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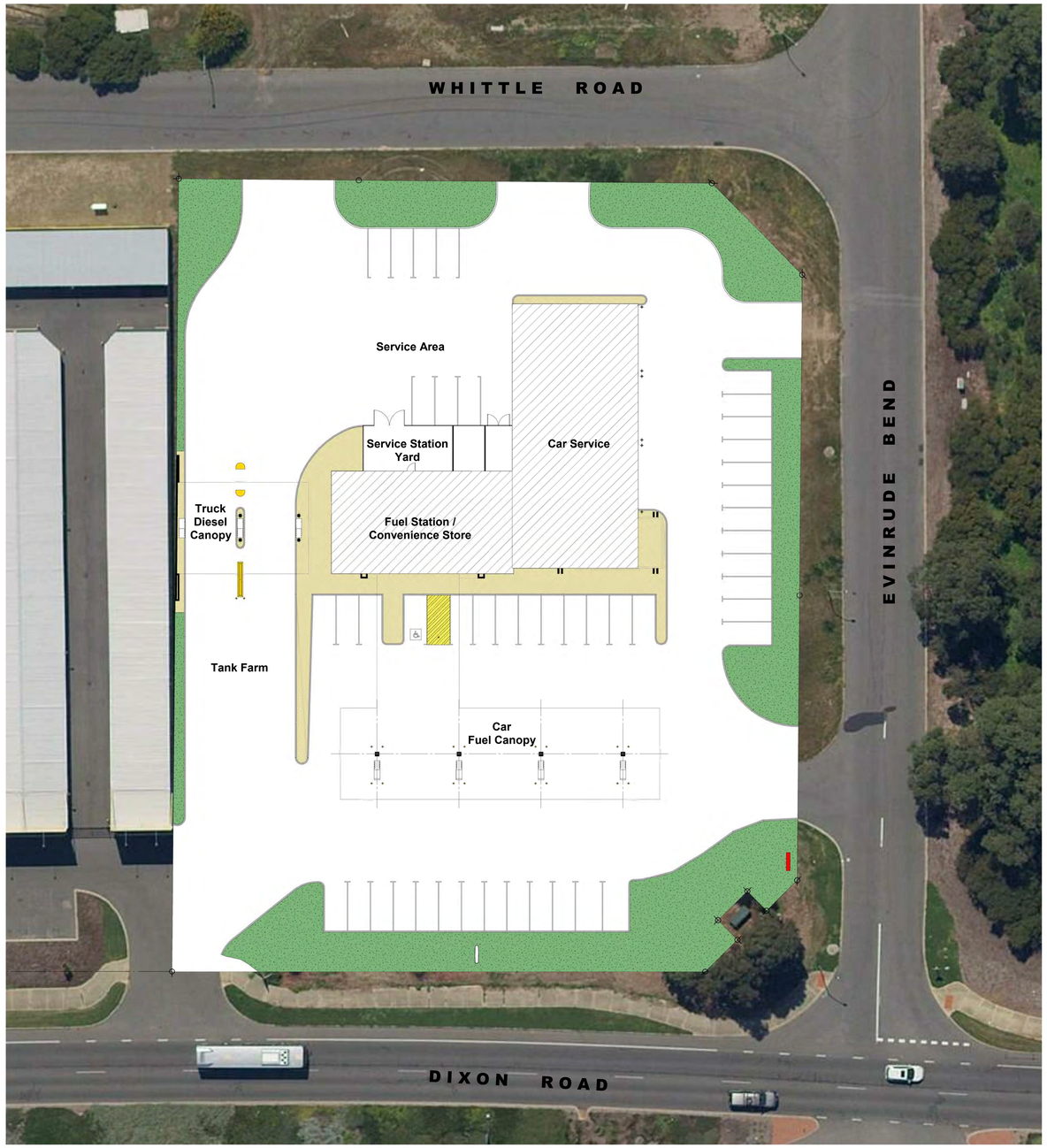
APPENDIX A

PLANS



N

DEVELOPED AERIAL DIAGRAM

SCALE:1 : 250

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

SK012
FEB 2019
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1 : 250 @ B1

8236

0 1 2 3 4 5 10

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Member Australian Institute of Architects
© Meyer Shircore & Associates ACN 115 189 216
Suite 2, Ground Floor, 437 Roberts Road Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

COMPOSITE SITE CRITERIA

1. Site Area 5,830m²

2. Zoning
Light Industry
Service Station "D" Use
Motor Vehicle Repair Station "D" Use

3. Landscaping

a. Landscape Required	583.0m² or (10% of site)
b. Landcape Provided	
Soft	895.5m²
Hard	245.6m²
Total	**1,141.1m²** (19.6% of site)

4. Floor Area

a. Convenience Store	225m²
b. Car Service	400m²
Total	**625m²**

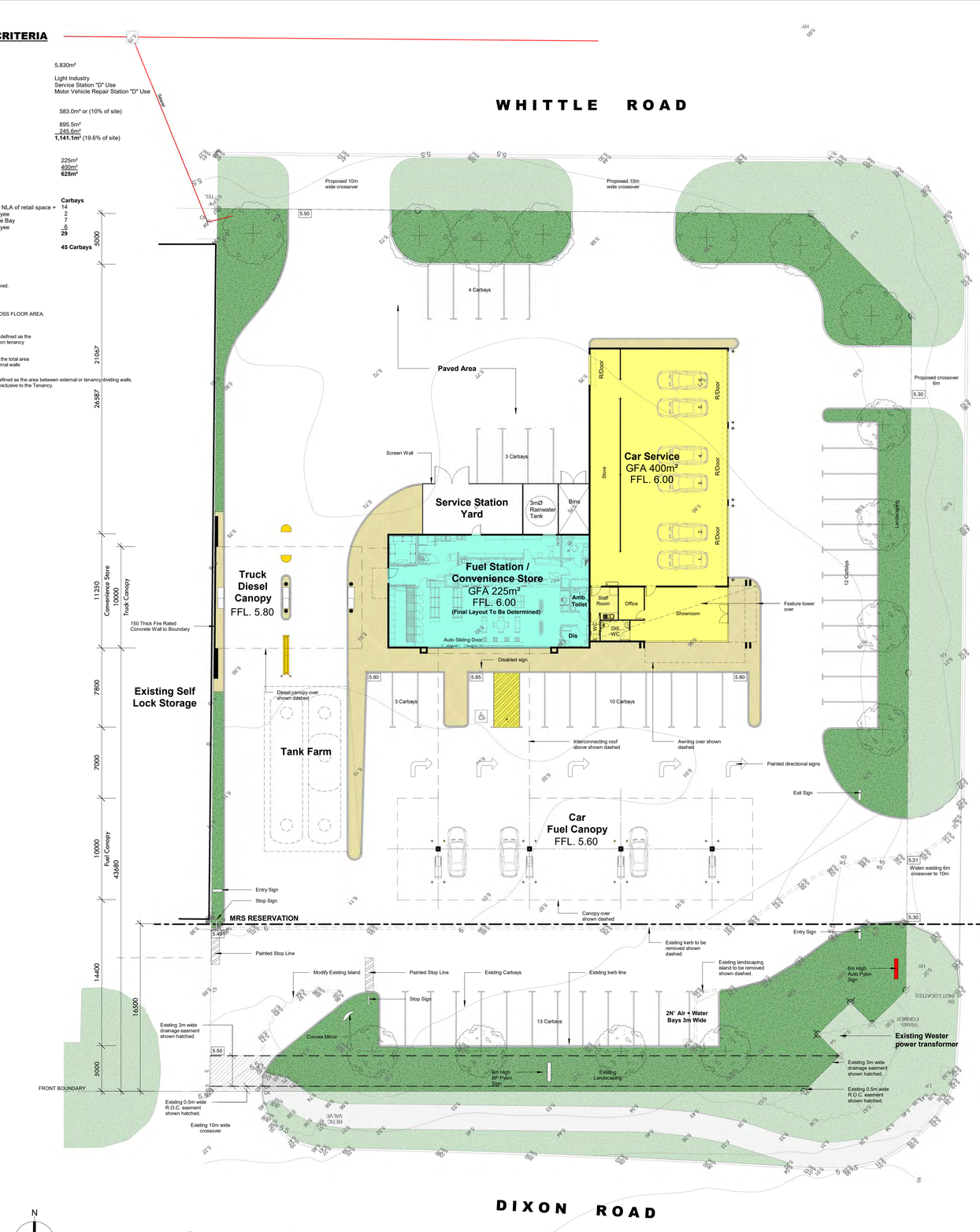
5. Carparking

a. Cars Required		**Carbays**
i. Convenience Store	6/100m² NLA of retail space +	14
	1/Employee	2
ii. Car Service	1/Service Bay	7
	1/Employee	6
Total		**29**
b. Cars Povided		**45 Carbays**

Landscaping
A. Hard Landscaping
Defined as paved walkways either open or covered.
B. Soft Landscaping
Defined as vegetative landscaping.

Gross Floor Area : GFA
A. All Floor Areas on this plan are shown as GROSS FLOOR AREA.
Unless otherwise noted as Nett Floor Area.
B. Definition of Gross Floor Area is defined as:
i/ GROSS FLOOR AREA OF TENANCY:
Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside edge of external walls.
ii/ GROSS FLOOR AREA OF A BUILDING:
Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls

Nett Floor Area : NFA
A. Nett Floor Area of a Tenancy on this plan is defined as the area between external or tenancy dividing walls.
B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.



SITE PLAN
SCALE: 1 : 200

EXISTING SITE SURVEY
SCALE: 1 : 200

PROPOSED FUEL STATION & CAR SERVICE
LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM
FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

SK012
FEB 2019
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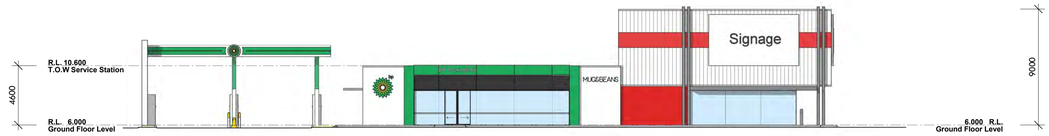
SOUTH ELEVATION (DIXON ROAD) WITH FUEL CANOPY

SCALE: 1 : 200

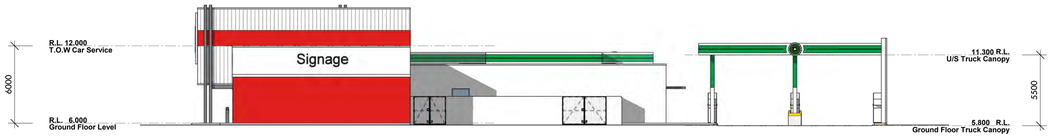


SOUTH ELEVATION (DIXON ROAD) WITHOUT FUEL CANOPY

SCALE: 1 : 200

EAST ELEVATION (EVINRUDE BEND)

SCALE: 1 : 200



NORTH ELEVATION (WHITTLE ROAD)

SCALE: 1 : 200

WEST ELEVATION WITHOUT BOUNDARY WALL

SCALE: 1 : 200

WEST ELEVATION WITH BOUNDARY WALL

SCALE: 1 : 200

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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APPENDIX B

ASSESSMENT OF SOURCES NOT REQUIRED TO ACHIEVE COMPLIANCE WITH THE REGULATIONS

Table B1 lists the resultant noise levels received at the residence located around the development from those sources that are exempt from the Regulations.

TABLE B.1 – WORST CASE CALCULATED NOISE LEVELS FOR NOISE SOURCE EXEMPT FROM REGULATIONS

Item	Calculated Noise Levels (dB(A))
Car movements	36
Truck movements	40
Car Start	43
Truck Start	45
Truck Air Brake	49

We note that with regards to vehicles accessing the site, that as anyone can access the site and the operators of the premises have no control on who can enter the car park or drive-thru, these areas would be designated as public places. Regulation 6 of the *Environmental Protection (Noise) Regulations 1997* relates to noise emissions from public places and under this Regulation, "*the person who is causing or permitting that noise to be emitted is to be treated as the occupier...*". Therefore, noise emissions from each individual vehicle using the car park needs to comply with the assigned noise levels.

The following provides an assessment for those noise sources that are exempt from the Regulations and do not need to achieve compliance.

A1 L_{A1} NOISE EMISSIONS – CAR AND TRUCK MOVEMENTS

Noise emissions from car and truck movements on site would be compared with the assigned L_{A1} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{A1} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Under the Regulations, noise emissions from vehicle movements would not be considered tonal. Thus, Tables B.2 and B.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE B.2 – ASSESSMENT OF L_{A1} NOISE LEVEL EMISSIONS FROM CAR MOVEMENTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	36	Night Period	57	Complies

TABLE B.3 – ASSESSMENT OF L_{A1} NOISE LEVEL EMISSIONS FROM TRUCK MOVEMENTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	40	Night Period	57	Complies

6.5 L_{AMAX} NOISE EMISSIONS

Noise emissions from car and truck engine starts on site would be compared with the assigned L_{AMax} noise level. Additionally, noise emission from trucks air brakes also would be compared with the assigned L_{AMax} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{AMax} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Noise emissions from a car and truck starting, when received at the neighbouring residence would not be tonal under the Regulations. However, noise emissions from truck air brakes, when received at the neighbouring residence could be impulsive and to be conservative, a +10dB for impulsive characteristics would be applied.

Table B4 list the characteristics that should be included and the assessable noise levels as would apply to the truck air brakes.

TABLE B.4 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{AMAX} NOISE LEVELS TRUCK AIR BRAKE

Item	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
Caravan Park	49	-	-	+10	59

Tables B.5 to B.7 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE B.5 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM CAR STARTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	43	Night Period	67	Complies

TABLE B.6 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM TRUCK STARTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	45	Night Period	67	Complies

TABLE B.7 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM TRUCK AIR BRAKE

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	59	Night Period	67	Complies

Appendix 7
Bushfire Reporting

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 36 Dixon Road, East Rockingham WA 6168

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 4th Month January Year 2019

Report author: Tim Briggs

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☑ Level 2 practitioner ☐ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 40353 Accreditation expiry: Month January Year 2020

Bushfire management plan version number: Rev 4

Bushfire management plan date: Day 27th Month March Year 2019

Client/business name: Entire Fire Management

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
Minor development (in BAL-40 or BAL-FZ)		✔
High risk land-use	✔	
Vulnerable land-use		✔

None of the above ☐

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Considered High Risk Land Use in accordance with SPP 3.7

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author  Date 27/03/2019

Bushfire Management Plan

Prepared for Lot 36 Dixon Road, East Rockingham

Table of Contents

List of figures

List of appendices

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Document control

Report Version	Purpose	Author/reviewer and accreditation details	Date Submitted
Revision 1	For Implementation	Tim Briggs 40353	23/01/2019
		Gavin Fancote	
Revision 2	Site Plan Updated	Tim Briggs 40353	08/03/2019
		Gavin Fancote	
Revision 3	Categorised as High Risk Land	Tim Briggs 40353	19/03/2019
	Use	Gavin Fancote	
Revision 4	Bushfire risk assessment	Tim Briggs 40353	27/03/2019
		Gavin Fancote	

Disclaimer

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Entire Fire Management at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Section 1: Proposal Details

This BMP has been developed in support of a development application for a new fuel station and car service centre on the property located at Lot 36 Dixon Road in East Rockingham WA. The subject lot size is 5,832m², has been previously been cleared for development and is clear of native vegetation.

The nearby area is largely developed for commercial purposes with exception to the area south of Dixon Road which is a bush forever site and is protected vegetation.

In accordance with SPP 3.7 this development is considered to be High Risk land use and is accompanied with an Emergency Evacuation Plan provided as a separate document and a bushfire risk assessment has been prepared.

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FIGURE 1: Copy of the Planning Proposal

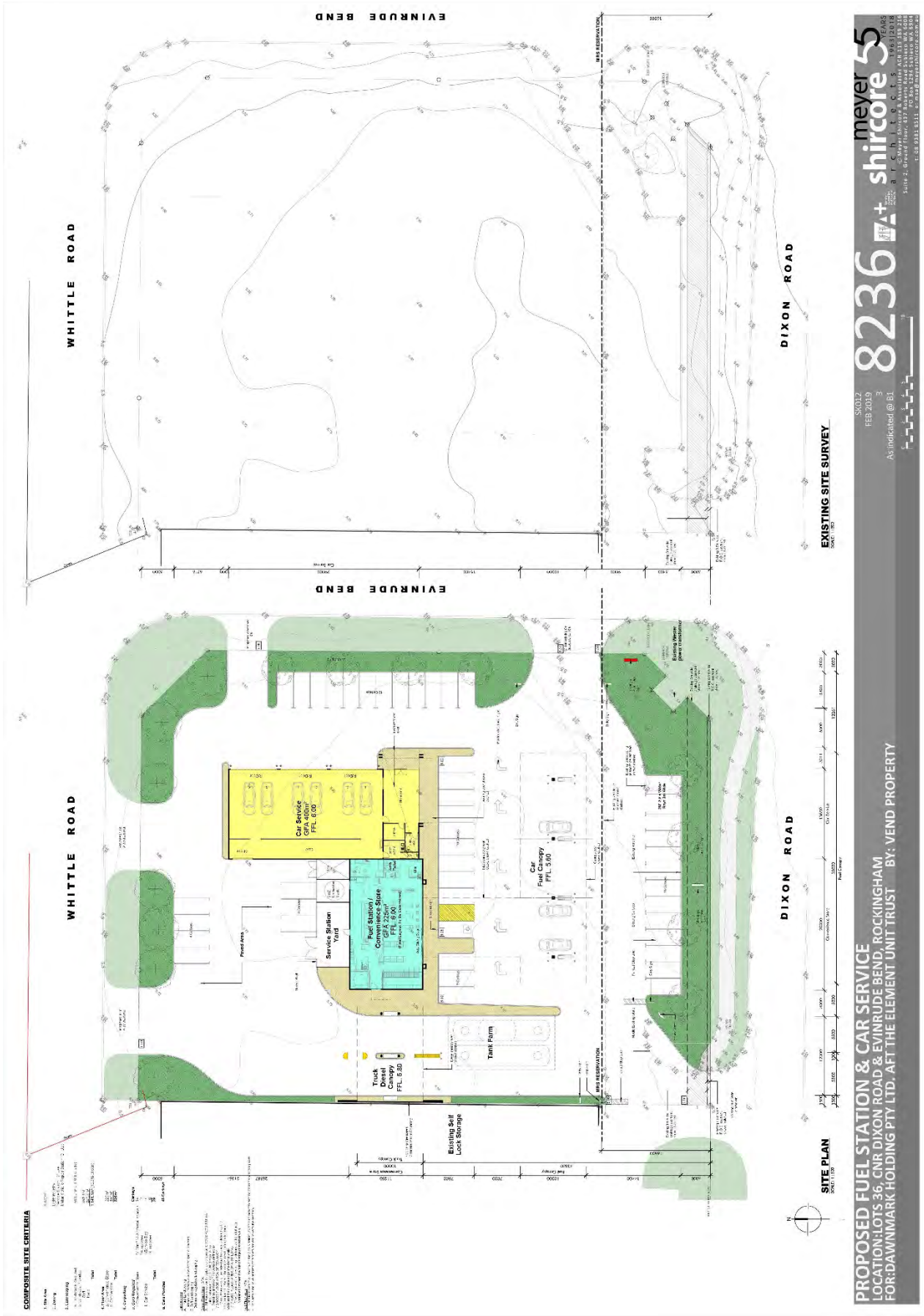

FIGURE 2: Map of Bushfire Prone Areas for Subject Site

Section 2: Environmental Considerations

The proposed development site has been assessed for environmental values using the national database set *www.nationalmap.gov.au* to ensure that any clearing of native vegetation for bushfire protection does not adversely affect recognised conservational elements.

Datasets explored within NationalMap include the following:

Department of Biodiversity, Conservation and Attractions:
- Ramsar Sites (DBCA-010)
- Threatened and Priority Flora (DBCA-036)
- Threatened Ecological Communities (DBCA-038)

Department of Planning:
- Bush Forever Areas 2000 (DOP-071)

Department of Water and Environmental Regulation
- Clearing Regulations – Environmentally Sensitive Areas (DWER-046)

The figures on the following pages indicate positive findings and should be considered by the decision maker.

Note: The proposed development site contains no existing areas of native vegetation and requires no clearing for development.

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FIGURE 3: NationalMap – NationalMap – Threatened Ecological communities (DBCA-038)

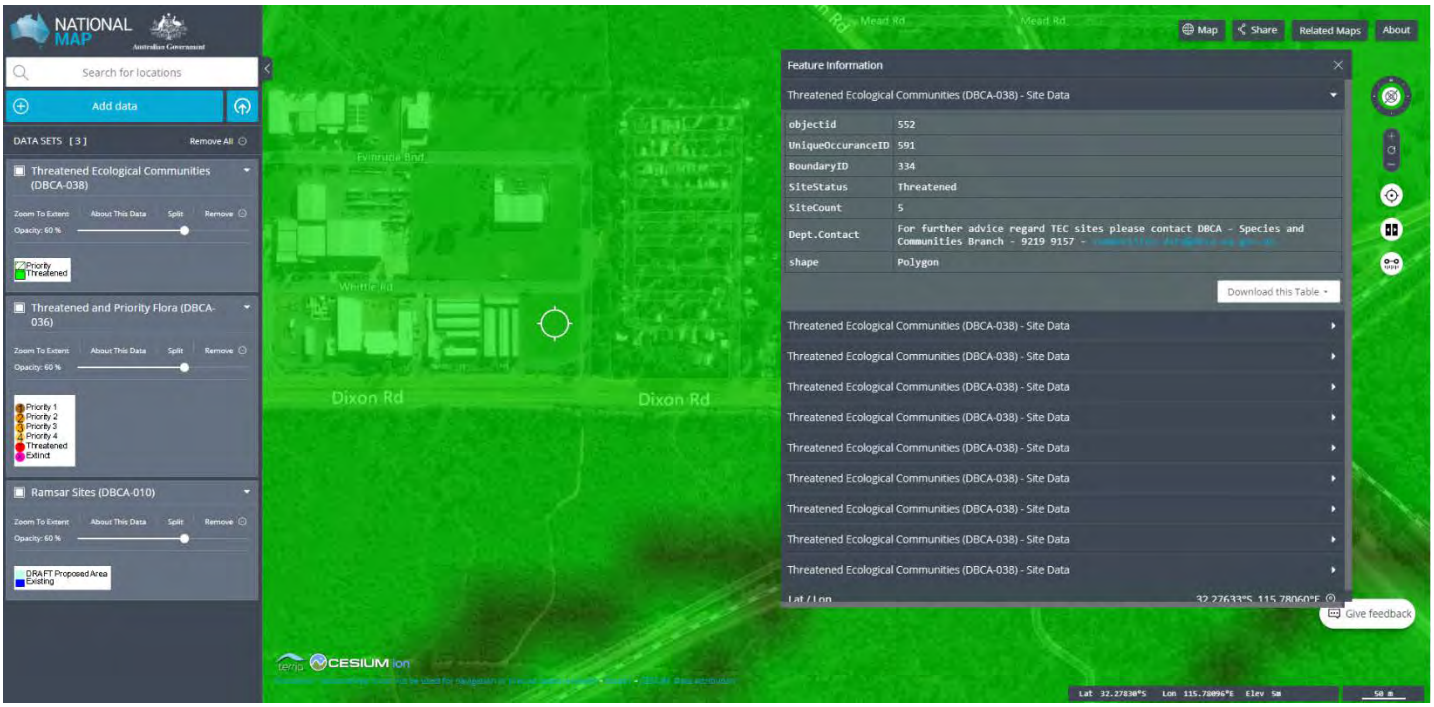
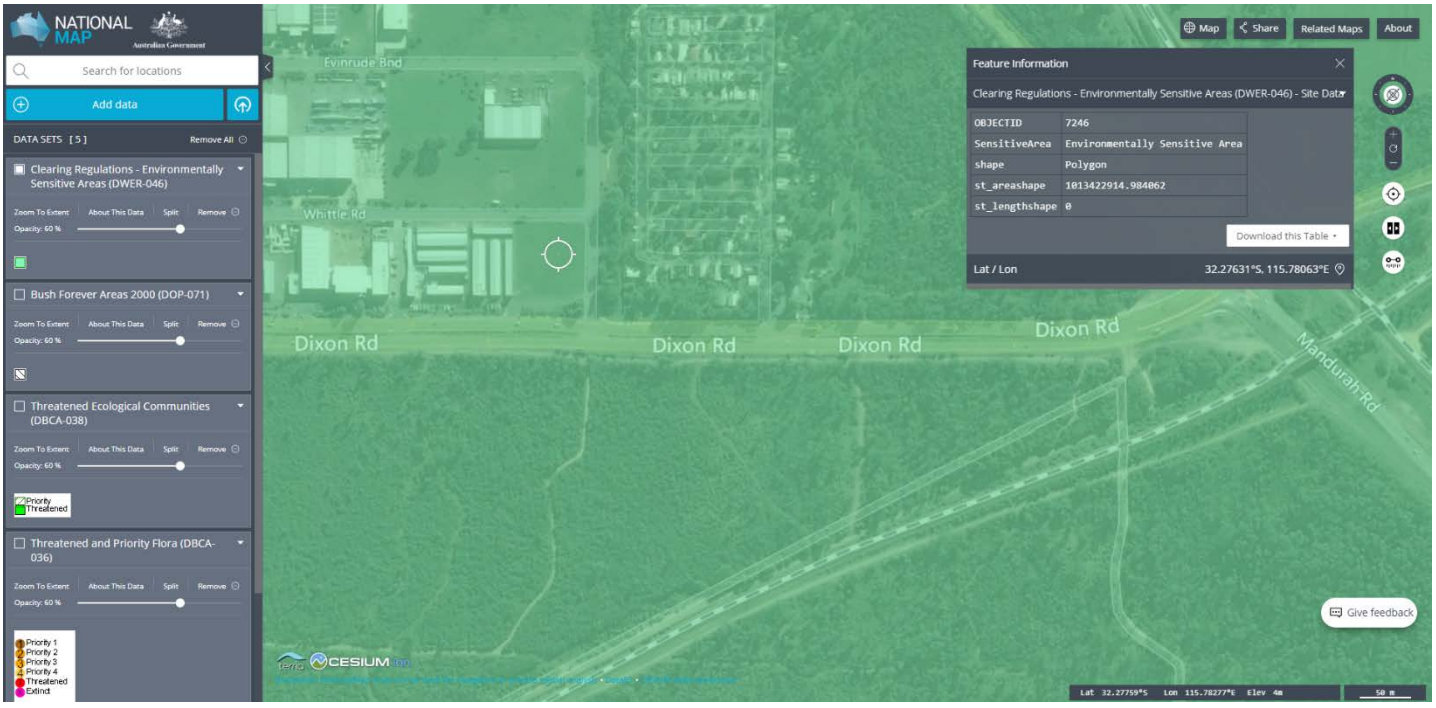


FIGURE 4: NationalMap – Environmentally Sensitive Areas (DWER-046)



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Subsection 2.1: Native Vegetation – Modification and Clearing

The Australian Government National Map indicates there are conservational values recognised within the local area of the subject property. There is no existing vegetation on the property that requires modification to ensure a suitable BAL rating can be achieved for future residences on each proposed lot.

Subsection 2.2: Re-vegetation/Landscape Plans

N/A

Section 3: Bushfire Assessment Results

A Bushfire Attack Level (BAL) Assessment has been prepared to support the proposed development application.

The following BAL Assessment has been prepared in accordance with AS 3959 and provides evidence and justification gathered during a site assessment that was conducted to determine the potential BAL rating associated with the proposed development.

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AS 3959 Bushfire Attack Level (BAL) Assessment Report

Site Details			
Address:	137 Dixon Road		
Suburb:	East Rockingham	**Postcode:**	6168
Local Government Area:	City of Rockingham		
Description of Building Works:	Construction of Fuel Station and Car Service		

Report Details			
Report Number:	BAL 2-1331	**Report Revision:**	1
Assessment Date:	04/01/19	**Report Date:**	23/01/19

BPAD Accredited Practitioner Details

Name:	Tim Briggs
Company Details:	Entire Fire Management

I hereby certify that I have undertaken the assessment of the above-mentioned site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 -2009 (Method 1)

I hereby declare that I am a BPAD accredited bushfire practitioner.

Accreditation No.	40353
Signature:	

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the Assessment date. If the assessment was completed more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

Site Assessment & Site Plans

(Attached as page 2 of this report)

The assessment of this site / development was undertaken on the above-mentioned date by an Accredited BPAD Practitioner for determining the Bushfire Attack Level in accordance with AS 3959 - 2009 Simplified Procedure (Method 1).

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ENTIRE FIRE MANAGEMENT

Entire Empire Pty Ltd
ABN: 63 468 728 651
Office: (08) 9498 0056
Address: 39B Alex Wood Drive
Forrestdale Business Park
Forrestdale WA 6112

Project	137 Dixon Rd. East Rockingham
Title	BAL Assessment
Size	A3
Scale	1:1500
Sheet	BAL 2-1331
Rev	1
Name	Tim Briggs
Date	04 Jan 2019

Legend

- Subject Property
- 150m Assessment Area
- 100m Exclusion Zone
- Photo Location
- Vegetation Plot Boundary
- Class A - Forest
- Class B - Woodland
- Class C - Shrubland
- Excluded c2.2.3.2(f)

0 45 90 Meters

Notes

Vegetation Classification

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	1	**Plot no:**	1
Vegetation Classification or Exclusion Clause			
Class A - Forest			
Description			
Vegetation containing tree canopy, mid-storey and ground fuels. Trees to 10m average height.			

Photo ID:	2	**Plot no:**	1
Vegetation Classification or Exclusion Clause			
Class A - Forest			
Description			
Vegetation containing tree canopy, mid-storey and ground fuels. Trees to 10m average height.			

Photo ID:	3	**Plot no:**	2
Vegetation Classification or Exclusion Clause			
Class B - Woodland			
Description			
Scrub vegetation to 3m in height with eucalyptus trees throughout.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	4	**Plot no:**	2
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Scrub vegetation to 3m in height with eucalyptus trees throughout.			

Photo ID:	5	**Plot no:**	3
Vegetation Classification or Exclusion Clause			
Class C - Shrubland			
Description			
planted shrub garden semi-maintained			

Photo ID:	6	**Plot no:**	4
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Eucalypt trees to 10m in average height. maintained ground and mid-storey fuels.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	7	**Plot no:**	4
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Eucalypt trees to 10m in average height. maintained ground and mid-storey fuels.			

Photo ID:	8	**Plot no:**	5
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation			

Photo ID:	9	**Plot no:**	6
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation			

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Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index FDI 80 Table 2.4.3

Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below.

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class A - Forest	FLAT	87m	12.5
2	Class B- Woodland	FLAT	32m	12.5
3	Class C - Shrubland	FLAT	54m	12.5
4	Class B- Woodland	FLAT	59m	12.5
5	Excluded c2.2.3.2(f)	-	-	LOW
6	Excluded c2.2.3.2(f)	-	-	LOW

Table 1: BAL Analysis

Determined Bushfire Attack Level (BAL)

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2009 using the above analysis.

Determined Bushfire Attack Level	**BAL** - 12.5

Notes:
The determined BAL rating is BAL-12.5 due to all of the nearby vegetation.
Construction standards found in AS 3959 DO NOT need to be complied with as this is a class 6 building.

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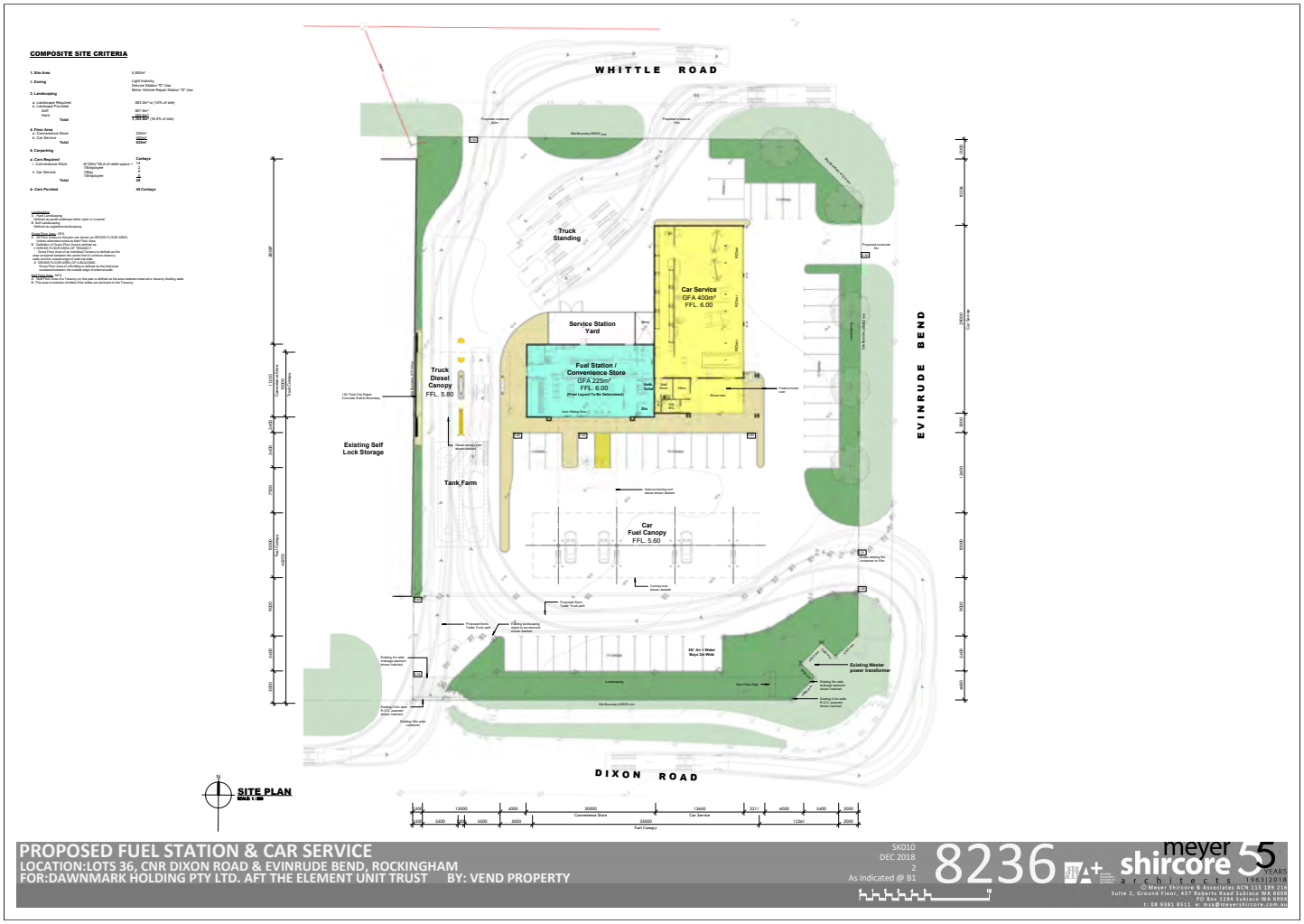
Appendix 2: Plans and Drawings

Plans and drawings relied on to determine the Bushfire Attack Level.



Bushfire Attack Level (BAL) Certificate

Determined in accordance with AS 3959-2009

This Certificate has been issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme. The certificate details the conclusions of the full Bushfire Attack Level Assessment Report (full report) prepared by the Accredited Practitioner.

Property Details and Description of Works

Address Details	**Unit no**	**Street no**	**Lot no**	**Street name / Plan Reference**	
		137	36	Dixon Road	
	Suburb East Rockingham			**State** WA	**Postcode** 6168
Local government area	City of Rockingham				
Main BCA class of the building	6	**Use(s) of the building**	Commercial/Retail		
Description of the building or works	Construction of new Fuel Station and Car Service				

Determination of Highest Bushfire Attack Level

AS 3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance	BAL
Method 1	Class B - Woodland	Flat	32m	12.5

BPAD Accredited Practitioner Details

Name Tim Briggs

Company Details Entire Fire Management

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2009 (Incorporating Amendments 1, 2 and 3).

I hereby declare that I am a BPAD accredited bushfire practitioner.

Accreditation No.	BPAD40353
Signature:	

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.

Section 4: Identification of Bushfire Hazard Issues

N/A

Section 5: Assessment Against the Bushfire Protection Criteria

The proposed plan for development at Lot 36 Dixon Road has been assessed against WAPC's Guidelines for Planning in Bushfire Prone Areas - Bushfire Protection Criteria. The table on the following pages assess each element of the criteria and indicates how compliance can be achieved for each.

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Bushfire protection criteria	Method of Compliance Acceptable solutions	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location	The proposed development is located sufficiently to be constructed within an area at BAL-29 or below.
Element 2: Siting and design	A2.1 Asset Protection Zone	All future gardens/plantings shall be in accordance with Appendix 1: APZ Standards.
Element 3: Vehicular access	A3.1 Two access routes.	Dixon Road provides access to multiple alternative locations.
	A3.2 Public road	All existing roads meet the minimum technical requirements set out in column 1 of Appendix 2: Vehicular access technical requirements.
	A3.3 Cul-de-sac (including a dead-end-road)	N/A
	A3.4 Battle-axe	N/A
	A3.5 Private driveway longer than 50 m A private driveway is to meet detailed requirements (refer to the Guidelines for detailed private driveway requirements).	N/A
	A3.6 Emergency access way	N/A
	A3.7 Fire service access routes (perimeter roads)	N/A
	A3.8 Firebreak width	N/A
Element 4: Water	A4.1 Reticulated areas	Reticulated street hydrants are installed at regular intervals on Dixon Rd, Evinrude Bend & Whittle Rd. in accordance with The Water Corporations No.63 Water Reticulation Standard
	A4.2 Non-reticulated areas	N/A
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A

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FIGURE 5: Spatial Representation of the Bushfire Management Strategies

Section 6: Responsibilities for Implementation & Management of the Bushfire Measures

DEVELOPER/SUBDIVIDER – PRIOR TO ISSUE OF CERTIFICATE OF TITLES FOR NEW LOTS	
No.	**Implementation action**
1	Landowner - Property owner shall maintain any future vegetation on the property to comply with the Asset Protection Zone standards provided in Appendix 1 of this BMP.
2	Notification is to be placed on title of the lot that the land is within a designated bushfire prone area and is subject to an existing Bushfire Management Plan.

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	**Management action**
1	Landowner - Property owner shall maintain vegetation on the properties to comply with the Asset Protection Zone standards provided in Appendix 1 of this BMP.
2	Landowner - Comply with the relevant local government annual firebreak notice issued under s33 of the *Bush Fires Act 1954.*

Appendices

A1: APZ – Asset Protection Zone Guidelines

A2: Vehicular Access Technical Documents

A3: City of Rockingham 2018/19 Fire Control Notice (supplied as a separate document).

A4: Bushfire Risk Assessment

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A1: APZ - Asset Protection Zone Guidelines

The siting and design of the strategic planning proposal, subdivision, or development application, including roads, paths, and landscaping, is appropriate to the level of bushfire threat that applies to the site. That it incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property, and infrastructure, including compliance with AS 3959-2009 if appropriate.

To achieve compliance with this Element the following acceptable solution must be met.

A2.1 Asset Protection Zone (APZ)

Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

- **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 output does not exceed 29KW/m² (BAL-29) in all circumstances.
- **Location:** the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in circumstances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity.
- **Management:** the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones'.

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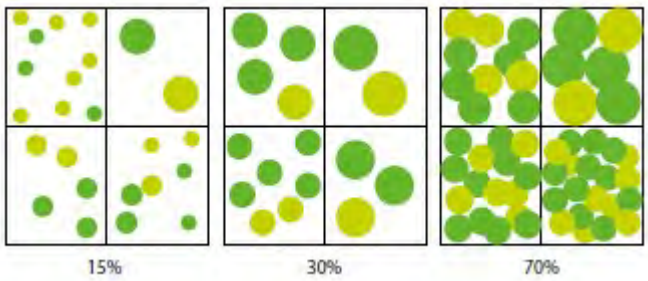
Design of Asset Protection Zone

The proportion of the APZ reflects the distance from the hazard to ensure adequate separation is achieved.

Standards for Asset Protection Zones

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, 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.



Tree Canopy Cover – Ranging from 15 to 70 percent at maturity

- **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.

Reference; WAPC Guidelines for Planning in Bushfire Prone Areas – V1.3

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A2: Vehicular Access Technical Requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	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 (m)	8.5	8.5	8.5	8.5	8.5
*Refer to E3.2 Public roads: Trafficable surface					

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Bushfire Risk Assessment

Prepared for Lot 36 Dixon Road, East Rockingham

Table of Contents

Entire Empire Pty Ltd | ABN: 63 468 728 651 | *www.entirefire.com.au* | *admin@entireempire.com.au* | (08) 9498 0056 | 6 Potts Road, Forrestdale WA 6112

1 Introduction

1.1 Project overview

Entire Fire Management was commissioned to prepare a Bushfire Risk Assessment to support a development application (DA) being prepared for the development of a service station located at Lot 36 (137) Dixon Road, East Rockingham (hereafter referred to as the subject site, **Appendix A, Figure 2**).

The proposed development will include construction of new retail store, service centre, canopies, fuel bowsers, underground fuel tanks, parking areas as depicted in **Appendix A, Figure 3**.

The proposed development will result in intensification of land use.

The subject site is partially within a designated bushfire prone area as per the *Western Australia State Map of Bushfire Prone Areas* (DFES 2018), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by Entire Fire Management Bushfire Consultant, Tim Briggs (FPAA BPAD Certified Practitioner No. BPAD 40353) with quality assurance undertaken by Bushfire Consultant Gavin Fancote.

1.2 Purpose and application of the plan

The primary purpose of this Bushfire Risk Assessment is to act as a technical supporting document to inform planning assessment in conjunction with the corresponding Bushfire Management Plan (BMP).

SPP 3.7 (Policy measure 6.6) requires development application for high-risk land uses (such as fuel stations) in areas between BAL-12.5 and BAL-29 to be accompanied by a risk management plan for any flammable on-site hazards. This Bushfire Risk Assessment prepared for the subject site identifies all new proposed structures within the subject site as being located within areas subject to a BAL rating of BAL-12.5.

The Building Code of Australia bushfire construction requirements only apply to residential buildings and associated structures. The Guidelines therefore require the planning process to focus on location and siting of high-risk land uses rather then the application of bushfire construction requirements.

Under the Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007 (the Regulations), the operator will also be required to complete a separate risk assessment that addresses risks other than bushfire for the proposed development. The Regulations also require operators to prepare an emergency plan for petrol stations. An emergency management should be developed for the subject site, which sets guidelines for the management of an emergency, disaster or major incident at the site. The emergency plan for the fuel station will reflect the site layout and bushfire risk post-construction.

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2 Potential bushfire scenarios

The BMP identifies and classifies the existing bushfire hazards within 150m of the subject site, based on existing vegetation, slope and separation distance to the vegetation.

Based on this information the potential bushfire scenarios that could affect the subject site have been assessed. The potential bushfire scenarios have been used to inform a bushfire risk assessment (refer to **Section 4**) and assist in development of appropriate bushfire mitigation responses (refer to **Section 5**).
The Following bushfire scenarios were identified and assessed:

1. Bushfire approaching the subject site from the south; and
2. Bushfire approaching the subject site from the east.

A description of each potential bushfire scenario is provided in the following subsections.

Bushfire scenarios have been selected based on the location of classified vegetation in relation to the subject site.

2.1 Scenario 1: Bushfire approaching the subject site from the south

A Bushfire approaching the subject site from the south is possible, however the separation distance is greater than 50 metres and is separated by Dixon Road acting as an effective buffer providing substantial area in which emergency services can restrain a bushfire on the southern side of Dixon Road.
A bushfire approaching from the south is likely to be fuelled by predominant south-westerly winds, however there is very little risk to the proposed development in the form of radiant heat from the fire, the risk lies in possible ember attack on the facility.

2.2 Scenario 2: Bushfire approaching the subject site from the east

A bushfire approaching the subject site from the east through the caravan park is possible. The scrub vegetation that is to the east of the caravan park is sufficient to host an intense bushfire, however the vegetation that is within the caravan park itself, whilst dominated with mature eucalypts is well maintained and bushfire intensity would diminish traveling in a westerly direction if and when it nears the proposed fuel station. There is little risk of radiant heat affecting the subject site, the probable risk would again be of ember attack fuelled by easterly winds. Evinrude Bend and Whittle Road also provide a suitable separation area for fire suppression activities to contain a fire before the subject site is impacted.

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3 Bushfire risk assessment methodology

Australian and New Zealand Standard *AS/NZS ISO 31000:2009 Risk Management-Principles and Guidelines* (SA & SNZ 2009) provides an internationally recognised approach to risk management. Methodology for this process is further described in *Risk Management Guidelines: Companion to AS/NSZ 4360/2004* (AS & SNZ 2004), which defines the risk assessment process as outlined in **Figure 1**.

AS/NZS ISO 31000:2009 is adopted by DFES, as documented in the agency's Bushfire Risk Management Framework (DFES 2015), to formalise and communicate the approach of managing bushfire risk across the department in the aim of leading to improved coordination and effectiveness of bushfire risk management processes.

From a bushfire management perspective, this methodology can be useful in determining:

1. The inherent bushfire risk (i.e. the initial level of risk prior to risk treatment and mitigation); and
2. The residual bushfire risk (i.e. the level of risk remaining following risk treatment and mitigation).

Inherent and residual bushfire risk can be determined for individual bushfire events on the basis of the following risk criteria, which is used to inform the likelihood and consequence of such events:

- Likelihood of ignition and bushfire occurrence takes into consideration the bushfire history of the area, risk of ignition, vegetation type, fuel age and load, slope under vegetation and predominant fire weather conditions; and
- Consequence or impact from bushfire on life, property and the environment takes into consideration the degree and severity of potential bushfire scenarios, location of bushfire hazard areas, assets present in the area and the level of management and suppression response available.

The two bushfire scenarios identified in **Section 2** have been subject to bushfire risk assessment through determination of likelihood and consequence in accordance with the rating tables outlined in **Table 1** and **Table 2**[1]. This process determines the inherent bushfire risk of the event and informs the level of mitigation or management response required to reduce the risk to an acceptable level. The risk assessment matrix used to determine inherent and residual bushfire risk is outlined in **Table 3**.

Table 1: Likelihood rating system

Likelihood rating	Description
Almost Certain	Consequence expected to occur in most circumstances; may occur once every year or more.
Likely	Consequence will probably occur in most circumstances; may occur once every five years.
Possible	Consequence might occur at some time; may occur once every twenty years.
Unlikely	Consequence is not expected to occur; may occur once every one-hundred years.
Rare	Consequence may only occur in exceptional circumstances; may only occur one every five-hundred or more years.

[1] the determined consequence rating is the most likely outcome, not the worst case.

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Table 2: Consequence rating system

Consequence rating	Description
Catastrophic	A large number of severe injuries, widespread damage and displacement of the community, significant impact on the environment
Major	Extensive number of injuries requiring hospitalisation, significant damage and impact on the community, longer term impacts on the environment
Moderate	Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment
Minor	Small number of injuries but no fatalities, some damage and disruption but no lasting effects
Insignificant	No injuries or fatalities, little damage or disruption

Table 3: Risk assessment matrix

	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	High	High	Extreme	Extreme	Extreme
Likely	Medium	High	High	Extreme	Extreme
Possible	Low	Medium	High	Extreme	Extreme
Unlikely	Low	Low	Medium	High	Extreme
Rare	Low	Low	Medium	High	High
Risk Level	**Risk Response**				
Low	Acceptable Risk. Application of standard management measures will ensure risk level remains low and risk should be eliminated or reduced as time permits.				
Medium	Potentially unacceptable risk. Development of site-specific management measures may be required to lower the risk level and risk should be reduced as soon as reasonably practicable.				
High	Potentially unacceptable risk. Development of additional site-specific management measures will be required to lower the risk level and requires urgent action as soon sa possible.				
Extreme	Unacceptable risk. Additional site-specific mitigation will be required to lower the risk level and an immediate mitigation response is required.				

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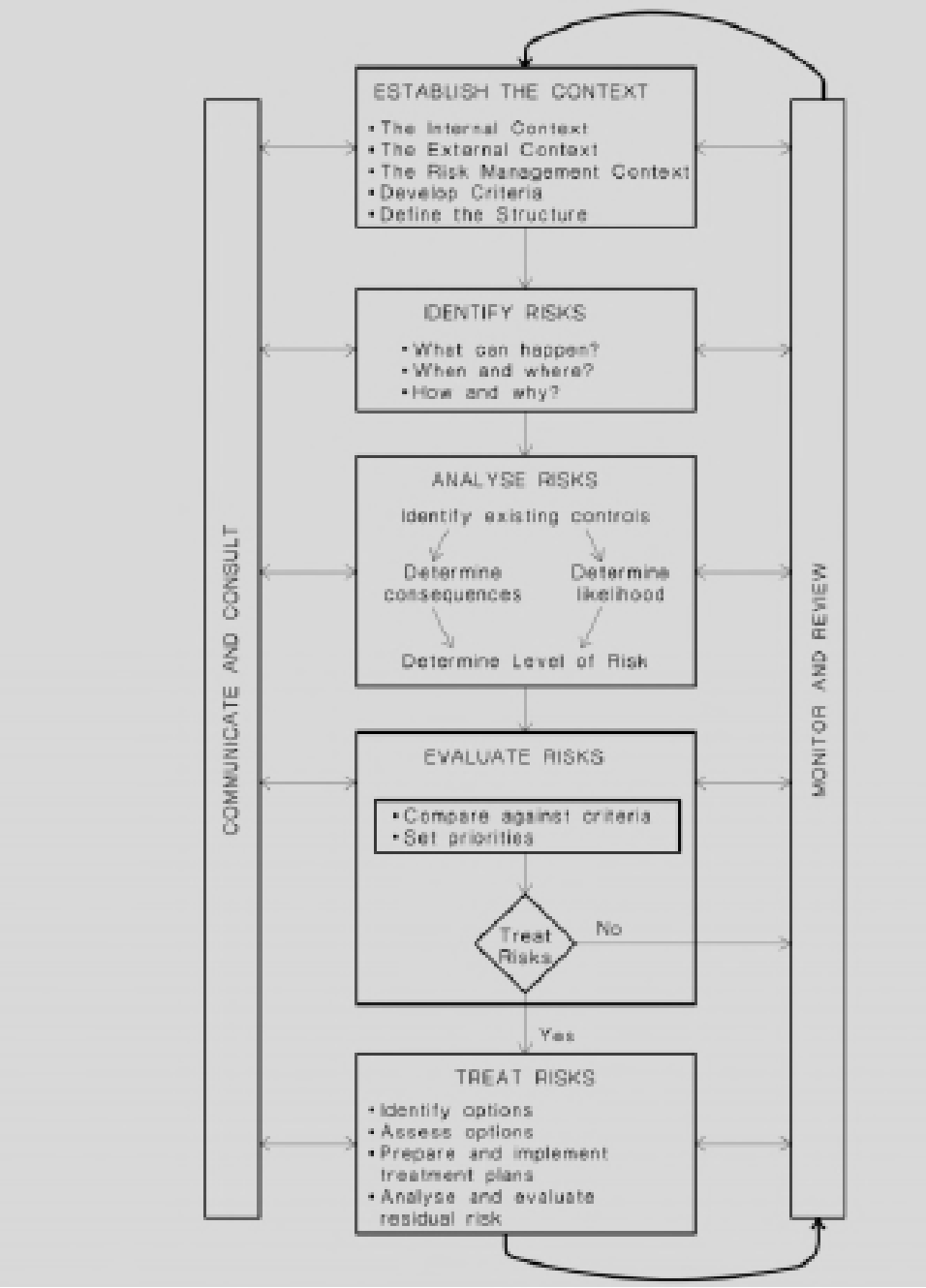

Figure1: Risk assessment process as per AS/NSZ ISO 31000:2009

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4 Bushfire risk assessment

4.1 Risk context

Risk is being assessed to inform bushfire mitigation for the subject site for the protection of life and property within and adjacent to the site. The risk assessment adopts a broad area and supports a tenure blind approach to ensure wider risk impacts and adjoining lands are captured to suitably address potential risk.

4.2 Risk identification

Bushfire risk is identified in the potential bushfire scenarios outlined in **Section 2**, which indicate the potential bushfire events that could impact life and property within the subject site and adjacent land. These two scenarios are considered to cover the majority of bushfire events that could occur in order to develop suitable bushfire risk mitigation.

4.3 Risk analysis and evaluation

Risk analysis and evaluation for each of the two potential bushfire scenarios is provided in **Table 4**, which specifies the likelihood and consequence of each scenario with and without management measures to determine inherent and residual risks.

Due to the storage and handling of flammable materials within the subject site, the potential consequence of a bushfire entering the site would be greater than if flammable materials were not present.

Entire Fire Management is of the view that following implementation of management measures, the risk of ignition will not be reduced due to the ongoing level of public access and presence of off-site classified vegetation and on-site flammable goods. Therefore, bushfire risk management measures are likely to reduce the level of consequence resulting from the bushfire event, rather than the likelihood of the event occurring. For example, an evacuation plan will reduce the potential impacts on life; thus reducing the level of consequence received from the bushfire event, but the likelihood of the event occurring will not be reduced.

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Table 4: Bushfire risk assessment

Bushfire scenario	Comments	Likelihood	Consequence	Inherent risk	Mitigation	Likelihood	Consequence	Residual Risk
1. Bushfire approaching subject site from the south	Extended fire run through vegetation bound by major roads, includes firebreaks. Separation provides minimal radiant heat output with greatest risk being ember attack fanned by a strong southerly wind. Consequence is not expected to occur; may occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment based on analysis of assets.	Possible	Moderate	High	Implementation of management measures identified in **Section 5**	Possible	Minor	Medium
2. Bushfire approaching subject site from the east	Limited fire run through scrub fuels before entering lightly fuelled woodland. Firebreaks and roads to limit rate of spread, numerous points of access for fire suppression, greatest level of impact would occur under adverse fire weather conditions with an easterly wind. Consequence is not expected to occur; may occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment based on analysis of assets.	Possible	Moderate	High		Possible	Minor	Medium

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5 Bushfire management measures

Results of the bushfire risk assessment indicate that all bushfire scenarios pose an equal level of inherent risk to life and property.

Implementation of the management measures provided in the following subsections prioritise protection of life and property and will reduce bushfire risk (residual risk) within the subject site.

5.1 Fire protection and detection equipment

The proposed fuel station should be fitted with fire protection and detection equipment as required by the Department of Mines and Petroleum (DMP) Storage and handling of dangerous goods – code of practice (2nd edition).

5.2 Evacuation plan and assembly points

A site-specific bushfire evacuation plan has been developed in accordance with the guidelines for active response to a bushfire threat. The plan identifies varying levels of bushfire emergencies and provides suitable actions to evacuate the premises if necessary.

5.3 Personnel training

All occupants working at the subject site must be trained in responding to and managing all emergency incidents in accordance with the emergency management plan for the site. A record of training must be kept up to date and debrief sessions held after all training exercises or incidents.

An evacuation exercise must be carried out at least annually. All occupants working on the site are required to participate.

5.4 Bushfire suppression

The Rockingham Fire Station (Career Station) is located on Dixon Road approximately 1.1 km west of the subject site and is expected to provide a best-case emergency suppression response time of 5 minutes in the event of an emergency.

5.5 Landscaping

All landscaping areas within the subject site will be maintained in accordance with Standards for Asset Protection Zones (WAPC 2017).

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5.6 Additional measures

Manifest

Dangerous goods sites must maintain a current manifest and a dangerous goods site plan, to allow an appropriate response by Emergency responders in the event of an emergency, such as a fire.

The manifest and dangerous goods site plan for dangerous goods that will be stored and handled at the service station will need to be developed in accordance with the relevant Dangerous Goods Safety Guidance Note (DMP 2014).

The emergency management plan refers to critical information for emergency response being located in the HAZMAT/HAZCHEM emergency boxes which will be located at the front of the building and inside the retail building. This information includes the Emergency Plan, Dangerous Goods Manifest, Register of Dangerous Goods and Hazardous Materials, Safety Data Sheets for bulk products kept on site and dangerous goods site layout plan.

Ignition sources

Operators of dangerous goods sites are required to manage potential ignition sources, such as hot works and electrical equipment, within any on-site hazardous areas.

Placard and marking

A placard, readily visual for Emergency responders and providing visual warnings of the hazards associated with storage of fuel, will be required at the subject site in accordance with DMP Storage and handling of dangerous materials Code of Practice (DMP 2010).

Signage and notices will also be required in accordance with AS 1940-2004 The storage and handling of flammable and combustible liquids (AS 1940-2004; SA 2004) and any relevant state guidance.

6 Conclusion

Entire Fire Management expects that through implementation of the management measures outlined in this Bushfire Risk Assessment, inherent bushfire risk to life and property within and surrounding the subject site can be reduced.

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References

Department of Fire and Emergency Services (DFES). 2015. Guidelines for Preparing a Bushfire Risk Management Plan, Department of Fire and Emergency Services, Western Australia.

Department of Fire and Emergency Services (DFES). 2018. Map of Bush Fire Prone Areas, [Online], Government of Western Australia, available from: *https://maps.slip.wa.gov.au/landgate/bushfireprone/*

Department of Mines and Petroleum (DMP). 2010. Storage and handling of dangerous goods - code of practice (2nd edition), Resources Safety, Department of Mines and Petroleum, Western Australia.

Department of Mines and Petroleum (DMP). 2014. Dangerous Goods Safety Guidance Note, Manifest and site plan requirements for dangerous goods sites, Resources Safety, Department of Mines and Petroleum, Western Australia.

Entire Fire Management 2019. Bushfire Management Plan, Development of Service Station – Lot 36 (137) Dixon Road, East Rockingham.

Standards Australia and Standards New Zealand (SA & SNZ). 2004. Risk Management Guidelines: Companion to AS/NZS 4360:2004, HB 436:2004, Standards Australia/Standards New Zealand, Sydney/Wellington.

Standards Australia and Standards New Zealand (SA & SNZ). 2009 Australian Standard/New Zealand Standard AS/NZS ISO 31000:2009 Risk management – Principles and guidelines, Standards Australia/Standards New Zealand, Sydney/Wellington.

Standards Australia (SA). 2004. Australian Standard AS 1940–2004 The storage and handling of flammable and combustible liquids, Standards Australia, Sydney.

Standards Australia (SA). 2009. Australian Standard AS 3959–2009 Construction of Buildings in Bushfire-prone Areas, Standards Australia, Sydney.

Standards Australia (SA). 2010. Australian Standard 3745-2010 Planning for emergencies in facilities, Standards Australia, 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.

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Appendix A: Proposed Development

Figure 2: Subject title

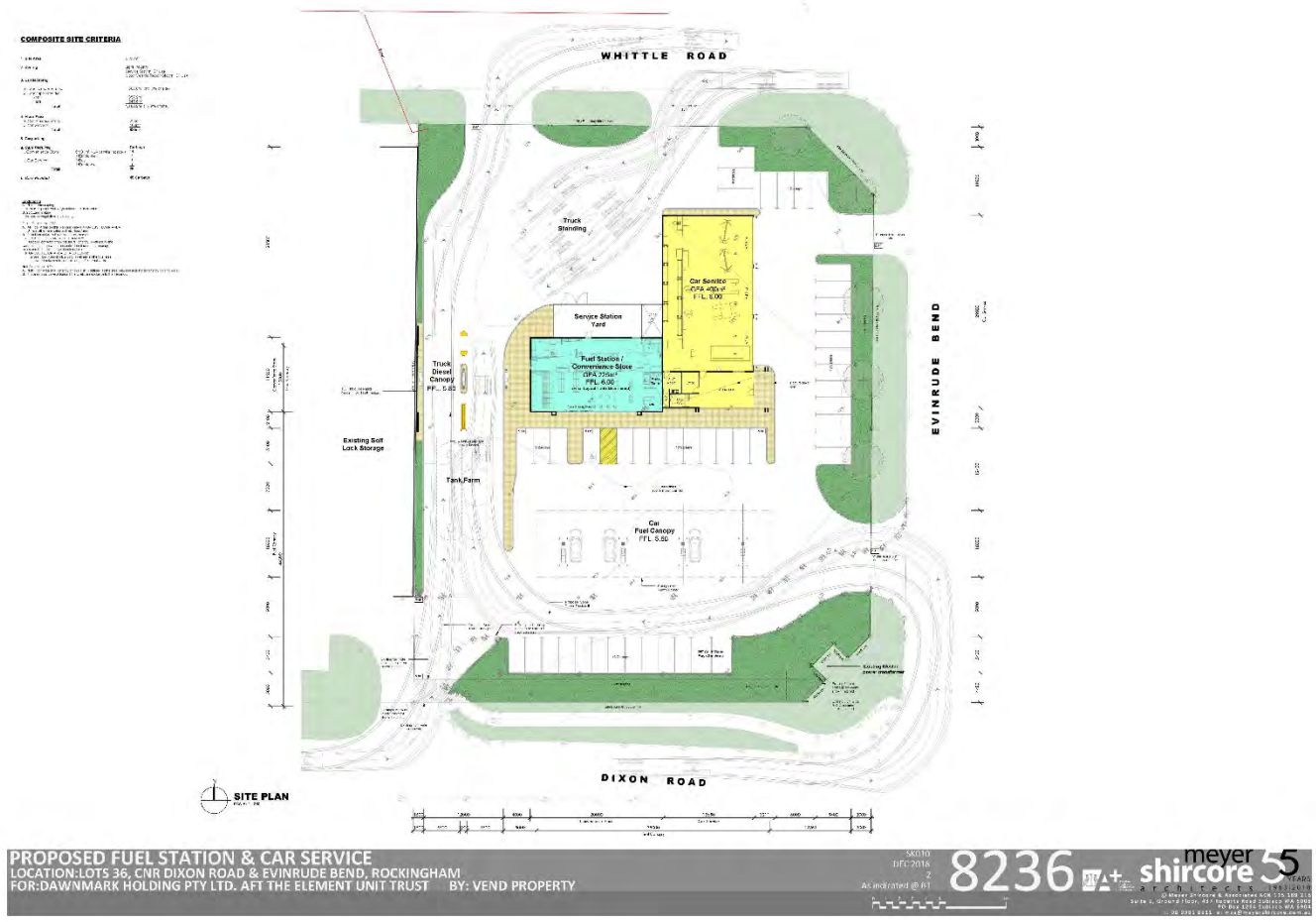


Figure 3: Proposed development

Appendix 8
MRS Clause 42 Certificate

Western Australian Planning Commission

Enquiries: Trevor Servaas (08) 6551 9110
Our Ref: 42 / 58545736
Your Ref: 5992

PLANNING SOLUTIONS (AUST) PTY LTD
LVL 1, 251 ST GEORGES TCE
PERTH
6000 WA

Dear Sir/Madam

CERTIFICATE UNDER CLAUSE 42 OF THE METROPOLITAN REGION SCHEME ISSUED BY THE WESTERN AUSTRALIAN PLANNING COMMISSION

In reply to your request, please find enclosed
Certificate Number: 58545736

It is advised that the enclosed Certificate has been prepared to conform with the current Statutory requirements (as at the date of signature) of the Metropolitan Region Scheme

Yours faithfully,

Ms Sam Fagan
Secretary
Western Australian Planning Commission

29 January 2019

Metropolitan Region Scheme

Form 5

Scheme Certificate

In accordance with clause 42 of the
Metropolitan Region Scheme the following information relates to:

Certificate: 58545736

Receipt: None

Date: 29/01/2019

Location:

Certificate of Title: Vol: 2731 Folio: 580

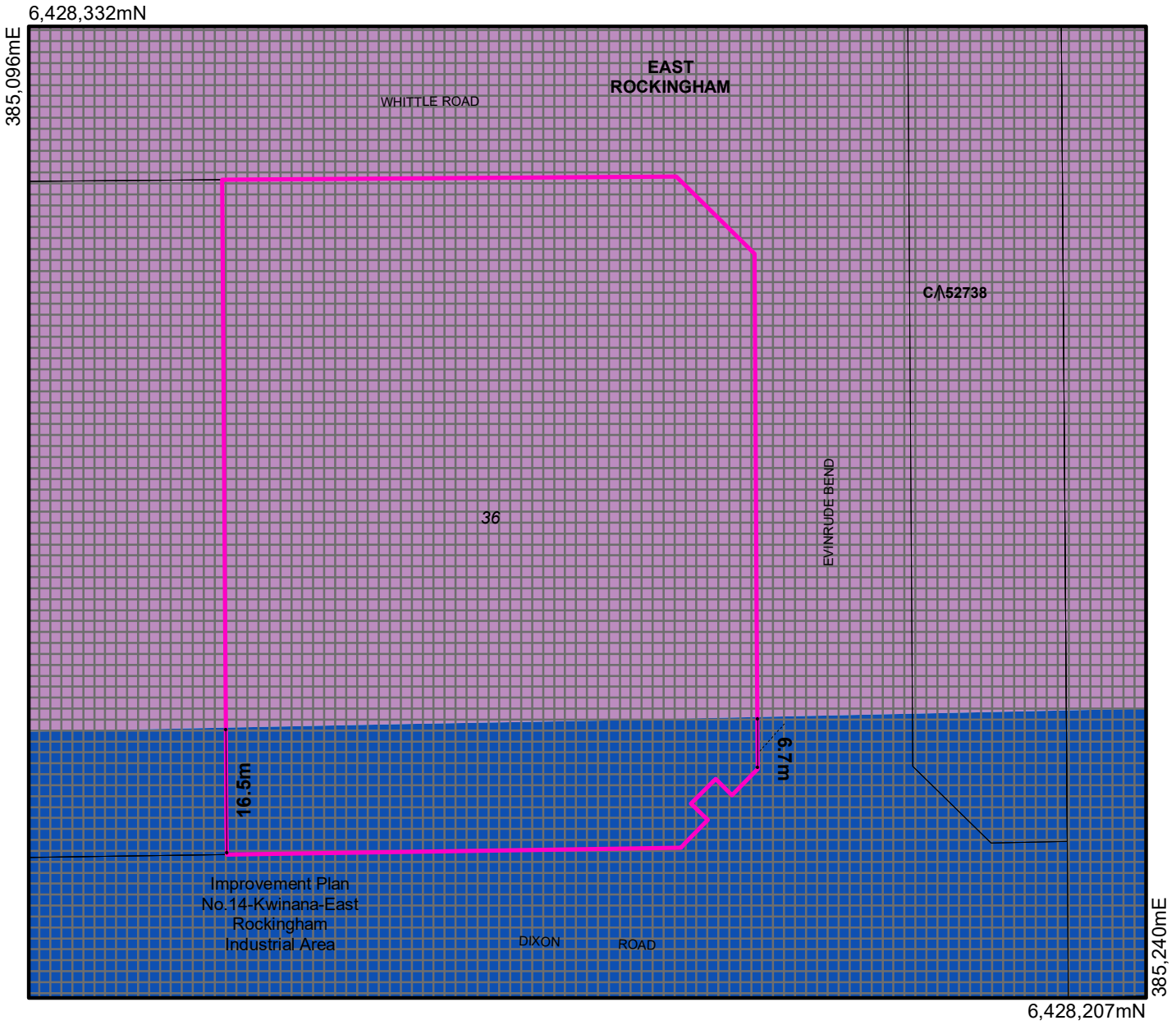
Deposited Plan: 65366

Legend for reserved land and zones

Improvement plan

Other regional roads

Industrial



This certificate relates only to the provisions of the:

Metropolitan Region Scheme

and does not claim to indicate the land use allocation under any local government provision.

Produced by Data Analytics,
Department of Planning, Lands and Heritage, Perth WA.

Base information supplied by:
Western Australian Land Information Authority SLIP 1096-2018-1

N

0 8.5 17 25.5 34
metres

Coordinates based on MGA Zone 50 (GDA 94)
All dimensions are in metres
Subject to survey

Ms Sam Fagan
Secretary
Western Australian Planning Commission

METROPOLITAN REGION TOWN PLANNING SCHEME ACT 1959 (AS AMENDED)

Improvement Plan No. 14

Kwinana-East Rockingham Industrial Area

File 819/2/26/2 V2.

NOTICE is hereby given that the State Planning Commission acting pursuant to section 37A of the Metropolitan Region Town Planning Scheme Act 1959 (as amended) has certified and recommended that for the purpose of advancing the planning development and use of the land depicted in the First Schedule hereunder, that land should be made the subject of an Improvement Plan.

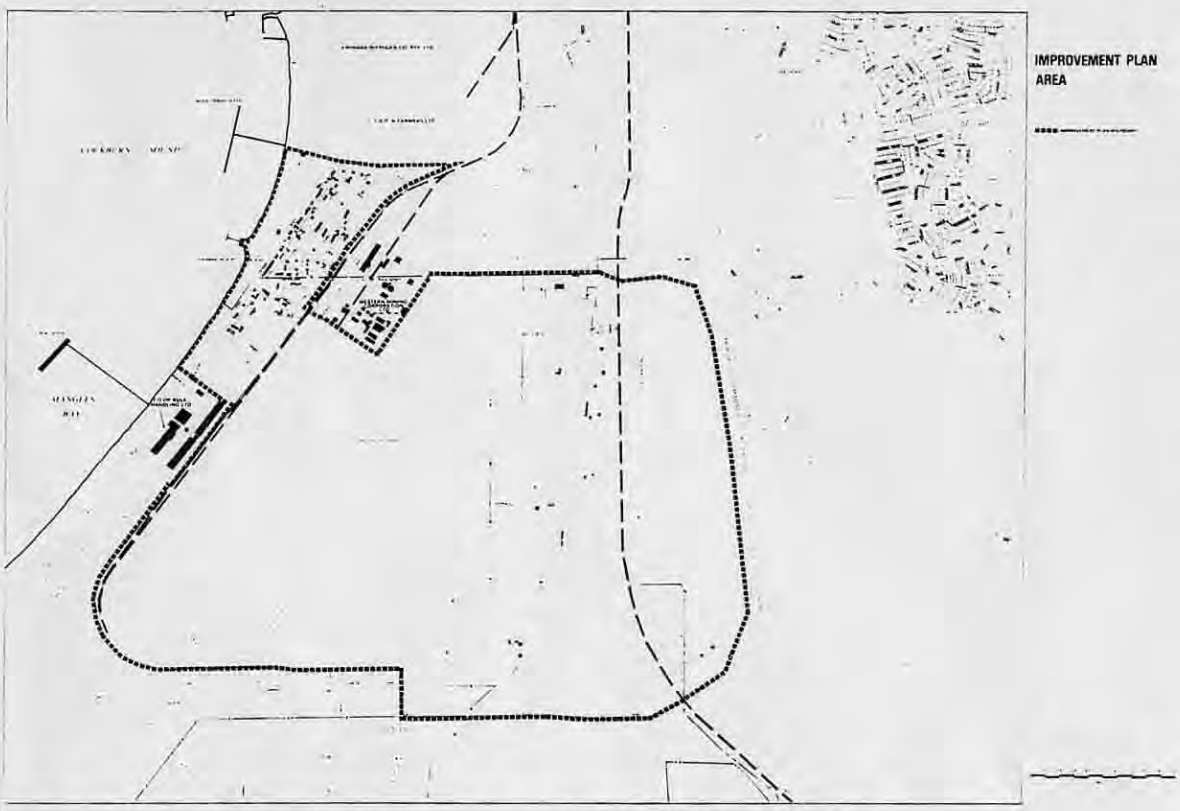
Such recommendation as signed and sealed by the State Planning Commission on 12 February 1988 has been accepted by the Minister for Planning and approved by His Excellency the Governor and will be known as Improvement Plan No. 14.

Improvement Plan No. 14 is effective as of 29 March 1988 when approved by His Excellency the Governor.

Copies of the Commission certificate together with supporting plans and texts for Improvement Plan No. 14 are available for public inspection during the normal business hours from Monday to Friday inclusive of each week, except on public holidays, at the places mentioned in the Second Schedule hereunder.

GORDON G. SMITH,
Secretary,
State Planning Commission.

First Schedule



KWINANA INDUSTRIAL AREA **IMPROVEMENT PLAN No.14**

Second Schedule

Public Inspection (during normal business hours)—

1. Office of the State Planning Commission,
   8th Floor, Oakleigh Building,
   22 St. George's Terrace,
   Perth 6000.
2. Office of the Municipality of the Town of Kwinana,
   Gilmore Avenue,
   Kwinana 6167.
3. Office of the Municipality of the Shire of Rockingham,
   Council Avenue,
   Rockingham 6168.
4. J. S. Battye Library,
   Alexander Library Building,
   Cultural Centre,
   Francis Street,
   Northbridge 6000.

PS Ref: 5992
City's Ref: DD020.2019.59.1 – D19/67945

20 May 2019

City of Rockingham
PO Box 2142
ROCKINGHAM WA 6967

Attention: David Banovic, Senior Planning Officer

Dear Sir,

LOT 36 DIXON ROAD, ROCKINGHAM
RESPONSE TO REQUEST FOR INFORMATION
PROPOSED SERVICE STATION DEVELOPMENT – DAP FORM 1 APPLICATION

Planning Solutions acts on behalf of Dawnmark Holdings Pty Ltd, the proponent of the proposed service station development on Lot 36 Dixon Road, Rockingham (subject site).

The following submission addresses the various matters identified by the City of Rockingham (City) in their request for further information (RFI) letter, received via email on 2 May 2019. This submission should be read in conjunction with the amended development plans, revised Traffic Impact Assessment (TIA), revised Bushfire Management Plan (BMP) and additional acoustic analysis and information attached to this letter.

1 Amended development plans and information

The following modifications have been made to the proposed development plans:

1. Increased width of car parking bays from 2.5m to 2.6m and relocation of universal access bay to align with retail store entry. A wide pram ramp has also been provided to ensure universal access.
2. Realignment of car parking adjacent to the retail building to allow for the shared access bay to be in front of the entrance.
3. Increase the width of the Dixon Road and Whittle Road crossovers from 10m to 15m and the Evinrude Crossover from 10m to 12.5m to allow for uninterrupted access for 19m vehicles to the subject site.
4. Realignment of the verge / kerb in the south west portion of the site, requiring the removal of two existing car parking bays.
5. Modified service area, depicting individual bin stores.
6. Removal of easternmost crossover to Whittle Road.
7. Removal of four car parking bays abutting the Whittle Road landscaping strip.
8. Increased separation of entry / exit signs to provide a 1m setback to the Evinrude Bend southern crossover.
9. Updated landscaping to include existing trees, lawn and shrubs.

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Planning Solutions (Aust) Pty Ltd

The modifications to the plans respond to the comments received from the City's RFI. Refer to Attachment 1 for a copy of the revised development plans, Attachment 2 for a copy of the further acoustic analysis and information, Attachment 3 for a copy of the revised BMP and Attachment 4 for a copy of the revised TIA.

2 Response to City's comments

Further information and justification is provided in Table 1 below, in support of the updated development plans, revised TIA, and in response to the City's RFI on 2 May 2019.

Table 1 **– Response to City's requested** amendments and RFI (via email on 02 May 2019)

#	**City's comment**	Applicant response
	Health	
1	*There are concerns in regards to the content of the report and it's suitability in demonstrating that compliance with the Environmental Protection (Noise) Regulations 1997 can be met.*	Please refer to Attachment 2 for a copy of the Herring Storer Acoustics response. It has been demonstrated that the noise received at the Holiday Village will be well below [9dB (A)] the required regulatory criteria and is compliant with the Regulations.
2	*Noise contour mapping – no noise mapping has been provided to demonstrate how noise propagation may effect residences in the caravan park.*	Please refer to the noise contour plots contained within Attachment 2 demonstrating satisfactory noise emissions.
3	*Worst case scenario conditions have not been assessed. Report looks at each noise source individually (stating this is required under the regulations?). Advice in regards to the cumulative noise that could be expected from regular operation of the premises under worst case conditions, is required.*	The different noise emissions will not occur at exactly the same time and as such will not be cumulative. The total maximum noise level would also comply with the assigned L_{Amax} night period noise level. Therefore, the total maximum noise level is entirely acceptable for the car service centre operating during the day. A thorough response is provided to this point within Herring Storer Acoustics response within Attachment 2.
4	*All mechanical plant noise associated with the motor repair workshop has not been assessed, only noise from an impact wrench. With the proposal suggesting six car service bays, there may be a number of vehicles being worked on at one time – utilising different noise producing equipment. The report does not demonstrate how compliance with the Noise Regulations can be achieved for these operating conditions.*	An assessment against the other / general noise emissions from the vehicle service centre is provided in Attachment 2.
5	*Report does not provide justification for not including annoying characteristics for some noises (eg. no impulsiveness included for impact wrench) and no specific information has been given in regards to meteorological conditions and whether worst case scenario conditions have been modelled.*	With regards to the impact wrench, measurements undertaken and the difference between the L_{Apeak} and $L_{Amax(Slow)}$ outside the workshop is around 12 dB and therefore would not be considered impulsive. The calculations for the acoustic assessment were carried out using the EPA weather conditions as stated in EPA Draft Guidance for Assessment if Environmental Factors No.8 – Environmental Noise. This also included worst case weather conditions designated by the EPA/DWER. The proposed service station facility is suitably located within an existing and growing industrial area. It is a highly appropriate use for this location and the noises that are associated with the use. The reporting and modelling by Herring Storer Acoustics demonstrates that noise emissions will be appropriate in consideration of the surrounding land uses.

6	*No justification has been provided for classifying the caravan park grounds as commercial premises and increasing the Influencing Factor that has been applied to the assigned noise levels. Caravan parks are considered noise sensitive premises under the Regulations.*	It is noted that although the residences within the Holiday Village would be considered as noise sensitive, for the determination of the Influencing Factor it is appropriately classified as a commercial enterprise (due to the operators receiving payment for persons to stay within the Holiday Village). As such, under the Regulations, where a premise has mixed uses, the use of land that results in the highest influencing factor is to be used in the determination of the influencing factor.
7	*The City is unsure if the proposed bin store area will sufficiently store waste generated from the proposed development, particularly waste generated through the motor repair operations. Consequently, a Waste Management Plan is required to be provided upfront.*	Waste from the car service facility will collected and stored in a separate bin to the petrol station component of the development. Please refer to Appendix 1 for a copy of the revised development plans depicting the separate car service bin store adjacent to the proposed rainwater tank. BP are experience service station operators with standardised operations which include waste management. BP and the future car service centre will utilise private contractors to remove waste and recycling material. The size of the bin compound is standard and will allow for the storage of waste and recycling bins. The service yards will also be easily accessible at the rear of the building to allow for collection. As the operator of the car service centre is still unknown. Therefore, a condition of development approval would be suitable mechanism to respond to this matter. The waste management plan can then be prepared prior to building permit or occupancy to ensure the City is satisfied with the waste management procedures.
8	*Development has not indicated any wash down bay for the motor repair operations or how wastewater from the motor repairs operations will be controlled.*	No wash down bay or facilities are proposed as part of this development, as they are not required for the car service operation.
9	*Odour from the motor repair operations (oils, chemicals, solvents) has not been assessed.*	The proposed development is suitably located within an industrial area and will provide for minor mechanical repairs and servicing of motor vehicles only. Any potential odour will be controlled by extractor fans as part of best practice mechanical repair facilities. Further details on internal capture of odour can be dealt with at the detailed design stage.
	Traffic	
10	*Providing 5 access points in this instance is considered excessive and is considered to increase traffic safety risk (e.g additional conflict points, confusion regarding traffic flow, etc). Please remove the eastern access of Whittle Road.*	Please refer to Attachment 1 for a copy of the revised development plans depicting the removal of the easternmost crossover to Whittle Road.
11	*AS2890.1 requires a minimum car parking bay dimension of 2.6m (width) by 5.4m (length) for a Service Station land use (i.e. high turnover). Manual measurements from the site plan suggests a car parking bay width of 2.5m is proposed and it is noted that some justification has been provided by traffic consultant which Traffic Engineer disagrees. Please amend the car parking design to provide at least a 2.6m wide car parking bays.*	The car parking bays have been widened by 0.1m (from 2.5m to 2.6m), as shown on the revised development plans in Attachment 1.

12	*Please provide at least a 1.0m horizontal clearance between the face of kerb and the edge of the proposed entry and exit sign.*	The revised development plans in Attachment 1 provide a 1m horizontal clearance between the entry / exit signs and the kerb.
13	*A queue analysis for the service station is required to be undertaken (taking into account random arrivals) to ensure sufficient queueing space within the site can be provided.*	An onsite queuing analysis has been undertaken by Shawmac within their TIA. Using a queuing theory model (M/M/s), an expected queue length will be two vehicles during peak hours. The subject site has sufficient capacity to accommodate this peak period queue length. Refer to the updated TIA contained within Attachment 4 for the detailed information.
14	*A kerb ramp is required between the shared area of the universal bay and the footpath in front of the convenience store. The kerb ramp shall not be located within the shared area and therefore likely to influence the building envelope extent of the convenience store.* *The kerb ramp and upper landing is to be designed in accordance with 1428.1. Manual measurement of the site plan suggests that there is insufficient footpath width to accommodate for the kerb ramp.*	The shared access bay has been relocated in front of the retail building entrance, with a kerb ramp added for ease of access.
City's Traffic Engineer Comments regarding TIS		
15	*Please amend the first bullet point within Section 2.3 to "WAPC Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments".*	The TIA has been updated to amend Section 2.3.
16	*Section 3.6 mentioned "The development site is mainly a traffic attractor. The main generator/attractors expected to influence traffic flows to and from City of Rockingham." which appears to be incomplete. Please amend Section 3.6 accordingly.*	The TIA has been updated to amend Section 3.6.
17	*Please amend the sentence describing Dixon Road to the following "Dixon Road operates with a 70km/hr speed limit approximately 100m east of McCamey Avenue and 60km/hr towards Rockingham Townsite".*	The TIA has been updated to amend Section 4.1.
18	*MRWA's Traffic Map provides the following traffic volume data which suggests that the traffic volumes obtained from MRWA SCATS may have been incorrectly calculated;* • *Dixon Road (west of Mandurah Road) – 21,077 vpd (2014/15 average)* • *Mandurah Road (south of Dixon Road) – 21,706 vpd (2017/18 average)* • *Mandurah Road (south of Office Road) – 10,877 vpd (2017/18 average)* • *Gilmore Avenue (east of Mandurah Road) – 16,833 vpd (2013/14 average)* *It appears that the SCATS data in Appendix B of the TIS suggests a traffic volume of 20,889 vpd for Dixon Road (west of Mandurah Road). Please check the calculations and amend the TIS accordingly.*	The traffic volumes and analysis has been updated within the TIA.

19	*The site plan suggests that there are in total 10 fueling positions (eight for standard vehicles and two for the heavy vehicles). Please amend the analysis within Section 5 accordingly to include the fuel positions for the heavy vehicles. It is noted that this is unlikely to change the outcome of the intersection analysis.*	The fuelling positions have been updated within the TIA. The trip generation analysis has been undertaken on the light vehicles, which accounts for eight standard refuelling positions. Refer to the updated TIA contained within Attachment 4 for further information.
20	*WAPC's Transport Impact Assessment Guidelines Volume 4 – Individual Developments recommends the following required assessment years;* • *The year of full opening of the development; and* • *10 years after full opening.* *Please provide the intersection analysis for the above scenarios.*	The development has been assessed based on the year development commences operation, which is assumed as 2021. The 10 years post development is therefore calculated as 10 years after full opening.
21	*Austroads' Guide to Traffic Management Part 3: Traffic Studies and Analysis recommends a practical degrees of saturation of 0.8 for unsignalised intersections. Please amend Section 5.6.1 accordingly.*	The TIA has been updated to include the practical degrees of saturation of 0.8.
22	*Section 6.2 mentioned "It is therefore recommended to install line markings to restrict truck movement along the west boundary of the site to northbound only and a stop line for the eastbound movement along the common thoroughfare." This contradicts with the provided swept path analysis where trucks are able to travel southbound along the western boundary.* *Please provide clarifications. LDI is of the view that restricting truck movements to northbound only would be the preferred option because providing a convex mirror would not help unfamiliar motorists driving within the site.*	The Dixon Road, Whittle Road and Evinrude Bend crossover have been modified to allow for uninterrupted access of 19m vehicles throughout the site. The increase in the size of these crossovers ensures larger vehicles can navigate the site and enter the road way without encumbering other vehicles. These modifications allow the 19m long vehicles to access the truck diesel canopy from a northerly and southerly direction. It is proposed to restrict vehicles to navigate the truck diesel area with the western bowser to be used by north bound trucks and eastern bowser to be used by south bound trucks only. These modifications will provide a safer movement of vehicles through the site and will resolve the previous sight line issues. Refer to Attachment 4 for a copy of the TIA which provides the
23	*The parking requirements for the "Car Service Centre" has not been included in Section 7.1. Please update Section 7.1 accordingly.*	There is no parking provision for car service centre. The proposed use falls under the service station definition and has been correctly referenced accordingly within the original development application report. In accordance with the definition of Service Station under the City's Local Planning Scheme No. 2, a service station incorporates the retail sale of fuel and the vehicle servicing component.
24	*The swept path analysis for the 19m semi-trailer suggests that it will significantly encroach into the opposing traffic lane when entering or exiting the access point of Dixon Road which is considered to increase traffic safety risk and therefore not acceptable. Please amend the route for the 19m semi-trailer such it is only to enter from Evinrude Bend.*	The proposed crossovers to Dixon Road, Evinrude Bend and Whittle Road have been widened to allow for uninterrupted access of 19m vehicles. The widening of the Dixon Road crossover allows 19m semi-trailer trucks to safely enter the site without any encroachment into the opposing traffic lane. It is proposed to restrict trucks to north bound on the western bowser and then south bound to the eastern bowser. In conjunction with the width of the crossovers this will resolve the vehicles safety concerns previously identified by the City. Please refer to Attachment 4 for the updated swept path analysis to demonstrate the movement of 19m long vehicles through the site and analysis on vehicles movements.

	Landscaping	
25	*The proposed landscape plan has failed to identify the three (3) existing Grass Trees along Dixon Road, one (1) Grass Tree on Evinrude Bend and a cluster of mature trees and two (2) Grass Trees located on the corner of Dixon Road and Evinrude Bend. All existing vegetation within these verge areas is to be identified to be retained.*	The revised landscaping plan now identifies the three existing Grass Trees along Dixon Road, one Grass Tree on Evinrude Bend and a cluster of mature trees and two Grass Trees located on the corner of Dixon Road and Evinrude Bend. All existing vegetation within these verge areas has been identified and will be retained.
26 *27*	*It is recommended that the landscape plan is amended to include the following:* *Further details to be provided regarding proposed irrigation strategy, (Previously connected to City System which has now been terminated). Irrigation should be efficient and the use of a water wise specialist is recommended. Use of alternative sources for irrigation, such as a rainwater tank is also encouraged.*	The irrigation of the proposed landscaping will be confirmed as part of the detailed designs for the proposed development. This information can be provided to the City as a condition of development approval. The proposed landscaping plan demonstrates the use of waterwise planting and the variety of species that are consistent with the City's requirements. The areas of turf will be irrigated accordingly, with specific irrigation and watering details to be provided at the detailed design stage following development approval. The initial development plans and revised development plans propose a water tank.
28	*Amount of proposed mulch should be reduced and limited to beneath existing vegetation.*	The mulched areas have been reduced and limited to areas within the site boundary. The proposed mulch offers an attractive and water wise landscaping option. The Coral Vine's will grow and cover the mulched area as they reach maturity, with additional groundcover provided.
29	*Mulch and planting within the verge areas is to be substituted for irrigated turf. This will result in a higher landscape amenity which is similar in form to existing developments along Dixon Road.*	Please refer to the landscaping plan depicting irrigated turf within the verge areas.
Additional information		
43	*For the purpose of car parking provision please ensure staff numbers are consistent through the Planning and Shawmac reports.*	The staff numbers are confirmed to be a maximum of 9 for the site any one time. Please disregard any discrepancies in the initial reporting.
44	*The City's records suggest that there are 14 existing bays along the southern boundary of the subject site, whilst the provided plans illustrate 13 existing bays.*	14 car bays currently exist on the subject site within the Dixon Road frontage. 2 bays are proposed to be removed to accommodate the widening of the Dixon Road crossover. A sufficient provision of parking remains as part of this development which is in excessive of the City's car parking requirements.
45	*Provide further justification for the provision of Two Pylon Signs or alternatively amend the plans in accordance with Pylon Sign requirements of Planning Policy 3.3.1 – Control of Advertisements.*	Two pylon signs should be supported for the proposed development for the following reasons: • The proposed development incorporates two separate tenancies. The BP tenancy has its own individual pylon sign which is consistent with their pylon signs developed across Australia. The vehicles servicing component to the development is a separate entity and won't be able to be incorporated into the BP pylon sign. • The subject site has three large road frontages. The proposed signs front Dixon Road and Evinrude Bend and have appropriate separation to ensure there is no clutter and proliferation of signage.

		• The car service component is setback back behind the BP canopy, with little frontage to the main Dixon Road. The inclusion of the second pylon sign will ensure exposure for this tenancy without causing an impact on the industrial area. • The additional pylon sign will allow customers to the car service to identify the site early and then navigate into the property safely. Without this signage, customers may identify the store late and this may impact the vehicle safety. For the reasons outlined above, it is considered the second pylon sign is justified for the proposed development and warrants the City's support accordingly.

3 Response to DWER comments

Further information and justification is provided in Table 2 below, in support of the proposed development and in response to Department of Water Environmental Regulation (DWER) comments received on 2 May 2019.

Table 2 – Response to DWER comments (via email on 02 May 2019)

Department of Water and Environmental Regulation Comments - Stormwater Management		
30	*The planning report has not included any conceptual designs for the management of stormwater within and around the service station and associated infrastructure. The stormwater management plan for the entire development area should demonstrate how and where the small, minor and major rainfall events will be managed and include the following:*	The detailed stormwater plans will be prepared as part of the detailed designs for the site. A SPEL Puraceptor is proposed for the site to manage contaminants from the service station. The Puraceptor captures and treats stormwater runoff within the forecourt area (light and heavy vehicle canopy) before it travels into the sites stormwater system. A detailed stormwater management plan can be prepared as a condition of development approval.
31	• *Stormwater runoff be fully contained onsite for small and minor storm events (1 and 0.2 Exceedance per Year runoff). Required storage for each rainfall event, basin sizing and design should be detailed.*	This information can be provided at the detailed design stage and can be detailed in the stormwater management plan as a condition of development approval.
32	• *The first 15 mm of stormwater runoff (1 Exceedance per Year runoff) to undergo water quality treatment via bio-retention.*	
33	• *Measures to prevent contaminated stormwater runoff mixing with other stormwater runoff from impervious areas and how the SPEL Puraceptor is integrated into the overall stormwater management system.*	
34	• *Permitted outflow of stormwater runoff from the site.*	

Emergency Response Plan		
35	*In accordance with DWER's Water Quality Protection Note No.10 (WQPN 10) - 'Contaminant spills – emergency response (February 2006)', an effective Emergency Response Plan is to be prepared as part of the development approval process. WQPN 10 provides guidance on developing and implementing an effective emergency response plan.*	Noted, an emergency response plan for contaminant spills can be provided prior to occupation. This level of information is required to inform the dangerous goods license process which is undertaken prior to the service station commencing operation.
Underground fuel tanks		
36	*In accordance with DWER's WQPN No. 62 – 'Tanks for underground chemical storage', tank systems should not be located in contact with the watertable (unless protected against buoyancy forces and corrosion). If tanks are in contact with the groundwater all tanks and pipe work should be constructed of corrosion-resistant materials that conform to Australian Standards such as reinforced plastic or metal construction with corrosion-resistant coating and cathodic protection.*	The design particulars of the underground storage tanks can be provided at the detailed design stage. Modern day fuel storage tanks are state of the art and are double walled and electronically monitored. The tanks will be appropriately located, constructed and maintained as part of best practice service station design and operation.
37	*All new or upgraded tanks and their pipe work (excluding any gas venting and tank fill lines that are normally dry) should have double-walled construction, with an interstitial leak-monitoring space. This is particularly important when located close to sensitive water resources or where the tank may come into contact with the watertable.*	
38	*All underground tank systems should have provision for leak monitoring.*	

4 Response to DFES comments

Further information and justification is provided in Table 3 below, in support of the proposed development and in response to Department of Fire and Emergency Services (DFES) comments received on 2 May 2019.

Table 3 **–** Response to DFES comments (via email on 02 May 2019)

Department of Fire and Emergency Services		
39	*The road verges on Evinrude and Dixon Road within Plot 5 have been excluded. Evidence to support these exclusions as managed to low threat in accordance with AS3959 is required. An enforceable mechanism is required to provide certainty that the proposed management measures can be achieved in perpetuity and that they are enforceable.*	The road verges are the responsibility of the adjacent landowner to maintain in accordance with the local Fire Control Notice and City of Rockingham Activities in Thoroughfares and Public Places and Trading Local Law 2001.
40	*The BAL Assessment within the BMP has not considered the location of the fuel canopy. Figure 1 shows a truck and car fuel canopy which appear to adjoin the fuel station convenience store. The BAL ratings should be calculated from the edge of the fuel canopy.*	The revised BAL rating has been calculated from the edge of the fuel canopy and includes the fuel canopy as an attached structure. Please refer to Attachment 3 for a copy of the revised Bushfire Management Plan.

41	*The BAL ratings cannot be validated, as the BAL assessment has excluded the fuel canopy.*	The BAL rating of 19 is valid and is considered acceptable for the land use.
42	*The development design has not demonstrated compliance to Element 1: Location and Element 2: Siting and Design.*	BAL 19 has been established for the subject site, corresponding to a limited scale of bushfire risk emanating from the non-vegetated area surrounding the development site, the low threat vegetation to the east of the subject site and the Bush Forever reserve south of Dixon Road. As a result, the bushfire risk of the proposed development is manageable through standard building code management measures, as detailed within sections 3 and 5 of AS 3959-2009. The development site proposes four separate vehicle access and/or egress points to the public road network. The development site has three street frontages and provides for multiple internal movement paths, including perimeter access for fire vehicle movements. The subject site is located within an industrial precinct and will contain a water mains connection.

5 Conclusion

The amended plans, updated supporting reports and responses contained within this letter address the City's comments received via email correspondence on 2 May 2019. We respectfully request the City proceed to finalise its assessment and favourable recommendation of the application to the Development Assessment Panel.

Should you have any queries or require further clarification in regard to the above matter please do not hesitate to contact the undersigned.

Yours sincerely,

JOSH WATSON
SENIOR PLANNER

190520 5992 RFI Response

ATTACHMENT 1

REVISED DEVELOPMENT PLANS

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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MAY 2019
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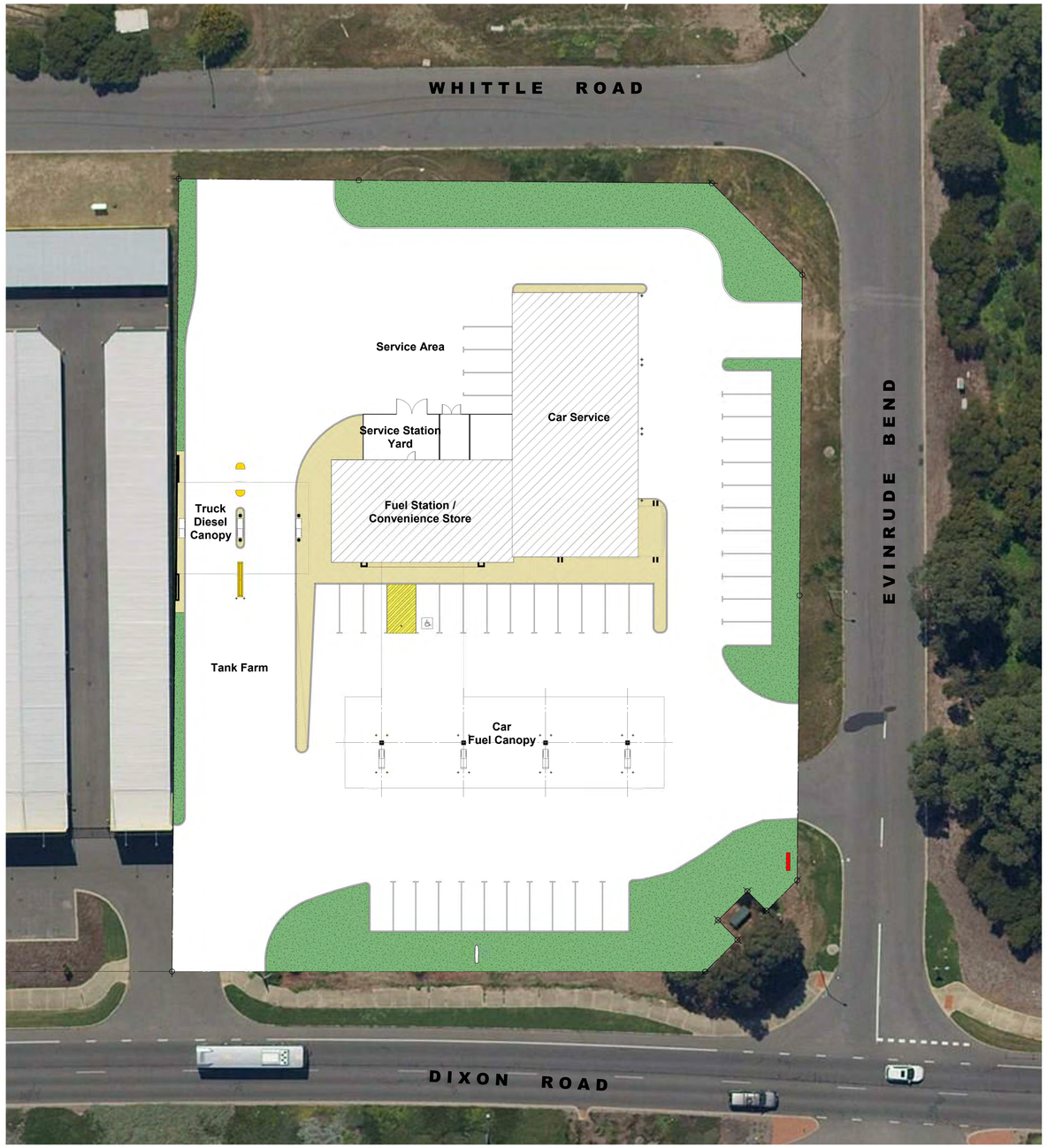

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DEVELOPED AERIAL DIAGRAM

SCALE:1 : 250

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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COMPOSITE SITE CRITERIA

1. Site Area 5,830m²

2. Zoning
Light Industry
Service Station "D" Use
Motor Vehicle Repair Station "D" Use

3. Landscaping

a. Landscape Required	583.0m² or (10% of site)
b. Landcape Provided	
Soft	873.4m²
Hard	230.1m²
Total	**1,103.5m²** (10.9% of site)

4. Floor Area

a. Convenience Store	225m²
b. Car Service	400m²
Total	**625m²**

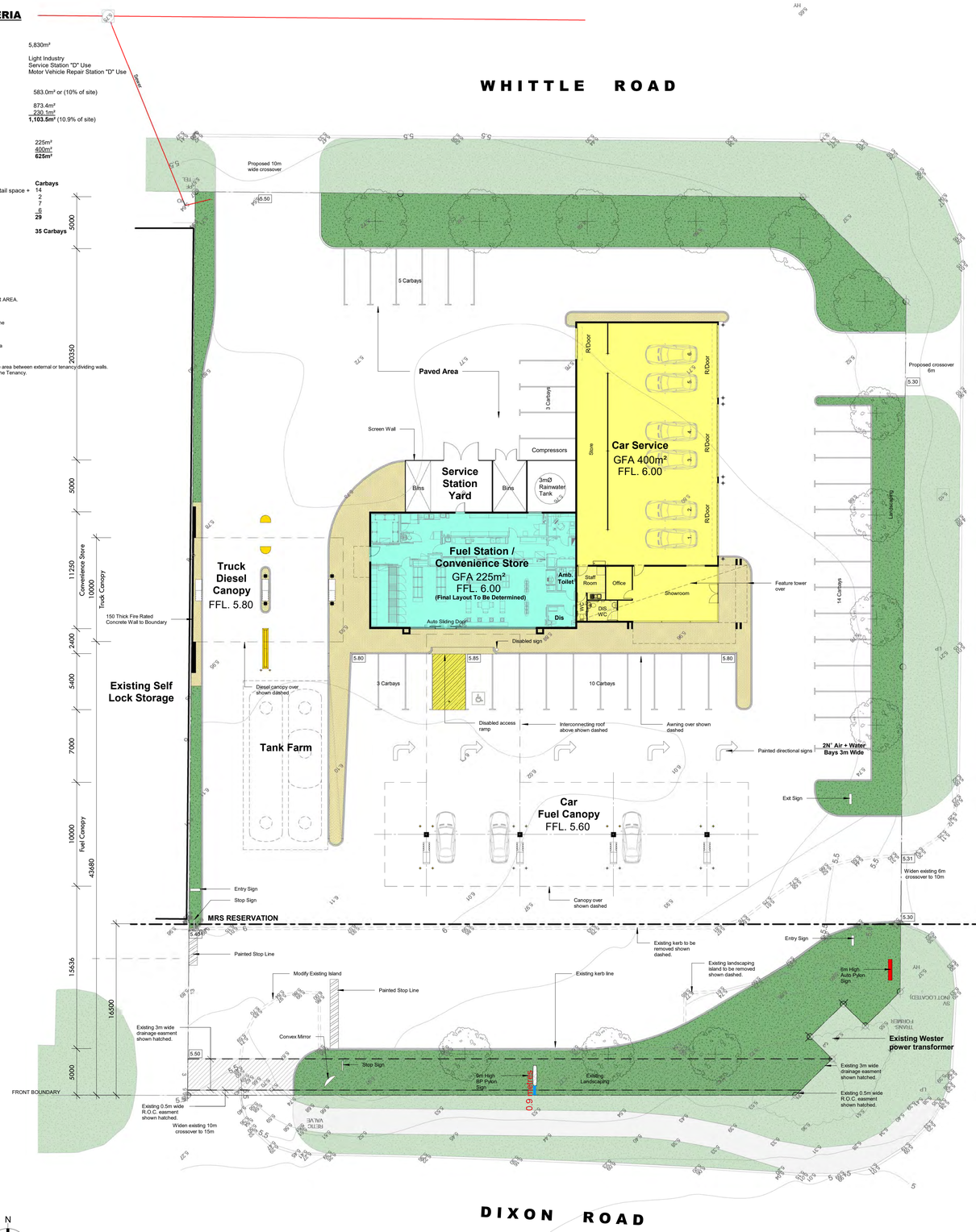
5. Carparking

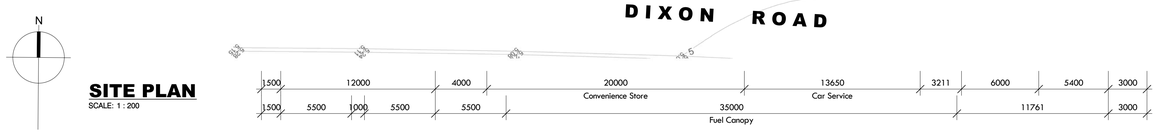
a. Cars Required		**Carbays**
i. Convenience Store	6/100m² NLA of retail space + 1/Employee	14 2
ii. Car Service	1/Service Bay 1/Employee	7 6
Total		**29**
b. Cars Povided		**35 Carbays**

Landscaping
A. Hard Landscaping
Defined as paved walkways either open or covered.
B. Soft Landscaping
Defined as vegetative landscaping.

Gross Floor Area : GFA
A. All Floor Areas on this plan are shown as GROSS FLOOR AREA.
Unless otherwise noted as Nett Floor Area.
B. Definition of Gross Floor Area is defined as:
i/ GROSS FLOOR AREA OF TENANCY
Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside edge of external walls.
ii/ GROSS FLOOR AREA OF A BUILDING
Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls

Nett Floor Area : NFA
A. Nett Floor Area of a Tenancy on this plan is defined as the area between external or tenancy dividing walls.
B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.





SITE PLAN
SCALE: 1 : 200

EXISTING SITE SURVEY
SCALE: 1 : 200

PROPOSED FUEL STATION & CAR SERVICE
LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM
FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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As indicated @ B1

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Total	**1,114.3m²** (19.1% of site)

4. Floor Area

a. Convenience Store	225m²
b. Car Service	400m²
Total	**625m²**

5. Carparking

a. Cars Required		**Carbays**
i. Convenience Store	6/100m² NLA of retail space +	14
	1/Employee	2
ii. Car Service	1/Service Bay	7
	1/Employee	6
Total		**29**
b. Cars Povided		**39 Carbays**

Landscaping
A. Hard Landscaping
Defined as paved walkways either open or covered.
B. Soft Landscaping
Defined as vegetative landscaping.

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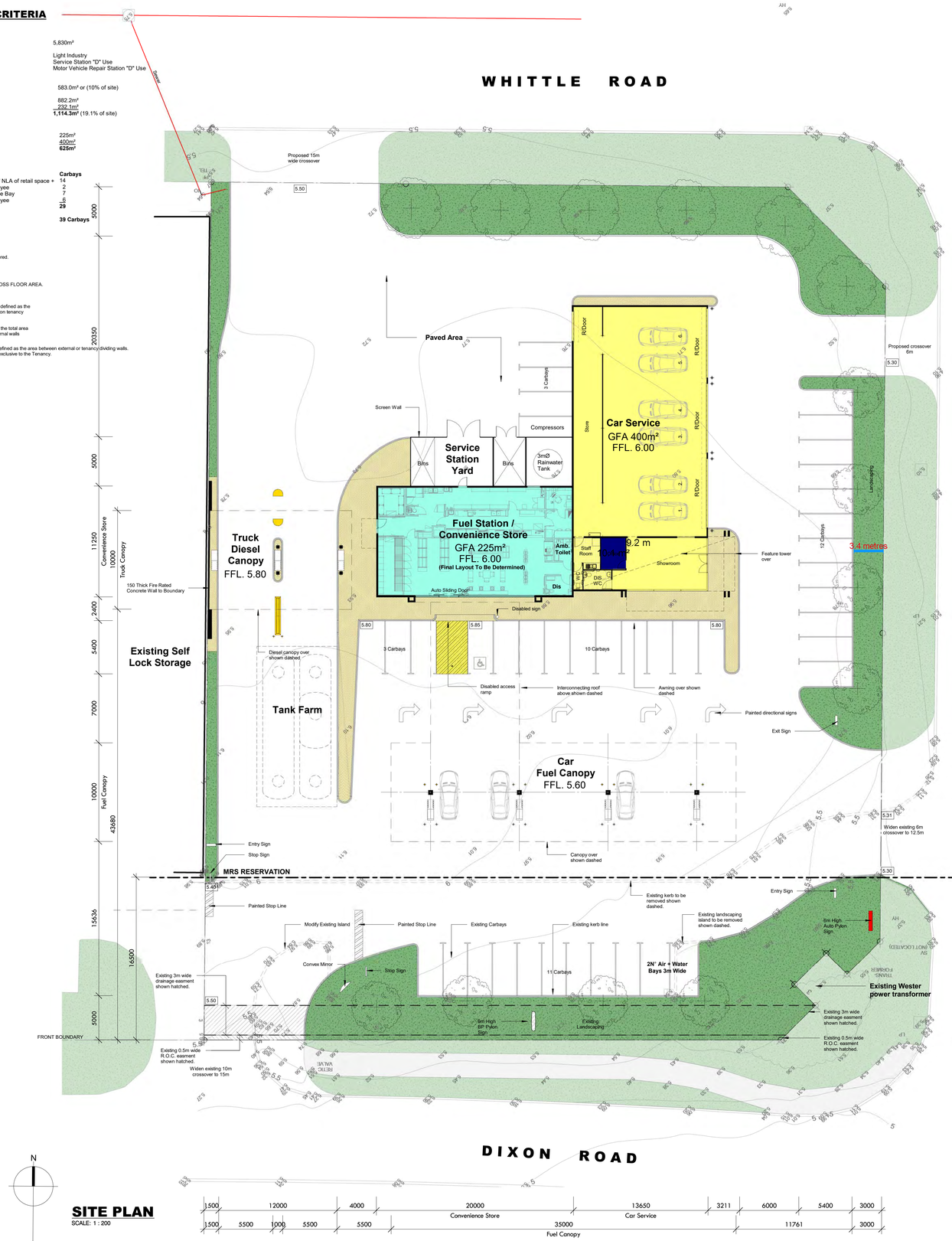

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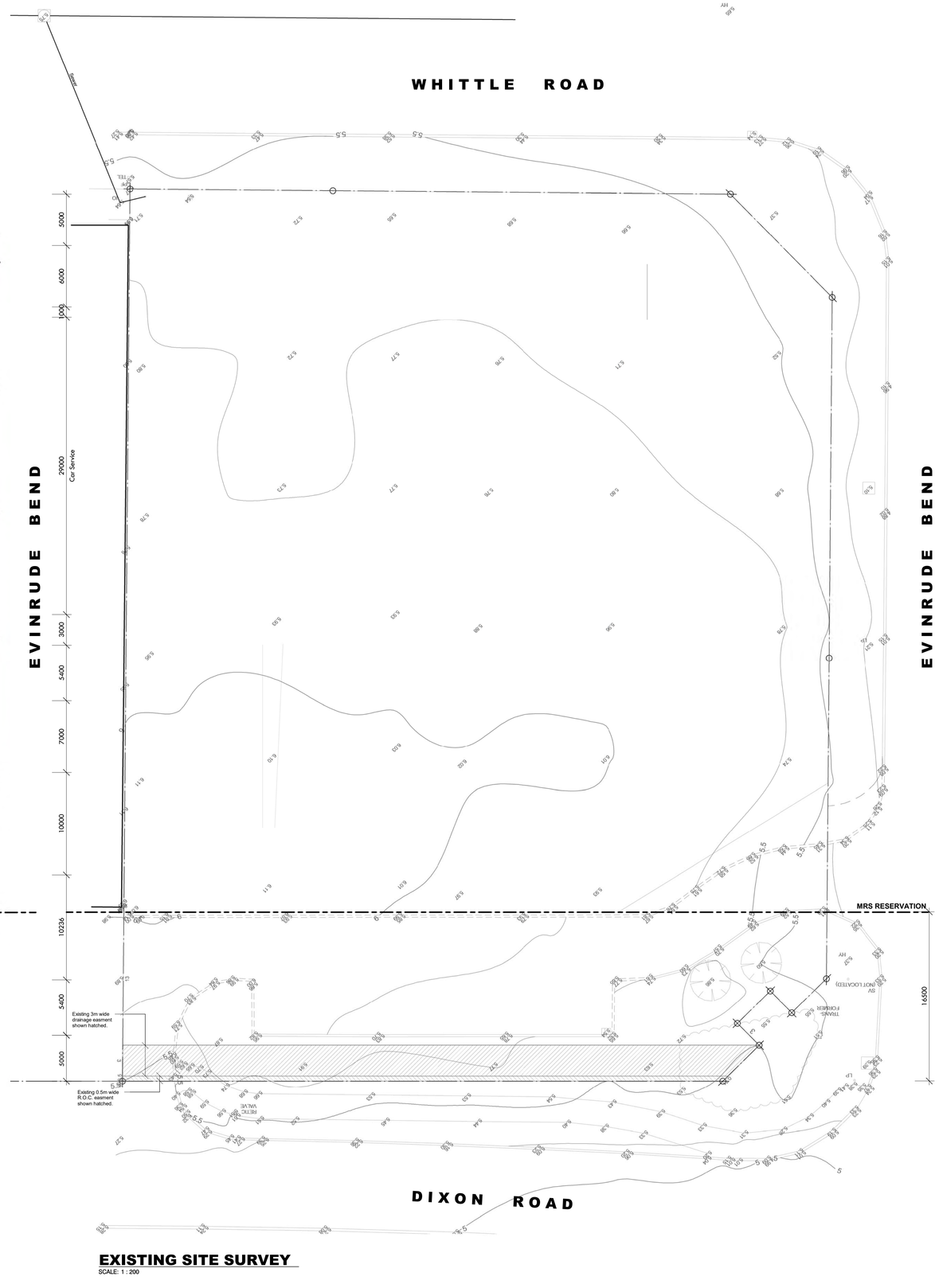
SITE PLAN
SCALE: 1 : 200



EXISTING SITE SURVEY
SCALE: 1 : 200

PROPOSED FUEL STATION & CAR SERVICE
LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM
FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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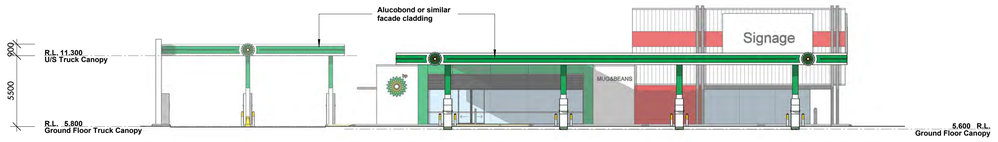
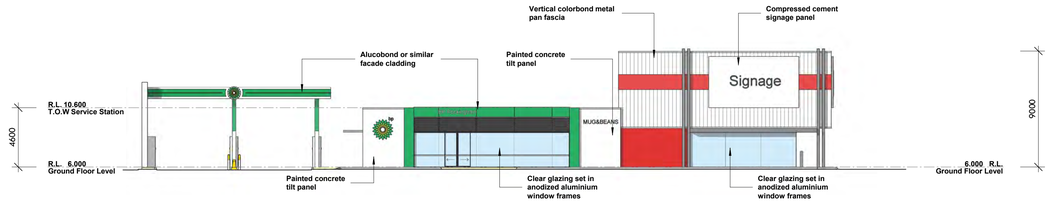


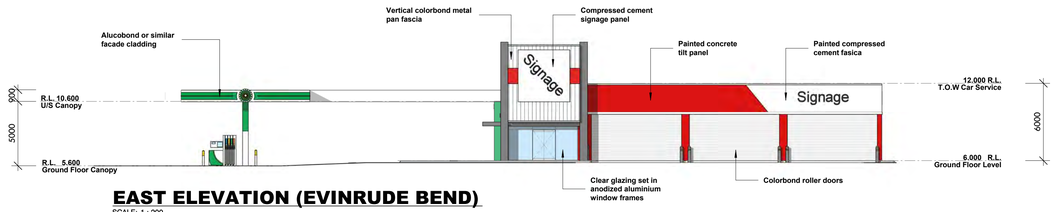
SOUTH ELEVATION (DIXON ROAD) WITH FUEL CANOPY

SCALE: 1 : 200



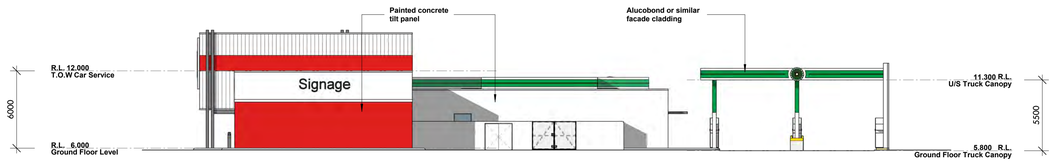
SOUTH ELEVATION (DIXON ROAD) WITHOUT FUEL CANOPY

SCALE: 1 : 200



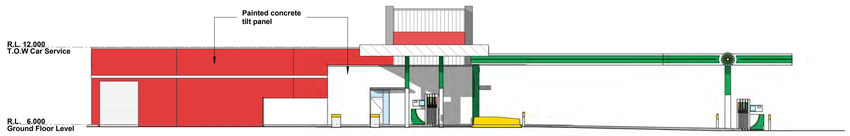
EAST ELEVATION (EVINRUDE BEND)

SCALE: 1 : 200



NORTH ELEVATION (WHITTLE ROAD)

SCALE: 1 : 200



WEST ELEVATION WITHOUT BOUNDARY WALL

SCALE: 1 : 200

WEST ELEVATION WITH BOUNDARY WALL

SCALE: 1 : 200

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

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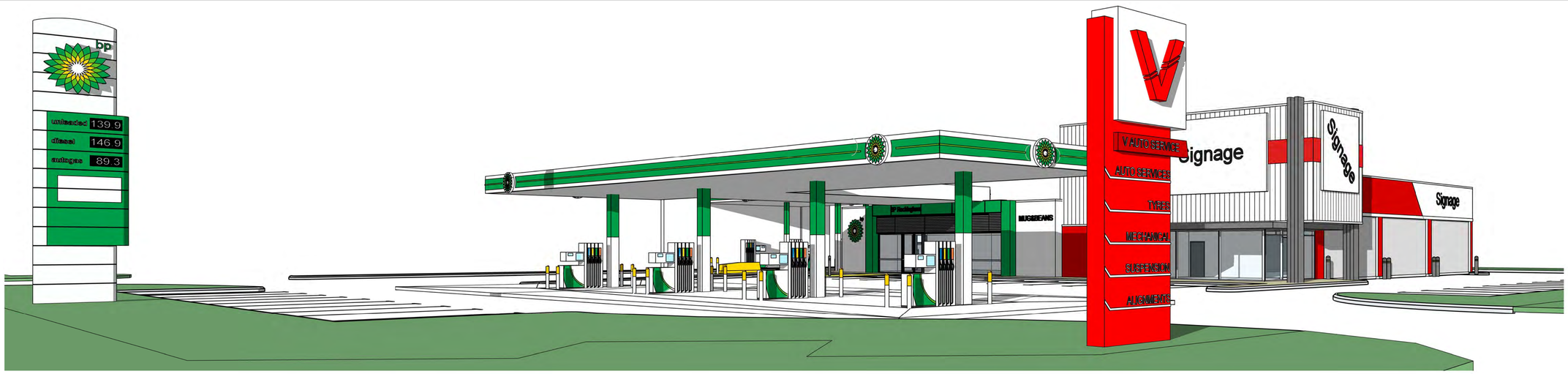
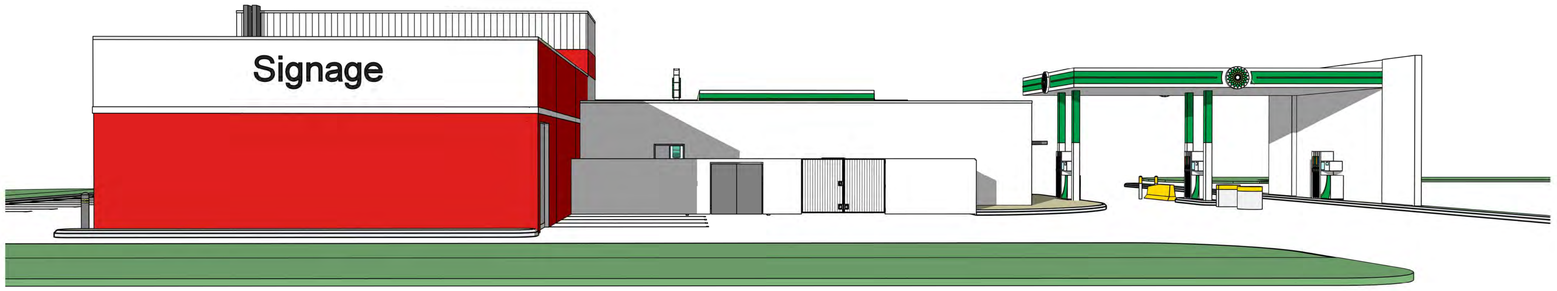
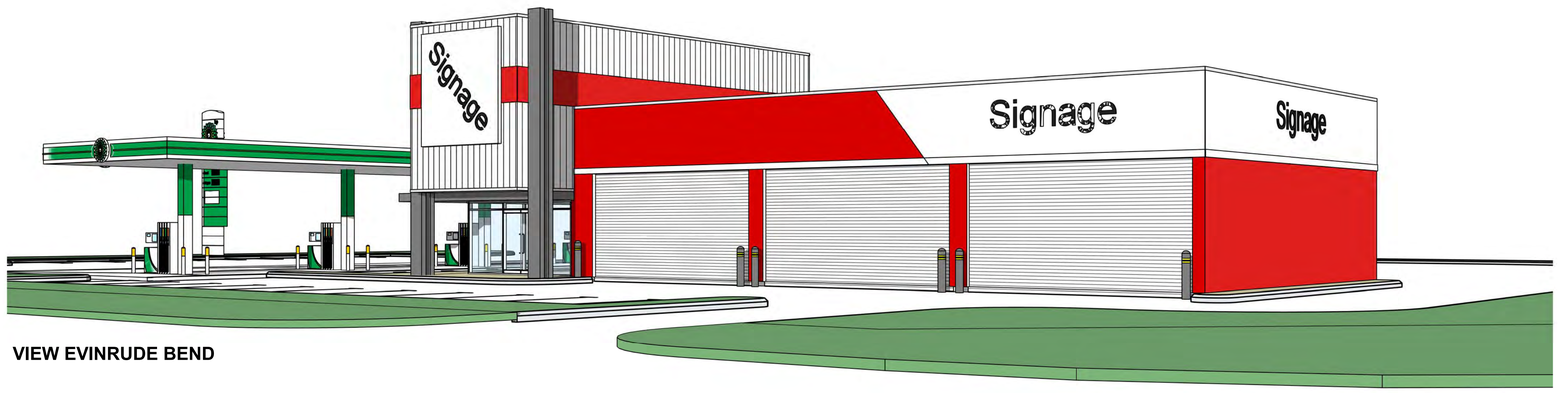


VIEW DIXON ROAD

VIEW DIXION ROAD



VIEW WHITTLE ROAD



VIEW EVINRUDE BEND

PROPOSED FUEL STATION & CAR SERVICE

LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM

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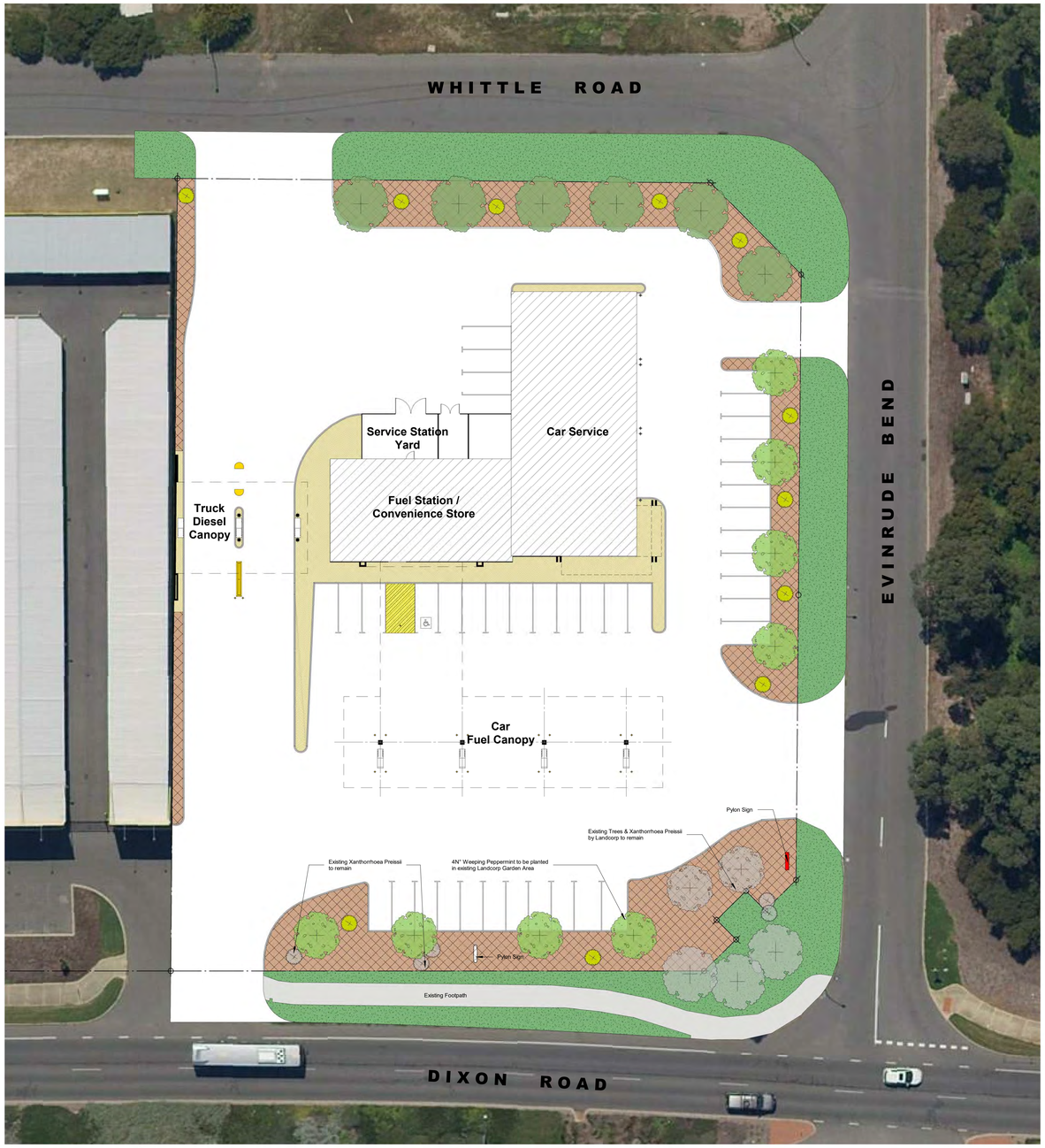

N

LANDSCAPING PLAN
SCALE:1 : 250

Landscape Legend

Symbol	Species	Description	Plant Size
	Brick Paving	**Selected Brick Paving**	
	Mulch	**100mm Jungle mulch**	
	Reticulated Turf	**Grass**	
	Kennedia Coccinea *Coral Vine*	 **Groundcover, with brightly coloured flowers in spring, in colours of pink, orange, and yellow-green**	**Height - 30cm to 40cm Width - 3m to 4m**
	Xanthorrhoea Preissii *Blackboy*	 **Grassy leaves atop a dark thick trunk, with cream flowers borne on a tall spear-like spike.**	**Height - 3m to 5m Width - 2m to 4m**
	Agonis Flexuosa *Weeping Peppermint*	 **A small evergreen tree with delicate, weeping branches. Grown for their clusters of small, 5-petaled, fragrant flowers**	**Height - 7m Width - 5m**
	Eucalyptus Torquata Coral Gum	 **Clusters of orange barrel shaped buds with horned caps.**	**Height - 4m to 11m**

Trees

14 Trees x 4 Cars = 56 Cars

PROPOSED FUEL STATION & CAR SERVICE
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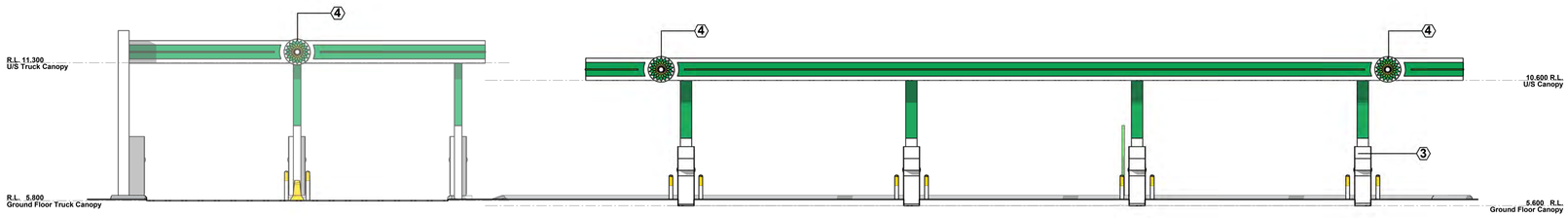
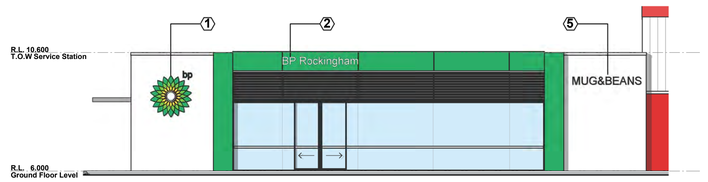
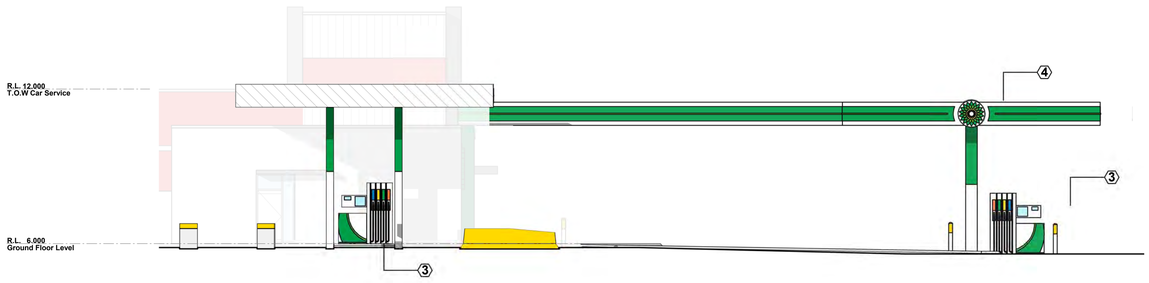


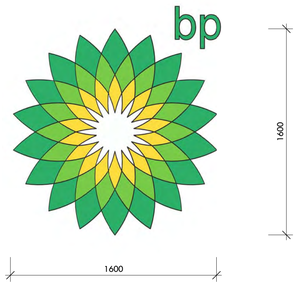
SOUTH ENTRY ELEVATION (DIXON ROAD) TRUCK & FUEL CANOPY
SCALE: 1 : 100



SOUTH ELEVATION (DIXON ROAD) WITHOUT FUEL CANOPY
SCALE: 1 : 100

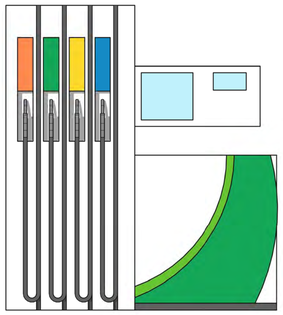


WEST ELEVATION WITHOUT BOUNDARY WALL
SCALE: 1 : 100



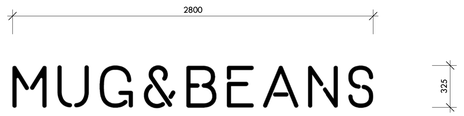
1. BP MAIN BUILDING LOGO
SCALE: 1 : 20

2. BP SITE NAME
SCALE: 1 : 20



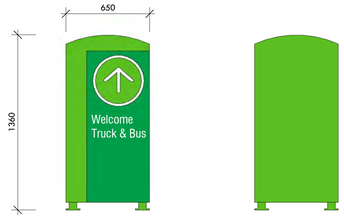
3. TYPICAL PUMP ELEVATION
SCALE: 1 : 20

4. BP CANOPY LOGO
SCALE: 1 : 20



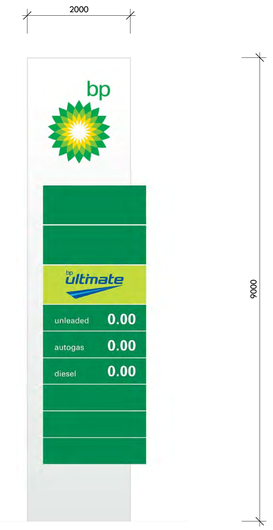
5. MUG&BEANS SIGN
SCALE: 1 : 20

ALL COLOUR AND SIZING
AS PER BP SPECIFICATION



TYPICAL ENTRY & EXIT SIGNS
SCALE: 1 : 20

DISABLE SIGN
SCALE: 1 : 10



TYPICAL BP PYLON SIGN
SCALE: 1 : 50

PROPOSED FUEL STATION & CAR SERVICE
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ATTACHMENT 2

ACOUSTIC RESPONSE

HERRING STORER ACOUSTICS

EMAIL TRANSMITTAL

REF:	24334-1-19022
TO:	Meyer Shircore Architects
ATTENTION:	Stephen Shircore
ADDRESS:	stephen@meyershircore.com.au
FROM:	Tim Reynolds
DATE:	15 May 2019
SUBJECT:	**PROPOSED DEVELOPMENT: LOT 36 DIXON ROAD, EAST ROCKINGHAM** **ACOUSTIC TO COUNCIL QUERIES**

Stephen,

As requested, we provide the following response to the council queries relating to compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

Firstly, we noted that of the noise sources that are required to comply, the assessment shows that noise received at the neighbouring noise sensitive premises would easily comply with the regulatory requirements, with, in the worst case, noise being 9 dB(A) below the appropriate assigned noise level.

Secondly, we note that with noise being a logarithmic scale, for one noise source to influence another (ie add to the total noise received at a location) the lower noise source needs to be within 10 dB(A) of the higher noise level; and at a difference of 6 dB(A), the overall increase would be 1 dB(A) (eg : the total noise level from sources being at 44 and 50 dB(A) would be 51 dB(A)).

Finally, we note that although the report seems quite simple, the analysis we undertake is vigorous and the methodology has been well established over many years. Thus, we confirm that noise received at the neighbouring noise sensitive premises will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

Even so, we provide the following information with regards to the acoustical assessment.

To simplify our response, we provide the responses in the same order as the “Advice Note” from council. For information, the City’s comments are attached for information.

1 Concerns of compliance

With reference to the above, noise received at the neigbouring noise sensitive premises will be well below the required regulatory criteria. Thus, noise received at the neighbouring noise sensitive premises will comply with the Regulations.

2 Noise Contour Mapping

For such a simple proposal, with basically one receiver location, we do not believe that noise contour plots are required. However, the following noise contour plots are attached for information.

FOR COMPLIANCE

L_{A10}	-	Mechanical service
L_{A10}	-	Mechanical service and general noise from vehicle service centre
L_{A1}	-	Impact wrench (including mechanical services and general vehicle service centre noise)
L_{AMax}	-	Maximum plot of vehicle starts and doors closing, air brake (includes impact wrench).

OTHER SOURCES FOR INFORMATION

L_{A1}	-	Vehicle movements (includes for cars and trucks)

3 Worst Case / Cumulative Noise

We believe that there is some confusion with regards to the worst case conditions and the accumulative assessment.

First, we note that the noise received from the impact wrench includes that for the mechanical services. However, we have included other noise emissions from the vehicle service centre (see point 4). The noise received at the neighbouring noise sensitive premises from the general service centre noise is such that it would not add to the noise received at these premises from the impact wrench.

Second, the L_{Amax} is the maximum noise received at the noise sensitive premises. It is noted that the maximum noise level received at some locations would be from the impact wrench, however, this has been assessed under the more stringent L_{A1} criteria. Given the type of noise sources, with vehicle engine start, vehicle door closing and truck air brakes being short term, these noise emissions would not occur at exactly the same time. Thus, these noise sources would not be additive. Even so, to be extremely conservative and extremely unlikely to occur, we provide the cumulative assessment for the total noise level from :

- Impact wrench;
- Truck Air brake; and
- Car door.

The total noise level would be 54 dB(A). The assessment is listed in Table 1.

TABLE 1 – ASSESSMENT OF COMBINED L_{AMAX} NOISE LEVEL EMISSIONS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	54	Day Period	77	Complies

We note that the above total maximum noise level would also comply with the assigned L_{AMax} night period noise level, even though the vehicle services centre is only open during the day period.

For vehicle movements, engine starts and truck air brakes, which are exempt from compliance with the Regulatory requirements, if they were to be assessed under the Regulatory Criteria, the premises would be deemed a public place, as anyone can enter the premises. Hence, under Regulation 6 the emitter of the noise is deemed to the occupier of the property. Which in this case would be the owner / driver of the vehicle. Thus, each vehicle would be treated as a premises for the purposes of the assessment and hence assessed separately. Finally, in this case, it is noted that noise received from vehicle movements is considerably below the Assigned noise Levels (ie at least 17 dB(A)) and regardless of the combination, noise emissions, (even thought they are exempt) would still comply with the regulatory requirements.

Note : In a recent SAT hearing, the exemption of vehicle movements and engine starts was confirmed by the acoustic experts and accepted by the tribunal.

4 Mechanical Plant Noise From Vehicle Service Centre

We note that vehicle service centre is not a particularly noisy place, with the main noise source being the impact wrench. Even so, as requested, we provide an assessment of other / general noise emissions from the vehicle service centre.

General noise includes, cars idling, electric hoists and occasional use of an electric screw driver. From measurements of a service centre, the L_{A10} sound power would be as listed in Table 2.

TABLE 2 – VEHICLE SERVICE CENTRE NOISE

Plant Item	Sound Power Level dB(A)
Combined general plant noise	78

The calculated noise level at the worst case noise sensitive premises would be as listed in Table 3.

TABLE 3 – VEHICLE SERVICE CENTRE NOISE

Plant Item	Calculated Noise Level dB(A)
Combined general plant noise	35

Due to the combination of noise sources, it is unlikely that noise received at the neighbouring noise sensitive premises would contain any annoying characteristics. However, to be conservative, a +5 dB(A) penalty for tonal characteristics has been included in the assessment. We note that the combined L_{A10} noise level received at the neighbouring noise sensitive premises (ie including the mechanical services) would be 36 dB(A). Thus, with the inclusion of a + 5 dB(A) penalty for a tonal component, the assessable noise level would be 41 dB(A). The assessment is shown in Table 4.

TABLE 4 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Caravan Park	41	Day Period	57	Complies

5 Annoying Characteristics / Meteorological conditions

The report states on page 4, under Section 4 – Modelling :

> Calculations were carried out using the EPA weather conditions as stated in the Environmental Protection Authority's *"Draft Guidance for Assessment of Environmental Factors No.8 - Environmental Noise"*.

These are worst case weather conditions as designated by the EPA / DWER. These weather conditions are:

Parameter	'Day' (0700-1900)	'Night' (1900-0700)
Wind speed	4m/s	3m/s
Temperature inversion lapse rate or - Pasquill Stability (CONCAWE)	0 E	2 ^{o}C /100m F
Temperature	20^{o}C	15^{o}C
Relative humidity	50%	50%

Note : Winds are from source towards receiver.

With regards to annoying characteristics, we note that the definition of annoying characteristics are :

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax(Slow)}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} in any one-third octave band;

(b) is present for more at least 10% of the representative assessment period; and

(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

The query with regards to impulsiveness was with regards to the impact wrench. From measurements we have undertaken, the difference between the L_{Apeak} and $L_{Amax(Slow)}$ outside the workshop is around 12 dB. Thus, would not be considered impulsive.

With regards to tonality, under the definition L_{A1} or L_{Amax} noise, as the noise is present for less than 10% of the time, can only be tonal if they comply with "the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands is greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels". Noise sources associated with this development would not comply with the above and would not be considered tonal.

Note : We have included a tonal adjustment to the impact wrench to be conservative. Strictly, under the Regulations, the impact wrench would not be tonal. We also note that the assessable noise level, including tonality, is 10 dB(A) below the assigned noise level, so noise received at neighbouring noise sensitive premises would still comply with the Regulatory criteria, regardless of the penalty applied (ie even if the penalty for impulsiveness was applied).

6 Caravan Park Being Commercial

We note that although the residences within the caravan park would be considered as noise sensitive, the caravan park for the determination of the Influencing Factor is commercial (ie the operators receive payment for persons to stay within the caravan park and/or the premises has a store), then it is a commercial enterprise. Thus, under the Regulations, where a premise has mixed uses, the use of land that results in the highest influencing factor is to be used in the determination of the influencing factor.

Additionally, on review we note that the caravan park is within Area B of the Kwinana Policy Area, thus, under clause (5A) of Schedule 3 – "Determination of influencing factor on noise sensitive premises" of the Regulations, the caravan park would be taken to be Type B land (or commercial) for the purposes of determining the Influencing Factor.

This, we confirm that the Influencing Factor would be +12 dB.

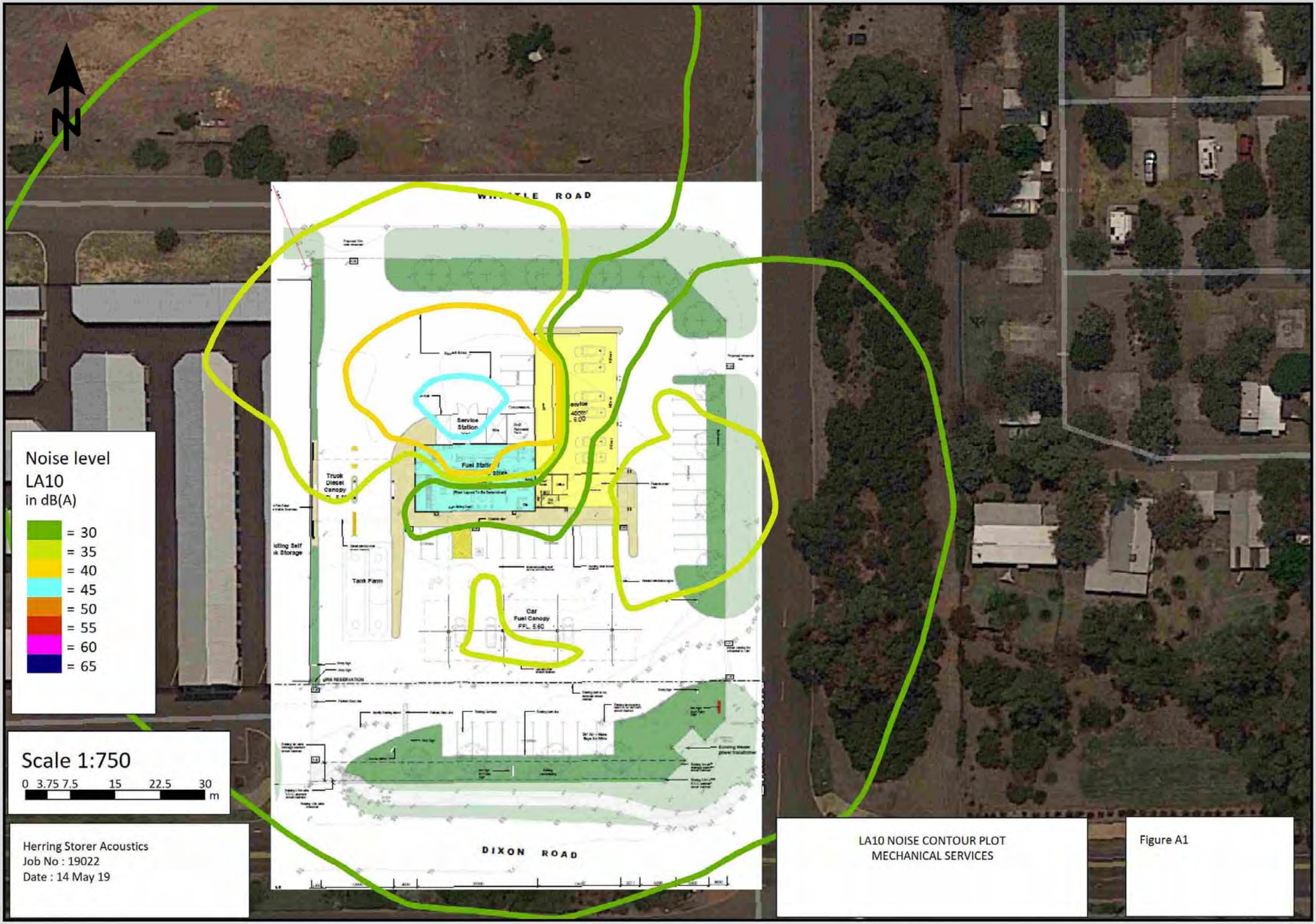
Finally, noise received at the neighbouring noise sensitive premises are well below the Regulatory requirements and would easily comply and hence be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997.*

Yours faithfully,
For **HERRING STORER ACOUSTICS**

Tim Reynolds

Att.

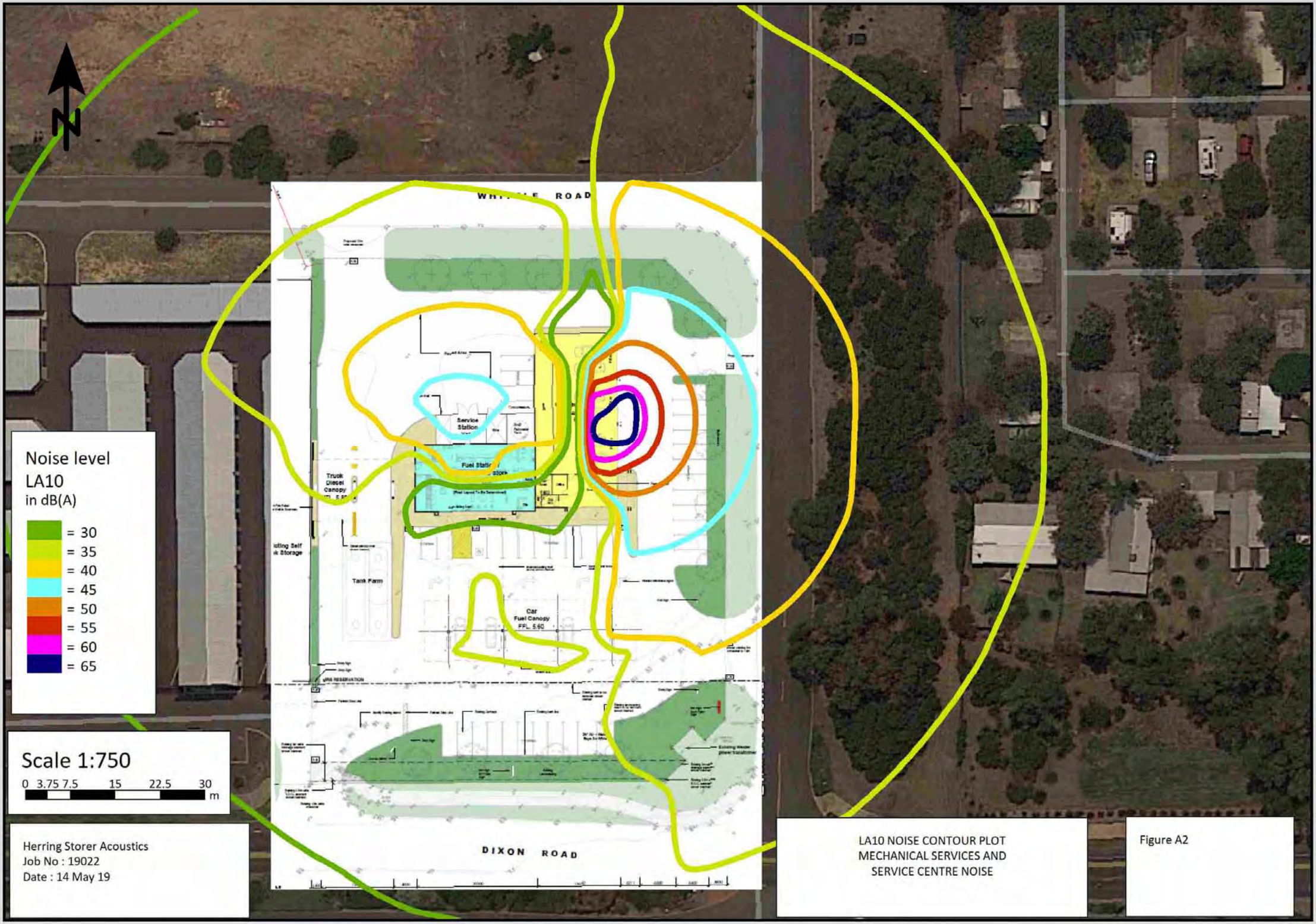
#	City's comment
Health	
1	*There are concerns in regards to the content of the report and it's suitability in demonstrating that compliance with the Environmental Protection (Noise) Regulations 1997 can be met.*
2	*Noise contour mapping – no noise mapping has been provided to demonstrate how noise propagation may effect residences in the caravan park.*
3	*Worst case scenario conditions have not been assessed. Report looks at each noise source individually (stating this is required under the regulations?). Advice in regards to the cumulative noise that could be expected from regular operation of the premises under worst case conditions, is required.*
4	*All mechanical plant noise associated with the motor repair workshop has not been assessed, only noise from an impact wrench. With the proposal suggesting six car service bays, there may be a number of vehicles being worked on at one time – utilising different noise producing equipment. The report does not demonstrate how compliance with the Noise Regulations can be achieved for these operating conditions.*
5	*Report does not provide justification for not including annoying characteristics for some noises (eg. no impulsiveness included for impact wrench) and no specific information has been given in regards to meteorological conditions and whether worst case scenario conditions have been modelled.*
6	*No justification has been provided for classifying the caravan park grounds as commercial premises and increasing the Influencing Factor that has been applied to the assigned noise levels. Caravan parks are considered noise sensitive premises under the Regulations.*



Herring Storer Acoustics
Job No : 19022
Date : 14 May 19

LA10 NOISE CONTOUR PLOT
MECHANICAL SERVICES

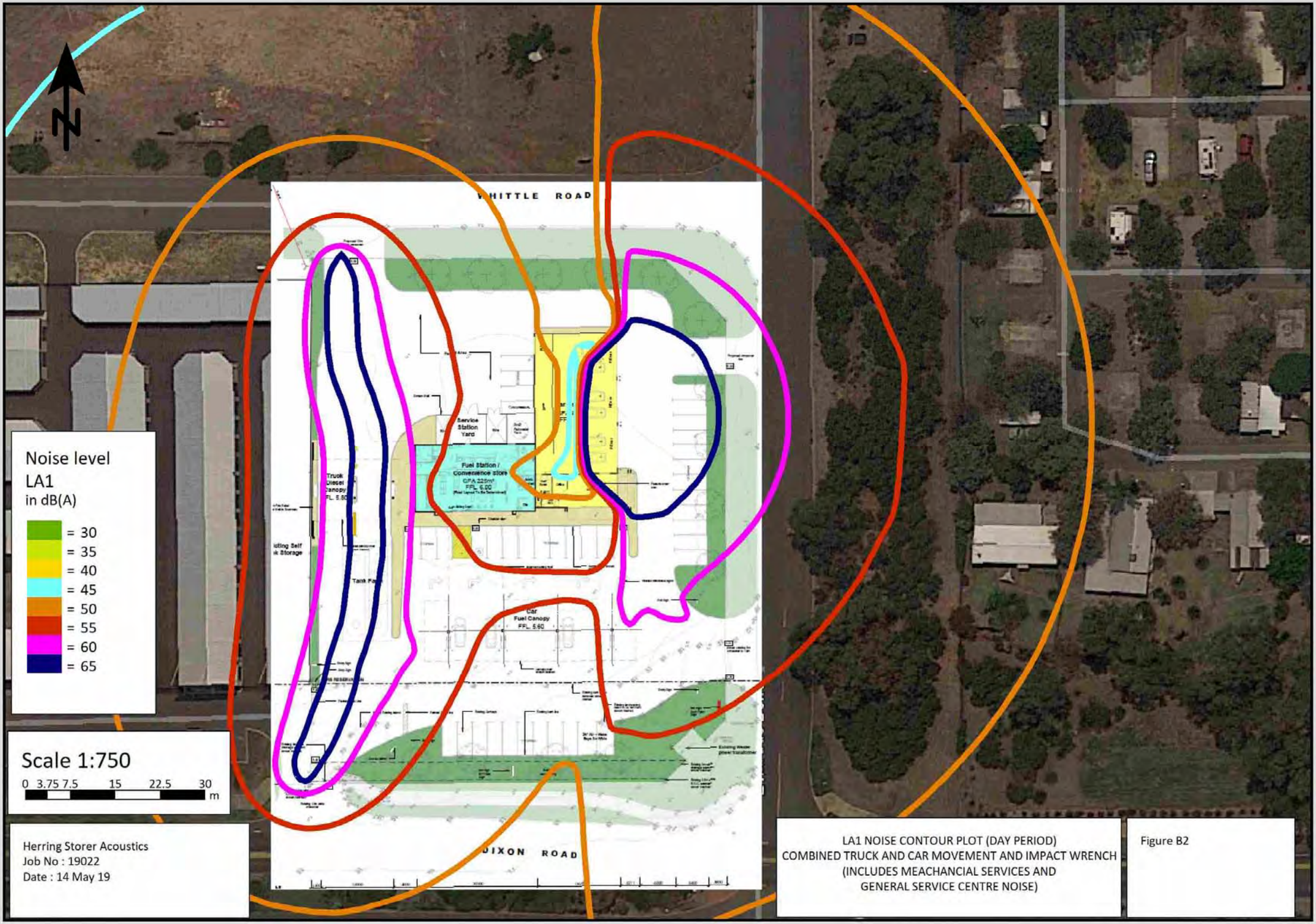
Figure A1



Herring Storer Acoustics
Job No : 19022
Date : 14 May 19

LA10 NOISE CONTOUR PLOT
MECHANICAL SERVICES AND
SERVICE CENTRE NOISE

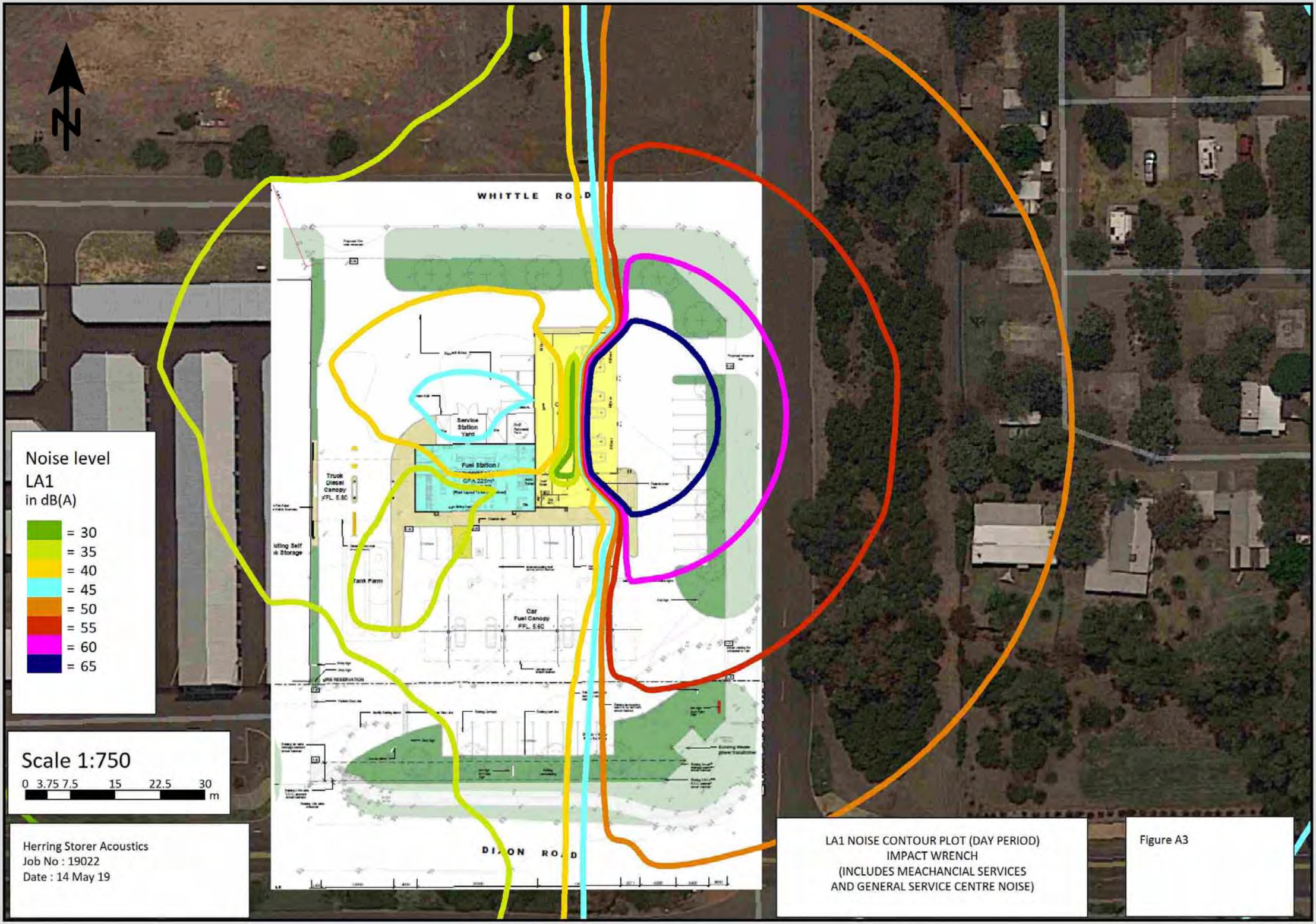
Figure A2



Herring Storer Acoustics
Job No : 19022
Date : 14 May 19

LA1 NOISE CONTOUR PLOT (DAY PERIOD)
COMBINED TRUCK AND CAR MOVEMENT AND IMPACT WRENCH
(INCLUDES MEACHANCIAL SERVICES AND
GENERAL SERVICE CENTRE NOISE)

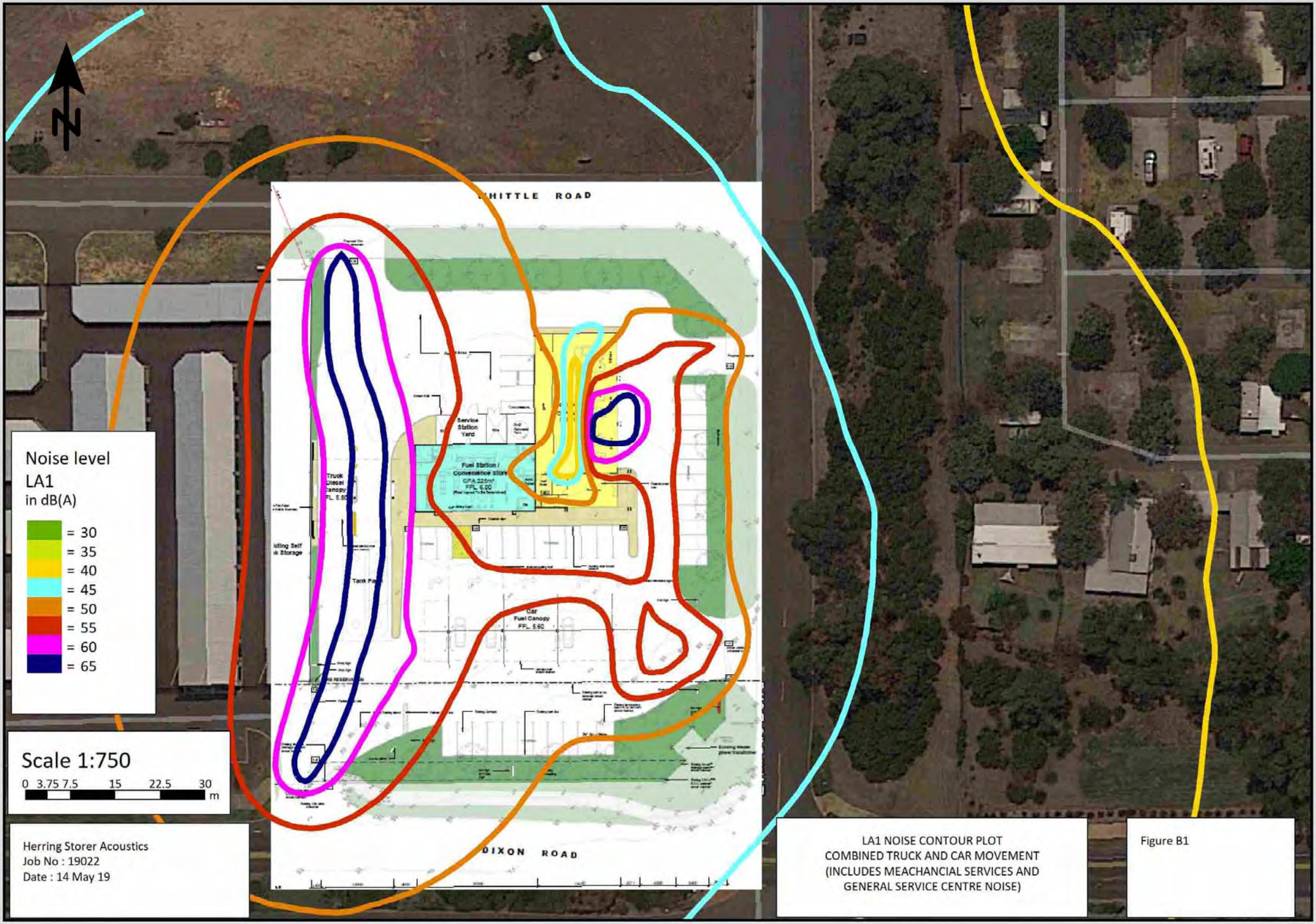
Figure B2



Herring Storer Acoustics
Job No : 19022
Date : 14 May 19

LA1 NOISE CONTOUR PLOT (DAY PERIOD)
IMPACT WRENCH
(INCLUDES MEACHANCIAL SERVICES
AND GENERAL SERVICE CENTRE NOISE)

Figure A3



Herring Storer Acoustics
Job No : 19022
Date : 14 May 19

LA1 NOISE CONTOUR PLOT
COMBINED TRUCK AND CAR MOVEMENT
(INCLUDES MEACHANCIAL SERVICES AND
GENERAL SERVICE CENTRE NOISE)

Figure B1

ATTACHMENT 3

BUSHFIRE MANAGEMENT PLAN

ATTACHMENT 4

REVISED TRAFFIC IMPACT ASSESSMENT

Transport Impact Statement

Project:	Lot 36 Dixon Road, East Rockingham Proposed Fuel Station & Car Service Centre
Client:	Dawnmark Holdings Pty Ltd c/o Meyer Shircore & Associates
Author:	Keli Li
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1. Summary

Shawmac was commissioned to assess the impacts associated with parking, access and traffic generation from the proposed Fuel Station & Car Service Centre located at Lot 36 Dixon Road, East Rockingham, in the City of Rockingham.

This Transport Impact Statement has been prepared in accordance with the WAPC Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016), for lodgement with the Development Application.

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

- The surrounding roads and intersections can accommodate the forecast increase in traffic from the proposed development;
- The supply of car parking spaces is considered adequate for the development;
- Review of the proposed parking layout indicates a shortage of 0.1m bay width in accordance with AS2890.1 Class 3 parking dimensions, however, the proposed layout is considered acceptable as the excessive aisle width can ensure single manoeuvre to access and egress from the bays and despite the high turnover rate, the parking occupancy is expected to be low;
- The proposed parking areas and internal geometry cater for all expected classes of vehicles;
- The proposed access arrangement, line-marking and convex mirror should facilitate safe circulation within the site;
- Based on the assessment of auxiliary lane, the existing right turn auxiliary lane is considered acceptable. Whilst the traffic volumes meet the warrants for an auxiliary left turn lane, an auxiliary left turn lane is not recommended considering the consistency of existing road environment and treatment of the adjacent intersections;
- Based on the proposed land use, the public transport demand of the site is likely to be low and therefore the existing services are considered to be adequate;
- The existing pedestrian/cyclist infrastructure in the vicinity of the site is considered to be adequate to facilitate the safe movement of pedestrians and cyclists.

2. Introduction

2.1. Background

Shawmac has been commissioned to prepare a Transport Impact Statement to assess the potential traffic impacts, car parking and access issues associated with the proposed Fuel Station & Car Service Centre to be located at Lot 36 Dixon Road, East Rockingham, in the City of Rockingham. The site plan of the facility is shown in Appendix A.

2.2. Site Location

The subject site is located as shown in Figure 1.

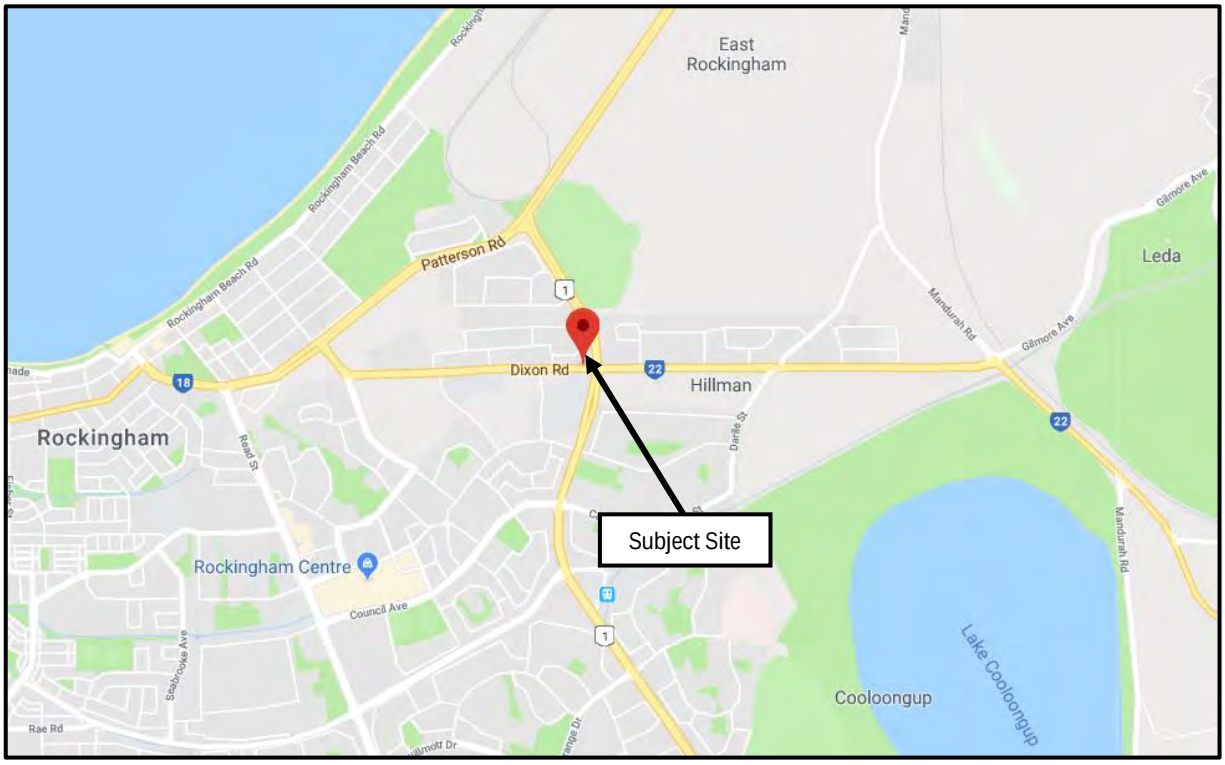


Figure 1 - Site Location

The subject site is currently vacant. The site together with four lots to the west shares an established common thoroughfare along the southern boundary of this land parcel. The thoroughfare driveway provides two accesses adjacent to the site. An aerial view of the subject site in Figure 2.

Figure 2 - Aerial View

2.3. Reference Information

In undertaking the study, the information listed below was referenced.

- WAPC Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments
- MRWA Functional Hierarchy Criteria;
- Livable Neighbourhoods Guidelines 2009;
- Australia Standard AS 2890.1-2004 Parking facilities - Off-street car parking;
- Trip Generation 9th edition, 2003 - Institute of Transportation Engineers, Washington, USA;
- Guide to Traffic Generating Developments Version 2.2, October 2002 – Roads and Traffic Authority, New South Wales;
- City of Rockingham Town Planning Scheme No. 2

3. Site Proposal

3.1. Regional Context

Lot 36 Dixon Road is located in the northwest of Dixon Road / Evinrude Bend intersection and is close to the northeastern boundary of City of Rockingham. The subject site is also situated at the southeast corner of the East Rockingham Industrial Park and is surrounded by:

- Industrial developments to the west and north;
- Vacant land to the south of Dixon Road; and
- A holiday village to the east.

3.2. Land Use

It is proposed to develop the site as a fuel station with a convenience store and a car service centre. Based on information provided by client, the fuel station and convenience store requires 2 employees to operate at a time. The car service centre will have 6 service bays and requires up to 7 employees to operate at any given time.

3.3. Vehicle Access

Lot 40, 49, 9001, 401 and 36 (subject site) shares a common thoroughfare through their frontage parking area and this thoroughfare connects to 5 existing crossovers including 3 crossovers to Dixon Road, 1 crossover to McCamey Avenue and a crossover to Evinrude Bend. It is understood that this common thoroughfare and the five crossovers are under common easement to serve all adjacent developments. Vehicle access to the proposed development at Lot 36 will only utilise the crossover from Dixon Road between Lot 401 and 36, the crossover to Evinrude Bend and two additional crossovers from Evinrude Bend and Whittle Road.

Proposed new vehicle access points to the serve the development are as follows:

- One additional crossover off Evinrude Bend (south of Whittle Road); and
- One crossover off Whittle Road.

3.4. Parking

The car parking demand of the development will be accommodated by 39 on-site car bays.

3.5. Planning Framework

According to the East Rockingham Industrial Park structure plan, Lot 36 Dixon Road is within the light industry precinct (Precinct 5) of the Structure Plan. The Structure Plan zoning map is shown in Figure 3.

Figure 3 - Zoning Map - Extract from Metropolitan Region Scheme

3.6. Major Attractors and Generators of Traffic

The development site is mainly a traffic attractor. The main generators/attractors are expected to influence traffic flows to and from City of Rockingham.

4. Existing Situation

4.1. Existing Roads

An extract of the Main Roads *Road Information Mapping* web tool is shown in Figure 4 and shows the road hierarchy surrounding the site.

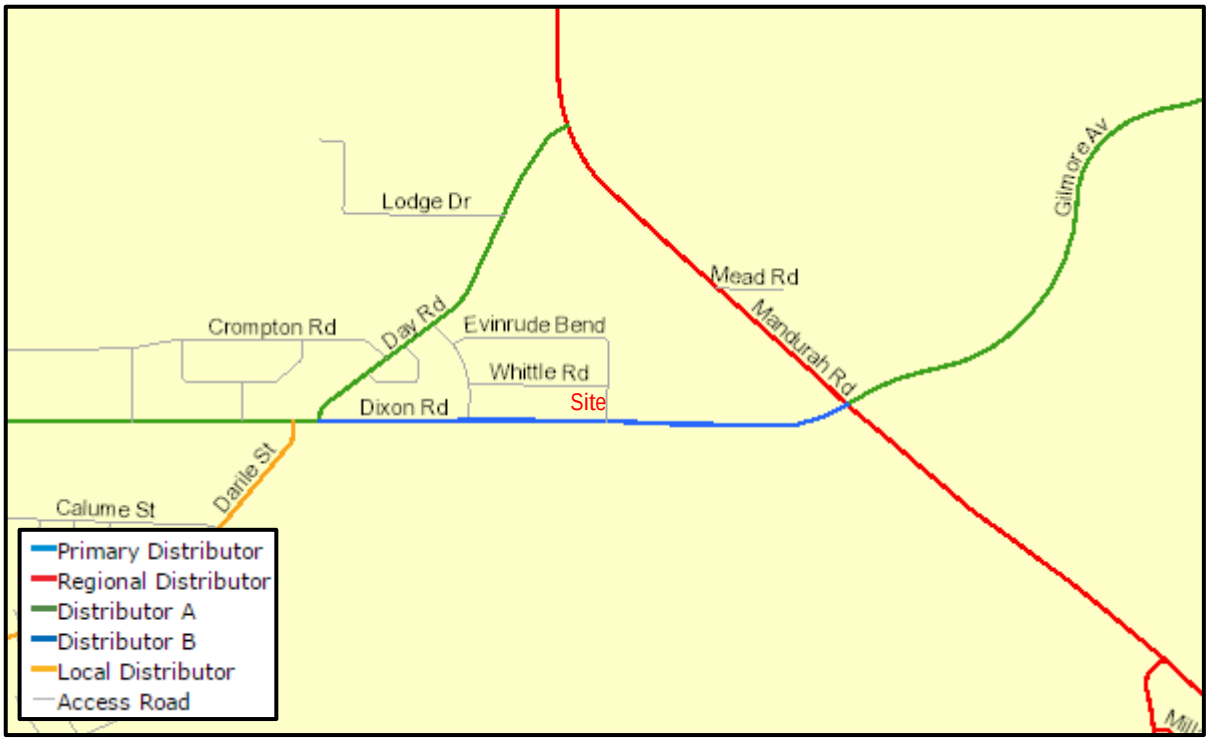


Figure 4 - Road Hierarchy

Dixon Road

Dixon Road is the southern boundary of the site. It is a two-way, four-lane dual carriageway road with a 6.0m wide median in the vicinity of the site. Dixon Road provides access between Rockingham Town Centre to the west and Kwinana Freeway to the east. Dixon Road in the vicinity of the site has sealed shoulders along both sides which can perform the function of on-road cycling lanes. Under the MRWA Functional Road Hierarchy, Dixon Road is classified as a District Distributor B Road east of Day Road and a District Distributor A road west of Day Road. Dixon Road operates with a 70 km/h speed limit approximately 100m east of McCamey Avenue and 60km/h towards Rockingham Townsite.

Evinrude Bend

Evinrude Bend is the eastern boundary of the site. Evinrude Bend is a two-way, two lane undivided carriageway with an approximate kerb-to-kerb width of 9.0m. Evinrude Bend is classified as an Access Road under the MRWA Functional Road Hierarchy and operates with a 50km/h speed limit.

Whittle Road

Whittle Road is the northern boundary of the site. Similar to Evinrude Bend, Whittle Road is a two-way, two lane undivided carriageway with an approximate kerb-to-kerb width of 9.0m. Whittle Road is classified as an Access Road under the MRWA Functional Road Hierarchy and operates with a 50km/h speed limit.

Mandurah Road and Gilmore Avenue

Mandurah Road is a Regional Distributor Road located 650m east of Evinrude Bend / Dixon Road intersection. Gilmore Avenue is a District Distributor A road and forms the forth leg of the Mandurah Road-Dixon Road signalised intersection. Mandurah Road and Gilmore Avenue together with Dixon Road allow heavy vehicles originate outside of City of Rockingham to access the East Rockingham Industrial Park without using other local roads in the City.

4.2. Road Hierarchy vs Actual Flows

The latest traffic volumes of the surrounding roads were derived from MRWA trafficmap and SCATS Traffic data. Traffic Data for Evinrude Bend and Whittle Road are not available, it is assumed that Evinrude Bend currently carries 500 vpd and Whittle Road carries 300 vpd. This is considered conservative as the East Rockingham Industrial Park has not been fully developed. Table 1 compares existing traffic volumes with MRWA indicative traffic volumes based on road classifications. Detailed traffic count data is included in Appendix B.

Table 1 - Road Classification and Indicative Traffic Volumes

Road Name	Road Features	MRWA Classification / Indicative Daily Volume (vpd)	Traffic Volume	Source
Dixon Road West of Mandurah Road	Four lane dual carriageway	District Distributor B / above 6,000	20,889*	2018 MRWA SCATS
Mandurah Road North of Dixon Road	Four lane dual carriageway	Regional Distributor / above 100	7,319	2018 MRWA SCATS
Mandurah Road South of Dixon Road	Four lane dual carriageway	Regional Distributor / above 100	21,439**	2018 MRWA Trafficmap
Gilmore Avenue West of Mandurah Road	Four lane dual carriageway	District Distributor A / above 8,000	12,920	2018 MRWA SCATS
Evinrude Bend North of Dixon Road	Single carriageway road	Access Road / below 3,000	500	Assumed
Whittle Road West of Evinrude Bendr	Single carriageway road	Access Road / below 3,000	300	Assumed

* Note: Although the 2018/19 data on trafficmap (at the count site East of Ennis Avenue) is higher than SCATS data, SCATS data were adopted for the purpose of the assessment considering the count site is located 1.8m east of the development and there is a major intersection between the count site and the development.
**Note: The SCATS data for Mandurah Road is lower than the 2018/19 data on trafficmap, the SCATS data have only been used for the purpose of intersection assessment.

As shown, all roads are within the indicative traffic volumes ranges for their respective classifications.

4.3. RAV Status

As per MRWA HVS network mapping tool, Dixon Road has RAV 4 network status with the following conditions:

- Not to be used as a through route;
- For local delivery and pickup only; and
- Driver must carry documentation as proof of local delivery or pickup;

Evinrude Bend has RAV 4 with the following conditions:

- No Left turn permitted into Evinrude Bend from Dixon Road.
- No Right turn permitted into Evinrude Bend from Dixon Road.
- No Right turn permitted into Dixon Road from Evinrude Bend

Mandurah Road has RAV 4 status no conditions whilst Gilmore Avenue and Whittle Road have no RAV Status.

Figure 5 shows the Restricted Access Vehicle categories for the road network in the vicinity of the subject site.

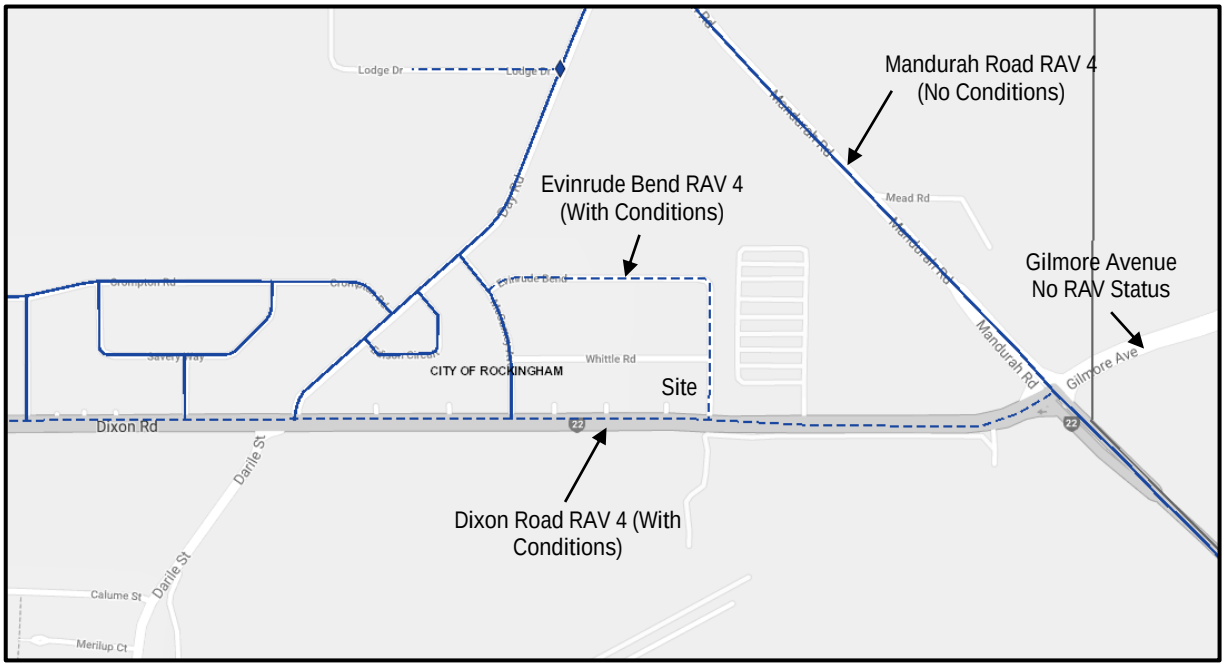


Figure 5: Restricted Access Vehicle Network

4.4. Changes to the Surrounding Network

Communication with the City indicates no significant traffic generators or attractors planned in the nearby road network apart from the East Rockingham Industrial Park. There are also no planned changes to the road network.

5. Transport Assessment

5.1. Assessment Years

The development is assessed based on the year of development, assumed as 2021. The City of Rockingham is not aware of any development in the vicinity that would significantly increase traffic volumes and has advised that a 3% growth from the current traffic count should represent the development year scenario.

Communication with the City indicates no significant developments are planned in the vicinity of the site, the traffic condition for 10 years after full opening is therefore expected to be comparable to the development year scenario.

5.2. Time Periods for Assessment

The time periods adopted for assessment are the peak hours of the Mandurah Road / Dixon Road / Gilmore Road signalised intersection (8:00-9:00 and 16:00-17:00), as these represent the worst-case conditions of the adjacent network.

5.3. Development Generation

In order to estimate the impact of traffic generated by the proposed development reference was made to the Institute of Transportation Engineers "Trip Generation" 9th edition. The trips generated by the site have been determined for both daily and peak hour. Predicted trip generation are summarised in Table 2.

Table 2 - Predicted Weekday Trip Generation

Land Use	Units	Quantum	Trip Generation Rate			Estimated Generation			Source
			ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak	
Automobile Care Centre 942	No. of Service Bay	6	12.48	1.52	2.17	75	9	13	ITE
Service Station with Convenience Market 945	Fuel Position	8**	162.78	10.16	13.51	1302	81	108	ITE
Total						1377	90	121	
Service station Passer-By Trips*				56%		729	46	61	
Total New Trips						648	45	61	

*Note: As per ITE Trip Generation Guideline, 56% of trips generated by the service station will be existing traffic deviate from the adjacent road to the proposed development and the trips will continue after visiting.
**Note: the site also has two separate fuel positions for heavy vehicles. For the purposed of this assessment, it is assumed that the trip generation rates applied for the 8 fuel positions accommodates heavy vehicle trips.

It is estimated that the proposed development has the potential to generate up to 648 new vehicle movements per day with 45 and 61 new trips during weekday AM and PM peak hours. Peak hour in & out distribution is summarised in Table 3 and Table 4.

Table 3 - Predicted Peak Hour Distribution (Including Passer-by Trips)

Land use	Peak Distribution			
	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Automobile Care Centre 942	68%	32%	32%	68%
	6	3	4	9
Service Station with Convenience Market 945	50%	50%	50%	50%
	41	41	54	54
Total	47	44	58	63

Table 4 - Predicted Peak Hour Distribution (New Trips Only)

Land use	Peak Distribution			
	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Automobile Care Centre 942	68%	32%	32%	68%
	6	3	4	9
Service Station with Convenience Market 945	50%	50%	50%	50%
	18	18	24	24
Total	24	21	28	33

5.4. Distribution

The distribution of the additional traffic has been assumed based on the spatial distribution of reginal land uses. For the purpose of this assessment, trips generated from the site will not be generated onto McCamey Avenue via the four crossovers off Whittle Road and Evinrude Bend crossovers and therefore the four crossovers off Whittle Road and Evinrude Bend is considered as a single access point providing full movement to Dixon Road.

The following distribution is assumed:

- 60% of trips generated to and from the west along Dixon Road; and
- 40% of trips generated to and from the east along Dixon Road, of which
    - 20% to and from Mandurah Road north;
    - 10% to and from Mandurah Road south; and
    - 10% to and from Gilmore Avenue

The traffic distribution and assignment of generated traffic are shown in Figure 6.

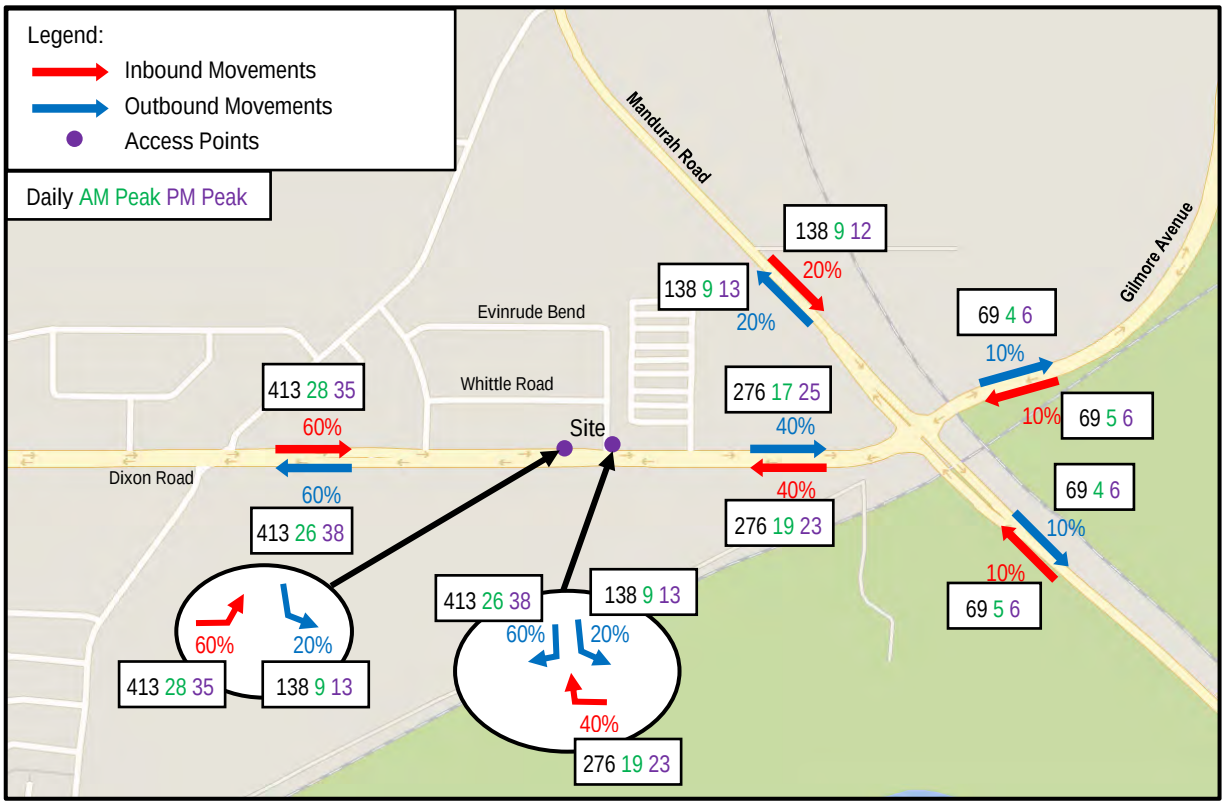


Figure 6 - Trip Distribution

5.5. Onsite Queue Analysis

As required by the City, a queue analysis should be included in the assessment to ensure queuing will not be overspilled onto adjacent roads.

Using a queuing theory model (M/M/s) the length of queuing can be determined. An M/M/s queue is a stochastic process to consider the number of customers in the system, including any currently in service. Arrivals occur according to a Poisson process. The model can be run based on the following variables:

- The number of servers,
- Customer/vehicle arrival rate, and
- Service rate.

It is assumed that the average service rate for each fuel position will be 10 vehicles per hour (or 6 minutes per vehicle) and based on the predicted traffic generation from Table 2, the arrival rate will be 62 vehicles per hour. The results of the queue model are shown overleaf in Figure 7. The result indicates the expected queue length will be 2 vehicle length (round-up from 1.39) during peak hours. It is anticipated that the site will have sufficient capacity to accommodate peak hour vehicle queue within the site.

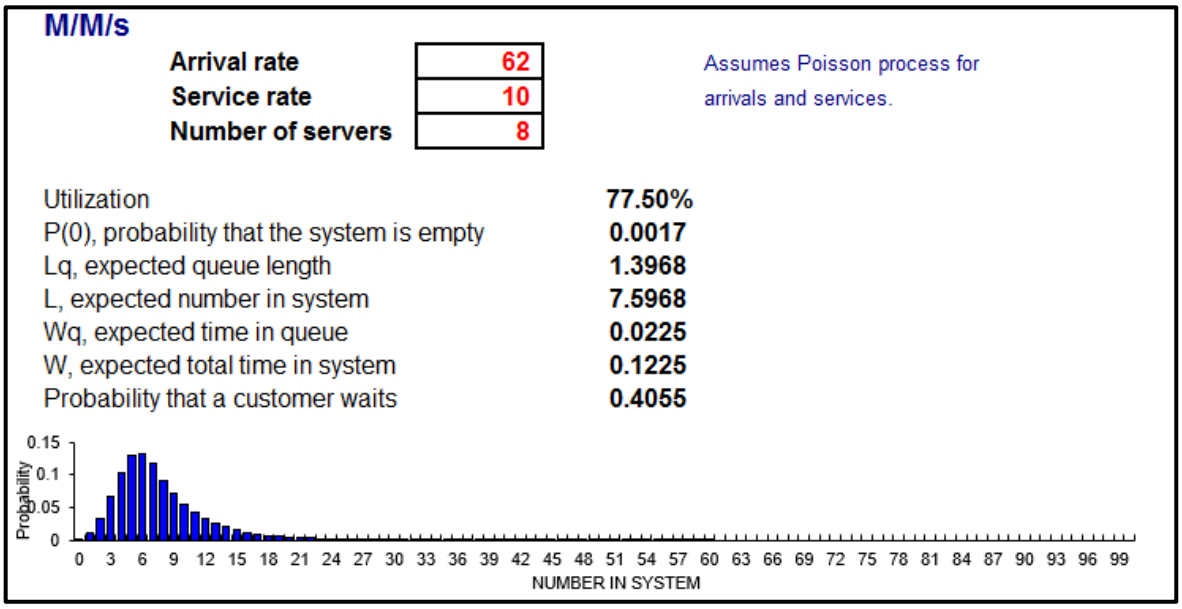


Figure 7 - Queue Model

5.6. Impact on Roads

5.6.1. Austroads Guidelines

Table 5.1 of Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (AGTM06) as shown below in Table 5 provides the mid-block capacities for urban roads with interrupted flow:

Table 5 - Typical Mid-Block Capacities for Urban Roads with Interrupted Flow

Type of Lane	One-way Mid-Block Capacity (Vph)
Median or inner lane	
Divided Road	1,000
Undivided Road	900
Middle Lane (of a Three-Lane Carriageway)	
Divided Road	900
Undivided Road	1,000
Kerb lane	
Adjacent to Parking Lane	900
Occasional Parked Vehicles	600
Clearway Conditions	900

The pre and post development traffic onto the adjacent roads are shown in Table 6.

Table 6 - Pre- and Post-Development Traffic Volumes

Road	Time Period	Direction	2018 Traffic Count	Background Traffic 2021	Increase	2021 Volume with Development
Dixon Road West of Evinrude Bend	AM Peak (Vph)	Eastbound	572	589	27	616
	AM Peak (Vph)	Westbound	1,064	1096	27	1,123
	PM Peak (Vph)	Eastbound	912	939	37	976
	PM Peak (Vph)	Westbound	841	866	37	903
Dixon Road East of Evinrude Bend	AM Peak (Vph)	Eastbound	572	589	18	607
	AM Peak (Vph)	Westbound	1,064	1,096	18	1,114
	PM Peak (Vph)	Eastbound	912	939	24	964
	PM Peak (Vph)	Westbound	841	866	24	891
Evinrude Bend North of Dixon Road	AM Peak (Vph)	Northbound	25	26	18	44
	AM Peak (Vph)	Southbound	25	26	36	62
	PM Peak (Vph)	Northbound	25	26	24	50
	PM Peak (Vph)	Southbound	25	26	49	75
Gilmore Avenue East of Mandurah Road	AM Peak (Vph)	Eastbound	469	483	5	488
	AM Peak (Vph)	Westbound	532	548	5	552
	PM Peak (Vph)	Eastbound	503	518	6	524
	PM Peak (Vph)	Westbound	548	564	6	571
Mandurah Road North of Dixon Road	AM Peak (Vph)	Northbound	273	281	9	290
	AM Peak (Vph)	Southbound	98	101	9	110
	PM Peak (Vph)	Northbound	140	144	12	156
	PM Peak (Vph)	Southbound	724	746	12	758
Mandurah Road South of Dixon Road	AM Peak (Vph)	Northbound	1,061	1093	5	1,097
	AM Peak (Vph)	Southbound	457	471	5	475
	PM Peak (Vph)	Northbound	675	695	6	701
	PM Peak (Vph)	Southbound	1,374	1,415	6	1,421

As shown in Table 6, the resulting traffic volumes are shown to be well within the practical capacity of the existing roads and the proposed development is considered to have minimal impact on the capacity of the road network at mid-block locations.

5.7. Impact on Intersections

5.7.1. Intersections Capacity

SIDRA Intersection 8 has been used to assess the peak hour capacity and performance of the Dixon Road / Site Access intersection and Dixon Road / Evinrude Bend intersection.

SIDRA is a commonly used intersection modelling tool used by traffic engineers for all types of intersections. Outputs for four standard measures of operational performance can be obtained, being Degree of Saturation (DoS), Average Delay, Queue Length, and Level of Service (LoS).

- Degree of Saturation is a measure of how much physical capacity is being used with reference to the full capability of the particular movement, approach, or overall intersection. A DoS of 1.0 equates to full theoretical capacity although in some instances this level is exceeded in practice. Design engineers typically set a maximum DoS threshold of 0.8 for unsignalised intersection layouts or modifications.
- Average Delay reports the average delay per vehicle in seconds experienced by all vehicles in a particular lane, approach, or for the intersection as a whole. For severely congested intersections the average delay begins to climb exponentially.
- Queue Length measures the length of approach queues. In this document we have reported queue length in terms of the length of queue at the 95th percentile (the maximum queue length that will not be exceeded for 95 percent of the time). Queue lengths provide a useful indication of the impact of signals on network performance. It also enables the traffic engineer to consider the likely impact of queues blocking back and impacting on upstream intersections and accesses.
- Level of Service is a combined appreciation of queuing incidence and delay time incurred, producing an alphanumeric ranking of A through F. A LoS of A indicates an excellent level of service whereby drivers delay is at a minimum and they clear the intersection at each change of signals or soon after arrival with little if any queuing. Values of B through D are acceptable in normal traffic conditions. Whilst values of E and F are typically considered undesirable, within central business district areas with significant vehicular and pedestrian numbers, delays/queues are unavoidable and hence, are generally accepted by road users.

The peak hour volumes for these two intersections are assumed as shown in Figure 8 and Figure 9.

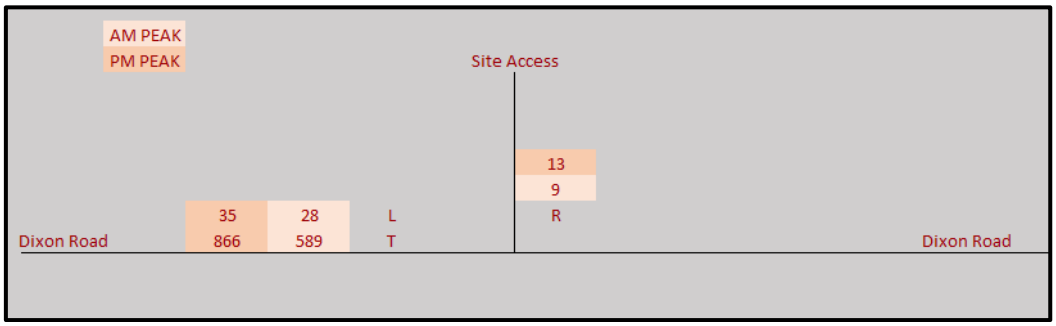


Figure 8 - Dixon Road / Site Access Intersection Volumes

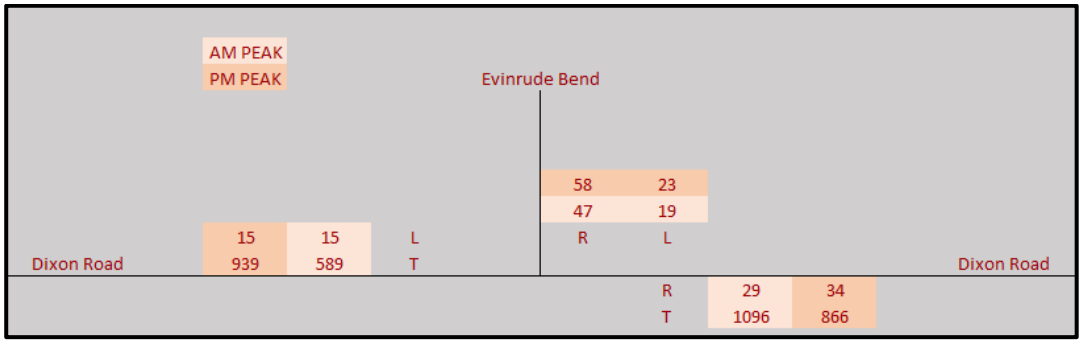


Figure 9 - Dixon Road / Evinrude Bend intersection Volumes

The results of the assessment are summarised in Table 7.

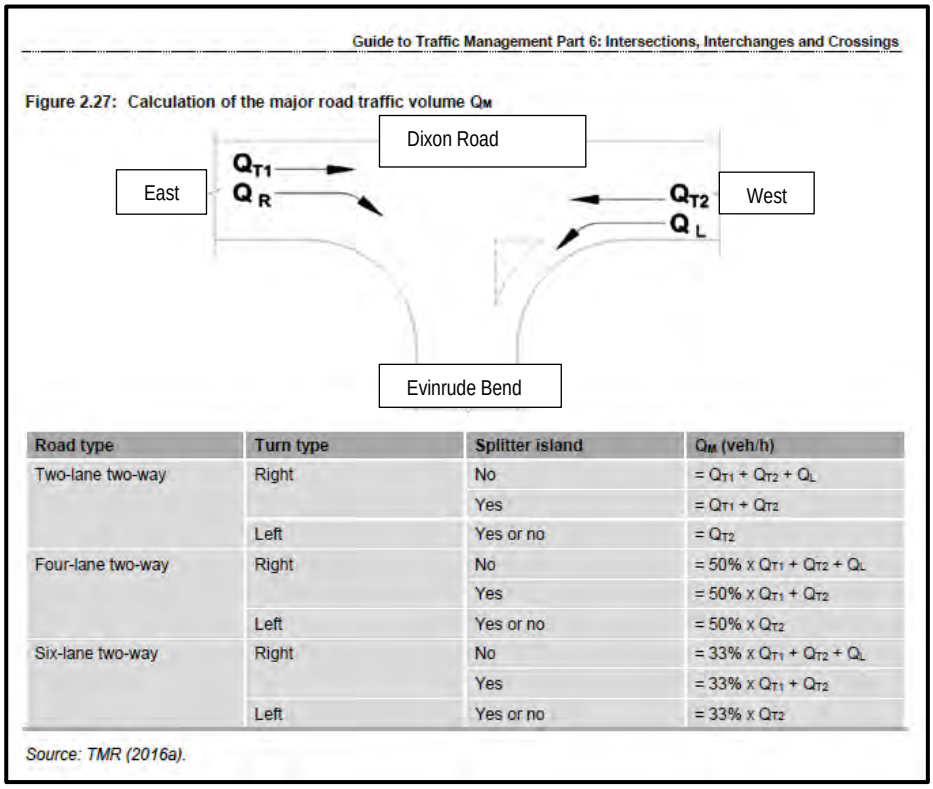
Table 7 - SIDRA Outputs

Intersection	Scenario	Assessment Period	Worst DoS	95%ile Queue (m)	Average Delay (s)	Worst Delay (s)	Average LoS	Worst LoS
Dixon Road / Site Access intersection	2021 with Development	AM Peak	0.168	0.3	0.5	5.6	A	A
		PM Peak	0.245	0.5	0.4	7.3	A	A
Dixon Road / Evinrude Bend	2021 with Development	AM Peak	0.296	1.3	1.7	14.3	A	B
		PM Peak	0.261	3.0	2.1	23.8	A	C

The results indicate both intersections would perform with acceptable degree of saturation, queue distance and delay under all scenarios.

5.7.2. Auxiliary Lanes

The traffic turning movements at intersections was calculated using the turning warrants calculator in accordance with MRWA Supplement to Austroads Guide to Road Design - Part 4 A.8. The through and turning volumes were calculated as per Austroad GTM Part 6 – 2017 as shown in Figure 10 and are summarised in Table 8. (Note: for the purpose of assessing left turn treatment, left turn volumes were left turning volume at Dixon Road / Site Access intersection.



Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 10 - Calculation of the Major Road Traffic Volume Q_m

Table 8 - Major Road Turning and Through Volumes at Intersection

	Peak Hour	Q_{T1}	QT1 HV%	Q_{T2}	QT2 HV%	Q_R or Q_L	Q_R or Q_L HV%	Q_M	Calculated Treatment
Left-turn	AM	1096	8%	589	8%	33	8%	589	AUL(S)
	PM	866	8%	939	8%	40	8%	939	AUL or CHL
Right-Turn	AM	1096	8%	589	8%	29	8%	1152	CHR
	PM	866	8%	939	8%	34	8%	1387	CHR

The calculated warrants are shown in Figure 11.

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	80km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	Yes

AM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	1096	8
Q_R =	29	8
Q_{T2} =	589	8
Q_L =	33	8

RIGHT TURN ASSESSMENT

Q_m =	1718
% HV =	8.000
x =	7.88
TREATMENT =	CHR

LEFT TURN ASSESSMENT

Q_m =	589
% HV =	8.000
x =	3.13
TREATMENT =	AUL(S)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	80km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	Yes

PM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	866	8
Q_R =	34	8
Q_{T2} =	939	8
Q_L =	40	8

RIGHT TURN ASSESSMENT

Q_m =	1845
% HV =	8.000
x =	8.97
TREATMENT =	CHR

LEFT TURN ASSESSMENT

Q_m =	939
% HV =	8.000
x =	5.18
TREATMENT =	AUL or CHL

Figure 11 - Warrants for Turn Treatments on Major Roads at Unsignalised Intersections

As per Figure 11, the required left-turn and right turn treatments at Dixon Road / Evinrude Bend intersection is an Auxilliary Left Turn (AUL) and a Channelised Right Turn (CHR) treatment, respectively.

The AUL and CHR treatment (refer to Figure 8.6 and Figure 7.8 of Austroad AGTRD4A) on the major road both feature construction of indented left/right turn lane minimising the impact of the slowed turning vehicles on through traffic.

In this instance, the existing right turn auxiliary lane is considered acceptable. Whilst the traffic volumes meet the warrants for an auxiliary left turn lane, an auxiliary left turn lane is not recommended taking into consideration of consistency of existing road environment and treatment of the adjacent intersections.

5.7.3. Vehicle Manoeuvring

It is understood that the maximum heavy vehicles accessing the site will be 19.0m long semi-trailers. The preferred access and egress arrangement as indicated by the client is explained in Figure 12.

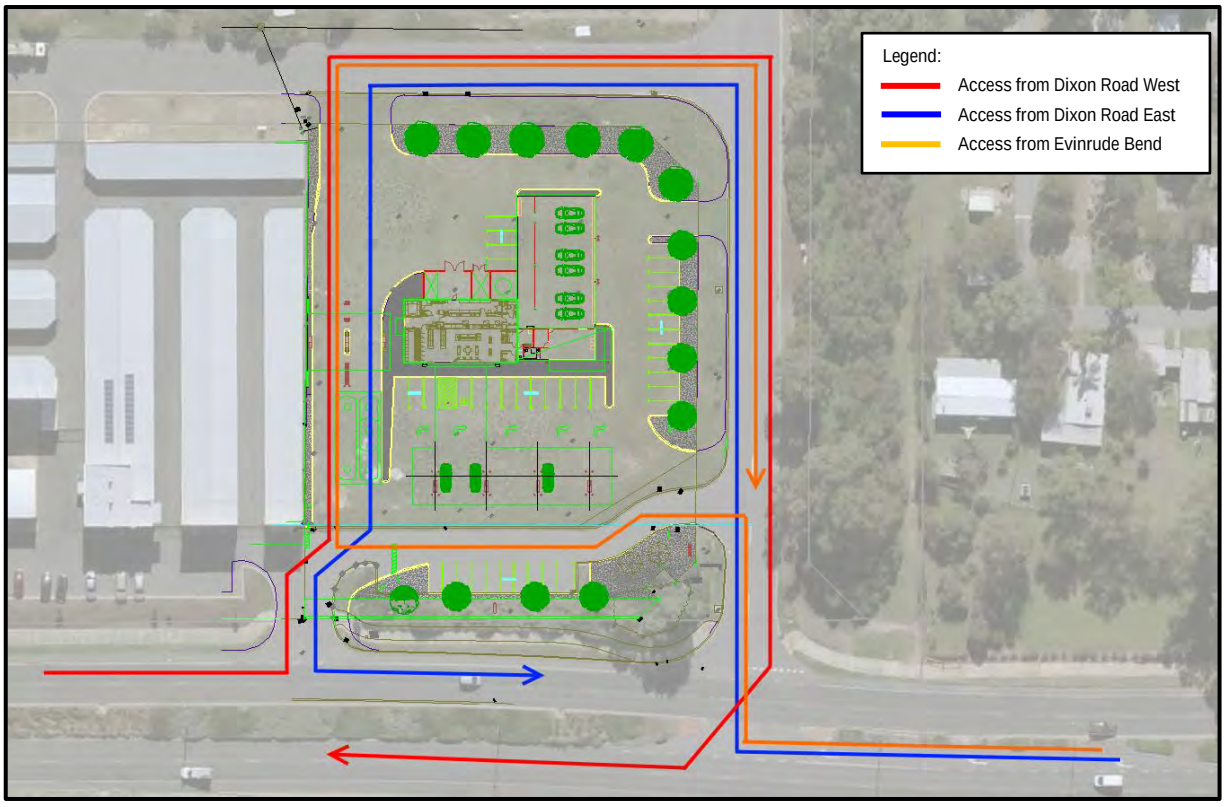


Figure 12 –Heavy Vehicle Access Arrangement

A swept path analysis using MRWA 19.0m Semi-Trailer template were completed and based on the analysis, the above access and egress movements can be completed satisfactorily. The swept path diagrams are included in Appendix D. It is noted that as survey files are not available the swept path analysis was based on aerial view extracted from City of Rockingham Intra-map.

The City of Rockingham has raised concern regarding to semi-trailer inbound and outbound manoeuvring from Dixon Road crossover as it will encroach into the opposite traffic lane and advised to amend the route to access from Evinrude Bend. The City's advice has been considered, however using Evinrude Bend for left-turn access semi-trailers will also encroaching into the opposite traffic lane as indicated in Figure 13. As the Dixon Road / Evinrude Bend is not constructed to accommodate the largest "as-of-right" vehicles, the client proposes to widen the Dixon Road crossover to 15.0m wide. With proposed widening, the extent of encroaching is reduced significantly and the movements are deemed adequate to access/egress from the development. An indication of widening as well as inbound and outbound manoeuvring is shown in Figure 14, and detailed swept path is provided in Appendix D.

Figure 13 – Semi-trailer Left-turn from Dixon Road to Evinrude Bend

Figure 14 - Widened Crossover and Swept Paths

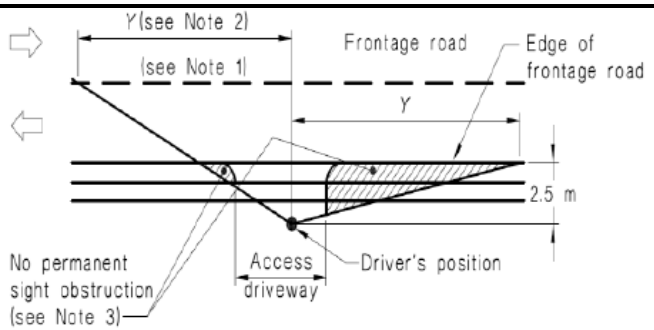
6. Site Access

6.1. Vehicle Accesses

Access and egress to and from the site will be via 4 crossovers as outlined in Section 3.3.

6.2. Access Vehicle Sight Distance

Sight distance from the crossovers along the street is defined in Figure 3.2 of AS2890.1 which is reproduced in Figure 15. A desktop review concluded that the minimum sight distance is achieved for all crossovers.



Dixon Road Design Speed	Km/h	Desirable (5s) gap (m)	Minimum sight distance (m)
	70	97	85
Evinrude Bend Design Speed	Km/h	Desirable (5s) gap (m)	Minimum sight distance (m)
	60	83	65
Whittle Road Design Speed	Km/h	Desirable (5s) gap (m)	Minimum sight distance (m)
	60	83	65

NOTES:
1 Centre-line or centre of road (undivided road), or right-hand edge of right hand through lane (divided road)
2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.
3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.

Figure 15 - Sight Distance Requirements

In addition to the sight distance at the crossovers, review of the site plan indicates a potential conflict point between trucks traveling south from the diesel canopy and vehicles traveling east along the common thoroughfare.

To ensure sufficient sightline for trucks traveling south bound, the client proposes to clearly linemark the western truck lane to be a northbound lane and the eastern truck lane to be a southbound lane and to install convex mirror and stop line (as indicated in Figure 16 and Figure 17) for eastbound movement along the common thoroughfare. The proposal is considered adequate to ensure sufficient sightline. Also note that the sightline will be improved further via the proposed widening to the Dixon Road crossover

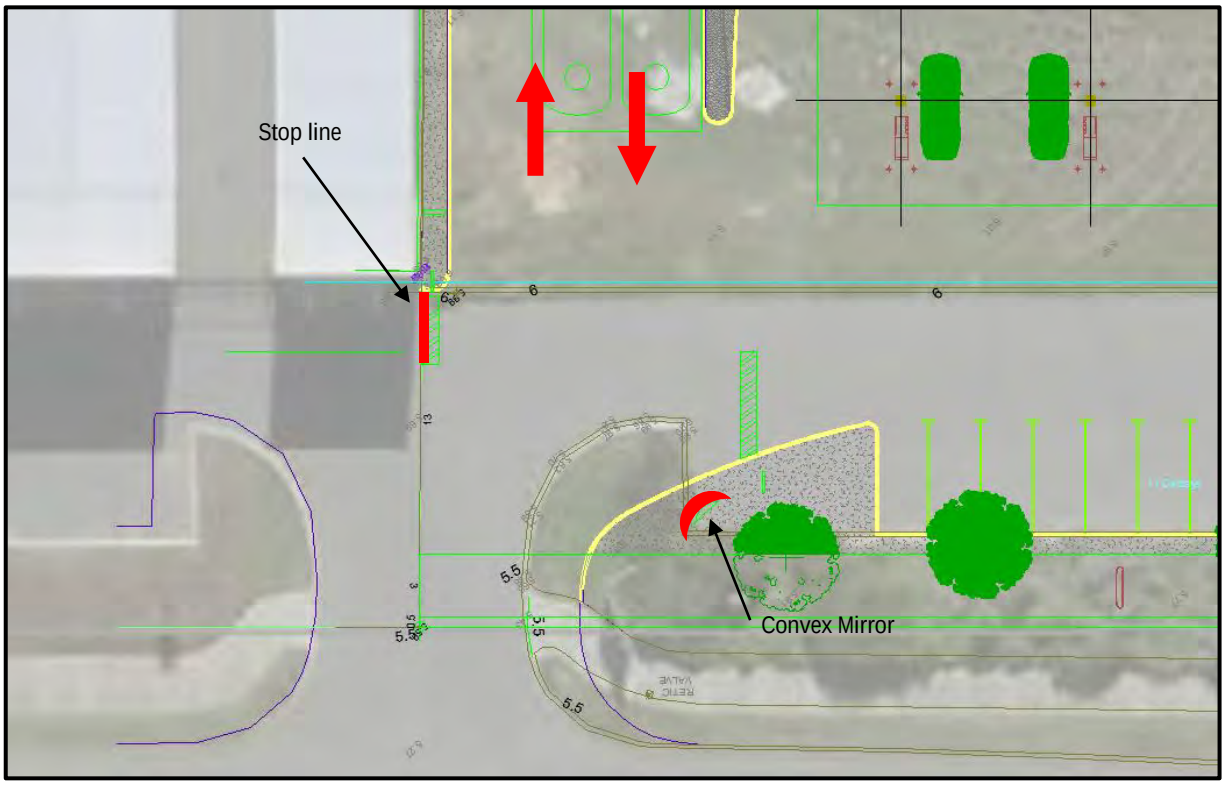


Figure 16 - Line Markings

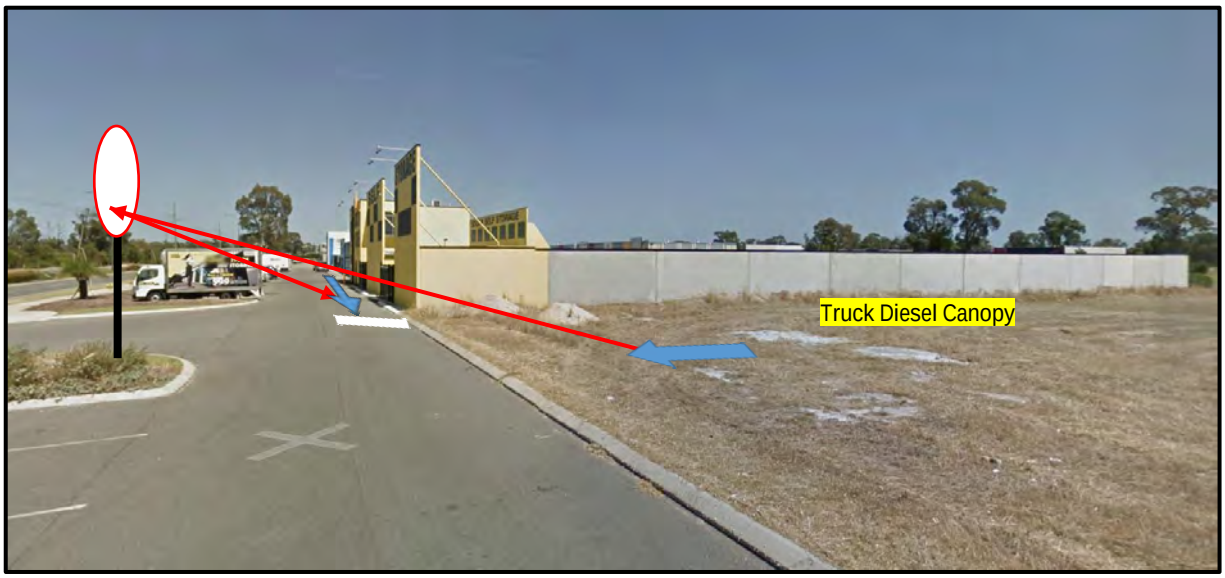


Figure 17 - Convex Mirror Location

6.3. Access Pedestrian Sight Distance

The Australian Standard AS2890.1:2004 provides details for sight lines and distances for pedestrian movements across an access to a car park. Those details are shown in the AS2890.1 Figure 3.3 extract on Figure 18.

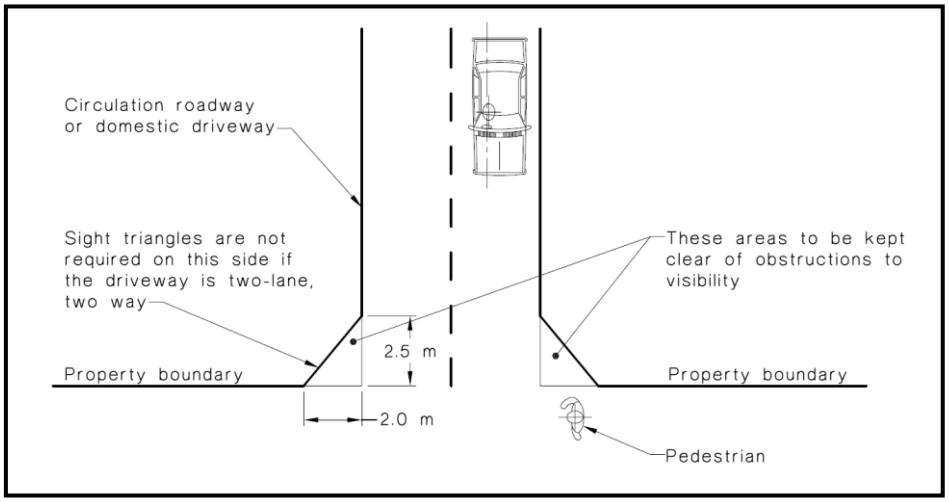


Figure 18 - AS 2890.1 Requirements for Pedestrian Sight Lines

The site plan does not indicate any sight line obstructions at the crossover. It can be concluded that sight distance at the egresses is acceptable.

7. Parking

7.1. Parking Provision

The City of Rockingham Town Planning Scheme No.2 (TPS2) sets out the car parking requirements as shown in Table 9. A comparison of the requirements and proposed parking provision indicates that the proposed parking supply is compliant.

Table 9 - City of Rockingham Town Planning Scheme No. 2 Car Parking Requirements

Land use	Parking Rate	Quantum	Parking Requirement
Service Station	1 bay per service bay	6	6
	1 bay per employee	9	9
	6 bays per 100 m^2 NLA of retail floorspace	225 m^2	14
		Total Required	29 Bays
		Parking Provision	39 Bays

7.2. Car Parking Layout

The bay dimensions for a Class 3 car parking facility according to AS2890.1 (Generally short-term parking) are shown below in Table 10.

Table 10 - AS 2890.1 Parking Bay Dimension for Cars

Bay Details	Bay Dimension Required	Bay Dimension Proposed
Ninety-degree Bays	5.4 x 2.6 x 5.8m aisles.	5.4 x 2.5 x 6.0m aisles. (minimum dimension)

As shown, the proposed bay width is 0.1m below minimum requirement, however, based on the following considerations the variation is considered acceptable and should not cause parking congestion.

- There is excessive provision of aisle width;
- Single manoeuvring in and out of the bays is achievable for the majority of bays.
- Although the turnover of parking bays is expected to be high, the bay occupancy is expected to be low;
- The onsite parking provision is significantly above minimum requirements;

8. Public Transport

8.1. Existing Public Transport Services

Figure 19 summarises the public transport network adjacent to the site. Transperth Bus route 549 is the only bus service operating in the local vicinity and the nearest bus stop is located outside the Rockingham Holiday Village, within 300m walking distance from the site.

The existing service is considered adequate for the proposed development considering the site has a low demand for public transport and the site provides sufficient number of bays for staff parking.

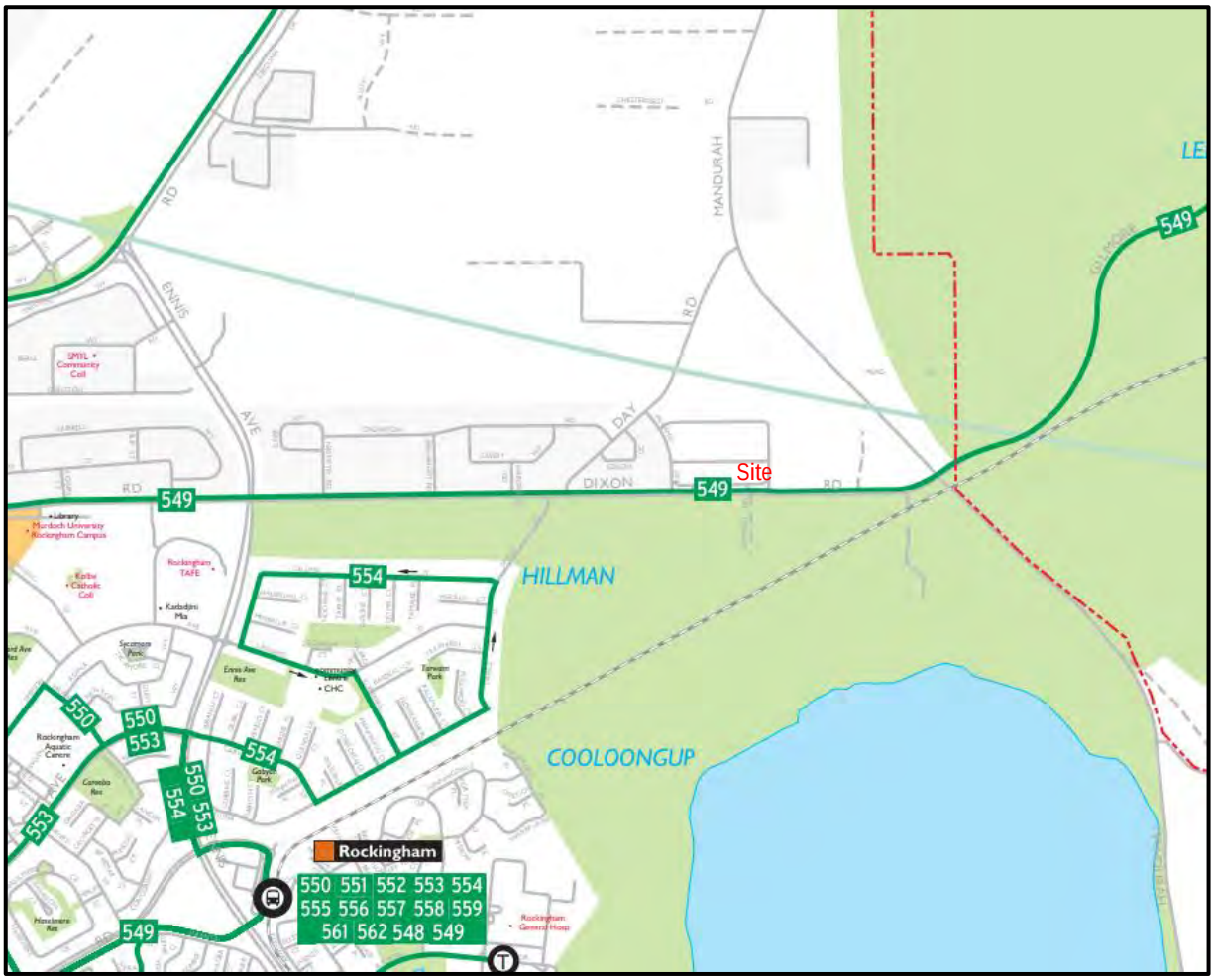


Figure 19 - Public Transport Network

9. Pedestrians and Cycle Networks

9.1. Existing Cycle and Pedestrian Infrastructure

Pedestrian and cycle facilities in the general vicinity of the site are shown in Figure 20. There are sealed shoulders along both sides of Dixon Road, providing access to Rockingham Bicycle Network. Pedestrian footpath is available along the northern side of Dixon Road connecting the light industrial and commercial developments along the road. Pedestrian movement to and from the site is expected to be low, and the existing infrastructure is considered adequate for the proposed development.

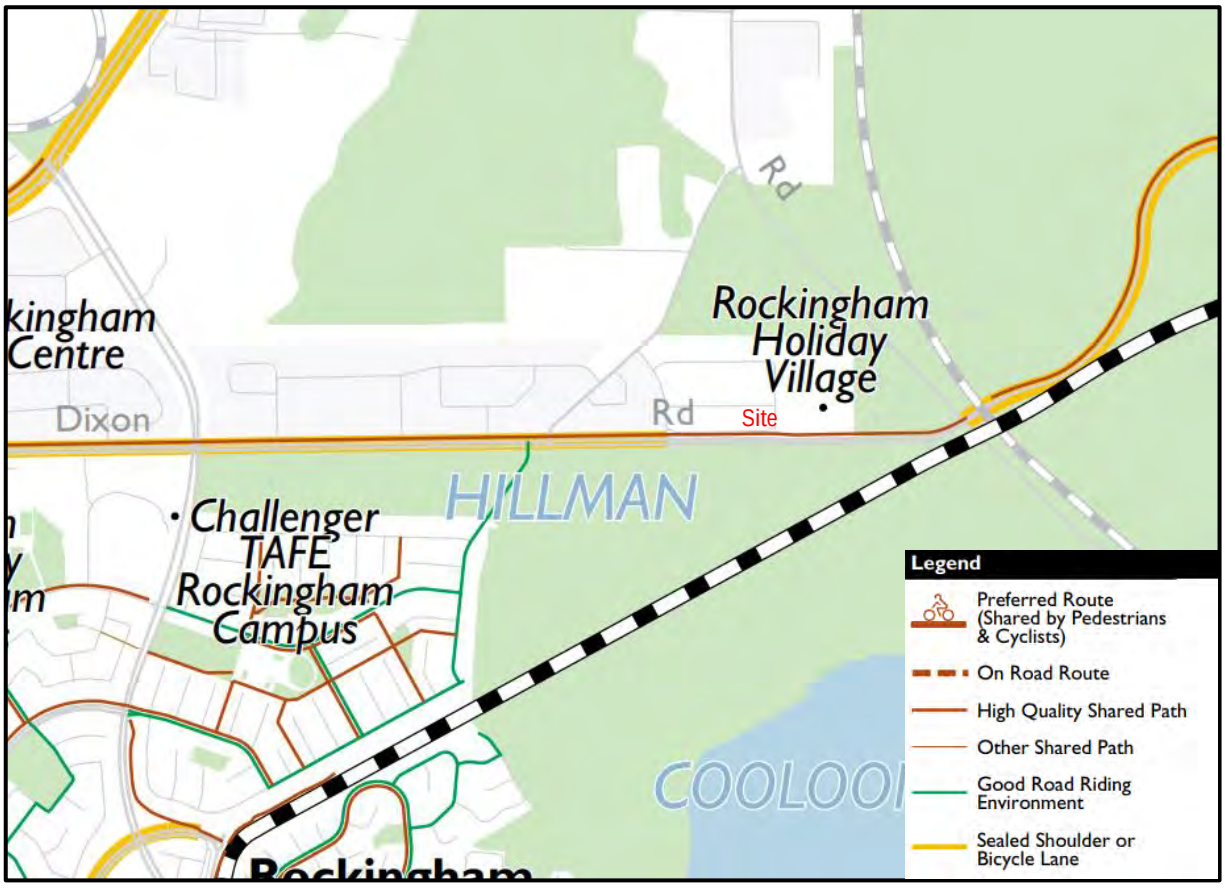


Figure 20 - Pedestrian and Cyclist Facilities

10. Site Specific or Safety Issues

10.1. Crash History

Crash data for the adjacent roads and major intersections were sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 31/12/2017. The report is summarised in Table 11.

Table 11 - Crash History

Location	Number of Crashes	MR Nature	Severity
Dixon Road / Mandurah Road / Gilmore Avenue Intersection	43	24 "Rear End" 2 "Sideswipe Same Direction" 6 "Right Angle" 11 "Right Turn Thru"	11 "Property Damage - Minor" 24 "Property Damage - Major" 6 "Medical" 2 "Hospital"
Dixon Road SLK 3.45 (McCamey Ave) to SLK 4.46 (Mandurah Rd)	15	7 "Rear End" 2 "Sideswipe Same Direction" 1 "Right Angle" 1 "Right Turn Thru" 1 "Hit Object" 1 "Other Unknown"	5 "Property Damage - Minor" 6 "Property Damage - Major" 3 "Medical" 1 "Hospital"
Evinrude Bend SLK 0.00 (Dixon Rd) to SLK 4.46 (McCamey Ave)	0	N/A	N/A
Whittle Road SLK 0.00 (Evinrude Bnd) to SLK 0.35 (McCamey Ave)	0	N/A	N/A

The number of crashes recorded at Dixon Road / Mandurah Road / Gilmore Avenue Intersection is relatively high compared to other intersection of similar location, however, while the development will generate additional traffic through this intersection, the number of additional traffic movements is relatively low. This additional volume of traffic is not considered to increase the risk of crashes to unacceptable levels.

11. Conclusion

With respect to the proposed Fuel Station & Car Service Centre, the following is concluded;

- The surrounding roads and intersections can accommodate the forecast increase in traffic from the proposed development;
- The supply of car parking spaces is considered adequate for the development;
- Review of the proposed parking layout indicates a shortage of 0.1m bay width in accordance with AS2890.1 Class 3 parking dimensions, however, the proposed layout is considered acceptable as the excessive aisle width can ensure single manoeuvre to access and egress from the bays and despite the high turnover rate, the parking occupancy is expected to be low;
- The proposed parking areas and internal geometry cater for all expected classes of vehicles;
- The proposed access arrangement, line-marking and convex mirror should facilitate safe circulation within the site;
- Based on the assessment of auxiliary lane, the existing right turn auxiliary lane is considered acceptable. Whilst the traffic volumes meet the warrants for an auxiliary left turn lane, an auxiliary left turn lane is not recommended considering the consistency of existing road environment and treatment of the adjacent intersections;
- Based on the proposed land use, the public transport demand of the site is likely to be low and therefore the existing services are considered to be adequate;
- The existing pedestrian/cyclist infrastructure in the vicinity of the site is considered to be adequate to facilitate the safe movement of pedestrians and cyclists.

Appendix A - Site Layout

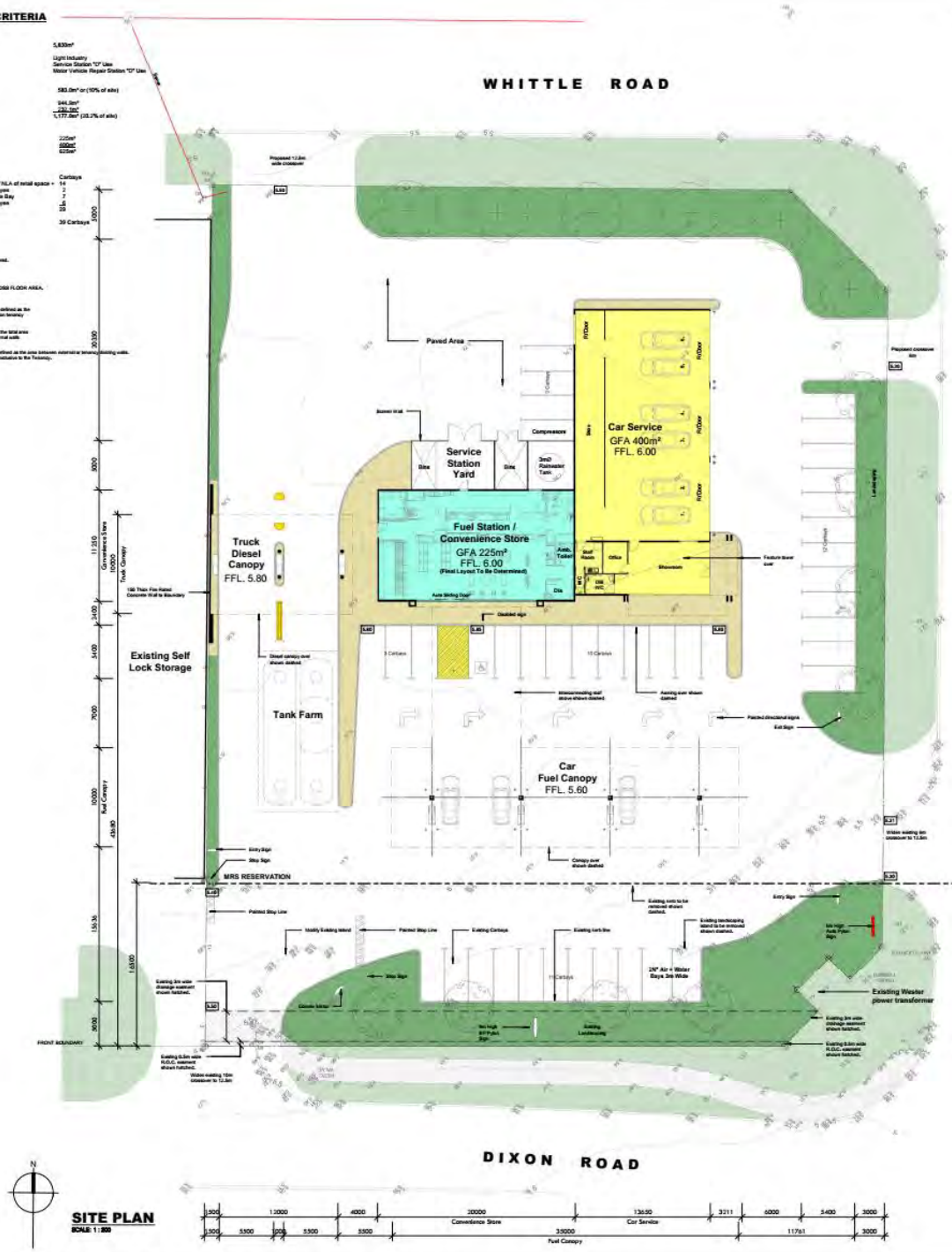
COMPOSITE SITE CRITERIA

1. Site Area		5,830m²
2. Zoning		Light Industry Service Station "D" Use Motor Vehicle Repair Station "D" Use
3. Landscaping		
a. Landscape Required		583.0m² or (10% of site)
b. Landscape Provided		
Soft		944.8m²
Hard		230.1m²
Total		1,177.0m² (20.2% of site)
4. Floor Area		
a. Convenience Store		225m²
b. Car Service		400m²
Total		625m²
5. Carparking		
a. Cars Required		Carbays
i. Convenience Store	6/100m² NLA of retail space +	14
	1/Employee	2
ii. Car Service	1/Service Bay	7
	1/Employee	16
Total		39
b. Cars Provided		39 Carbays

Landscaping
A. Hard Landscaping
Defined as paved walkways either open or covered.
B. Soft Landscaping
Defined as vegetative landscaping.

Gross Floor Area / GFA
A. All Floor Areas on this plan are shown as GROSS FLOOR AREA, Unless otherwise noted as Nett Floor Area.
B. Definition of Gross Floor Area is defined as:
i/ GROSS FLOOR AREA OF TENANCY:
Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside face of external walls.
ii/ GROSS FLOOR AREA OF A BUILDING:
Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls.

Nett Floor Area / NFA
A. Nett Floor Area of a Tenancy on this plan is defined as the area between external or tenancy dividing walls.
B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.



SITE PLAN
SCALE: 1:200

EXISTING SITE SURVEY
SCALE: 1:200

PROPOSED FUEL STATION & CAR SERVICE
LOCATION:LOTS 36, CNR DIXON ROAD & EVINRUDE BEND, ROCKINGHAM
FOR:DAWNMARK HOLDING PTY LTD. AFT THE ELEMENT UNIT TRUST BY: VEND PROPERTY

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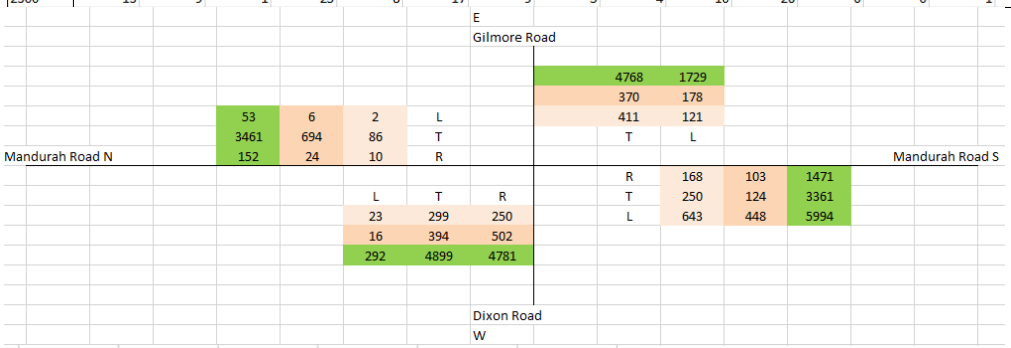
PO Box 1294 Subiaco WA 6904
t: 08 9381 4511 e: msa@meyershircore.com.au

Appendix B - Traffic Count

MRWA SCATS traffic count for Dixon Road / Mandurah Road / Gilmore Avenue
Average hourly traffic volume from Monday 12/11/2018 to Friday 16/11/2018

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
0000	8	5	0	14	5	9	4	4	2	3	14	3	1	0	17	6	97
0100	7	3	0	6	2	5	1	7	2	2	6	1	0	0	10	6	60
0200	12	2	0	6	2	11	2	8	3	3	5	1	0	1	11	1	66
0300	13	6	0	12	1	12	4	21	8	1	8	2	0	3	14	6	111
0400	15	5	0	26	7	44	20	62	35	7	14	9	1	4	31	14	294
0500	28	23	2	73	40	87	64	355	354	43	38	32	2	19	180	24	1363
0600	46	45	3	129	71	97	80	298	320	75	76	49	0	26	290	43	1647
0700	45	46	6	146	78	99	91	201	240	131	130	92	4	19	630	72	2030
0800	42	44	10	190	109	122	128	121	129	168	225	186	2	23	643	121	2263
0900	48	41	7	201	103	124	126	69	69	107	206	157	2	21	386	88	1756
1000	55	52	11	223	123	140	139	63	56	85	203	138	3	21	367	93	1772
1100	56	58	8	221	127	145	158	58	50	77	213	141	5	24	373	107	1821
1200	72	77	12	224	124	145	159	55	44	81	199	140	5	21	360	90	1806
1300	67	85	8	222	121	147	157	58	47	75	186	120	4	19	337	106	1758
1400	131	192	17	233	139	185	191	59	53	90	199	159	5	22	403	138	2215
1500	192	294	21	262	171	243	248	66	61	121	229	204	5	20	485	181	2802
1600	276	419	24	246	148	248	253	66	57	103	199	171	6	16	448	178	2858
1700	192	305	11	200	122	202	189	66	49	91	188	140	2	13	337	178	2286
1800	93	132	7	150	81	113	108	34	26	69	148	95	3	7	260	110	1436
1900	35	42	1	117	64	80	77	17	11	45	105	52	1	5	155	63	870
2000	24	29	2	100	54	69	64	12	5	36	81	34	1	3	106	40	663
2100	22	21	1	74	38	65	50	11	8	29	62	22	0	2	71	35	511
2200	18	18	1	45	19	30	20	9	4	15	41	13	0	1	51	20	305
2300	13	9	1	25	8	17	9	5	4	10	26	6	0	1	29	8	172



	Daily	AM PEAK	PM PEAK
Mandurah Road N	7319	371	863
Mandurah Road S	20797	1518	2049
Dixon Road	20886	1636	1753
Glimore Avenue	12920	1001	1051

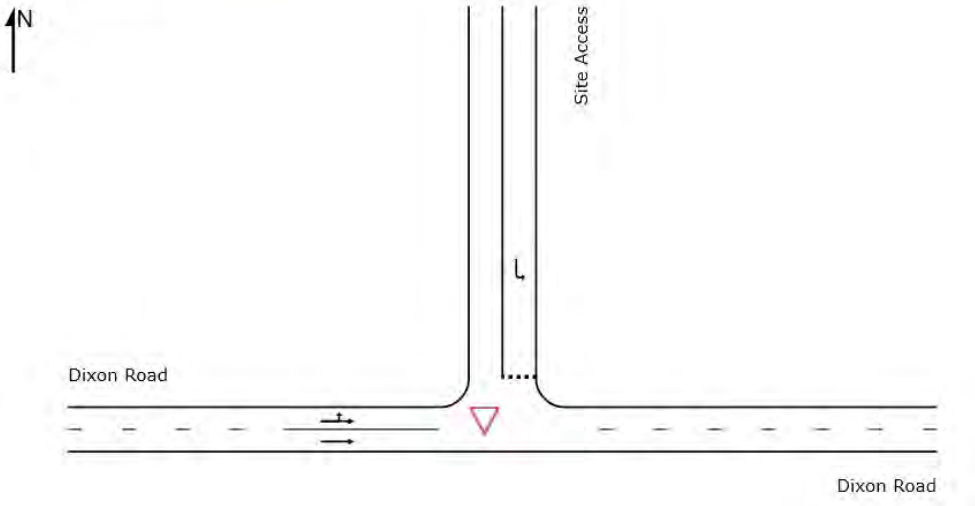
Appendix C - SIDRA Outputs

Site Access / Dixon Road Intersection

SITE LAYOUT

▽ **Site: [2021 AM Peak - Site Access / Dixon Road]**

Site Category: -
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: [2021 AM Peak - Site Access / Dixon Road]

Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Site Access												
7	L2	14	8.0	0.012	6.6	LOS A	0.0	0.3	0.35	0.56	0.35	52.2
Approach		14	8.0	0.012	6.6	LOS A	0.0	0.3	0.35	0.56	0.35	52.2
West: Dixon Road												
10	L2	33	8.0	0.168	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	57.4
11	T1	589	8.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach		622	8.0	0.168	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles		636	8.0	0.168	0.5	NA	0.0	0.3	0.01	0.04	0.01	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: [2021 PM Peak - Site Access / Dixon Road]

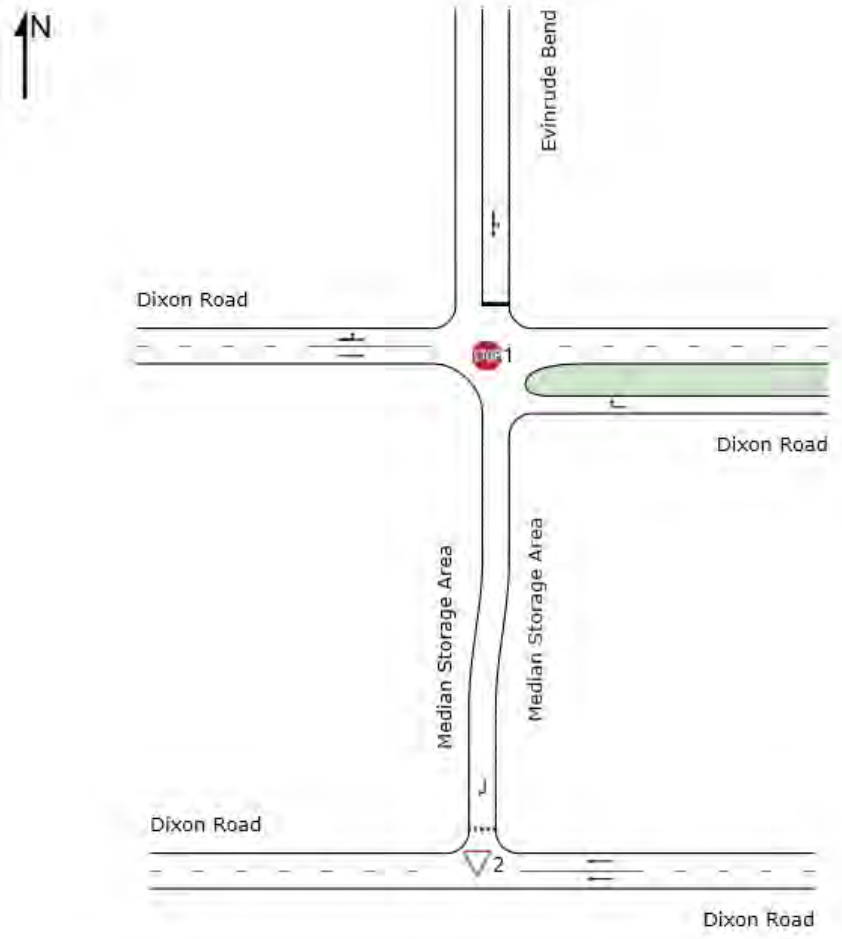
Site Category: -
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Site Access												
7	L2	18	8.0	0.017	7.3	LOS A	0.1	0.5	0.44	0.61	0.44	51.9
Approach		18	8.0	0.017	7.3	LOS A	0.1	0.5	0.44	0.61	0.44	51.9
West: Dixon Road												
10	L2	40	8.0	0.245	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	57.5
11	T1	866	8.0	0.245	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach		906	8.0	0.245	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles		924	8.0	0.245	0.4	NA	0.1	0.5	0.01	0.04	0.01	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Dixon Road Evinrude Bend Intersection
Note: this intersection layout is a technique to simulate staged right turn movements.



MOVEMENT SUMMARY

Site: 1 [2021 AM Peak Dixon Road / Evinrude Bend Stage 1]

Network: N101 [2021 AM Peak Dixon Road / Evinrude Bend Staged Right Turn]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Dixon Road														
12	R2	29	8.0	29	8.0	0.042	9.1	LOS A	0.1	0.5	0.55	0.72	0.55	50.7
Approach		29	8.0	29	8.0	0.042	9.1	NA	0.1	0.5	0.55	0.72	0.55	50.7
North: Evinrude Bend														
1	L2	19	8.0	19	8.0	0.119	9.8	LOS A	0.2	1.3	0.55	0.96	0.55	49.0
2	T1	47	8.0	47	8.0	0.119	14.3	LOS B	0.2	1.3	0.55	0.96	0.55	43.7
Approach		66	8.0	66	8.0	0.119	13.0	LOS B	0.2	1.3	0.55	0.96	0.55	45.9
West: Dixon Road														
4	L2	15	8.0	15	8.0	0.163	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.7
5	T1	589	8.0	589	8.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		604	8.0	604	8.0	0.163	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		699	8.0	699	8.0	0.163	1.7	NA	0.2	1.3	0.07	0.13	0.07	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2021 AM Peak Dixon Road / Evinrude Bend Stage 2]

Network: N101 [2021 AM Peak Dixon Road / Evinrude Bend Staged Right Turn]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Dixon Road														
11	T1	1096	8.0	1096	8.0	0.296	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1096	8.0	1096	8.0	0.296	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Median Storage Area														
3	R2	47	8.0	47	8.0	0.108	6.7	LOS A	0.1	0.8	0.71	0.71	0.71	6.3
Approach		47	8.0	47	8.0	0.108	6.7	LOS A	0.1	0.8	0.71	0.71	0.71	6.3
All Vehicles		1143	8.0	1143	8.0	0.296	0.3	NA	0.1	0.8	0.03	0.03	0.03	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2021 PM Peak Dixon Road / Evinrude Bend Stage 1]

Network: N101 [2021 PM Peak Dixon Road / Evinrude Bend Staged Right Turn]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Dixon Road														
12	R2	34	8.0	34	8.0	0.083	13.4	LOS B	0.1	0.9	0.72	0.88	0.72	47.8
Approach		34	8.0	34	8.0	0.083	13.4	NA	0.1	0.9	0.72	0.88	0.72	47.8
North: Evinrude Bend														
1	L2	23	8.0	23	8.0	0.261	12.1	LOS B	0.4	3.0	0.76	1.02	0.85	44.8
2	T1	58	8.0	58	8.0	0.261	23.8	LOS C	0.4	3.0	0.76	1.02	0.85	37.5
Approach		81	8.0	81	8.0	0.261	20.5	LOS C	0.4	3.0	0.76	1.02	0.85	40.3
West: Dixon Road														
4	L2	15	8.0	15	8.0	0.258	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
5	T1	939	8.0	939	8.0	0.258	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		954	8.0	954	8.0	0.258	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1069	8.0	1069	8.0	0.261	2.1	NA	0.4	3.0	0.08	0.11	0.09	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2021 PM Peak Dixon Road / Evinrude Bend Stage 2]

Network: N101 [2021 PM Peak Dixon Road / Evinrude Bend Staged Right Turn]

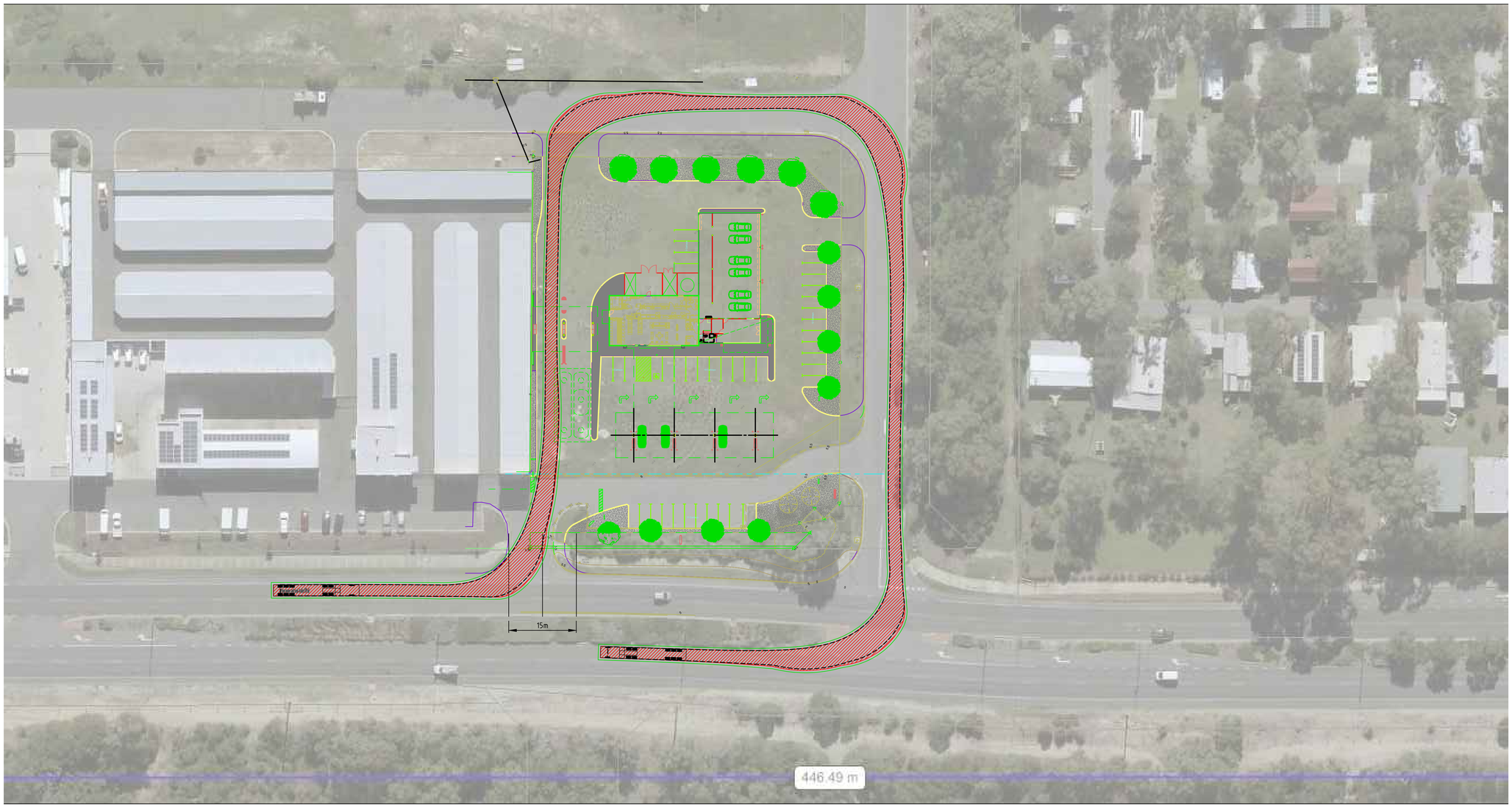
Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Site Category: (None)
Giveway / Yield (Two-Way)

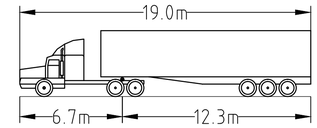
Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Dixon Road														
11	T1	866	8.0	866	8.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		866	8.0	866	8.0	0.234	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Median Storage Area														
3	R2	58	8.0	58	8.0	0.098	4.3	LOS A	0.1	0.7	0.60	0.60	0.60	8.3
Approach		58	8.0	58	8.0	0.098	4.3	LOS A	0.1	0.7	0.60	0.60	0.60	8.3
All Vehicles		924	8.0	924	8.0	0.234	0.3	NA	0.1	0.7	0.04	0.04	0.04	59.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D - Swept Path Diagram(s)





PRIME MOVER AND SEMI-TRAILER (19m) MRWA

OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
TURNING RADIUS TO OUTSIDE FRONT WHEEL	15.000m

LEGEND

- TURNING TEMPLATE - VEHICLE BODY FORWARD MOVEMENT
- TURNING TEMPLATE - WHEEL PATH
- TURNING TEMPLATE - 0.5m CLEARANCE FROM VEHICLE BODY

SCALE 1:500

A1

REV	DATE	DESCRIPTION	APPROVED
A	17.05.19	ISSUED FOR INFORMATION	LD

ISSUE AND REVISION HISTORY

CLIENT: meyer shircore architects

LOCAL GOVERNMENT AUTHORITY: City of Rockingham – where the coast comes to life

SCALE @A1
HORIZ: 1:500
VERT:

DATUM
HORIZONTAL: XXXX
VERTICAL: XXXX

SHAWMAC

INFORMATION ONLY

DATE DRAWN:	17.05.19
DESIGNED:	N/A
DRAWN:	KL
CHECKED:	LD
APPROVED:	LD

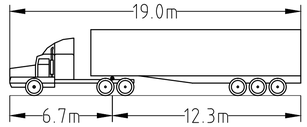
LOT 36 DIXON ROAD, EAST ROCKINGHAM
SWEPT PATH ANALYSIS
MRWA SEMI TRAILER (19.0m) TURNING TEMPLATE
TO AND FROM WEST

DRAWING NUMBER: 1901005-SK-011

REV. A

FILE REF: Y:\Jobs Active 2019\T&T - Traffic & Parking\Dawnmark Holdings_Fuel Station & Car Service Centre_TIS_1901005\Drawings\Sketches\1901005-SK-011

LAST SAVED BY: Kli DATE: 17 May 2019 4:12 PM



PRIME MOVER AND SEMI-TRAILER (19m) MRWA

OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
TURNING RADIUS TO OUTSIDE FRONT WHEEL	15.000m

LEGEND

- TURNING TEMPLATE - VEHICLE BODY FORWARD MOVEMENT
- TURNING TEMPLATE - WHEEL PATH
- TURNING TEMPLATE - 0.5m CLEARANCE FROM VEHICLE BODY

SCALE 1:500

A1

REV	DATE	DESCRIPTION	APPROVED
A	17.05.19	ISSUED FOR INFORMATION	LD

ISSUE AND REVISION HISTORY

CLIENT: meyer shircore architects

LOCAL GOVERNMENT AUTHORITY: City of Rockingham – where the coast comes to life

SCALE @A1
HORIZ: 1:500
VERT:

DATUM
HORIZONTAL: XXXX
VERTICAL: XXXX

SHAWMAC

INFORMATION ONLY

DATE DRAWN:	17.05.19
DESIGNED:	N/A
DRAWN:	KL
CHECKED:	LD
APPROVED:	LD

LOT 36 DIXON ROAD, EAST ROCKINGHAM

SWEPT PATH ANALYSIS
MRWA SEMI TRAILER (19.0m) TURNING TEMPLATE
TO AND FROM EAST

DRAWING NUMBER: 1901005-SK-012

REV. A

FILE REF: Y:\Jobs Active 2019\T&T - Traffic & Parking\Dawnmark Holdings_Fuel Station & Car Service Centre_TIS_1901005\Drawings\Sketches\1901005-SK-011

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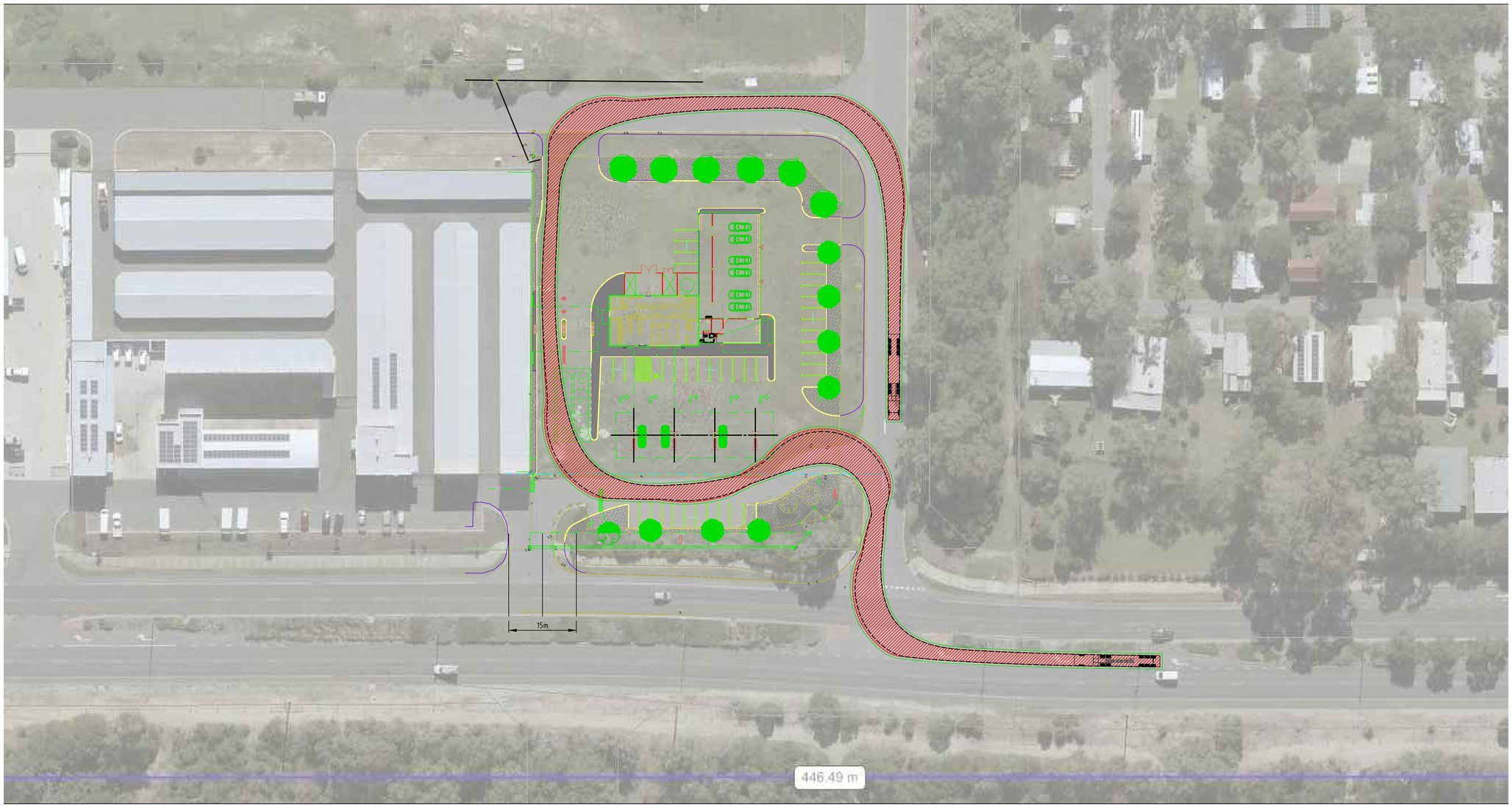

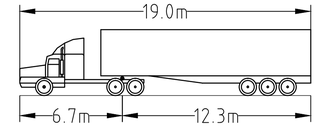

PRIME MOVER AND SEMI-TRAILER (19m) MRWA

OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
TURNING RADIUS TO OUTSIDE FRONT WHEEL	15.000m

LEGEND

- TURNING TEMPLATE - VEHICLE BODY FORWARD MOVEMENT
- TURNING TEMPLATE - WHEEL PATH
- TURNING TEMPLATE - 0.5m CLEARANCE FROM VEHICLE BODY

SCALE 1:500

A1

REV	DATE	DESCRIPTION	APPROVED
A	17.05.19	ISSUED FOR INFORMATION	LD

ISSUE AND REVISION HISTORY

CLIENT: meyer shircore architects

LOCAL GOVERNMENT AUTHORITY: City of Rockingham – where the coast comes to life

SCALE @A1
HORIZ: 1:500
VERT:

DATUM
HORIZONTAL: XXXX
VERTICAL: XXXX

SHAWMAC

INFORMATION ONLY

DATE DRAWN:	17.05.19
DESIGNED:	N/A
DRAWN:	KL
CHECKED:	LD
APPROVED:	LD

LOT 36 DIXON ROAD, EAST ROCKINGHAM
SWEPT PATH ANALYSIS
MRWA SEMI TRAILER (19.0m) TURNING TEMPLATE
ACCESS FROM EVINRUDE BEND CROSSOVER

DRAWING NUMBER: 1901005-SK-013

REV. A

FILE REF: Y:\Jobs Active 2019\T&T - Traffic & Parking\Dawnmark Holdings_Fuel Station & Car Service Centre_TIS_1901005\Drawings\Sketches\1901005-SK-011

LAST SAVED BY: KLi DATE: 17 May 2019 4:12 PM

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 36 Dixon Road, East Rockingham WA 6168

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 4th Month January Year 2019

Report author: Tim Briggs

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☑ Level 2 practitioner ☐ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 40353 Accreditation expiry: Month January Year 2020

Bushfire management plan version number: Rev 5

Bushfire management plan date: Day 13th Month May Year 2019

Client/business name: Entire Fire Management

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
Minor development (in BAL-40 or BAL-FZ)		✔
High risk land-use	✔	
Vulnerable land-use		✔

None of the above ☐

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Considered High Risk Land Use in accordance with SPP 3.7

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author  Date 13/05/2019

Bushfire Management Plan

Prepared for Lot 36 Dixon Road, East Rockingham

Table of Contents

List of figures

List of appendices

Entire Empire Pty Ltd | ABN: 63 468 728 651 | *www.entirefire.com.au* | *admin@entireempire.com.au* | (08) 9498 0056 | 6 Potts Road, Forrestdale WA 6112

Document control

Report Version	Purpose	Author/reviewer and accreditation details	Date Submitted
Revision 1	For Implementation	Tim Briggs 40353	23/01/2019
		Gavin Fancote 37922	
Revision 2	Site Plan Updated	Tim Briggs 40353	08/03/2019
		Gavin Fancote 37922	
Revision 3	Categorised as High Risk Land	Tim Briggs 40353	19/03/2019
	Use	Gavin Fancote 37922	
Revision 4	Bushfire risk assessment	Tim Briggs 40353	27/03/2019
		Gavin Fancote 37922	
Revision 5	Revised to suit DFES referral	Tim Briggs 40353	13/05/2019
	comments	Gavin Fancote 37922	

Disclaimer

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Entire Fire Management at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Section 1: Proposal Details

This BMP has been developed in support of a development application for a new fuel station and car service centre on the property located at Lot 36 Dixon Road in East Rockingham WA. The subject lot size is 5,832m², has been previously been cleared for development and is clear of native vegetation.

The nearby area is largely developed for commercial purposes with exception to the area south of Dixon Road which is a bush forever site and is protected vegetation.

In accordance with SPP 3.7 this development is considered to be High Risk land use and is accompanied with an Emergency Evacuation Plan provided as a separate document and a bushfire risk assessment has been prepared.

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FIGURE 1: Copy of the Planning Proposal

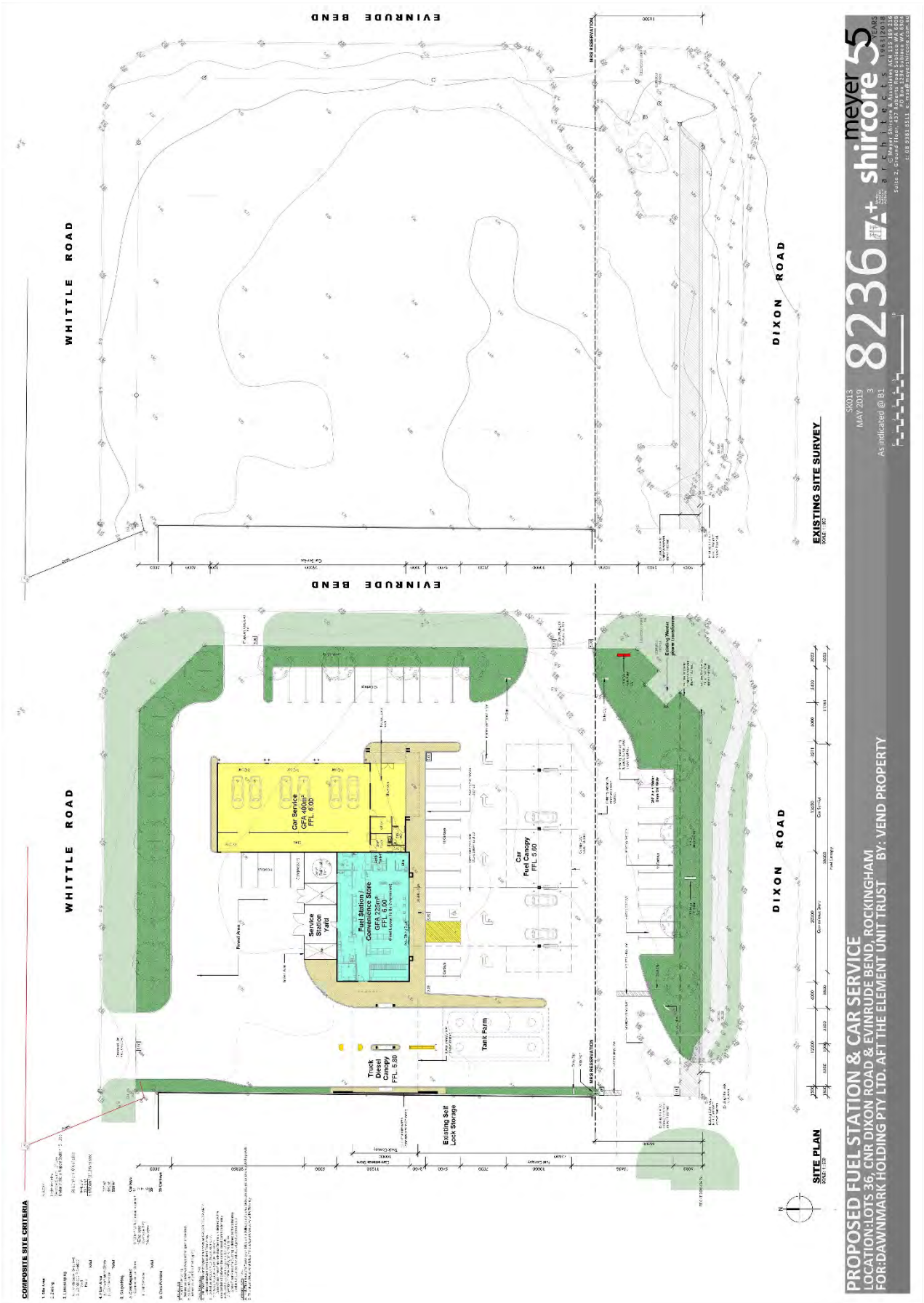

FIGURE 2: Map of Bushfire Prone Areas for Subject Site

Section 2: Environmental Considerations

The proposed development site has been assessed for environmental values using the national database set *www.nationalmap.gov.au* to ensure that any clearing of native vegetation for bushfire protection does not adversely affect recognised conservational elements.

Datasets explored within NationalMap include the following:

Department of Biodiversity, Conservation and Attractions:
- Ramsar Sites (DBCA-010)
- Threatened and Priority Flora (DBCA-036)
- Threatened Ecological Communities (DBCA-038)

Department of Planning:
- Bush Forever Areas 2000 (DOP-071)

Department of Water and Environmental Regulation
- Clearing Regulations – Environmentally Sensitive Areas (DWER-046)

The figures on the following pages indicate positive findings and should be considered by the decision maker.

Note: The proposed development site contains no existing areas of native vegetation and requires no clearing for development.

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FIGURE 3: NationalMap – NationalMap – Threatened Ecological communities (DBCA-038)

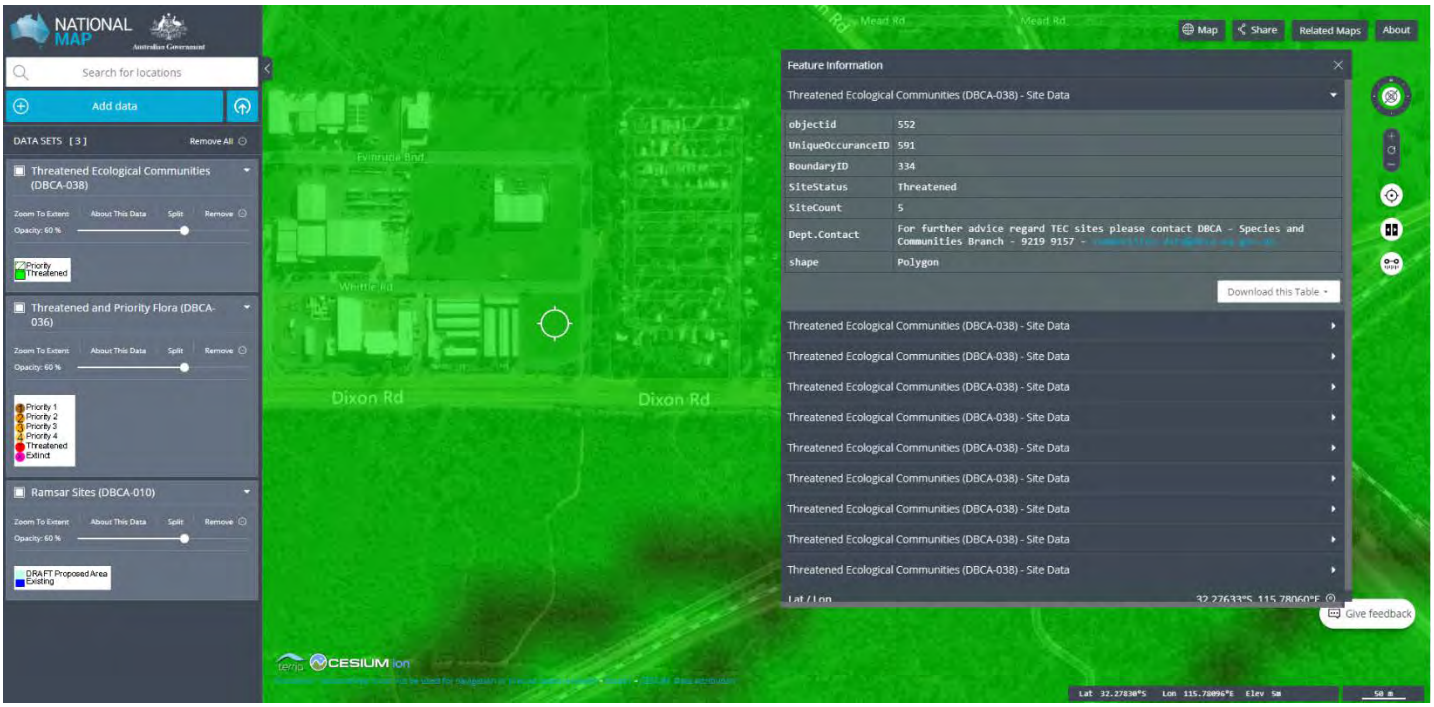
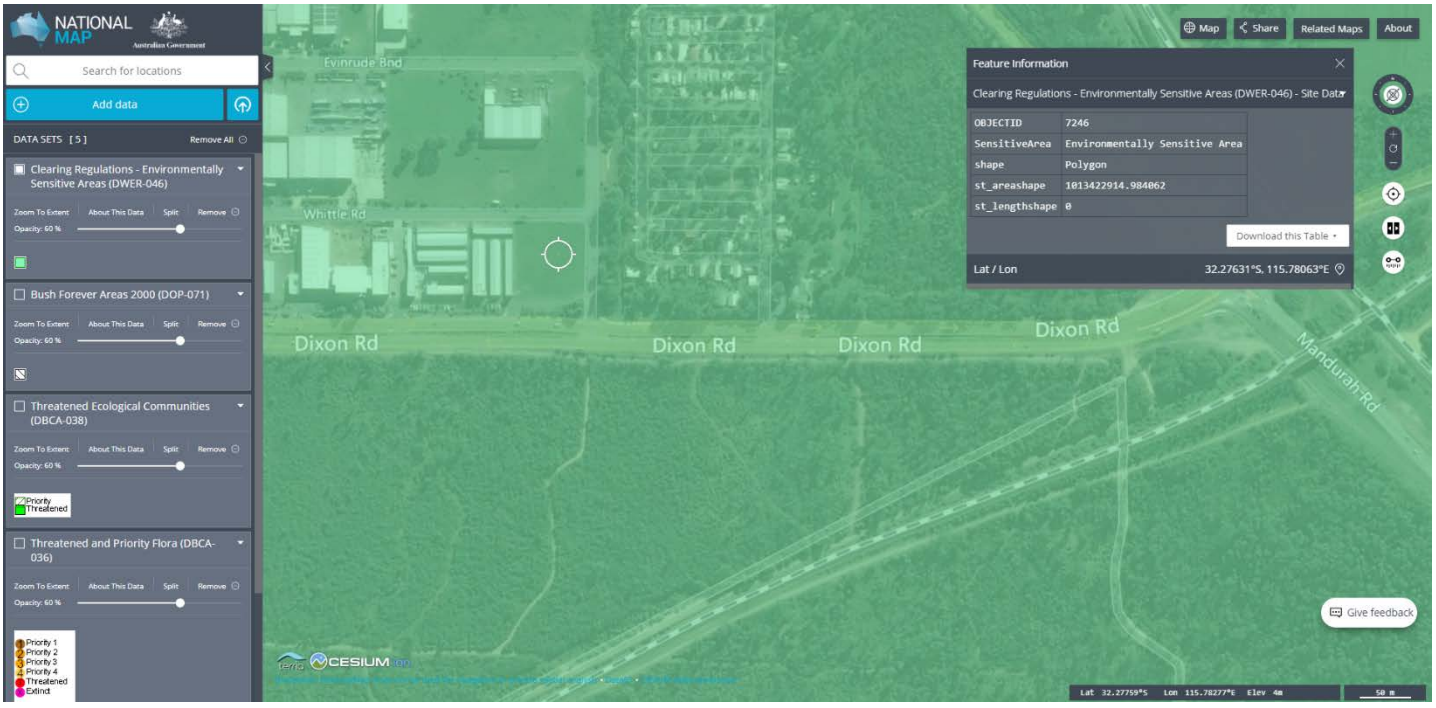


FIGURE 4: NationalMap – Environmentally Sensitive Areas (DWER-046)



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Subsection 2.1: Native Vegetation – Modification and Clearing

The Australian Government National Map indicates there are conservational values recognised within the local area of the subject property. There is no existing vegetation on the property that requires modification to ensure a suitable BAL rating can be achieved for future residences on each proposed lot.

Subsection 2.2: Re-vegetation/Landscape Plans

N/A

Section 3: Bushfire Assessment Results

A Bushfire Attack Level (BAL) Assessment has been prepared to support the proposed development application.

The following BAL Assessment has been prepared in accordance with AS 3959 and provides evidence and justification gathered during a site assessment that was conducted to determine the potential BAL rating associated with the proposed development.

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AS 3959 Bushfire Attack Level (BAL) Assessment Report

Site Details			
Address:	137 Dixon Road		
Suburb:	East Rockingham	**Postcode:**	6168
Local Government Area:	City of Rockingham		
Description of Building Works:	Construction of Fuel Station and Car Service		

Report Details			
Report Number:	BAL 2-1331	**Report Revision:**	2
Assessment Date:	04/01/19	**Report Date:**	13/05/19

BPAD Accredited Practitioner Details

Name:	Tim Briggs
Company Details:	Entire Fire Management

I hereby certify that I have undertaken the assessment of the above-mentioned site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 -2009 (Method 1)

I hereby declare that I am a BPAD accredited bushfire practitioner.

Accreditation No.	40353
Signature:	

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the Assessment date. If the assessment was completed more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

Site Assessment & Site Plans

(Attached as page 2 of this report)

The assessment of this site / development was undertaken on the above-mentioned date by an Accredited BPAD Practitioner for determining the Bushfire Attack Level in accordance with AS 3959 - 2009 Simplified Procedure (Method 1).

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	Project 137 Dixon Rd. East Rockingham			
	Title BAL Assessment			
Entire Empire Pty Ltd ABN: 63 468 728 651 Office: (08) 9498 0056 Address: 39B Alex Wood Drive Forrestdale Business Park Forrestdale WA 6112	Size A3	Scale 1:1500	Sheet BAL 2-1331	Rev 2
	Name Tim Briggs		Date 04 Jan 2019	

Legend

- Subject Property
- 150m Assessment Area
- 100m Exclusion Zone
- Photo Location
- Vegetation Plot Boundary
- Class A - Forest
- Class B - Woodland
- Class C - Shrubland
- Excluded c2.2.3.2(f)

0 45 90 Meters

Notes

Vegetation Classification

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	1	**Plot no:**	1
Vegetation Classification or Exclusion Clause			
Class A - Forest			
Description			
Vegetation containing tree canopy, mid-storey and ground fuels. Trees to 10m average height.			

Photo ID:	2	**Plot no:**	1
Vegetation Classification or Exclusion Clause			
Class A - Forest			
Description			
Vegetation containing tree canopy, mid-storey and ground fuels. Trees to 10m average height.			

Photo ID:	3	**Plot no:**	2
Vegetation Classification or Exclusion Clause			
Class B - Woodland			
Description			
Scrub vegetation to 3m in height with eucalyptus trees throughout.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	4	**Plot no:**	2
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Scrub vegetation to 3m in height with eucalyptus trees throughout.			

Photo ID:	5	**Plot no:**	3
Vegetation Classification or Exclusion Clause			
Class C - Shrubland			
Description			
planted shrub garden semi-maintained			

Photo ID:	6	**Plot no:**	4
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Eucalypt trees to 10m in average height. maintained ground and mid-storey fuels.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	7	**Plot no:**	4
Vegetation Classification or Exclusion Clause			
Class B- Woodland			
Description			
Eucalypt trees to 10m in average height. maintained ground and mid-storey fuels.			

Photo ID:	8	**Plot no:**	5
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation Maintained as Low Threat in accordance with the local Bush Fire Notice.			

Photo ID:	9	**Plot no:**	6
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation			

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Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index FDI 80 Table 2.4.3

Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below.

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class A - Forest	FLAT	60m	12.5
2	Class B- Woodland	FLAT	28m	19
3	Class C - Shrubland	FLAT	56m	12.5
4	Class B- Woodland	FLAT	59m	12.5
5	Excluded c2.2.3.2(f)	-	-	LOW
6	Excluded c2.2.3.2(f)	-	-	LOW

Table 1: BAL Analysis

Determined Bushfire Attack Level (BAL)

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2009 using the above analysis.

Determined Bushfire Attack Level	**BAL** - 19

Notes:
The determined BAL rating is BAL-19 due to all of the nearby vegetation.
Construction standards found in AS 3959 DO NOT need to be complied with as this is a class 6 building.

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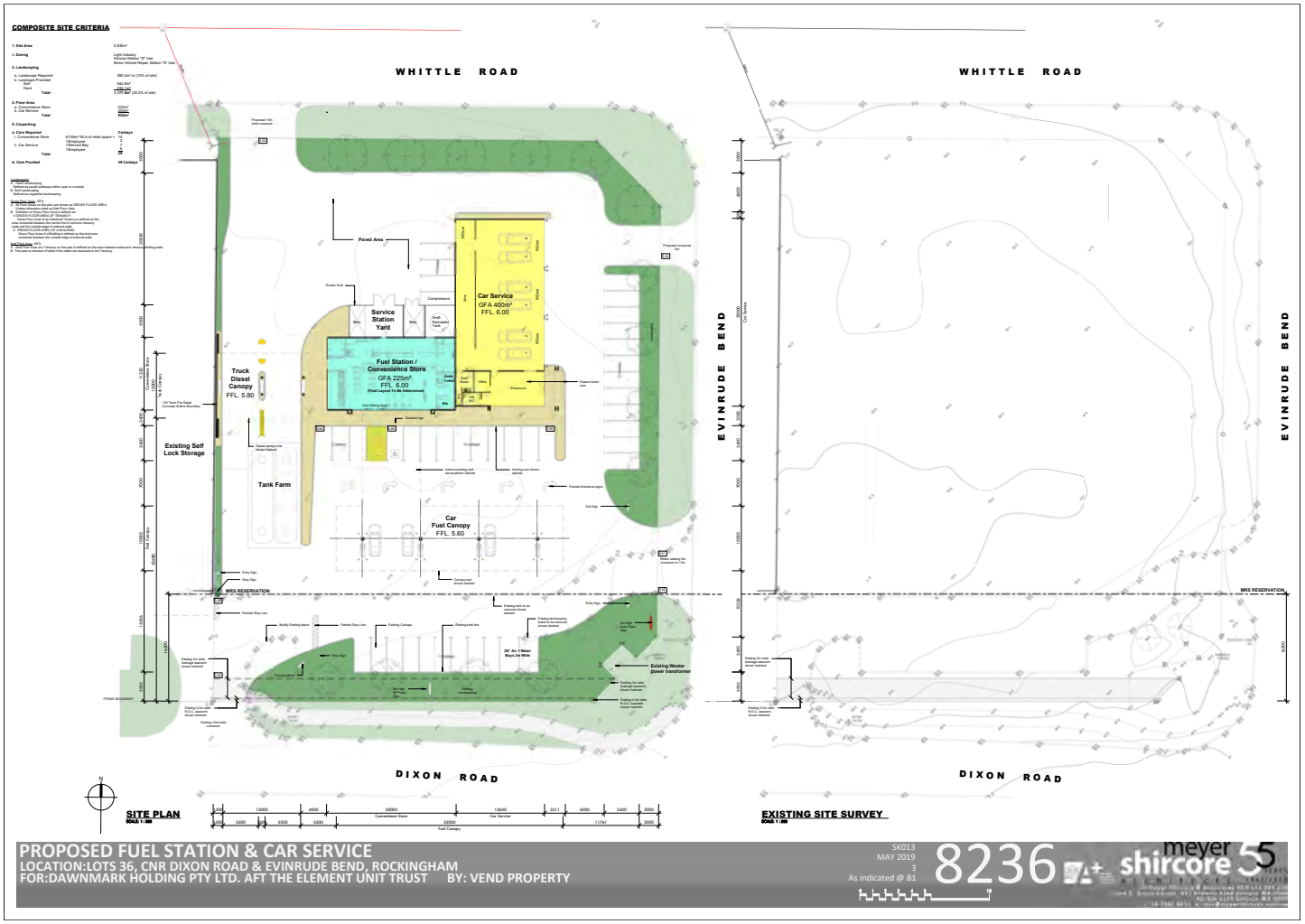
Appendix 2: Plans and Drawings

Plans and drawings relied on to determine the Bushfire Attack Level.



Bushfire Attack Level (BAL) Certificate

Determined in accordance with AS 3959-2009

This Certificate has been issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme. The certificate details the conclusions of the full Bushfire Attack Level Assessment Report (full report) prepared by the Accredited Practitioner.

Property Details and Description of Works

Address Details	**Unit no**	**Street no**	**Lot no**	**Street name / Plan Reference**	
		137	36	Dixon Road	
	Suburb East Rockingham			**State** WA	**Postcode** 6168
Local government area	City of Rockingham				
Main BCA class of the building	6	**Use(s) of the building**	Commercial/Retail		
Description of the building or works	Construction of new Fuel Station and Car Service				

Determination of Highest Bushfire Attack Level

AS 3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance	BAL
Method 1	Class B - Woodland	Flat	28m	19

BPAD Accredited Practitioner Details

Name
Tim Briggs

Company Details
Entire Fire Management

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2009 (Incorporating Amendments 1, 2 and 3).

I hereby declare that I am a BPAD accredited bushfire practitioner.

Accreditation No.	BPAD40353
Signature:	

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.

Section 4: Identification of Bushfire Hazard Issues

N/A

Section 5: Assessment Against the Bushfire Protection Criteria

The proposed plan for development at Lot 36 Dixon Road has been assessed against WAPC's Guidelines for Planning in Bushfire Prone Areas - Bushfire Protection Criteria. The table on the following pages assess each element of the criteria and indicates how compliance can be achieved for each.

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Bushfire protection criteria	Method of Compliance Acceptable solutions	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location	The proposed development is located sufficiently to be constructed within an area at BAL-29 or below.
Element 2: Siting and design	A2.1 Asset Protection Zone	All future gardens/plantings shall be in accordance with Appendix 1: APZ Standards.
Element 3: Vehicular access	A3.1 Two access routes.	Dixon Road provides access to multiple alternative locations.
	A3.2 Public road	All existing roads meet the minimum technical requirements set out in column 1 of Appendix 2: Vehicular access technical requirements.
	A3.3 Cul-de-sac (including a dead-end-road)	N/A
	A3.4 Battle-axe	N/A
	A3.5 Private driveway longer than 50 m A private driveway is to meet detailed requirements (refer to the Guidelines for detailed private driveway requirements).	N/A
	A3.6 Emergency access way	N/A
	A3.7 Fire service access routes (perimeter roads)	N/A
	A3.8 Firebreak width	N/A
Element 4: Water	A4.1 Reticulated areas	Reticulated street hydrants are installed at regular intervals on Dixon Rd, Evinrude Bend & Whittle Rd. in accordance with The Water Corporations No.63 Water Reticulation Standard
	A4.2 Non-reticulated areas	N/A
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A

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FIGURE 5: Spatial Representation of the Bushfire Management Strategies

Section 6: Responsibilities for Implementation & Management of the Bushfire Measures

DEVELOPER/SUBDIVIDER – PRIOR TO ISSUE OF CERTIFICATE OF TITLES FOR NEW LOTS	
No.	**Implementation action**
1	Landowner - Property owner shall maintain any future vegetation on the property to comply with the Asset Protection Zone standards provided in Appendix 1 of this BMP.
2	Notification is to be placed on title of the lot that the land is within a designated bushfire prone area and is subject to an existing Bushfire Management Plan.

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	**Management action**
1	Landowner - Property owner shall maintain vegetation on the properties to comply with the Asset Protection Zone standards provided in Appendix 1 of this BMP.
2	Landowner - Comply with the relevant local government annual firebreak notice issued under s33 of the *Bush Fires Act 1954.*

Appendices

A1: APZ – Asset Protection Zone Guidelines

A2: Vehicular Access Technical Documents

A3: City of Rockingham 2018/19 Fire Control Notice (supplied as a separate document).

A4: Bushfire Risk Assessment

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A1: APZ - Asset Protection Zone Guidelines

The siting and design of the strategic planning proposal, subdivision, or development application, including roads, paths, and landscaping, is appropriate to the level of bushfire threat that applies to the site. That it incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property, and infrastructure, including compliance with AS 3959-2009 if appropriate.

To achieve compliance with this Element the following acceptable solution must be met.

A2.1 Asset Protection Zone (APZ)

Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

- **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 output does not exceed 29KW/m² (BAL-29) in all circumstances.
- **Location:** the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in circumstances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity.
- **Management:** the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones'.

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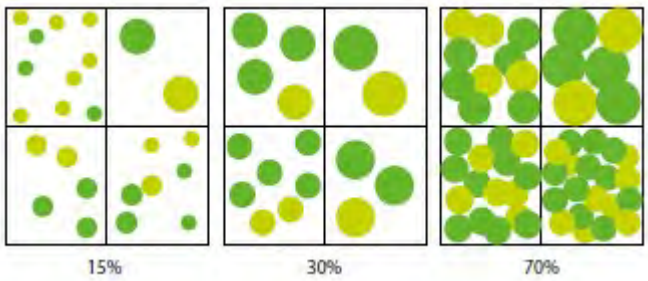
Design of Asset Protection Zone

The proportion of the APZ reflects the distance from the hazard to ensure adequate separation is achieved.

Standards for Asset Protection Zones

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, 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.



Tree Canopy Cover – Ranging from 15 to 70 percent at maturity

- **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.

Reference; WAPC Guidelines for Planning in Bushfire Prone Areas – V1.3

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A2: Vehicular Access Technical Requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	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 (m)	8.5	8.5	8.5	8.5	8.5
*Refer to E3.2 Public roads: Trafficable surface					

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Bushfire Risk Assessment

Prepared for Lot 36 Dixon Road, East Rockingham

Table of Contents

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1 Introduction

1.1 Project overview

Entire Fire Management was commissioned to prepare a Bushfire Risk Assessment to support a development application (DA) being prepared for the development of a service station located at Lot 36 (137) Dixon Road, East Rockingham (hereafter referred to as the subject site, **Appendix A, Figure 2**).

The proposed development will include construction of new retail store, service centre, canopies, fuel bowsers, underground fuel tanks, parking areas as depicted in **Appendix A, Figure 3**.

The proposed development will result in intensification of land use.

The subject site is partially within a designated bushfire prone area as per the *Western Australia State Map of Bushfire Prone Areas* (DFES 2018), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by Entire Fire Management Bushfire Consultant, Tim Briggs (FPAA BPAD Certified Practitioner No. BPAD 40353) with quality assurance undertaken by Bushfire Consultant Gavin Fancote.

1.2 Purpose and application of the plan

The primary purpose of this Bushfire Risk Assessment is to act as a technical supporting document to inform planning assessment in conjunction with the corresponding Bushfire Management Plan (BMP).

SPP 3.7 (Policy measure 6.6) requires development application for high-risk land uses (such as fuel stations) in areas between BAL-12.5 and BAL-29 to be accompanied by a risk management plan for any flammable on-site hazards. This Bushfire Risk Assessment prepared for the subject site identifies all new proposed structures within the subject site as being located within areas subject to a BAL rating of BAL-12.5.

The Building Code of Australia bushfire construction requirements only apply to residential buildings and associated structures. The Guidelines therefore require the planning process to focus on location and siting of high-risk land uses rather then the application of bushfire construction requirements.

Under the Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007 (the Regulations), the operator will also be required to complete a separate risk assessment that addresses risks other than bushfire for the proposed development. The Regulations also require operators to prepare an emergency plan for petrol stations. An emergency management should be developed for the subject site, which sets guidelines for the management of an emergency, disaster or major incident at the site. The emergency plan for the fuel station will reflect the site layout and bushfire risk post-construction.

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2 Potential bushfire scenarios

The BMP identifies and classifies the existing bushfire hazards within 150m of the subject site, based on existing vegetation, slope and separation distance to the vegetation.

Based on this information the potential bushfire scenarios that could affect the subject site have been assessed. The potential bushfire scenarios have been used to inform a bushfire risk assessment (refer to **Section 4**) and assist in development of appropriate bushfire mitigation responses (refer to **Section 5**).
The Following bushfire scenarios were identified and assessed:

1. Bushfire approaching the subject site from the south; and
2. Bushfire approaching the subject site from the east.

A description of each potential bushfire scenario is provided in the following subsections.

Bushfire scenarios have been selected based on the location of classified vegetation in relation to the subject site.

2.1 Scenario 1: Bushfire approaching the subject site from the south

A Bushfire approaching the subject site from the south is possible, however the separation distance is greater than 50 metres and is separated by Dixon Road acting as an effective buffer providing substantial area in which emergency services can restrain a bushfire on the southern side of Dixon Road.
A bushfire approaching from the south is likely to be fuelled by predominant south-westerly winds, however there is very little risk to the proposed development in the form of radiant heat from the fire, the risk lies in possible ember attack on the facility.

2.2 Scenario 2: Bushfire approaching the subject site from the east

A bushfire approaching the subject site from the east through the caravan park is possible. The scrub vegetation that is to the east of the caravan park is sufficient to host an intense bushfire, however the vegetation that is within the caravan park itself, whilst dominated with mature eucalypts is well maintained and bushfire intensity would diminish traveling in a westerly direction if and when it nears the proposed fuel station. There is little risk of radiant heat affecting the subject site, the probable risk would again be of ember attack fuelled by easterly winds. Evinrude Bend and Whittle Road also provide a suitable separation area for fire suppression activities to contain a fire before the subject site is impacted.

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3 Bushfire risk assessment methodology

Australian and New Zealand Standard *AS/NZS ISO 31000:2009 Risk Management-Principles and Guidelines* (SA & SNZ 2009) provides an internationally recognised approach to risk management. Methodology for this process is further described in *Risk Management Guidelines: Companion to AS/NSZ 4360/2004* (AS & SNZ 2004), which defines the risk assessment process as outlined in **Figure 1**.

AS/NZS ISO 31000:2009 is adopted by DFES, as documented in the agency's Bushfire Risk Management Framework (DFES 2015), to formalise and communicate the approach of managing bushfire risk across the department in the aim of leading to improved coordination and effectiveness of bushfire risk management processes.

From a bushfire management perspective, this methodology can be useful in determining:

1. The inherent bushfire risk (i.e. the initial level of risk prior to risk treatment and mitigation); and
2. The residual bushfire risk (i.e. the level of risk remaining following risk treatment and mitigation).

Inherent and residual bushfire risk can be determined for individual bushfire events on the basis of the following risk criteria, which is used to inform the likelihood and consequence of such events:

- Likelihood of ignition and bushfire occurrence takes into consideration the bushfire history of the area, risk of ignition, vegetation type, fuel age and load, slope under vegetation and predominant fire weather conditions; and
- Consequence or impact from bushfire on life, property and the environment takes into consideration the degree and severity of potential bushfire scenarios, location of bushfire hazard areas, assets present in the area and the level of management and suppression response available.

The two bushfire scenarios identified in **Section 2** have been subject to bushfire risk assessment through determination of likelihood and consequence in accordance with the rating tables outlined in **Table 1** and **Table 2**[1]. This process determines the inherent bushfire risk of the event and informs the level of mitigation or management response required to reduce the risk to an acceptable level. The risk assessment matrix used to determine inherent and residual bushfire risk is outlined in **Table 3**.

Table 1: Likelihood rating system

Likelihood rating	Description
Almost Certain	Consequence expected to occur in most circumstances; may occur once every year or more.
Likely	Consequence will probably occur in most circumstances; may occur once every five years.
Possible	Consequence might occur at some time; may occur once every twenty years.
Unlikely	Consequence is not expected to occur; may occur once every one-hundred years.
Rare	Consequence may only occur in exceptional circumstances; may only occur one every five-hundred or more years.

[1] the determined consequence rating is the most likely outcome, not the worst case.

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Table 2: Consequence rating system

Consequence rating	Description
Catastrophic	A large number of severe injuries, widespread damage and displacement of the community, significant impact on the environment
Major	Extensive number of injuries requiring hospitalisation, significant damage and impact on the community, longer term impacts on the environment
Moderate	Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment
Minor	Small number of injuries but no fatalities, some damage and disruption but no lasting effects
Insignificant	No injuries or fatalities, little damage or disruption

Table 3: Risk assessment matrix

	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	High	High	Extreme	Extreme	Extreme
Likely	Medium	High	High	Extreme	Extreme
Possible	Low	Medium	High	Extreme	Extreme
Unlikely	Low	Low	Medium	High	Extreme
Rare	Low	Low	Medium	High	High
Risk Level	**Risk Response**				
Low	Acceptable Risk. Application of standard management measures will ensure risk level remains low and risk should be eliminated or reduced as time permits.				
Medium	Potentially unacceptable risk. Development of site-specific management measures may be required to lower the risk level and risk should be reduced as soon as reasonably practicable.				
High	Potentially unacceptable risk. Development of additional site-specific management measures will be required to lower the risk level and requires urgent action as soon sa possible.				
Extreme	Unacceptable risk. Additional site-specific mitigation will be required to lower the risk level and an immediate mitigation response is required.				

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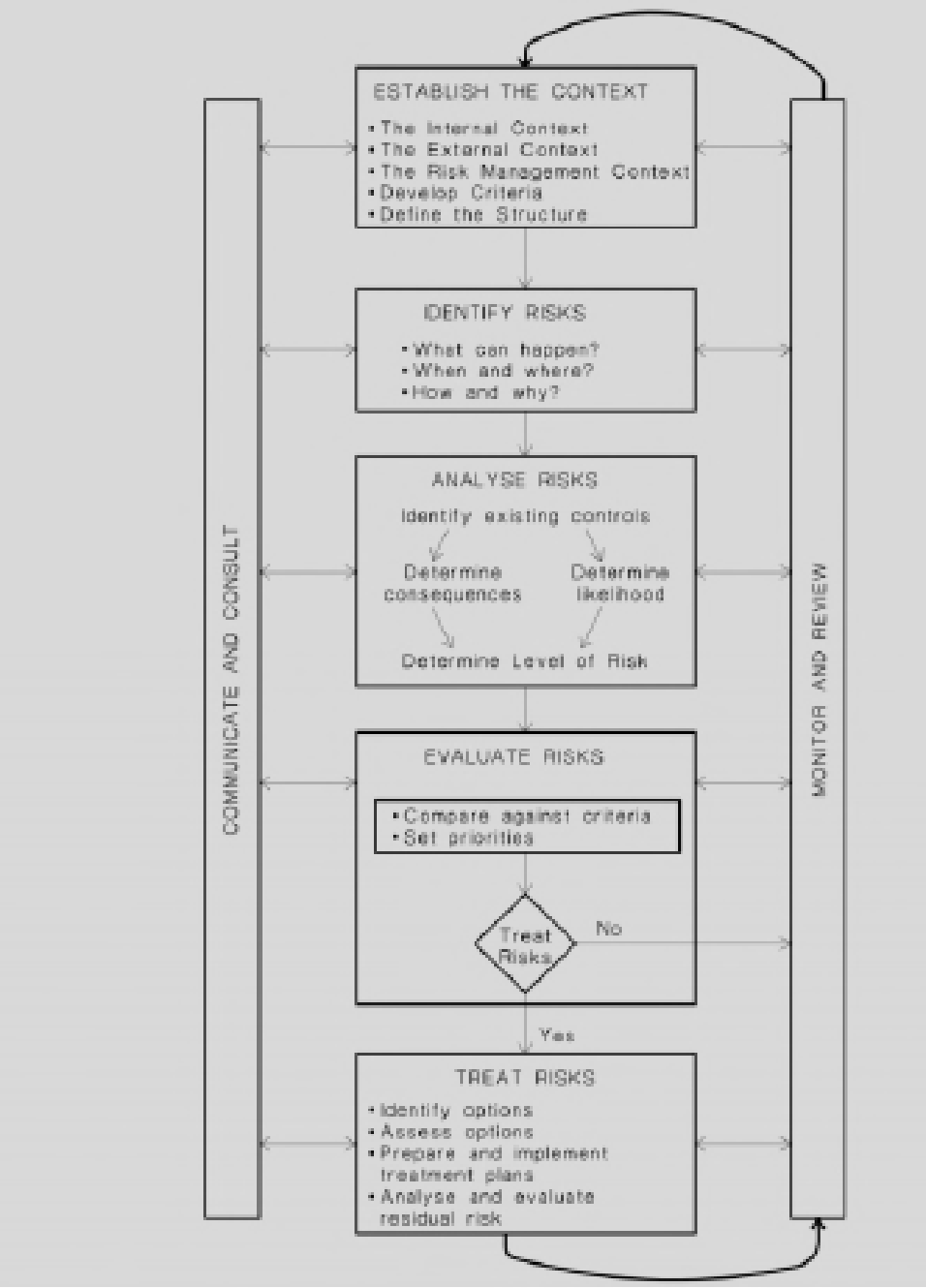

Figure1: Risk assessment process as per AS/NSZ ISO 31000:2009

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4 Bushfire risk assessment

4.1 Risk context

Risk is being assessed to inform bushfire mitigation for the subject site for the protection of life and property within and adjacent to the site. The risk assessment adopts a broad area and supports a tenure blind approach to ensure wider risk impacts and adjoining lands are captured to suitably address potential risk.

4.2 Risk identification

Bushfire risk is identified in the potential bushfire scenarios outlined in **Section 2**, which indicate the potential bushfire events that could impact life and property within the subject site and adjacent land. These two scenarios are considered to cover the majority of bushfire events that could occur in order to develop suitable bushfire risk mitigation.

4.3 Risk analysis and evaluation

Risk analysis and evaluation for each of the two potential bushfire scenarios is provided in **Table 4**, which specifies the likelihood and consequence of each scenario with and without management measures to determine inherent and residual risks.

Due to the storage and handling of flammable materials within the subject site, the potential consequence of a bushfire entering the site would be greater than if flammable materials were not present.

Entire Fire Management is of the view that following implementation of management measures, the risk of ignition will not be reduced due to the ongoing level of public access and presence of off-site classified vegetation and on-site flammable goods. Therefore, bushfire risk management measures are likely to reduce the level of consequence resulting from the bushfire event, rather than the likelihood of the event occurring. For example, an evacuation plan will reduce the potential impacts on life; thus reducing the level of consequence received from the bushfire event, but the likelihood of the event occurring will not be reduced.

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Table 4: Bushfire risk assessment

Bushfire scenario	Comments	Likelihood	Consequence	Inherent risk	Mitigation	Likelihood	Consequence	Residual Risk
1. Bushfire approaching subject site from the south	Extended fire run through vegetation bound by major roads, includes firebreaks. Separation provides minimal radiant heat output with greatest risk being ember attack fanned by a strong southerly wind. Consequence is not expected to occur; may occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment based on analysis of assets.	Possible	Moderate	High	Implementation of management measures identified in **Section 5**	Possible	Minor	Medium
2. Bushfire approaching subject site from the east	Limited fire run through scrub fuels before entering lightly fuelled woodland. Firebreaks and roads to limit rate of spread, numerous points of access for fire suppression, greatest level of impact would occur under adverse fire weather conditions with an easterly wind. Consequence is not expected to occur; may occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment based on analysis of assets.	Possible	Moderate	High		Possible	Minor	Medium

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5 Bushfire management measures

Results of the bushfire risk assessment indicate that all bushfire scenarios pose an equal level of inherent risk to life and property.

Implementation of the management measures provided in the following subsections prioritise protection of life and property and will reduce bushfire risk (residual risk) within the subject site.

5.1 Fire protection and detection equipment

The proposed fuel station should be fitted with fire protection and detection equipment as required by the Department of Mines and Petroleum (DMP) Storage and handling of dangerous goods – code of practice (2nd edition).

5.2 Evacuation plan and assembly points

A site-specific bushfire evacuation plan has been developed in accordance with the guidelines for active response to a bushfire threat. The plan identifies varying levels of bushfire emergencies and provides suitable actions to evacuate the premises if necessary.

5.3 Personnel training

All occupants working at the subject site must be trained in responding to and managing all emergency incidents in accordance with the emergency management plan for the site. A record of training must be kept up to date and debrief sessions held after all training exercises or incidents.

An evacuation exercise must be carried out at least annually. All occupants working on the site are required to participate.

5.4 Bushfire suppression

The Rockingham Fire Station (Career Station) is located on Dixon Road approximately 1.1 km west of the subject site and is expected to provide a best-case emergency suppression response time of 5 minutes in the event of an emergency.

5.5 Landscaping

All landscaping areas within the subject site will be maintained in accordance with Standards for Asset Protection Zones (WAPC 2017).

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5.6 Additional measures

Manifest

Dangerous goods sites must maintain a current manifest and a dangerous goods site plan, to allow an appropriate response by Emergency responders in the event of an emergency, such as a fire.

The manifest and dangerous goods site plan for dangerous goods that will be stored and handled at the service station will need to be developed in accordance with the relevant Dangerous Goods Safety Guidance Note (DMP 2014).

The emergency management plan refers to critical information for emergency response being located in the HAZMAT/HAZCHEM emergency boxes which will be located at the front of the building and inside the retail building. This information includes the Emergency Plan, Dangerous Goods Manifest, Register of Dangerous Goods and Hazardous Materials, Safety Data Sheets for bulk products kept on site and dangerous goods site layout plan.

Ignition sources

Operators of dangerous goods sites are required to manage potential ignition sources, such as hot works and electrical equipment, within any on-site hazardous areas.

Placard and marking

A placard, readily visual for Emergency responders and providing visual warnings of the hazards associated with storage of fuel, will be required at the subject site in accordance with DMP Storage and handling of dangerous materials Code of Practice (DMP 2010).

Signage and notices will also be required in accordance with AS 1940-2004 The storage and handling of flammable and combustible liquids (AS 1940-2004; SA 2004) and any relevant state guidance.

6 Conclusion

Entire Fire Management expects that through implementation of the management measures outlined in this Bushfire Risk Assessment, inherent bushfire risk to life and property within and surrounding the subject site can be reduced.

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References

Department of Fire and Emergency Services (DFES). 2015. Guidelines for Preparing a Bushfire Risk Management Plan, Department of Fire and Emergency Services, Western Australia.

Department of Fire and Emergency Services (DFES). 2018. Map of Bush Fire Prone Areas, [Online], Government of Western Australia, available from: *https://maps.slip.wa.gov.au/landgate/bushfireprone/*

Department of Mines and Petroleum (DMP). 2010. Storage and handling of dangerous goods - code of practice (2nd edition), Resources Safety, Department of Mines and Petroleum, Western Australia.

Department of Mines and Petroleum (DMP). 2014. Dangerous Goods Safety Guidance Note, Manifest and site plan requirements for dangerous goods sites, Resources Safety, Department of Mines and Petroleum, Western Australia.

Entire Fire Management 2019. Bushfire Management Plan, Development of Service Station – Lot 36 (137) Dixon Road, East Rockingham.

Standards Australia and Standards New Zealand (SA & SNZ). 2004. Risk Management Guidelines: Companion to AS/NZS 4360:2004, HB 436:2004, Standards Australia/Standards New Zealand, Sydney/Wellington.

Standards Australia and Standards New Zealand (SA & SNZ). 2009 Australian Standard/New Zealand Standard AS/NZS ISO 31000:2009 Risk management – Principles and guidelines, Standards Australia/Standards New Zealand, Sydney/Wellington.

Standards Australia (SA). 2004. Australian Standard AS 1940–2004 The storage and handling of flammable and combustible liquids, Standards Australia, Sydney.

Standards Australia (SA). 2009. Australian Standard AS 3959–2009 Construction of Buildings in Bushfire-prone Areas, Standards Australia, Sydney.

Standards Australia (SA). 2010. Australian Standard 3745-2010 Planning for emergencies in facilities, Standards Australia, 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.

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Appendix A: Proposed Development

Figure 2: Subject title

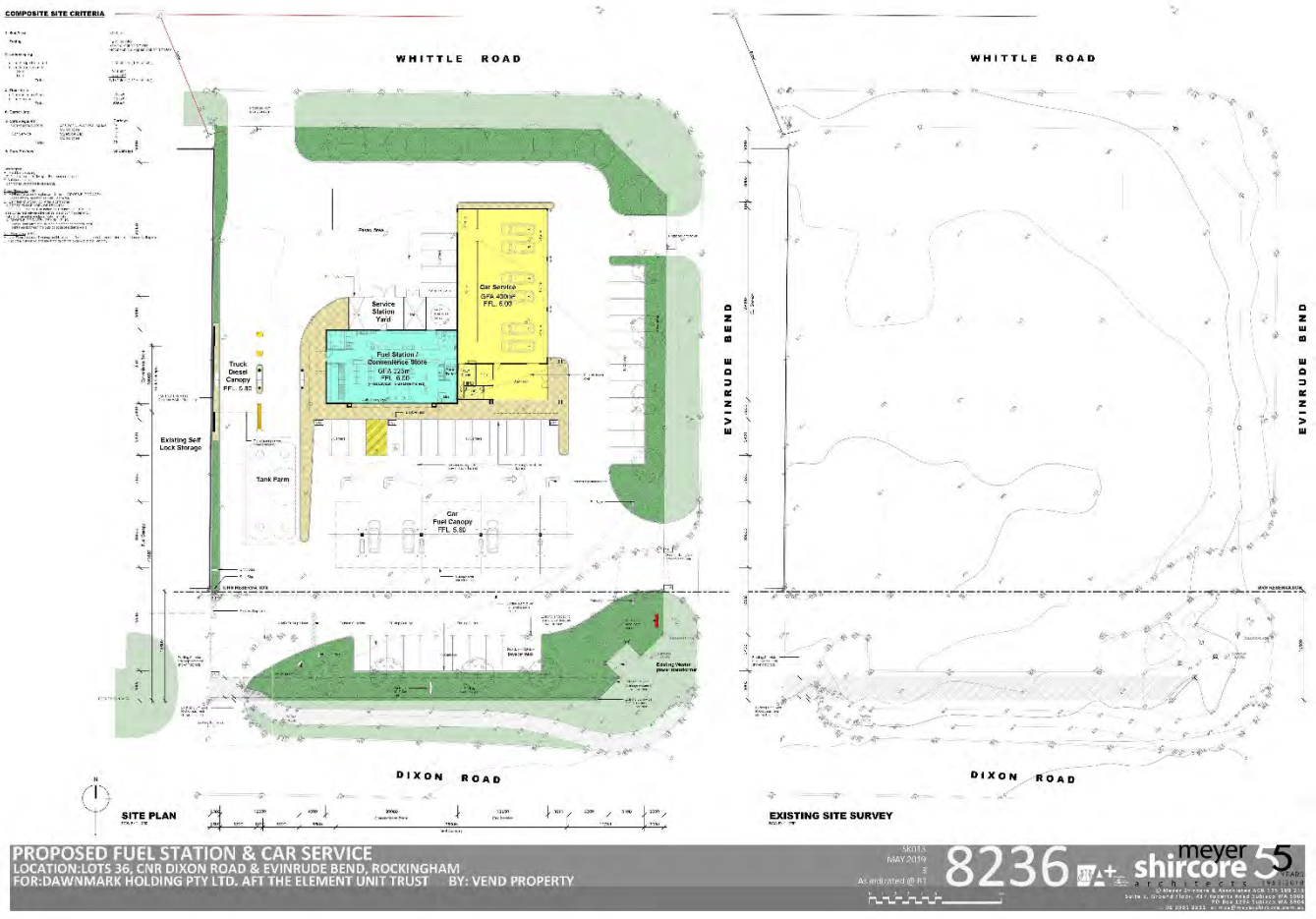

Figure 3: Proposed development

137 Dixon Road, East Rockingham
Emergency Evacuation Plan

137 Dixon Road
East Rockingham
WA 6168
Fire Warden: On Duty Manager

Evacuation Plan Objectives
The objective of this emergency evacuation plan is to eliminate or reduce the risk of injury or harm that may occur during an evacuation by undertaking a three-step process of:

1. Identifying a potentially hazardous bushfire situation;
2. Assessing the risks; and
3. Implementation.

This plan has been developed with the threat of bushfires in mind. However, these principles can also be implemented for other emergency situations such as structural/vehicular fire, accidents, bomb threats and other natural disasters.

Bureau of Meteorology (BOM)

- BOM issue fire weather warnings when weather conditions are conductive to the spread of dangerous bushfires. Warnings are generally issued within 24 hours of the potential onset of hazardous conditions. Warnings are broadcast on radio and television.

- BOM will also issue daily Fire Danger Ratings for all areas in Australia.
  To check the latest Fire Danger Rating for Western Australia, use the link below:
  http://www.bom.gov.au/wa/forecasts/fire-danger.shtml

Department of Fire and Emergency Services (DFES)

- DFES and DBCA will issue community alerts and warnings for bushfires that have potential to threaten lives and property.
  To view details of bushfires in the local area visit Emergency WA using the following link:
  https://www.emergency.wa.gov.au/

- DFES emergency information can also be found by calling 13 DFES (13 3337).

Entire Fire Management | ABN: 63 468 728 651 | www.entirefire.com.au | admin@entireempire.com.au | (08) 9498 0056 | PO Box 4439, Harrisdale WA 6112

Bushfire Identification

When a bushfire threat has been identified and the property is not yet at risk (DFES: Bushfire Advice):

- Call 000 to notify emergency services, if not already in attendance.
- Remain vigilant in obtaining regular updates on the bushfire situation.
- Be observant to changes in weather conditions that may cause a change in fire behaviour in the area.
- Be ready to act if the situation changes.

When a bushfire threat has been identified and there is a real risk of bushfire attack (DFES: Bushfire Watch and Act):

- It is necessary to take action.
- Call 000 to notify emergency services, if not already in attendance.
- Identify the current location of the bushfire and the direction that it is heading. A decision must be made on whether to evacuate all customers and staff from the fuel station and car service centre or to seek refuge if the way is not clear.
    - The preferred option is for all customers and staff to self-evacuate to an agreed safe location that is out of the predicted path of the fire if the way is clear and available.
    - If the way is not clear and it is absolutely necessary to evacuate the property, an orderly evacuation should be made to the Assembly Area located in the carpark at neighbouring 135 Dixon Rd. (location indicated on evacuation diagrams attached) and await extraction or instruction by emergency services.
- Staff shall methodically advise all remaining customers to assemble at the property's assembly area to await further information and instruction from the Fire Warden.
- The Fire Warden will advise if the situation is suitable for guests to self-evacuate or to seek refuge at the assembly area.
    - If refuge is to be taken at the assembly area, the Fire Warden should also advise if customers have sufficient time to attempt to retrieve/fire proof their belongings and relocate vehicles to a safer location within the property before evacuating. This will depend of the proximity and the speed of the encroaching bushfire.
- Identify any persons with a lesser ability to respond in an emergency situation (i.e. elderly, walking or breathing difficulties etc.). These people should be evacuated as early as possible, assistance may be required and ensure that anyone requiring medication takes it with them.

When an immediate bushfire threat is impeding in the vicinity of the property (DFES: Bushfire Emergency Warning)

- Act now, it is likely too late to self-evacuate.
- Call 000 to notify emergency services, if not already in attendance.
- Implement emergency evacuation procedures as listed above under 'DFES:Watch and Act'.
- Advise customers that evacuation will be made to seek refuge at the assembly area.

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Evacuation (Implementation)
When a Bushfire has been identified, and evacuation options have been assessed.

Self-Evacuation or Recommended Evacuation (there is sufficient time to prepare)

- Fire Warden shall advise all customers and non-essential staff to drive to an agreed safe location that is out of the path of the fire in an orderly fashion taking any accompanying belongings.
- Any customers that do not have own transport will require assistance.
- Once all customers are safely at a selected location a roll call shall be conducted to ensure that all that are present.
- Await further instruction from emergency services personnel or Fire Warden before attempting to return to the property.

Directed Evacuation to Assembly Area (emergency situation, not sufficient time)

- Fire Warden shall arrange a site check of the premises to ensure numbers of remaining customers and staff are tallied.
- Fire Warden shall instruct all customers and non-essential staff to make their way towards the Assembly Area by foot.
- Ensure that assistance is provided to those who have a lesser capacity to respond in an emergency.
- Ensure that only essential items are carried (mobile phones, medication, protective clothing, first aid kits, radios and food etc.).
- Once all customers are safely at the Assembly Area a roll call shall be conducted to ensure that all are present.
- Await further instruction from emergency services personnel or Fire Warden before attempting to return to the property.

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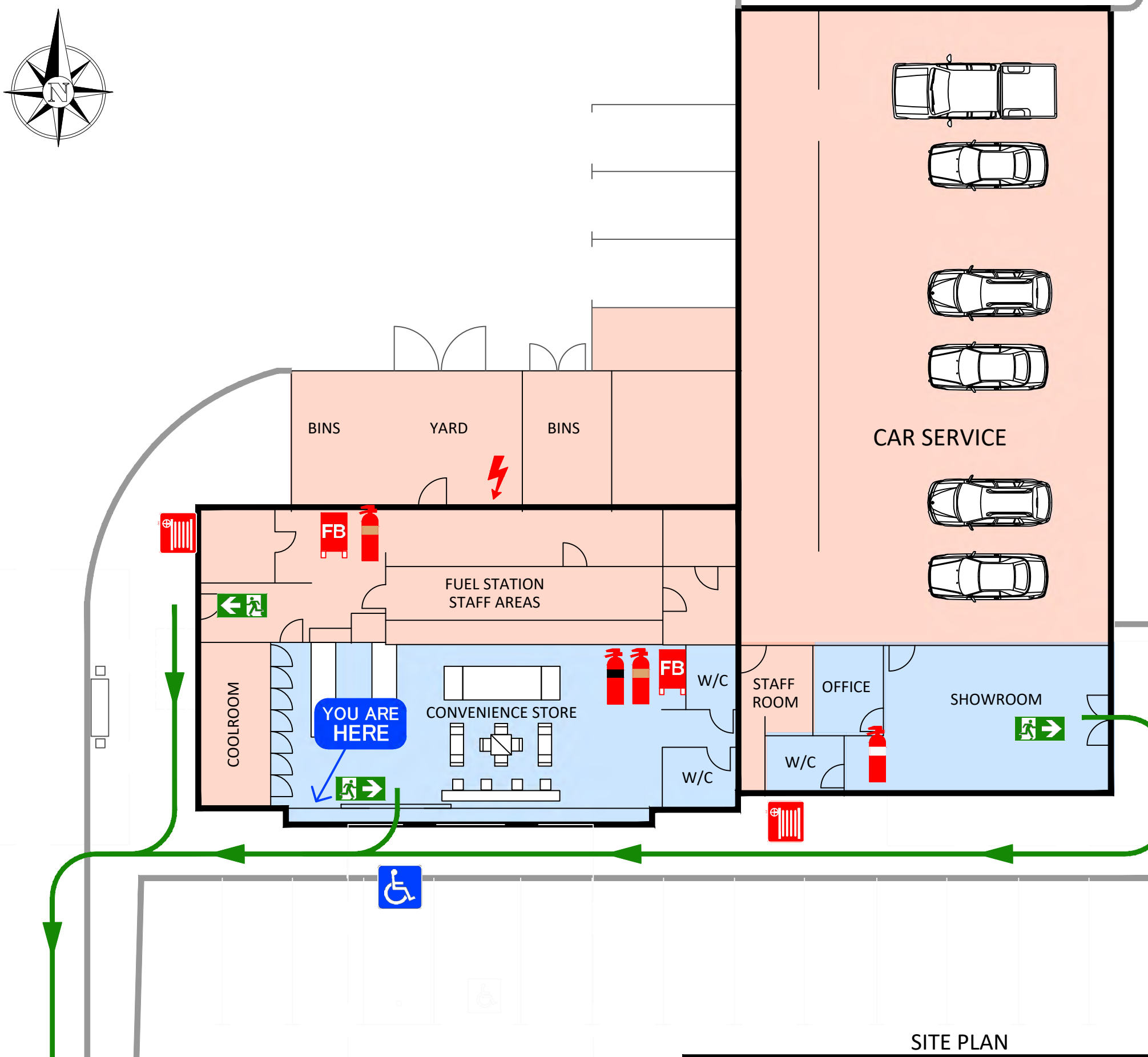
HAZARD: BUSHFIRE

Agency / Organisation	Phone No.	Mobile No.	Fax No.
Police, Fire, Ambulance (emergencies)	**000**		
Department of Emergency Services (DFES) - Emergency - Public Information Line - Website	**000** 133 337 www.dfes.wa.gov.au		
City of Rockingham - City of Rockingham Administration	(08) 9528 0333		
WA Police - Rockingham	(08) 9528 8000		(08) 9528 8080
State Emergency Services (SES) - Statewide Emergency Assistance - Public Information Line - Rockingham-Kwinana SES Unit	132 500 133 337 (08) 9527 2560	(08) 9527 6177	
Department of Biodiversity, Conservation and Attractions (DBCA) - DBCA Headquarters	(08) 9219 9000		(08) 9334 0498
Hospital - Rockingham General Hospital - St John Ambulance Rockingham	(08) 9599 4000 (08) 9334 1233		
Bureau of Meteorology - General enquiries - Pre-recorded weather service - Website	(03) 9669 4000 1900 969 905 www.bom.gov.au		
Main Roads – Road Conditions	138 138		
ABC Radio	98.3 FM, 684 AM		

EVACUATION DIAGRAM

137 Dixon Road, East Rockingham 6168

Version 2: Date Issued: 13/5/2019 Valid until: 13/5/2024



LEGEND

- Evacuation Path
- Emergency Exit
- Assembly Area
- Switchboard
- Wheel Chair Access
- CO_2 Extinguisher
- Powder Extinguisher
- Wet Chemical Extinguisher
- Fire Blanket
- Fire Hose Reel

R

RESCUE:

- yourself.
- other customers and staff.

A

Raise the ALARM:

- Alert the Fire Brigade by calling 000.
- Notify staff onsite.

C

CONTAIN the fire:

- To the room or space of origin.
- Close the doors behind you.

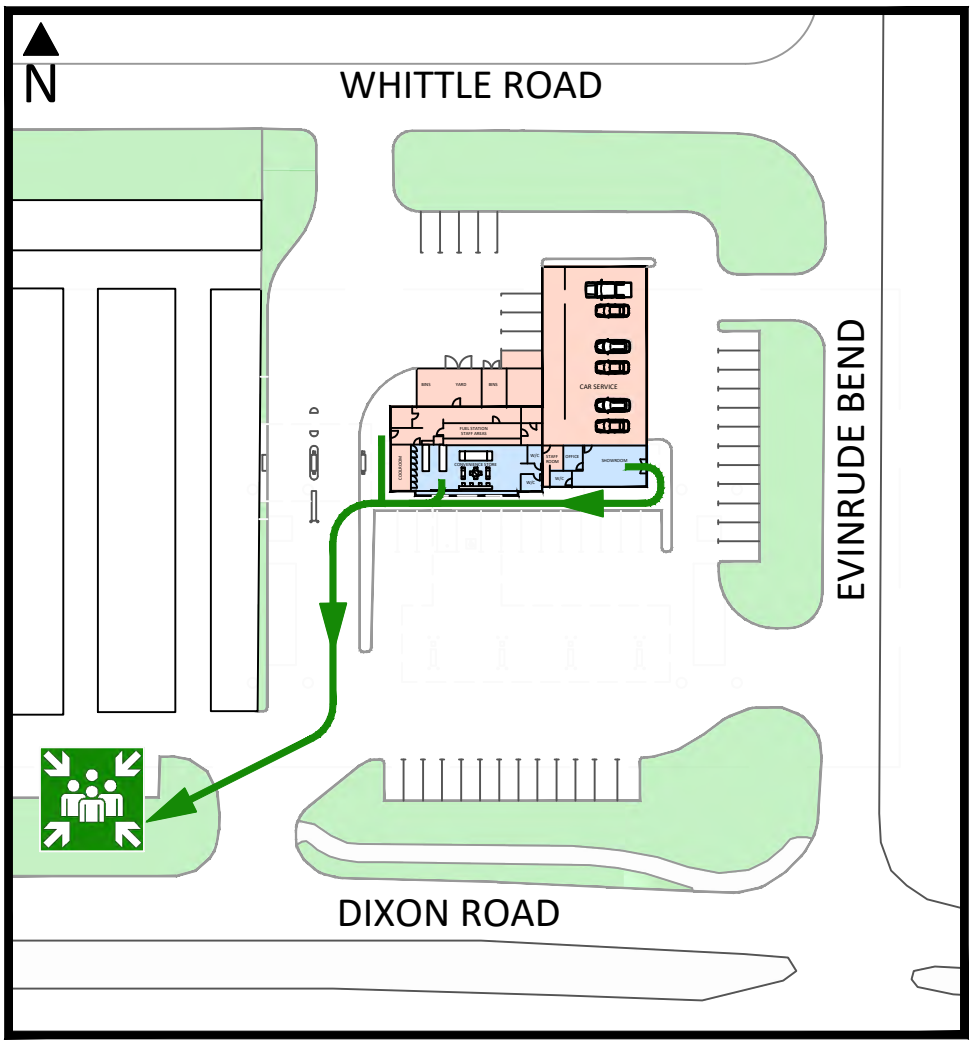
E

EXTINGUISH or EVACUATE:

- Follow instructions.
- Go to Assembly Area.
- Only attempt to extinguish if safe, you're trained and it is safe to do so.

000 EMERGENCY

SITE PLAN



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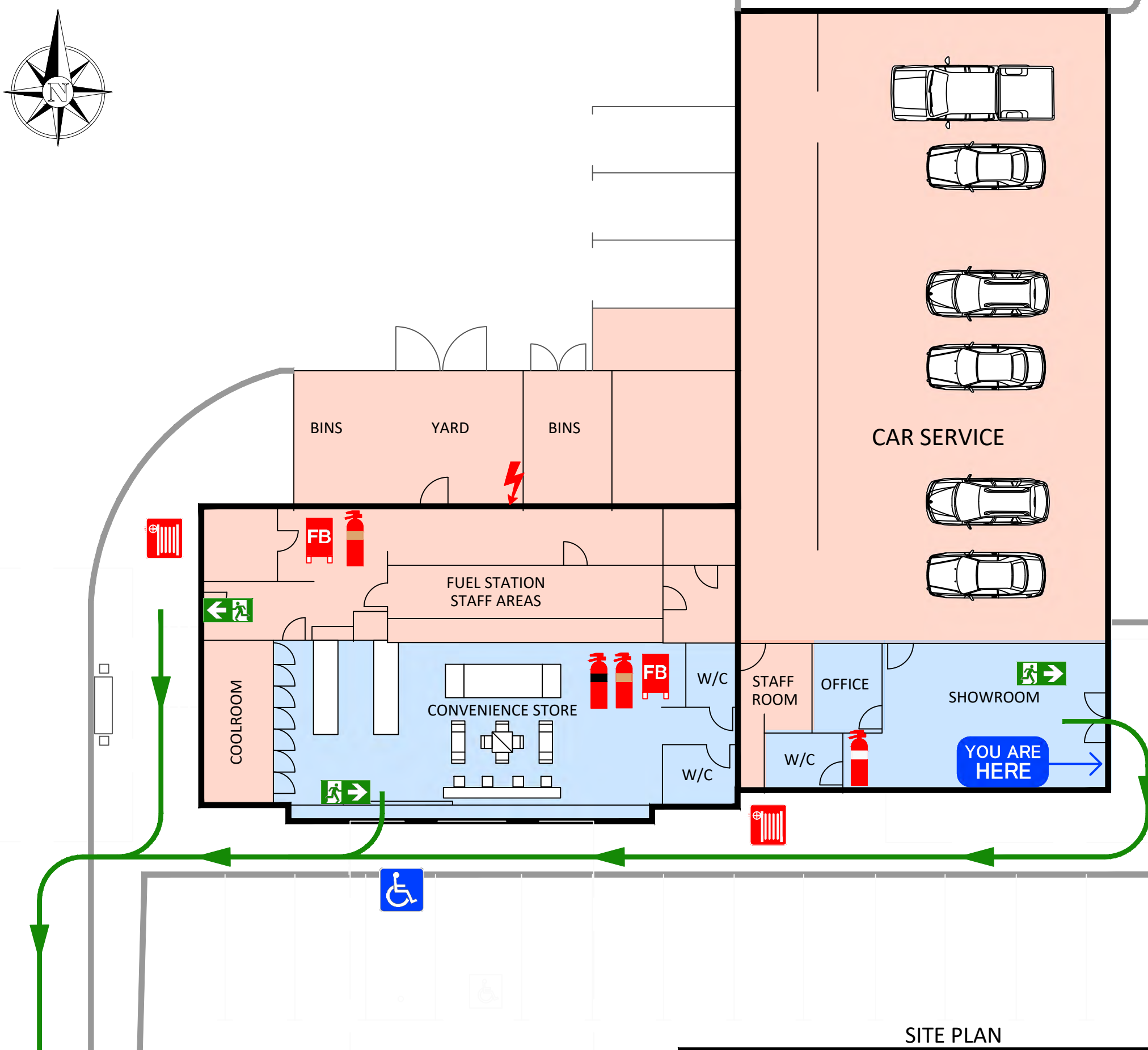

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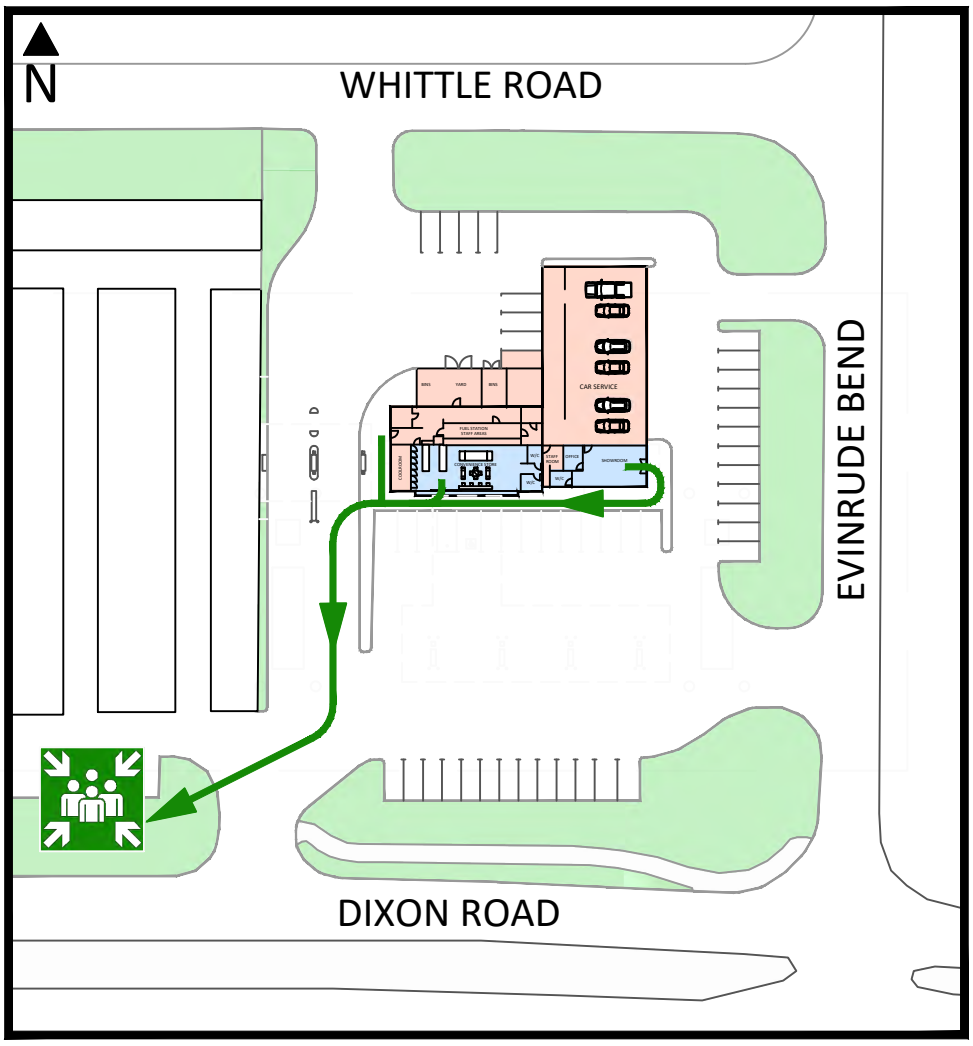

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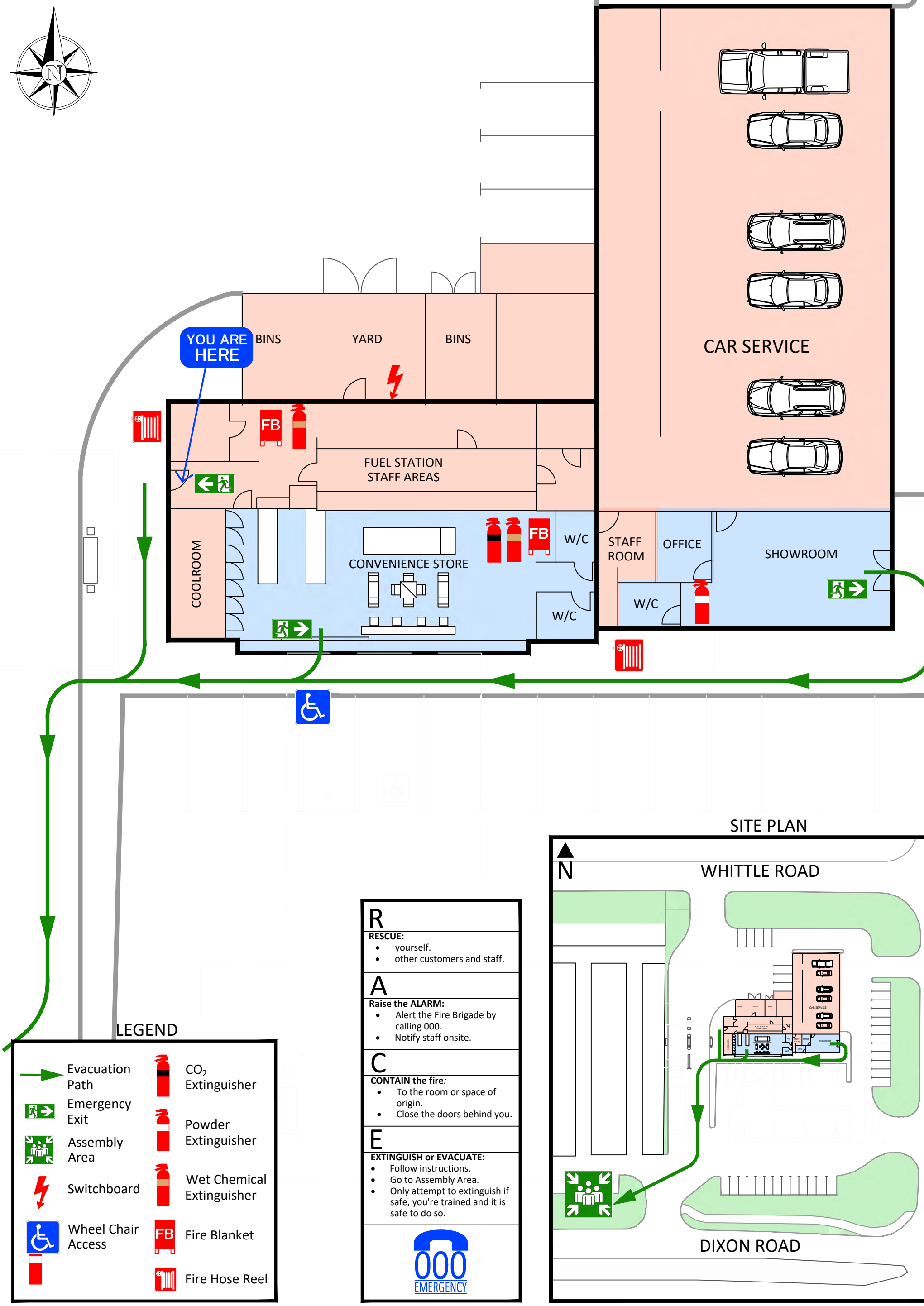

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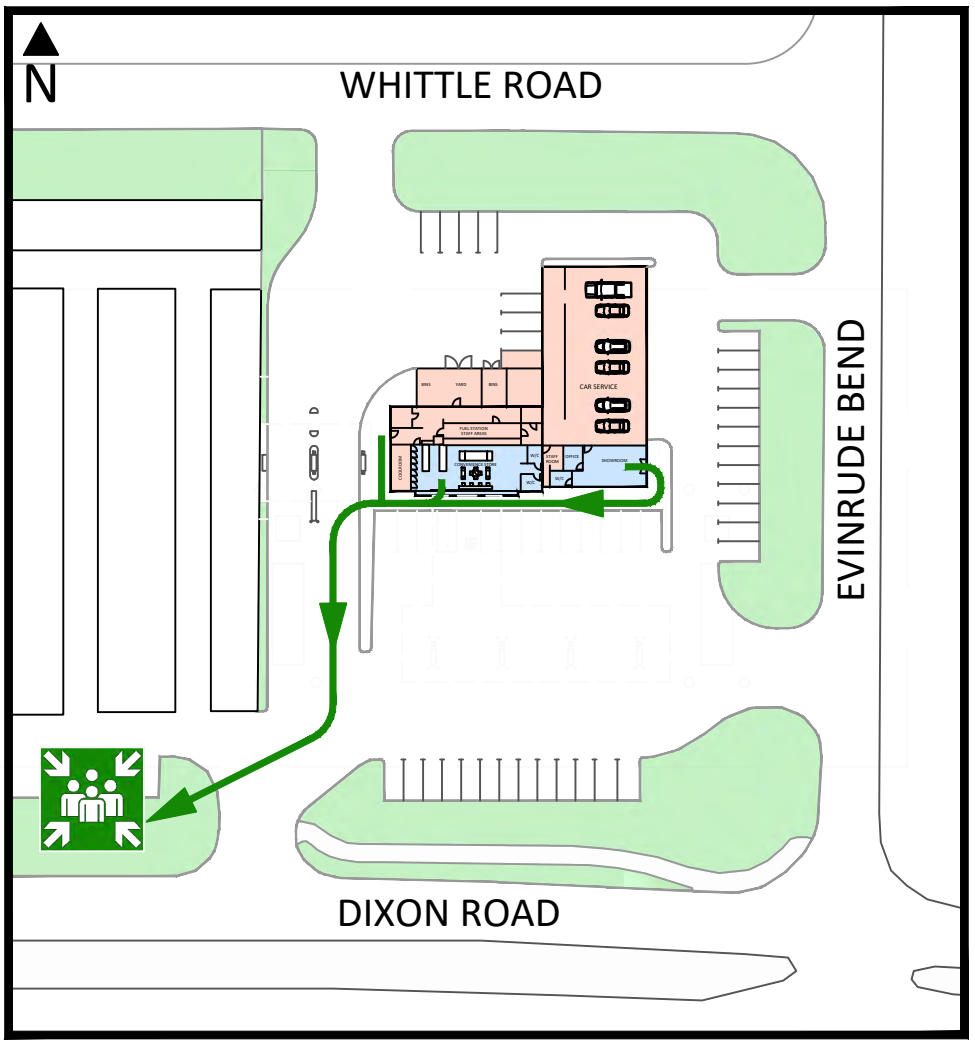

Schedule of Submissions

Schedule of Submissions – Proposed Service Station
Lot 36 (No.137) Dixon Road, East Rockingham

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Mr Richard Spaanderman	PO Box 8170 WARNBRO WA 6169 richard@zippyrentals.com.au	Any kind of car wash would make our zippy car wash close down. I request that Lot 36 is not granted the approval for any kind of car washing facility Ie:- Hand car wash Truck car wash Auto car wash
2. Name Withheld	15B Smyth Street ROCKINGHAM WA 6168	There are a sufficient number of petrol stations already in the Rockingham area and BP are well represented. I should think that the residents at the Rockingham Holiday Village do not need and want a petrol station right next door to them! There are a few more petrol stations just over the train line in Kwinana, of which BP is also represented.

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Dept. Water & Environment Regulation Brett Dunn	Kwinana Peel Region PO Box 332 MANDURAH WA 6210	Thank you for referring the above development application received by the Department of Water and Environmental Regulation (DWER) in correspondence dated 2 April 2019. The DWER has reviewed the application and provides the following advice. The DWER identifies the following risks associated with this proposal • The potential for groundwater contamination due to fuel leakage from underground fuel storage tanks, from minor and major fuel/chemical spills and from hydrocarbon contaminated stormwater runoff from impervious surfaces. **Stormwater Management** The applicant has indicated that a stormwater management plan will be provided after approval is granted. DWER recommends the stormwater drainage system be designed, constructed and managed in accordance with the S*tormwater Management Manual for Western Australia* (DWER, 2004). The planning report has not included any conceptual designs for the management of stormwater within and around the service station and associated infrastructure. The stormwater management plan for the entire development area should demonstrate how and where the small, minor and major rainfall events will be managed and include the following: • Stormwater runoff be fully contained onsite for small and minor storm events (1 and 0.2 Exceedance per Year runoff). 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-retention. • Measures to prevent contaminated stormwater runoff mixing with other stormwater runoff from impervious areas and how the SPEL Puraceptor is integrated into the overall stormwater management system. • Permitted outflow of stormwater runoff from the site.

Schedule of Submissions – Proposed Service Station
Lot 36 (No.137) Dixon Road, East Rockingham

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.1 – cont…		**Emergency Response Plan** • In accordance with DWER's Water Quality Protection Note No.10 (WQPN 10) - *'Contaminant spills – emergency response (February 2006)'*, an effective Emergency Response Plan is to be prepared as part of the development approval process. WQPN 10 provides guidance on developing and implementing an effective emergency response plan. **Underground fuel tanks** DWER provides the following advice in regards to underground fuel tanks, • In accordance with DWER's WQPN No. 62 – '*Tanks for underground chemical storage'*, tank systems should not be located in contact with the watertable (unless protected against buoyancy forces and corrosion). If tanks are in contact with the groundwater all tanks and pipe work should be constructed of corrosion-resistant materials that conform to Australian Standards such as reinforced plastic or metal construction with corrosion-resistant coating and cathodic protection. • All new or upgraded tanks and their pipe work (excluding any gas venting and tank fill lines that are normally dry) should have double-walled construction, with an interstitial leak-monitoring space. This is particularly important when located close to sensitive water resources or where the tank may come into contact with the watertable. • All underground tank systems should have provision for leak monitoring. If you have any queries relating to the above matter please contact Mark Hingston at DWER's Mandurah office on 9550 4222.
2. Dept. Planning, Lands & Heritage Simon Luscombe	Locked Bay 2506 PERTH WA 6001	***Re: Lot Dixon Road Rockingham*** I refer to your correspondence dated 3 April 2019 regarding the above application. In accordance with the Western Australian Planning Commission's (WAPC) Instrument of Delegation dated 30 May 2017, the following comments are provided. This proposal seeks approval for a service station for fuel retailing and minor repairs on the site. **Land Requirements** Lot 36 abuts Dixon Road which is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS), also reserved as Category 3 per Plan Number SP 694/4. The subject land is affected by the ORR reservation for Dixon Road, as per the attached Western Australian Planning Commission (WAPC) Land Requirement Plan number 1.7033. The extent of this reservation has been taken into consideration as part of the design of the proposed land use. For further information, the proponent can apply for a Clause 42 Certificate, which is a legal document that shows the exact dimensions of the road widening requirement. The application form can be downloaded from:

Schedule of Submissions – Proposed Service Station
Lot 36 (No.137) Dixon Road, East Rockingham

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.2 – cont…		https://www.dplh.wa.gov.au/information-and-services/mapping/regionscheme-certificates **Access** No changes are proposed to existing access arrangements onto Dixon Road. This is in accordance with the Commission's Regional Roads (Vehicular Access) Policy D.C. 5.1, which seeks to minimise the number of new crossovers onto regional roads. **Transport Impact Statement** The above report, prepared by Shawmac, states that Dixon Road forms part of Main Roads WA's RAV 4 network, allowing for 27.5 metre long heavy vehicles. The maximum length of heavy vehicles accessing the site will be 19.0 metre long semi-trailers. The proposal is anticipated to generate 648 new vehicle movements per day with 45 and 61 new trips during AM and PM peak hour periods. The report states that although traffic volumes meet the warrant for an auxiliary left turning lane, this is not recommended taking into consideration the consistency of the existing road environment and the treatment of adjacent intersections. SIDRA analysis shows acceptable performance for the intersections modelled. **Recommendation** The Department of Planning, Lands and Heritage has no objection to the proposal and provides the following comments: • The Department has no objection to use of the reserved land for the proposed signage, car parking and landscaping on a temporary basis only, and on condition that: o The advertisements do not interfere with sightlines, distract drivers, or have the potential to hinder the interpretation of or become confused with traffic signals or road signs. This position reflects the Commission's advertising on Reserved Land Policy D.C 5.4, paragraph 5.3.1.; and o The proponent agrees to remove the signage without seeking compensation from either the Council or the WAPC for any loss, damage or expense should the reserved land be required for road upgrading purposes in the future. • It is recommended that the submitted swept path analysis plans be verified / checked to the satisfaction of the City's Technical Services Directorate; SIDRA intersection analysis should be undertaken for a 10 year horizon (not 2021 or post- development) in accordance with WAPC Transport Impact Assessment Guidelines to the satisfaction of the City. Land Requirement Plan 1.7033

Schedule of Submissions – Proposed Service Station
Lot 36 (No.137) Dixon Road, East Rockingham

<table>
<tr><th colspan="3">SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS</th></tr>
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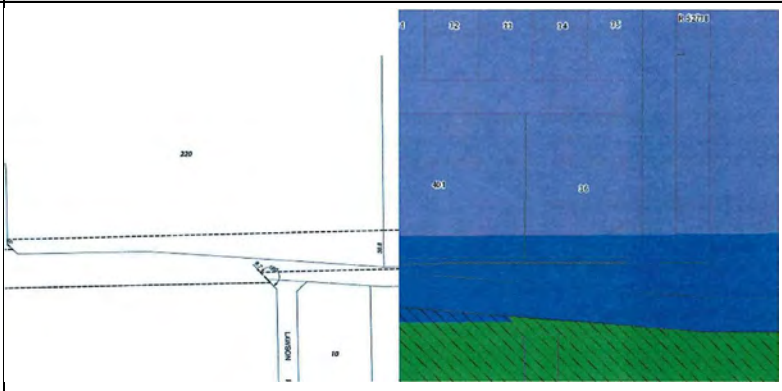
<tr><td>No.2 – cont…</td><td></td><td>  </td></tr>
<tr><td>3. Department of Fire and Emergency Services
Sasha De Brito
Coordinator Land Use Planning</td><td>Level 1, Albert Facey House
469 Wellington Street
PERTH WA 6000
advice@dfes.wa.gov.au</td><td>
RE: HIGH RISK – LOT 36 DIXON ROAD, ROCKINGHAM – PROPOSED SERVICE STATION – DEVELOPMENT APPLICATION
I refer to your email dated 2 April 2019 regarding the submission of a Bushfire Management Plan (BMP) (Revision 4), prepared by Entire Fire and dated 27 March 2019, for the above development application.
It should be noted that this advise relates only to State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the responsibility of the proponent to ensure that the proposal complies with all other relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining necessary approvals that may apply to the proposal including planning, building, health or any other approvals requires by a relevant authority under other written laws.
<u>Assessment</u>
1. Policy Measure 6.5 a) (i) Preparation of a BAL assessment
<table>
<tr><th>Issue</th><th>Assessment</th><th>Action</th></tr>
<tr><td>Vegetation Classification</td><td>The road verges on Evinrude and Dixon Road within Plot 5 have been excluded. Evidence to support these exclusions as managed to low threat in accordance with AS3959 is required. An enforceable mechanism is required to provide certainty that the proposed management measures can be achieved in perpetuity and that they are enforceable.</td><td>Insufficient information. The decision maker to be satisfied with the vegetation exclusions and vegetation management proposed.</td></tr>
</table>
</td></tr>
</table>

Schedule of Submissions – Proposed Service Station
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<tr><td>No.3 – cont…</td><td></td><td>
<table>
<tr><td>Development Footprint</td><td>The BAL Assessment within the BMP has not considered the location of the fuel canopy. Figure 1 shows a truck and car fuel canopy which appear to adjoin the fuel station convenience store. The BAL ratings should be calculated from the edge of the fuel canopy.</td><td>Modification required.</td></tr>
</table>
2. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria
<table>
<tr><th>Element</th><th>Assessment</th><th>Action</th></tr>
<tr><td>Location and Siting & Design</td><td>A1.1 and A2.1 – not demonstrated
The BAL ratings cannot be validated, as the BAL assessment has excluded the fuel canopy.</td><td>Modification/clarification required.</td></tr>
</table>
<u>Recommendation – not supported modifications required</u>
It is critical that the bushfire management measures within the BMP are refined, to ensure they are accurate and can be implemented to reduce the vulnerability of the development to bushfire. The proposed development is not supported for the following reasons:
1. The development design has not demonstrated compliance to Element 1: Location and Element 2: Siting and Design.
As this planning decision is to be made by a Joint Development Assessment Panel please forward notification of the decision to DFES for our records.
If you require further information, please contact me on telephone number 6551 4075.
</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>