheme:

Industry - Minimum Short-term Parking – n/a

Minimum Long-term Parking - 0.1 spaces per 100m² NLA Note: All rounding of bicycle parking rates is to be calculated by rounding up to the nearest whole number

		Bicycle Parking requirement			
Land Use	Yield	Minimum Long-term Parking Employee Resident Spaces	Req. bays	Minimum Short-term Parking Visitor/Shopper spaces	Req. bays
Warehouse / Storage and Distribution Centre	6,584m² NLA	0.1 spaces per 100m ² NLA	6.58	n/a	0
		Minimum Long-term Parking	7	Minimum Short-term Parking	0

Justification

In accordance with the City of Rockingham's PP3.3.14, the proposed development requires the provision of 7 Long-term bicycle parking bays for employees of the site and no Short-term Parking bay for visitors. PP's requirement is general and applicable to all "industrial uses". It is highly unlikely that visitors to the site will utilise cycling as a mode of transportation to access the site, as it is expected they will approach the site for steel reinforcement supplies.

The proposed development plans indicate a provision of 3 bicycle parking racks with 6 bike bays. As the subject development site is located within a predominantly industrial area, KCTT believes most of the staff members will use their own vehicles to approach the place of work, and only a minor percentage will utilise the bikes. Therefore, KCTT considers the provided bike racks applicable for the development's bicycle parking demand and believes it will be beneficial for promoting the use of alternative transportation modes around the development.

2.10 ACROD Parking

Class of Building Does this building class require a specific provision of ACROD Parking?	Class 5 - An office building Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse); YES		
Reference Document Utilised Description of Parking Requirements: Class 5: An office building.	Building Code of Australia		
 1 space for every 100 carparking spaces or part thereof 			

Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse);

• 1 space for every 100 carparking spaces or part thereof.

Parking Requirement in acco	rdance with regulatory documents		
Land Use	Requirements	Yield	Total Parking
Warehouse / Storage and Distribution Centre	1 space for every 100 carparking spaces	93 parking bays	1
Warehouse / Office Area	— or part thereof		1
	Total Volume of ACROD	Parking Required	2

Parking Requirement in accordance with regulatory documents

The proposed development shows the provision of 2 ACROD parking bays located within the internal parking area and therefore achieves BCA compliance.

2.11 Delivery and Service Vehicles

Guideline Document used as reference

NSW RTA Guide to Traffic Generating Developments

Requirements

Wholesale, Industrial (< 8,000m2 GFA) - 1 space per 800m2 Other uses - 1 space per 2,000m2

Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Warehouse / Storage and Distribution Centre	1 space per 800m2	7,316 m² GFA	9.15
Warehouse / Office Area	1 space per 2,000m2	870m ² GFA	0.44
Total	Volume of Service and Deliv	ery Parking Required	10

 Total Volume of Service and Delivery Parking Provided by Proponent
 15

Justification

The plans for the proposed development shows a loading zone at the northern segment of the subject development site. There are 15 semitrailer parking bays provided on site. While the bays are linemarked slightly shorter, conducted swept path analysis indicates there are adequate manoeuvring and drive-thru areas provided.

Service vehicles are expected to utilise 3 of 4 proposed crossovers in total. The northern 2 crossovers are proposed for heavy vehicles access only. In contrast, the southern 11m wide crossover is planned to accommodate heavy and light vehicle movements from staff familiar with the facility.

KCTT believe this solution is suitable for the scale and use of the development. It is not likely that any larger delivery vehicles will obstruct functionality of the car parking area in the southern segment of the site.

2.12 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation? What are the likely peak hours of operation?	From 06:00 till 22:00 The usage of the facility is expected to be spread across the day with no specific peaks.			
Do the development generated peaks coincide with existing road network peaks?	NO			
Guideline Document Used	WAPC Transport Assessment Guidelines for Developments			
Rates from above document:	Office and Commercial Area - 2 per 100m ² of GFA in the PM Peak hour. The same rate is assumed for the AM peak. An 80% IN / 20% OUT split has been assumed for the AM peak and the reverse for the PM peak;			
Guideline Document Used	NSW RTA Guide to Traffic Generating Developments			
Rates from above document:	Office and Commercial Area – 10 vehicular trips per $100m^2$ of GFA;			

Warehouse - 4 vehicular trips per 100m² GFA per day and 0.5 vehicular trips in the peak hour per 100m² GFA. KCTT is assumed the same rate for the PM peak.

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation
Warehouse/ Storage and Distribution Centre	4 VPD per 100m ² GFA Peak 0.5 VPH per 100m ² GFA;	7,316m ² GFA	293	37
Warehouse/ Office Area	10 vehicle trips per 100m ² GFA Peak 2 vehicle trips per 100m ² GFA	870m ² GFA	87	17
Expected Traffic Generation from the proposed development			380 VPD	54 VPH

Does the site have existing trip generation/attraction? What is the total impact of the new proposed development?

NO

The proposed development is expected to generate additional **380 vehicular movements per day** with a forecasted impact of around **54 vehicular movements per hour** in the peak hour.

The proposed development generates between 10 and 100 VPH, and therefore triggers the requirement for a Transport Impact Statement, per WAPC guidelines.

The proposed development can be deemed to have a **moderate** impact on the network

Traffic Flow Distribution 2.13

How many routes are available for access/egress to the Two major routes are expected to be utilised for site?

accessing/egressing the subject site as follows:

Route 1	
Provide details for Route No 1	From north via Day Road
Percentage of Vehicular Movements via Route No 1	45%
	further split as follows:
	 - 15% - From north via Mandurah Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse
	- 30% - From southeast via Mandurah Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse
Route 2	
Provide details for Route No 2	From south via Day Road
Percentage of Vehicular Movements via Route No 2	55%
	further split as follows:
	 - 40% - From west via Dixon Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse
	 - 10% - From south via Darlie Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse
	 - 5% - From east via Dixon Road >>Day Road>> Lodge Drive >> Proposed Road >> Proposed development site and reverse.

Note - For more detailed plans of the estimated vehicular traffic volumes and distribution, please refer to the plans provided in Appendix 2.

Transport Impact Statement KC01344.000 Lot 1 Day Road, East Rockingham

2.14 **RAV Network Analysis**

Which RAV network is available for reaching the site? RAV 2, 3 & 4 Networks

SUBJECT OVYLOPMENT SITE DIXENT RO DIXENT RO RO DIXENT RO RO RO RO RO RO RO RO RO RO RO RO RO R	
What is the largest vehicle allowed on this network?	Up to RAV 4 sized vehicles (max 27.5m in length) currently utilise both Day Road and Lodge Drive. Lodge Drive has a conditional RAV 4 approval, as this road currently serves as access point to only one development. The largest vehicle planned to be used within the proposed
Here Mahiala Quart Daths have sheeled for estavise	development site is a B-Double (27.5m). YES
Have Vehicle Swept Paths been checked for entering the development with the abovementioned large vehicles?	B-Double (27.5m) is the largest vehicle expected to access the development. Refer to Appendix 3 for more detail.
What are the expected routes for large vehicles entering and exiting the site?	At present there is a limitation at the intersection of Lodge Drive and Day Road – vehicles are prohibited from turning left from Lodge Dr to Day Rd and turning right from Day Rd to Lodge Dr.
	The proposal for the subdivision of Lot 1 Day Road stipulates this intersection will be upgraded to cater to RAV 7 movements. Once this upgrade is completed, unrestricted movement will be allowed for RAV vehicles of appropriate class.
	In the interim, the largest vehicles (27.5m) will have to use the route via Dixon Road > Day Road > Lodge Drive > Proposed Road > Proposed development site
Additional comments	As indicated in the , Transport Impact Assessment Lot 1, Day Road, prepared for Hesperia Projects Pty Ltd by CARDNO in August 2021 '' <i>RAV classification for these</i> <i>roads are changed to accommodate up to RAV 7 vehicles,</i> <i>the truncation on the north-eastern corner of the</i> <i>subdivision has been sized to ensure that the Day Road /</i> <i>Lodge Drive intersection can be upgraded to accommodate</i> <i>the swept path of the RAV7 vehicles (note: it is assumed</i> <i>that the section of Day Road to the south of Lodge Drive will</i> <i>remain classified to only permit up to RAV4 vehicles).</i> "

2.15 Road Safety

Are sight distances adequate at proposed intersections? YES

Justification

In order to navigate the access/egress point of the subject site, vehicles must reduce operating speed to a maximum of 20km/h (if not stop fully); therefore, the requirements for ASD and SISD are so low they are not provided in the Austroads tables.

A review of the plan for the proposed development indicates there are sufficient sight distances for safe traffic movements. This is elaborated more closely below:

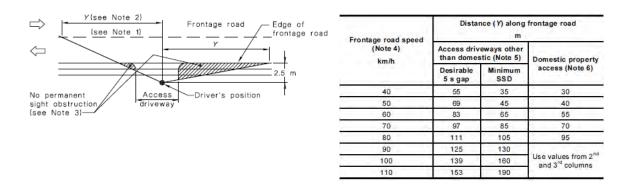
- Sight distances for passenger vehicles

According to AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street:

"Entering sight distance - Unsignalized access driveways shall be located so that the intersection sight distance along the frontage road available to drivers leaving the car park or domestic driveway is at least that shown in Figure 3.2."

The proposed cul-de-sac road is expected to have a 50kph speed limit. As shown in the images below from AS 2890.1, the sightline distance should be 45m for the minimum stopping sight distance. This is achieved on both the western and eastern sides of the proposed driveways, measured as per the AS2890.1 specification shown in the image below.

Sight distance is the distance at which the driver leaving the driveway is able to see without any obstructions, and it is not to be confused to the distance from the crossover to intersections.



Sight distances forr commercial vehicles

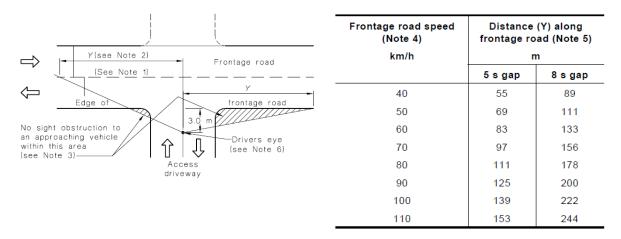
AS 2890.2—2002 Parking facilities Part 2: Off-street commercial vehicle facilities states the following:

"Sight distance requirements for commercial vehicle traffic entering a public roadway from an access driveway, are as follows:

- (a) Sight distance to oncoming traffic on the public roadway Sight distance requirements to enable a commercial vehicle to find a safe gap in oncoming traffic when leaving an access driveway are specified in Figure 3.3.
- (b) Sight distance to pedestrians Minimum dimensions for sight distance splays required to enable a pedestrian on the public road footpath to evade a vehicle emerging from an access driveway shall be as illustrated in Figure 3.4. Wherever practicable, larger splays should be provided."

Transport Impact Statement

KC01344.000 Lot 1 Day Road, East Rockingham



As seen in above table, for the expected 50kph speed limit on the proposed cul-de-sac road, the sightline distance should be 69m for the minimum stopping sight distance. This is achieved on both the western and eastern sides of the proposed driveways, measured as per the AS2890.2 specification shown in the image above.

"When checking sight distance the height of the object (approaching vehicle) is to be taken as 1.15 m above the road surface. The driver's eye height is to be taken as any height in the range 1.15 m to 2.5 m, to cater for both car and commercial vehicle drivers."

It should be mentioned that crossover needs to be design to accommodate the movement of the largest vehicle that will utilise the site.

Road safety internal to the development:

The parking is designed in accordance with AS2890.01 and deemed fully navigable. Navigability is checked with B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a a 19m long semitrailer and a B-Double (27.5m) and no navigability issues have been found. Please refer to Appendix 3 for further details.

In addition, although there are 4 proposed crossovers. Only one of them is 6m wide and planned for light vehicle movements only. Two northern 11m wide crossovers are dedicated for heavy vehicles only, while 11m wide crossover at the southern end is planned to accommodate heavy and light vehicles from staff who are familiar with the facility. Therefore, the possibility that any heavy vehicles will obstruct the functionality of the site is minimised.

2.16 Road Cross-Section Requirements

Does this development propose the construction of new roads? NO *

Note* - proposed cul-de-sac 20m wide road to the east of the subject development is planned to be constructed as a part of proposed subdivision.

2.17 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road YES networks?

How many existing crossovers? 4*

Note * - Proposed development site currently is undeveloped vacant land. However, based on the information provided in *Development Application Report, Proposed Industrial Development, Lot 1 (27) Day Road, East Rockingham, WA, prepared in August 2021, by Planning Solution for Hero Properties Pty Ltd, 'Four crossovers to the development site from the future road to the east ' ' are planned ' 'to be constructed as part of the subdivision.'*

How many proposed crossovers?	Crossover 1 – 11m wide unrestricted crossover for heavy vehicles only
	Crossover 2 – 11m wide unrestricted crossover for heavy vehicles only
	Crossover 3 – 6m wide unrestricted crossover for light vehicles only
	Crossover 4 – 11m wide unrestricted crossover for combined movements of heavy and light vehicles
If there are greater numbers of new crossov	ers, than existing, provide justification:
Please refer to the note above.	

How close are proposed crossovers to existing intersections? Each of the proposed crossovers is more than 6m away from the intersection of Lodge Drive and Proposed Road

Does this meet existing standards?

YES

Justification

According to AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking, the user class of the access point is: User Class 1A - Residential, domestic and employee, proposed development plans indicate a total of 91 car parking bays and 2 crossovers dedicated for the use of the light vehicles that will utilise the proposed parking area. Each crossover serves between 25 and 100 parking bays from a local road, making it a ''Category 1 driveway''

Therefore, the following requirements from AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking apply:

"(a) **Driveway Categories 1 and 2:** At unsignalized intersections of sub-arterial, collector or local streets with each other or with an arterial road, access driveways in Categories 1 and 2 (see Table 3.1) shall not be located in the sections of kerb shown by heavy lines in Figure 3.1. This requirement shall not apply to accesses to domestic driveways in the kerb section opposite the entering road at any intersection including signalised intersections.

Furthermore, it shall not apply to any access driveway serving a property which would otherwise be denied access due to the physical impossibility of meeting the requirement.

At signalised intersections, the minimum distance from the intersection, measured from the property boundary along both legs, shall be increased as necessary to locate access driveways beyond the influence of normal queue lengths at the intersections. If this is not practicable, it may be necessary to provide-

(*i*) an arrangement which confines traffic to turning left when either entering or

leaving the car park;

(*ii*) a signalised driveway with signals coordinated with the intersection signals; or

(iii) other traffic management means of providing for safe and efficient operation of the driveway."

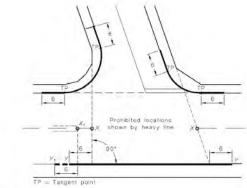
	TABLE 3.1
SELECTION OF	ACCESS FACILITY CATEGORY

			A	ccess facility cat	tegory	
	Frontage road type	Number of parking spaces (Note 1)				
		-25	25 to 100	101 to 300	301 to 600	>600
LIA.	Arterial	1	2	3	4	5
	Local	1	1	2	3	1
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	+
3.3A	Arterial	2	3	4	4	3
	Local	1	2	3	4	+

NOTES:

1 When a car park has multiple access pronts, each access should be designed for the number of parking spaces offectively served by that access:

2 This Table does not imply that certain types of development are necessarily suitable for location on any particular frontage road type. In particular, access to acterial roads should be limited as far as practicable, and in some circumstances it may be preferable to allow left-tam-only movements into and out of the access driveway.



NOTES:

 Accesses to domestic driveways are excluded from the prohibition in respect of the kerb section marked (+) (see Clause 3.2.3(a)).

2 The points marked X₁ and X are respectively at the median end on a divided road and at the intersection of the main road centre-line and the extensions of the side road property lines shown as dotted lines, on an undivided road, On a divided road, dimension i/-i extends to Point Y₂.

DIMENSIONS IN METRES

FIGURE 3.1 PROHIBITED LOCATIONS OF ACCESS DRIVEWAYS

The proposed crossovers are not located in any of the areas shown by thicker lines and therefore complies with the AS/NZS 2890.1:2004 requirements.

2.18 Public Transport Accessibility

How many bus routes a	One (1)		
How many rail routes a	re within 800 metres of the subject site?		One (1)
Bus / Rail Route	Description	Peak Frequency	Off-Peak Frequency
Bus Route 549	Rockingham Station to Fremantle Station	15 minutes	30minutes on Saturday, Sunday and Public Holiday
Mandurah Line	Railway route passes within 800m radius from the subject development; however, the nearest Rail Station is approximately at 2km distance	5 minutes	60 minutes on Saturday, Sunday and Public Holidays

Note - A Railway easement is located directly adjacent to the south of the subject Lot 1 and proposed subdivision; currently there is an industrial land further south

Walk Score Rating for Accessibility to Public Transport

29 Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?

2.19 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street
Does the site have existing pedestrian facilities	NO
Does the site propose to improve pedestrian facilities?	NO
If YES, describe the measures proposed.	
n/a at this stage of development	
What is the Walk Score Rating?	
7 Car-Dependent. Almost all errands require a car.	

YES

2.20 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the su	YES	
If YES, describe:		
Classification	Road Name	
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street	
" Good Road Riding Environment"	Darlie Street, Unnaro Street	
" Bicycle Lanes or Sealed Shoulder Either Side"	Darlie Street	
Are there any PBN Routes within a 400m radius of the sub	oject site?	YES
If YES, describe:		
Classification	Road Name	
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Dixon Road, Darlie Street	
" Good Road Riding Environment"	Darlie Street	
" Bicycle Lanes or Sealed Shoulder Either Side"	Darlie Street	
Does the site have existing cyclist facilities?	NO	
Does the site propose to improve cyclist facilities?	YES	
If YES, describe the measures proposed.		

Proposed development plans indicate 3 bicycle racks (space suitable for 6 bicycles).

Transport Impact Statement

KC01344.000 Lot 1 Day Road, East Rockingham

2.21 Site-Specific Issues and Proposed Remedial Measures

How many site specific issues need to be discussed? Site-Specific Issue No 1

Remedial Measure / Response

Site Specific Issue No 2

Remedial Measure / Response

Site Specific Issue No 3

Remedial Measure / Response

3

Does the development offer suitable access/egress to the external road network?

Access/egress point locations comply with AS/NZS 2890.1:2004 requirements and allow uninterrupted manoeuvring of the B-Double (27.5m), which is nominated as the largest vehicle that will utilise the site.

Does the development offer a suitable internal road network?

Swept path analysis enclosed in Appendix 3 for clarity confirms that the proposed internal circulation lane safely accommodates the movement of the B99 Passenger vehicle, a Service Vehicle of 8.8 metres, a 19m long semitrailer and a B-Double (27.5m). Furthermore, the car parking layout has been considered to limit any light vehicle or pedestrian interaction with the heavy vehicle movements and minimises any conflict.

Parking provision

The proposed plans demonstrate the provision of 93 car parking bays (inclusive of 91 standard bays and 2 ACROD bays) within the internal parking area and additional parking spaces for up to 15 heavy vehicles at the northern portion of the development site. KCTT believe that a sufficient volume of parking has been provided for this development. In addition, there are a plethora of available parking areas at the back of the warehouse facility if required.

BENNETT SPRINGS DRIVE, LOT 27 BENNETT SPRINGS – Proposed Educational Establishment (Primary School)

DAP Name:	Matra Outar Jaint Davalanment Assessment		
DAF Name.	Metro Outer Joint Development Assessment Panel		
Local Government Area:	City of Swan		
Applicant:	Parry and Rosenthal Architects		
Owner:	Swan Christian Education Association Inc		
Value of Development:	\$6.649 million		
	□ Mandatory (Regulation 5)		
	\boxtimes Opt In (Regulation 6)		
Responsible Authority:	City of Swan		
Authorising Officer:	Philip Russell		
LG Reference:	DA-694/2021		
DAP File No:	DAP/21/02060		
Application Received Date:	23 August 2021		
Report Due Date:	19 November 2021		
Application Statutory Process	90 Days with an additional 11 days agreed		
Timeframe:	90 Days with an additional 11 days agreed		
Attachment(s):	Attachments		
	1. Location Plan		
	2. Accompanying Plans:		
	Site Plan - Drawing No.DD.01 Rev E		
	• Early Learning Centre Floor Plan -		
	Drawing No.DD.10 Rev B		
	Stage 1 Elevations - Drawing		
	No.DD.20 Rev A		
	 Early Learning Centre Elevations - 		
	Drawing No.DD.21 Rev D and		
	Drawing No.DD.22 Rev C		
	 Overall Landscape Plan dated 5 		
	October 2021		
	Overall Tree Plan dated 5 October		
	2021		
	Supplementary Documents		
	3. Design Review Report 1 and 2		
le the Deenersible Authority			
Is the Responsible Authority Recommendation the same as the	□ Yes Complete Responsible Authority □ N/Δ Recommendation section		
Officer Recommendation?	\square N/A Recommendation section		
	⊠ No Complete Responsible Authority		
	and Officer Recommendation		
	sections		

Form 1 – Responsible Authority Report (Regulation 12)

Responsible Authority Recommendation

- 1) Note the importance of ensuring that the carpark of the proposed school can operate in a manner that reduces the risk of conflict between pedestrians and motorists using this area.
- 2) Endorse the staff recommendation on the application to the Metro Outer Joint Development Assessment Panel, which is to approve the application with conditions, **subject to the inclusion of the following additional Condition**:

Prior to commencement of operation of the school the applicant/owner is to prepare, to the satisfaction of the City of Swan, a "Kiss and Drive" Operational Plan that will detail the management and supervision of the operation of the carpark and kiss and drive area through designation of:

- (i) lines of pedestrian movement through the car parking area, including crossing points of the carpark;
- (ii) vehicle travel speeds through the car parking area; and
- (iii) signage and line marking to the car parking area that indicates pedestrian movement areas and vehicle speeds to users.
- 3) Note the reason for modifying the staff recommendation is to respond to the reasonable concerns of Council with the safety in operation of the proposed school's car parking area by ensuring it is appropriately managed in operation as recommended by the applicants own Traffic Impact Assessment by Shawmac dated 30 August 2021.

Officer Recommendation

It is recommended that the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/21/02060 and Accompanying Plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of Clause 10.3 of the City of Swan Local Planning Scheme No.17, and pursuant to clause 26 of the Metropolitan Region Scheme subject to the following conditions:

Conditions

- 1. This approval is for an Educational Establishment as defined in the City of Swan Local Planning Scheme No.17, and the subject land may not be used for any other use without the prior approval of the City.
- 2. All building and works to be carried out under this development approval are required to be contained within the boundaries of the subject lot.
- 3. Prior to the occupation or use of the development, a minimum of 67 vehicle parking bays must be provided on the lot in accordance with the approved plans. The design of vehicle parking and access must comply with AS/NZ 2890.1 (as amended). Accessible parking bays must comply with AS/NZ 2890.6 (as amended).
- 4. Prior to the occupation or use of the development, a minimum of 20 bicycle spaces (comprising of 10 bike racks) must be provided on site to the satisfaction of the City of Swan. The design and construction of the bicycle spaces must be in accordance with AS/NZ 2890.3:2015 Parking Facilities Part 3: Bicycle Parking.

- 5. Vehicle parking, access and circulation areas must be sealed, kerbed, drained and maintained to the satisfaction of the City of Swan, in accordance with the approved plans.
- 6. All crossovers must be built and maintained in accordance with the City's specifications.
- 7. No wall, fence or landscaping greater than 0.75m in height measured from the natural ground level at the boundary, shall be constructed within 3m of a vehicular access way.
- 8. Prior to approval of the building permit, the Applicant needs to submit to the City of Swan for approval a detailed Drainage Management Strategy with drawings.
- 9. All stormwater produced from this property including subsoil drainage must be collected and disposed of in accordance with the approved detailed Drainage Management Strategy.
- 10. Refuse bin areas adequate to service the development must be provided to the satisfaction of the City of Swan prior to occupation or use of development.
- 11. External lighting shall comply with the requirements of AS4282 Control of Obtrusive Effects of Outdoor Lighting.
- 12. The approved Landscaping Plan must be implemented within the first available planting season after the initial occupation of the development, and maintained thereafter, to the satisfaction of the City of Swan. Any species that fails to establish within the first two (2) planting seasons following implementation must be replaced in consultation with, and to the satisfaction of, the City of Swan.
- 13. All trees located along the western boundary are to be protected during the site works and construction of the development, and thereafter maintained.
- 14. Bike racks are to be provided with appropriate weather protection.
- 15. All piped, ducted and wired services, air conditioners, hot water systems, water storage tanks, service meters and bin storage areas must be located to minimise any visual and noise impact on the occupants of nearby properties and screened from view from the street. Design plans for the location, materials and construction for screening of any proposed external building plant must be submitted to and approved by the City of Swan prior to the issue of a building permit.
- 16. All areas of outdoor storage must be screened from public view. Design plans for the location, materials and construction of proposed screening are to be included on the development plans to the satisfaction of the City of Swan prior to the issue of a building permit.
- 17. The development must be connected to Scheme Water and the Water Corporation's sewer where available.
- 18. Prior to a building permit being issued, the landowner must contribute a sum of 1% of the total development construction value toward Public Art in accordance with the City of Swan Local Planning Policy POL-LP-1.10 Provision of Public Art, either by:

- a. Payment to the City of Swan of a cash-in-lieu amount equal to the sum of the 1% contribution amount (\$66,490). This must be paid to the City of Swan prior to the date specified in an invoice issued by the City of Swan, or prior to the issuance of a building permit for the approved development, whichever occurs first; or
- b. Provision of Public Art on-site to a minimum value of the 1% contribution amount (\$66,490). The following is required for the provision of Public Art on site:
 - i. The landowner or applicant on behalf of the landowner must seek approval from the City of Swan for a specific Public Art work including the artist proposed to undertake the work to the satisfaction of the City of Swan in accordance with POL-LP-1.10 and the *Developers' Handbook for Public Art* (as amended.) The City of Swan may apply further conditions in regard to the Public Art.
 - ii. No part of the approved development may be occupied or used until the Public Art has been installed in accordance with the approval granted by the City of Swan; and
 - iii. The approved Public Art must be maintained in compliance with the approval granted by the City of Swan and any conditions thereof, to the satisfaction of the City of Swan.
- 19. Signage illumination shall not flash or pulsate to the satisfaction of the City of Swan.
- 20. All earthworks and footings must be located entirely within the subject lot and must not encroach upon the road reserve or any other land.

Region Scheme	Metropolitan Region Scheme			
Region Scheme -	Urban			
Zone/Reserve				
Local Planning Scheme	City of Swan Local Planning Scheme No.17			
Local Planning Scheme -	Local Reserve - Public Purposes (Primary School)			
Zone/Reserve				
Structure Plan/Precinct Plan	N/A			
Structure Plan/Precinct Plan	N/A			
- Land Use Designation				
Use Class and	Educational Establishment N/A			
permissibility:				
Lot Size:	35,000m ²			
Existing Land Use:	Vacant land			
State Heritage Register	No			
Local Heritage	⊠ N/A			
	□ Heritage List			
	□ Heritage Area			
Design Review				
	Local Design Review Panel			
	State Design Review Panel			
	☑ Other - Peer Review			

Details: outline of development application

Bushfire Prone Area	No
Swan River Trust Area	No

Proposal:

Proposed Land Use	Educational Establishment
Proposed Net Lettable Area	Approximately 3,205m ²
Proposed No. Storeys	Single Storey
Proposed No. Dwellings	N/A

Background:

The application seeks to relocate the existing Beechboro Christian School which is located approximately 380m west of the subject site at Lot 55 (No.375) Marshall Road, Bennett Springs. It will bring over fourteen existing transportable classrooms for reuse on the subject site. It will also involve the construction of three (3) new permanent buildings on the subject site.

The application is proposed to allow the school to expand due to school enrolments steadily increasing, and the current location is confined in area and no longer able to facilitate the population of the school. There are currently 269 students and 37 staff. The proposed expansion would accommodate 440 students.

Legislation and Policy:

Legislation

Planning and Development Act 2005 Planning and Development (Local Planning Schemes) Regulations 2015 Planning and Development (Development Assessment Panels) Regulations 2011

State Government Policies

State Planning Policy 7.0 - Design of the Built Environment Government Sewerage Policy 2019

Local Planning Policies

POL-TP-129 Vehicle Parking Standards POL-LP-1.10 Provision of Public Art POL-LP-1.13 - Design Review

Consultation:

Public Consultation

Consultation was undertaken in the following manner:

Duration: 14 days between the 6th September and the 21st September 2021

Method: Letters to nearby landowners, notice on the City of Swan's website, and three (3) signs on site.

Submissions Received: a total of 27 submissions were received, consisting of 13 objections, three (3) submissions of conditional support, 10 non-objections and one (1) neutral submission. A summary of the issues raised follows:

Issue Raised	Officer comments
Traffic and parking	The applicant has submitted that parking and traffic
Parking should be	movements have been carefully analysed by a traffic engineer. The local road network has adequate
located along the western side boundary and exit via Bridgeman	capacity to accommodate the re-distribution of school traffic from the existing school site.
Drive, or to be located on a side street.	The proposed parking provisions have been designed to accommodate staff and visitor numbers in addition to a large 'kiss-and-drop' area.
Need for another Public School in close proximity, not Private School. This was an initial selling point for residents	The Department of Education has knowingly sold the land to the Swan Christian Education Association Inc. It is understood that there is a sufficient number of public schools within the vicinity to accommodate the catchment areas.
Noise	The applicant has submitted that the School uses a PA system/siren to signify breaks and emergency procedures. The system will operate within the guidelines regarding noise levels to minimise disruption to local residents.
Visual Amenity due to fencing requirements and demountable buildings	The applicant has submitted that the design of the front fence has been carefully considered. It will be a low height and being near the car park will be positioned within landscaping which will significantly reduce any visual impact. The low level fencing will extend around the eastern side of the site. A higher fence will be erected along the western boundary, parallel to the park and obstructed from view by the existing trees. The transportable buildings are not mine-site sheds.
	The buildings have been constructed specifically for educational purposes. They are composed of materials chosen for their aesthetic qualities as well as their durability for a school environment.
	The School's long-term plan is to replace the transportable classrooms with permanent buildings.
Use of the public park will take away facilities from the community	The use of the public park will be subject to booking the facility through the City.

City staff have reviewed the applicant's response to submissions and are accepting of all responses.

Referrals/consultation with Government/Service Agencies

The application was referred to the following agencies:

- Department of Education;
- Department of Health; and
- Department of Planning Lands and Heritage (Aboriginal Heritage Directorate)

The Department of Education (DoE) was the former owner of the subject land. The DoE sold the subject site to Swan Christian Education Association (the current landowner) on the 22 December 2020. The application was referred to the DoE to seek comment as to the impact of this school site on surrounding and planned public primary schools. DoE advised that the proposed Primary School will not adversely impact Beechboro Primary School which is the closest public school to the site.

The Department of Health (DoH) have advised that:

- The development is required to connect to scheme water and reticulated sewerage, and be in accordance with the *Government Sewerage Policy 2019*. Potable water must be of the quality specified under the *Australian Drinking Water Quality Guidelines 2011*.
- All food related areas are to comply with the provisions of the *Food Act 2008*.
- Consideration should be given to potential health risks of the proposed site through a health risk assessment or other methodical analysis of health impact. This would include the location's supportiveness and safety for physical activity, air pollution and asthma levels, past or present contamination of site or nearby areas, and nearby sources of pollution, noise, dust or contaminants such as highways and potential conflicting land use such as for fast food locations.
- Provide safe infrastructure including a 'Safe Routes to School' plan to maximise opportunities for walking and biking to school. This should be integrated with public transport.
- All public access areas are to comply with the provisions of the *Health* (*Miscellaneous Provisions*) *Act* 1911, related regulations and guidelines, and in particular Part VI Public Buildings.

The Department of Planning Lands and Heritage (DPLH) advised that the site is located within the public boundary for the Bennett Brook: in toto and Bennett Brook: Camp Area, but not within the boundary as administered by the Department of Planning Lands and Heritage - Aboriginal Heritage Operations. As such, DPLH had no comment to make in relation to this application.

It is noted that Main Roads WA (MRWA) also became aware of this proposal. MRWA submitted that they have no comment on this proposal.

Design Review Panel Advice

State Planning Policy 7.0 (SPP 7.0) addresses design quality and built form outcomes in Western Australia. It seeks to deliver broad economic, environmental, social and cultural benefits that derive from good design outcomes and supports consistent and robust design review and assessment processes across the State. SPP 7.0 sets out 10 design principles to assess developments against.

Pursuant to the City of Swan Local Planning Policy POL-LP-1.13 Design Review, Opt-In JDAP applications require a Peer Review. wOnder city + landscape were engaged to conduct a Peer Review. Their assessment against the relevant Design Principles follows:

The application was referred to wOnder city + landscape for a Peer Review. The conclusion of the Peer Review was that Context and Character, Landscape Quality, and Sustainability were not supported, Functionality and built quality, Amenity, Legibility, Safety, Community and Aesthetics required further attention and Built Form and Scale were supported.

A detailed exposition of this process is contained within the Planning Assessment section of this report.

PLANNING ASSESSMENT:

The proposal has been assessed against all the legislative requirements of the City of Swan Local Planning Scheme No.17 and State and Local Planning Policies outlined in the Legislation and Policy section of this report. A brief assessment against each planning tool follows.

Zoning and Use Permissibility

The subject land is reserved under the City of Swan's Local Planning Scheme No.17, and therefore no land use permissibility's apply to the site. Local Planning Scheme No.17 states that:

In determining an application for planning approval the local government is to have due regard to:

- a) the matters set out in clause 10.2; and
- b) the ultimate purpose intended for the Reserve.

There are 28 matters to be considered as set out in clause 10.2. Of those, relevant considerations pertain to visual amenity, compatibility within its setting, social impacts, preservation of amenity broadly, traffic and access, and the ultimate intended purpose of the Reserve. These matters are considered in the assessment, and discussed throughout this report.

As already established, the land is Reserved for Public Purposes - Primary School. The proposed development is for a Private Primary School. It is true to say that the site has always been intended for a Primary School.

The matter of contention is that the land is Reserved for Public Purposes, not private purposes. However, the land was knowingly sold by the Department of Education to the current landowner. Doing so suggests that the land is not required for the purpose of providing a Public Primary School. The matter of public purposes therefore falls away.

It follows that it is reasonable to conclude that the Primary School is the ultimate intended purpose of the Reserve.

State Planning Policy 7.0 - Design of the Built Environment

At the end of the Peer Review on the initial design proposal, wOnder city + landscape did not support the following:

- Filling in of the drain, as the site is part of the Bennett Brook System with powerful mythological, historical and social associations;
- Exacerbation of the urban heat loading through roofs, pavement, barren mulch and little tree canopy proposal;
- Front setback being designed as an inhospitable parking area;
- Design of the Parking Area lending itself to a high-speed environment;
- The removal of some trees along the western edge due to the close proximity of the hard court and shade structure and transportable classrooms;
- The removal of two (2) mature trees on the south side of the development;
- The replacement of turf on the western edge with mulch;

- Insufficient facilities for cyclists and shade for walking and cycling;
- Lack of seating opportunities; and
- Lack of detail around energy efficiency.

wOnder city + landscape made a number of suggestions to improve the design. These have been classified into three (3) main themes: Landscaping, Built Form and Design Configuration and Use and Amenity:

Landscaping

- Landscaping and improving the drain to be used for nature play and drainage functions;
- Growing a significant tree canopy and including the planting size and species, throughout the development but in particular within the parking area;
- Shift the buildings east to ensure all western boundary trees are retained;
- Retain turf around the base of the trees instead of proposing mulch;
- Replace the mulch proposed along the east and south with native planting;
- Remove parking bays and replace with trees;
- Use of the correct soil mixtures for the turf can reduce irrigation requirements by up to 60%;
- Planting around the front fence should be kept low to allow for visual interaction and passive surveillance; and
- Including a school garden, educational garden, food orchard, native garden, bush tucker garden or other type of educational and/or community uses.

Built Form and Design Configuration

- Vehicle access and egress to Bennett Springs Drive should be tightened to provide an appropriate low-speed, child-safe environment;
- Locate the parallel parking on both sides of the central walkway to reduce distance from the furthest bay to the walkway;
- Provision of a seating note at the main entrance of the school in front of the fence;
- The footpath on the southern side of the parking area could be widened to allow seating for children to safely wait;
- Add windows for the toilets between Pre-Primary No.1 and No.2 to provide access to daylight;
- Add windows for the kitchenettes between Kindy No.1 and No.2 and between Kindy No.3 and Pre-Primary No.2 to provide access to daylight;
- All air conditioning units should be out of view of the public realm, included in the constructions or screened from view;
- Consideration to more seating and diversity of seating to promote relaxation and socialising in different configurations;
- A clear hierarchy to support intuitive wayfinding needs attention;
- Consider moving the front doors of Kindy No.3 and Pre-Primary No.1 and No.2 to the north side, with sliding doors on both sides of the class rooms;
- Include more play and socialising opportunities including street games, informal play incentives (in the pavement, furniture, art), drinking fountains etc;
- Weather protection for bike racks should be provided as well as end-of-trip facilities; and
- Floor plans of the transportable classrooms must be provided for a complete peer review.

Use and Amenity

• School gates should be open for public use after school hours;

- Improve visual transparency from Bridgeman Drive;
- Consider inviting community uses for after hours;
- Obtaining agreement between the School and the City of Swan for co-use of the adjoining park; and
- Consider a community use for the underutilised mulched area to the north and east such as a school and community garden.

Applicant's Response

The applicant provided a revised proposal which made the following changes:

Landscape

- A more detailed landscaping plan provided addressing:
 - Significant number of new trees will be planted as part of the school development to counter any potential heat load problems;
 - The carpark will be punctuated with the addition of new trees to the northern boundary, providing an inviting 'front yard';
 - Turf around the trees on the western edge will be retained; and
 - The proposed tree planting size and species.
- Educational, food orchard and native garden raised planter beds have been added to the south east corner of the community courtyard;
- The area in front of Admin No.2 will mature into a vibrant native garden; and
- Proposed fence around the Kindy Courtyard and to the northern portion of the site will be low level as well as any adjacent planting to aid passive surveillance and visual interaction

Built Form and Design Configuration

- The hard courts have been moved further east away from the tree line on the western boundary. Two (2) transportable buildings are above ground with no below ground footings;
- Windows have been added to all of the kitchenettes and pre-primary toilet spaces;
- All air-conditioning units on transportable classrooms that can be seen from the public realm will be screened; and
- Seating has been provided to the northern edge of the site facing the 'kissand-drop' bays. Further seating is scattered throughout the campus. The configuration of the existing transportable verandahs allows students to sit on the ends of the verandah and socialise and interact

In relation to the recommended use of the drain for nature play, the proponent has advised that the site does not have any specific known Aboriginal heritage or indigenous significance. The decommissioned drain was constructed in the early 1950's and was used for agricultural purposes.

The proposed nature play has been strategically positioned so it can easily and safely be accessed, as well as allowing for passive surveillance by staff. It also will create a visible, highly activated street front to Bennett Springs Drive. Whereas using the drain as nature play would create significant occupational health and safety issues for the school, and require a separate fence and individual supervision by staff.

The applicant has also obtained an additional technical note to confirm that the current design, including entry and exit connections to Bennett Springs Drive is a child-safe, low speed environment. As such, no change is proposed to tightening the access and egress to the site.

The proponents have advised that additional parking has been provided intentionally. Unlike government schools with an immediate catchment area where many families can walk or cycle to school, Beechboro Christian School is an independent school. Their catchment is over a very widespread area. As a result, most children are dropped off by car. As such, they have not reduced the proposed number of parking bays.

The applicant has advised that the seating node at the entrance has specifically been designed behind the fence as part of a controlled play space for the Early Learning Centre. Additional seating has been provided adjacent to the 'kiss-and-drop'. To this end they are not willing to move this seating node in front of the fence.

The applicant has provided additional explanation to support the existing layout of the Administration Buildings. They state that Admin No.1 is the main entrance for visitors as it is positioned closer to the front of the school than Admin No.2. It also has a large glazed façade on the front of the building which allows visitors to make a clear visual connection from a distance, identifying the school reception area. They also confirm that both these buildings have end-of-trip facilities.

The purpose of the mulch along the south and east will be used for future learning opportunities such as raised planter beds. It will be used as a community, educational and environmental zone. As such, the proponent plans to retain the proposed mulch and not install planting in these zones.

The proponent has submitted that the loss of two (2) trees is considered acceptable given one (1) of the two (2) trees is small and more akin to a bush, and due to the School providing a significant number of new trees which offsets the loss of the two (2) existing trees. They note the comments relating to irrigation and correct soil mixtures. The landscape specifications will reflect the appropriate soil build up for turfed areas.

They have noted that it is not practical for the campus to open after hours for security reasons. The school currently runs a number of programs which brings the community into the grounds such as the River Rangers program and community fair days. They note that the school is currently in discussions with the City of Swan on an agreement to use the adjacent public park for specific sporting and school based events.

The applicant has also confirmed that the permanent buildings have been designed to meet current building codes and standards. They include insulation of all walls and roofs, operable louvres on opposite sides of the classrooms allowing for cross-ventilation, high level skylights reducing the need for artificial lighting, reduction of volatile organic compounds, low allergen materials and spaces, use of E glazing and control systems selected to minimise energy consumption.

They also confirm that the entry points for the Kindy and Pre-Primary No.1 and No.2 are accessed from the Early Learning Centre central/internal courtyard.

The applicant is of the view that the school has been designed with clear sightlines through the campus. They submit that there are no hidden areas or corners.

Secondary Design Review by wOnder city + landscape

wOnder city + landscape were given the opportunity to review the revised proposal and additional information as to why the applicant has retained certain elements of their design. At the close of the secondary review, there were no elements which were not supported. wOnder city + landscape provided the following final suggestions:

• Analyse aerial photos from the early 1950's and earlier and connect with Noongar Elders to be better informed. Use those findings in the further detailing of the landscape plan and possibly the layout of the central walkway;

- The child-safety of the parking area would be further improved by:
 - Letting the fire truck enter the central walkway directly from Bennett Springs Drive with appropriate kerb treatment, instead of double turning though the parking area;
 - Tightening the swept paths of the entrances to clearly set the expectations regarding drivers' behaviour;
 - Consider reducing the radius of the driveway to match the 4.5m radius of the street entrance; and
 - Install one-way traffic, as indicated on the Brabham Primary School reference, allowing to reduce the entrance and exit driveways from 6m to one (1) vehicle width.
- Further explanation is required of the intent of the central walkway potential providing views to the south;
- Look into possibilities of nature play for the primary school students, and combine with learning about the original landscape and its values;
- The 'non-irrigated mass tube planting' and mulch zones on the east side need more design attention;
- The retained mature tree (within the western tree line) is not yet included in the landscape plan;
- The choice of tree species needs further consideration. Large tree species should be considered to grow effective shade and provide cooling, especially along Bennett Springs Drive around the parking area. Trees should be located closer to the carriageway, between the parking bays;
- More Native species should be considered for the courtyards;
- Consider combining drainage and stormwater retention with nature play (for primary school students), environmental learning and acknowledgement of Aboriginal cultural values;
- A canopy over the bike racks to provide weather protection is advised;
- Consider further diversity of seating arrangements along the central walkway and in the community courtyard;
- Consider more incentives throughout the landscape design for informal play and socialising, including street games in the pavement, multifunctional furniture, interpretive objects etc;
- Consider widening the footpath to provide enough space for prams and people passing;
- Consider locating the parallel bays evenly on both sides of the central walkway to reduce walking distance to the school gate to improve safety;
- Consider locating the parking bay for the 12 seater bus directly next to the central walkway, either on the east or west side; and
- Lighting for safety during evening hours might need attention

City Staff Assessment:

The City is satisfied with the modifications made by the applicant in response to the Peer Review comments. The responses to the neighbour objections are supported by City staff as they are logical and fair.

The significant 'over-supply' of parking is accepted, as some of the objections already raised concern around parking and it is accepted that as a Private School, students may be coming from further afield and rely on a private vehicle for commuting. The addition of shade trees in the parking area improves this space considerably.

The concern maintained in relation to the safety of the parking area with the introduction of fire trucks is considered adequately addressed. Fire drills occur during the school day when there are no children within the parking lot. In the event of a fire emergency during peak periods, the traffic flow through the parking area would be

expected to be low-speed by virtue of children and parents moving through the space. An additional access point may add confusion to the site.

Reducing the radius of the driveway to match the 4.5m radius at the street entrance is considered onerous. The wider entry and exit is considered appropriate to allow vehicles to comfortably manoeuvre the site. The expected speed at peak hour will be low in itself, and unlikely to require design treatments to restrict speeds further.

Reducing the driveway to one (1) vehicle width would affect the ability of vehicles to safely reverse out of parking bays. It is also noted that Australian Standards require aisles for 90 degree parking to be always two-way.

In relation to objections received contending that the development will cause congestions on the roundabout, City staff have reviewed the proposal along with the technical reports provided by the applicant and are satisfied that there will be no queuing at the crossover to the west of Crystal Turn round-a-bout. It is considered that the internal driveway should be a sufficient buffer to store any potential queue from traffic waiting to get past vehicles reversing out of a car parking spot.

A close inspection of the survey plans indicated the existing western tree line is located very near to the legal boundary; approximately 0.53m at the closest. The timber bollards are acknowledged to be on the proponents land. The City has no objection to them being removed given the proponent will be installing new perimeter fencing on the boundary. The western tree line is to be protected during construction and maintained thereafter.

A detailed assessment of the proposed landscaping plan has been undertaken in light of the Peer Review comments received. City staff note that of those proposed, only three (3) species fit into the 'Large' category at maturity and that the majority of the proposed species are considered medium. Notwithstanding, in excess of 30 shade trees are proposed throughout the development, and while classified as a 'medium' tree with heights between 5m and 8m, these are still highly functional.

The City supports the Peer Reviewer's comments relating to providing the bike racks with weather protection. This is reflected as a recommended condition of approval.

It is considered that the remainder of the Peer Reviewer's comments could be incorporated into the development as it establishes into the future. Informal play and street games, landscape design, additional trees, additional nature play and learning objectives are all matters which naturally evolve over time.

The applicant has advised that the development will be serviced by a private waste collection service. To this end, the number of bins required to service the development and frequency of collection will be at the operator's discretion.

Conclusion:

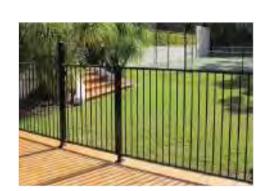
The application has been assessed against all relevant legislation and has undergone a Peer Review. The applicant has amended their proposal in response to Peer Review comments and has demonstrated compliance with Local Planning Scheme No.17 requirements and general compliance with all other requirements of State and Local policies.

At the close of assessment, it is considered that the sum changes made to the original proposal along with the additional justification for the retention of other design considerations is a superior design outcome and will contribute in a positive way to the Bennett Springs community.

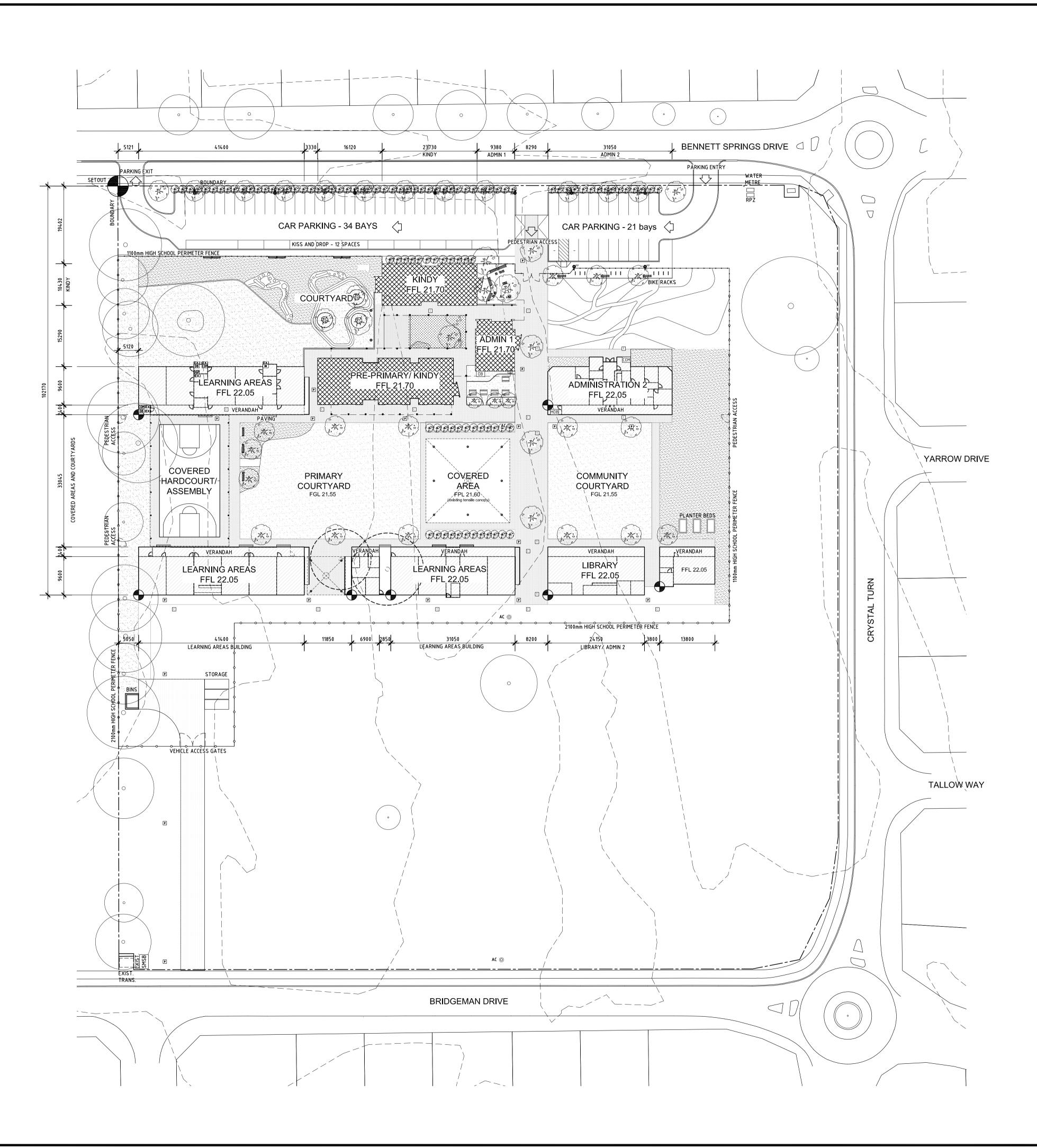




TYPICAL 2100mm HIGH SCHOOL PERIMETER FENCE



TYPICAL 1100mm HIGH SCHOOL PERIMETER FENCE



NOTES



DO NOT SCALE OFF DRAWINGS

DIMENSIONS & LEVELS OF ALL WORK TO BE CHECKED ON SITE BY CONTRACTOR BEFORE COMMENCEMENT WORKS, BEFORE PROVISION OF SH DRAWINGS & BEFORE MANUFACTURING OF ANY COMPONENTS.

ANY DISCREPANCIES BETWEEN DRAWINGS TO BE REPORTED IMMEDIATELY TO THE ARCHITECT. SET-OUT POINTS & LEVELS OF BUILDINGS & ROADS TO BE CONFIRMED ON

SITE WITH ARCHITECT PRIOR TO COMMENCEMENT, ALLOW FOR LICENSED SURVEYOR AS REQUIRED TO LOCATE EXISTING ELEMENTS AND SETOUT O THE WORKS.

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16.00	NEW LEVEL
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	EXISTING TREE TO BE RETAINED & PROTECTED
	NEW PLANTED TREE ON SOFT LANDSCAPE
	PAVING – LE:01 SEGMENTAL CONCRETE PAVING
	PAVING – LE:03 CONCRETE PAVING TYPE 1
	PAVING - LE:04 CONCRETE PAVING TYPE 2
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	GARDEN BED
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	FIRE APPLIANCES ACCESS ROAD
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Parry and Rosenthal Architects

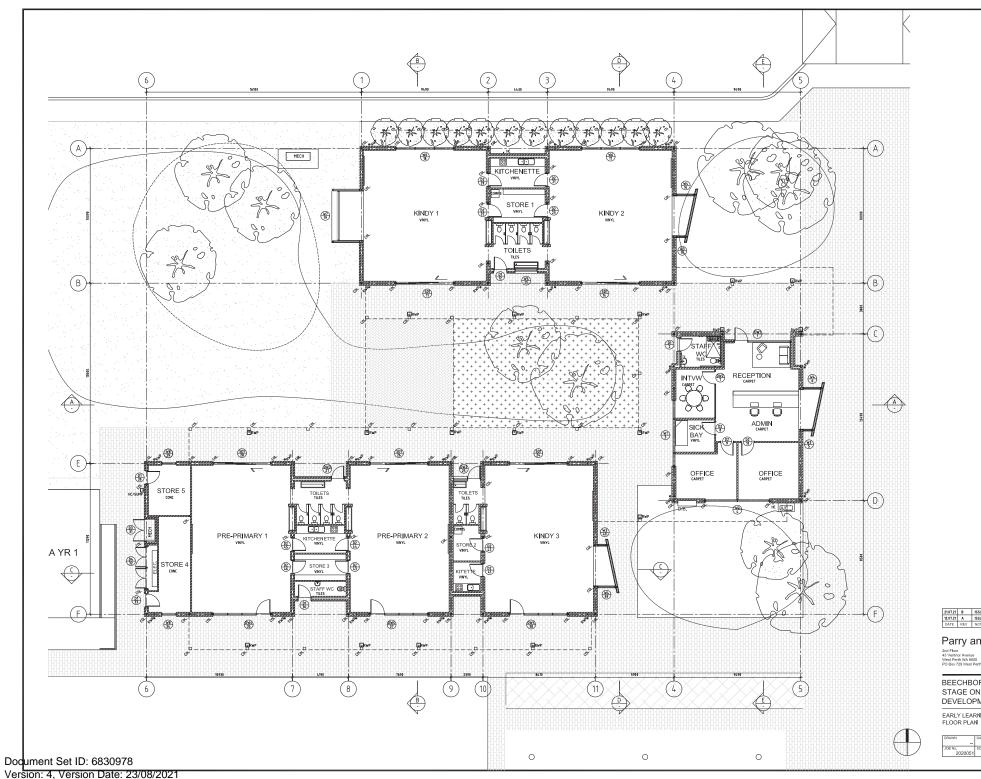
2nd Floor 43 Ventnor Avenue West Perth WA 6005 PO Box 729 West Perth WA 6872

Tel (08) 9481 0540 mail@parryandrosenthal.com.au www.parryandrosenthal.com.au

BEECHBORO CHRISTIAN SCHOOL STAGE ONE DEVELOPMENT APPROVAL

SITE PLAN





CITY OF SWAN STATUTORY PLAN RECEIVED 18 Aug 2021

Parry and Rosenthal Architects ^{2nd Flor} ⁴³ Ventor Avenue ⁴⁴ Ventor Avenue ⁴⁵ Ventor Avenue ⁴ 2nd Floor 43 Ventnor Avenue West Perth WA 6005 PO Box 729 West Perth WA 6872

BEECHBORO CHRISTIAN SCHOOL STAGE ONE DEVELOPMENT APPROVAL

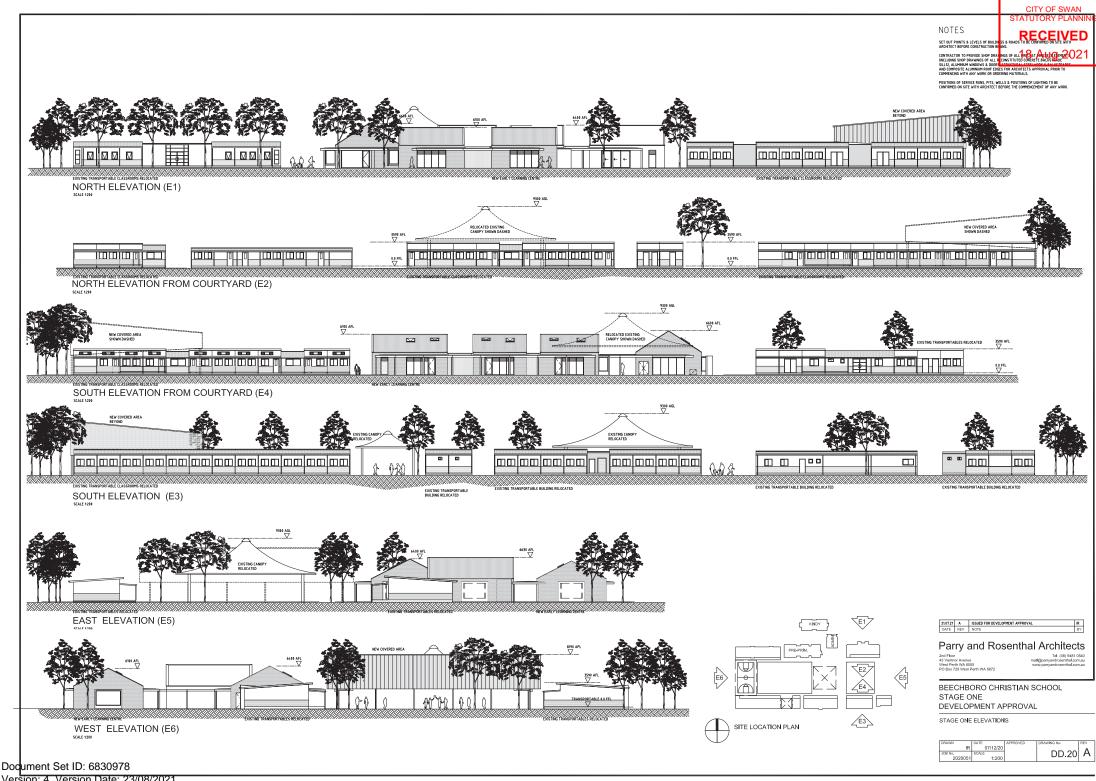
EARLY LEARNING CENTRE FLOOR PLAN



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 ISSUED FOR DEVELOPMENT APPROVAL

 12.07.21
 A
 ISSUED FOR CONSULTANT CO-ORDINATION

 DATE
 REV
 NOTE



Version: 4, Version Date: 23/08/2021



NOTES

SET OUT POINTS & LEVELS OF BUILDINGS & ROADS TO BE CONFIRMED ON SITE WITH ARCHITECT BEFORE CONSTRUCTION BEGINS.

CONTRACTOR TO PROVIDE SHOP DRAWINGS OF ALL PRECAST CONCRETE ELEMENTS (INCLUDING SHOP DRAWINGS OF ALL RECONSTITUTED CONCRETE BALUSTRADE SILLS), ALUMINIUM WINDOWS & DOORS, STRUCTURAL STEELWORK & BALUSTRADES AND COMPOSITE ALUMINIUM ROOF EDGES FOR ARCHITECTS APPROVAL PRIOR TO COMMENCING WITH ANY WORK OR ORDERING MATERIALS.

POSITIONS OF SERVICE RUNS, PITS, WELLS & POSITIONS OF LIGHTING TO BE CONFIRMED ON SITE WITH ARCHITECT BEFORE THE COMMENCEMENT OF ANY WORK.

FACE BRICKWORK <u>(39 c) 3343 </u> (31 c) 2657 🛛 POD WINDOW



A/C UNIT SHOWN DASHED. REFER TO

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MECH. ENG. DWGS

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21.07.21	В	ISSUED FOR DEVELOPMENT APPROVAL	IR
19.07.21	А	ISSUED FOR CONSULTANT CO-ORDINATION	IR
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BEECHBORO CHRISTIAN SCHOOL STAGE ONE DEVELOPMENT APPROVAL

EARLY LEARNING CENTRE ELEVATIONS

DRAWN	DATE	APPROVED	DRAWING No.	REV
JS	07/12/20			
JOB No.	SCALE		DD 21	
2020051	1:100			
2020031	1.100			



NOTES

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POSITIONS OF SERVICE RUNS, PITS, WELLS & POSITIONS OF LIGHTING TO BE CONFIRMED ON SITE WITH ARCHITECT BEFORE THE COMMENCEMENT OF ANY WORK.

CITY OF SWAN RECEIVED 5 October 2021

COLORBOND FINISH METAL DECK ROOF SHEETING AT 27° PITCH

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19.07.21	А	ISSUED FOR CONSULTANT CO-ORDINATION	IR
DATE	REV	NOTE	BY

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BEECHBORO CHRISTIAN SCHOOL STAGE ONE

DEVELOPMENT APPROVAL

EARLY LEARNING CENTRE ELEVATIONS

DRAWN	DATE	APPROVED	DRAWING No.	REV
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CITY OF SWAN RECEIVED 5 October 2021

LEGEND

21)

6

1. Main entrance

(15)

- 2. Car park area
- 3. Main access promenade including central tree avenue and feature paving
- 4. Seating node (parent pick up/ waiting) compacted granitic fines
- 5. Compacted granitic fines and bike racks
- 6. Non-irrigated mass tube stock planting including gravel path
- 7. Irrigated water -wise planting
- 8. Un-irrigated mulched area
- 9. Secondary path access (contrasting salt and paper paving)
- 10. Flexible early learning courtyard
- 11. Deciduous feature tree and raised planters
- 12. Nature play area with boundary fence
- 13. Concrete 'trike' track and mounded turf with trees
- 14. Turf play zone
- 15. Existing trees and turf to be retained
- 16. Deciduous shade trees
- 17. Planting beds with shade trees and seating
- 18. Open turf play area and optional play élements
- 19. Outdoor teaching area with fixed tables, compacted granitic fines and shade trees
- 20. Set down area. compacted road base gravel
- 21. Planting buffer
- 22. Access to adjacent to adjacent playing fields and organic
- mulch to base of existing trees. 23. Irirgated water-wise planting
- and car park trees 24. Raised vegetable planters
- 25. Pick Up/Drop off Seating
- -- Site boundary





Overall Landscape Plan Scale 1:500 @ A3







24

8





Beechboro Christian School Overall Tree Plan Scale 1:500 @ A3



Design Review Report DA 694-21

Subject	Development Review - Proposed Primary School Lot 27 Bennett	
	Springs Drive, Bennett Springs, DA 694-21	
Date 22 September 2021		
Design reviewer Hans Oerlemans, wOnder city+landscape		
Proponent Allerding Associates, for Swan Christian Education Association		
Planning Authority	City of Swan	
Contact Person Rebecca Lodge, Senior Planning Officer		

Documentation assessed:

- Request for Quote JDAP reduced size.pdf (including the Development Application Report and drawings); received 26 August 2021
- Landscape & Irrigation Plan and amended Site Plan DD.01; received 22 September 2021

Summary of strengths and weaknesses

Strengths of the proposal

- Re-use of the transportable buildings is an important strength of the proposal. They reduce
 waste and allow for testing the school layout and functionalities before locking these in with
 permanent buildings. However, how they work aesthetically with the new buildings cannot
 be assessed, as the necessary information is not provided.
- The co-location with the park and the spacious layout of the school complex around courtyards provides important opportunities for creating an integrated community hub, as the proposal states to intent. While the design can be further strengthened to achieve the aspiration, the realisation will very much depend on the accessibility of the school ground for after hour use and the management agreement with the City of Swan.

Weaknesses of the proposal / Opportunities for improvement

The proposal ignores the remaining signature of aboriginal culture on country, erasing the drain instead of celebrating it for stormwater, nature play, education and healing. The proposal also worsens the problem of urban heating in an already challenged environment. It is a pity to see that three of the four School's values - kindness, courage and excellence - are not translated into the design. On the contrary, the proposal is unkind to the history and environment, and not showcasing courage or excellence. A redesign of the school layout combined with a suitable landscape design could solve these issues.

Summary of assessment according to the Formerpies of Good Design					
1. Context and character		6. Amenity			
2. Landscape quality		7. Legibility			
3. Built form and scale		8. Safety			
4. Functionality and built quality		9. Community			
5. Sustainability		10. Aesthetics			

Summary of assessment according to the 10 Principles of Good Design



Requires further attention

Detailed assessment regarding the 10 Principles of Good Design

The 10 Principles of Good Design are meant to be used in a holistic way. The notes below need to be read with that in mind. Many points relate to multiple principles. For the readability, points are noted under the principle they relate to most. The reader needs to consider relevance to other principles.

Principle 1 Context and character

Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.

Assessment

- 1) An analysis of context and character and argumentation for the proposed built form is absent. Even though, the 1-storey permanent buildings with pitched roofs seem suitable in the suburban context.
- 2) The most striking is the denial of the aboriginal cultural values of the context. The area is part of the Bennett Brook System, an area with powerful mythological, historical and social associations. It is part of the Waugul creation story, which relates not just to the Swan River, but also to the Bennett Brook and all drains feeding into the brook. The Bennett Brook System specifically is also a significant locality for the Turtle (Boyee or Yackan) Dreaming. The drain on the site, even though it is decommissioned, is a last reminiscence of this environmental and cultural context. Filling in the drain is a final piece in erasing the aboriginal values and presence on this country. Instead, the design would be better to acknowledge and celebrate this cultural and environmental context; instead of deepening the wounds, contribute to healing.
- 3) The area also has a rural history, including the still present Palm Farm within view, directly to the east. The development does not relate to this context either.
- 4) One of the biggest contextual issues of the location is the increasing urban heat loading due to the greenfield development. The proposal has the opportunity to counter this issue with growing a significant tree canopy, but instead exacerbates to the heat problem with large amounts of roofs, pavement and barren mulch.
- 5) The substantial setback of the buildings to Bennett Springs Drive suits the low-density suburb. However, instead of contributing to the streetscape, the front setback is designed as an inhospitable parking area. The setback should be designed as an inviting 'front yard', integrating parking in a proud presentation of the school to the public street.

Principle 2 Landscape quality

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.

- The set-up with classrooms around green courtyards is good and provides promising opportunities. The design of the kindy and primary courtyards is simple and fairly functional. The inclusion of the outdoor teaching area is good. The community courtyard is too basic and needs more attention.
- 2) The inclusion of nature play is a good intent, though appears superficial, as both location and design ignore the existing (decommissioned) drain. The proposal should consider

using the existing natural environment to develop truly meaningful nature play, instead of delivering a mere artificial substitute.

- 3) It is not clear if the line of trees along the west side are on the development lot or part of the public park. Most of these existing trees are planted within manicured turf and timber bollards limit, approximately in line with the edge of the transportable buildings. The site plan (DD.01) on the other hand shows a new fence to be erected on the westside of these trees, in the current parkland.
- 4) The site plan (DD.01) wrongly states all trees along the western edge will be retained. The drawn pavement and shade structure of the hardcourt will require to remove at least one mature tree, as shown in the later received landscape plan. Moreover, two of the transportable buildings are located within the canopy projection, possibly within the structural root zone. All mature trees along the west side should be retained and advise from a qualified arborist is required regarding the constructions.
- 5) Planting size and species of the trees is not provided. It will likely take years before they will provide shade. The removal of the two mature trees on the south side of the development is not logical. These trees would provide greatly needed shade and cooling at Day One. The re-used shade structures will not provide the same cooling effect and should be used in addition to, not instead of existing trees.
- 6) The carpark is designed as a barren heat island, instead of creating a welcoming frontage. Including substantial tree canopy to create shaded parking is recommended.
- 7) Replacing the existing turf of the public park around the trees along the west side with mulch as shown on the landscape plan is a poor outcome, as well as the vast amounts of mulch along the east and south side. Native planting should be considered for the east and south areas, while the park edge could be kept in turf.

Principle 3 Built form and scale

Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.

Assessment

1) The bulk and scale of the buildings - single-storey, pavilion-type buildings, mostly with pitched roofs - is appropriate in its context. The rhythm and articulation of the permanent buildings have a human scale and refers to the suburban setting of detached single-story dwellings.

Principle 4 Functionality and build quality

Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.

- 1) The three permanent buildings are simple and functional. The glass doors and sliding doors are applauded, allowing for good cross ventilation and easy access to the courtyards.
- 2) Daylight to the toilet spaces is provided between Kind 1 & 2 and between Kindy 3 & Preprimary 2. Consider also windows for the toilets between Pre-primary 1 & 2 and the

kitchenettes between Kindy 1 & 2 and between Kindy 3 & Pre-primary 2 to provide access to daylight.

- 3) Organising the transportable classrooms around the primary courtyard, with their verandahs facing the courtyard is a good setup. Floor plans of the transportable buildings are not provided; thus their functionality cannot be sufficiently assessed.
- 4) Air conditioner units are missing on the plans. (Streetview of the transportable buildings show air conditioner units on the facades.) All air conditioner units should be out of view from the public realm, included in the constructions or screened from view.
- 5) The plan includes a tremendous oversupply of parking bays; 68 provided whereas 19 are required, an oversupply of 250%. It is good that in the amended site plan these parking bays are outside the school fence and gates, and thus available for double use for events at the public park. Still, a significant part of the 49 bays oversupply should be removed to include an abundance of trees in the parking area.

Principle 5 Sustainability

Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.

- The re-use of the transportable buildings and shade structures is a positive contribution to sustainability. It reduces waste. It also allows to test the layout of the school site and make changes, before locking it in with permanent structures.
- 2) The proposal seems to ignore the lack of walkability and cyclability of the suburb. Instead, it contributes to the problem with the excessive oversupply of car parking, the lack of facilities for cyclists (staff, parents, students and visitors), and not providing shade and cooling comfort for walking and cycling. This is not only showing a lack of attention for sustainability, it also seems to violate the School's values of kindness, community, courage and excellence.
- 3) The development ignores the important environmental asset of the site: the (decommissioned) drain. Instead of filling in the drain and investigating "underground drainage detention (...) in conjunction with detailed engineering" (report, page 6), the proponent should consider utilising the existing drain. It could combine drainage needs, stormwater retention, nature play, environmental learning, acknowledgement of aboriginal cultural values, and so on. A redesign of the school layout is recommended.
- 4) The report mentions that "the new buildings will be designed and constructed with energy efficiency in mind", but provides no details if or how this will be achieved. Only a possible future integration of solar panels is mentioned. In the area with increasing urban heating and consequently increasing power use for air conditioning, more should be expected. Consider thermal insulation of the buildings to retain cooling during hot days, and growing substantial tree canopy to reduce the urban heat island.
- 5) The use of turf is supported to promote outdoor activities on the school grounds. Irrigation requirements of the turf should be reduced by using the correct soil mixtures (up to 60% reduction in comparison to traditional turf).

Principle 6 Amenity

Good design optimises internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.

Assessment

- The co-location of the school with the adjoining park provides promising opportunities for dual use. The amended site plan indicates two gates, on each side of the hardcourt, allowing for interaction. Dual use in both directions should be allowed for. The gates should be open for public use after school hours.
- 2) An essential amenity for the school grounds will be shade and cooling during hot weather. The inclusion of new and re-used shade structures, covered walkways, verandahs and retained tree in the kindy courtyard sets a good base. This should be strengthened with retaining the two mature trees on the south side and planting large size and fast-growing new trees.
- 3) No weather protection is provided for the bicycle racks. Secure bicycle parking and endof-trip facilities should be provided (see also Sustainability, point 2)
- 4) Except for the seating node at the school entrance, seating seems limited to individual benches along a few paths. Consider more diversity of seating arrangements and opportunities to sit, relax and socialise in different configurations. This will benefit both students during school and others during the School's community events.
- 5) The proposal includes a limited number of standard elements of formal play (hard court, play equipment) and informal play (turfed areas, 'nature' play). Consider extending the play and socialising opportunities, including street games, informal play incentives (in the pavement, furniture, art), drinking water fountains, etc.
- 6) The low-quality landscaping north and east of Admin 2 and the community court is a missed opportunity. Consider including a school garden, educational garden, food orchard, native garden, bush tucker garden, or other type of educational and/or community uses to support the School's values of kindness, community, courage and excellence.

Principle 7 Legibility

Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.

- 1) The use of a main pedestrian entrance from Bennett Springs Drive and central walkway into the school grounds sets a good base for legibility and intuitive wayfinding.
- 2) The position and orientation of the Admin 1 and Admin 2 buildings, with clear views to both front doors from the pedestrian entrance, is good. The Admin 1 seems to present itself as the main entrance for visitors, though this depends on the appearance of the entrance of Admin 2. A clear hierarchy to support intuitive wayfinding needs attention.
- 3) The main entrance of Kindy 3 seems to be on the south side, and not from the kindy court, like Kindy 1 & 2. This is confusing. Consider moving the front doors of Kindy 3 and Preprimary 1 & 2 to the north side, with sliding doors on both sides of the class rooms.

Principle 8 Safety

Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.

Assessment

- The fence around the kindy courtyard creates a safe boundary to the adjoining car parking and public park. Planting around the fence should be kept low, to allow for visual interaction and passive surveillance both ways.
- 2) The use of parallel parking bays along the south side of the parking area, with an uninterrupted footpath to the central walkway, is a good setup. However, the footpath width is limited and could use seating for children to safely wait while parents are unloading/preparing their car. Reducing the distance from the furthest bay to the walkway and central seating node would also help, for instance by locating the parallel bays on both sides of the central walkway.
- 3) Safety during evening hours might need attention. The visual openness to assist with passive surveillance is provided between park and primary court, to the kindy court, from Bennett Springs Drive and Crystal Turn. Visual transparency from Bridgeman Drive can be improved. Consider inviting community uses for after hours, such as a school/community garden, to improve passive surveillance (see also Amenity, point 6).
- 4) The parking area should be clearly designed as a low-speed environment. The speed bump in the middle is a good start. Consider continuing the pavement pattern of the central walk on the speed bump. The sweeping connections to Bennett Springs Drive however are implying a high-speed environment, communicating the wrong message. They should be significantly tightened, appropriate to a low-speed, child-safe environment.

Principle 9 Community

Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.

- The report states on page 8: "The integration of a school in central Bennett Springs will revitalise and form part of a communal hub that will allow for greater social interaction with residents of the community." This aim is admirable. However, it requires more than the school function at a central location, and needs further consideration of the following:
- 2) The co-location with the park can provide important dual use benefits, both for the school - of the park for sports and exercise - and for the community - of the schoolgrounds after school hours. Realisation of these benefits requires harnessing in an agreement between School and City.
- 3) The inclusion of a seating node at the main entrance of the school is potentially a positive contribution to the community, for informal meeting and socialising. However, locating this seating node behind the fence and gate makes it feel private, not for community members to use. Consider opening the node to the street and locating the fence after the reception of the Admin 1 building. This would also improve intuitive wayfinding (see Legibility, point 2) and safety (see Safety, point 2).

4) Consider a community use for the underutilised mulched areas to the north and east, such as a school and community garden (see also Amenity, point 6). This would align with School's values and also enhance safety and surveillance (see Safety, point 3).

Principle 10 Aesthetics

Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.

- The restrained aesthetics of the permanent buildings seems appropriate, though the aesthetic qualities will highly depend of the quality of materials and detailing. Materials are only described in abstract - face brickwork, colorbond finish metal deck roof, fiber cement cladding - and architectural detailing is not provided. Proper assessment of the aesthetics quality cannot be provided.
- 2) No details are provided of the transportable buildings, regarding colour, materials and finished. How well they will work in unity with the permanent buildings cannot be assessed. Consideration needs to be given to the aesthetic cohesion of the complex.

Design Review Report DA 694-21 (2)

Subject	Development Review - Proposed Primary School Lot 27 Bennett		
	Springs Drive, Bennett Springs, DA 694-21 - 2 nd review		
Date	12 October 2021		
Design reviewer	Hans Oerlemans, wOnder city+landscape		
Proponent	Allerding Associates, for Swan Christian Education Association		
Planning Authority	City of Swan		
Contact Person	Rebecca Lodge, Senior Planning Officer		

Documentation assessed:

- 211005_Response to Beechboro Design Review Report.pdf; received 5 October 2021
- Also taken into consideration, the meeting with the proponent and the City of Swan senior planning officer, 29 September 2021, discussing the Design Review Report of 22 September 2021

Summary of strengths and weaknesses

Strengths of the proposal

- The strengths of the proposal are maintained, including the re-use of the transportable buildings, utilising the co-location with the park, the open layout of the school site with courtyards, the transparency of the edges, the amenities of the buildings including excellent cross-ventilation and good daylight access, and the design of outdoor spaces for school and community activities.
- The proposal is further strengthened by taking many of the comments of the first design review on board, either by providing additional information or by amending the plans.

Weaknesses of the proposal / Opportunities for improvement

- Although the overall layout of the school grounds is logical in the current suburban setting, more attention could be given to the context and character, specifically the past and future setting. Consider in the layout of the central walkway with adjoining buildings and in the landscape design to make reference to the original landscape and its Noongar cultural meanings.
- The proposal is advised to give further attention to reducing heat loading, especially through planting more trees and using species that will provide more shade.

Summary of assessment according to the 10 Principles of Good Design

1. Context and character	6. Amenity	
2. Landscape quality	7. Legibility	
3. Built form and scale	8. Safety	
4. Functionality and built quality	9. Community	
5. Sustainability	10. Aesthetics	



Requires further attention

Not supported

Detailed assessment regarding the 10 Principles of Good Design

The 10 Principles of Good Design are meant to be used in a holistic way. The notes below need to be read with that in mind. Many points relate to multiple principles. For the readability, points are noted under the principle they relate to most. The reader needs to consider relevance to other principles.

Principle 1 Context and character

Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.

Assessment

- 1) The analysis of context and character is still absent. This should include the original landscape that was still present till the early 1950's, the current suburban context, and the future, in particular regarding the rest of Lot 27.
- 2) The site used to be part of the Bennett Brook System, an area with powerful mythological, historical and social associations. Although the site itself is not classified as an official heritage site, it was part of a natural system with important cultural values, including the Waugul creating story and the Turtle (Boyee or Yackan) Dreaming. Whether this is significant depends on the cultural perspective. The proponent is advised to analyse aerial photos from the early 1950s and before, and to connect with Noongar elders to be better informed. These aspects of context and character should inform the further detailing of the landscape plan and possibly the layout of the central walkway with the adjoining buildings.
- 3) The 1-storey permanent buildings with pitched roofs are suitable in the current suburban context. The issue of increasing urban heat loading in the suburb is partially addressed with including more trees (see also 'Landscape quality'). The connection to the street is improved with the inclusion of trees along Bennett Springs Drive.
- 4) During the meeting of 29 September, an argumentation was raised regarding the future of the school site, with the central walkway potentially providing views to what might happen to the south. The layout of the school grounds, with a central walkway and perpendicular courtyards, provides an interesting base for future expansion of the school towards Crystal Turn and Bridgeman Drive. Though further explanation of the intent is advised.

Principle 2 Landscape quality

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.

- 1) The set-up with classrooms around the kindy and primary courtyards is simple and effective, providing a variety of functional outdoor spaces.
- 2) The inclusion of the outdoor teaching area is good. The explanation that the seating area next to the front gate is also intended as outdoor classroom for the kindy, is welcomed.
- 3) The additional information states that the kindy nature play will be designed by a specialist. This is supported.
- 4) The proponent is advised to also look into possibilities of nature play for the primary school students, possibly with limited access, possibly as part of the curriculum or as part of the River Rangers activities. This could be combined with learning about the original landscape and its cultural values.

- 5) The use of the mulched areas for outdoor education and River Rangers activities, such as the raised veggie beds at the current school, is supported. Even though, the 'non-irrigated mass tube planting' and mulch zones at the east side need more design attention.
- 6) The amendments to the west side are supported, with retention of a mature tree by moving the covered basketball court, and retention of the turf, strengthening the connection with the adjoining public park. The retained mature tree is not yet included in the landscape plan though.
- 7) The removal of the two smaller trees for a rational location the southern transportable buildings, in order to keep a clear view of the central walkway to the south, is acceptable.
- 8) The inclusion of more trees in the landscape plan is supported. Though the choice of species needs further consideration. Large tree species should be considered, to grow effective shade and provide cooling, especially along Bennett Springs Drive and around the parking area. More native species should be considered for the courtyards.
- 9) The carpark design is still underwhelming. Although the street appeal has improved with the inclusion of trees along Bennett Springs Drive, it is still mostly a heat sump. Consider large, shade providing tree species, and consider locating them close to the carriageway, between the parking bays.

Principle 3 Built form and scale

Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.

Assessment

1) The bulk and scale of the buildings is unchanged, and still appropriate in its context. The rhythm and articulation of the permanent buildings have a human scale and refers to the suburban setting of detached single-story dwellings.

Principle 4 Functionality and build quality

Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.

- 1) The three permanent buildings are simple and functional, allowing for good cross ventilation, daylight access and direct access to the kindy courtyard.
- 2) The addition of windows, providing daylight to more kitchenettes and toilet spaces is supported.
- 3) Organising the transportable classrooms around primary courtyard with verandahs and direct access to the court is a good setup.
- 4) The addition of the floorplans of the transportable buildings is appreciated. The location of the cantina opposite the covered area, close to the central walkway is well choosen.
- 5) Air conditioner units on the outsides of the transportable buildings, as well as air conditioners for the permanent buildings, need to be screened from public view.
- 6) The explanation about the number of parking bays is appreciated. Keeping them outside the school fence allows for double use for events in the public park.

Principle 5 **Sustainability**

Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.

Assessment

- 1) The re-use of the transportable buildings and shade structures is a positive contribution to sustainability. It also allows to test the layout of the school site and make changes, before locking it in with permanent structures.
- 2) The re-use of current kindergarden transportable building (Block H) in combination with the River Rangers zone is good way to making the best of the existing buildings.
- 3) The additional information about the sustainability initiatives for the permanent buildings is supported.
- 4) The use of turf (with irrigation-reducing soil mix), water-wise native species for low planting and mulched areas (to allow for raised planter beds and the like) is supported.
- 5) The "underground drainage detention (...) in conjunction with detailed engineering" (report, page 6) needs further consideration. The proponent is advised to consider combining drainage and stormwater retention with nature play (for primary school students), environmental learning and acknowledgement of aboriginal cultural values.

Principle 6 Amenity

Good design optimises internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.

- 1) The co-location of the school with the adjoining park provides promising opportunities for dual use. The gates in the western fence, allowing for direct connection, is supported.
- 2) The new and re-used shade structures, covered walkways, verandahs and retained trees set a good base for weather protection and shade. Changing the new trees to species that grow bigger and provide more shade is recommended.
- 3) Having the bicycle racks within the school fence addresses the secure bicycle parking sufficiently. Showers in Admin 1 and 2 as end-of-trip facilities are supported. A canopy over the bicycle racks to provide weather protection is advised.
- 4) It is noted that seating options are provided at several locations across the school grounds. Consider further diversity of seating arrangements and opportunities to sit, relax and socialise along the central walkway and in the community courtyard.
- 5) In addition to the play spaces and elements already provided, consider more incentives throughout the landscape design for informal play and socialising, including street games in the pavement, multifunctional furniture, interpretive objects, etc.
- 6) The intent for educational planting, raised planter beds, food orchard and native garden, and involvement of the River Rangers is supported. It will be important to translate intent into realised outcomes.

Principle 7 Legibility

Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.

Assessment

- 1) The central pedestrian walkway from Bennett Springs Drive sets a sound base for legibility and intuitive wayfinding. The continuation of pavement pattern across the speedbump strengthens the legibility.
- 2) The additional information about the Admin 2 building entrance supports the Admin 1 as main entrance building and addresses the concern in the previous design review sufficiently.
- 3) The potential confusion of the kindy 3 building entrances is also solved to satisfaction.

Principle 8 Safety

Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.

- 1) The low-level planting around the fence to the kindy courtyard is supported and will provide important visibility and passive surveillance.
- 2) The 1.2m transparent fences around the school allow for good visual connection and passive surveillance to and from the park and surrounding streets.
- 3) The parallel parking bays for drop-off / pick-up, with an uninterrupted footpath to the central walkway, is a good setup. The revised landscape plan suggests there might be benches included along the footpath, which is a good improvement. Consider widening the footpath to provide enough space for prams and people passing. Consider to locate the parallel bays evenly on both sides of the central walkway, to reduce walking distance to the school gate, and thus further improve safety.
- 4) Consider to locate the parking bay for the 12-seater school bus directly next to the central walkway, either on the east or west side.
- 5) Sufficient lighting for safety during evening hours might need attention. This will also support the school's community programs and after-hours community events.
- 6) The additional information of the fire truck swept paths and school parking references is appreciated, though not convincing. The child-safety of the parking area can be further improved by considering:
 - to let the fire truck enter the central walkway directly from Bennett Springs Drive with appropriate kerb treatment, instead of double-turning through the parking area;
 - tightening the swept paths of the entrances, to clearly set the expectations regarding drivers' behaviour. Consider reducing the radius of the driveway to match the 4.5m radius of the street entrance;
 - install one-way traffic, as indicated on the Brabham Primary School reference, allowing to reduce the entrance and exit driveways from 6m to one vehicle width. This will further reinforce drivers to drive slow and pay attention.
- 7) Outside the plan boundary, the footpath along Bennett Springs Drive need to have priority over both driveways.

Principle 9 **Community**

Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.

Assessment

- 1) The intent for dual use of the of the park is supported.
- 2) Locating the seating node at the main entrance behind the school fence, to allow the node to be used as outside class for the kindy, is supported.
- 3) The additional information regarding the intended use of the mulched areas for education and community purposes is appreciated and supported.
- 4) The limitations to open the school grounds after hours are understood. The use of low fencing and gates to Bennett Springs Drive and the public park are supported, as they provide the opportunity to easily open up the grounds in the future if situations change.

Principle 10 Aesthetics

Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.

- 1) The restrained aesthetics of the permanent buildings is supported. The quality of materials and architectural detailing, more than provided, will be important to realise the quality suggested in the visualisations.
- 2) The additional plans and photos of the transportable buildings is appreciated. The colour setting cream white, with accent colours for the classroom doors facing the primary courtyard, and dark blue for the entrance of Admin 2 is restrained and appropriate as background to the permanent buildings.