

Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Meeting Number: Meeting Venue: Tuesday, 9 May 2023; 9:30am MOJDAP/245 Electronic Means

To connect to the meeting via your computer https://us06web.zoom.us/j/81532280435

To connect to the meeting via teleconference dial the following phone number - +61 8 6119 3900

Insert Meeting ID followed by the hash (#) key when prompted - 815 3228 0435

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

1 Table of Contents

1.	Opening of Meeting, Welcome and Acknowledgement	2
2.	Apologies	2
3.	Members on Leave of Absence	2
4.	Noting of Minutes	2
5.	Declarations of Due Consideration	2
6.	Disclosure of Interests	3
7.	Deputations and Presentations	3
8.	Form 1 – Responsible Authority Reports – DAP Applications	3
	8.1 Lot 12 and 13 (No.4 & 6) Lodge Drive, East Rockingham	. 3
9.	Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval	3
	Nil	. 3
10.	State Administrative Tribunal Applications and Supreme Court Appeals	3
11.	General Business	4
12.	Meeting Closure	4



Attendance

DAP Members

Mr Eugene Koltasz (Presiding Member) Ms Karen Hyde (Deputy Presiding Member) Mr Jason Hick (Third Specialist Member) Cr Mark Jones (Local Government Member, City of Rockingham) Cr Lorna Buchan (Local Government Member, City of Rockingham)

Officers in attendance

Mr David Banovic (City of Rockingham) Mr Marius Le Grange (City of Rockingham) Mr Mike Ross (City of Rockingham)

Minute Secretary

Mr Stephen Haimes (DAP Secretariat)

Applicants and Submitters

Mr Oliver Basson (Planning Solutions)

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

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

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

2. Apologies

Nil.

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include Attachment 14 – Council Minutes from the City of Rockingham in relation to Item 8.1, received on 3 May 2023.



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

6. Disclosure of Interests

Nil.

7. Deputations and Presentations

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

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 12 and 13 (No.4 & 6) Lodge Drive, East Rockingham

Development Description:	Proposed Tyre Recycling Facility
Applicant:	Planning Solutions Pty Ltd
Owner:	Hamersley 1 WA Pty Ltd
Responsible Authority:	City of Rockingham
DAP File No:	DAP/23/02419

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

Nil.

10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications					
File No. & SAT DR No.	LG Name	Property Location	Application Description	Date Lodged	
DAP/18/01543 DR 75/2022	City of Joondalup	Lot 649 (98) O'Mara Boulevard, Iluka	Commercial development	02/05/2022	
DAP/22/02159 DR163/2022	Shire of Murray	No. 630 (Lot 137) Pinjarra Road, Furnissdale	Proposed Petrol Filling Station	28/09/2022	
DAP/21/02036 DR236/2022	City of Swan	Lot 97 (31) & 817 (47) Lakes Road, Hazelmere	Proposed Construction of a Logistics Depot with Ancillary Office Area	23/12/2022	
DAP/22/02346 DR47/2023	City of Joondalup	8 Elcar Lane, Joondalup	Two Storey Mixed Used Development	17/03/2022	



11. General Business

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

12. Meeting Closure

LOT 12 & 13 (No.4 & 6) LODGE DRIVE, EAST ROCKINGHAM – PROPOSED TYRE RECYCLING FACILITY

Form 1 – Responsible Authority Report

(Regulation 12)

DAP Name:	Metro Ou	ter Joint Development Assessment		
	Panel			
Local Government Area:	City of Rockingham			
Applicant:		Solutions Pty Ltd (Oliver Basson)		
Owner:		ey 1 WA Pty Ltd		
Value of Development:	\$ 13 Milli	on		
-	🛛 Mar	datory (Regulation 5)		
		In (Regulation 6)		
Responsible Authority:		ockingham		
Authorising Officer:		ci – Director Planning and		
	Developr	nent Services		
LG Reference:	20.2022.	331.1		
DAP File No:	DAP23/0			
Application Received Date:	23 Janua			
Report Due Date:	27 April 2	2023		
Application Statutory Process	94 Days			
Timeframe:				
Attachment(s):	1. Aerial Plan			
		 Development Plans Schedule of Submissions 		
	4. Schedule of External Authority Responses			
	5. Planning Report			
	6. Bushfire Management Plan			
	7. Bushfire Risk Management Plan			
	8. Fire Safety Strategy			
		onmental Noise Report		
		Feature Survey		
		sport Impact Statement		
		e Management Plan		
	13. Risk	Assessment and Management Plan		
	14. Council Minutes			
Is the Responsible Authority				
Recommendation the same as the	e □ N/A Recommendation section			
Officer Recommendation?				
	□ No Complete Responsible Authority and			
	Officer Recommendation sections			
	l			

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/22/02419 and the accompanying plans received on 5 December 2023 and Amended Plans received on 20 February 2023:

- Aerial Underlay Site Plan Drawing no. A.02(F), Dated 20/03/2023;
- Site Plan Drawing no. A.03(AL), Dated 20/03/2023;
- Zoomed Office Plan Drawing no. A.04(C), Dated 18/11/2022;
- Estate Plan Drawing no. A.06(B), Dated 01/03/2023;
- Site Elevations Drawing no. E.01(F), Dated 22/02/2023;

Main Building Elevations - Drawing no. E.02(D), Dated 22/02/2023;

In accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 subject to the following conditions as follows:

Conditions:

- 1. This decision constitutes planning approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
- 2. Prior to applying for a Building Permit, arrangements must be made to the satisfaction of the City of Rockingham for the amalgamation of lot 12 Lodge Drive and lot 13 Lodge Drive into one Certificate of Title. The amalgamation must be completed prior to occupation of the development.
- 3. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for approval. All stormwater generated by the development must be managed in accordance with Local Planning Policy 3.4.3 Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.
- 4. Prior to applying for a Building Permit, a Construction Management Plan is to be submitted to and approved by the City of Rockingham addressing but not limited to:
 - (i) Hours of construction
 - (ii) Temporary Fencing
 - (iii) Traffic Management including, a Traffic Management Plan addressing site access, egress and parking arrangement for staff and contractors;
 - (iv) Management of vibration and dust
 - (v) Management of construction noise and other site generated noise.
- 5. Prior to applying for a Building Permit, the Applicant must submit full detailed engineering drawings showing the various pavement types and cross sectional profiles to be adopted across the entire development site and adjoining road reserves, for review and approval by the City of Rockingham.
- 6. Prior to applying for a Building Permit, a Sign Strategy must be prepared (which must include the information required by Planning Policy 3.3.1, Control of Advertisements) to the satisfaction of the City of Rockingham and it must thereafter be implemented for the duration of the development.
- 7. Prior to occupation of the development, pavement marking and signage must be provided at the vehicular crossover locations, to the satisfaction of the City of Rockingham, to clearly delineate the intended traffic flow within the site as follows:
 - (i) Restricted entry/exit only for heavy vehicles at 10m and 12m wide crossovers;
 - (ii) Full movement entry and exit for staff and visitor vehicles only at the 6m crossover for the administration building;
- 8. The buildings must be designed, constructed and maintained to BAL- 29 as specified in Australian Standard AS3959-2018: Construction of Buildings in Bushfire-Prone Areas (AS3959). The building must be maintained in accordance with the specified requirements of the BAL for the duration of the development.
- 9. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:
 - (i) the location of bin storage areas and bin collection areas;
 - (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;

- (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
- (iv) frequency of bin collections.

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

- 10. Prior to applying for a Building Permit, bin storage area/s must be designed with a size suitable to service the development and screened from view of the street to the satisfaction of the City of Rockingham. The bin storage area/s must be constructed prior to the occupation of the development and must be retained and maintained in good condition for the duration of the Development.
- 11. Prior to applying for a Building Permit, a Landscaping Plan must be submitted and approved to the satisfaction of the City of Rockingham and shall include the following detail:
 - (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
 - (ii) any lawns to be established and areas to be mulched;
 - (iii) any natural landscape areas to be retained;
 - (iv) those areas to be reticulated or irrigated;
 - (v) the provision of shade trees at a ratio of 1 tree per 4 car bays;
 - (vi) use of species consistent with the prescribed plant species list in the East Rockingham Development Guidelines;
 - (vii) fencing type, height and alignment, demonstrating that the street frontage fencing is located behind the extent of the Landscaped setback area;
 - (viii) internal footpath and kerb ramps providing linkages between car parking areas to the main office, including any proposed lighting; and
 - (ix) proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas.
- 12. The landscaping (including all verge landscaping) must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham.
- 13. Prior to the occupation of the development, the recommendations in the Bushfire Management Plan prepared by Eco Logical dated 24 March 2023 shall be implemented in the design, construction and ongoing operation of the development at all times to the satisfaction of the City of Rockingham including but not limited to the following requirements:
 - (i) Ensure proposed buildings are located outside of areas subject to BAL-FZ and BAL-40.
 - (ii) Ensure all APZs are established and maintained to the standard in the Guidelines.
 - (iii) Six (6) fire hydrants and monitoring systems are installed and extend reticulated water supply to appropriate areas.
 - (iv) Construct the internal road network as per the approved development plans.
- 14. Prior to the occupation of the development, the recommendations in the Bushfire Risk Management Plan prepared by Eco Logical dated 23 January 2023 shall be implemented in the design, construction and ongoing operation of the development at all times to the satisfaction of the City of Rockingham including but not limited to the following requirements:
 - (i) The proposed building will be fitted with a sprinkler system, automatic fire detection system and automatic smoke exhaust system

- (ii) Bund areas (where truck and passenger tyres will be collected and stored prior to processing) will be:
- (iii) Fitted with radiometric thermal cameras (operating 24 hours a day, 7 days a week), which when activated will trigger an automatic response to the nominated emergency services;
- (iv) Limiting storage areas to Passenger Tyre Storage 3,840m2 and Truck Tyre Storage 3,840m2
- (v) Bund walls to be 7m in height and constructed from fireproof material
- 15. Prior to the occupation of the development, the car parking areas must:
 - (i) provide a minimum of 80 car parking spaces;
 - be designed, constructed, sealed, kerbed, drained and line marked in accordance with User Class 1A for staff parking, User Class 2 for visitor bays, User Class 4 for universal bays of Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to commencement of development;
 - (iii) provide One (1) car parking space(s) dedicated to people with disability, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
 - (iv) be constructed, sealed, kerbed, drained and clearly marked prior to the development being occupied and maintained thereafter;
 - (v) have lighting installed, prior to the occupation of development;
 - (vi) any semi-trailer parking bays shall be clearly line marked and designed in accordance with AS2890.2 for the purposes of parking trailers only at all times; and
 - (vii) confine all illumination to the land in accordance with the requirements of Australian Standard AS 4282-1997, Control of the obtrusive effects of outdoor lighting, at all times.
- 16. Prior to the occupation of the development and in accordance with City of Rockingham Local Planning Policy 3.3.14 Bicycle parking and End of Trip Facilities, at least two (2) showers and change rooms must be provided for the development which must be designed in accordance with that Policy and approved by the City of Rockingham. The showers, change rooms and lockers must be retained and maintained in good and safe condition for the duration of the development.
- 17. Prior to the occupation of the development, eight permanent (8) bicycle parking spaces must be designed in accordance with AS2890.3-1993, Parking facilities, Part 3: Bicycle parking facilities, and located within the development to the satisfaction of the City of Rockingham.
- 18. The Environmental Noise Report prepared by Herring Storer Acoustics dated March 2023 shall be reviewed within 30 days of the occupation of the development to determine compliance with the Environmental (Noise) Regulations 1997.
- 19. No vegetation within the Conservation Area (Reserve ID R/52979 Alumina Reserve) shall be removed or disturbed during development works, including any secondary impacts from works to provide infrastructure and drainage.
- 20. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures shall be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.

- 21. Crossovers shall be designed and constructed in accordance with the City's Commercial Crossover Specifications.
- 22. Materials, sea containers, goods or bins must not be stored within the carpark areas at any time. Car parks shall remain freely accessible at all times.

Advice Notes

- This Approval relates to the details provided in the application; to undertake the development in a different manner to that stated in the application a fresh application for Development Approval must be submitted to the City.
- In relation to Condition 3, dust management is to be in accordance with the Department of Environment and Conservation Guideline: A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.
- It is advised that the applicant is required to obtain a Works Approval license from the Department of Water and Environmental Regulation before commencing operations at the site. The applicant is encouraged to liaise directly with Department of Water and Environmental to ensure compliance with all relevant regulations and requirements.
- The proponent is advised that this approval is not a building permit, which constitutes a separate legislative requirement. Prior to any building work commencing on site, a building permit must be obtained.
- A Sign Permit must be obtained for any advertising associated with the development, including signage painted on the building; the applicant and owner should liaise with the City's Building Services in this regard.
- With respect to the Landscape Plan and Stormwater Management Plan, the applicant is to liaise with the City's Land Development and Infrastructure Services in this regard.
- All works in the road reserve, including construction of a crossover or footpath and any other works to the road carriageway must be to the specifications of the City of Rockingham. The Applicant should liaise with the City of Rockingham's Land and Development Infrastructure Services and Engineering Services in this regard.
- No battering, fill or waste shall be deposited within the Conservation Area (Reserve ID R/52979 Alumina Reserve). The landowner/applicant must immediately report any fill or construction waste that is deposited within the Conservation Area (Reserve ID R/52979 Alumina Reserve) to the Department of Biodiversity, Conservation and Attractions.
- The disposal of wastewater into the Water Corporation's sewerage system must be with approval of the Water Corporation; the applicant and owner should liaise with the Water Corporation in this regard.
- The development must comply with the Environmental Protection (Noise) Regulations 1997; contact the City of Rockingham's Health Services in this regard.
- All vehicle access to the site via Scandium Way must be provided by the internal access road to be constructed prior to occupation of the development pursuant to the Subdivision Approval issued by WAPC (ref 160809).

Region Scheme	Metropolitan Region Scheme
Region Scheme -	Industrial
Zone/Reserve	
Local Planning Scheme	General Industry
_	
Local Planning Scheme -	Town Planning Scheme No.2
Zone/Reserve	
Structure Plan/Precinct Plan	N/A

Details: outline of development application

Structure Plan/Precinct Plan -	N/A
Land Use Designation	
Use Class and permissibility:	Industry General (Licensed) - "A" use
Lot Size:	11.9098ha
Existing Land Use:	Industry General
State Heritage Register	Yes
Local Heritage	□ N/A
	Heritage List
	Heritage Area
Design Review	⊠ N/A
	Local Design Review Panel
	State Design Review Panel
	□ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Site Context:

The subject site is located in East Rockingham and fronts Lodge Drive along its southern boundary and a portion of its western boundary. Lot 15 to the west, which is owned by Western Power and the adjoining the north-western boundary of the property forms part of a Conservation Reserve (R 52979). The Development Area is located immediately west of the three (3) warehouse tenancies in the former 'wool washing' building in a portion of land formerly occupied by Water Corporation. The development area occupies all of Lot 12 and the western portion of Lot 13.

Proposal:

The application is for a Tyre Recycling Facility. The process involves the operator obtaining refuse tyres (passenger and truck) which are initially inspected on-site for their viability to be recycled. Once accepted, the tyres are cut into small segments in preparation for shredding and extraction. Once the segments have been processed through the various machinery, the outcome produces rubber granules and meshing.

The products are then sold locally and internationally for reuse within applications such as road treatments, recreational surfaces, such as gym and playground flooring, and concrete additives.

The Development Application includes the following:

- An industrial building consisting of workshop and warehouse areas located centrally to the site with a total floor area of 13,710m²;
- Administration and amenities office building comprising an area of 680m²;
- Four crossovers accessed from the future subdivision road (Scandium Way) directly to the east, which will be constructed as part of the subdivision works. The four crossovers propose access as follows:
 - Two, 10m wide crossovers to Lodge Drive (South) for unrestricted heavy vehicle access only;
 - One, 6m wide crossover to the parking area for the use of light vehicles and passenger vehicles only;
 - o One, 12m wide crossover to Lodge Drive (West) for heavy vehicle access only; and
 - One, 10m wide crossover to Scandium Way (East) for heavy vehicle access.
- A total of 80 new car parking spaces inclusive of one accessible bay;
- A storage area to the north compromising of 6 storage bunds of 1,280m² for tyres.

- Fire tanks and a pump station located abutting the existing (former) 'wool washing' shed structure;
- A electrical voltage substation located to the western boundary, for the electrical requirements of the machinery operating on the site;
- Open air storage spaces located to the east of the proposed building abutting the existing workshop;
- A bin store area 83m² in size abutting the existing bund locations; and
- Landscaping areas abutting all road frontages.

During the assessment of the application the City raised the following concerns with the applicant;

- The need to increase provision of car parking bays to match the number of staff on-site;
- Concerns over the number of one way crossovers in and out of the property;
- Modifications to the Bushfire Management Plan (BMP) to ensure accuracy with State Planning Policy 3.7 - Planning in Bushfire Prone Areas (SPP3.7);
- An Acoustic Report to be provided assessing the development against the *Environmental* (*Protection*) Noise Regulations 1997 (Noise Regulations); and
- Clarification of operational details regarding the storage, cleaning, and wetting down of tyres to mitigate mosquito breeding.

The applicant submitted Amended Plans which addressed the following concerns raised by the City;

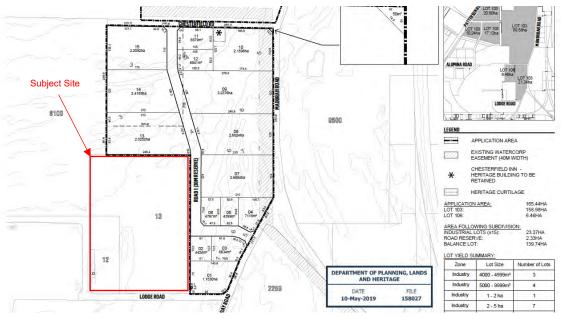
- An addition 21 bays were proposed bringing the total to 80 bays;
- A revised BMP;
- An Environmental Noise Report detailing the operations of the site; and
- Operational detail addressing the storage, cleaning and wetting down of tyres in regards to mosquito breeding concerns.

Background:

In June 1998, the City granted conditional Development Approval for a 'Wool Washing Plant' (Jandakot Wool Scourers) at the subject site, which was constructed between 1998 and 2004.

In May 2019, the West Australian Planning Commission (WAPC) resolved to grant approval to a 15 lot subdivision over land to the east of the subject site. The subdivision is part of the 'Clipper Estate' industrial area being developed by DevelopmentWA. The subdivision has a road connection (Scandium Way) from Chesterfield Road to Mandurah Road and which adjoins the north-eastern boundary of the site.

The City has issued subdivision clearance to 11 lots, however, lot titles have yet to be issued and Scandium Way has yet to be ceded to the Crown.



Subdivision Approval - WAPC REF158027

Legislation and Policy:

Legislation

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

State Government Policies

- State Planning Policy 3.7 Planning in Bushfire Prone Areas
- State Planning Policy 4.1 State Industrial Interface

Structure Plans/Activity Centre Plans

Not Applicable

Local Policies

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

Consultation:

Public Consultation

The application was advertised for public comment in the following manner:

- Notice was published in the Sound Telegraph on 8 March 2023;
- Owners and occupiers identified on the Consultation Map below were notified in writing of the proposed application;
- A sign was placed on-site;
- The application was made available for public inspection at the City's Administration Offices and published electronically on the City's Website.

• Submissions were requested over a 14 day period between 8 and 22 March 2023, as per the *Planning and Development (Local Planning Scheme) Regulations 2015.*

Three (3) submissions were received at the conclusion of the advertising period:

- One letter of support was received by a landowner living outside of the consultation area
- Two neutral submissions was received by an owner/occupier outside of the consultation area. The submissions queried the operational methodologies of the facility, the technical documents and other items in the Table below.

Submission:

Concern about potential odours and noise emissions from the proposed facility (summarised).

Applicant's Response:

The EPA's *Guidance Statement No.3* - Separation Distances between Industrial and Sensitive Land Uses (EPA Guidance Statement No.3) provides generic buffer distances intended to mitigate impacts of industrial developments on sensitive land uses.

The EPA Guidance Statement No.3 identifies potential impacts as gaseous, noise, dust, odour and risk from a used tyre storage and recycling facility. A generic buffer distance of 500m - 1,000m is recommended.

The proposed development provides a separation distance of approximately 700m from the Caravan Park on Dixon Road. The nearest dwellings are over 1km away. Please refer to the Environmental Noise Assessment (ENR).

Additional management measures can be implemented to mitigate any potential adverse amenity impacts. A separate works approval / licensing application is being progressed with DWER by Encycle Consulting Pty Ltd.

This is a high regulated facility. A separate application for the facility's works approval/environmental licence is being assessed by DWER. In addition to any conditions applied to a development approval, the facility will also need to operate in compliance with any environmental license conditions we will be subject to regular compliance auditing by DWER. City Response:

The proposal is subject to the Environmental Protection Agency (EPA) *Guidance Statement No.3* – *Separation Distances between Industrial and Sensitive Land Uses.* The site has a separation distance of 700m to the nearest sensitive receptor, (taken from the site boundary), being the Rockingham Holiday Village (Caravan Park) located on Dixon Road. There are no other Sensitive Premises within 1000m of the development site.

The applicant has provided information that the processing of tyres will not involve any burning or any process which will cause hazardous odour emission from the facility. The City referred the application to the Department of Water and Environmental Regulations (DWER) for comment, which did not raise odours as a concern. The application will also be further required to be licensed by DWER.

The applicant has also submitted an ENR which demonstrates how the proposal will comply with the Noise Regulations. An advice note is recommended reminding the applicant of the need to obtain a DWER Licence.

Submission:

Concern about fire risk of the facility in the event of a bushfire. Management Plans don't adequately address fire risk (summarised).

Applicant's Response:

Fire risk has been considered as part of this proposed development. Refer to the Bushfire Management Plan and Bushfire Risk Management Plan.

Preliminary fire safety measures are proposed following pre-lodgement engagement with DFES. Such measures include:

- Monitoring of the subject site and facility by trained staff;
- Radiometric thermal cameras to monitor the pile temperature in each bund. Alarms may be connected to alert DFES, should the temperature of the pile reach the critical temperature;
- The bund walls are to achieve a height of 7m (as shown on the development plans); and
- A fire hydrant monitoring system is to be installed to provide immediate firefighting capabilities if a fire is detected in the early stages.

The scope of a BMP and Bushfire Risk Management plan (In the context of State Planning Policy 3.7 - Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas.) is to prepare plans which address bushfire risk to the site and flammable on-site hazards.

DFES has provided their comments and will be addressed accordingly by the Bushfire Reporting and concept fire safety strategy prepared by Warrington Fire.

The risks associated with tyre storage have been discussed in detail with DFES prior to lodgement of this development application. Risk management measures are identified within the concept fire safety strategy prepared by Warrington Fire and will continue to be developed and refined as part of detailed design.

City Response:

The applicant has provided a BMP which details the bushfire threat from the vegetation to the west and the asset protection zone for the site. The applicant has also provided a Bushfire Risk Management Plan (BRMP) which provides a comprehensive strategy to mitigate any bushfire threats the development site might potentially encounter. Both documents were referred to Department of Fire and Emergency Services (DFES) for comment.

DFES's submission recommended changes to the BMP (see Agency Consultation below) to achieve compliance with SPP3.7. The applicant provided a revised BMP which the City is satisfied addresses DFES's comments. DFES did not raise any concerns over the BRMP.

Referrals/consultation with Government/Service Agencies

The following government departments were consulted:

- Department of Fire and Emergency Services (DFES); and
- Department of Water and Environmental Regulation (DWER); and
- Department of Mining, Industry Relations and Safety (DMIRS); and
- Water Corporation.

The comments received are summarised as follows:

Consultation with other Agencies or Consultants

The following Government departments were consulted:

- Department of Mining and Industry Regulation and Safety (DMIRS);
- Department of Water and Environmental Regulation (DWER);
- Department of Fire and Emergency Services (DFES);
- DevelopmentWA; and
- Water Corporation.

The comments received include:

Department of Mining and Industry Regulation and Safety (DMIRS) (summarised)

- No dangerous goods concern.
- Contact DWER for comment in regards for any licensing requirements.

Applicant Comment:

Noted.

City's Comment:

Noted. DWER has been consulted.

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

DWER provided the following comments:

• The development will need to comply with the Controlled Waste, Noise and Unauthorised Discharges Regulations.

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

- A Native Vegetation clearing permit is required for the existing mature vegetation on site, including the Tuart Trees on site.
- A Ground water licence is required.
- A Works Licence is required for the premise. Given the Tyre Recycling Facility falls under a Prescribed Premise (57 Used Tyre Storage), a Works License is required under the *Environmental Protection Act 1986* (EP act).

Applicant's Comment:

Noted. Any inconsistencies and the extent of clearing will be clarified and confirmed as part of the clearing permit application with DWER.

A separate process for works approval is being progressed with DWER in accordance with the EP act licence.

City's Comment:

Applicant's comments are noted.

DWER regulates industrial emissions and discharges to the environment through a works approval and licensing process, under Part V of the EP Act.

Industrial premises with potential to cause emissions and discharges to air, land or water are known as 'Prescribed Premises' and trigger regulation under the EP Act. Prescribed Premises categories are outlined in Schedule 1 of the *Environmental Protection Regulations 1987*.

The EP Act requires a Works Approval to be obtained before constructing a Prescribed Industrial premises and makes it an offence to cause an emission or discharge unless a licence or registration is held for the premises.

The City notes that the applicant has submitted an application for Works Approval which is currently being considered by DWER.

Department of Fire and Emergency Services (summarised)

Modifications to the applicant's BMP are required for the following:

- Vegetation exclusion areas & classification; and
- BAL contour mapping; and
- Administrative queries.

Further changes are required to address the 'Bushfire Protection Criteria from SPP3.7', as acceptable solutions have not been illustrated for the following matters:

- Location;
- Siting of design; and
- Water.

Applicant's Comment:

The comments from DFES has been appropriately responded to, with the Bushfire Management Plan amended as required (refer to BMP) and the technical note response prepared by Eco Logical to respond to the specific comments.

Eco Logical Response:

There were multiple vegetation management scenarios discussed during the preparation of the BMP which has resulted in confusion in the BMP maps. The BMP will be amended to classify vegetation along the western boundary of the subject site. Following development, vegetation immediately south of the subject site boundary is excludable and justification of this exclusion has been provided in the amended BMP. The BMP will be amended to include recommendations from the Concept Fire Safety Strategy (Warrington Fire 2023) specifically:

Department of Fire and Emergency Services (summarised) (cont...)

'The proposed tyre recycling facility must be provided with a fire hydrant system in accordance with clause E1.3 of the NCC, DFES guidance note GN02, and AS 2419.1:2005, with the exception that six fire hydrants outlets and a fire hydrant monitoring system are to be provided instead of five fire hydrant outlets'.

Other changes also include:

- Typographical errors; and
- Vegetation classification

City's Comment:

Noted. The City has reviewed the revised BMP and is satisfied that the matters raised by DFES has been addressed. Conditions can be applied requiring the development to adhere to the BMP and (BRMP) measures to achieve compliance at all times.

Development WA

No objection to the proposed development.

Applicant's Comment:

Noted.

City's Comment:

Noted.

Water Corporation (summarised)

The Water Corporation advised that reticulated water is available to the area. There are sewerage services available to the site and the applicant may be required to upgrade in order to connect. The Water Corporation does not object to the application.

Applicant Comment:

Noted.

City's Comment:

The Water Corporation's submission is noted and an Advice Note is recommended.

A copy of the external comments received from the consulted Government Agencies is within Attachment .

Planning Assessment:

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

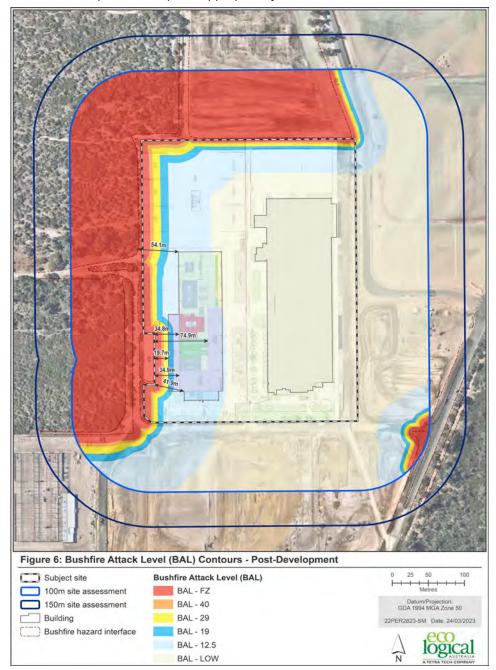
The following matters have been identified as key considerations for the determination of this application:

State Government Policy 3.7 - Planning in Bushfire Prone Areas (SPP3.7)

SPP3.7 seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.

As the land is designated as a Bushfire Prone Area, the applicant submitted a BMP and BRMP in support of the application, as per the requirements of SPP3.7 which are explained further in this Report.

The bushfire threat for the development arises primarily due to existing vegetation to the west of the site on Reserve 52979. The vegetation will remain in the long term and thus the application will be required to respond appropriately to the bushfire threat.



BAL Contour Map

A revised BMP responds to DFES' request to modify the plans to ensure compliance with the Guidelines and *Australian Standard 3959-2018 - Construction of buildings in bushfire prone areas* (AS3959). The BAL contour map demonstrates that the development is able to achieve the BAL-29 separation with an Asset Protection Zone (APZ) fully contained within the lot.

Given the high risk associated with the proposed land use, a BRMP was required to be submitted as per the requirements of SPP3.7. The BRMP assesses the bushfire risk of the development site and outlines strategies to manage that risk, including building construction standards, landscaping requirements, and ongoing maintenance and management practices. Of particular concern is the open yard storage areas (tyre bunds), which are located within the BAL Flame Zone (FZ) area (as indicated on the BAL Contour Map). The primary risk identified in the BRMP is that a bushfire could potentially ignite the tyre storage areas, thus necessitating appropriate risk management measures.

The BRMP's role in this instance is to provide considerations to the inherent and residual bushfire risk. These can be determined on the basis of the following risk criteria:

- Likelihood of ignition;
- Bushfire occurrence (bushfire history of the area);
- Risk of ignition;
- Vegetation type, fuel age and load, slope under vegetation; and
- Predominant fire weather conditions.

The consequence or impact from bushfire risks noted above present in the area and the level of management and suppression response available. The BRMP has provided the following to address the above:

- A BMP;
- A risk assessment matrix based on bush fire attack scenarios from different directions;
- Bushfire mitigation measures;
 - Fire protection and detection equipment;
 - Evacuation plan and assembly points;
 - Bushfire suppression ability; and
 - Landscaping mitigation methods (APZ)

The main mitigation methods which target the open storage yards (tyre bunds) include the following strategies suggested within the BRMP.

- The proposed building will be fitted with a sprinkler system, automatic fire detection system and automatic smoke exhaust system;
- Bund areas (where truck and passenger tyres will be collected and stored prior to processing) will be:
 - Fitted with radiometric thermal cameras (operating 24 hours a day, 7 days a week), which when activated will trigger an automatic response to the nominated emergency services;
 - Limiting storage areas to Passenger Tyre and Truck Tyre Storage areas.
 - Each bund to be no more than 1,280m² in size;
 - Bunds are located more than 18m from the main building to achieve separation distances to minimise fire risk;
 - 18m separation from the northern boundary;
 - Bund walls to be 7m in height; and
 - Separated 1.5m from each other.
- The facility will be provided with manual call points (break glass alarms) adjacent to all exits that will operate the Direct Brigade Alarm (DBA) and the building occupant warning system; and

Fire hydrants will be located within the subject site at various locations and fire hydrant monitor system will also be installed in the open yard tyre storage area. Only personnel trained in the use of fire-fighting equipment or other necessary equipment (i.e. forklifts) required to respond to a fire on the site should be utilising this equipment and only if safe to do so. The final design of the hydrant system will be subject to assessment by the project hydraulic engineer and fire authority approval.

The BRMP has also been prepared in conjunction with a Fire Safety Strategy (FSS) document. The objective of the FSS is a comprehensive analysis at a building with a view to putting a plan in place to minimise the risks when there is a fire and to prevent the spread of fire. The recommendations from the FSS provided the strategies to inform the development of the BRMP.

In consideration of the above, the applicant has provided three (3) major documents which the City and DFES considered provides strategies to demonstrate compliance with SPP3.7.

State Planning Policy 4.1 - State Industrial Buffer Policy ('SPP4.1')

The key objective of SPP4.1 is to protect industry, infrastructure and special uses from the encroachment of incompatible land uses as well as provide for the safety and amenity of land uses surrounding industry, infrastructure and special uses. As a result, most industries and infrastructure, as well as other uses, need to be separated from residential areas and other sensitive uses within a buffer area explained bellow.

The objectives of SPP4.1 are as follows:

- "To provide a consistent Statewide approach for the definition and securing of buffer areas around industry, infrastructure and some special uses;
- To protect industry, infrastructure and special uses from the encroachment of incompatible land uses;
- To provide for the safety and amenity of land uses surrounding industry, infrastructure and special uses; and
- To recognise the interest of existing landowners with buffer areas who may be affected by residual emissions and risk, as well as the interests, needs and economic benefits of existing industry and infrastructure which may be affected by encroaching incompatible land uses".

Environmental Protection Authority (EPA) - Separation Distance between Industrial and Sensitive Land Uses No.3 ('Guidance Statement') The Guidance Statement serves as a valuable tool in the assessment of SPP4.1, providing essential direction and facilitates the decision making process by providing guidance.

The EPA Guidance Statement provides advice to proponents, responsible authorities, stakeholders and the public, on the minimum requirements for environmental management which the EPA would expect to be met when the Authority considers a development proposal.

For the purpose of the Guidance Statement, 'industrial land use' is used in a general way to encompass a range of industrial, commercial and rural activities, associated with off-site emissions that may affect adversely the amenity of sensitive land uses. A table of land uses is provided in the Guidance Statement.

The City considered the proposal constitutes an 'industry' as defined within the Guidance Statement. The nearest sensitive land use is the Rockingham Holiday Village Caravan Park (approximately 700m to the east) is situated inside the minimum 500-1000m generic separation requirement for such and industrial use.



Separation to Sensitive Land Use

Given the methodology of the Tyre Recycling Facility's operation, noise is the only consideration of the proposal which could potentially affect the amenity of the locality. As the tyre recycling facility is understood to be operational at all hours, seven days a week, noise received at the neighbouring premises from these noise sources needs to comply with the appropriate assigned noise levels for this period.

The applicant has prepared an ENR in order to demonstrate compliance. Given there are other examples of similar facilities in Hope Valley and Naval Base, the ENR utilised existing machinery noise levels to assess the application. The ENR has been reviewed and the City is satisfied that the ENR demonstrates compliance with the Noise Regulations at the nearest sensitive receptor being the Rockingham Holiday Village Caravan Park.

The proposal is considered to be compatible with existing and future industrial development, within the East Rockingham Industrial Area (ERIA).

Local Planning Policy 3.3.8 - East Rockingham Development Guidelines (LPP3.3.8)

In June 2020, the City resolved to adopt revised Planning Policy 3.3.8 – East Rockingham Industrial Zones subject to the gazettal of Scheme Amendment 178. During the time of lodgement of this application Amendment 178 was gazetted and the former policy was revoked.

LPP3.3.8 has been prepared to guide the orderly development of serviced industrial land within the ERIA. LPP3.3.8 provides a set of planning criteria to ensure that the ERIP has a consistently high standard of development and visual amenity.

The proposal satisfies the requirements of LPP3.3.8's development standards. It also complies with specific provisions such as building height, fencing, and plant and equipment. Furthermore, the proposal meets the standards for other structures, storage, and service areas. LPP3.3.8 further assesses the TPS2's general setback and landscaping requirements which is further discussed in this policy.

Local Planning Policy 3.3.14 - Bicycle Parking and End-of-Trip Facilities (LPP3.3.14)

The aim of the LPP3.3.14 is to appropriately provide for secure, well defined and effective on site bicycle parking and end-of-trip (EOT) facilities, to encourage the use of bicycles as a means of transport and access within the City.

Bicycle Parking Requirement

	Required				
Land Use	Minimum Short Term		Minimum Long Term		Provided
	Rate	Number	Rate	Number	
Tyre Recycling Facility - 13,710m²)	0.30 spaces per 100m² NLA	41.13	0.12 spaces per 100m ² NLA	16.4	8
Total Required	42		17		59 spaces

The proposal provides 8 long term bicycle bays which are readily available to staff of the site. The applicant proposes a variation to the requirements of the policy by 51 bicycle spaces. The proposed variation can be considered acceptable for this development given:

- The proposal is located in an Industrial Zone and there is a low expectance that employees/occupiers will utilise a bicycle to work.
- The requirement of 59 bays stems from the size of the warehouse, where it would not otherwise demand a large amount of staff or visitors to the site.
- The requirement for short-term parking is not considered to serve any benefit, and for that reason only the requirement for long-term was applied (i.e. employees).
- No short term bays have been provided that are publicly available. Given the bicycle bays are only in benefit of the employees. It is not expected that any short-term visitors will be visiting the site.

End of Trip Facilities (EoT)

The requirements of the Policy stipulate the proposal to include EoT facilities when long term bicycle parking is required:

Requirement	No of Long Term Bike Parking	No of Showers	Change Rooms
One shower following the first five (5) long-term parking spaces, plus an additional shower for each four (4) bicycle parking spaces thereafter	8	2	2

A condition is recommended requiring the provision of EOT facilities if Development Approval is granted. The proposal otherwise complies with LPP3.3.14.

Local Planning Policy 3.4.3 - Urban Water Management (UWMP) (LPP3.4.3)

A Stormwater Management Plan (SMP) was not submitted as part of the Development Application, nor is there any mention regarding management principles in the Application. LPP3.4.3 provides guidance that the City may impose conditions on Development Application to include a SMP.

A Section 70A is listed on both Titles, requiring written approval from Water Corporation with regard to the quality and quantity of any discharge of industrial waste water into the reticulated sewerage system.

The applicant has provided two (2) drainage basins on-site via the development plans. It is anticipated that these will form part of the future SMP. Other hardstand areas are expected to utilise soak wells for any stormwater discharge.

A SMP will be required as a condition of Development Approval. Given the site is a Prescribed Premises, the development will require further consideration by DWER. Should the strategy in the Stormwater Management Plan fail to satisfy DWER advice and PP3.4.3, the Applicant will be required to investigate alternatives.

Planning and Development (Local Planning Scheme) Regulations 2015 (Planning Regulations)

Clause 67 of the Planning Regulations outlines matters to be considered by the decision maker in determining this application. Where relevant, these matters are discussed throughout this report.

Town Planning Scheme No.2 (TPS2)

Clause 3.2 - Zoning Table

The subject site is zoned General Industry in TPS2. The proposed development is General Industry - (Licenced), the proposed development is consistent with the land use of Industry, meaning:

"means an industry which is a category of Prescribed Premises set out in Schedule 1 of the Environmental Protection Regulations 1987 or premises subject to registration set out in Schedule 2 of the Environmental Protection Regulations 1987, but does not include an abattoir, agriculture - intensive, animal husbandry - intensive, industry extractive, industry - hazardous, industry - noxious, industry - primary production, industry - rural, landfill (Prescribed Premises Category 63, 64, 65 and 66), or stockyards."

An 'Industry- General (Licenced)' land use is not permitted ('A') unless the local government has exercised its discretion by special notice in accordance with Clause 64 of the deemed provisions.

Clause 4.10.1 - Objectives of Industrial zones

The following objectives apply to Industrial Zoned land within the TPS2 are:

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

The proposed development is considered to be consistent with the objectives of the General Industry zone.

Clause 4.10.2 - Form of Development

In considering an application for Development Approval, the decision maker shall have regard to the following:

- (a) promotion of a high standard of building development, landscaping and working environment;
- (b) protection of the amenity of adjacent residential and open space areas;
- (c) management of drainage systems and land uses to promote groundwater conservation; and
- (d) to ensure safe movement of vehicular and pedestrian traffic in the area."

The proposed development is subject to assessment against LPP3.3.8, which details specific design and landscape requirements for the site. The development complies with the relevant requirements of the LPP3.3.8, as outlined previously in the Policy section of this Report.

The provision of a SMP will assist with any consideration towards drainage and ground water conservation.

The applicant has provided Transport Impact Statement (TIS) accompanying the application. Upon review of the TIS, the City is satisfied the traffic volumes produced from the proposed development will not impact on the locality.

Clause 4.10.3 - Parking

TPS2 requires the provision for the on-site parking of vehicles in accordance with the provisions of Clause 4.15. The application proposed a total of 80 car parking bays for a total of 89 employees.

Under the calculations of Clause 4.15 based on the total floor area, the proposal does not comply with the car parking requirements of TPS2.

Use Class	Minimum Requirement	Floor Area	Required Bays	Provided Bays
Industry	1 bay per 50m ² NLA for factory units and bulky goods showrooms, plus 1 bay per 100m2 NLA for warehouses or 1 bay per employee, whichever is the greater	8450m ²	169 bays	
Office	1 bay per 20m² NLA	680m ²	34 bays	
Warehouse	1 bay per 100m² NLA	5226m ²	53 bays	
Total	·	•	256 bays	80 bays

Clause 4.20 of TPS2 allows the Council to exercise discretion in modifying development standards. Consideration can be given to the nature of the proposed development, the number of employees likely to be employed on the site and the anticipated demand. In light of the above, for the following reasons, the proposed 80 car parking bays is acceptable:

- The proposed development has fewer staff than what is conventionally required for such an operation, meaning that the parking requirements may be less than typical.
- The operation does not require all staff to be on-site at the same time, and has varying work schedules, meaning that the parking demand may be lower than what is generally expected. According to the applicant, the operation is 24 hours and the number of staff during the day will be different to the demands at night time.
- The shortfall in parking bays will not impact the surrounding area or the operation of the development as the Development Site has adequate area on site to provide parking.

Clause 4.10.4 - General Development Provisions

The façade of the building is considered to comply, the construction is considered modern, comprised of various materials and is visible from Lodge Drive.

Clause 4.10.6 - Setbacks and Landscaping for Industrial Zones

The development meets all the setback and landscaping requirements of TPS2.

Conclusion:

The proposed development is an industrial type land use and is compatible with the context of the locality. The planning framework in the ERIA is designed to facilitate the establishment of general industrial land uses, subject to a set of development requirements.

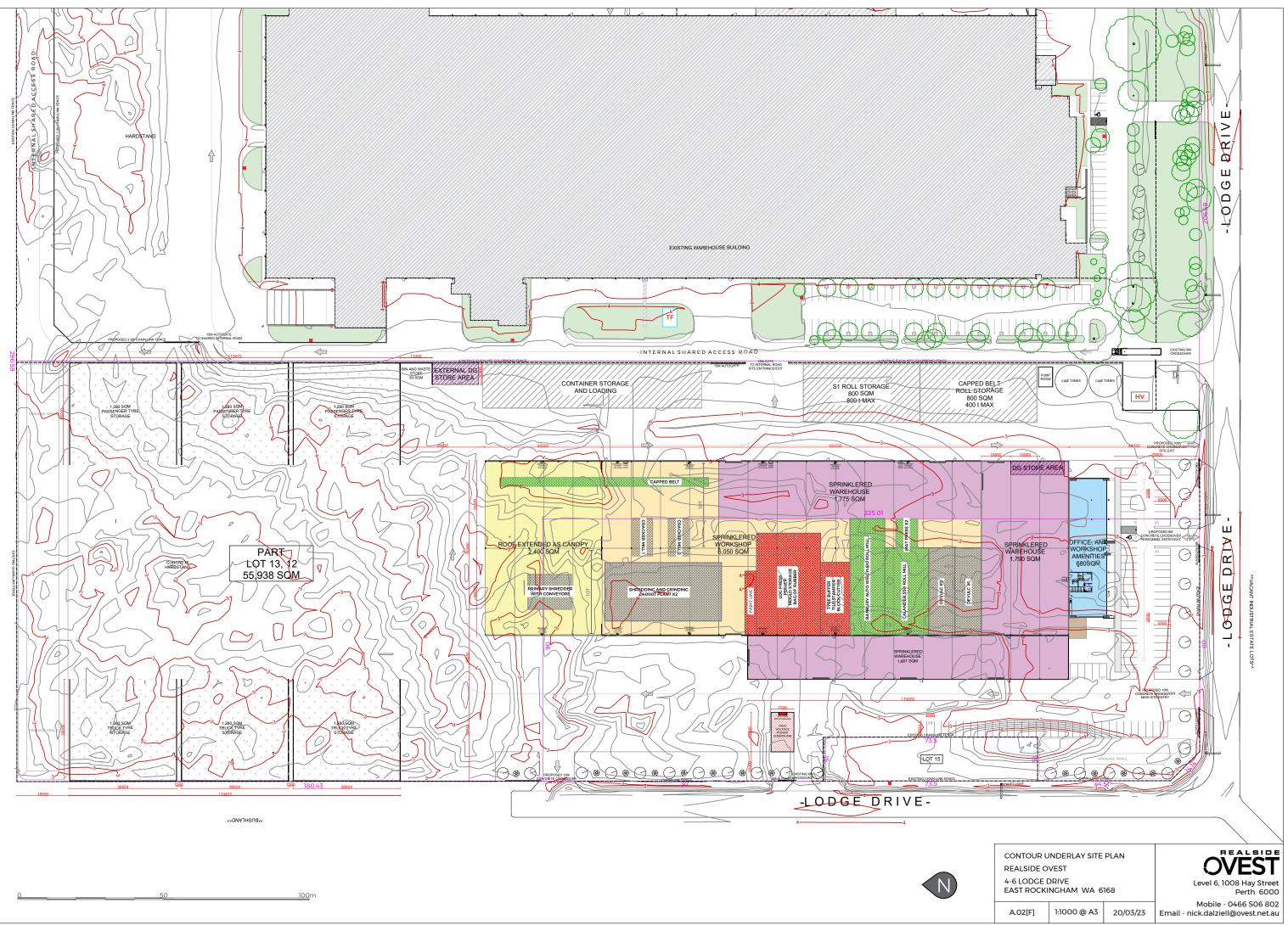
The application has been assessed against the requirements of TPS2 and SPP3.7. Given the proposal falls under a 'High Risk Land Use', it required a BRMP in addition to a BMP. The revised BMP and the BRMP are considered acceptable along with a FSS to supplement the requirements of SPP3.7.

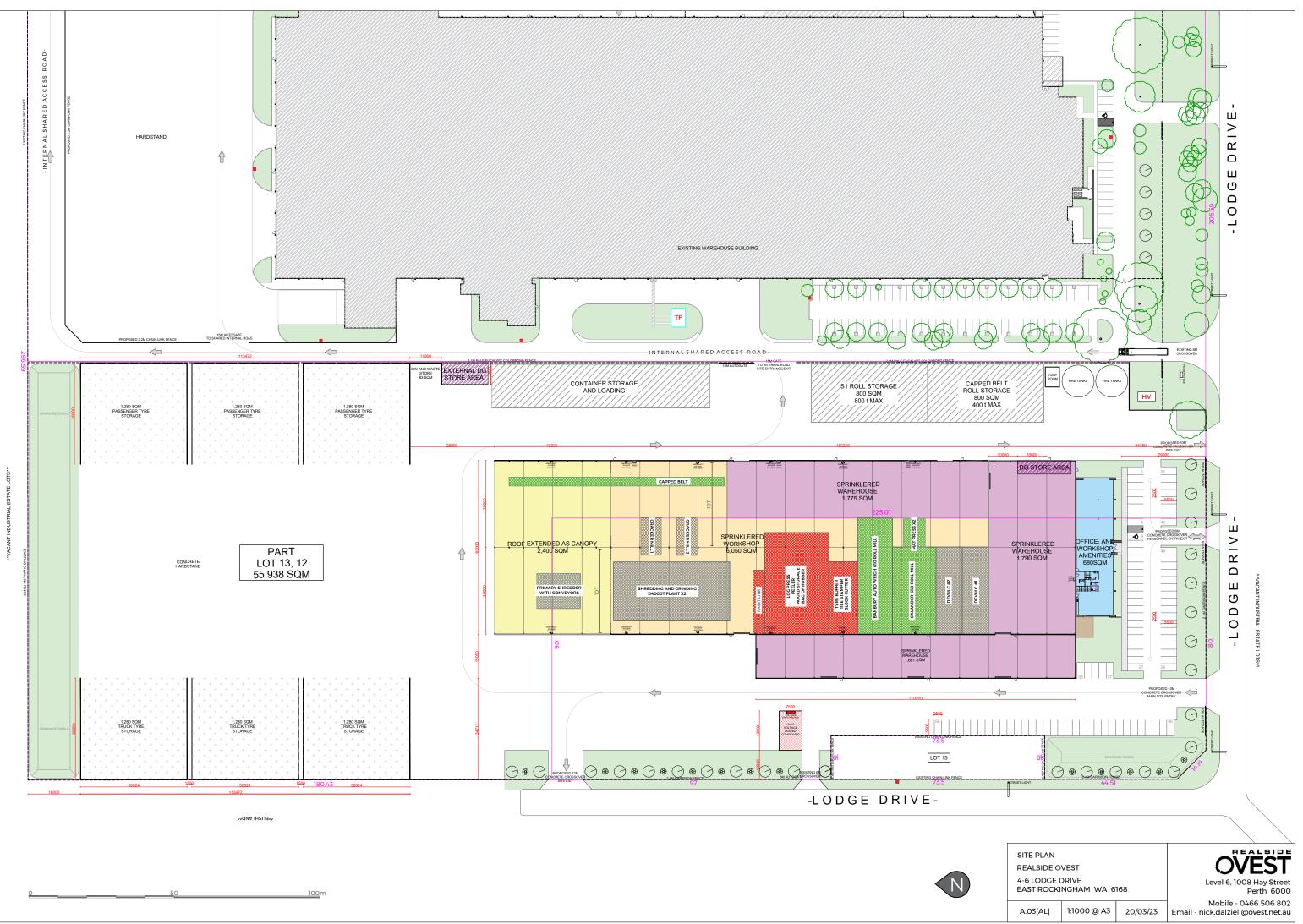
The proposal is compliant with LPP3.3.8 and the design is deemed to be in accordance with the requirements within the local planning framework and well-integrated with the surrounding development.

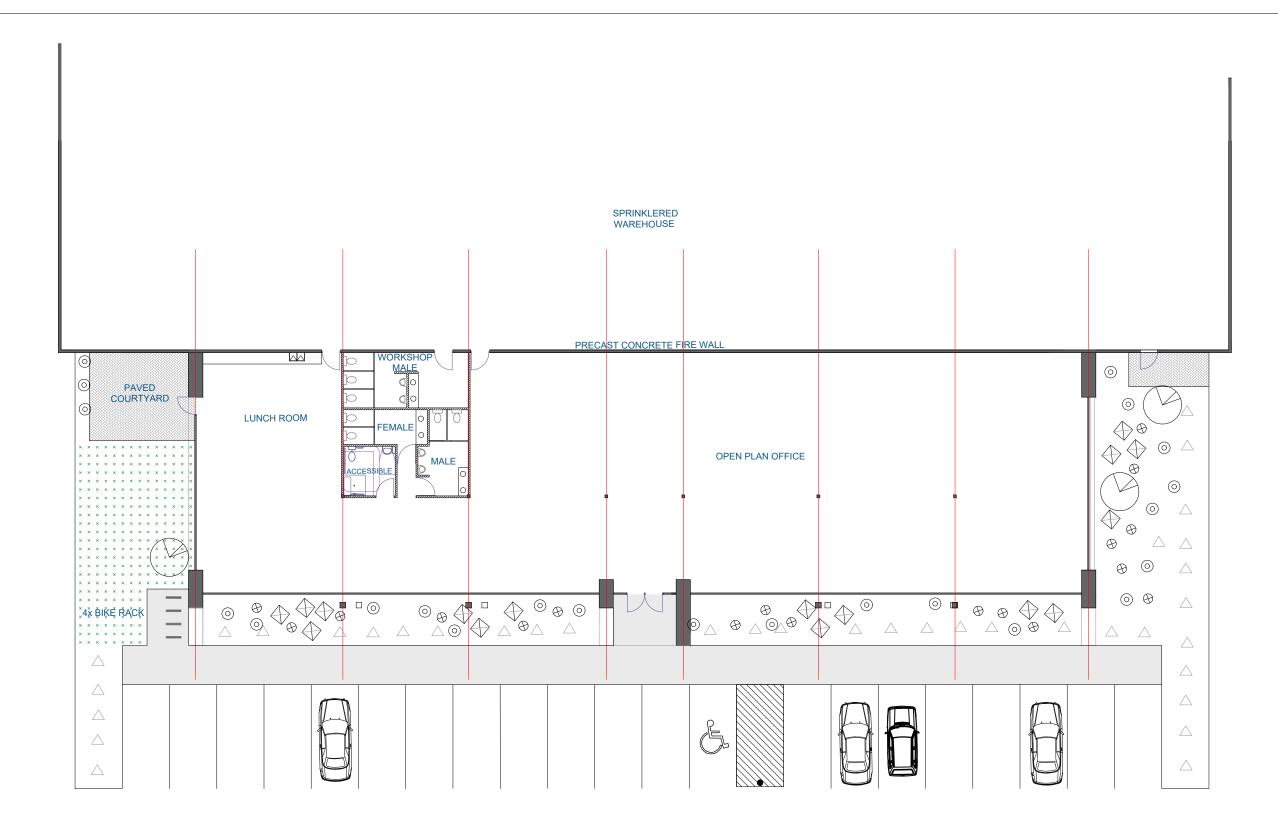
The applicant has also provided an ENR to demonstrate compliance with the EPA Guidance Statement and the Noise Regulations.

After a thorough examination of the site's traffic, the City has determined it to be satisfactory. Additionally, an assessment of the parking arrangements on the site has been conducted and found to be adequate for the operation's level and scale. The proposed Tyre Recycling Facility is recommended for Development Approval, subject to various conditions including compliance with SPP3.7 and the Noise Regulations.



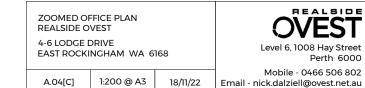


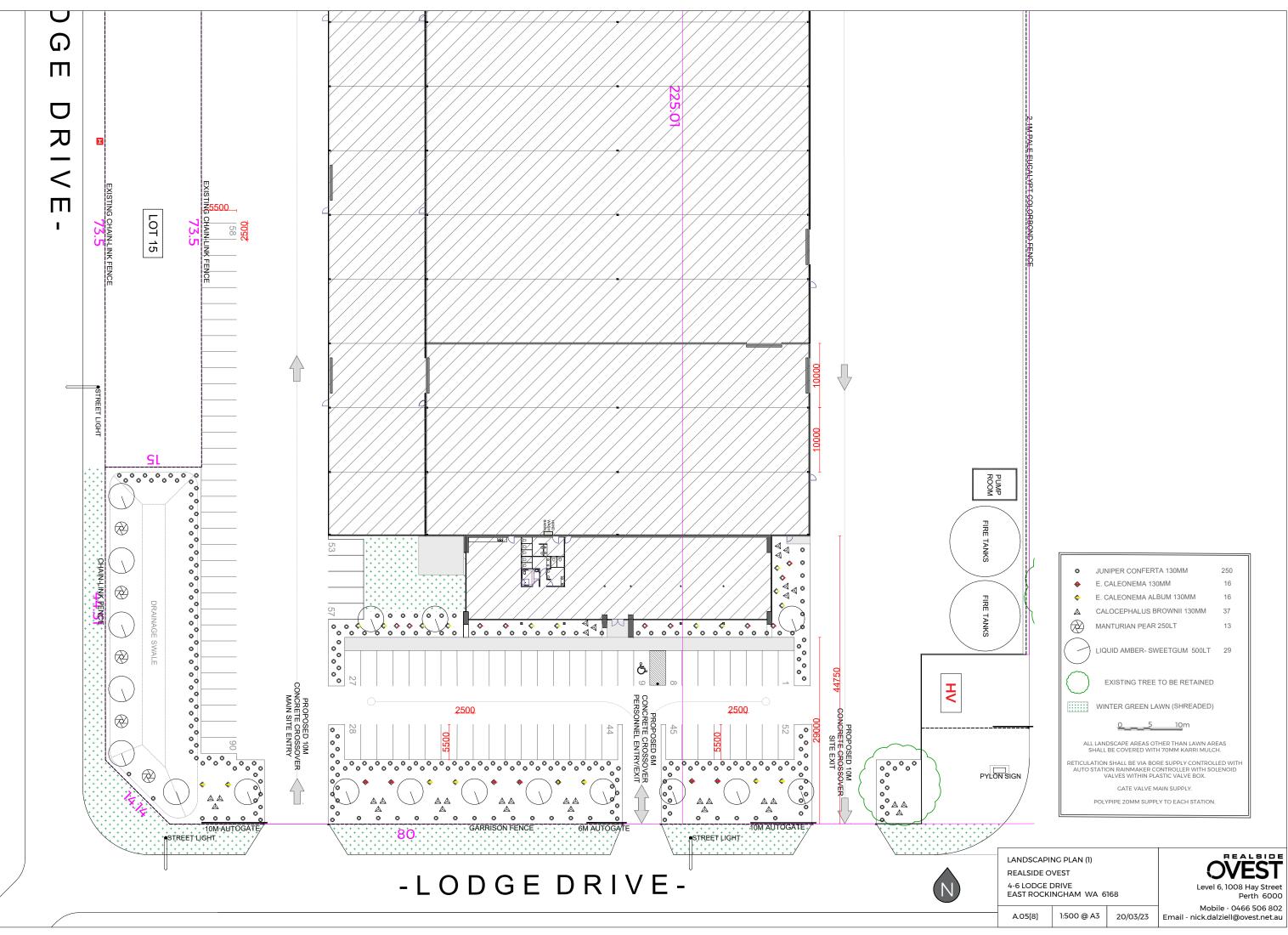


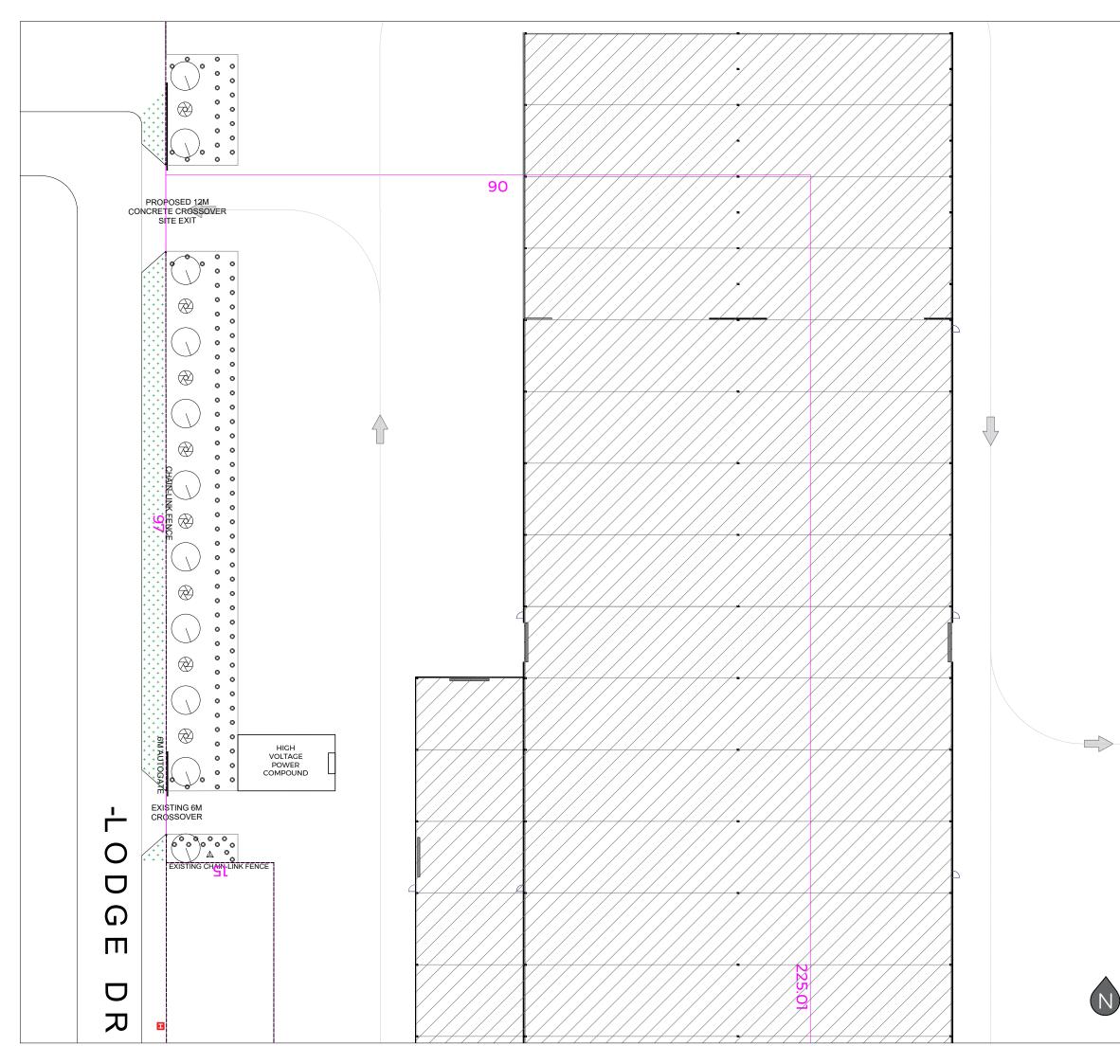


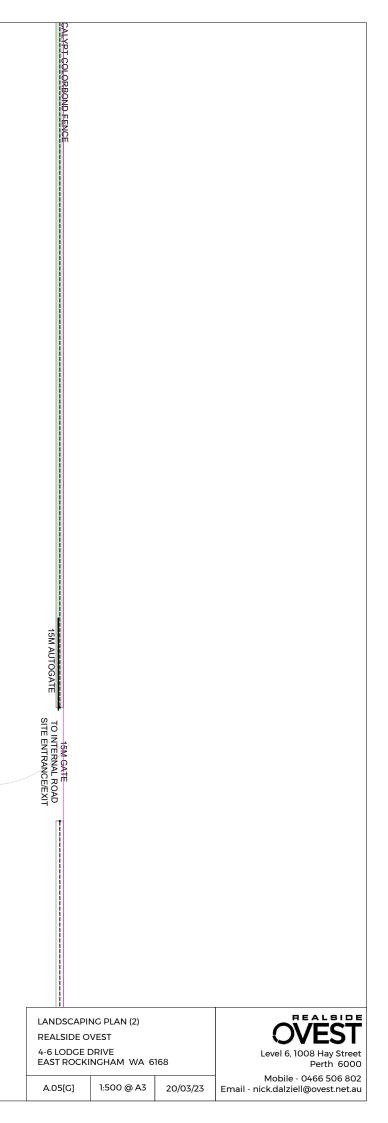
<u>0 5 10</u>m

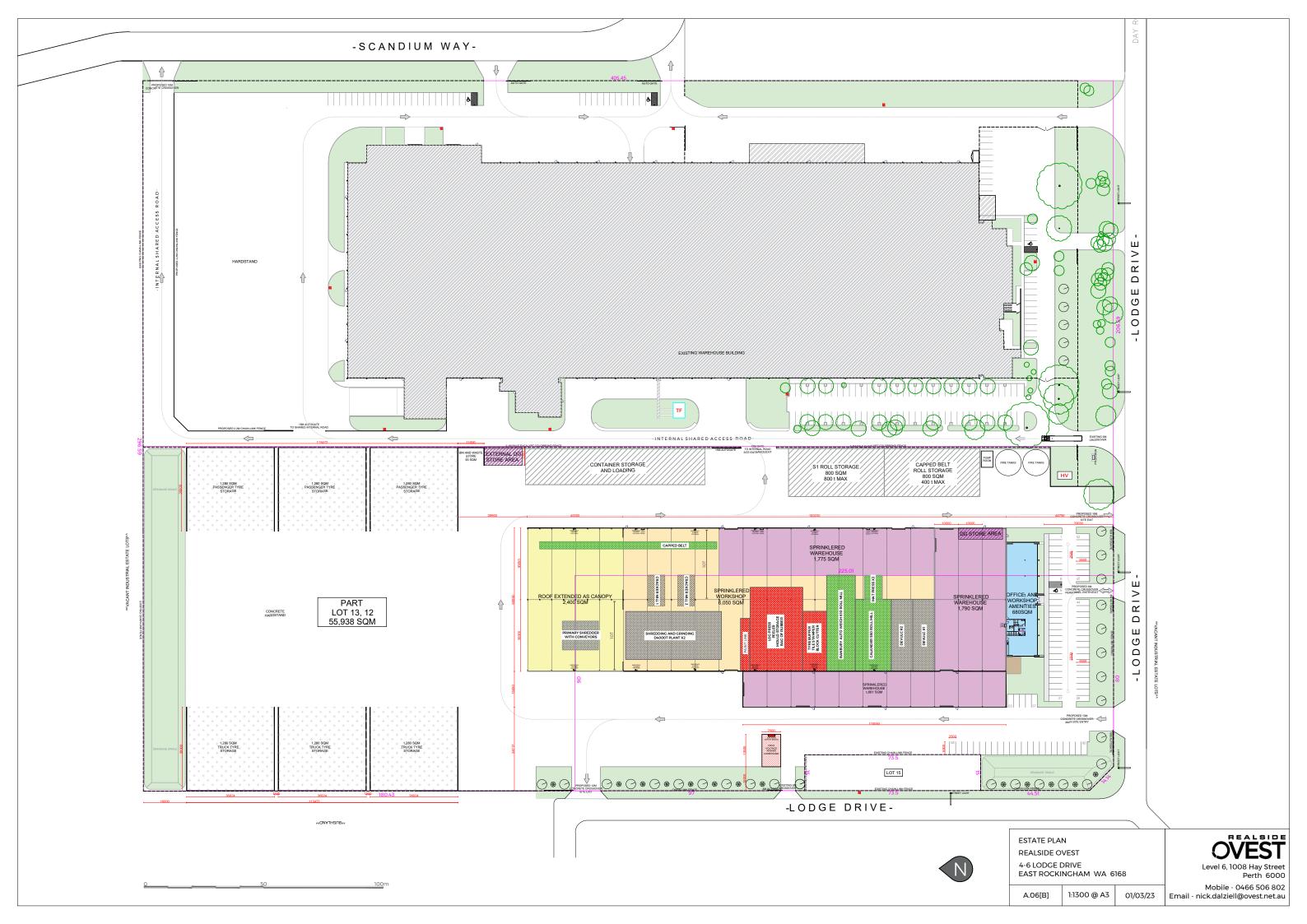










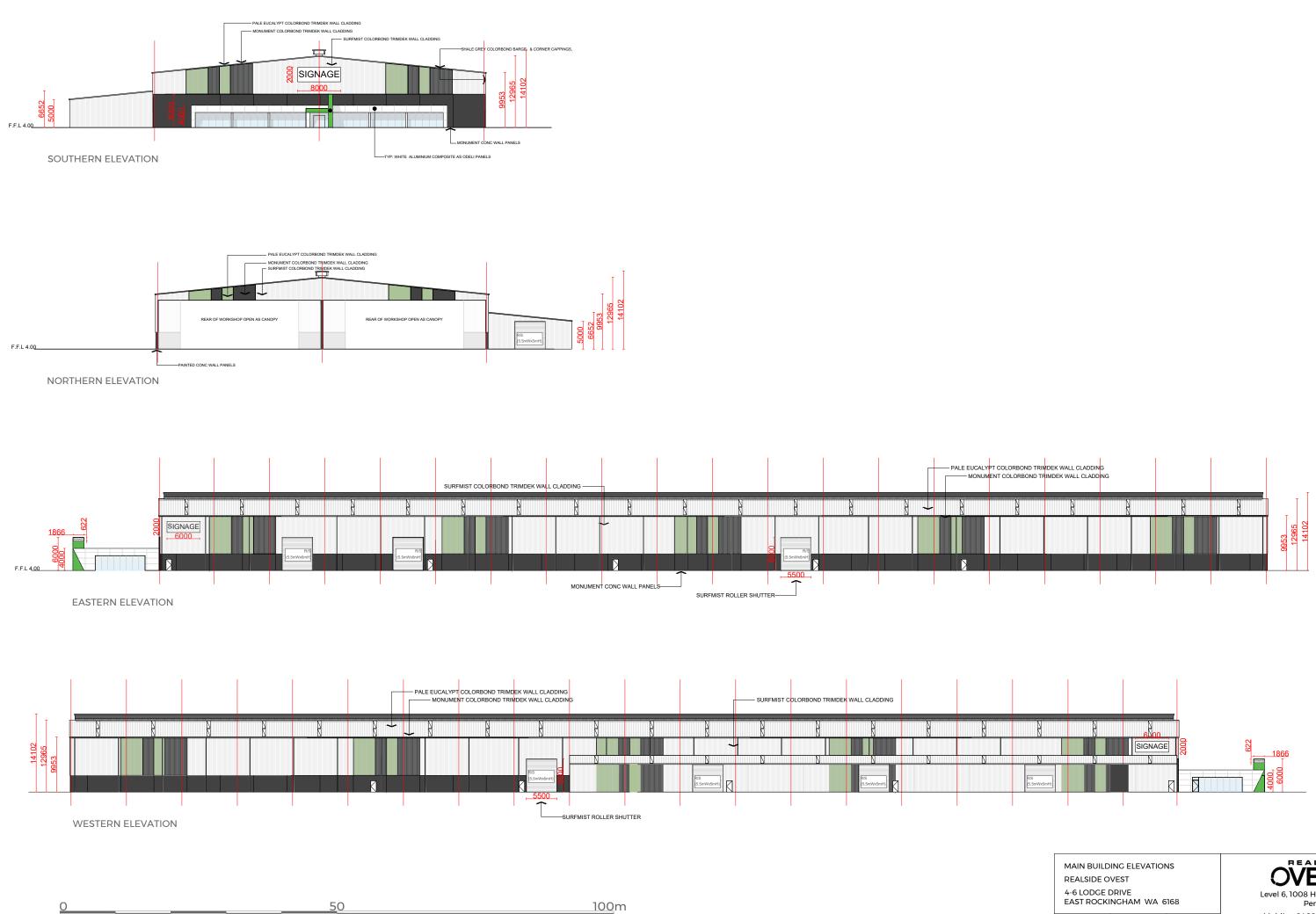




1:000 @ A3

22/02/23

E.01[F]



MAIN BUILDING ELEVATIONS REALSIDE OVEST 4-6 LODGE DRIVE EAST ROCKINGHAM WA 6168	Level 6, 1008 Hay Street Perth 6000
E.02[D] 1:600 @ A3 22/02/23	Mobile - 0466 506 802 Email - nick.dalziell@ovest.net.au

Schedule Of Submissions JDAP Proposed Tyre Recycling Facility Lot 13 (No.4) Lodge Drive, East Rockingham (20.2022.331.1)

	PUBLIC SCHEDULE OF SUBMISSIONS			
No	Comment			
1.	Tyre recycling is greatly to be encouraged and supported and the proposed facility will tap into massive volumes rubber of tyre waste generated by society. The alternative is that this precious resource goes to waste in landfill, or at best pile up in non-secure industrial areas with seemingly vague prospects for reuse. Huge storage piles of used tyres pose a serious fire risk for the proposed Tyre Recycling Facility. Demonstrated fire security and management plans must be developed and adhered to in keeping with best fire expert advice. Site security will have to be non-compromising in design to guard against arson attacks. Site firefighting capability has to be of highest standard 24/7. An out of control fire within the proposed Tyre Recycling Facility, will pose a considerable health hazards to surrounding residential communities, all depending on how the winds blows on the day. Potential pollution generated from the recycling process will need to be controlled and contained. All up, with proper attention to planning, design and safe operation, the Tyre Recycling Facility proposal should be given the green light.			
2.	I have been through the relevant documents but I cannot see in any of them - including the Risk Assessment and Management Plan - Proposed Tyre Recycling Facility - that addresses any issue of odour emissions. I am in Hillman - only about 1.5km from the proposed site and am a migraine sufferer. We have lived here since the mid 1990's and I usually don't have a problem with the way Rockingham City Council has done things, but I would like to understand more about the process in lay-man's terms and if there will be odours. Being smell sensitive I don't want to try living with migraines on a regular basis. We can hear the speedway from the Kwinana Motor Complex on most motorplex nights - so odours when the wind is blowing in the right direction could be a problem. Thank you for your time and I look forward to your reply. Please not this is not an objection at the moment - I would like to know more - specifically in the types of odours that are to be expected in the processes.			
3	1. Development Application Report - Proposed Tyre Recycling Facility			
	 Page 7 notes criminal and antisocial activity across Lodge Drive. How will the proponent manage security considering large scale tyre storage and processing in a designated bushfire prone area. Page 7 notes there are no sensitive land uses in proximity to the subject site. This ignores the following sites potentially classed as sensitive land uses in close proximity: a. The Star Ballroom and Function Centre 22 Savery Way, Rockingham WA 6168 ~470 metres from proposed facility b. Chesterfield Inn Listed on the State Register of Heritage Places ~500m metres from proposed facility c. KG Training 1/8 Day Rd, Rockingham WA 6168 ~520 metres from proposed facility d. Wave 8 Sound Producer 12/8 Day Rd, East Rockingham WA 6168 ~520 metres from proposed facility e. Sound City Church 5 McCamey Ave, East Rockingham WA 6168 ~600 metres from proposed facility 			

Schedule Of Submissions JDAP Proposed Tyre Recycling Facility Lot 13 (No.4) Lodge Drive, East Rockingham (20.2022.331.1)

4/117 Dixon Rd, East Rockingham WA 6168 ~600 metres from proposed facility g. Rockingham Holiday Village 147 Dixon Rd, East Rockingham WA 6168 ~770 metres from proposed facility h. Residential 122A Calume St, Hillman WA 6168 ~1000 metres from proposed facility The document, "Guidance for the Assessment of Environmental Factors Western Australia (in accordance with the Environmental Protection Act 1986) - Separation Distances between Industrial and Sensitive Land Uses" lists the following: "Land uses considered to be potentially sensitive to emissions from industry and infrastructure include residential developments, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing facilities. Required Buffer Distance of 100-200m from sensitive land uses to Used Tyre Storage facilities. Required Buffer Distance of 500-1000m from sensitive land uses to Tyre Recycling facilities. The document does not list hours of operation. However the Bushfire Risk Management Plan notes operations 24 hours a day 7 days a week. • Given 24/7 operations and the proximity to sensitive receptors one would assume a noise management plan should form part of the submission. Page 9 notes stormwater management on site. It does not list firewater containment which is crucial in such a high risk operation. o DFES guidance note, GN02: Bulk Storage of Rubber Tyres states: Tyres are considered a "Special/High Hazard" when burning; the high calorific value stored in tyres is released during combustion as heat and smoke and typically results in a very hot fire with enormous volumes of black smoke being generated. This presents a high hazard to the community, firefighters and environment. Pyrolytic oil is also produced by tyre fires and needs to be recovered to minimise the environmental impact to soil and water. 2. Development Plans - Proposed Tyre Recycling Facility • Tyre storage on the boundary is not consistent with DFES guidance note, GN02: Bulk Storage of Rubber Tyres. • Any deviation from GN02 should be approved by DFES. • The plans are detailed within the warehouse "Devulc units". There should be more detail on these units as they could be Tyre Pyrolysis units which are high risk processing techniques. 3. Bushfire Management Plan - Proposed Tyre Recycling Facility • The Bushfire Management Plan references the external tyre storage - but does not go into detail on the internal processing machinery and what risks that they introduce. 4. Bushfire Risk Management Plan - Proposed Tyre Recycling Facility • The Bushfire Risk Assessment only covers bushfires approaching the subject site. However it does not consider the risk of fire starting at the facility and spreading to the immediately adjacent bushland on the west and north of the site. Within the Bushfire Risk Assessment for Scenario 1 and 3 regarding the risk of bushfire approaching the subject site, it lists:

Schedule Of Submissions JDAP Proposed Tyre Recycling Facility Lot 13 (No.4) Lodge Drive, East Rockingham (20.2022.331.1)

 Likelihood - possible
 Consequence - moderate
 Inherent risk - high.
 I disagree with moderate consequence. That would be applicable for a standard industrial warehouse. Given that tyre recycling facilities are high risk, and tyre fires present a high hazard to the community one could argue that the consequence should be at least major or even catastrophic when considering the potential impact on the environment. This would then change the Inherent risk level to extreme.
 Section 5.6.3 Ignition sources notes, "The operator will be responsible for checking if Total Fire Bans (TFB) or Harvest and Vehicle Movement Bans (HVMB) are in place prior to undertaking any activities on the site that may be prohibited during the ban."
 Please advise what activities will be stopped in the event of a total fire ban? Shredding of radial tyres is known to produce sparks. Does this mean shredding operations will stop during a total fire ban?
 Considering tyre recycling is a high risk activity and it is located in a bushfire prone area I would suggest it appropriate to include the fire management plan to confirm DFES endorsement as a prerequisite to development approval.



Government of Western Australia Department of Water and Environmental Regulation

 Your ref:
 20.2022.331.1 – D23/14839

 Our ref:
 RF1746-03, PA 054051

 Enquiries:
 Jane Sturgess, Ph 9550 4228

City of Rockingham PO Box 2142 Rockingham DC WA 6967

Attention: Marius Le Grange

Dear Marius,

PROPOSED GENERAL INDUSTRY – LICENCED (TYRE RECYCLING FACILITY) – JDAP – LOTS 12 AND 13 (NO 4 AND 6) LODGE DRIVE, EAST ROCKINGHAM

Thank you for providing the development application received with correspondence dated 25 January 2023 for the Department of Water and Environmental Regulation (Department) to consider.

The Department has identified that the proposed tyre recycling facility has the potential for impact on environment and water resource values and/or management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue

Industry Regulation

Advice

The Department of Water and Environmental Regulation (DWER) regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V, Division 3 of the *Environmental Protection Act 1986* (EP Act).

The categories of prescribed premises are outlined in Schedule 1 of the *Environmental Protection Regulations* 1987.

The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge from an existing prescribed premises unless they are the holder of a works approval or licence (or registration) and the emission is in accordance with any conditions to which the licence or works approval is subject.

The provided development application request was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act.

Based on the information provided, the proposed operations will be categorised as Prescribed Premises as per Schedule 1 of the *Environmental Protection Regulations 1987* i.e.:

Category number	Description of category	Production or design capacity
57	Used tyre storage (general): premises (other than premises within category 56) on which used tyres are stored.	100 tyres or more
61A	Solid waste facility: premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	1000 tonnes or more or year

The *Environmental Protection Act 1986* makes it an offence to undertake any work which causes a premises to become, or become capable of being, a Prescribed Premises unless the work is undertaken in accordance with a works approval. It is also an offence under the EP Act to alter the nature and/or volume of any emissions, unless done so in accordance with a works approval or licence or a registration (for operation) is held for the premises.

The Department has received and is currently assessing the Works Approval application for this proposal.

The application will also need to demonstrate compliance with the *Environmental Protection (Controlled Waste) Regulations 2004, Environmental Protection (Noise) Regulations 1997* and *Environmental Protection (Unauthorised Discharges) Regulations 2004.*

lssue

Native Vegetation Regulation

Advice

Under section 51C of the *Environmental Protection Act 1986* (EP Act), clearing of native vegetation is an offence unless:

- it is undertaken under the authority of a clearing permit
- it is done after the person has received notice under Section 51DA(5) that a clearing permit is not required
- the clearing is subject to an exemption

Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (the Clearing Regulations).

The Department received a Clearing Permit application CPS 9710/1 on 20 April 2022 from Hammersley 1 WA Pty Ltd to clear 3.556 hectares of native vegetation at this location for the purposes of building and structure. This application is currently waiting on information from the applicant.

The extent of clearing specified in the clearing permit application appears to be slightly inconsistent with the clearing proposed in the Development Application with regards to proposed crossovers.

If the development will involve clearing of the vegetation located in the most southern section of the property, then it is recommended the proposed clearing area submitted to the Department is revised to include this area as well as within the clearing permit application CPS 9710/1.

For additional advice relating to the assessment of this application please contact Momina Tanvir on 6364 6670.

If further clarification is required, please contact the Department's Native Vegetation Regulation section by email (<u>admin.nvp@dwer.wa.gov.au</u>) or by telephone (6364 7098).

lssue

Groundwater Licence

Advice

The subject area is located in the Cockburn groundwater area (Wellard subarea) as proclaimed under the *Rights in Water and Irrigation Act 1914*. Any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department.

There is an existing groundwater licence for the irrigation of up to 0.5ha of landscaped gardens from the superficial aquifer and expires on 23 November 2031.

Where the Department has a statutory role, planning applications should be considered prior to the Department issuing any relevant permits, licenses and/or approvals.

In the event that the applicant determines that a works approval or licence application is required under Part V of the *Environmental Protection Act 1986* (EP Act), the advice provided in this communication does not prejudice and must not be considered to infer the outcome of the EP Act licence and works approval process.

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

Should you require any further information on the comments, please contact Jane Sturgess at the Mandurah office on 9550 4228.

Yours sincerely

Em

Brett Dunn Program Manager – Planning Advice Kwinana Peel Region

10 / 03 / 2023

Development Services

629 Newcastle Street Leederville WA 6007

PO Box 100

T (08) 9420 2099 Leederville WA 6902 F (08) 9420 3193



Your Ref: 20.2022.331.1 - D23/26091 Our Ref: DAP393810 Enquiries: Matt Calabro Direct Tel: 9420 2099

24 February 2023

Chief Executive Officer City Of Rockingham **Civic Boulevard ROCKINGHAM WA 6168**

Attention of: Marius Le Grange

Re: External Referral - Water Corporation - Proposed General Industry - Licenced (Tyre Recycling Facility) - JDAP - Lots 12 & 13, 4 & 6 Lodge Dr, East Rockingham

Thank you for your letter dated 10th February 2023, Water Corporation has the following comments.

The proposed development does not appear to affect Water Corporation assets. Water servicing is available in the area for the development to connect to. No Wastewater network is nearby however, if a wastewater connection is needed an extension will be required at the developers cost.

This proposal will require approval by our Building Services section prior to the commencement of works. Infrastructure Contributions and fees may be required to be paid prior to approval being issued.

For further information about building applications, please follow this link: https://www.watercorporation.com.au/Developing-and-building/Building/Lodging-a-buildingapplication

The information provided above is subject to review and may change. If the proposal has not proceeded within six months, it is recommended that the developer contacts us to confirm whether or not the above information is still valid.

Should queries, please do hesitate contact vou have any not to me at matt.calabro@watercorporation.com.au

Regards,

Matt Calabro Senior Planner – Land Planning **DEVELOPMENT SERVICES**

Marius Le Grange

From:	Catherine McLeod <catherine.mcleod@developmentwa.com.au></catherine.mcleod@developmentwa.com.au>
Sent:	Wednesday, 22 February 2023 10:47 AM
То:	Marius Le Grange
Cc:	Rebekah Gibbins
Subject:	FW: Referral to DevelopmentWA - Proposed Joint Development Panel Application - General Industry - Licenced (Tyre Recycling Centre) - Lot 13 and 12 (No.4 and No.6) Lodge Drive, East Rockingham
Attachments:	Referral to DevelopmentWA - Proposed Joint Development Panel Application - General Industry - Licenced (Tyre Recycling Centre) - Lot 13 and 12 (No.4 and No.6) Lodge Drive, East Rockingham.pdf; Development Plans - Proposed Tyre Recycling Facility - Lot 13 (No.4) Lodge Drive, East Rockingham - DA20.2022.331.1.PDF; DA Report - Proposed Tyre Recycling Facility - Lot 13 (No.4) Lodge Drive, East Rockingham - DA20.2022.331.1.PDF

CAUTION: This email originated from outside of the City of Rockingham. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you are unsure please contact the Service Desk.

Hi Marius,

In regards to the above proposal at Lots 12 & 13 Lodge Drive, we can confirm that DevelopmentWA has no objection to the proposal and has no formal comment to provide here.

Kind Regards,

Catherine McLeod Development Manager



Whadjuk Noongar Country 40 The Esplanade, Perth WA 6000 T 08 9482 7870 M F +61 8 9481 0861 **developmentwa.com.au**

We acknowledge the Traditional Custodians of the land on which we operate across Western Australia and their continuing connection to land, water and community, as we continue our journey together towards a bright future.

From: Rebekah Gibbins <<u>Rebekah.Gibbins@rockingham.wa.gov.au</u>>

Sent: Tuesday, 21 February 2023 2:22 PM

To: Records <<u>records@developmentwa.com.au</u>>

Cc: Marius Le Grange <<u>Marius.LeGrange@rockingham.wa.gov.au</u>>

Subject: Referral to DevelopmentWA - Proposed Joint Development Panel Application - General Industry - Licenced (Tyre Recycling Centre) - Lot 13 and 12 (No.4 and No.6) Lodge Drive, East Rockingham

You don't often get email from rebekah.gibbins@rockingham.wa.gov.au. Learn why this is important

Good Afternoon,

Please find attached correspondence from Mr Marius Le Grange.

Should you have any queries with respect to the attached, please contact Mr Le Grange on 9528 0387 or via <u>Marius.LeGrange@rockingham.wa.gov.au</u>.

Kind regards,



where the coast comes to life

Rebekah Gibbins - Secretary Planning Services

PO Box 2142 Rockingham DC WA 6967 Civic Boulevard Rockingham Western Australia telephone +61 8 9528 0467 facsimile +61 8 9592 1705 email <u>rebekah.gibbins@rockingham.wa.gov.au</u> web rockingham.wa.gov.au





Our Ref: D27349 Your Ref: DA.20.2022.331.1

Marius Le Grange City of Rockingham Marius.LeGrange@rockingham.wa.gov.au

Dear Mr Le Grange

RE: PROPOSED TYRE RECYCLING FACILITY, LOT 12 & 13 LODGE DRIVE EAST ROCKINGHAM – DEVELOPMENT APPLICATION

I refer to your email dated 25 January 2023 regarding the submission of a Bushfire Management Plan (BMP) (Revision 3), prepared by Eco-Logical Australia and dated 20 December 2022, for the above development application.

This advice 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 the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.

<u>Assessment</u>

- It is noted the proposed development as high-risk land use.
- It is unclear from the BMP how vegetation in Lot 15 will be managed. Lot 15 is adjacent to the proposed development but BAL ratings in the BMP do not consider the vegetation in this lot.
- It should be noted that DFES Built Environment Branch have previously provided advice and conducted extensive consultation with the proponents through Warrington Fire to improve building and site design.
- Further clarification is required within the BMP of the requirements of SPP 3.7, and the supporting Guidelines as outlined in our assessment below.

Issue	Assessment	Action
Vegetation Exclusion	Figure 4 shows vegetation classified as Plot 5 outside the lot boundary along the southern and western boundaries. Some of this vegetation has been shown as excluded in Figure 5.	Modification to the BMP is required.
	Evidence to support the exclusion of this vegetation as managed to low threat in accordance with AS3959 is required.	

1. Policy Measure 6.5 a) (ii) Preparation of a BAL contour map

	An enforceable mechanism is required to provide certainty that the proposed vegetation exclusion can be achieved in perpetuity, and it is enforceable.	
Vegetation classification / BAL Contour Map	Plot 1 is not depicted on Figure 4 (Vegetation Classification Map) but is referenced in Table 3 as influencing the BAL ratings.	Modification to the BMP is required.
	Table 1, Figure 4 and Appendix A indicate that Plot 5 is Class D Scrubland and Plot 6 is Class C Shrubland	
	Table 2 indicates that Plot 5 is Class C Shrubland and Plot 6 is Class D Scrubland.	
	On review of the details provided, it is not fully understood why Table 3 shows Plots 1 and 4 as primarily influencing the BAL ratings at the buildings, when other Plots appear to be more influential. It would be clearer if the separation was depicted spatially or if all separation distance inputs were provided in a table.	
	The BMP should be reviewed and updated for consistency.	
Administrative queries	From information on DFES' mapping system, the subject site comprises four lots, being #4 Lodge Drive (Lot 13), #6 Lodge Drive (Lot 12), #4 Lodge Drive (Lot 15) and Lot 17.	Clarification required.
	The referral request only referenced Lots 12 and 13, but DFES has completed the assessment based on the boundaries shown within the BMP and assumed that the proponent has control over all lots for the purpose of development, clearing and ongoing management. If this is not the case, then DFES' comments may require review and updating.	
	In addition, references are made to "Bushfire Risk Management Plan". The term BRMP is already used when discussing Mitigation Funding. DFES recommends the terminology is updated to prevent confusion and more accurately represent requirements of Policy Clause 6.6.1, which relates to any flammable on site hazards, rather than specifically bushfire.	

2. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria

Element	Assessment	Action
Location and	A1.1 & A2.1 – not demonstrated	Modification to
Siting and	The BAL ratings cannot be validated for the reasons	the BMP is
Design	outlined in the above table.	required. Please
	Furthermore, while it is noted that the habitable building within BAL-29, DFES encourages all elements of development to be located in area of BAL-29 or lower to achieve compliance with A1.1. It is noted that truck tyre storage, which is a key part of the development, is shown located in BAL-FZ. DFES recommends that the site is re- designed to respond to hazards inside and outside the site. If the site is not capable of re-design to accommodate all development in BAL-29 or lower then the proponent should address Performance Principle P1. While the BMP indicates that a Risk Management Plan should be provided, the decision maker may wish to require this prior to determination to fully understand whether the location of the tyre storage would be acceptable in that location or whether the site should be	demonstrate compliance or provide substantiated evidence of a performance principle-based solution.
Water	re-designed.	Modification to
water	A4.2 – not demonstrated The BMP should provide detail on the hydrant(s) at the proposed site and provide evidence of how the hydrants represented will comply with the Guidelines. The BMP states it "assumes the hydrants and the existing reticulated water supply present in the area likely complies with Water Corporations Design Standard DS 63 Water Reticulation Standard".	the BMP is required.

<u>Recommendation – compliance with Acceptable Solutions not demonstrated</u> <u>modifications required</u>

It is critical 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,
- Element 2: Siting and Design and
- Element 4: Water

It is critical 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.

If you require further information, please contact Senior Land Use Planner Officer - Tristan Whiting on telephone number 9395 9301.

Yours sincerely

La

Naomi Mynott DIRECTOR LAND USE PLANNING

08 March 2023

LANNING SOLUTIONS

Development Application Report

Proposed Tyre Recycling Facility

Lot 13 (4) and Lot 12 (6) Lodge Drive, East Rockingham

> Prepared for Ovest Industrial December 2022

Copyright Statement 2022

© Planning Solutions (Aust) Pty Ltd

All rights reserved. Other than for the purposes of and subject to the conditions prescribed under the *Copyright Act 1968* (Cth), no part of this report may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic or otherwise, without the prior written permission of Planning Solutions (Aust) Pty Ltd.

No express or implied warranties are made by Planning Solutions (Aust) Pty Ltd regarding the information and analysis contained in this report. In particular, but without limiting the preceding exclusion, Planning Solutions (Aust) Pty Ltd will not verify, and will not assume responsibility for, the accuracy and completeness of information provided to us.

This report has been prepared with particular attention to our Client's instructions and the relevant features of the subject site. Planning Solutions (Aust) Pty Ltd accepts no liability whatsoever for:

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

Direct all enquiries to:

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

All correspondence to: Planning Solutions GPO Box 2709 CLOISTERS SQUARE PO WA 6850

Phone:08 9227 7970Fax:08 9227 7971Email:admin@planningsolutions.com.auWeb:planningsolutions.com.au

Project Details

Job number	8088		
Client	Ovest Industrial		
Prepared by	Planning Solutions		
Consultant Team	Town Planning	Planning Solutions	
	Survey	Crossland & Hardy	
	Drafting and Design	Realside Ovest	
	Environmental	PGV Environmental	
	Traffic reporting	Transcore	
	Bushfire risk	Eco Logical	

Document Control

Revision #	File name	Author	Approved by	Approval date	Revision Type
Rev 0	221220 8088 DA Report – Proposed Tyre Recycling Facility	OB	OB	20 December 2022	Final

Contents

1	PRELIMINARY	1
1.1	Introduction	1
1.2	RubberGem operations	1
1.3	Background	
2	SITE DETAILS	4
2.1	Land description	4
2.2	Location	4
3	PROPOSED DEVELOPMENT	8
3.1	Development Summary	8
3.2	Landscaping	9
3.3	Traffic and access	9
3.4	Bushfire management	9
3.5	Stormwater management	9
3.6	Waste management	9
4	STATUTORY PLANNING FRAMEWORK1	0
4.1	Metropolitan Region Scheme	0
4.2	City of Rockingham Local Planning Scheme No. 21	0
4.3	Local Planning Policies1	7
4.4	State Planning Policies2	2
4.5	Seriously Entertained Planning Proposals2	
4.6	Matters to be Considered2	
5	CONCLUSION2	5

Figures

Figure 1 – Extract from DevelopmentWA sales brochure advertising the Clipper Precinct	4
Figure 2 – Aerial photograph of the subject site and surrounds (source: Nearmap 2022)	5
Figure 3 - LPS2 zoning map	10
Figure 4 – Eastern elevation of office building visible from Lodge Drive	20
Figure 5 – Aerial photography showing clearing of adjoining Clipper Precinct by DevelopmentWA	21

Appendices

- Appendix 1: Recent Development Approval
- Appendix 2: Flora and Vegetation Survey
- Appendix 3: Certificates of Title and Plan
- Appendix 4: Site Feature Survey
- Appendix 5: Development Plans
- Appendix 6: Landscaping Plan
- Appendix 7: Transport Impact Statement
- Appendix 8: Bushfire Management Plan

PS

1 PRELIMINARY

1.1 Introduction

Planning Solutions acts on behalf of Ovest Industrial, the proponent of the proposed development of Lot 12 (6) and Lot 13 (4) Lodge Drive, East Rockingham (**subject site**).

Planning Solutions has prepared the following report in support of an application for development approval. This report will discuss various matters pertinent to the proposal, including:

- Background.
- Site details.
- Proposed development.
- Statutory planning framework.

The proposal involves the development and use of a tyre recycling facility on the subject site. The proposed development seeks to establish an important industrial facility, one that is designed to a high standard and has benefitted from the expert input of traffic and bushfire consultants.

We respectfully request the Metro Outer Joint Development Assessment Panel (JDAP) grant approval to the proposed development.

1.2 RubberGem operations

The proposed industrial building will be tenanted by RubberGem for the use of a recycling plant to transform rubber tyres into sustainable products. RubberGem recycle waste rubber into a diverse range of durable products used worldwide by using the latest research & leading technology.

RubberGem currently operates out of Naval Base and has 20 years of expertise and innovation with their facility and processes designed to deliver substantially more cost and energy efficient solutions to the rubber and tyre recycling industry. RubberGem's unique processes of recycling rubber will mean more inexpensive, energy-efficient raw materials becoming available for re-use.

The proposed development will incorporate processes currently undertaken at the Naval Base facility, which involves the storage and processing of conveyor belts. The proposed development allows for the expansion of processes to include the storage, processing and recycling of off the road (**OTR**) tyres, car tyres and truck tyres. At full capacity, the following volumes of tyres are expected to be received and processed:

- OTR Tyre 1000 to 1500 tonne per month
- Truck Tyre =900 tonne per month
- Car Tyre =750 tonne per month

Operations on the subject site will include the receival and outdoor storage of unprocessed rubber tyres and shredding and grinding of rubber materials inside the facility.

The new building is expected to accommodate up to 89 staff on site at any one time (15 office staff, 74 workshop staff).

PS

1.3 Background

1.3.1 Site history

The subject site is within an area identified by the State Government (in 1988) as a strategic land resource, with unique locational advantages given the proximity to planned port and rail infrastructure and separation from sensitive land uses. The area was subsequently identified as the East Rockingham Industrial Park, and now the Rockingham Industry Zone (**RIZ**), and forms one of four dedicated industrial zones within the Western Trade Coast (**WTC**).

Between 1995 and 1999, Lot 13 was developed as a large industrial facility for wool washing and scouring, including a wastewater treatment plant on a portion of Lot 12. Following the cessation of wool processing activities by Jandakot Wool Washing, we understand Lot 12 has remained largely unoccupied.

On 28 June 2022, the applicant lodged an application for modifications to the existing industrial development on Lot 13 (4) Lodge Drive. The application sought approval for external works, including new vehicle crossovers to improve vehicle access to the three individual tenancies, installing a canopy along the eastern façade of the building, providing additional parking in closer proximity to the individual tenant, improving internal security fencing and other minor improvements.

The development application was approved by the City of Rockingham on 18 October 2022 and the existing industrial building in the eastern portion of Lot 13 will soon be tenanted with three industrial businesses. Refer to **Appendix 1** for a copy of the recent development approval relating to Lot 13.

1.3.2 Environmental approvals

Additional expansion and development of the subject site has been constrained by the identification of 20%-40% of the subject site as 'Tuart Woodlands' by the Department of Biodiversity, Conservation and Attractions (DBCA), and the mapping of Conservation Category Wetlands (CCW) across undeveloped portions of both lots.

A June 2021 site visit undertaken by PGV Environmental confirmed the following:

- A sufficient number of Tuart Trees were identified to result in portion of the site falling within the functional classification of a 'Tuart Woodland'-but assessed the overall condition of the woodland as 'poor' due to the limited understory and few native flora species.
- Areas mapped as CCW have been predominantly cleared of vegetation, filled with mulch and contain no identifiable species of website flora meaning that CCW values are no longer present. Accordingly, the areas mapped as CCW have been excluded from the proposed development and are not a relevant consideration.

Refer to Appendix 2 for a copy of the Flora and Vegetation Survey prepared by PGV Environmental.

Considering the above, applications for permits to clear the Tuart Woodlands were lodged with the Department of Water and Environmental Regulation (**DWER**) and the Commonwealth Department of Agriculture, Water and the Environment (**DAWE**) in April 2021 (now the Department of Climate Change, Energy, the Environment and Water).

On 25 November 2021, DAWE determined that the vegetation clearing was a controlled action, and as such, required assessment and a decision under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). At the time of writing this report, the Federal assessment/referral process is still underway.

On 24 May 2022, DWER confirmed that the application for a clearing permit was currently within the 'Validation Phase', pending confirmation that an application for development approval had been lodged with the City of Rockingham. Following lodgement of the application, the clearing permit will move to the assessment phase of the process.



1.3.3 Pre-lodgement Consultation

Planning Solutions and the proponent met with senior officers from the City of Rockingham on 2 June 2022 to discuss the proposed development. The outcomes of the meeting are summarised as follows:

- Land use The City expressed no concern regarding the proposal to develop an industrial building for warehousing/storage type uses.
- **Traffic** Traffic and vehicle access were identified as the main consideration and a Transport Impact Statement in support of the development was requested.
- **Bushfire** A Bushfire Management Plan would be required to support the application.
- **Parking** The City acknowledged that the significant parking shortfall associated with the proposal was consistent with the long-standing use of the site, and that large industrial uses have significantly lower staffing numbers than anticipated by the minimum parking requirements.
- **Technical reporting** The City agreed that waste management, stormwater management and landscaping could be shown on the appropriate plans and addressed within the DA report without providing separate plans or technical reports.
- **Subdivision** It was noted that any development approval for the proposed development would include a condition of approval requiring a amalgamation or boundary alignment to ensure that the building was not constructed across the lot boundary.
- Wetlands Although not forming part of this development proposal, the City was supportive of the development of the former wetlands area consistent with the industrial zoning of the land.
- **Criminal and anti-social activity** The City acknowledged that crime and anti-social behaviour had been a longstanding issue along Lodge Drive leading to the City's installing a gate across a portion of the road to prevent hooning.

The outcomes of this pre-lodgement meeting have been incorporated into the final development application and supporting documentation, noting a tyre recycling facility is now proposed, rather than an industrial building for warehousing/storage type uses. However, the land use is still of an industrial nature, with no sensitive land uses in proximity to the subject site.

PS

2 SITE DETAILS

2.1 Land description

Refer to Table 1 below for the lot details and a description of the subject site.

Table 1 - Lot details

Lot	Plan	Volume	Folio	Area (ha)
13	23754	2174	382	10.0
12			381	1.9098

A S70A Notification (Water Corporation) is listed on both titles, requiring written approval from the Water Corporation with regard to the quality and quantity of any discharge of industrial wastewater into the reticulated sewerage system. This notification does not preclude consideration and approval of the proposed development.

Refer to Appendix 3 for a copy of the Certificates of Title and Plan.

2.2 Location

2.2.1 Regional and local context

The subject site is located within the municipality of the City of Rockingham (**City**) and in the suburb of East Rockingham. The subject site is located approximately 36km south west of the Perth city centre, approximately 4.5km south-west of the Kwinana town centre, and approximately 4.2km east of the Rockingham town centre.

The subject site is located within the Rockingham Industry Zone, which forms one of four strategic industrial zones within the Western Trade Coast. The locality is generally characterised by a range of industrial and service commercial uses, including warehousing, transport & logistics, medium-to-large fabrication works and maritime-related industries. However, the majority of the RIZ remains undeveloped.



Figure 1 – Extract from DevelopmentWA sales brochure advertising the Clipper Precinct

Adjoining the subject site to the west is a conservation area, with a new industrial land release by DevelopmentWA called the "Clipper Estate" located to the east. The Clipper Estate includes 11 new industrial lots, and a new road called Scandium Way, which runs along a portion of the eastern boundary of the subject site.



Lodge Drive (a local road under the jurisdiction of the City) adjoins the subject site at its southern boundary and a portion of the western boundary. The subject site is located approximately 300m west of Rockingham Road, which connects the subject site to the wider metropolitan region.

Refer to Figure 2, aerial photograph of the subject site and surrounds.



Figure 2 - Aerial photograph of the subject site and surrounds (source: Nearmap 2022)

2.2.2 Land use and topography

The subject site contains an existing warehouse building with an incidental office, and is surrounded by a bituminised vehicle accessway, external storage areas and car parking. Existing buildings on the subject site are summarised as follows:

- A large warehouse building with a floor space of approximately 24,038m², situated in the eastern portion of the subject site.
- An additional 800m² (approximately) of office/amenities floor space is provided adjacent to the warehouse.
- A water processing facility measuring approximately 1,500m² in area, situated in the north eastern portion of Lot 12.

Approximately 123 car bays are currently present on the subject site. Vehicle access to/from the site is currently provided via two crossovers to Lodge Drive (south) and one crossover to Lodge Drive (west). The subject site is generally flat, with some minor depressions and mounds. Undeveloped portions of the subject site generally comprise levels of 3m-4m AHD. Refer to **Appendix 4** for a copy of the Site Feature Survey.

The October 2022 development approval facilitated 49 additional car parking bays, one new crossover to Lodge Drive (south) and two new crossovers to Scandium Way. Refer to **Appendix 1** for a copy of the development approval.

Refer to Photographs 1-6 below, depicting the subject site.



PS

Photograph 1 - View of the western elevation of the existing industrial building, facing east.



Photograph 2 - View from Lot 13 facing south towards the site entrance and existing crossover to Lodge Drive.



Photograph 3 - View of the western carpark adjoining the western elevation of the existing building, facing north.



PS

Photograph 4 – The former water treatment facility on Lot 12.



Photograph 5 - View from Lot 12 facing west towards the existing crossover to Lodge Drive (west).



Photograph 6 - View of northern elevation of the existing industrial building, facing south east.

7

PS

3 PROPOSED DEVELOPMENT

3.1 Development Summary

The proposal involves the development of the currently vacant portion of the site with a new industrial building to accommodate the tyre recycling facility. The development contains a workshop for processing the rubber, warehouse/storage areas, an ancillary office and associated parking, hardstand and landscaping. The proposed development features a modern industrial design that is consistent with the expectations for the surrounding precinct.

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

- One industrial building containing a workshop with a total floor area of 6,050m² and a covered extended area (open to the north) with a floor area of 2,400m².
- Internal warehouse/storage areas comprising a floor area of 5,226m².
- An ancillary office building with workshop amenities adjoining the southern elevation of the industrial building, comprising a floor area of 680m².
- Six external tyre storage compartments located to the north of the proposed industrial building, each comprising an area of 1,280m².
- New and modified vehicle access arrangements as follows:
 - o One 12m wide crossover to Lodge Drive (western lot boundary) for heavy vehicle egress;
 - Two 10m wide crossovers to Lodge Drive (southern lot boundary) for heavy vehicle ingress/egress and one 6m wide crossover for light vehicle ingress/egress;
 - One 10m wide crossover at the northern aspect of Scandium Way (eastern lot boundary) for heavy vehicle egress;
- A new car parking area to the south of the office building, comprising 40 car bays (including one accessible parking bay).
- New automatic entry/exit gates at the crossovers, incorporated into the existing chain link boundary fences, to enhance security of the subject site.
- A new car parking area to the west of the industrial building, comprising 29 car bays.
- An 8m long x 2m high wall sign on the southern elevation of the industrial building and 6m long x 2m high wall signs on the western and eastern elevations.
- An 83m² bin and waste store.
- Two 800m² Roll Storage areas.

The new building is expected to accommodate up to 89 staff on site at any one time (15 office staff, 74 workshop staff).

The proposed building is constructed with concrete and steel, with Colorbond 'Surfmist' Trimdek cladding and various exterior treatments. The development will comprise high quality materials, consistent with expectations of contemporary industrial developments, contributing to the overall amenity of a strategic industrial precinct occupied by general industry, logistical activities and port-related infrastructure and services.

Refer to **Appendix 5** for the development plans and elevations depicting the proposed development.

PS

3.2 Landscaping

The proposed development provides landscaping along a portion of the western lot boundary and adjoining the car parking area and office building. The landscaping includes both shrubs, ground cover and tree plantings that will grow to become significant shade trees. It is expected a more detailed landscaping plan can be provided as an appropriately worded condition of development approval, if required.

Refer to **Appendix 6** for a copy of the landscaping plan.

3.3 Traffic and access

The proposed development and access arrangements are supported by a Transport Impact Statement (TIS), prepared by Transcore. The TIS carries out an assessment in accordance with WAPC guidelines and demonstrates that the trip generation resulting from the proposed facility will have an insignificant impact on the surrounding road network. The resultant anticipated traffic generation from the proposed development is 91AM peak hour trips, and 92 PM peak hour trips.

The net traffic increase of the proposed development will not increase traffic on the surrounding road network by more than 100 vehicles per hour. In accordance with the WAPC's Transport Impact Assessment Guidelines for Development (2016), a Transport Impact Assessment is therefore not required as the impact on the surrounding road network is insignificant. The TIS also concludes:

- The proposed and existing car parking is sufficient to accommodate and cater for the proposed development.
- Turn path analysis undertaken with 19m trucks confirms the satisfactory entry, egress, and circulation within the subject site.
- No particular safety issues have been identified for the proposed development.

Refer to **Appendix 7** for the TIS prepared by Transcore.

3.4 Bushfire management

A Bushfire Management Plan (**BMP**) and associated formal reporting has been prepared in support of the subdivision and new lot creation process and sets out appropriate mitigation/bushfire protection measures satisfying the relevant requirements of State Planning Policy 3.7 Planning in Bushfire Prone Areas.

Refer to **Appendix 8** for a copy of the Bushfire Management Plan prepared by Eco Logical and to **section 4.4.1** of this report for further bushfire commentary.

3.5 Stormwater management

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

3.6 Waste management

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

4 STATUTORY PLANNING FRAMEWORK

4.1 Metropolitan Region Scheme

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

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

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

PS

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

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

4.2 City of Rockingham Local Planning Scheme No. 2

4.2.1 Zoning

The subject site is zoned 'General Industry' pursuant to the provisions of the City of Rockingham Local Planning Scheme No. 2 (LPS2). Refer to the Figure 3, zoning map below.

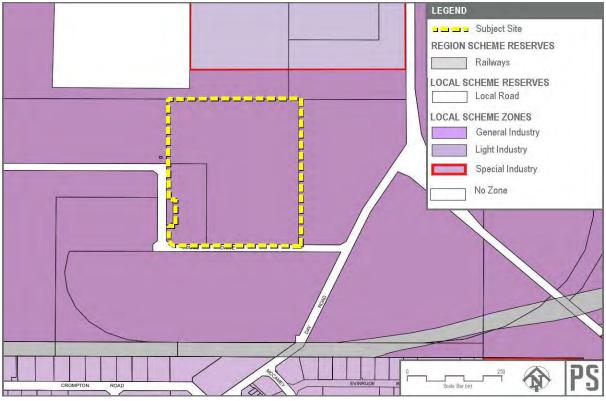


Figure 3 - LPS2 zoning map



4.2.2 Zoning objectives

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

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

The proposed development is considered entirely acceptable and consistent with the objectives of the General Industry zone as it will establish an industrial land use that is environmentally and socially acceptable, resulting in no adverse amenity or environmental impacts. The proposal also facilitates the development of a largely vacant site with a new industrial building consistent with prevailing amenity expectations. Light vehicle parking areas have largely been separated from areas of heavy vehicle movements for safety. The proposed areas of soft landscaping will ensure a good level of amenity.

The proposed development is consistent with the objectives of the zone and warrants the City's support and approval accordingly.

4.2.3 Land use permissibility

Pursuant to the provisions of Schedule 1 – Interpretations of LPS2, the proposed development is an 'Industry' land use, defined as follows:

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

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

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

More specifically, because of the storage of tyres of site, the land use is an "Industry– General (Licensed)" land use, which is defined as follows:

Industry— *General (Licensed)* means an industry which is a category of Prescribed Premises set out in Schedule 1 of the Environmental Protection Regulations 1987 or premises subject to registration set out in Schedule 2 of the Environmental Protection Regulations 1987, but does not include an abattoir, agriculture intensive, industry-extractive, industry-hazardous, industry-noxious, industry—rural, landfill (Prescribed Premises Category 63, 64, 65 and 66), livestock holding facility, piggery or stockyards.

Under the provisions of the *Environmental Protection Regulations* 1987, the storage of used tyres falls within Category 57 of the Prescribed Premises set out in Schedule 1. Given a component of the proposed land use is a



Prescribed Premises, the development is subject to a separate environmental approval/license from the Department of Water and Environmental Regulation.

Pursuant to Table No. 1 – Zoning Table of LPS2, Industry– General (Licensed) is an 'A' (discretionary) use within the General Industry zone and is capable of approval at the City's discretion, following a mandatory period of public advertising.

4.2.4 Development standards and requirements

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

Table 2 – Industrial development requirements

Re	quirement	Provided	Compliance
4.1	0.2 Form of development		
oth		nent approval on industrial zoned land, the Local Government, in ac o any other matter it is required or permitted to consider, shall have	
a)	promotion of a high standard of building development, landscaping and working environment;	The proposed development is consistent with contemporary expectations for large-scale industrial development and includes a large concrete and steel workshop and storage structure, a smaller office fronting the street and an appropriate level of landscaping along the street boundary and around the carparking area.	✓
b)	protection of the amenity of adjacent residential and open space areas;	The proposed works to the existing industrial site will have no adverse impacts on the amenity of residential and open space areas due to its location in an industrial area and separation from sensitive uses.	✓
<i>c)</i>	management of drainage systems and land uses to promote groundwater conservation; and	A detailed stormwater management plan can be prepared in accordance with an appropriately worded condition of development approval.	Achieve via condition of approval
d)	to ensure safe movement of vehicular and pedestrian traffic in the area.	The site layout has been designed to ensure efficient, functional, and safe movements of vehicles and traffic as demonstrated by the Transport Impact Statement (refer to Appendix 7).	✓
4.1	0.3 Parking		
pai dev acc	vision shall be made for the on-site king of motor vehicles for all elopment on industrial zoned land in ordance with the provisions of clause 5 and Table No. 2.	Refer section 4.2.5 for a detailed parking assessment. The assessment demonstrates that the proposed development will increase the overall parking shortfall on the subject site requiring the City to exercise their discretion in approving a variation.	Variation required - Refer section 4.2.5
4.1	0.4 General Development Provisions		
On	all industrial zoned land within the	City, unless otherwise specified in the Industrial Policy or Eas	t Rockingham

Development Guidelines:



Requirement	Provided	Compliance
a) The facades of all buildings visible from the primary road or open space area shall be of masonry construction or any other material approved by the Local Government in respect of the ground floor level, provided that if concrete panels are used, such panels must have an exposed aggregate or textured finish. The second floor level, or its equivalent may be constructed of any other material in accordance with the Building Code of Australia and to the satisfaction of Local Government.	The proposed development has concrete panels along the base of the building with a steel frame and Colorbond Trimdek cladding. The façade of the office building fronting Lodge Drive has glazed windows, aluminum composite cladding and a green accent feature identifying the front entrance. Overall, the building presents an acceptable level of variation in texture and materials consistent with contemporary expectations of an industrial building within this precinct.	✓
b) No fence visible from a road or open space reserve shall be constructed of materials/colours which in the opinion of local government are unsightly or detract from the amenity of the locality, or be used for signage where the approval of the local government has not been granted. Any industrial (e.g. chain wire) fencing forward of the street building setback line shall be landscaped to the satisfaction of the local government.	The proposal intends to make use of the existing chain link boundary fences.	✓
(c) No use of the area between the street alignment and the prescribed building setback line shall be permitted other than for landscaping, or for pedestrian and vehicular circulation and parking, except that not more than 20% of the setback area may be used for trade display purposes, to be approved at the discretion of the Local Government.	The setback between the street frontage and the building is used for landscaping, parking, and vehicle access. No trade displays or permanent storage of goods are proposed.	✓
4.10.5 Improvement Plan No.14 (IP 14)		
a) Improvement Plan No. 14, hereinafter referred to as IP14, was initiated in 1988 under the provisions of Section 37A of the Metropolitan Region Town Planning Scheme Act 1959 (as amended) for the purpose of advancing the planning, development and use of the land affected by the Plan for industrial purposes.	The application of IP14 has been acknowledged and considered in this submission.	✓
b) In considering applications for development approval or otherwise planning for development on industrial zoned land in the East Rockingham Industrial Park (IP14 Area), the local government shall have regard to the Industrial Policy.		



Requirement	Provided	Compliance
 c) The Industrial Policy incorporates both general and specific policy statements. General policy statements address:- Air Quality; Noise; Risks and Hazards; Water Quality; and Social Environment. 	The proposed development is suitably located within an industrial area and is not expected to result in any adverse impacts in terms of air quality, noise, risks and hazards, water quality and social environment.	*
4.10.6 East Rockingham Development G	uidelines	
a) The East Rockingham Development Guidelines have been prepared to guide the orderly development of serviced industrial land within the East Rockingham Industrial Park (IP14 Area).	An assessment against the East Rockingham Development Guidelines in provided in section 4.3.1 of this report.	✓
The main objectives of the East Rockingham Development Guidelines are:- (i) To achieve an attractive and unified development which acknowledges the goal of conserving and enhancing the natural environment by emphasising the retention of natural vegetation and the introduction of complementary quality landscaping and well-designed buildings.	Existing vegetation is required to be removed to accommodate the proposed development, which is of a scale expected for this industrial area. Further detail on landscaping can be provided as a condition of development approval. The proposed buildings are well designed, providing a contemporary and functional built form that is purpose built for the proposed tenant and land use.	*
(ii) To achieve a degree of consistency and compatibility in the built form and landscaping, whilst allowing for individuality and a well presented corporate or market image; and	The proposal is consistent with the expected type of industrial built form envisaged for the locality. Ovest Industrial are experienced industrial developers, renowned for providing well-presented developments.	✓
(iii) To avoid unsightly and poorly planned development and enhance and protect the investment of all owners within the East Rockingham Industrial Park and the investment of others in the region.	The proposed development provides a substantial investment in the East Rockingham Industrial Park by means of a contemporary and functional industrial development.	✓
c) In considering applications for development approval and otherwise planning for development within the East Rockingham Industrial Park, the local government shall have due regard to the East Rockingham Development Guidelines.	Noted. An assessment against the East Rockingham Development Guidelines is provided in section 4.3.1 below.	✓



Requirement	Provided	Compliance
4.10.9 General Industry Zone		
On all land zoned General Industry, unless otherwise specified in the East Rockingham Development Guidelines:- a) Setbacks: A minimum front setback of twenty five (25) metres shall apply for major structures and a minimum front setback of fifteen (15) metres shall apply to offices, gatehouses and amenity buildings. Where a lot has frontage to two or more streets, the prescribed front setbacks of twenty five (25) metres and fifteen (15) metres shall apply to the primary street and the setback to the secondary street shall be determined by the local government, but shall not be less than the prescribed minimum landscaping setback requirement.	The office building is set back a compliant minimum distance of 40m from the southern (Lodge Drive) lot boundary.	*
b) Landscaping. Landscaping shall be provided on all street frontages for a distance of not less than 10 metres from each property boundary. At the discretion of local government, additional landscaping may be required on the remainder of the site.	A 6m wide landscaping strip is provided along the Lodge Drive road frontage. A conceptual landscape plan is provided as part of the development plans, which indicates the type of planting. Refer to Appendix 6 . The landscaping provision of the proposed development is entirely appropriate, ensuring a good level of amenity and aesthetic to staff and visitors, while achieving its function as an industrial development within an industrial area. When combines with the landscaped verge, a 25.8m wide landscaping strip is provided.	Variation

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

4.2.5 Car parking assessment

Clause 4.15 and Table No.2 of LPS2 stipulate the applicable minimum car parking requirements for developments on zoned land. A full assessment against the applicable parking requirements is provided in **Table 3** below.

Table 3 - LPS2 Parking Assessment	
-----------------------------------	--

Tenancy	Parking Provision	Assessment	Parking Required
<u>Existing</u> Industry, Showroom, Warehouse	1 bay per 50m ² NLA for factory units and showrooms, plus 1 bay per	24,038m ² Workshops 800m ² Offices/ Amenities	240 bays
<u>Proposed</u> Industry, Showroom, Warehouse	100m² NLA for warehouses or 1 bay per employee, whichever is the greater.	8,450m² Workshops 5,226m² Warehouse 680m² Offices/ Amenities	169 bays 52 bays 221 bays
Existing parking provisio	n		
Total current (approved) parking provision on existing site			137 bays
Total minimum parking requirements for existing site			240 bays
Total existing parking shortfall			103 bays
Proposed parking provision			
Total amount of parking required for proposed development & existing site			461 bays
Total number of additional bays proposed as part of new development			69 bays
Total amount of parking provided by new and existing developments			206 bays
Total proposed parking shortfall			255 bays

Having regard to **Table 3** above, it is acknowledged that the parking provided for the existing and proposed development is not compliant with the minimum parking provisions of LPS2. However, the 'on paper' car parking shortfall is warranted for the following reasons:

- The proposed development effectively doubles the amount of parking available across the entirety of the subject site.
- The total number of staff across the site is nowhere near the 461 car parking bays required.
- The minimum parking requirements are excessive when compared to the actual level of parking generated by both the existing and proposed development as demonstrated by the fact that the development has operated for more than 25 years with an 'on paper' shortfall.
- Moreover, the site contains multiple industrial tenancies under single ownership, which provides opportunities for shared parking arrangements, as demonstrated by this application.
- The minimum parking requirements are a broad-brush instrument which accommodate all types of industrial activities, from smaller service industrial businesses with a high level of visitor parking demand to large-scale industrial activities with little to none.
- The overall trend in Australia is for the number of employees per square metre of industrial floorspace to decline over time, whereas minimum parking requirements have remained largely static.
- The proponent is experienced in managing and developing industrial properties and understands the parking numbers that are actually required for these types of developments.

Considering the above, the proposed car parking scenario is sufficient and warrants the City's support.



4.3 Local Planning Policies

4.3.1 Local Planning Policy 3.3.8 East Rockingham Development Guidelines

Local Planning Policy 3.3.8 East Rockingham Development Guidelines (Development Guidelines) sets out the development standards applicable to land within the East Rockingham Industrial Park. The subject site is located within Precinct Four – General Industry, as depicted in Figure 1 (Structure Plan) of the Development Guidelines. Clause 4.4 - General Industry of the Development Guidelines states that:

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

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

Table (According to gain at the valouant	nuovicione of the East Deskin.	rham Dovalonmont Cuidalinas
Table 4 – Assessment against the relevant	provisions of the cast Rocking	sham Development Guidennes

Requirement	Assessment	Compliance	
5.2.1 Site Layout			
 When planning the site layout and design of buildings, various issues are to be considered. These include: Orientation - prevailing winds, sun angles, street 'image' Landform, existing vegetation and required new landscaping - site access, retention of mature trees (plus other native plants of value Adjacent land uses and built form - consider landscaping and complimentary designs Contribution to 'streetscape' - buildings 'façade' the street, screening. 	The layout of the proposed new industrial building reflects the existing orientation of the lot and current industrial buildings, the location of current wetland mapping (where development has been avoided) and the street frontage to Lodge Drive along the western boundary.	•	
5.2.2 Setbacks			
Front setbacks: As per specific requirements for General Industry zones.	A compliant front setback of 40m is provided.	~	
Side and Rear Setbacks: 6 metres	A side setback of 35m is provided to Lodge Drive (west).	~	
5.2.3 Height Limit			
Building height subject to Council discretion.	The proposed 14m maximum height of the building (apex) is considered entirely consistent with prevailing expectations.	~	
5.2.4 Site Coverage/Plot Ratio			
No maximum site coverage or plot ratio specified.	Site coverage is approximately 50,349m ² (42%) of the total area of the subject site and is considered entirely consistent with prevailing expectations. This is a common site coverage for modern day industrial developments of this scale and strategic location.	✓	



Requirement	Assessment	Compliance
5.2.5 Orientation and Shading		
Site layout and building orientation, should as much as possible, take into consideration the benefits and/or detrimental effects of sun angles, prevailing breezes, and vision to and from the site.	Orientation and shading has been factored into the design. Roller Shutters are provided on the western elevation to allow for south westerly prevailing windows. Glazing is provided on the southern elevation of the office to allow natural light and surveillance to Lodge Drive (south).	✓
5.2.6 Site Levels		
The sites within the park are generally flat, however, with some large buildings envisaged, even shallow gradients can mean substantive earthwork. The intent should be to minimise the extent of earthmoving and 'site interference'. It should be understood that earthworks adjacent to existing mature trees may affect their ability to survive and should therefore be avoided.	The extent of earthworks (cut and fill) proposed on the subject site are proposed to be kept to a minimum. A finished floor level of approximately 3.3m AHD is proposed for the development. This is generally in accordance with the existing site levels which range from 2.8m AHD to 3.4m AHD. The exact finished floor level/s will be confirmed at detailed design as part of detailed drawings.	✓
5.2.7 Carparking, Vehicular and Pedestrian Movement		
The number of car parking bays required will be in accordance with the Local Authority Scheme Text.	Refer section 4.2.5 for a detailed parking assessment.	Variation justified
Car parking can be replaced between the landscape setback and the building line.	Carparking is proposed between landscaping and the office building.	√
Similarly, bay sizes. Driveway widths and turning circles are to suit these and other functional requirements.	We understand car bays will be constructed in accordance with the relevant Australian Standards.	~
Street parking is discouraged within the park; the service roads are likely to be used by large trucks and other heavy vehicles and street parking would impede manoeuvrability and safety.	No street parking is proposed.	✓
 Roadways and parking within a development must be planned to achieve the following: Separation of service/haulage vehicles from visitor and staff parking areas; 	 Three additional crossovers have been proposed to improve the segregation of cars and heavy vehicles: A new heavy vehicle crossover to Scandium Way at the northern end of the eastern boundary reducing heavy vehicle access via the existing crossover on the southern boundary of Lot 13 which provides access to the western carpark. New crossovers on the southern boundary of Lot 13 providing segregated car access to the existing carpark. 	•

PIS

Requirem	ent	Assessment	Compliance
		• A new crossover to the western boundary of Lot 12 for heavy vehicle egress, with the existing crossover used to provide access to the proposed staff and visitor car park for light vehicles only.	
		Further to these changes, three additional crossovers and new carparking areas proposed as part of the development application approved by the City in August 2022 provides separate access points for the tenants of the eastern building and reduces the number of staff and visitors driving through the site.	
		Overall, the proposed development significantly improves the segregation of vehicular traffic improving the overall safety of the activities already occurring and proposed.	
	of parking area adjacent to areas of buildings are commonly accessed;	The development includes a new carparking area directly adjacent to the office building.	√
	de suitable species of shade trees at a ratio of 1 car bays, evenly throughout parking areas;	The proposed carparking adjacent to the office building contains 40 parking bays, requiring 10 shade trees. The proposed landscaping plan shows that 10 Tuart trees (<i>E. Gomphocephala</i>) will be planted around the parking area and along the western boundary. We understand mature Tuart trees can have a canopy 25m in width and are suitable as shade trees.	•
separ	de dear paths for pedestrian movement ate from areas of frequent vehicular ment; and	A marked pedestrian crossing can be provided between the western carpark and the hardstand area associated with the new industrial building. The exact location can be confirmed at detailed design.	~
the co	der the visitor parking areas as an extension of orporate/market image in terms of its ntation.	The new carpark will be sealed, kerbed and landscaped consistent with prevailing expectations of a modern industrial area.	1
5.2.8 Fenc	ing		
The minim galvanisea	um standard for fencing is black PVC coated I link mesh.	No change to existing link mesh fencing is proposed as part of the proposed development.	✓
5.2.9 Servi	ice, Storage & Display Areas		
front build from the st	and storage areas are to be setback behind the ing line and screened so as not to be visible creet. Landscaping and obscure (approved) n be utilised to screen these areas.	The service areas and storage areas are screened from the street frontage and located internally within the site. The open air storage area in the northern aspect of the site is substantially set back from the street and the existing landscaping.	✓

PS

Requirement	Assessment	Compliance
5.3 Built Form		
5.3.1 Architectural Form and Massing		
 Consider views to and from the building to enhance: Visual appeal Market or corporate 'image' Safety / security / access and egress Property value 	The office building has been sited directly fronting the street (albeit set back) with the façade incorporating both windows and a visible front entrance highlighted by a green accent.	✓
• Buildings should be designed to 'address' the street with consideration given to the impression from the street and a point of entry. The main entrance to the building itself should be clearly visible or 'signalled' in the design. Designs should incorporate porticos or 'entry statements' and glazed areas rather than 'blank' facades facing the street.	Figure 4 - Southern elevation of office building visible from Lodge Drive.	*
5.3.3 Outbuildings and Other Structures		
Where there are numerous separate buildings on the site, the design of each should be considered with the 'whole of the site' planning so that they may present as an integrated development. Where possible future expansion and staging should be considered so as to integrate these buildings. Also use of colours, form and materials should be consistent amongst all these buildings.	The proposed development has been assessed as a cohesive development with particular attention paid to demonstrating that the site works as a whole with regard to traffic management and vehicle movements (refer Appendix 7). The scale, colours and materials proposed are consistent with the expectations for development of the site and the existing industrial building.	*
5.3.4 Signage and Graphics		
 Exposed signage and graphics should be of constant form, lettering type and colour; Free standing screen walls or suchlike, displaying signage at entry points and elsewhere should utilise forms and materials/colours that those form building on the site; No flags, banners, bunting, revolving signs, sandwich boards or signage on otherwise transparent fencing are permitted; Give consideration to signage and graphics locations in the building design process, rather than applying them 'randomly; to a finalised building. 	Signage zones have been proposed on the eastern, western and southern elevations of the building showing the size and location of future signage. Wall signage which remains within the boundaries of these zones are not expected to require a future development application.	*
5.4.1 Landscape Theme		
• Provision of reticulated verges and landscape buffer strips adjacent to street boundaries as specified;	Please refer to the landscape plan in Appendix 6 . Native, waterwise species are proposed.	~



Requirement	Assessment	Compliance
Where practicable, existing trees are to be retained;	Retention of trees within an industrial development of a scale that is proposed is impractical, given the need for extensive hard standing and maximisation of vehicle maneuverability, as demonstrated by the clearing of the adjoining Clipper Precinct by DevelopmentWA (refer Figure 5). It would be unreasonable to impose stricter expectations on the subject site. Trees within the street verge are proposed to be retained, and existing trees within car parking areas on Lot 13 and alongside existing internal access ways.	Acceptable
	Figure 5 - Aerial photography showing clearing of adjoining Clipper Precinct by DevelopmentWA	
 Landscaping is to be provided within parking areas to provide shade for parked cars and to soften the impact of spaced carparking viewed from adjacent sites and roads; 	10 Tuart trees proposed around the carpark to provide shade with ground cover as per the landscaping plan (Appendix 6).	✓
• Landscaping is to be used to screen service and storage areas (until such landscaping is sufficiently established, interim screening is to be provided);	Service and storage areas are not easily visible from Lodge Drive, as they are located internally or to the north of the site.	✓
• The landscape theme for the Park is based predominantly on the use of hourly native trees, shrubs and ground covers.	Refer landscaping plan in Appendix 6 , with native species proposed.	✓

As demonstrated in **Table 4** above, the proposed development is consistent with the Development Guidelines, with any variations appropriately justified.

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

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



Dedicated bicycle parking spaces are not warranted or desirable for a development of this nature given the safety issues associated with encouraging cyclists to travel along the surrounding road network where they will encounter heavy vehicles with limited visibility.

Notwithstanding the above, an appropriate number of bicycle parking spaces can be provided as a condition of development approval if required by the City.

4.4 State Planning Policies

4.4.1 State Planning Policy 3.7 Planning in Bushfire Prone Areas

The subject site is identified as being located within a 'Bushfire Prone Area' by the Department of Fire and Emergency Services (**DFES**) Map of Bushfire Prone Areas and subject to the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (**SPP3.7**).

A BAL assessment was undertaken over the site, confirming the development will be subject to a BAL rating of less than BAL-12.5, with an Asset Protection Zone that can be contained within the boundaries of the subject site. The Bushfire Management Plan prepared in support of the proposed subdivision (refer **Appendix 8**) sets out the appropriate mitigation/bushfire protection measures to satisfy the relevant requirements of SPP3.7.

BAL ratings are based on post-development vegetation classification which factors in the clearing of the southern vegetation and maintaining at a low threat status.

The BMP confirms that the proposed development is consistent with the aims and objectives of SPP3.7 and warrants approval.

4.5 Seriously Entertained Planning Proposals

4.5.1 Scheme Amendment No. 178 and draft Planning Policy 3.3.8 East Rockingham Industrial Zones

Amendment No. 178 (SA178) to LPS2 gives force to a Draft Planning Policy No.3.3.8 East Rockingham Industrial Zones (draft policy). Although SA178 is a seriously entertained planning proposal, the Minister directed the City in January 2021 to modify the amendment in such a manner as to radically depart from the context of the original amendment (as reported by the City to Council on 23 February 2021). For this reason, both the amendment and the draft policy have been given limited-to-no-weight in this assessment.

4.6 Matters to be Considered

Clause 67(2) of the *Planning and Development (Local Planning Schemes) Regulations 2015* (**Deemed Provisions**) sets out the matters for which due regard shall be given when considering an application for development approval. The relevant considerations are addressed in **Table 5**Error! Reference source not found. below.

Matter to be considered		Provided	
(a)	the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The aims and provisions of LPS2 are addressed in this report. Refer to section 4.2 (Local Planning Scheme No. 2).	
(b)	the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;	Refer to section 4.5 (Seriously entertained planning proposals). SA178 does not preclude the merits of this proposal. There are no known scheme amendments to LPS2 or other planning proposals that affect the merits of this proposal from an orderly and proper planning perspective.	

Table 5 – Matters to be considered (clause 67)

Development Application Report – Proposed Tyre Recycling Facility Lot 13 (4) and Lot 12 (6) Lodge Drive, East Rockingham



Mat	ter to be considered	Provided
(C)	any approved State planning policy;	Refer to section 4.4 (State Planning Policies).
(e)	any policy of the Commission;	
(f)	any policy of the State;	
(g)	any local planning policy for the Scheme area;	Refer to section 4.3 (Local Planning Policies).
(j)	in the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve;	
(k)	the built heritage conservation of any place that is of cultural significance;	Not applicable.
(1)	the effect of the proposal on the cultural heritage significance of the area in which the development is located;	
	 the compatibility of the development with its setting including – i. the compatibility of the development with the desired future character of its setting; and i. the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development; 	Refer to section 4.2.4 (development requirements) and 4.3.1 (Design guidelines).The proposed development is a large industrial building, well set back from property boundaries, of a similar height, scale and bulk as the existing development on Lot 13, and consistent by nature and built form with the prevailing expectations of the surrounding industrial precinct. Strong emphasis has been placed on the design of the building, ensuring the built form responds to the prevailing industrial character of the locality, while making a positive built form contribution to
i		the streetscape. The increased activity and surveillance associated with the proposed development is likely to positively affect the amenity of the locality. Being a Prescribed land use, any potential environmental impacts associated with tyre storage will be closely monitored and regulated. The proposed development is consistent with the existing and emerging industrial character of the locality. There will be no detrimental social impact resulting from the proposed development. Conversely, the proposal will result in positive social impacts to the locality, through the creation jobs and further enhancing opportunities for employment.
(0)	the likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource;	All stormwater will be contained on-site to the extent possible, with detailed civil / stormwater plans to be provided as an appropriately worded condition of development approval.
(p)	whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	Refer to the concept landscape plan in Appendix 6 and assessment comments relating to tree retention in section 4.3.1 (Design guidelines).

Development Application Report – Proposed Tyre Recycling Facility Lot 13 (4) and Lot 12 (6) Lodge Drive, East Rockingham



Ma	tter to be considered	Provided
(q)	the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;	Refer section 3.4, section 4.4.1 and Appendix 8 for bushfire related commentary.
(r)	the suitability of the land for the development taking into account the possible risk to human health or safety;	Excluding traffic matters, no risks to human health and safety have been identified with the development of the land.
	the adequacy of – i. the proposed means of access to and egress from the site; and ii. arrangements for the loading, unloading, manoeuvring and parking of vehicles;	A Transport Impact Statement (TIS) has been prepared to address traffic/access considerations, confirming the proposed development is entirely suitable in this regard. Refer to Appendix 7 for a copy of the TIS.
(t)	the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	
i i i	 the availability and adequacy for the development of the following – i. public transport services; ii. public utility services; iii. storage, management and collection of waste; v. access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities); v. access by older people and people with disability; 	 i. Availability of transport options near the subject site is addressed in the supporting TIS (refer Appendix 7). ii.We understand the subject site has access to all the required utility services prior to commencement of development. iii.The details of the storage of waste are provided within this report. iv.The development is accessible to pedestrians and cyclists, however, these movement are unlikely to be frequent, given the nature of the land use and its location. Universally accessible car parking spaces have been provided for the proposed development.
(v)	the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;	The proposed development will deliver an increase in employment opportunities and any potential benefits associated with the economic activities and commercial services provided by the industrial businesses operating from the subject site. Rubber / tyre recycling is an important industry for sustainability and material re-use.

Having regard to **Table 5** above, it is considered that all potential matters to be considered have been satisfactorily addressed within this report, demonstrating the proposed development warrants approval.

Development Application Report – Proposed Tyre Recycling Facility Lot 13 (4) and Lot 12 (6) Lodge Drive, East Rockingham

5

CONCLUSION

This application seeks approval for the development and use of an industrial building on the subject site, including associated buildings, access, landscaping, and car parking. The development is suitably located within the East Rockingham industrial area and will provide essential industrial (and recycling) services and employment opportunities to the immediate community and wider locality.

Approval of the proposal is entirely warranted for the following reasons:

- The development will continue to provide, and expand upon, industrial offerings in support of the Rockingham Industrial Zone. and for wider metropolitan Perth. Specifically, the proposal will provide important services regarding rubber and tyre recycling.
- The development is appropriately located within an existing and established industrial setting.
- The proposed development will not by nature of its operations and location, detrimentally impact upon the locality.
- The development is designed to an exceptionally high standard and will present attractively to the surrounding industrial developments.
- The development appropriately responds to all relevant aspects of the planning framework with any variations to the framework appropriately justified. It has been demonstrated to be satisfactory from a bushfire and traffic perspective with access and circulation arrangements providing for a high level of functionality, convenience and safety.
- The proponent has investigated the environmental conditions of the subject site and is progressing the necessary approval processes for clearing of vegetation.

Having regard to the above, the proposal clearly demonstrates the suitability of the industrial development on the subject site.

We therefore respectfully request the application for development approval be considered on its merits and favourably determined by the Metro Outer Joint Development Assessment Panel.

PS ref: 8088 City's ref: 20.2022.331.1 – AD22/138675

13 January 2023

City of Rockingham PO BOX 2142 Rockingham DC WA 6967

Attention: Mr Marius Le Grange, Senior Planning Officer

Dear Sir,

LOT 13 (4) AND LOT 12 (6) LODGE DRIVE, EAST ROCKINGHAM DEVELOPMENT APPLICATION – PROPOSED TYRE RECYCLING FACILITY RESPONSE TO REQUEST FOR ADDITONAL INFORMATION

Planning Solutions acts on behalf of Ovest Industrial in support of an Application for Approval to Commence Development at Lot 13 (4) and Lot 12 (6) Lodge Drive, East Rockingham (**subject site**).

We refer to the correspondence from the City of Rockingham (**City**) dated 23 December 2023 (sent via email on 22 December 2022). The following submission provides a response to the City's request for further information (provided at **Attachment 1** for reference).

REQUEST FOR FURTHER INFORMATION

Table 1 – Response to request for additional information (via email on 22 December 2022)

Additional information requested	Applicant response
An Environmental Assessment Report which addresses the City's Planning Policy 7.1 - East Rockingham Industrial Park: Environmental Planning Policy contains the information to be part of the license application to	The proposed land use is a Prescribed / Licensed Premises and is required to go through a separate works approval and licensing process with DWER, under Part V of the <i>Environmental Protection Act</i> <i>1986</i> (EP Act). The proposed tenant (RubberGem) has engaged Encycle Consulting
Department of Water and Environmental Regulation (DWER).	to prepare the necessary reporting required for the environmental licensing. The Works Approval application for the tyre recycling facility was submitted to DWER on 20 December 2022. It is expected the City will refer this development application to DWER for environmental feedback during the assessment process.
A Risk Assessment and Management Plan for the tyre recycling facility processes, storage, handling, transportation and disposal of tyres.	Please refer to Attachment 2 for a copy of the Risk Assessment and Management Plan prepared by RubberGem, which outlines the potential risks and management measures associated with the processes, storage, handling, transportation and disposal of tyres.
As the proposed tyre recycling facility is considered a High Risk Land-Use, an Emergency Evacuation Plan is required in	A Bushfire Risk Management Plan (BRMP) is currently being prepared and finalised by Eco Logical, and will be provided to the City separately.
cordance with State Planning Policy - 3.7 anning in Bushfire Prone Areas and the uidelines for Planning in Bushfire Prone reas (version 1.4).	Furthermore, Warringtonfire has been engaged to conduct a fire hazard analysis and produce a fire safety strategy for the proposed development, in consultation with all stakeholders including the Department of Fire and Emergency Services (DFES). After three DFES consultation meetings, it is agreed that the proposed design of the tyre recycling facility is acceptable and detailed design should follow. These will be documented in a fire safety strategy report.



Level 1,251 St Georges Tce, Perth WA (08) 9227 7970 GPO Box 2709 Cloisters Square PO 6850

admin@planningsolutions.com.au www.planningsolutions.com.au ACN 143 573 184 ABN 23 143 573 184 Planning Solutions (Aust) Pty Ltd

Additional information requested	Applicant response
A Waste Management Plan.	Please refer to Attachment 3 for a copy of the Waste Management Plan prepared by RubberGem.
An Acoustic Consultants Report; and	Further to correspondence with the City, we respectfully request the City accept the application for assessment without the upfront provision of an acoustic report.
	We note that the subject site is in a state significant industrial area, where the nearest noise sensitive land use (the caravan park on Dixon Road) is approximately 700m away. The nearest dwellings are over 1km away.
	In accordance with clause 2.4.4 of the City's Planning <i>Policy No. 7.1</i> East Rockingham Industrial Park: Environmental Planning Policy:
	Environmental noise impacts from industrial premises are addressed in the Environmental Protection (Noise) Regulations 1997 (the Regulations). These Regulations are in line with world- best-practice and are based on maximum allowable noise levels determined by the calculation of an influencing factor, which is then added to the base levels. The influencing factor is calculated by considering land use within two circles having a radius of 100m and 450m from the noise sensitive premises concerned.
	The subject site far exceeds a separation distance of 450m from the nearest noise sensitive premises. Furthermore, we understand the DWER Works Approval will include a review and mitigation / Management measures for potential impacts to receptors, including any noise levels for the areas.
	However, in consideration of the City's concerns, an acoustic report can be provided during the assessment process (if absolutely required) or provided as an appropriately worded condition of development approval.
One (1) hard copy of all information submitted in support of the application, including the requested further information.	One (1) hard copy of all information submitted in support of the application will be provided to the City independently of this submission.

CONCLUSION

The City's request for additional information has been satisfactorily addressed, with hard copies of the information and the Bushfire Risk Management Plan to be provided separately. We respectfully request the City proceeds to accept the application for assessment and refers the application to the Development Assessment Panel Secretariat.

Should you have any queries or require further clarification regarding the proposal, please do not hesitate to contact the writer.

Yours faithfully,

Obassian

OLIVER BASSON SENIOR PLANNER

230113 8088 Letter to City - Additional information (stop the clock)

ATTACHMENT1

ADDITIONAL INFORMATION REQUEST - 23 DECEMBER 2022

 Our Ref:
 20.2022.331.1 – AD22/138675

 Your Ref:
 (PS 8088)

 Enquiries to:
 Mr M Le Grange





Mr Oliver Basson Planning Solutions Urban & Regional Planning GPO Box 2709 CLOISTERS SQUARE PERTH WA 6850 Er

Email: oliver.basson@planningsolutions.com.au

Dear Oliver

Re: Proposed Industry : General Licensed (Tyre Recycling Facility) - Lots 13 & 12 (No.4 & 6) Lodge Drive, East Rockingham

The City acknowledges receipt of your Development Assessment Panel ('DAP') Application, which was received on 20th December 2022 in respect to the above land.

Pursuant to Regulations 63 and 63A of the deemed provisions of the City's Town Planning Scheme No.2 (Deemed Provisions) and Pursuant to Regulation 11 of the *Planning and Development (Development Assessment Panels) Regulations 2011* (DAP Regulations), the City hereby gives notice that further information is required to enable the assessment of the application. Specifically, the City requires:

- An Environmental Assessment Report which addresses the City's <u>Planning Policy 7.1</u>
 <u>- East Rockingham Industrial Park</u>: <u>Environmental Planning Policy</u> contains the information to be part of the license application to Department of Water and Environmental Regulation (DWER);
- A Risk Assessment and Management Plan for the tyre recycling facility processes, storage, handling, transportation and disposal of tyres;
- As the proposed tyre recycling facility is considered a High Risk Land-Use, an Emergency Evacuation Plan is required in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* and the *Guidelines for Planning in Bushfire Prone Areas* (version 1.4);
- A Waste Management Plan;
- An Acoustic Consultants Report; and
- One (1) hard copy of all information submitted in support of the application, including the requested further information;

For the purposes of Regulation 63A(1)(b)(ii) of the Deemed Provisions, the application for Development Approval in its current form is **not Accepted for assessment**. Once the City receives the abovementioned information and is satisfied with the level of information provided, then assessment of the application can be undertaken.

The City's Senior Planning Officer, Mr Marius Le Grange will be processing your application and can be contacted on 9528 0387 or <u>Marius.Legrange@rockingham.wa.gov.au</u>.

Yours faithfully

D WALLER CO-ORDINATOR STATUTORY PLANNING



www.rockingham.wa.gov.au

Bushfire Management Plan: Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham

Ovest Industrial





DOCUMENT TRACKING

Project Name	Bushfire Management Plan: Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham
Project Number600-22PER2823	
Project Manager	Stephen Moore
Prepared by	Maitland Ely
Reviewed by	Eva Cronin, Stephen Moore and Daniel Panickar (BPAD Level 3 – 37802)
Approved by	Daniel Panickar (BPAD Level 3 – 37802)
Status	Draft
Version Number	v4
Last saved on	24 March 2023

This report should be cited as 'Eco Logical Australia 2023. *Bushfire Management Plan: Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham.* Prepared for Ovest Industrial.

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Ovest Industrial (the client).

Disclaimer

This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and the client. The scope of services was defined in consultation with the client, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Template 2.8.1

Version control		
Version	Purpose	
vl	Draft – Submission to client	
v2	Final	
v3	Final – Site plan redesign	
v4	Final – Amendments in response to site plan redesign and DFES comments	

Contents

1. Introduction	1
1.1 Proposal details	1
1.2 Purpose and application of the plan	1
1.3 Environmental considerations	2
2. Bushfire assessment results	6
2.1 Bushfire assessment inputs	6
2.1.1 Fire Danger Index	6
2.1.2 Vegetation classification and slope under vegetation	6
2.2 Bushfire assessment outputs	10
2.2.1 BAL assessment	
2.2.2 Method 1 BAL assessment	
2.3 Identification of issues arising from the BAL assessment	11
3. Assessment against the Bushfire Protection Criteria	14
3.1 Compliance	14
3.2 Additional Bushfire Requirements	16
4. Implementation and enforcement	
5. Conclusion	19
6. References	20
Appendix A – Classified Vegetation Photos	21
Appendix B – Standards for Asset Protection Zones	
Appendix C - Vehicular access technical requirements (WAPC 2017)	

List of Figures

Figure 1: Site overview	3
Figure 2: Site Plan	4
Figure 3: Bushfire Prone Areas	5
Figure 4: Pre-Development Vegetation classification	8
Figure 5: Post-Development Vegetation classification	9
Figure 6: Bushfire Attack Level (BAL) Contours	13
Figure 7: Spatial representation of the bushfire management strategies	17
Figure 9: Illustrated tree canopy cover projection (WAPC 2021)	31

List of Tables

Table 1: Classified vegetation as per AS 3959: 2018	6
Table 2: Method 1 BAL calculation (BAL contours)	
Table 3: BAL rating for proposed building and individual uses within the subject site	11
Table 4: Summary of solutions used to achieve bushfire protection criteria	14
Table 5: Proposed work program	18

1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Ovest Industrial to prepare a Bushfire Management Plan (BMP) to support a development application for Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham (hereafter referred to as the subject site, Figure 1). The proposed development will result in an intensification of land use and involves the development of workshops, a warehouse, an office and nine main storage areas associated with a tyre recycling facility (Figure 2).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2019; Figure 3), which triggers bushfire planning requirements *under State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; Western Australian Planning Commission [WAPC] 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.4* (the Guidelines; WAPC 2021).

The subject site is located within the City of Rockingham north of Lodge Drive in East Rockingham. Within the subject site there are areas of unmanaged classifiable vegetation and areas of existing industrial development and carparks. Classifiable remnant vegetation is located throughout the west of the site and beyond, as well as areas further than 100 m to the southeast. Land immediately north, south and west of the site is predominantly comprised of cleared areas and areas that have been historically cleared, however regrowth has occurred with classifiable vegetation now present.

This assessment has been prepared by ELA Bushfire Consultant Maitland Ely with quality assurance undertaken by Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802). Amendments for version 4 of this BMP have been completed by Eva Cronin (FPAA BPAD Level 2 Certified Practitioner No. BPAD45482) with quality assurance undertaken by Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

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

The tyre recycling facility proposed within the subject site is categorised as a high risk land use due to the activities planned on site and the definitions within the Guidelines (WAPC 2021). High risk land uses may expose the community, fire fighters and the environment to dangerous, uncontrolled substances during a bushfire event. High risk land uses may include, but are not limited to: service stations, landfill sites, bulk storage of hazardous materials, fuel depots and certain heavy industries as well as military bases, power generating land uses, saw-mills, highways and railways.

Planning and development applications that incorporate proposals for non-residential, high risk land uses in bushfire prone areas are to comply with policy measure 6.6 which requires a Bushfire Management Plan and a risk management plan for any flammable on-site hazards jointly endorsed by the local government and the Department of Fire and Emergency Services. In most instances the

requirement of the bushfire risk management plan should be incorporated into the proposed site management plans.

1.3 Environmental considerations

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

Within the site there is remnant vegetation containing grasses, shrubs and trees. No revegetation is proposed within the development and landscaping will be maintained in a low-threat state.

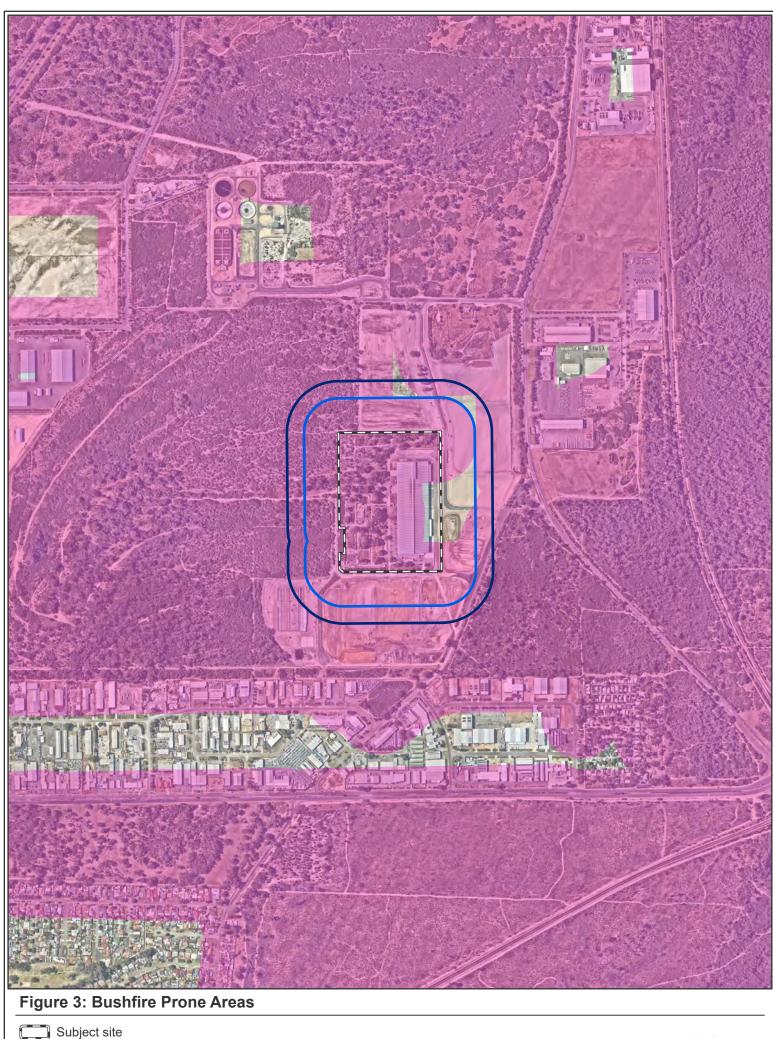
Environmental approvals are currently being pursued for clearing vegetation.





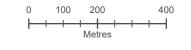


Figure 2: Site Plan



 -		
100m	site	assessmen

- 150m site assessment
 - Bushfire Prone Mapping (DFES 2021)



Ν

Datum/Projection: GDA 1994 MGA Zone 50



22PER2823-SM Date: 24/03/2023

2. Bushfire assessment results

2.1 Bushfire assessment inputs

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

2.1.1 Fire Danger Index

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

2.1.2 Vegetation classification and slope under vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed in accordance with the Guidelines and *AS 3959: 2018* with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment was undertaken on 16 June 2022.

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

Development of the subject site will result in a significant portion of the vegetation present within the site being cleared for development. A post-development vegetation classification map reflecting this clearing is provided in Figure 5.

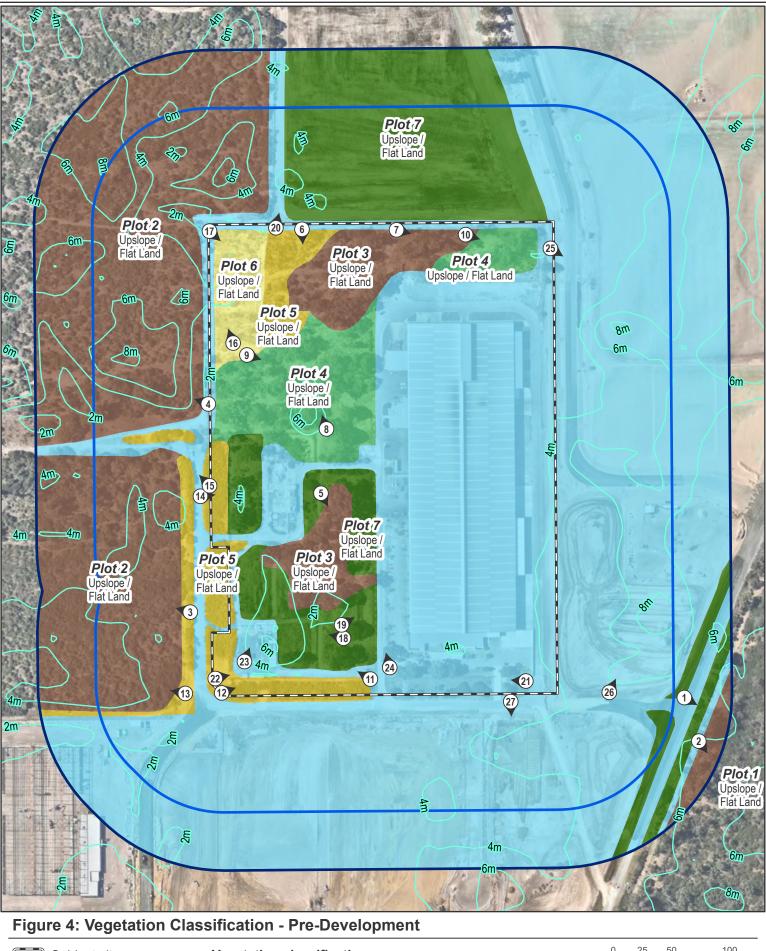
Plot	Vegetation Classification	Effective Slope
1	Class A Forest	All upslopes and flat land (0 degrees)
2	Class A Forest	All upslopes and flat land (0 degrees)
3	Class A Forest	All upslopes and flat land (0 degrees)
4	Class B Woodland	All upslopes and flat land (0 degrees)
5	Class D Scrub	All upslopes and flat land (0 degrees)
6	Class C Shrubland	All upslopes and flat land (0 degrees)
7	Class G Grassland	All upslopes and flat land (0 degrees)
8 Excluded AS 3959: 2018 2.2.3.2 (e) & (f)		-

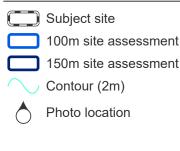
Table 1: Classified vegetation as per AS 3959: 2018

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

The post-development scenario assumes the strip of vegetation approximately 5 m wide adjacent to the southern boundary of the subject site (measured perpendicular to the elevation of the building exposed to the strip of vegetation) will form part of the Lodge Drive Road Reserve. ELA note land further south of Lodge Drive has been cleared for development as depicted in Photo ID 27 (Appendix A). Vegetation

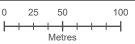
within Lodge Drive Road Reserve south of the subject site, is therefore, considered excludable under Clause 2.2.3.2(f) of AS 3959: 2018.





Vegetation classification

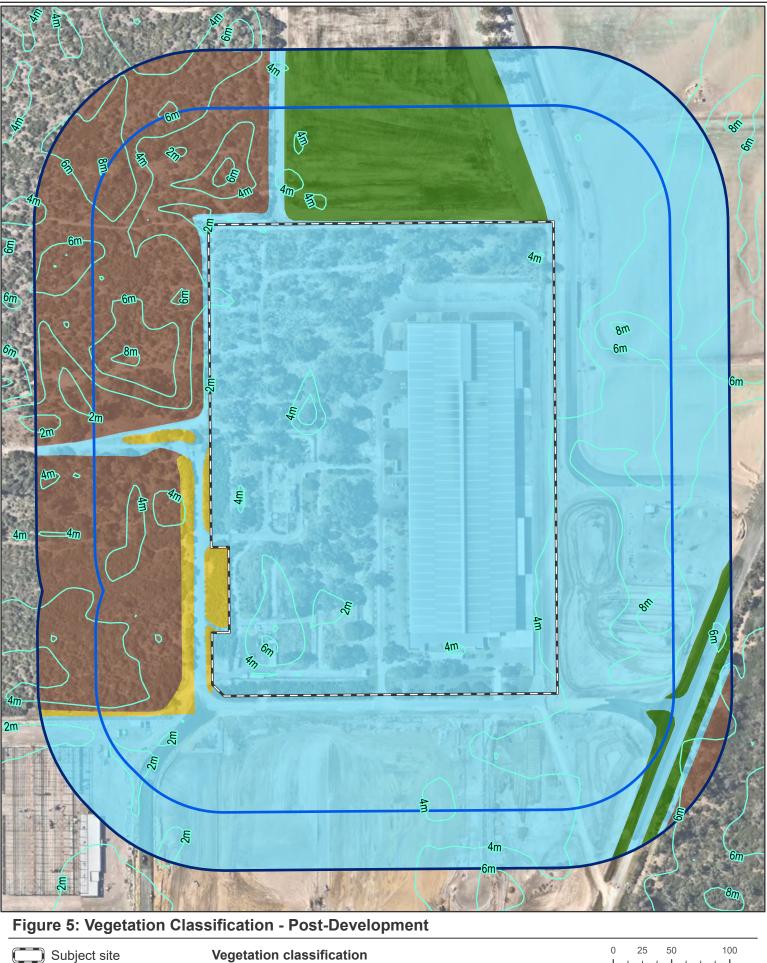
- Class A forest Class B woodland Class C shrubland
- Class D scrub
- Class G grassland
- Excluded as per clause 2.2.3.2 (e) and (f)



Datum/Projection: GDA 1994 MGA Zone 50

22PER3823-SM Date: 24/03/2023







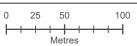


100m site assessment

Contour (2m)

Vegetation classification

- Class A forest
 - Class B woodland
 - Class D scrub
 - Class G grassland
 - Excluded as per clause 2.2.3.2 (e) and (f)



Datum/Projection: GDA 1994 MGA Zone 50

22PER3823-SM Date: 24/03/2023



2.2 Bushfire assessment outputs

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

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in Figure 5 (i.e. post-development) is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

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

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

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

2.2.2 Method 1 BAL assessment

Table 2 and Figure 6 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959: 2018 methodology.

Plot	Vagatation Classification	Effective Slope -	Separation distances required				
PIOL	Vegetation Classification	Effective Slope	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
2	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
3	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
4	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10-<14	14-<20	20-<29	29-<100
5	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100
6	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7-<9	9-<13	13-<19	19-<100
7	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6-<8	8-<12	12-<17	17-<50
8	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-		No separation	distances req	uired – BAL-L	ow

Table 2: Method 1 BAL calculation (BAL contours)

The proposed building within the subject site has a BAL rating of BAL-19 as detailed in Figure 6. This building will contain numerous uses, with each individual use shown in Table 3.

The Guidelines state:

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

As none of the proposed structures is a Class 1, 2 or 3 building and/or Class 10a building or deck associated with a Class 1, 2 or 3 building, construction to AS 3959: 2018 is not required for this proposal.

The general fire safety construction provisions within the National Construction Code (NCC) are considered suitable for bushfire construction measures, however ember protection measures in sections 3 and 6 of AS 3959: 2018 are recommended to be incorporated where applicable.

Proposed building	Plot most affecting BAL rating	Separation Distance (m)	BAL Rating
Office and Workshop Amenities	Plot 5 Class D Scrub	41.9	BAL-12.5
Sprinklered Warehouse (1,775 SQM)	Plot 5 Class D Scrub	74.9	BAL-12.5
Sprinklered Warehouse (1,790 SQM)	Plot 5 Class D Scrub	34.9	BAL-12.5
Sprinklered Warehouse (1,661 SQM)	Plot 5 Class D Scrub	19.7	BAL-19
Sprinklered Workshop	Plot 5 Class D Scrub	34.8	BAL-12.5
Roof Extended as Canopy	Plot 2 Class A Forest	54.1	BAL-12.5

Table 3: BAL rating for proposed building and individual uses within the subject site

2.3 Identification of issues arising from the BAL assessment

With the current proposed site plan, the proposed building is subject to a rating of BAL-19. This BAL rating is based on the post-development vegetation classification assessment in Figure 5 which factors in clearing of vegetation for the proposed buildings and supporting infrastructure.

Some proposed external tyre storage areas adjacent to the western and northern boundaries of the subject site are located in BAL-40 and BAL-FZ areas. These external storage areas are not structures and are located outside the APZ area that surrounds the proposed building. ELA are not aware of any requirements in the Guidelines or SPP 3.7 that precludes the tyre storage areas from being located in BAL-FZ and BAL-FZ and BAL-40 areas, provided they are not located within the APZ surrounding the proposed building. This takes into consideration a number of factors including:

- The tyres will be stored in bunded concrete storage areas;
- The proposed building will be required to comply with the relevant standards set out in the National Construction Code (NCC), Volume 1, which is expected to include provisions for fire protection systems; and
- A bushfire risk management plan will be developed that addressed bushfire risk management measures for flammable on-site hazards.

In fact, siting the tyre storage areas adjacent to the west and north boundaries of the subject site in an area subject to ≤BAL-29 would result in siting bulk storage of flammable materials in closer proximity to the building.

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

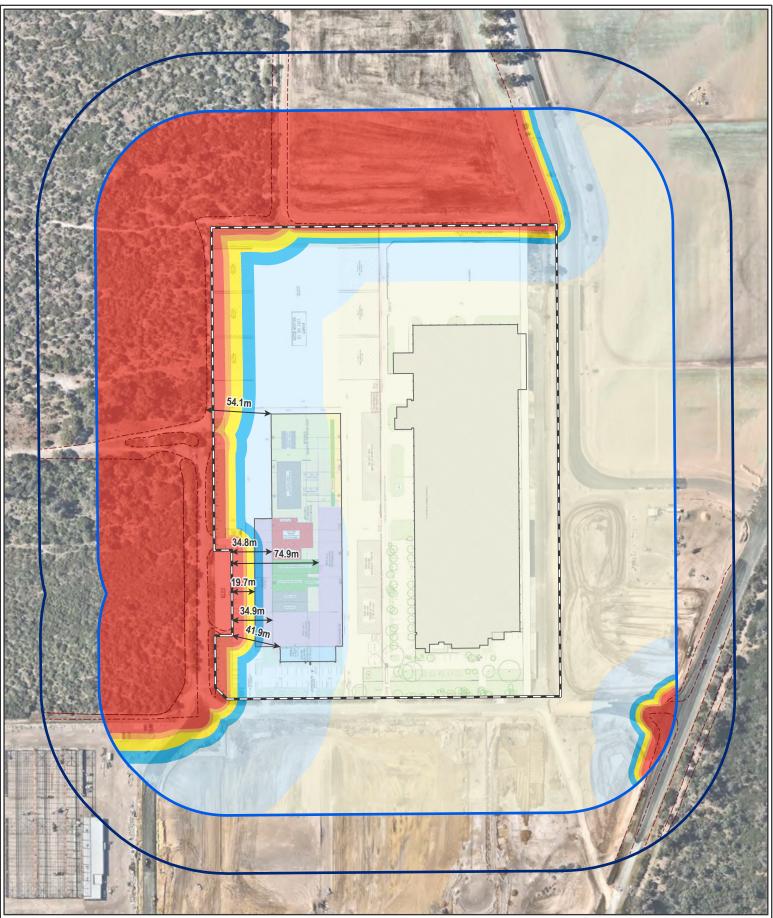


Figure 6: Bushfire Attack Level (BAL) Contours - Post-Development



100m site assessment 150m site assessment Building

- Bushfire hazard interface
- BAL FZ BAL - 40 BAL - 29 BAL - 19 BAL - 12.5

BAL - LOW

Bushfire Attack Level (BAL)

0	25	50		100
H		Metre	++-	
		weire	5	
			jection: A Zone	50

22PER2823-SM Date: 24/03/2023





3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed development is required to comply with policy measures 6.2, 6.5 and 6.6 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 4 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 7 where relevant.

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location				The proposed development within the subject site will be located in an area subject to BAL rating of ≤BAL-29 (Figure 7).
	\boxtimes			Please refer to A3.2 below for further details regarding management of southern vegetation.
				The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	\boxtimes			The proposed development has an APZ sufficient for the potential radiant heat flux to not exceed 29K/m ² and will be managed in accordance with the requirements of ' <i>Standards for Asset Protection</i> <i>Zones</i> ' (WAPC 2021; Appendix B).
				The APZ can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state. The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Public Roads				The subject site is accessed via existing public roads. The Guidelines do not prescribe values for the trafficable (carriageway/pavement) width of public roads as they should be in accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Austroad Standards and/or any applicable standard in the local government area.
				ELA's assessment identified that all of the surrounding roads are bitumen with estimated width of the sealed surface achieving a minimum width of ≥6 m and therefore consider the existing road network would provide suitable access and egress for the community and emergency services personnel in the event of a bushfire. Vehicular

Table 4: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
				access technical requirements in accordance with the Guidelines are detailed in (Appendix C).
				No public roads are proposed as a part of this subdivision.
				The proposed development is considered to be compliant with A3.1.
A3.2a Multiple access routes				Two access routes from the subject site to two suitable destinations are available via the existing public road network (Figure 7). Lodge Drive connects with Day Road which extends to the north and south away from the subject site, before connecting up with either Mandurah Road to the north or Dixon Road to the south. Please refer to A3.1 above for details regarding vehicular access technical requirements for public roads. The proposed development is considered to be compliant with A3.2a.
A3.2b Emergency Access way				No emergency access ways are required or proposed.
A3.3 Through-roads			\boxtimes	This acceptable solution does not apply to Development Applications.
A3.4a Perimeter roads			\boxtimes	This acceptable solution does not apply to Development Applications.
A3.4b Fire service access route			\boxtimes	This acceptable solution does not apply to Development Applications.
A3.5 Battle-axe access legs				No battle-axe properties are proposed as a part of this development.
A3.6 Private driveways				The subject site is serviced by reticulated water and the site is accessed by a public road where speed limit is not greater than 70 km/hr. The internal road (treated as a private driveway) is greater than 70 m in length. This internal road has passing bay space available within every 200 m that has a minimum length of
				20 m and width of 2 m. The proposed private driveway will also meet the Vehicular access technical requirements in accordance with the Guidelines are detailed in (Appendix C).
				The proposed development is considered to be compliant with A3.6.
Element 4: Water A4.1 Identification of future water supply			\boxtimes	This acceptable solution does not apply to Development Applications.
A4.2 Provision of water for firefighting purposes	\boxtimes			Existing reticulated water is present within the area. ELA assume the hydrants and the existing reticulated water supply present in the area likely complies with Water Corporations Design Standard DS 63 Water

Bushfire Protection Criteria	AS	PS	N/A	Comment
				Reticulation Standard, however, recommend this is confirmed with the Water Corporation, where possible. Hydrants within the surrounding residential development are generally spaced approximately 100 m apart as depicted in Figure 7. Additionally, the proposed development will require a water supply as recommended in the Concept Fire Safety Strategy (Warringtonfire 2023), specifically: 'The proposed tyre recycling facility must be provided with a fire hydrant system in accordance with clause E1.3 of the NCC, DFES guidance note GN02, and AS 2419.1:2005, with the exception that six fire hydrants outlets and a fire hydrant monitoring system are to be provided instead of five fire hydrant outlets6 fire hydrants'. The proposed development is considered to be compliant with A4.2.
Element 5: Vulnerable tourism land uses			\boxtimes	This development application is not considered vulnerable tourism land use. Element 5 is not applicable to this proposed development.

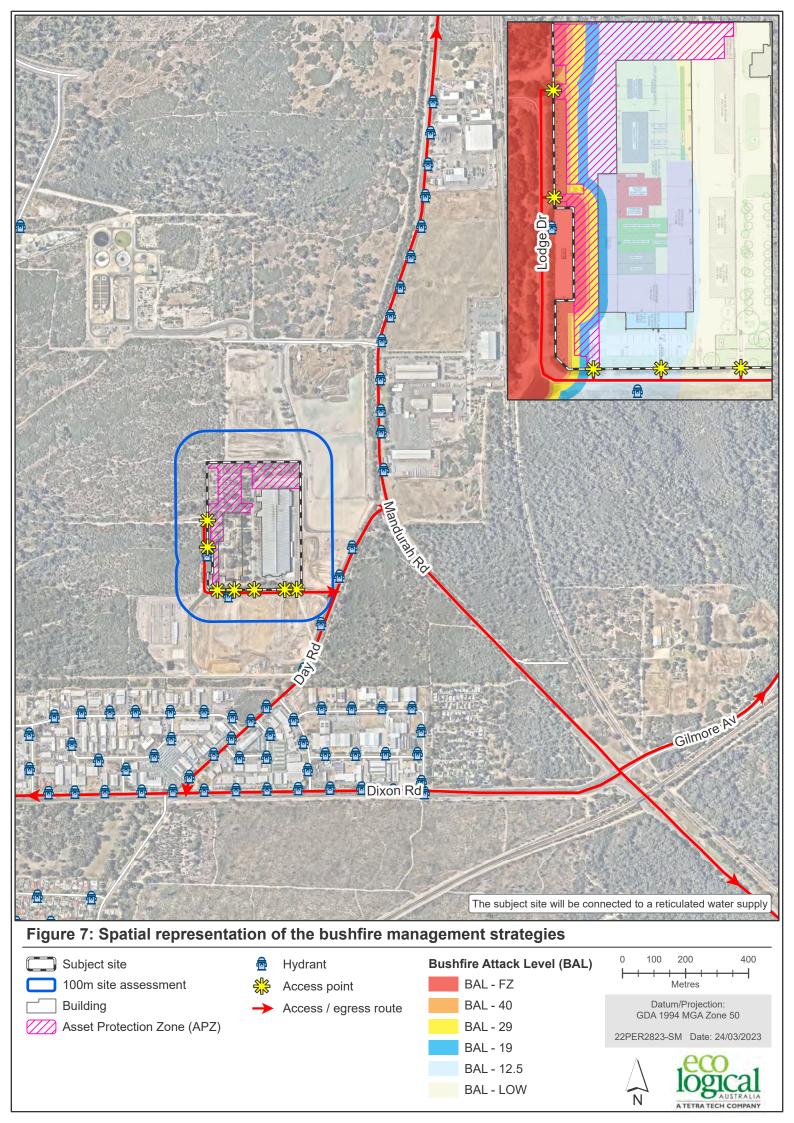
3.2 Additional Bushfire Requirements

BAL ratings for the proposed development are based on the post-development vegetation classification assessment in Figure 5 which factors in clearing of vegetation for the proposed buildings and supporting infrastructure.

All landscaping areas within the subject site will be maintained in accordance with Standards for Asset Protection Zones (Appendix B) or to a low threat standard as per clause 2.2.3.2(e) or (f) of AS 3959: 2018.

Due to the high risk nature of the land use and the increased bushfire risk of the area, ELA recommend the proposed building is constructed to a BAL-19 standard.

As the proposed building associated with the tyre recycling facility will be situated within an area subject to BAL ratings of ≥BAL 12.5, a Bushfire Risk Management Plan (BRMP) will be prepared for this development in accordance with Policy Measure 6.6 of SPP 3.7.



4. Implementation and enforcement

Implementation of the BMP applies to the developer, future owners within the subject site and the local government to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in Section 3, as well as a works program, is provided in Table 5. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 5: Proposed work program

No	Bushfire management measure	Responsibility			
Prior to	issue of Titles				
1	Ensure proposed buildings are located outside of areas subject to BAL-FZ and BAL-40 as per the design in Figure 7.	Developer			
2	Ensure that APZs are cleared and maintained around the proposed building as depicted in Figure 7.	Developer			
3	Extend reticulated water supply to appropriate areas.	Developer			
4	Construct road network as per plan in Figure 7.	Developer			
5	Creation of Bushfire Risk Management Plan (BRMP).	Developer			
Prior to occupancy					
6	Ensure all APZs are established and maintained to the standard in the Guidelines.	Developer			
7	Implement the Bushfire Risk Management Plan (BRMP) prior to occupancy of development.	Developer			
Ongoin	g management				
8	Maintain APZs to the standard in the Guidelines.	Owners			
9	Review the BRMP prepared for this development on an annual basis and update details/procedures as required.	Owners			

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development. As such, the proposed development is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

City of Rockingham (CoR), 2022, Fire Control Notice 2022-2023 [Online], available from: <u>Fire Control</u> <u>Brochure 2022 - 2023 (rockingham.wa.gov.au)</u>

Department of Fire and Emergency Services (DFES), 2021, Map of Bush Fire Prone Areas, [Online],GovernmentofWesternAustralia,availablefrom:http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx

Department of Planning (DoP), 2016, *Visual guide for bushfire risk assessment in Western Australia*. DoP, Perth.

Standards Australia (SA), 2018, Construction of buildings in bushfire-prone areas, AS 3959-2018. SAI Global, Sydney.

Warringtonfire 2023. Concept fire safety strategy 6 Lodge Drive, East Rockingham (Revision CFSS1.0). Prepared for Ovest Industrial.

Western Australian Planning Commission (WAPC), 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC), 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4 (including appendices),* WAPC, Perth.

Appendix A – Classified Vegetation Photos

Plot

Classification or Exclusion Clause

Class A Forest

1 Photo Point 1

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and shrubs.

Slope under this plot was assessed as upslope/flat land

© 120°E (T) • -32.271196, 115.778077 ±9 m ▲ -29 m

Plot **Classification or Exclusion Clause** 1

Class A Forest

Photo Point 2

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and shrubs.

Slope under this plot was assessed as upslope/flat land



Plot 2 **Classification or Exclusion Clause**

Class A Forest

Photo Point 3

Classified vegetation within this plot is comprised of trees greater than 10 m tall that could grow up to 30 m with a current foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and tall scrub.

Slope under this plot was assessed as upslope/flat land



Plot 2 Classification or Exclusion Clause

Class A Forest

Photo Point 4

Classified vegetation within this plot is comprised of trees greater than 10 m tall that could grow up to 30 m with a current foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and tall scrub.

Slope under this plot was assessed as upslope/flat land



Plot 3 Classification or Exclusion Clause

Classified vegetation within this plot is comprised of

trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and

Slope under this plot was assessed as upslope/flat land

Class A Forest



Plot 3 Classification or Exclusion Clause

Class A Forest

Photo Point 6

Photo Point 5

shrubs.

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and shrubs.

Plot is showcased in background of associated photo point.

Slope under this plot was assessed as upslope/flat land



Plot 3 **Classification or Exclusion Clause**

Class A Forest

Photo Point 7

Classified vegetation within this plot is comprised of trees greater than 10 m tall that could grow up to 30 m with a current foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and tall scrub.

Slope under this plot was assessed as upslope/flat land



Plot **Classification or Exclusion Clause** 4

Class B Woodland

Photo Point 8

Classified vegetation within this plot is comprised of trees 10 m to 30 m tall with 10%-30% foliage cover. Understory is comprised of grasses with isolated shrubs.

Slope under this plot was assessed as upslope/flat land



4 Photo Point 9

Plot

Classified vegetation within this plot is comprised of trees 10 m to 30 m tall with 10%-30% foliage cover. Understory is comprised of grasses with isolated shrubs.

Classification or Exclusion Clause

Slope under this plot was assessed as upslope/flat land



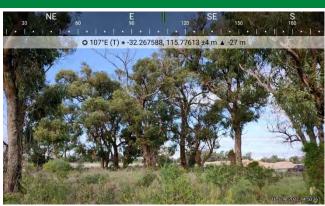
Plot 4 **Classification or Exclusion Clause**

Class B Woodland

Photo Point 10

Classified vegetation within this plot is comprised of trees 10 m to 30 m tall with 10%-30% foliage cover. Understory is comprised of grasses with isolated shrubs.

Slope under this plot was assessed as upslope/flat land



Plot **Classification or Exclusion Clause**

Class D Scrub

Photo Point 11

Classified vegetation within this plot is comprised of shrubs greater than 2 high with >30% foliage cover.

2 m height pole present within the associated photo.

Slope under this plot was assessed as upslope/flat land



5 Photo Point 12

Plot

Classified vegetation within this plot is comprised of shrubs greater than 2 high with >30% foliage cover. 2 m height pole present within the associated photo. Slope under this plot was assessed as upslope/flat land

Classification or Exclusion Clause



Plot 5	Classification or Exclusion Clause	Class D Scrub				
Photo Point 13		SW W 3300 NW 3300 N				
Classified vegetation within this plot is comprised of		© 282°W (T) • -32.27112, 115.773524 ±6 m ▲ -30 m				
shrubs greater than 2 high with >30% foliage cover.		A CARLER OF THE ACTION				
2 m height pole	e present within the associated photo.					

Slope under this plot was assessed as upslope/flat land



Plot **Classification or Exclusion Clause**

Class D Scrub

Photo Point 14

Classified vegetation within this plot is comprised of shrubs greater than 2 high with >30% foliage cover. 2 m height pole present within the associated photo. Slope under this plot was assessed as upslope/flat land



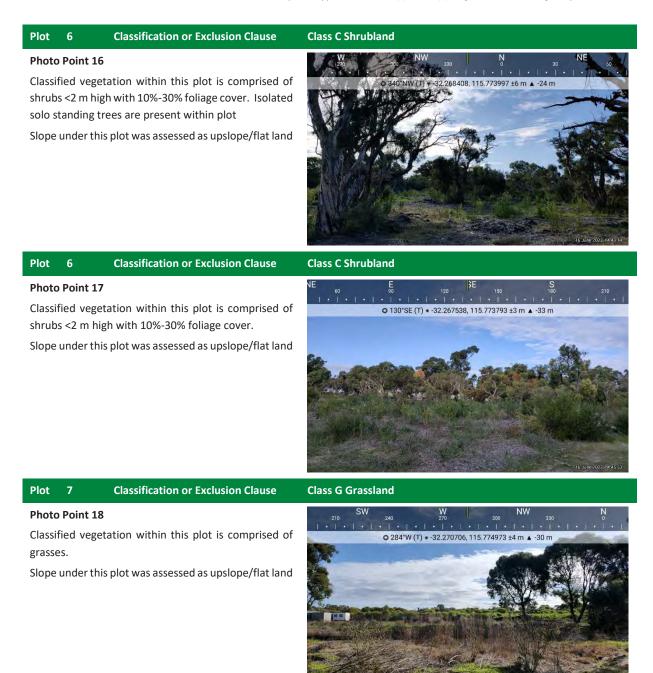
5 Photo Point 15

Plot

Classified vegetation within this plot is comprised of shrubs greater than 2 high with >30% foliage cover. 2 m height pole present within the associated photo. Slope under this plot was assessed as upslope/flat land

Classification or Exclusion Clause





Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham | Ovest Industrial



Photo Point 20

Classified vegetation within this plot is comprised of grasses. Previously cleared with regrowth occurring. Slope under this plot was assessed as upslope/flat land



8 Photo Point 21

Plot

Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscaping.

Classification or Exclusion Clause

Excluded AS 3959: 2018 2.2.3.2 (f)



Photo Point 22

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared area for future road development.

9: 2018 2.2.3.2 (e)



Plot 8 **Classification or Exclusion Clause**

Photo Point 23

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared area for future road and industrial infrastructure development.

Excluded AS 3959: 2018 2.2.3.2 (e)



8 Photo Point 24

Plot

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprises no-vegetated areas such as carpark, and industrial buildings as well as the surround low threat landscaping areas.

Classification or Exclusion Clause

Excluded AS 3959: 2018 2.2.3.2 (e) & (f)



Plot **Classification or Exclusion Clause** 8

Excluded AS 3959: 2018 2.2.3.2 (e)

Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 25

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared area for future roads and industrial infrastructure development as well as water storage run-off sump.



Plot 8 **Classification or Exclusion Clause**

Photo Point 26

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared area for future roads and industrial infrastructure development.



8 Photo Point 27

Plot

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared area for development.

Classification or Exclusion Clause



Appendix B – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas* v 1.4 (WAPC 2021).

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

a. Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of '*Standards for Asset Protection Zones*' (below):

- Fences within the APZ:
 - Should be constructed from non-combustible materials or bushfire-resisting timber referenced in Appendix F of AS 3959.
- Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness):
 - Should be managed and removed on a regular basis to maintain a low threat state;
 - Should be maintained at <2 tonnes per hectare (on average); and
 - Mulches should be non-combustible (e.g. stone, gravel or crushed mineral earth) or wood mulch >6 millimetres in thickness.
- Trees (>6 metres in height):
 - Trunks at maturity should be a minimum distance of six metres from all elevations of the building;
 - Branches at maturity should not touch or overhand a building or powerline;
 - Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation;
 - Canopy cover within the APZ should be <15 per cent of the total APZ area; and
 - Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.

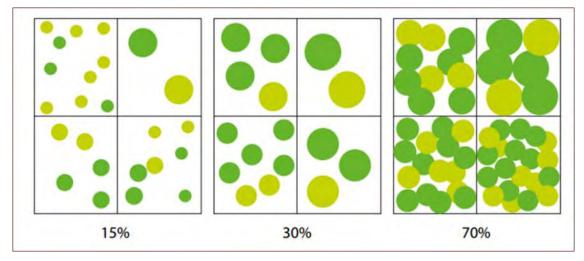


Figure 8: Illustrated tree canopy cover projection (WAPC 2021)

- Shrub and scrub 0.5 metres to six metres in height (shrub or scrub >6 metres in height are to be treated as trees):
 - Should not be located under trees or within three metres of buildings;
 - Should not be planted in clumps >5 square metres in area; and
 - Clumps should be separated from each other and any exposed window or door by at least 10 metres.
- Ground covers <0.5 metres in height (ground covers >0.5 metres in height are to be treated as shrubs):
 - Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above; and
 - Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
- Grass:
 - \circ Grass should be maintained at a height of 100 millimetres or less, at all times; and
 - Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
- Defendable space:
 - Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
- LP Gas Cylinders:
 - Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building;
 - o The pressure relief valve should point away from the house;
 - \circ $\;$ No flammable material within six metres from the front of the valve; and
 - Must site on a firm, level and non-combustible base and be secured to a solid structure.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Plant flammability, landscaping design and maintenance should also be considered for trees, shrub, scrub and ground covers with the APZ. Please refer to explanatory notes 'E2 Managing an Asset Protection Zone (APZ) to a low threat state,' 'E2 Landscaping and design of an asset protection zone,' and 'E2 Plant flammability' in the Guidelines for further information relating to APZ standards.

Appendix C - Vehicular access technical requirements (WAPC 2017)

Technical requirements	Public road	Emergency access way ¹	Fire service access route ¹	s Battle-axe and private driveways ²	
Minimum trafficable surface (m) In accordance with A3.		6 6		4	
Minimum horizontal clearance (m)	N/A		6	6	
Minimum vertical clearance (m)		4	.5		
Minimum weight capacity (t)		1	.5		
Maximum grade unsealed road ³	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)			
Maximum grade sealed road ³	As outlined in the IPWEA Subdivision Guidelines	1:7 (14.3%)			
Maximum average grade sealed road	As outlined in the IPWEA Subdivision Guidelines		1:10 (10%)		
Minimum inner radius of road curves (m)	As outlined in the IPWEA Subdivision Guidelines		8.5		

¹ To have crossfalls between 3 and 6 %.

² Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

³ Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle





• 1300 646 131 www.ecoaus.com.au

Bushfire Risk Management Plan: Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham

Ovest Industrial





• 1300 646 131 www.ecoaus.com.au

DOCUMENT TRACKI	OCUMENT TRACKING				
Project Name	Bushfire Management Plan:				
	Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham				
Project Number	600-22PER2823				
Project Manager	Stephen Moore				
Prepared by	Eva Cronin (BPAD Level 2 – 45482)				
Reviewed by	Daniel Panickar (BPAD Level 3 – 37802)				
Approved by	Daniel Panickar (BPAD Level 3 – 37802)				
Status	Draft				
Version Number	v2				
Last saved on	23 January 2023				

This report should be cited as 'Eco Logical Australia 2023. *Bushfire Risk Management Plan: Development Application:* Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham. Prepared for Ovest Industrial.

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Ovest Industrial (the client) and Planning Solutions.

Disclaimer

This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and the client. The scope of services was defined in consultation with the client, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Template 2.8.1

Version control	
Version	Purpose
v1	Draft – Submission to client
v2	Draft – DA submission

Contents

1. Introduction	1
1.1 Project overview	1
1.2 Purpose and application of the plan	1
2. Bushfire risk assessment methodology	
3. Identified bushfire scenarios	4
3.1 Scenario 1 - Bushfire approaching subject site from the west or northwest	4
3.2 Scenario 2 – Bushfire approaching the site from the north	5
3.3 Scenario 3 – Bushfire approaching the site from the east	5
3.4 Scenario 4 – Bushfire approaching the site from the south	6
4. Bushfire risk assessment results	7
4.1 Risk context	7
4.2 Risk identification	
4.3 Risk analysis and evaluation	
4.4 Summary of results	
5. Bushfire mitigation measures	10
5.1 Fire protection and detection equipment	
5.2 Evacuation plan and assembly points	
5.3 Personnel training	
5.4 Bushfire suppression	11
5.5 Landscaping	11
5.6 Additional measures	11
5.6.1 Fire safety management	
5.6.2 Open yard storage areas	
5.6.3 Ignition sources	
6. Conclusion	13
7. References	14
Appendix A November and February wind roses for Jandakot Airport (Station No	o. 9172; BoM 2022)

List of Figures

Figure 1: Site overview	3
Figure 2: Site Plan	.1
Figure 3: Risk assessment process as per AS ISO 31000:2018	3

List of Tables

Table 1: Likelihood rating system	2
Table 2: Consequence rating system	2
Table 3: Risk assessment matrix	
Table 4: Bushfire risk assessment	8
	-

1. Introduction

1.1 Project overview

Eco Logical Australia (ELA) was commissioned by Ovest Industrial to prepare a Bushfire Risk Management Plan (BRMP) to support a development application (DA) being prepared for the development of a tyre recycling facility located at Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham (hereafter referred to as the subject site; Figure 1 and Figure 2).

The proposed development will include the following components associated with the proposed tyre recycling facility (Figure 2):

- Office and amenities;
- Workshops;
- Warehouse;
- Office;
- Six external tyre storage areas (passenger and truck tyres);
- Two roll storage areas (finished rubber products ready to be transported off site); and
- One general container storage area.

The proposed tyre recycling facility is located within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2021), 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* v 1.4 (the Guidelines; WAPC 2021).

This assessment has been prepared by Senior Bushfire Consultant Eva Cronin (FPAA BPAD Level 2 Certified Practitioner No. BPAD45482) with quality assurance undertaken by Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

The primary purpose of this BRMP is to act as a technical supporting document to inform planning assessment in conjunction with the corresponding Bushfire Management Plan (BMP) also prepared by ELA (ELA 2022).

SPP 3.7 (Policy Measure 6.6) requires development applications for high-risk land uses (such as facilities storing large quantities of tyres) in areas between BAL-12.5 and BAL-29 to be accompanied by a risk management plan for any flammable on-site hazards. The Bushfire Management Plan (BMP) prepared by ELA for the subject site (ELA 2022) identifies the proposed buildings within the subject site as being located within an area subject to BAL ratings ≤BAL-12.5. Some proposed external tyre storage areas adjacent to the western and northern boundaries of the subject site are located in areas subject to BAL-FZ and BAL-40. ELA (2022) addresses this issue in detail and concludes that the proposal is permissible provided (amongst other strategies) that this BRMP provides suitable bushfire risk management measures for flammable on-site hazards.

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 than application of bushfire construction requirements. Due to the high risk nature of the land use and the increased bushfire risk of the area, however, ELA have recommended the proposed building is constructed to a BAL-12.5 standard (ELA 2022).

Ovest Industrial have commissioned Warringtonfire to develop a Concept fire safety strategy (Warringtonfire 2023), that will inform the development of a detailed fire safety study for the site at a later time. The concept fire safety strategy provides information in relation to fire safety measures that will likely be required for the site to ensure compliance with the National Construction Code (NCC) Volume 1 Amendment 1 (ABCB 2019) and DFES guidance note, GN02: Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres (DFES 2020). An emergency management plan will be developed for the subject site, which will set guidelines for the management of an emergency, disaster or major incident at the site. The emergency plan for the tyre recycling facility will reflect the site layout and bushfire risk post-construction.



Metres







Figure 2: Site Plan

2. Bushfire risk assessment methodology

Australian and New Zealand Standard *AS ISO 31000:2018 Risk Management–Guidelines* (SA 2018) provides an internationally recognised approach to risk management. Methodology for this process is outlined in Figure 3.

AS/NZS ISO 31000:2018 is adopted by the Department of Fire and Emergency Services (DFES), as documented in the agency's Bushfire Risk Management Framework (DFES 2020).

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 on the basis of the following risk criteria:

- <u>Likelihood</u> 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
- <u>Consequence</u> or impact from bushfire on life, property and the environment considers 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 bushfire scenarios identified in Section 3 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 2¹. 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.

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

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 every twenty years
Unlikely	Consequence is not expected to occur, may occur once every one-hundred years
Rare	Consequences may occur only in exceptional circumstances; may occur once every five-hundred or more years

Table 1: Likelihood rating system

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

	Consequences						
Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic		
Almost Certain	High High I		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 as possible.						
Extreme	Unacceptable risk. Additional site-specific mitigation will be required to lower the risk level and an immediate mitigation response is required.						

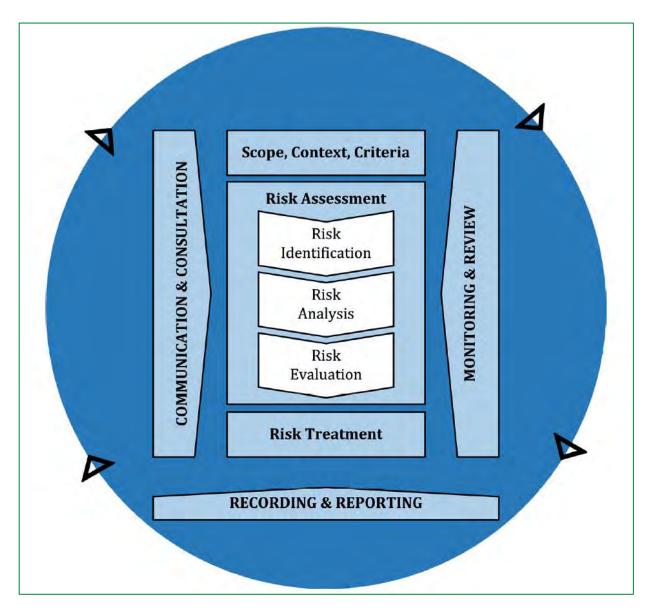


Figure 3: Risk assessment process as per AS ISO 31000:2018

3. Identified bushfire scenarios

The BMP (ELA 2022) identifies and classifies the existing bushfire hazards within 150 m of the subject site, based on existing vegetation and slope and separation distance to the vegetation.

Based on this information, ELA has assessed potential bushfire scenarios that could affect the subject site. 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 assessed:

- Bushfire approaching the subject site from the west or northwest;
- Bushfire approaching the subject site from the north;
- Bushfire approaching the subject site from the east; and
- Bushfire approaching the subject site from the south.

The potential bushfire scenarios that may impact this site will vary depending on a number of factors including:

- Fire weather conditions on the day (i.e. wind direction and speed, temperature, relative humidity, drought factor);
- Fuels available to burn (fuel load, fine fuel moisture content, etc);
- Fire start time; and
- The location of point of ignition.

A description of the potential bushfire scenario is provided in the following subsections and November and February wind roses for Jandakot Airport Weather Station (Station No. 9172, approximately 27.5 km from the subject site) used to identify potential directions of bushfire attack are provided in Appendix A (BoM 2022). BoM stations at Garden Island and Mandurah are more relevant to the conditions likely to be experienced at the subject site than Jandakot (i.e. distance to the site and similar coastal locations), however neither of these stations record 9am and 3pm weather/climate observations, including: temperature; relative humidity; wind speed; and wind direction.

3.1 Scenario 1 - Bushfire approaching subject site from the west or northwest

A bushfire approaching the subject site from the west or northwest through scrub and forest fuels associated with vegetation within Alumina Reserve is possible given predominant afternoon winds are from the west and south-west throughout the fire season (BOM 2021). It is unlikely fire will approach directly from the northwest given predominant winds for the area during the bushfire season, however as this vegetation is contiguous with that to the west, these two aspects have been grouped together into one scenario.

The bushfire hazard in the context of the surrounding landscape (i.e. outside the 150 m Bushfire Attack Level assessment area) consists of a mixture of predominantly scrub and forest vegetation that is associated with conservation significant wetland and interzone areas within Alumina Reserve. Continuity of these bushfire fuels is broken up with cleared tracks within the vegetation that will likely limit the rate of spread, improving access for suppression response. In addition, vegetation to the west and north is mainly on flat land which will further reduce the potential fire behaviour and impacts.

There is a moderate to high risk of ignition in this vegetation due to the proximity of industrial areas and roads/tracks crossing the vegetation.

A bushfire impacting from these aspects is likely to be detected in a short time frame due to surrounding public roads and operational light industrial areas that will provide an opportunity for a rapid fire suppression response, dependent upon the Fire Danger Rating (FDR) during a fire event, which could contain a fire in this area before significant impacts are experienced at the site.

3.2 Scenario 2 – Bushfire approaching the site from the north

A bushfire approaching the development area directly from the north through predominantly grassy fuels is unlikely given predominant winds of the area include easterlies in the morning and westerlies/south westerlies in the afternoon throughout the fire season (BOM 2021).

The bushfire risk in this area immediately adjacent to the subject site is associated with predominantly unmanaged grassland vegetation within cleared land which forms part of the surrounding industrial estate with some grassy and scrub fuels located approximately 400 m further north. Continuity of these bushfire fuels is broken up with cleared tracks within the vegetation. This will likely limit the rate of spread, improving access for suppression response. In addition, vegetation to the west and north is mainly on flat land which will further reduce the potential fire behaviour and impacts.

There is a moderate risk of ignition in this vegetation due to the proximity of light industrial activities and roads to this vegetation.

A bushfire impacting from this aspect (directly from the north) is likely to be detected in a short time frame due to surrounding public roads and operational light industrial areas that will provide an opportunity for a rapid fire suppression response, dependent upon the Fire Danger Rating (FDR) during a fire event, which could contain a fire in this area before significant impacts are experienced at the site.

3.3 Scenario 3 – Bushfire approaching the site from the east

A bushfire approaching the subject site from the east through forest and scrub fuels associated with vegetation along the east side of Day Road is possible given predominant morning winds are from the east throughout the fire season (BOM 2021).

The bushfire hazard in the context of the surrounding landscape (i.e. outside the 150 m Bushfire Attack Level assessment area) consists of a mixture of predominantly forest and scrub vegetation that whilst segmented by road, rail, tracks etc. does extend for over 2 km, presenting a significant fire catchment. In addition, whilst tracks and roads provide access to certain areas of this catchment, there are significant areas where access is limited or non-existent. Significant separation does exist between the subject site and these hazards in the form of Day Road and over 250 m of cleared/developed land which forms part of the surrounding industrial estate.

There is a moderate to high risk of ignition in this vegetation due to the proximity of industrial areas and roads/tracks and rail crossing the vegetation.

A bushfire impacting from the east may not be detected early, given the size of the fire catchment, limiting opportunity for a rapid fire suppression response, however the significant separation between

the subject site and this vegetation is likely to mean that impacts are limited to ember shower and low levels of radiant heat.

3.4 Scenario 4 – Bushfire approaching the site from the south

The area immediately south of the subject site consists of predominantly developed and/or cleared land for development associated with the surrounding industrial area and road network. There is significant vegetation further south of the subject site (approx. 650 m), south of Dixon Road. Whilst ember attack from this vegetation during a bushfire event may be experienced at the subject site, other impacts are unlikely given the significant separation distance that exists between the subject site and this area of vegetation.

4. Bushfire risk assessment results

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 scenario outlined in Section 3, which indicates the potential bushfire events that could impact life and property within the subject site and adjacent land. This scenario is considered to cover the majority of bushfire events that could occur in order to develop suitable mitigation and manage as much of the bushfire risk as possible.

4.3 Risk analysis and evaluation

Risk analysis and evaluation for the bushfire scenarios described in Section 3 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.

4.4 Summary of results

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.

ELA is of the view that following implementation of management measures provided in the Section 5, 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.

Table 4: Bushfire risk assessment

Bushfire risk	Comments	Likelihood	Consequence	Inherent risk	Mitigation	Likelihood	Consequence	Residual risk
Scenario 1 : Bushfire impacting subject site from the west or north west	Safety risk Continuity of forest and scrub fuels is broken up by cleared tracks. This will limit the rate of spread that will improve access for suppression response. Greatest level of impact would occur under adverse fire weather conditions with a westerly wind. Consequence might occur at some time; may occur every twenty 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
Scenario 2 : Bushfire impacting subject site from north	 Safety risk Continuity of grassland and scrub fuels is broken up with cleared tracks and some pockets of development. This will limit the rate of spread that will improve access for suppression response. This bushfire scenario is unlikely given predominant winds of the area include easterlies in the morning and westerlies/south westerlies in the afternoon throughout the fire season (BOM 2021). 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. 	Unlikely	Moderate	Medium	Implementation of management measures identified in Section 5	Unlikely	Minor	Low
Scenario 3 : Bushfire impacting subject site from east	 Safety risk Forest and scrub fuels occur in a large fire catchment which may allow for significant fire spread. Significant separation does exist between the subject site and these hazards in the form of Day Road and over 250 m of cleared/developed land which forms part of the surrounding industrial estate. Impacts are likely to be limited to ember shower and low levels of radiant heat. Consequence might occur at some time; may occur every twenty 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 	Possible	Moderate	High	Implementation of management measures identified in Section 5	Possible	Minor	Medium

Bushfire Risk Management Plan:

Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham | Ovest Industrial

Bushfire risk	Comments	Likelihood	Consequence	Inherent risk	Mitigation	Likelihood	Consequence	Residual risk
	short-term impact on the environment based on analysis of assets.							
Scenario 4: Bushfire	This bushfire scenario is unlikely due to the significant separation distance (approx. 650 m) between the subject site and large fire catchment south of Dixon Road. Consequence is not expected to occur; may				Implementation of			
impacting subject site from south	occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc.	Unlikely	Moderate	Medium	management measures identified in Section 5	Unlikely	Minor	Low

Bushfire Risk Management Plan:

Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham | Ovest Industrial

5. Bushfire mitigation measures

Results of the bushfire risk assessment indicate that Scenario 1 is considered to have the higher inherent and residual bushfire risk given the predominant westerly wind direction for Perth during the bushfire season.

Implementation of the fire safety measures detailed in Concept fire safety strategy report (Warringtonfire 2023) are summarised in the following subsections and will assist in prioritising protection of life and property and reducing bushfire risk (residual risk) within the subject site. The following subsections provide a broad summary of the key strategies only. This BRMP, therefore, shall be read in conjunction with the Concept fire strategy report for more detailed information regarding the fire safety measures proposed to be implemented within the site.

5.1 Fire protection and detection equipment

The facility is monitored via the control room which is to be staffed at all times (24 hours a day, 7 days a week). A number of fire protection and detection systems are proposed for the facility in accordance with the NCC Volume 1, relevant Australia Standards and DFES Guidance Note GN02 as detailed in Warringtonfire 2023 including:

- The proposed building will be fitted with a sprinkler system, automatic fire detection system and automatic smoke exhaust system;
- Bund areas (where truck and passenger tyres will be collected and stored prior to processing) within open yard tyre storage areas will be fitted with radiometric thermal cameras (operating 24 hours a day, 7 days a week), which when activated will trigger an automatic response to the nominated emergency services;
- The facility will be provided with manual call points (break glass alarms) adjacent to all exits that will operate the Direct Brigade Alarm (DBA) and the building occupant warning system; and
- Fire hydrants will be located within the subject site at various locations and fire hydrant monitor system will also be installed in the open yard tyre storage area. Only personnel trained in the use of fire-fighting equipment or other necessary equipment (i.e. forklifts) required to respond to a fire on the site should be utilising this equipment and only if safe to do so. The final design of the hydrant system will be subject to assessment by the project hydraulic engineer and fire authority approval.

5.2 Evacuation plan and assembly points

The operator is required to develop an emergency management plan for the subject site in accordance with *Australian Standard 3745-2010 Planning for emergencies in facilities*, identifying evacuation triggers and depicting muster points on-site.

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 every six months. All occupants working on the site are required to participate.

Additionally, relevant staff shall undergo appropriate training to assist in the removal of tyres from storage piles using forklifts and in the operation of fire hydrant monitors in the event of a fire.

5.4 Bushfire suppression

The Rockingham Career Fire and Rescue Services (CFRS) Brigade is the closest fire brigade (located approximately 1.5 km southwest of the subject site) that is likely to provide first response in the event of a bushfire emergency and is expected to provide a conservative emergency suppression response time of approximately 15 minutes.

The facility must have staff members trained in the use of the hydrant monitor system and forklifts to assist in the removal of tyres from storage piles in the event of a fire present on site at all times (24 hours a day, 7 days a week).

5.5 Landscaping

All landscaping areas within the subject site will be maintained in accordance with *Standards for Asset Protection Zones* (WAPC 2021) and/or clause 2.2.3.2 (f) of AS3959: 2018.

5.6 Additional measures

5.6.1 Fire safety management

The bunds that will be used for storing passenger and truck tyres are required to be setback 18 m from northern boundary of the subject site. No combustible items are to be stored at any time within this zone. Any additional fire safety management measures that are determined following completion of a detailed fire study for the site shall be addressed in an updated version of this BRMP, where required.

5.6.2 Open yard storage areas

Specific requirements will apply to the site in relation to storage of passenger and truck tyres within the open yard storage areas surrounding the building (approximately 7,680m² in size). These requirements are detailed in Warringtonfire (2023) and relate to the;

- Arrangement of tyres;
- Size/dimensions of bund areas;
- Separation distance between each bund;
- Separation between the bunds and the proposed building;
- Separation between external tyre storage areas and vegetation adjacent to the northern and western boundaries (as detailed in section 5.6.1); and
- Construction of bunds.

Specific requirements will also apply to post-processed granule products stored internally within the warehouse as detailed in Warringtonfire (2023).

5.6.3 Ignition sources

The operator will be responsible for checking if Total Fire Bans (TFB) or Harvest and Vehicle Movement Bans (HVMB) are in place prior to undertaking any activities on the site that may be prohibited during the ban. DFES has the ability to put in place TFBs based on the predicted extreme fire weather for any part of a day. The TFB is announced by DFES and with information to be found on their website² or call the TFB hotline on 1800 709 355. In addition to a TFB, the City of Rockingham has the ability to put in place HVMBs based on predicted extreme fire weather for any part of a day. The HVMB is communicated by the City of Rockingham via the City of Rockingham website or Facebook page usually in the late afternoon on the day before the HVMB is declared.

² https://www.emergency.wa.gov.au/

6. Conclusion

ELA expects that through implementation of the management measures outlined in this BRMP, inherent bushfire risk to life and property within and surrounding the subject site can be reduced.

7. References

Bureau of Meteorology (BoM) 2022, *Climate statistics for Australian locations: Monthly climate statistics for Jandakot Aero*, [Online], Commonwealth of Australia, available from: http://www.bom.gov.au/climate/averages/tables/cw_009172.shtml, [11 August 2022].

City of Rockingham (CoR) 2023, Current fire warnings and advice [Online], available from: <u>Current fire</u> warnings and advice - City of Rockingham

Department of Fire and Emergency Services (DFES) 2020, *Guidelines for Preparing a Bushfire Risk Management Plan*, Department of Fire and Emergency Services, Western Australia.

Department of Fire and Emergency Services (DFES). 2021. *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx.

Department of Fire and Emergency Services (DFES) 2020, *Guidance Note GN02: Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres*, Department of Fire and Emergency Services, Western Australia.

Eco Logical Australia 2022. *Bushfire Management Plan: Development Application: Lots 13 (4) and 12 (6) Lodge Drive, East Rockingham*. Prepared for Ovest Industrial.

Australian Building Codes Board (ABCB) 2019, *National Construction Code (NCC) Volume One Amendment 1*, Australian Building Codes Board, Australian Capital Territory.

Standards Australia (SA) 2018, Australian Standard AS ISO 31000:2018 Risk management – Guidelines, Standards Australia, Sydney.

Warringtonfire 2023. *Concept fire safety strategy 6 Lodge Drive, East Rockingham (Revision CFSS1.0).* Prepared for Ovest Industrial.

Western Australian Planning Commission (WAPC). 2015. *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC). 2021. Guidelines for Planning in Bushfire Prone Areas Version 1.4 (including appendices). WAPC, Perth.

Appendix A November and February wind roses for Jandakot Airport (Station No. 9172; BoM 2022)

Rose of Wind direction versus Wind speed in km/h (01 Feb 1989 to 11 Aug 2022)

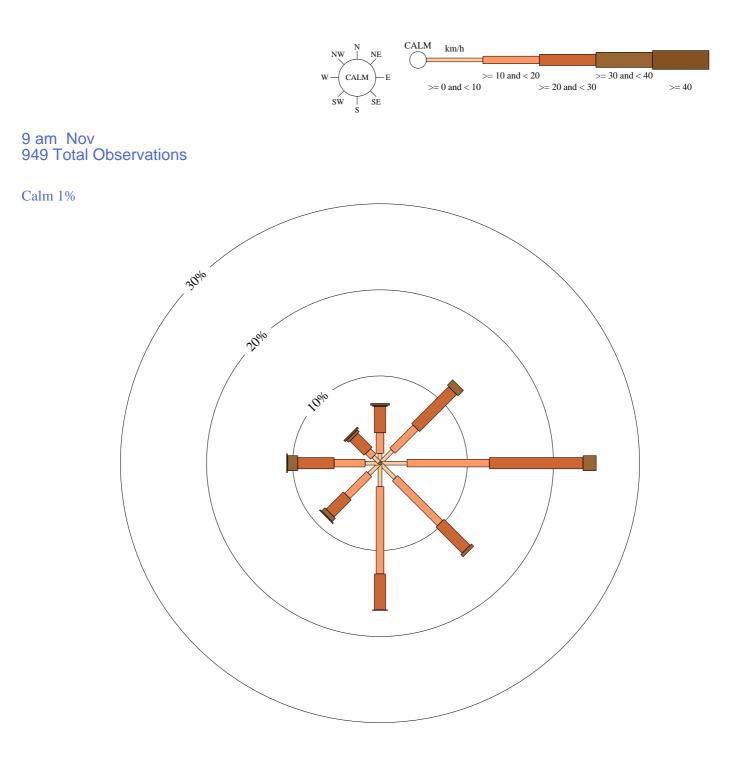
Custom times selected, refer to attached note for details

JANDAKOT AERO

Site No: 009172 • Opened Aug 1972 • Still Open • Latitude: -32.1011° • Longitude: 115.8794° • Elevation 30m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.





Rose of Wind direction versus Wind speed in km/h (01 Feb 1989 to 11 Aug 2022)

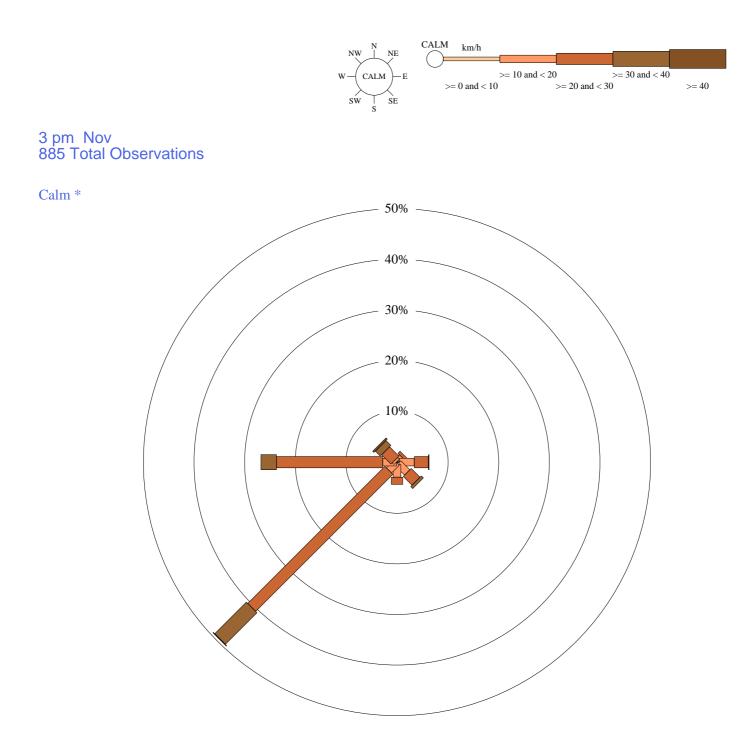
Custom times selected, refer to attached note for details

JANDAKOT AERO

Site No: 009172 • Opened Aug 1972 • Still Open • Latitude: -32.1011° • Longitude: 115.8794° • Elevation 30m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.





Rose of Wind direction versus Wind speed in km/h (01 Feb 1989 to 11 Aug 2022)

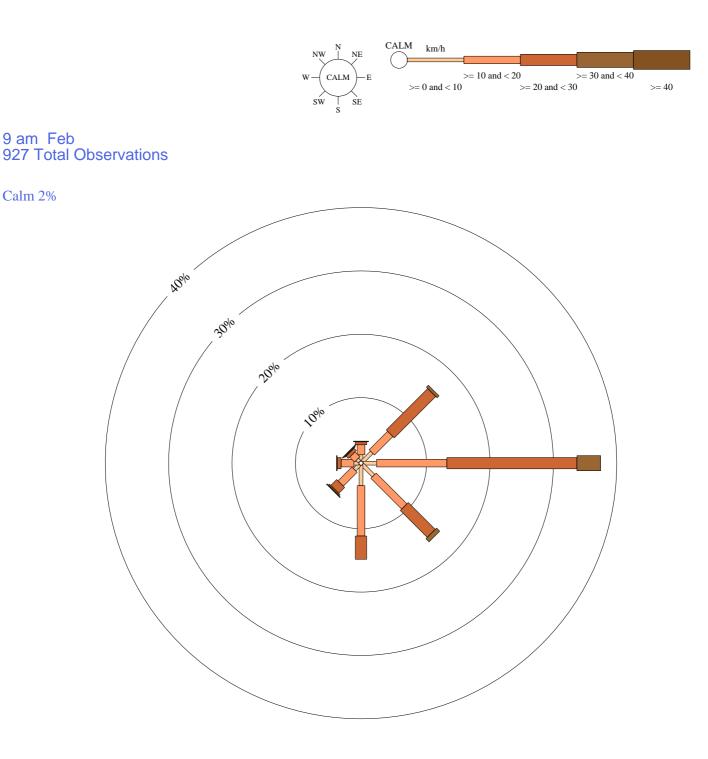
Custom times selected, refer to attached note for details

JANDAKOT AERO

Site No: 009172 • Opened Aug 1972 • Still Open • Latitude: -32.1011° • Longitude: 115.8794° • Elevation 30m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.





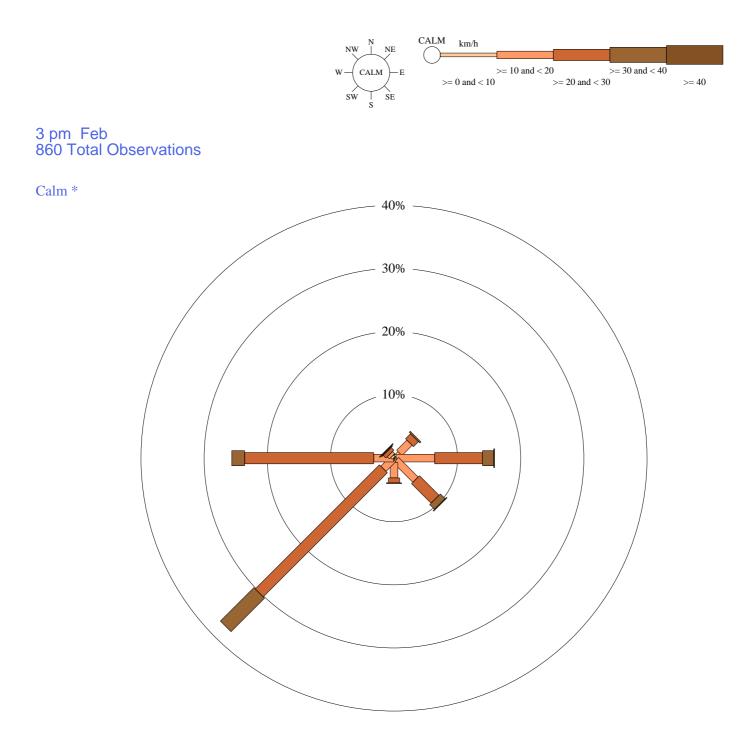
Rose of Wind direction versus Wind speed in km/h (01 Feb 1989 to 11 Aug 2022)

Custom times selected, refer to attached note for details

JANDAKOT AERO

Site No: 009172 • Opened Aug 1972 • Still Open • Latitude: -32.1011° • Longitude: 115.8794° • Elevation 30m

An asterisk (*) indicates that calm is less than 0.5%. Other important info about this analysis is available in the accompanying notes.









• 1300 646 131 www.ecoaus.com.au





Concept fire safety strategy

6 Lodge Drive, East Rockingham

Client: Ovest Industrial

Job number: PE220100

Date: 20 January 2023 Revision: CFSS1.0



Quality management

Version	Date	Information about the report			
CFSS1.0	20 Jan 2023	Description	Report issued to Rubbergem, Ovest Industrial for review and comment.		
			Prepared by Reviewed by Authorise		Authorised by
		Name	Elvan Ling	Namrata Moharana	Leigh Clark
		Signature	mit	Namrata	44



Contents

1.	Introducti	on	4
2.	Consultat	ion with stakeholders	4
2.1 2.2 2.3		cription naracteristics f fire hazards	5 7 8
3.	Scope an	d assumptions	13
3.1 3.2	Scope Assumption	S	13 13
4.	Fire safet	y measures	14
4.1 4.2 4.3 4.4 4.5 4.6 4.7	Indoor stora Fire resistan Access and Services an	ice	14 14 16 16 17 17 17
5.	Safety in	design	21
Appe	endix A	Drawings and information	22
Appe	endix B	Meeting minutes	23
B.1 B.2	25 October 10 January		23 28
Appe	endix C	Flow and pressure test	35
C.1 C.2	Onsite test Street test		35 36

1. Introduction

Ovest Industrial has requested Warringtonfire to undertake a fire safety engineering assessment for the proposed tyre recycling facility at 6 Lodge Drive, East Rockingham. The purpose of this report is to identify and document the fire safety measures that are likely to be required for the building to comply with the performance requirements of the National Construction Code Volume One – Building Code of Australia (NCC) 2019 Amendment 1¹ and DFES guidance note, GN02: Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres². The documented fire safety measures will form the basis for the development of the detailed fire safety study for the site.

The fire safety design of the development needs to be considered from two perspectives:

- Compliance with the NCC 2019 amendment 1 for the main processing building; and
- Compliance with DFES guidance note GN02 with respect to the open yard storage of tyres.

It should be noted that further consultation with the project stakeholders and modifications to the design may require amendments to this fire safety strategy. Based on further consultation and following the finalisation of the design, a fire safety study will be prepared to demonstrate that the proposed fire prevention, detection and fire fighting measures are appropriate for the specific fire hazards on site and any deviations from the DFES guidance note GN02 are not expected to have a detrimental impact on the fire spread and fire brigade intervention for the site.

2. Consultation with stakeholders

A meeting was held online via Microsoft Teams on 25 October 2022 between the Department of Fire and Emergency Services (DFES), Rubber Gem, Ovest Industrial and Warringtonfire. The aim of the meeting was to introduce the proposed new development to DFES and discuss the proposed fire safety strategy. The minutes of the PBDB meeting are included in Appendix B. At the end of the meeting, it was noted that additional information and design changes were to be provided due to the following:

- The perimeter vehicular access does not comply with the requirements of the NCC.
- The concrete walls located at the site boundary are not expected to prevent the risk of fire spread to the neighbouring allotment.
- The proposed arrangement of tyres in piles does not comply with DFES guidance note GN02 which requires the tyres to be stored in laced profile.
- The site is located in a bushfire prone area and hence a bushfire management plan is to be adopted into the design.

A discussion was held between Ovest Industrial and Warringtonfire after the first meeting with DFES to discuss the required changes to the design. At the end of the discussion, it was proposed to change the layout of the site to allow for more space for the open yard tyre storage, limit the pile storage height and incorporate perimeter vehicular access in accordance with clause C2.3 of the NCC. The updated design was sent to DFES along with the meeting minutes for comment.

A second meeting was held online via Microsoft Teams on 6 December 2022 between DFES, Rubber Gem, Ovest Industrial, North Point Consulting and Warringtonfire. The aim of the meeting was to discuss the design changes. At the end of the meeting, it was agreed that the revised design may be acceptable, provided that more fire safety measures are introduced to limit the risk of fire spread to the north and west boundaries. DFES also required the fire water containment system to comply with the DFES guidance note GN02.

Following the second meeting, additional fire safety measures were proposed in response to DFES comments in the meeting:

• An 18 m setback from the north site boundary is to be provided.

National Construction Code Volume One – Building Code of Australia 2019 Amendment 1, Australian Building Codes Board, Australia
 Guidance Note: GN02, Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres, Version 1, 2020, Department of Fire and Engineering Services

- An 18 m clearer fire break zone is to be provided at the west boundary.
- Tyre storage bunds are to be separated by a distance of 1.5 m.
- The maximum height of the tyre piles must not exceed 3.7 m.
- Radiometric thermal cameras are to be provided to monitor the tyre pile temperature.
- Management in use plan and staff training to operate emergency equipment and fire hydrant monitoring system are to be enforced.

A third meeting was held online via Microsoft Teams on 10 January 2023 between DFES, Rubber Gem, Ovest Industrial, North Point Consulting and Warringtonfire. The aim of the meeting was to discuss the latest design change. The minutes of the PBDB meeting is included in Appendix B.2. At the end of the meeting, DFES provided in-principle support for the proposed fire safety measures for the site.

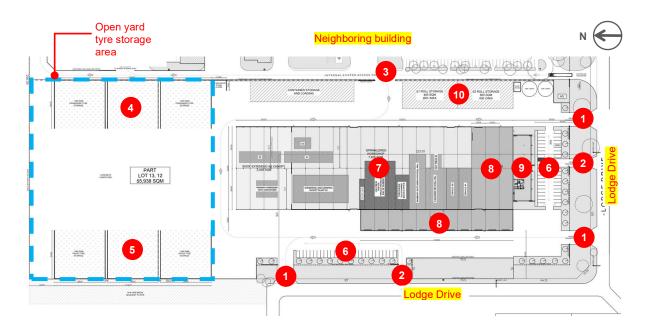
2.1 **Project description**

The project is the construction of a new single storey tyre recycling facility at 6 Lodge Drive, East Rockingham. The proposed building has an internal floor area of approximately 14,356 m² and an outdoor open yard storage area of approximately 7,680 m². The building is considered to be a large-isolated building with mixed uses. This includes an open layout office (class 5), two storage warehouses (class 7b) and a processing area (class 8). The site is bounded by Lodge Drive to the south and west, and neighbouring properties to the south and east – refer to Figure 1.

The following steps describe the tyre recycling process for the site:

- 1. Passenger tyres and truck tyres are delivered via trucks and arranged into piles within concrete bunds at the open yard storage area.
- 2. The tyres are periodically transferred via forklifts to the primary shredder located within the processing building.
- 3. The tyres undergo shredding and grinding before reaching the next production lines.
- 4. A portion of the shredded tyre granules are packaged and stored in the warehouse.
- 5. A portion of the tyre granules could go into the press peeler to be made into mats.
- 6. A portion of the tyre granules could also go into the roll mills to be made into rolled product and stored in the roll storage refer to Figure 2.





1 – Site entry

Figure 1

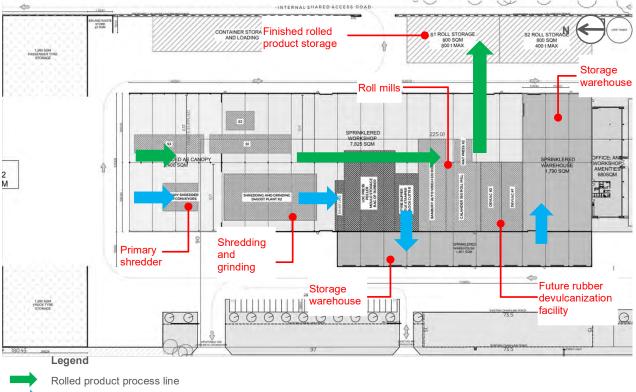
- 2 Carpark entry
- 3 Entrance to the neighbouring allotment

Site location plan

- 4 External passenger tyre storage
- 5 External truck tyre storage
- 7 Internal sprinklered main processing building
 8 Internal sprinklered warehouse
 - 9 Internal office

6 - Carpark

10 - Post-processed roll storage



Granule product process line





Table 1 shows the main characteristics of the building for determining compliance with the NCC. Table 2 shows the proposed use and classification of the building or part in accordance with part A6 of the NCC.

Table 1 Main building characteristics

Characteristic	NCC provision	Description
Effective height	Schedule 3	Less than 25 m
Type of construction required	C1.1	Type C and large-isolated building
Rise in storeys	C1.2	One
Levels contained	-	One

Table 2Use and classification

Part of building	Use	Classification (A6)
Ground floor – Main processing area	Processing	Class 8
Ground floor – warehouses	Storage of finished or half-finished product	Class 7b
Ground floor – Office	Administration area	Class 5

Table 3 Fire compartments

Part of building	Approximate floor aera (m ²)	Approximate volume (m ³)
Ground floor – Main processing area	10,225	122,700
Ground floor –warehouse	3,451	41,412
Ground floor – Office	680	8,160

2.2 Occupant characteristics

The characteristics of the occupants expected to be in the building are listed in Table 4.

Table 4Occupant characteristics

Characteristic	Description
Familiarity	Occupants are expected to be staff who are familiar with the layout of the building and trained in emergency situations. Visitors may also be present, but they are expected to be accompanied by staff.
Awareness	Occupants are expected to be awake and alert to a potential emergency event such as a fire in the building.
Mobility	Occupants are assumed to have the same level of mobility as the general population. This may include a limited proportion of mobility impaired occupants. These occupants may need crutches, a wheelchair or similar to evacuate on their own or need assistance from other occupants.
Age	Occupants of all ages may be present within the building. The majority of the occupants are between 15-65 years of age.
Language	Although occupants may have English as their second language, they are expected to understand signs and verbal instructions in English enough to not adversely affect evacuation.
Occupant load	The population has not been calculated because it is not directly used for the assessment.



2.3 Summary of fire hazards

2.3.1 General occupancy characteristics

The proposed tyre recycling facility is used to collect, and process used passenger and truck tyres and store finished products. The facility can be divided in to three zones including the tyre collection zone, processing zone and storage zone – refer to Figure 3.

The tyre collection area is used to collect passenger and truck tyres in piles within bunds. Each bund is limited to a floor area of approximately 1,280 m². It is expected that only truck and loading equipment operators will be present in this area in a normal daily routine. These operators are expected to be trained and aware of the fire hazards within the site.

The processing area is categorised as a manufacturing building. US data³ collected between 2011-2015 estimates 7,770 fires in industrial and manufacturing properties per year with an average of eight civilian deaths. 65% of these fires occurred in manufacturing or processing facilities. The remaining 35% covers utility, defense, agriculture and mining. The potential for a fire is more common on weekdays and during normal business hours. 45% of fires in industrial properties were confined to the object of fire origin, while a further 19% were confined to the room of fire origin². 51% of fires in manufacturing properties were confined to the object of fire origin³.

The storage area consists of two warehouses. US data collected between 2016-2020 estimates 1,450 fires in warehouse properties per year with an average of two civilian deaths⁴. The potential for a fire is more common on weekdays and during normal business hours. Electrical distribution or lighting equipment was involved in 18% of warehouse fires and was responsible for 31% of direct property damage. Fires that were intentionally set caused 15% of warehouse structure fires and accounted for 15% of direct property damage. Flammable and combustible liquids and gases, piping, and filters were the items first ignited in 6% of fires, but these caused 34% of civilian injuries. 26% of fires in warehouses were identified as confined or contained incidents and these fires resulted in minimal losses.

Occupants within the processing area and the storage area are expected to be experienced staff who are aware of the layout of the site and fire hazards associated with the site. Visitors may be present at time but will be accompanied by experienced staff. Staff are also expected to be well-trained in an emergency.



³ Campbell R, 2018, Fire in industrial and manufacturing properties, National Fire Protection Association.

⁴ Campbell R, 2022, Warehouse structure fires, National Fire Protection Association.



2.3.2 Impact of sprinklers

The building is to be provided with a sprinkler system in accordance with specification E1.5 of the NCC and AS 2118.1:2017. The successful activation of the sprinklers is expected to provide the following benefits:

- A reduction in the rate of burning and quantity of smoke produced, subsequently increasing the available safe egress time.
- A reduced fire intensity and duration, which in turn reduces the severity of fire exposure to structural and fire separating elements.
- A reduction in the chances of a fire spreading beyond the area of origin or flashover occurring.

The successful operation of the sprinkler system is expected to have the following impact on compartment temperatures during a fire⁵:

- The average temperatures outside the immediate area of operation of the sprinkler system will be below 100 °C.
- The temperature in the localised area above the fire will be somewhat higher than the mean compartment temperature but is still unlikely to exceed 200 °C.

Full scale tests have shown that standard sprinklers can be expected to maintain tenable conditions in relation to temperature and toxicity outside the room where the fire started.

Data collected in the US demonstrates that in properties with sprinklers compared with those with no automatic suppression system, fatalities were reduced by 87%, civilian injuries were reduced by 27% and firefighter fireground injuries were reduced by 67%⁶. When fatalities do occur in sprinkler protected buildings, the victims tend to be in close proximity to the fire, involved in its ignition or incapable of self-preservation⁷.

The CIBSE Guide E^8 notes the following potential concessions for buildings protected by sprinklers:

- Building compartment areas / volumes may be increased over that for a similar building without sprinklers.
- A structural element is liable to maintain its load-bearing capacity and a separating element will maintain both its integrity and its ability to resist the transfer of heat. The fire resistance levels may therefore be reduced if sprinklers are fitted.
- The distance required to travel to an exit can potentially be increased without reducing the level of safety to people.

Statistics on US experience show that sprinklers operated in 92% of the fires in which sprinklers were present and the fire was considered large enough to activate them. They were effective at controlling the fire in 96% of fires in which they operated⁹. Data provided by Marryatt concludes that 92% of fires are controlled by 1-5 heads¹⁰.

Sprinkler systems have been demonstrated to achieve high operational reliability through numerous statistical studies. Budnik estimated that the mean reliability of sprinkler systems was 93-96%, based on the analysis of 16 separate studies¹¹. Reliability is likely to be even higher where sprinkler systems are correctly designed, commissioned and maintained.

England JP, Young SA, Hui MC and Kurban N, 2000, Guide for the design of fire resistant barriers and structures, Warrington Fire Research Australia and Building Control Commission, Melbourne VIC.

Ahrens M, 2017, U.S. Experience with sprinklers, National Fire Protection Association.

Fire protection handbook, 2008, 20th edition, NFPA, Quincy MA. Fire safety engineering – CIBSE guide E, 2019, 4th edition, CIBSE Publications Department. Ahrens M, 2017, U.S. Experience with sprinklers, National Fire Protection Association.

¹⁰ Marryatt HW, 1988, Fire: A century of automatic sprinkler protection in Australia and New Zealand 1886-1986, Australian Fire Protection Association, Melbourne VIC

¹¹ Budnick EK, 2001, Automatic sprinkler system reliability, Fire Protection Engineering, Winter 2001, issue 9, pp 7-12.



2.3.3 Initial review of ignition sources

Tyres collection area

The following leading ignition sources were identified based on a program developed by the California Tire Fire Council, assisted by The State of Fire Marshal in US¹² and a study prepared by Environment Engineering and Contracting at California¹³:

- Arson
- Lighting strike
- Bushfire
- Welding or smoking in and around the tyre pile

Among these ignition sources, arson was reported to be the main sources of fire in waste tyre facility.

Processing area

The following leading ignition sources were identified based on US data collected between 2011-2015¹⁴, in manufacturing properties:

- Heat generated from the shredding, grinding, pressing and rolling equipment
- electrical and lighting equipment
- torch, burner or soldering iron
- loading equipment
- arson
- exposure from adjacent fire

The shredded rubber materials are exposed to heat generated by the machinery during the manufacturing process. Given that the processing area also utilises conveyor belts, the following ignition sources are also identified¹⁵:

- The frictional heat due to conveyor belt slip is one of the primary sources of ignition for conveyor belt fires.
- Other sources of conveyor belt fires include the friction and heat generated from collapsed idler bearings, slide of a belt in a drive, jammed rollers and friction from the brake.
- The usual internal ignition sources for electrical equipment are incipient aching fault, internal component failure, short circuit electrical arching could potentially generate large amounts of heat.
- The front-end loader and other loading and unloading equipment is another likely ignition source of fires within the processing area.

Storage area

The ignition sources within the storage zone can be summarised as follows:

- electrical and lighting equipment
- loading equipment
- arson
- exposure from adjacent fire and heat
- self-ignition and spontaneous combustion of shredded tyre products

¹² Rings of Fire Revisited: Tire Fire Prevention and Suppression, n.d. Office of the State Fire Marshal, State of California.

¹³ Tire Pile Fires: Prevention, Response, Remediation, 2002. Environmental Engineering and Contracting. Inc, Santa Ana California, USA.

¹⁴ Campbell R, 2018, Fire in industrial and manufacturing properties, National Fire Protection Association.



Shredding and grinding of tyres produce a low density, high surface area, porous material through which oxygen may actively percolate. Due to the large surface area and the permeability to oxygen for reaction to take place, the shredded rubber is susceptible to spontaneous combustion.

2.3.4 Initial review of fire load

Tyres collection area

The tyre collection area consists of tyre piles up to a height of 3.7 m in each bund, enclosed by concrete walls on three sides. The tyre piles contribute to the fire load within this area.

Processing area

Data from historical surveys¹⁶ nominates a mean fire load density for occupancies with manufacturing and storage of combustible goods less than 150 kg/m² is 1,180 MJ/m² with a 95% fractile value of 3,590 MJ/m². The fire load within the processing area consists of machinery and rubber. The conveyor belts also contribute to the fire load within this area.

Storage area

Data from historical surveys¹⁷ nominates a mean fire load density for occupancies with storage of combustible goods less than 150 kg/m³ of 1,780 MJ/m² with a 95% fractile value of 4,490 MJ/m². The mean fire load density for occupancies with manufacturing and storage of combustible goods less than 150 kg/m² is 1,180 MJ/m² with a 95% fractile value of 3,590 MJ/m². The proposed storage warehouses are to be used to stored granule product packed in bulk bags. These bulk bags are to be stored in pallets with a maximum of two stacks according to the design team. The warehouses will also be used to stored finished products from the manufacturing process. Therefore, the fire load within this area consists of bulk bags of granule products and finished products.

The main processing and the storage areas will be provided with sprinkler protection throughout. As discussed in section 2.3.2, the presence of a sprinkler system can be expected to control fire development, if not extinguish the fire. Data from the US¹⁸ indicates that indicates that deaths were 100% lower when wet pipe sprinklers were present, compared to fires with no sprinklers. Sprinklers operated 91% of the time in fires large enough to activate the equipment and they were effective in 95% of these fires.

2.3.5 Thermal characteristics of tyres

Rubber products such as tyres consist of natural and synthetic rubber filled with carbon and other components such as sulphur, zinc oxides and oil¹⁹. In general, rubber products are composed of styrene-butene rubber (SBR), natural rubber (NR), butyl rubber (BR), carbon and a small composition of sulphur.

Truck tyres for example are composed of 51 wt.% of NR, 39 wt.% of SBR and 10 wt.% of BR¹⁸. Passenger tyres for example are composed of 35 wt.% NR and 65 wt.% of BR¹⁸. The thermal degradation or pyrolysis of tyres can produce pyrolytic oil such as limonene that is highly flammable and harmful to the environment¹⁸. The flash point of pyrolytic oil was reported to be between 31 °C and 48 $^{\circ}C^{20}$. Due to the low flash point of the pyrolytic oil, the proposed fire safety strategy is developed to prevent the tyre piles from reaching the critical pyrolysis temperature.

Several studies were conducted on the critical temperature leading to the pyrolysis of NR, SBR and BR – refer to Table 5 and Table 6. Given that the studies reported slightly different critical pyrolytic temperature, the fire safety strategy will adopt the lowest temperature.

¹⁶ Thomas PH, 1986, Design guide: Structural fire safety CIB W14 Workshop report, Fire Safety Journal, volume 10, issue 2, table A1.3.6.

¹⁷ Thomas PH, 1986, Design guide: Structural fire safety CIB W14 Workshop report, Fire Safety Journal, volume 10, issue 2, table A1.3.6.

 ¹⁹ Ahrens M, 2021, US Experience with sprinklers, National Fire Protection Association.
 ¹⁹ Januszewicz, K., Kazimierski, P., Suchocki, T., Kardaś, D., Lewandowski, W., Klugmann-Radziemska, E. and Łuczak, J., 2020. Waste rubber pyrolysis: Product yields and limonene concentration. Materials, 13(19), p.4435.
 ²⁰ Čepić, Z., Mihajlović, V., Durić, S., Milotić, M., Stošić, M., Stepanov, B. and Ilić Mićunović, M., 2021. Experimental Analysis of Temperature

Influence on Waste Tire Pyrolysis. Energies, 14(17), p.5403.



Table 5 Pyrolysis temperature by Čepić, Z et. al (2021)¹⁹

Rubber component	Critical pyrolysis temperature range (°C)
Natural rubber (NR)	350 °C – 420 °C
Styrene-butene rubber (SBR)	420 °C – 500 °C
Butyl rubber (BR)	

Table 6Pyrolysis temperature by Januszewicz, K et. al (2020)18

Rubber component	Critical pyrolysis temperature (°C)
Natural rubber (NR)	303 °C
Styrene-butene rubber (SBR)	267 °C
Butyl rubber (BR)	316 °C



3. Scope and assumptions

3.1 Scope

- We have not confirmed that every aspect of the building complies with the building code and/or relevant Australian standards including DFES guidelines. It is the responsibility of other parties to ensure full compliance with the code and standards is achieved.
- The scope of our work does not include assessing the level of performance and/or compliance of external walls and associated materials, unless specifically agreed in writing with Warringtonfire.
- Matters such as property protection (other than the protection of adjoining property), business interruption, public perception, environmental impacts and broader community issues such as loss of a major employer and impact on tourism have not been considered as they are outside the scope of the NCC.
- This report considers fires involving a single ignition point. Our assessment does not cover arson or destructive acts involving:
 - large amounts of accelerants which significantly change the expected burning behaviour of materials
 - multiple ignition sources
 - terrorism.
- The scope of our work is limited to considering evacuation and fire safety issues for people with disabilities to the same degree as the DTS provisions of the NCC. The evacuation of people with disabilities under the provisions of the Disability Discrimination Act 1992 is specifically excluded.
- If there are building alterations or additions, a change in use or changes to the fire safety systems in the future, a reassessment will be needed to verify consistency with the assessment in this report.
- The information in this report specifically relates to the building and must not be used for any other purpose.
- The documentation that forms the basis for this report is listed in Appendix A.
- The figures included in this report are provided for illustrative purposes only and may not reflect the latest design drawings. They should be read together with the latest drawings and other documentation prepared by the project team.
- This report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of this information and will not be responsible for any errors or omissions that may be incorporated into this report as a result.

3.2 Assumptions

- The design complies with the DTS provisions of NCC 2019 Amendment 1 relating to fire safety. No performance solutions were required to address non-compliances at the time of writing this report.
- All the fire safety systems are to be designed, installed, operated and maintained in accordance with the appropriate Australian standards, other design codes, legislation and regulations relevant to the project unless specifically stated otherwise.
- The fire safety strategy is based on the assumption that the facility will only be used as a recycling facility for storing, conveying, shredding, grinding, pressing and rolling of processed passenger tyres and truck tyres.



4. Fire safety measures

The following fire safety measures are proposed for the building as a starting point for the fire safety engineering assessment to comply with the relevant performance requirements of the NCC and DFES guidance note GN02 and form part of the development of the fire safety strategy.

4.1 General

- 1. The design must comply with the DTS provisions of NCC 2019 Amendment 1 relating to fire safety, unless specifically stated. This section does not provide a comprehensive list of the safety measures required by the DTS provisions of the NCC.
- 2. This report and the requirements in this section are essential are essential services which would be required to be implemented into the design and identified on the essential services maintenance schedule for the site. They would be required to be maintained and certified in accordance with the relevant Australian Standards.

4.2 Open yard tyre storage areas

- 3. The external areas around the building are proposed to be used for the storage of passenger tyres and truck tyres. The toral storage area in the open yard is approximately 7,680 m². This includes the following:
 - a. Passenger tyre storage 3,840 m² in total
 - b. Truck tyre storage 3,840 m² in total
- 4. Tyres are to be stored as piles within bunds as an alternative to complying with DFES guidance note GN02. The following is to be achieved:
 - a. Each bund has a maximum floor area of 1,280 m².
 - b. The bunds are to be located at least 18 m from the main processing building.
 - c. A separation distance of 18 m from the northern site boundary, and a cleared zone of at least 18 m at the western site boundary are to be provided refer to Figure 4.
 - d. The bund walls area to be constructed with non-combustible concrete and achieve an FRL of 240/240/240.
 - e. The bund walls are to achieve a minimum of 7 m in height refer to Figure 5.
 - f. Bunds are to be separated from each other by a distance of 1.5 m.

Note. The minimum separation distance between the bunds is to be confirmed by the project structural engineer.

g. The bund walls are to be designed to collapse inwards in an event of failure.

Note. This design of the bund walls is to be discussed and confirmed by the project structural engineer.

- h. The pile within each bund is to be arranged in a truncated pyramid shape with a maximum height of 3.7 m. The pile is proposed to have a width of 36 m and a length of 35 m. The pile must not be arranged against the bund wall refer to Figure 5.
- i. The bund areas are to be provided with radiometric thermal cameras to monitor the temperature of the tyre piles within the bunds. The following is to be achieved:
 - i. The radiometric thermal cameras are to be connected to an alarm system and activate if the temperature of the pile reach the critical temperature 267 °C.

Note. This is the temperature when the thermal decomposition of tyres occurs and releases flammable pyrolytic oil.

ii. The alarm system is to be connected to the Direct Brigade Alarm (DBA) system at the Fire Detection Control and Indicating Equipment (FDCIE)



Note: The design of the alarm system is to be further discussed with DFES and the project electrical engineer.

iii. The radiometric thermal cameras of the tyre pile is to be monitored by trained staff at all times.

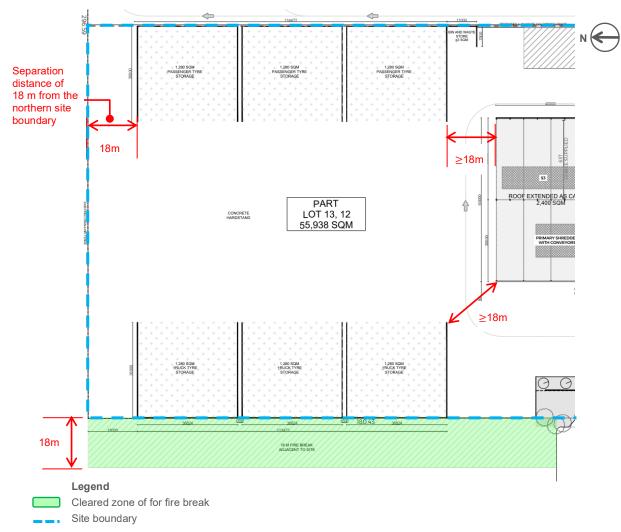
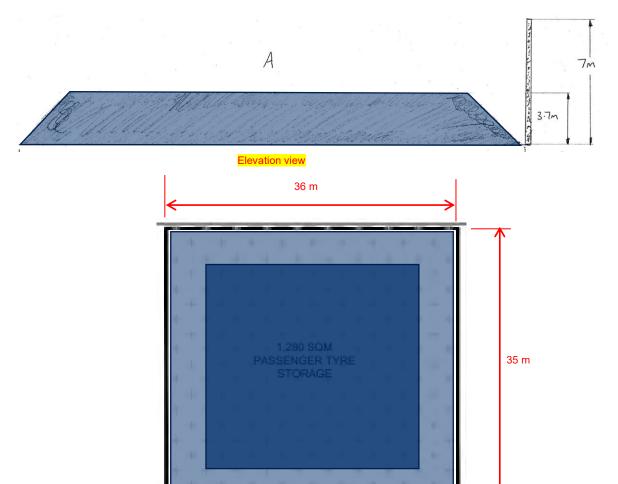


Figure 4 External tyre storage area





Plan view

Figure 5 Proposed stack profile in each bund

4.3 Indoor storage

5. The post-processed granule products are to be stored in the warehouse of the main processing building are to be packed in bulk bags and stored in pallets not exceeding two stacks.

4.4 Fire resistance

4.4.1 Fire separation

- 6. The fire resistance levels (FRLs) of the building elements associated with the main processing building must be designed in accordance with the requirements of specification C1.1 of the NCC for a large-isolated building of type C construction.
- 7. The office portion must be separated from the rest of the building by a fire wall designed in accordance with clause C2.7 of the NCC. The wall is to extend to the underside of a non-combustible roof covering refer to Figure 6.
- 8. The storage warehouses must be separated from the rest of the building by construction, including openings, penetration, and junctions with other building elements, that prevent the free passage of smoke refer to Figure 6. The separating construction must comply with the following:



- a. The wall must have all openings around penetrations and the junctions of the wall stopped with non-combustible material to prevent the free passage of smoke.
- b. Any doors must either be self-closing or automatically close in the event of smoke detection or sprinkler activation.

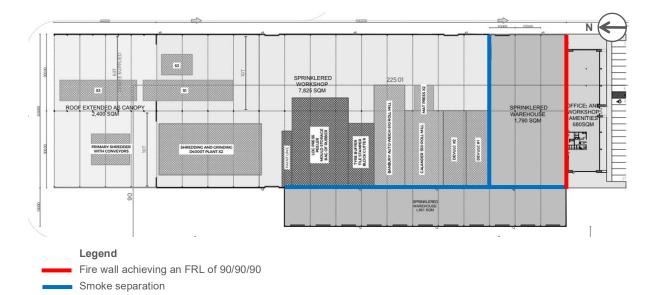


Figure 6 Floor plan

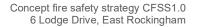
4.5 Access and egress

- 9. The provision for escape within the main processing building is to be in accordance with part D1 of the NCC.
- 10. Trave distances within the main processing building must comply with clauses D1.4 and D1.5 of the NCC.

4.6 Services and equipment

4.6.1 Firefighting equipment

- 11. The proposed tyre recycling facility must be provided with a fire hydrant system in accordance with clause E1.3 of the NCC, DFES guidance note GN02, and AS 2419.1:2005, with the exception that six fire hydrants outlets and a fire hydrant monitoring system are to be provided instead of five fire hydrant outlets.
- 12. The following must be achieved in relation to the hydrant system:
 - a. The hydrant system must be provided with a ring main in accordance with E1.3 of the NCC and AS 2419.1:2005.
 - b. The hydrant system must be provided with two fire boosters separated by a minimum distance of 10 m from each other.
 - c. The hydrant system must provide a minimum flow rate of 10 L/s at 700 kPa at each outlet as per DFES guidance note GN02 while all other fire safety systems operate.
 - d. The hydrant system must be provided with a sufficient water supply for the following fire scenarios:
 - i. Fire scenario 1: Fire within the main processing building The water supply must be sufficient to support the operation of fire sprinklers for a duration of 90 minutes and the operation of three fire hydrants for a duration of 4 hours.





- ii. Fire scenario 2: Open yard fire involving tyre storage The water supply must be sufficient to support the operation of six hydrants and one fixed fire hydrant monitor operating non-simultaneously for four hours.
- 13. The proposed open yard tyre storage within the facility must be provided with the following additional requirements:
 - a. A total of four fire hydrant monitors are to be provided.
 - b. Each fire hydrant monitor is to achieve a minimum flow of 20 L/s at 700 kPa.
 - c. The fire hydrant monitors are to be fixed in positions and distributed evenly to ensure hydrant coverage on all six bunds.

Note. This is to be confirmed by the project hydraulic engineer.

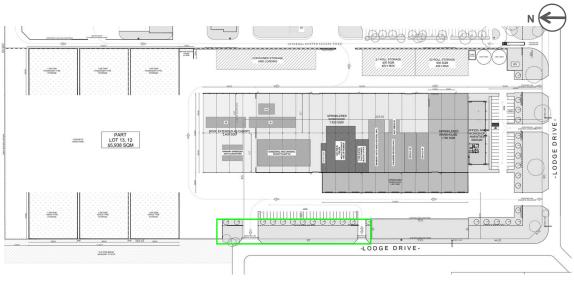
- 14. A fire hose reel system must be installed throughout the building in accordance with clause E1.4 of the NCC and AS 2441:2005.
- 15. A sprinkler system must be installed throughout the building in accordance with specification E1.5 of the NCC and AS 2118.1:2017. Sprinklers provided throughout the warehouse part of the building and any associated in-rack, solid-piled, palletised, shelf, or bin-box storage arrangements are to comply with AS 2118.1:2017 with regards to hazard category of storage.

Note. The specification of the sprinkler system is to be confirmed by the project hydraulic engineer.

- 16. A fire water runoff containment system is to be provided for the site to capture the contaminated fire water in accordance with DFES guidance note GN02. The following is to be achieved:
 - a. The containment system is proposed to be located at the west site of the building near the carpark refer to Figure 7.

Note. The exact location of the containment system is subject to discussion with project stakeholders.

b. Bunds are proposed to be designed to incorporate a slope towards the rear bund walls to recover water runoff during the firefighting operation.



Legend

Proposed location of the fire water containment system

Figure 7 Site plan



4.6.2 Smoke hazard management

- 17. An automatic fire detection system in accordance with clause 4 of specification E2.2a of the NCC and AS 1670.1:2018 is to be provided for the main processing building.
- 18. The building must be provided with an automatic smoke exhaust system in accordance with specification E2.2b of the NCC and automatically activate upon detection of smoke or fire.

4.6.3 Emergency lighting, exit signs and warning systems

- 19. An emergency lighting system must be installed throughout the building in accordance with clauses E4.2 and E4.4 of the NCC and AS/NZS 2293.1:2018.
- 20. Exit signs and directional signs must be installed throughout the buildings in accordance with clauses E4.5, E4.6 and E4.8 of the NCC and AS 2293.1:2018.
- 21. The facility must be provided with manual call points (break glass alarms) adjacent to all exits. The manual call points must operate the Direct Brigade Alarm (DBA) and the building occupant warning system and in accordance with clause 6 of specification E2.2a and AS 1670.1:2018.

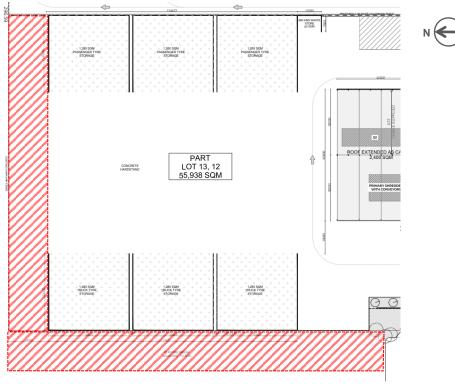
4.7 Fire safety management and training

22. An emergency management plan complying with AS 3745:2010 must be developed and implemented for the site.

Once the emergency management plan is developed, it is to be implemented with exercises, periodic audits, and suitable procedures to maintain safety. This should include training under simulated fire emergency conditions for all relevant personnel.

- 23. The following specific management in use requirements must be implemented for the facility:
 - a. The radiometric thermal camera which monitors the open yard tyre storage in each bund must operate 24 hours a day, 7 days a week.
 - b. The control room which monitors the facility must be occupied 24 hours a day, 7 days a week.
 - c. No combustible storage is permitted at the 18 m setback zone and the 18 m fire break zone located at the north and west site boundaries refer to Figure 8.
 - d. Staff who are trained to assist in removal of tyres from storage piles using forklifts and operate fire hydrant monitors in the event of a fire must be present on site 24 hours a day, 7 days a week.





Legend

ZZZZ Area where combustible storage is not allowed

Figure 8 Open yard storage

warringtonfire Proud to be part of element

5. Safety in design

Our scope of work is to assess the level of fire safety and demonstrate that the design complies with the relevant performance requirements of the NCC. A preliminary safety in design review considered whether the recommended fire safety measures in section 4 could reasonably be expected to introduce unique or unusual hazards that would not otherwise be present in the construction, installation and/or maintenance of the building. The fire safety measures in section 4 are performance specifications for other consultants to incorporate into their designs. The detailed designers retain discretion over where and how systems and structures are installed and are therefore responsible for the safety in design for the detailed design. It is important to note that the outcomes of our review are limited to issues that could reasonably be foreseen by a fire safety engineer within our limited scope and involvement in the project. It is likely that other parties involved in detailed design, installation and/or maintenance will identify additional issues.

A safety in design hazard risk register has been prepared as a result of our review – see Table 7. This hazard risk register has been brought to the attention of the project team, including the client representatives, designers, contractors and maintenance workers. It should be reviewed by responsible parties within the project team so that appropriate action can be taken to eliminate, reduce or control the level of risk.

Table 7Hazard risk register

Hazard identification	Potential harm	Likelihood	Control measure
Sprinklers, fire hydrant monitors and radiometric thermal cameras may be required to be installed at heights greater than 7 m.	Workers may fall.	Not assessed.	Ensure that workers use appropriate work platform and safety harness when working at heights.

Note: Residual risks are to be considered and addressed by appropriate people within the design, construction and maintenance teams who have duties under health and safety legislation.



Appendix A Drawings and information

Drawing title	Dwg no	Date	Drawn
Site plan	A.03 [AF]	13 Dec 2022	Realside Ovest

Other information	Ref no	Date	Prepared by
Guidance note: GN02 – Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres	Version 1. 2020	2020	Department of Fire and Emergency Services



Appendix B Meeting minutes

B.1 25 October 2022

warring	tonfire
	Proud to be part of a element

Warringtonfire Australia	Suite 4.01, 256 Adelaide Terrace
ABN: 81 050 241 524	Perth WA 6000
T: +61 8 9382 3844	Australia

Time	11 am	Date	25 October 2022	
Job no	PE220100	Issued	4 November 2022	
Project	Tyre Recycling Facility			

Meeting minutes

Table 1 Stakeholders present at meeting

Attendees	Role	Organisation	Contact details
Julie Drago	Client	Hero Properties	julie.drago@ovest.net.au
Nicholas Dalziell		Realside Ovest	nick.dalziell@ovest.net.au
Mitra Maboud	Designer	Rubber Gem	mitra@rubbergem.com
Geraldine Busby	Policy advisor	Department of Climate Change, Energy, the Environment and Water	-
Kelly Ford	Fire brigade	Department of Fire and Emergency Services (DFES)	fireengineers@dfes.wa.gov.au
Alexandra Viale			
Elvan Ling	Fire safety engineer	Warringtonfire	elvan.ling@warringtonfire.com
Namrata Moharana	Senior fire safety engineer		namrata.moharana@warringtonfire.com

1. Purpose

The purpose of the meeting was to provide an introduction to the proposed tyre recycling facility at 6 Lodge Drive, East Rockingham and discuss the fire safety strategy for the new building.

Note: Following the meeting an updated site location plan has been provided - refer to Figure 1.

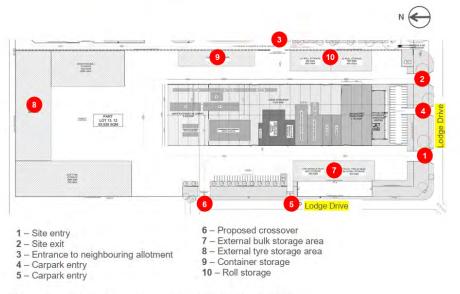
2. Development description

The project is the construction of a new single storey tyre recycling facility. The proposed building has a floor area of approximately 13,302 m² and is considered to be a large-isolated building of mixed uses. This includes an open layout office (class 5), a storage warehouse (class 7b) and a processing area (class 8). The site is bound by Lodge Drive to the south and east, and neighbouring properties to the south and west – refer to Figure 1.

20221104-PE220100 Meeting minutes 1.0 (issued).docx



warringtonfire



Site location plan – updated 31 October 20221 Figure 1

3. Key points discussed

Perimeter vehicle access (PVA)

The building is a considered a large-isolated building under the requirement of NCC. a. Therefore, it is required to be provided with a PVA in accordance with clause C2.4 of the NCC and DFES Guideline GL-11². In particular, the following will be provided:

- The PVA must have a minimum unobstructed width of 6 m. i.
- ii. No part of its further boundary is to be more than 18 m from the building.
- iii. Pedestrian access from the PVA to the building must be provided.
- The PVA must be constructed with all-weather pavements and is able to iv. withstand at least 30 tonne of load.
- The PVA must be wholly within the allotment except a public road complying V. with (i), (ii), (iii) and (iv)
- DFES noted that the proposed PVA does not meet the NCC requirements because it b. did not provide a continuous access around the building.

Post meeting note: The updated site plan is included in Figure 1. This includes a larger site area incorporating a compliant vehicular access around the building. It should be noted that the carpark will be modified to vehicular access around the building.

20221104-PE220100 Meeting minutes 1.0 (issued).docx

Page 2 of 5

Email correspondence from Realside Ovest to Warringtonfire, lodge drive revised plan, 31 October 2022. GL-11: DFES site planning and fire appliance specifications, 2017, Department of Fire and Emergency Services, https://publications.dfes.wa.gov.au/publications/gl-11-dfes-site-planning-and-fire-appliance-specifications, accessed 25 October 2022



warringtonfire

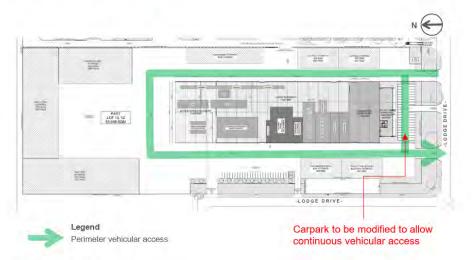


Figure 2 Site plan

External storage area

- a. The external areas around the building are proposed to be used for the storage of tyres, conveyor belts and other items to be used as part of the building process. The total storage area in the open yard is 13,488 m². This includes the following
 - i. Car tyre storage 3990 m² with a maximum capacity of 750 tonnes.
 - ii. Truck tyre storage 3778 m² with a maximum capacity of 900 tonnes.
 - iii. Conveyor belt storage 2520 m² with a maximum capacity of 4000 tonnes.
 - iv. S1 roll storage 800 m² with a maximum capacity of 800 tonnes.
 - v. S2 roll storage 800 m² with a maximum capacity of 800 tonnes.
 - vi. Car granule bulk bag storage 800 m²
 - vii. Truck tyre 40 mesh bulk bag storage 800 m²
- b. The external storage area is considered as a large tyre facility under DFES Guidance Note GN02. Under this guidance note, the following is required:
 - i. A minimum distance of 18 m from the allotment boundary is to be maintained except where the boundary is facing a public road, the minimum distance can be reduced to 6 m.
 - The tyres are to be arranged in a rack system, strapped in bundles, pallet system, horizontal system or laced if external.
- c. It was noted that storage in accordance with the DFES Guidance Note GN02 is not considered to be feasible for the site. It is proposed to store tyres in piles within a three sided concrete enclosure without roof instead of following the storage guidance outlined GN02.
- d. In addition, it is proposed for the concrete enclosures for the tyre storage to be located at the site boundary instead of the minimum separation distance in accordance with the requirements of GN02.
- e. DFES raised concern about the external storage height of tyre piles exceeding the height of the concrete enclosure. DFES suggested to conduct an analysis to demonstrate that the concrete enclosure can effectively prevent the risk of fire spread to the neighbouring allotment.

20221104-PE220100 Meeting minutes 1.0 (issued).docx

Page 3 of 5



- f. The details of the enclosure design are to be discussed and confirmed with the project design team.
- g. DFES raised questions regarding the construction and design of the storage tanks. It is understood that the purpose of the storage tanks is to store and pump granule tyre to the production line. The tank is made of metal and is provided with heat detector. Upon the detection of excessive heat within the tank, it will be sealed to prevent air from entering the tank.

Fire hydrant system

- a. A fire hydrant system must be installed throughout the building in accordance with clause E1.3 of the NCC, AS 2419.1:2005 and DFES Guidance Note GN02. In particular the following is to be achieved:
 - i. For internal storage if non-sprinkler protected: 6 outlets each discharged at 10 L/s
 - ii. For sprinkler protected: 3 outlets each discharged at 10 L/s.
 - iii. For open yard storage of 15,000 m²: 6 outlets each discharged at 10 L/s.
 - iv. The hydrant system is to supply a minimum water supply of four hours.
 - v. An onsite pumps and tanks and booster assembly are to be provided. The tank capacity must be capable of supplying at least four hours of water.

DFES requires the location of the booster assembly and the location of pumps and tanks to comply with the NCC and AS 2419.1:2005.

- b. DFES had no comments on the amount of water proposed to be delivered as long as it is in accordance with the requirement outlined in GN02.
- c. DFES raised a question regarding the design of water runoff. Section 11 of GN02 requires the capacity of the firefighting water run-off to be design based on:
 - i. the calculated maximum sprinkler design output operating for a period of 90 minutes, and
 - ii. the calculated flow from all hydrants operating simultaneously at 10 L/s for a period of four hours.

Note. The total capacity for firefighting water run-off must be designed based on the total flow of the sprinkler and the hydrant system operating simultaneously for their respective period of operation stated above.

Fire safety management plan and training

- a. DFES recommended to incorporate the following as part of the fire safety management plan for the site:
 - Emergency forklift training for staff in the event that a fire occurs in a tyre storage pile, forklift can be used to move tyres in the surrounding areas to limit the fire size.
 - ii. Fire hydrant monitors DFES recommended the provision of fire monitors on site to allow trained staff to undertake initial firefighting before fire crews arrive on site. This will be discussed further with the project stakeholders.
 - Ongoing maintenance, housekeeping and cleaning of machineries to prevent dust type fire was proposed by DFES. No further discussion on this proposed management plan.

Fire separation

- It is proposed to fire separated the warehouse and office from the rest of the building with construction achieving an FRL of 90/90/90.
- b. DFES has no concerns regarding the proposed fire separation.

Bush fire management plan

20221104-PE220100 Meeting minutes 1.0 (issued).docx

Page 4 of 5



warringtonfire

a. DFES noted that the site is located in a bush fire prone area and a bushfire management plan must be provided for the site. In addition, DFES noted that the bushfire management plan may have requirements for the site in addition to what is outlined in the GN02 guideline.

4. Conclusion

Should any of the stakeholders have any comments or inclusions for the meeting minutes please respond in writing to Warringtonfire as soon as practically possible. If no comments are received within 7 days it is assumed that all stakeholders accept and agree with the contents of the meeting minutes.

If you have any questions or would like to discuss this matter further please contact Elvan Ling or Namrata Moharana of Warringtonfire on 08 9382 3844.

20221104-PE220100 Meeting minutes 1.0 (issued).docx

Page 5 of 5

warring tontire

Perth WA 6000

Australia

B.2 10 January 2023

warringtonfire Warringtonfire Australia Suite 4.01, 256 Adelaide Terrace ABN: 81 050 241 524 T: +61 8 9382 3844

Time	11 am	Date	10 January 2023	
Job no	PE220100	Issued	13 January 2023	
Project	6 Lodge Drive, East Rockingham - Tyre recycling facility			

Meeting minutes

Table 1 Stakeholders present at meeting

Attendees	Role	Organisation	Contact details
Nick Dalziell	Client	Realside Ovest	nick.dalziell@ovest.net.au
Julie Drago		Hero Properties	julie@heroproperties.com.au
Corey Matters	Designer	Rubber Gem	corey@rubbergem.com
Mitra Maboud			mitra@rubbergem.com
Jeff Davis	Principal scientific officer	Department of Fire and Emergency	Jeff.Davis@dfes.wa.gov.au
Ryan Murray	HAZMAT CBR manager	Services (DFES)	Ryan.Murray@dfes.wa.gov.au
Pauric McCaughey	Fire engineering team		Pauric.McCaughey@dfes.wa.gov.au
Peter Mitchison			Peter.Mitchison@dfes.wa.gov.au
Nathan Fraser	Hydraulic engineer	North Point Consulting	nathan@npconsulting.com.au
Elvan Ling	Fire safety engineer	Warringtonfire	Elvan.Ling@warringtonfire.com
Namrata Moharana	Senior fire safety engineer		Namrata.Moharana@warringtonfire.com

1. Purpose

The purpose of the meeting was to review and discuss the proposed latest fire safety strategies of the tyre recycling facility at 6 Lodge Drive, East Rockingham.

2. **Development description**

The project is the construction of a new single storey tyre recycling facility at 6 Lodge Drive, East Rockingham. The proposed building has an internal floor area of approximately 14,356 m² and an outdoor open yard storage area of approximately 7,680 m². The building is considered to be a large-isolated building of mixed uses. This includes an open layout office (class 5), two sprinklered storage warehouses (class 7b) and a processing area (class 8). The site is bounded by Lodge Drive to the south and west, and neighbouring properties to the south and east - refer to Figure 1.

20230113-PE220100 Meeting minutes 3.1 (issued).docx



warringtonfire

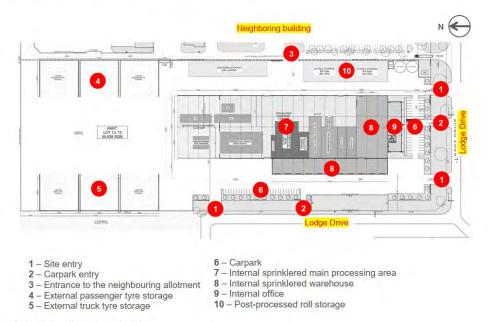


Figure 1 Site location plan

3. Key points discussed

External tyre storage areas

- The external areas around the building are proposed to be used for the storage of passenger tyres and truck tyres. The toral storage area in the open yard is approximately 7,680 m². This includes the following:
 - a. Passenger tyre storage 3,840 m² in total
 - b. Truck tyre storage 3,840 m² in total
- The external storage area is considered as a large tyre facility under DFES Guidance Note GN02. Under this guidance note, the following is required:
 - a. A minimum distance of 18 m from the allotment boundary is to be maintained except where the boundary is facing a public road, the minimum distance can be reduced to 6 m.
 - b. The tyres are to be arranged in a rack system, strapped in bundles, pallet system, horizontal system or laced if external.

It was noted that the storage configurations in accordance with GN02 is not considered to be feasible for the site. This is due to the fast turnaround time required for the processing of these tyres in the main building, therefore the tyres are not intended to be stored long term. On this basis, it is proposed for the tyres to be stored in a pile within bunds as outlined in item 3.

- It is proposed to store tyres as piles within bunds instead of complying with DFES guidance note GN02. The following is to be achieved:
 - a. Each bund has a maximum floor area of 1,280 m².
 - b. The bunds are to be located at least 18 m from the main processing building.

20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 2 of 7



warringtonfire Proud to be part of @ element

- c. A separation distance of 18 m from the northern site boundary, and a cleared zone of at least 18 m at the western site boundary are to be provided refer to Figure 2.
- d. The bund walls area to be constructed with non-combustible concrete.
- e. The bund walls are to achieve a minimum of 7 m in height refer to Figure 3.
- f. Bunds are to be separated from each other by a distance of 1.5 m.

Note. The minimum separation distance between the bunds is to be confirmed by the project structural engineer.

g. The bund walls are to be designed to collapse inwards in an event of failure.

Note. This design is to be discussed and confirmed by the project structural engineer.

h. The pile within each bund is to be arranged in a truncated pyramid shape with a maximum height of 3.7 m. The pile is proposed to have a width of 36 m and a length of 35 m. The pile must not be arranged against the bund wall – refer to Figure 3.

 This design is considered to be more feasible for the site due to the following reasons, subjected to the provision of additional fire safety strategies

- a. Fast turnover The site will utilise front end loader and other equipment to move tyres from piles to the processing facility. Storing tyres in piles allows the relocation of tyres to be carried out more efficiently.
- b. The bund design prevents burning tyres from rolling to the unaffected tyre pile in the separated bunds. In the meeting, DFES has acknowledged the benefits of the bund design.
- c. Short term tyre storage. In the meeting it was noted that tyres are not proposed to be stored within the site for long term. Tyres stored in bunds are to be progressively collected and processed.
- d. The height of the bund walls also reduces the likelihood of a fire initiated from arson.
- e. The bund could also act as a fire water recovery area see item 12

5. The bund areas are to be provided with radiometric thermal cameras to monitor the temperature of the tyre piles within the bunds. The following is to be achieved:

a. The radiometric thermal cameras are to be connected to an alarm system and activate if the temperature of the pile reach the critical temperature 267 °C.

Note. This is the temperature when the thermal decomposition of tyres occurs and releases flammable pyrolytic oil.

The alarm system is to be connected to the Direct Brigade Alarm (DBA) system at the Fire Indication Panel (FIP).

Post meeting note: The design of the alarm system is to be further discussed with DFES and the project electrical engineer.

- c. The temperature of the tyre pile is to be monitored by trained staff 24 hours.
- 6. DFES has provided in principle support on the proposed fire safety strategy for the open yard tyre storage.

20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 3 of 7



warringtonfire

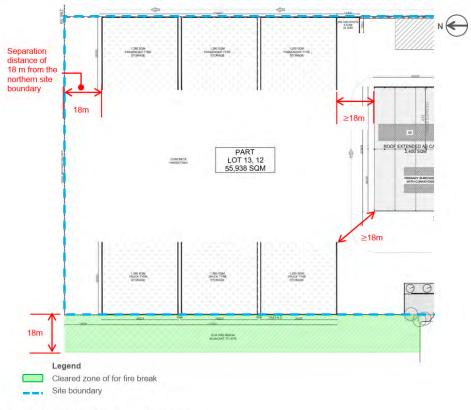


Figure 2 External tyre storage area

20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 4 of 7



warringtonfire

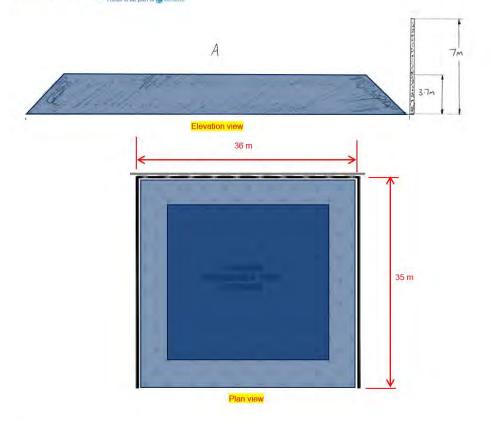


Figure 3 Proposed stack profile in each bund

Fire hydrant system

- 7. DFES Guidance Note GN02 requires the following to be achieved:
 - a. For the sprinkler protected building, three outlets each discharged at 10 L/s.
 - b. For the open yard storage of 7,680 m², five outlets each discharged at 10 L/s.
 - c. The hydrant system is to supply a minimum water supply of four hours.
 - d. An onsite pumps and tanks and booster assembly are to be provided. The tank capacity must be capable of supplying at least four hours of water.
- 8. The flow and pressure tests have been conducted on the street and onsite fire hydrant. The results indicated that the onsite hydrant has compliant flow and pressure and can achieve 30 L/s at 300 kPa. The results also indicated that the street hydrant has complaint flow and pressure and can achieve 30 L/s at 310 kPa.
- It is proposed to provide six fire hydrant outlets each operating at 10 L/s and a mobile fire hydrant monitor for the site. In addition, the main processing building will be sprinkler protected.
- 10. The required firefighting water required to be stored on site is proposed to be calculated based on either one of the following fires scenarios occurring:

20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 5 of 7



a. Fire scenario 1: Fire within the main processing building – The fire sprinklers are to operate for a duration of 90 mins and the three fire hydrants are to operate for a duration of 4 hours.

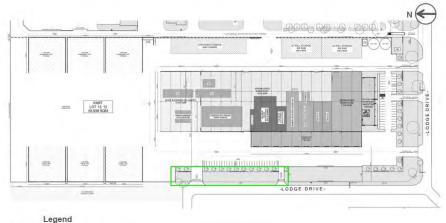
Note. The fire sprinklers are to be High Hazard Roof Level protection as per AS 2118.1. Further discussion on the types of good stored; area, volume and method of product storage within the building are to be conducted to determine the Hazard Classification for the fire sprinkler system.

b. Fire scenario 2: Open yard fire involving tyre storage – ie six hydrants and one fixed fire monitor operating non-simultaneously for four hours.

Note. The design of the fire hydrant monitoring system is to be confirmed by the project hydraulic engineer.

- 11. DFES advised that a maximum of two fire boosters separated by a minimum distance of 10 m is to be provided for the site.
- 12. DFES mentioned that a fire water runoff containment system is to be provided for the site to capture the contaminated fire water. DFES recommended the design to consider water recovery to reduce the capacity of the containment system. The following design was proposed in the meeting:
 - a. The containment system is proposed to be located at the west site of the building near the carpark – refer to Figure 4. The exact location is to be confirmed.
 - b. The bund is proposed to be designed to incorporate a slope towards the rear bund walls to recover water runoff during the firefighting operation.

13. DFES has provided in-principle support on the proposed design.



Proposed location of the fire water containment system

Figure 4 Site plan

Internal granule bulk bag storage

- 14. Post-processed car tyre and truck tyre granule bulk bags are to be stored within the sprinklered warehouse instead of in the open yard as outlined in the previous drawings.
- 15. The granule bulk bags are to be stored in pallets not exceeding two stacks.
- 16. DFES raised no concerns regarding this storage arrangement.
- Other

20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 6 of 7



warringtonfire Proud to be part of @ element

17. DFES advised that local fire station to be contacted for pre-planning prior to the commissioning of this tyre recycling facility.

4. Conclusion

Should any of the stakeholders have any comments or inclusions for the meeting minutes please respond in writing to Warringtonfire as soon as practically possible. If no comments are received within 7 days it is assumed that all stakeholders accept and agree with the contents of the meeting minutes.

If you have any questions or would like to discuss this matter further please contact Elvan Ling of Warringtonfire on 08 9382 3844.

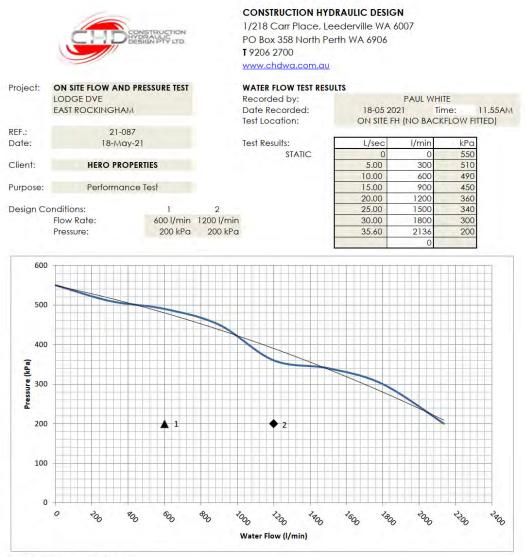
20230113-PE220100 Meeting minutes 3.1 (issued).docx

Page 7 of 7

warringtonfire Proud to be part of @ element

Appendix C Flow and pressure test

C.1 Onsite test



DISCLAIMER & CLARIFICATIONS

AS 2419 'Fire Hydrant Installations' part 1 'System design, installation and commissioning' nominates the minimum required fire hydrant flow rates at a minimum residual pressure (recorded at the most remote on-site fire hydrant) for the fire compartment size they may serve.

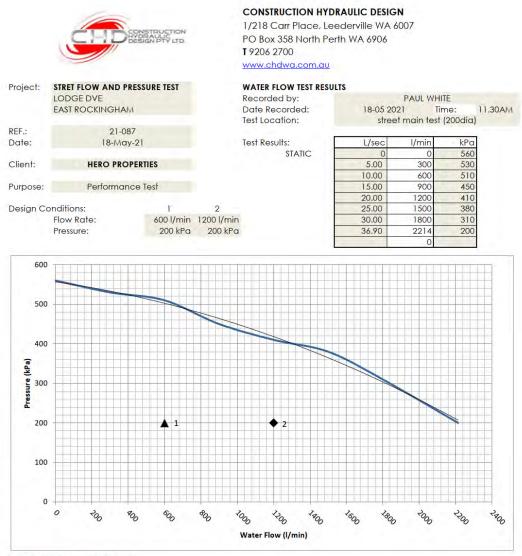
Notwithstanding the performance results recorded by an independent third party specialist, the Water Corporation have a statutory obligation to service each building site with a standard domestic water supply service capable of discharging 20 litres per second at 15 metres head (147 kPa).

The Water Corporation is under no obligation to maintain or guarantee a constant flow and pressure for the life of the service, as a fire service is not a standard water supply.

It should be noted however that it is the property owner's responsibility to regularly monitor the performance of the fire service and carry out any rectification works needed to ensure that the performance of the fire safety systems connected to the town main are not compromised in the event that the Water Corporation water supply no longer satisfies the design requirements for the fire services system.



C.2 Street test



DISCLAIMER & CLARIFICATIONS

AS 2419 'Fire Hydrant Installations' part 1 'System design, installation and commissioning' nominates the minimum required fire hydrant flow rates at a minimum residual pressure (recorded at the most remote on-site fire hydrant) for the fire compartment size they may serve.

Notwithstanding the performance results recorded by an independent third party specialist, the Water Corporation have a statutory obligation to service each building site with a standard domestic water supply service capable of discharging 20 litres per second at 15 metres head (147 kPa).

The Water Corporation is under no obligation to maintain or guarantee a constant flow and pressure for the life of the service, as a fire service is not a standard water supply.

It should be noted however that it is the property owner's responsibility to regularly monitor the performance of the fire service and carry out any rectification works needed to ensure that the performance of the fire safety systems connected to the town main are not compromised in the event that the Water Corporation water supply no longer satisfies the design requirements for the fire services system.

warringtonfire Proud to be part of e element

Global locations



Warringtonfire Australia Pty Ltd ABN 81 050 241 524

Perth

Suite 4.01, 256 Adelaide Terrace Perth WA 6000 Australia T: +61 8 9382 3844

Sydney

Suite 802, Level 8, 383 Kent Street Sydney NSW 2000 Australia T: +61 2 9211 4333

Canberra

Unit 10, 71 Leichhardt Street Kingston ACT 2604 Australia T: +61 2 6260 8488

Brisbane

Suite B, Level 6, 133 Mary Street Brisbane QLD 4000 Australia T: +61 7 3238 1700

Melbourne

Level 4, 152 Elizabeth Street Melbourne VIC 3000 Australia T: +61 3 9767 1000

Melbourne - NATA accredited laboratory

409-411 Hammond Road Dandenong VIC 3175 Australia T: +61 3 9767 1000



PROPOSED TYRE RECYCLING AND PROCESSING FACILITY

4-6 LODGE DRIVE EAST ROCKINGHAM

ENVIRONMENTAL ACOUSTIC ASSESSMENT

MARCH 2023

OUR REFERENCE: 30822-3-23064



Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as: HERRING STORER ACOUSTICS P.O. Box 219, Como, W.A. 6952 (08) 9367 6200 hsa@hsacoustics.com.au DOCUMENT CONTROL PAGE

ENVIRONMENTAL ACOUSTIC ASSESSMENT PROPOSED TYRE RECYCLING AND PROCESSING FACILITY

Job No: 23064

Document Reference: 30822-3-23064

FOR

PLANNING SOLUTIONS

Author:	Ashwin Sharma		Checked By:		Geoff Harris		
Date of Issue:	24 March 2023						
		REVIS	ION HISTORY				
Revision	Description	Description Date Author Che					
1	Added residential receivers as per client request			24/03/2023	AS	GH	
2	Edited IF for R1 and R2, updated hours of operation, added truck movements and unloading noise			29/03/2023	AS	GH	
						-	
		DOCUMEN	T DISTRIBUTION				
Copy No.	Version No.	Destination			Hard Copy	Electronic	

Сору No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Planning Solutions Attn: Oliver Basson Email: <u>oliver.basson@planningsolutions.com.au</u>		\checkmark
	2	Planning Solutions Attn: Oliver Basson Email: <u>oliver.basson@planningsolutions.com.au</u>		\checkmark
	3	Planning Solutions Attn: Oliver Basson Email: <u>oliver.basson@planningsolutions.com.au</u>		\checkmark

This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

CONTENTS

1.	INTRO	DUCTION	1
2.	SUM	MARY	1
3.	CRITE	RIA	1
4.	MODI	ELLING	4
5.	RESU	LTS	6
6.	ASSES	SSMENT	6
	6.1	L _{A10} Noise Emissions – Tyre recycling and processing units	6
	6.2	LA10 Noise Emissions – Truck Movement	7
	6.3	L _{A10} Noise Emissions – Unloading Noise	7

APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Planning Solutions on behalf of Realside Ovest to undertake an acoustic assessment of noise emissions associated with the proposed tyre recycling and processing facility to be located at 4-6 Lodge Drive, East Rockingham.

This report assesses noise emissions from the premises with regards to compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

For reference, the plan for the proposed development is attached in Appendix A.

2. <u>SUMMARY</u>

The closest neighbour to this development is an existing industrial premise located to the east of the development (Lot 13). The surrounding land is zoned as industrial with the exception of a small block of commercial facilities and a residential block both located approximately 1km south west, as well as a caravan park (residential) located approximately 850m south east to the proposed development. As the tyre recycling and processing facility is understood to be operational at all hours, seven days a week, noise received at the neighbouring premises from these noise sources needs to comply with the appropriate assigned noise levels for this period.

Analysis of the noise from the proposed development shows that compliance with the assigned L_{A10} noise levels would be achieved with no additional noise mitigation measures

Measurements of equipment from the existing site at Henry Street, Hope Valley Road, Naval Base were used in the noise modelling of the proposed situation. However, some equipment at the new site did not exist at the current site and as a result measurements of these were not able to be undertaken. For these items, where possible file data and manufacturers specifications were utilised.

From the analysis undertaken, noise emissions from the proposed development has been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997 at all times with the proposed design of the development.

3. <u>CRITERIA</u>

The allowable noise level for noise sensitive premises in the vicinity of the proposed Facility site is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 and 8 stipulate maximum allowable external noise levels or assigned noise levels that can be received at a premise from another premises. The assigned noise levels for commercial and industrial premises are listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL						
Premises Receiving Noise	Time of Day	Assigned Level (dB)				
Fremises Receiving Noise	Time of Day	L _{A10}	L _{A1}	L _{Amax}		
	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF		
Naisa consitivo promisoo:	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF		
Noise sensitive premises: highly sensitive area	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF		
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF		
Commercial Premises	All times	60	75	80		
Industrial Premises	All times	65	80	90		

Note: L_{A10} is the noise level exceeded for 10% of the time. L_{A1} is the noise level exceeded for 1% of the time.

L_{Amax} is the maximum noise level.

IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"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.		

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS					
Where tonality is presentWhere modulation is presentWhere impulsiveness is present					
+5 dB(A) +5 dB(A) +10 dB(A)					
	Where modulation is present				

3

Note: These adjustments are cumulative to a maximum of 15 dB.

For this development, the premises considered for assessment are located, as shown on Figure 3.1 below.



FIGURE 3.1 – AREA AROUND PROPOSED DEVELOPMENT

The influencing factor at the nearest residential locations to the proposed tyre recycling and processing facility have been determined as summarised in Table 3.3 and Table 3.4

TABLE 3.3 – INFLUENCING FACTORS R1			
Influencing Faster Devenator	Influencing Factor (dB)		
Influencing Factor Parameter	All Residences		
Major Road within inner circle	+0		
Major Road within outer circle	+4		
Secondary Road within inner circle	+0		
Industrial Premises within inner circle	+0		
Industrial Premises within outer circle	+6.5 (Adjusted for Kwinana Policy Area)		
TOTAL IF	+11		

Influencing Factor Decompton	Influencing Factor (dB)		
Influencing Factor Parameter	All Residences		
Major Road within inner circle	+0		
Major Road within outer circle	+2		
Secondary Road within inner circle	+0		
Commercial Premises within outer circle	+0.5		
Industrial Premises within outer circle	+0.25 (Adjusted for Kwinana Policy Area)		
TOTAL IF	+3		

Note: The total transport factor due to roads can be a maximum of 6dB. The influencing factor is always rounded to the nearest whole number, so therefore there is an addition of **11dB** for R1 and **3dB** for R2.

Based on the above, the assigned noise levels are as listed in Table 3.5

_ . _ . _ . .

Premises	Time of Day	Assigned Level (dB)			
Receiving Noise	Time of Day	L _{A 10}	L _{A 1}	L _{A max}	
	0700 - 1900 hours Monday to Saturday	56	66	76	
Noise sensitive premises: Highly	0900 - 1900 hours Sunday and Public Holidays	51	61	76	
sensitive area	1900 - 2200 hours all days	51	61	66	
R1	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	46	56	66	
	0700 - 1900 hours Monday to Saturday	48	58	68	
Noise sensitive premises: Highly	0900 - 1900 hours Sunday and Public Holidays	43	53	68	
sensitive area	1900 - 2200 hours all days	43	53	58	
R2	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	38	48	58	
Commercial Premises	All times	60	75	80	
Industrial Premises	All times	65	80	90	

TABLE 3.5 - ASSIGNED OUTDOOR NOISE LEVELS

Note: L_{A10} is the noise level exceeded for 10% of the time. L_{A1} is the noise level exceeded for 1% of the time.

 $L_{\mbox{\scriptsize Amax}}$ is the maximum noise level.

4. MODELLING

Modelling of the noise propagation from the proposed development was carried out using an environmental noise modelling computer program, "SoundPlan". 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".

Noise emissions from the development, include:

- Tyre recycling and processing units.
- Truck Movements and Unloading Noise

The calculations were based in the sound power levels listed in Table 4.1

Plant Item	Sound Power Level dB(A)
Cracker Mill	100
Capped Belt	97
Shredding and Grinder Units	111
Log Press Peeler	88
Block Cutter	89
Sheath Plant, Mixer, Tyre Buffer	95
Paint Line	95
Sheath Roller	95
Buffing Shredder and Screen	95
Salvadori Moulding Plant	95
Tile Stamper	95
Banbury Auto Weigh 610 Roll Mill	76
Calander 550 Roll Mill	86
Devulcanization Unit	86
Mat Press Unit	86
Truck Pass (Semi Trailer)	92
Truck Unloading Noise	102

TABLE 4.1 – TYRE RECYCLING AND PROCESSING SOUND POWER LEVELS

Noise levels were obtained by a combination of both noise emissions of existing operations as well as file data.

The modelling was carried out under three scenarios; all plant operating simultaneously, truck movements and trucks unloading.

The above noise sources need to comply with the following assigned noise levels:

- L_{A10} Tyre recycling and processing units
- L_{A10} Truck Movement Noise
- LA10 Unloading Noise

5. <u>RESULTS</u>

Calculations were undertaken to all the premises noted on Figure 3.1. Since multiple premises exist within Commercial Lot 1, the highest noise level within the Lot is presented as C1. The resultant noise levels are listed in Tables 5.1 and 5.2.

	NOISE SOURCES REQUIRING COMPLIANCE						
lteres	Calculated Noise Levels (dB(A))						
Item	11	12	13	C1	R1	R2	
Facility Operations	60	34	47	21	38	19	
Truck Movements	47	15	33	13	20	11	
Unloading	52	24	38	9	22	8	

TABLE 5.1 – WORST CASE CALCULATED NOISE LEVELS NOISE SOURCES REQUIRING COMPLIANCE

6. ASSESSMENT

The following provided the acoustic assessment for the noise sources requiring compliance, as listed in Table 5.1.

6.1 <u>LA10 NOISE EMISSIONS – TYRE RECYCLING AND PROCESSING UNITS</u>

During operation, noise emissions from the tyre recycling and processing facility would at times occur for more than 10% of the time. Thus, noise received at the neighbouring residences needs to comply with the assigned L_{A10} noise levels.

It is possible that the noise received at the neighbouring premises could be tonal. However, this cannot be confirmed as measurements for most of the machines could not be undertaken, and the levels provided lack the requisite detail to determine this. To be conservative, however, a +5 dB(A) penalty has been applied to the calculated noise level associated with the facility. Table 6.1 lists the characteristics that should be included in the assessable noise level.

	Calculated	Applicable Adj	Assessable		
Location	Noise Level,	Where	Noise Level,		
dB(A)		Tonality	Modulation	Impulsiveness	dB(A)
11	60	+5	-	-	65
12	34	+5	-	-	39
13	47	+5	-	-	52
C1	21	+5	-	-	26
R1	38	+5	-	-	43
R2	19	+5	-	-	24

TABLE 6.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE LA10 NOISE LEVELS, dB(A) ALL FACILITY OPERATIONS

Table 6.2 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated with the tyre recycling and processing facility for all periods using the noise levels from the worst-case scenario.

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L _{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
11	65	All Hours	65	Complies
12	39	All Hours	65	Complies
13	52	All Hours	65	Complies
C1	26	All Hours	60	Complies
R1	43	Night Period	46	Complies
R2	24	Night Period	38	Complies

TABLE 6.2 – ASSESSMENT OF LA10 NOISE LEVEL EMISSIONS ALL FACILITY OPERATIONS

6.2 <u>LA10 NOISE EMISSIONS – TRUCK MOVEMENT</u>

At this stage, it is unknown how many trucks will enter and exit the premises per day. To be conservative, noise emissions from truck movements have been assumed to occur for more than 10% of the time. As measurements of existing trucks were not able to be taken during the site visit, file data for truck noise has been used in the modelling and noise calculation.

TABLE 6.3 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{A10} NOISE LEVELS, dB(A) TRUCK MOVEMENTS

Location	Calculated Noise Level,	Applicable Adjustments to Measured Noise Le dB(A) Where Noise Emission is NOT music		Assessable Noise Level,	
	dB(A)	Tonality	Modulation	Impulsiveness	dB(A)
11	47	-	-	-	47
12	15	-	-	-	15
13	33	-	-	-	33
C1	13	-	-	-	13
R1	20	-	-	-	20
R2	11	-	-	-	11

Table 6.4 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated with truck movements for all periods using the noise levels from the worst-case scenario.

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L _{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
11	47	All Hours	65	Complies
12	15	All Hours	65	Complies
13	33	All Hours	65	Complies
C1	13	All Hours	60	Complies
R1	20	Night Period	46	Complies
R2	11	Night Period	38	Complies

TABLE 6.4 – ASSESSMENT OF LA10 NOISE LEVEL EMISSIONS TRUCK MOVEMENTS

6.3 <u>L_{A10} NOISE EMISSIONS – UNLOADING NOISE</u>

At this stage it is unknown how many unloading events will occur during the day. Whilst noise associated with unloading primarily consists of closing and banging of doors and metal, to be conservative, noise emissions from unloading have been assumed to occur more than 10% of the time.

It is possible that the noise associated with unloading operations received at the neighbouring premises could be considered impulsive. Hence, the +10 dB(A) penalty has been applied to the calculated noise level associated with the unloading noise. Table 6.5 lists the characteristics that should be included in the assessable noise level.

Location	Calculated Noise Level,		sured Noise Levels, Assess NOT music		
	dB(A)	Tonality	Modulation	Impulsiveness	dB(A)
11	52	-	-	+10	62
12	24	-	-	+10	34
13	38	-	-	+10	48
C1	9	-	-	+10	19
R1	22	-	-	+10	32
R2	8	-	-	+10	18

TABLE 6.5 – APPLICABLE ADJUSTMENTS AND ASSESSABLE LA10 NOISE LEVELS, dB(A) UNLOADING

Table 6.6 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated with unloading for all periods using the noise levels from the worst-case scenario.

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L _{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
11	62	All Hours	65	Complies
12	34	All Hours	65	Complies
13	48	All Hours	65	Complies
C1	19	All Hours	60	Complies
R1	32	Night Period	46	Complies
R2	18	Night Period	38	Complies

TABLE 6.6 – ASSESSMENT OF LA10 NOISE LEVEL EMISSIONS UNLOADING

From the above assessments, noise received at the neighbouring premises from facility operations, truck movements and unloading noise, complies with the requirements of the *Environmental Protection (Noise) Regulations 1997* during all periods with no additional noise mitigation required to the current design.

APPENDIX A

PLANS



Appendix 2 Flora and Vegetation Survey

LOTS 12 AND 13 LODGE DRIVE, EAST ROCKINGHAM

FLORA AND VEGETATION SURVEY

Prepared for:	Hero Properties
Report Date:	18 October 2021
Version:	1
Report No.	2021-606



CONTENTS

Сс	ontents			i
Li	st of At	tachn	nents	iii
1	INTE	RODU	ICTION	1
	1.1	Site	Location	1
	1.2	Back	ground	1
	1.3	Scop	be of Works	.1
2	EXIS	TING	ENVIRONMENT	. 2
	2.1	Land	l Use	. 2
	2.2	Торо	ography	.3
	2.3	Geo	logy and Soils	.3
	2.3.3	1	Geology	.3
	2.3.2	2	Soils	.3
	2.4	Hyd	rology	.4
	2.4.3	1	Groundwater	.4
	2.4.2	2	Wetlands	.4
3	MET	нор	OLOGY	.5
	3.1	Data	abase Searches	.5
	3.2	Site	Survey	.5
	3.3	Surv	ey Conditions	.5
4	RESU	JLTS.		.7
	4.1	Flora	a Database Searches	.7
	4.2	TEC	and PEC Desktop Search	.8
	4.3	Flora	a	.8
	4.4	Vege	etation	.9
	4.4.	1	Vegetation Complex	.9
	4.4.2	2	Vegetation Type	.9
	4.4.3	3	Floristic Community Types	12
	4.4.4	4	Vegetation Condition	12
	4.5	Con	servation Significance of Flora and Vegetation	12
	4.5.3	1	Flora	12
	4.5.2	2	Vegetation Complex	13
	4.5.3	3	Threatened and Priority Ecological Communities	13
	4.5.4	4	Conservation Category Wetland Assessment	13

5	SL	JMMARY AND CONCLUSIONS	15
	5.1	Summary	15
6	RE	EFERENCES	16

LIST OF ATTACHMENTS

Tables

Table 1:	Statement of Botanical Survey Conditions
Table 2:	Conservation Significant Flora identified in Database Searches
Table 3:	Likelihood of Identified Significant Flora Species Occurring on the Site
Table 4:	Threatened and Priority Ecological Communities likely to occur within 5km of the Site
Table 5:	Vegetation Types on the Site
Table 6:	Vegetation Condition Rating Scale

Plates

Plate 1:	Aerial Photograph 1995 (Landgate, 2021)
Plate 2:	Aerial Photograph 2000 (Landgate, 2021)
Plate 3:	Aerial Photograph 2021 (Landgate, 2021)
Plate 4:	Conservation Category Wetland Location
Plate 5:	Conservation Category Wetland Area
Plate 6:	Rhamnus in the Conservation Category Wetland Area

Figures

Figure 1:	Site Location
Figure 2:	Site Boundary and Topography

- Figure 3: Vegetation Types and Condition
- Figure 4: Tuart Woodland TEC

Appendices

- Appendix 1: Naturemap Report
- Appendix 2: Protected Matters Search Tool Report
- Appendix 3: Flora Species List
- Appendix 4: Quadrat Data

Appendix 5: Conservation Codes

1 INTRODUCTION

1.1 Site Location

Lots 12 and 13 Lodge Drive, East Rockingham (the site) are located in the City of Rockingham approximately 36km south of the Perth Central Business District (Figure 1). The site is bound to the north and east by cleared land in the Clipper Precinct of the Rockingham Industry Zone (RIZ), to the south by cleared rural land and to the west by native vegetation in the RIZ Conservation Area.

The site is 11.9098ha in size (Figure 2).

1.2 Background

The site contains a large shed and some disused infrastructure associated with a Wool Scouring plant that was built between 1995 and 2000. The shed and yards are now used for a different purpose.

The shed and other areas of infrastructure occupy about 6ha of the 11.9ha site. The balance of the site remains undeveloped and contains a large number of trees and some bare areas.

Hero Properties Pty Ltd is assessing the potential for development of the site. Development is likely to include the clearing of most of the vegetation on the site.

The site was not included in the RIZ environmental approvals obtained at State and Commonwealth level. Therefore, the potential presence of conservation significant plant species and ecological communities needs to be assessed as part of any application for approval to clear the vegetation.

PGV Environmental was commissioned by Hero Properties Pty Ltd to undertake a Detailed Flora and Vegetation survey of the site.

1.3 Scope of Works

A Detailed Flora and Vegetation Survey was undertaken in accordance with EPA Technical Guidance *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). The survey included the following:

- A search of the Naturemap website (DBCA, 2020);
- A search of the Commonwealth Government's Protected Matters Search Tool (DAWE, 2020) to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999*;
- Examination of historic and recent aerial photography and contour and soil maps to provisionally identify vegetation types and condition;
- Field survey using quadrats to record native and introduced species as well as a thorough site walkover of any areas of native vegetation;
- Recording of any significant plant species using a hand-held GPS;
- Description and mapping of vegetation types and vegetation condition; and
- Compilation of a flora list.

2 EXISTING ENVIRONMENT

2.1 Land Use

Aerial photography from 1995 shows the site as undeveloped but with a large amount of clearing over the site (Plate 1).



Plate 1: Aerial Photograph 1995 (Landgate, 2021)

The 2000 aerial photo shows the wool scouring shed had been constructed on most of the eastern half and a water treatment plant in the central western section (Plate 2). Native vegetation remains in the north-west corner, and some scattered trees at the north-east end and some vegetation in the south-west corner.





The 2021 aerial photograph shows the current situation with more trees on the site than was previously there in 2000 (Plate 3). The additional trees are the result of landscape planting around the carparks as well as some natural recruitment of trees.



Plate 3: Aerial Photograph 2021

The site is zoned 'Industrial' under the Metropolitan Region Scheme (SLIP, 2021) and 'General Industry' under the City of Wanneroo Local Planning Scheme No. 3 (SLIP, 2021).

2.2 Topography

The site is flat at around 4m AHD, however the site's natural contours have been modified as a result of earthworks for past land use and importation of mulch.

2.3 Geology and Soils

2.3.1 Geology

The site is mapped as part of the Quindalup South System which is the youngest dune system on the Swan Coastal Plain, consists of sand dunes or ridges formed by windblown unconsolidated calcareous and quartz beach sand.

2.3.2 Soils

One Quindalup South soil unit is mapped on the site and is described as follows:

• Quindalup Phase 3 (211Qu) Safety Bay sands -calcareous deep sands and yellow sands and coastal scrub.

2.4 Hydrology

2.4.1 Groundwater

The historical maximum groundwater level under the site is between 1 and 2m AHD which 2-3m below the natural surface level (mAHD) (DoW, 2021).

2.4.2 Wetlands

The *Geomorphic Wetlands of the Swan Coastal Plain* database identifies a Conservation Category Wetland (CCW) occurs in the south-west portion of the site and two eastern tips of another CCW just inside the property boundary (UFI 6,221) (Plate 4). The is flora and vegetation survey will demonstrate that the CCWs no longer occur on the site (see Section 4.5.4).



Plate 4: Conservation Category Wetland Locations

3 METHODOLOGY

3.1 Database Searches

Searches of the following databases were undertaken for a 10km radius around the central point of the site prior to the site survey:

- DBCA NatureMap Database (DBCA, 2021) (Appendix 1); and
- The Commonwealth Government's Protected Matters Search Tool to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation Act 1999*(EPBC Act) (DAWE, 2021). A radius of 5km was used for this database (Appendix 2).

Searches for Threatened flora and Threatened Ecological Communities (TECs) were not undertaken as the site has been highly modified.

3.2 Site Survey

A flora and vegetation survey of the site was conducted by Dr Paul van der Moezel of PGV Environmental on two occasions, the first preliminary survey on 1 July 2021 and a follow-up survey on 15 October 2021.

The site was thoroughly walked to record all species and vegetation types in the survey area. Information on flora composition and vegetation structure was recorded in six 10m x 10m non-permanent quadrats in representative vegetation types.

All plant species were identified in the field.

3.3 Survey Conditions

The conditions that the survey was undertaken in are presented in Table 1 in order to assess the adequacy of the survey. In summary, there were no constraints to the survey.

Issue	Constraints (Y/N)*	Comment
Competency/experience of the consultant conducting the survey	No	Dr Paul van der Moezel has extensive botanical survey experience in the Perth Metropolitan Region.
Proportion of the flora identified^	No	The timing of the survey in mid-October was optimal to identify all flora species on the site including any potential Threatened and Priority Flora. No follow- up survey required.
Sources of information (historic/recent or new data)	No	The flora in the Perth Metropolitan Region is well documented.
Proportion of the task achieved and further work that may need to be undertaken	No	No follow-up survey required as no Threatened Flora expected to occur in other seasons.

Table 1: Statement of Botanical Survey Conditions

Issue	Constraints (Y/N)*	Comment
Timing/weather/season/cycle	No	The spring survey was optimal for most flora species. 2021 was a good year for ephemeral species, including orchids.
Disturbances (Fire)	No	The fire age of the vegetation was greater than 5 years.
Intensity of survey (e.g. In retrospect was the intensity adequate)	No	The time spent on the site (approx. 6hr in two surveys) was considered adequate
Completeness (e.g. was relevant area fully surveyed)	No	for the size of the site (7ha of highly disturbed vegetation), and the low variation in vegetation types.
Resources (e.g. degree of expertise available for plant identification)	No	Experienced botanist undertook plant identifications on site.
Remoteness and/or access problems	No	Easily accessible site in the Perth Metropolitan Region.
Availability of contextual (e.g. bioregional) information for the study area.	No	Bush Forever

*Constraints have been rated as Significant, Moderate or No constraints

^Fungi and nonvascular flora (eg. algae, mosses and liverworts) were not specifically surveyed for during the survey.

4 RESULTS

4.1 Flora Database Searches

A search of the DBCA Naturemap Database (Appendix 1) indicates that a number of species that are listed as Endangered, Threatened or Priority have been located within a 10km radius of the site. The EPBC Act Protected Matters Search Tool (Appendix 2) indicates species that may have habitat within 5km radius of the site. The results from these database searches are shown in Table 2.

Table 3 lists the likelihood that any of these species could occur on the site based on the soil types and vegetation condition.

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act
Andersonia gracilis	Slender Andersonia		Endangered
	King Spider-orchid, Grand		
Caladenia huegelii	Spider-orchid, Rusty Spider-	Schedule 1	Endangered
	orchid		
Drakaea elastica	Glossy-leafed Hammer Orchid	Schedule 1	Endangered
Diuris purdiei	Purdie's Donkey-orchid	Schedule 2	Endangered
Drakaea micrantha	Dwarf Hammer-orchid	Schedule 2	Vulnerable
Diuris micrantha	Dwarf Bee-orchid	Schedule 3	Vulnerable
Synaphea sp. Serpentine			Critcally
G.R. Brand 103			Endangered
Acacia sp. Binningup			
G. Cockerton et al. WB		Priority 1	
37784			
Jacksonia sericea	Waldjumi	Priority 3	
Dodonaea hackettiana	Hackett's Hopbush	Priority 3	

Table 2: Conservation Significant Flora Identified in Database Searches

Conservation Codes are shown in Appendix 5

Table 3: Likelihood of Identified Significant Flora Species Occurring on the Site

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
Andersonia gracilis	Slender Andersonia	Slender Andersonia occurs in white/grey sand, sandy clay, gravelly loam in winter- wet areas, near swamps.	Highly Unlikely – no winter wet areas
Caladenia huegelii	King Spider- orchid, Grand Spider- orchid, Rusty Spider-orchid	The Grand Spider-orchid prefers sand or clay loam. This species generally does not survive in disturbed areas.	Highly Unlikely – not usually associated with Quindalup soil type

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
Drakaea elastica	Glossy-leafed Hammer Orchid	The Glossy-leafed Hammer Orchid prefers low-lying situations adjoining winter-wet swamps. This species does not survive in disturbed areas.	High Unlikely – no winter wet areas
Diuris purdiei	Purdie's Donkey- orchid	Purdie's Donkey Orchid occurs in grey- black sand in moist winter-wet swamps.	High Unlikely – no winter wet areas
Drakaea micrantha	Dwarf Hammer- orchid	Dwarf Hammer-orchid occurs in grey sands over dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps.	High Unlikely – no winter wet areas
Diuris micrantha	Dwarf Bee- orchid	The Dwarf Bee-orchid is usually found on cleared firebreaks or open sandy patches that have been disturbed with in Jarrah Banksia woodland or thickets of Spearwood (<i>Kunzea ericifolia</i> / <i>glabrescens</i>) (Williams <i>et al.</i> , 2001).	Highly Unlikely – not habitat typical to this species
Dodonaea hackettiana	Hackett's Hopbush	Hackett's Hopbush occurs in sand with outcropping limestone.	Unlikely – not habitat typical to this species
Jacksonia sericea	Waldjumi	Waldjumi grows in calcareous and sandy soils.	Possible

* sourced from Florabase (DBCA, 2017) and SPRAT Database (DoEE, 2016) as well as the DBCA database searches unless otherwise denoted

4.2 TEC and PEC Desktop Search

A search of DAWE's Protected Matters Search Tool was conducted within a radius of 5km around the site (Appendix 2). Three ecological communities are listed as TECs under the Commonwealth EPBC Act. The communities identified in the database searches are outlined in Table 4.

Ecological Community	Description	Conservation Status WA	Status under the EPBC Act
SCP19b	Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (Critically Endangered	Endangered (Listed as FCT19)
Banksia WL SCP	Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	Priority 3	Endangered
Tuart woodlands	Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain	Priority 3	Critically Endangered

Table 4: Threatened and Priority Ecological Communities likely to occur within 5km of the Site

4.3 Flora

A total of 55 plant species were recorded on the site during the survey (Appendix 3). The total consists of 13 native and 42 introduced species. The number of native species is very low for the size of the

survey area (7ha of undeveloped land) and the percentage of introduced species (76%) is very high which is indicative of the past land use.

The plant Families with the highest representation of species were the Asteraceae (Daisy family – 11 species, including 2 native and 9 introduced), Poaceae (Grass family – 8 species, all introduced) and the Fabaceae (Pea and Wattle family – 5 species, including 2 native and 3 introduced),

None of the species is listed as a Threatened or Priority species. No species with any other conservation significance were recorded on the site.

Quadrat Data are provided in Appendix 4.

Species richness in the five quadrats in areas of native vegetation ranged from 13-30 species. The number of native species in the quadrats was very low and ranged from 1-4. The percentage of introduced species in the quadrats was very high (average 84%).

4.4 Vegetation

4.4.1 Vegetation Complex

Vegetation Complexes are a broad level of vegetation description which is based on the underlying geomorphology and rainfall (Heddle *et al.,* 1980). The areas of remnant native vegetation on the site is part of the Quindalup Complex which is described as:

Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. (Heddle *et al.*, 1980).

The general description of the vegetation complex matches the vegetation types recorded on the site.

4.4.2 Vegetation Type

For small scale sites, such as the survey area, vegetation mapping can be further refined by using vegetation types which are described by the composition and structure of the dominant species rather than based on geomorphology.

Two native vegetation types and one non-native vegetation type were described and mapped on the site (Figure 3). The vegetation types are described in Table 5.

Table 5: Vegetation Type on the Site

Vegetation Type	Description	Photograph
Eg <i>Eucalyptus gomphocephala</i> (Tuart) Woodland over mulch and weeds	This is the main vegetation type occurring on the site. The Tuart trees were around 12-15m high with an average canopy cover of 20-25%. There were very few native understorey species present throughout the site. The only native shrub species that was reasonably common on the site was <i>Acacia</i> <i>rostellifera</i> while the climbing plant <i>Clematis linearifolia</i> was sometimes present. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrats LR1, 2, 3 and 4 are representative of this vegetation type.	<image/>

Vegetation Type	Description	Photograph
MrMh <i>Melaleuca rhaphiophylla/M.</i> <i>huegelii</i> Low Open Woodland over weeds	This vegetation type occurred in the north-west corner of the site. The vegetation type contained medium tree species <i>Melaleuca rhaphiophylla</i> and to a lesser extent <i>M. huegelii</i> and some <i>Banksia littoralis</i> up to 5m high. <i>Acacia rostellifera</i> and <i>Spyridium globulosum</i> were sparse native shrubs in the area otherwise the understorey was all introduced species. The dominant shrub species are indicative of wetland vegetation found elsewhere in the RIZ, however the area is not mapped as a wetland and the 0.5m layer of mulch has altered the natural surface level such that wetland species are unlikely to regenerate in the area over time. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrat LR6 is representative of this vegetation type.	
Weeds	Several areas occurred on the site that did not have any native species. These areas had been mulched in the past up to as much as 0.5m deep. The condition of the areas prior to the mulching is not known. The areas contained abundant weeds, particularly grass species. No regeneration of any native species was observed in these areas. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrat LR5 is representative of this vegetation type.	

4.4.3 Floristic Community Types

Floristic Community Types (FCT) are based on the whole floristic composition of the vegetation rather than being determined by soil type and geomorphology (Vegetation Complex) or the nature of the dominant species (Vegetation Types).

The condition of the vegetation on the site was rated as Completely Degraded and therefore could not be assigned to a FCT.

4.4.4 Vegetation Condition

The condition of the vegetation was assessed according to the system of Keighery as described in Bush Forever (Government of Western Australia, 2000) (Table 6).

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Table 6: Vegetation Condition Rating Scale

The condition of the vegetation is Completely Degraded due to historic clearing, very low native understorey species and high weed densities (Figure 3).

4.5 Conservation Significance of Flora and Vegetation

4.5.1 Flora

No Threatened (Declared Rare) flora species listed under the State *Biodiversity Conservation Act 2016* or the EPBC Act and no Priority plant species were recorded on the site or are expected to occur on the site at any other time of the year.

4.5.2 Vegetation Complex

The vegetation on the site is part of the Quindalup Complex (Heddle *et al.*, 1980). Approximately 60.49% of the pre-European vegetation extent of this complex remains, of which 10.98% is currently managed by DBCA (DBCA, 2018).

The percentage retention is above EPA's target for minimum 30% retention of vegetation complexes State-wide and above the 10% minimum criteria for vegetation complexes in the Perth and Peel Region Constrained Areas.

4.5.3 Threatened and Priority Ecological Communities

The potential for the three TECs listed in Table 4 as potentially occurring on the site is summarised below.

- Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (SCP 19) Not present due to the absence of any wetland vegetation and dune swales;
- Banksia Woodlands of the Swan Coastal Plain Not present due to the absence of appropriate Banksia tree species;
- Tuart Woodlands and Forests of the Swan Coastal Plain Potentially present (see below for assessment)

PGV Environmental (2021) undertook a Tuart Woodland TEC assessment according to the *Approved Conservation Advice* for the TEC published at the time of the proposed listing on 16 September 2016 for the EPBC listed *Tuart Woodlands and Forests of the Swan Coastal Plain: A Nationally Significant Ecological Community* (DoEE, 2019).

A summary of the result of the Tuart Woodland TEC assessment is provided below:

- One patch of Tuart woodland occurs on the site, as determined using tree canopies and a perimeter of 30m around the outer edge of the canopies;
- The vegetation condition is rated as Poor on the Tuart Woodland TEC scale;
- The size of the Tuart patch within the site is 5.495ha, and at least 6.71ha as the patch extends further west offsite; and
- The Tuart patch meets the definition of the *Tuart Woodlands and Forests of the Swan Coastal Plain Threatened Ecological Community,* as the size of the patch is larger than the 5ha minimum required for a patch of Tuart in Poor condition to be the TEC.

The extent of the Tuart Woodland TEC is shown on Figure 4.

4.5.4 Conservation Category Wetland Assessment

The areas mapped as containing a Conservation Category Wetland (CCW) in the south-west part of the site were assessed during the flora and vegetation survey. The areas now contain a layer of mulch, up to 0.5m thick, which was laid down some time ago. No native plants were recorded in any of the areas mapped as CCW. Plate 5 shows the general appearance of the larger CCW mapped on the site. Plant species in the area were all introduced species, particularly *Avena fatua* (Wild Oats), *Trifolium campestre* (Clover), *Medicago polymorpha* (Burr Medic) and *Bromus diandrus* (Great Brome). The woody weed species Rhamnus (*Rhamnus alaternus*) was abundant on the edges of the mulch (Plate 6).

No native plant species were observed regenerating in the mapped wetland areas.

The CCW areas are considered to be no longer a CCW and likely to no longer function as a wetland.



Plate 5: Conservation Category Wetland Area

Plate 6: Rhamnus in the Conservation Category Wetland Area



5 SUMMARY AND CONCLUSIONS

5.1 Summary

The Flora and Vegetation survey of a 11.9098ha parcel of land on Lots12 and 13 Lodge Drive resulted in the following findings:

- The survey area contains highly disturbed native vegetation and large areas without any native plants;
- A total of 55 plant species have been recorded on the site. The total consisted of 13 native species and 42 introduced species. The high (76%) proportion of introduced species reflects the past history of the site and the high degree of disturbance;
- No Threatened (Declared Rare) or Priority species were recorded on the site or are expected to occur on the site due to the highly degraded condition;
- Two native vegetation types were described and mapped on the site and one non-native vegetation type (weeds). The main vegetation type was *Eucalyptus gomphocephala* (Tuart) Woodland over Mulch and Weeds. One area of *Melaleuca rhaphiophylla/M. huegelii* Low Open Woodland over weeds occurred in the north-west corner;
- The vegetation was all rated as Completely Degraded. The site has only 12 native species and a high density of weed coverage;
- The vegetation is part of the Quindalup Complex which is well retained in the Perth Metropolitan Region;
- The vegetation was too degraded to be assigned to a Floristic Community Type;
- The Tuart woodland vegetation type was assessed as being part of the Tuart Woodlands and Forests of the Swan Coastal Plain TEC which is listed as Critically Endangered under the Commonwealth EPBC Act. While the understorey of the Tuart woodland had very few native species, the assessment is based on the size of the patch being greater than 5ha; and
- The areas mapped as containing Conservation Category Wetlands in the south-west portion of the site no longer have any native vegetation and have been mulched to such an extent that the CCW rating no longer applies. The areas are likely to no longer function as a wetland.

- Bolland, M. (1998) *Soils of the Swan Coastal Plain.* Department of Agriculture. Bunbury, Western Australia.
- Department of Agriculture, Water and the Environment (DAWE) (2021) *Protected Matters Search Tool* <u>http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf</u> Accessed August 2021 Canberra, Australia
- Department of Biodiversity, Conservation and Attractions (DBCA) (2018) *Remnant Vegetation Extent Stats 2018* Perth western Australia
- Department of Biodiversity, Conservation and Attractions (DBCA) (2021) Naturemap Accessed August 2021 <u>https://naturemap.dpaw.wa.gov.au/</u> Perth Western Australia
- Department of Primary Industries and Regional Development (DPIRD) (2020) Natural Resource Information. Accessed December 2020 <u>http://maps.agric.wa.gov.au/nrm-info/</u> Government of Western Australia, Perth.
- Department of the Environment and Energy (DotEE) (2016) Species Profile and Threats (SPRAT) Database. <u>http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</u> Commonwealth of Australia.
- Department of Water and Environmental Regulation (DWER) (2010) *Perth Groundwater Map.* Accessed October 2021 <u>https://maps.water.wa.gov.au/#/webmap/gwm</u> Government of Western Australia, Perth.
- Environmental Protection Authority (EPA) (2016) *Technical Guidance: Flora and Vegetation Surveys* for Environmental Impact Assessment Perth Western Australia
- Government of Western Australia (2000) Bush Forever *Keeping the Bush in the City. Volume 2:* Directory of Bush Forever Sites. Perth, Western Australia.
- Heddle, E.M., Loneragan, O.W. and Havel, J.J. (1980) Vegetation complexes of the Darling System,
 Western Australia. In Atlas of Natural Resources of the Darling System of Western Australia.
 Department of Conservation and Environment. Perth, Western Australia.
- Landgate (2020) Historical Aerial Photography Accessed August 2021 <u>https://www.landgate.wa.gov.au/bmvf/app/mapviewer/</u> Government of Western Australia, Perth.
- National Map (2021) Map-Based Access to Spatial Data from Australian Government Agencies <u>http://nationalmap.gov.au/#wa</u> Accessed August 2021 Government of Australia
- PGV Environmental (2021). Lots 12 And 13 Lodge Road, East Rockingham Tuart Woodland TEC Assessment And Black Cockatoo Habitat Assessment. Report prepared for Hero Properties.

- Western Australian Herbarium (2001) Atlas of Living Australia; Australia's Virtual Herbarium Record for *Austrostipa mundula* <u>http://biocache.ala.org.au/occurrences/5d377bf5-98ec-4fbe-8723-</u> <u>4cfc8f8f534f</u> Accessed March 2017 Perth, Western Australia
- Williams, K., Horan, A., Wood, S. and Webb, A (2001) Declared rare and poorly known flora in the Central Forest Region, Western Australian Wildlife Management Program No. 33, Western Australian Department of Conservation and Land Management. Perth, Western Australia

FIGURES

APPENDIX 1 Naturemap Report



NatureMap Species Report

Created By Guest user on 10/08/2021

Current Names Only Yes Core Datasets Only Yes Method 'By Circle' Centre 115° 46' 29" E,32° 16' 09" S Buffer 5km Group By Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	439	1838
Priority 1	1	1
Priority 3	4	8
Priority 4	8	51
Protected under international agreement	17	74
Rare or likely to become extinct	9	62
TOTAL	478	2034

					Area
	-	ome extinct			
1.		Calidris ferruginea (Curlew Sandpiper)		Т	
2.		Calidris tenuirostris (Great Knot)		Т	
3.	24731	Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black Cockatoo)		Т	
4.	24733	Calyptorhynchus baudinii (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		т	
5.	24734	Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		т	
6.	48400	Calyptorhynchus sp. (white-tailed black cockatoo)		Т	
7.	25335	Caretta caretta (Loggerhead Turtle)		т	
8.	25336	Chelonia mydas (Green Turtle)		Т	
9.	24798	Numenius madagascariensis (Eastern Curlew)		т	
Protected u	nder inte	ernational agreement			
10.	41323	Actitis hypoleucos (Common Sandpiper)		IA	
11.	25736	Arenaria interpres (Ruddy Turnstone)		IA	
12.	24779	Calidris acuminata (Sharp-tailed Sandpiper)		IA	
13.	24786	Calidris melanotos (Pectoral Sandpiper)		IA	
14.	24788	Calidris ruficollis (Red-necked Stint)		IA	
15.	24789	Calidris subminuta (Long-toed Stint)		IA	
16.	41332	Chlidonias leucopterus (White-winged Black Tern, white-winged tern)		IA	
17.	48587	Hydroprogne caspia (Caspian Tern)		IA	
18.	25741	Limosa limosa (Black-tailed Godwit)		IA	
19.	24690	Macronectes giganteus (Southern Giant Petrel)		IA	
20.	41347	Onychoprion anaethetus (Bridled Tern)		IA	
21.	48591	Pandion cristatus (Osprey, Eastern Osprey)		IA	
22.	25640	Sterna dougallii (Roseate Tern)		IA	
23.	48597	Thalasseus bergii (Crested Tern)		IA	
24.	24806	Tringa glareola (Wood Sandpiper)		IA	
25.	24808	Tringa nebularia (Common Greenshank, greenshank)		IA	
26.	24809	Tringa stagnatilis (Marsh Sandpiper, little greenshank)		IA	
Priority 1					
27.	48762	Acacia sp. Binningup (G. Cockerton et al. WB 37784)		P1	
Priority 3					
28.	48935	Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)		P3	
29.	25147	Lerista lineata (Perth Slider, Lined Skink)		P3	
30.	25249	Neelaps calonotos (Black-striped Snake, black-striped burrowing snake)		P3	
31.	25006	Pletholax gracilis subsp. edelensis (Keeled Legless Lizard (Shark Bay))		P3	
Priority 4					
32.	4763	Dodonaea hackettiana (Hackett's Hopbush)		P4	
33.		Hydromys chrysogaster (Water-rat, Rakali)		P4	
			Department of Bioc Conservation and	diversity.	WEST

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
34.	48588	Isoodon fusciventer (Quenda, southwestern brown bandicoot)		P4	
35.	4027	Jacksonia sericea (Waldjumi)		P4	
36.	48022	Notamacropus irma (Western Brush Wallaby)		P4	
37.	25196	Notoscincus butleri (lined soil-crevice skink (Dampier))		P4	
38.	24328	Oxyura australis (Blue-billed Duck)		P4	
39.	48135	Thinornis rubricollis (Hooded Plover, Hooded Dotterel)		P4	
lon-consei	vation ta	axon			
40.	3502	Acacia pulchella (Prickly Moses)			
41.	15482	Acacia pulchella var. goadbyi			
42.	3525	Acacia rostellifera (Summer-scented Wattle)			
43.	3527	Acacia saligna (Orange Wattle, Kudjong)			
44.	30032	Acacia saligna subsp. saligna			
45.	3557	Acacia stenoptera (Narrow Winged Wattle)			
46.	24260	Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)			
47.	24261	Acanthiza chrysorrhoa (Yellow-rumped Thornbill)			
48.	24262	Acanthiza inornata (Western Thornbill)			
49.	1208	Acanthocarpus preissii			
50.	24560	Acanthorhynchus superciliosus (Western Spinebill)			
51.	25535	Accipiter cirrocephalus (Collared Sparrowhawk)			
52.	25536	Accipiter fasciatus (Brown Goshawk)			
53.	42368	Acritoscincus trilineatus (Western Three-lined Skink)			
54.	1505	Agave americana (Century Plant)	Y		
55.	184	Aira caryophyllea (Silvery Hairgrass)	Y		
56.	1728	Allocasuarina fraseriana (Sheoak, Kondil)			
57.		Allotrochosina karri			
58.		Aname mainae			
59.	24312	Anas gracilis (Grey Teal)			
60.	24315	Anas rhynchotis (Australasian Shoveler)			
61.	24316	Anas superciliosa (Pacific Black Duck)			
62.	1411	Anigozanthos manglesii (Mangles Kangaroo Paw, Kurulbrang)			
63.	44629	Anilios australis			
64.		Anser anser			
65.	6949	Anthocercis littorea (Yellow Tailflower)			
66.	24561	Anthochaera carunculata (Red Wattlebird)			
67.	24562	Anthochaera lunulata (Western Little Wattlebird)			
68.	6211	Apium prostratum (Sea Celery)			
69.	12040	Apium prostratum subsp. prostratum var. prostratum (Sea Celery)			
70.		Apogon rueppellii			
71.	24991	Aprasia repens (Sand-plain Worm-lizard)			
72.	24285	Aquila audax (Wedge-tailed Eagle)			
73.		Araneus cyphoxis			
74.	41324	Ardea modesta (great egret, white egret)			
75.	24340	Ardea novaehollandiae (White-faced Heron)			
76.		Argiope trifasciata			
77.	25566	Artamus cinereus (Black-faced Woodswallow)			
78.	24353	Artamus cyanopterus (Dusky Woodswallow)			
79.		Artoria flavimana			
80.		Artoria linnaei			
81.		Artoriopsis expolita			
82.	226	Arundo donax (Giant Reed)	Y		
83.		Atherinosoma wallacei			
84.	47713	Austronomus australis (White-striped Free-tailed Bat)			
85.	17240	Austrostipa flavescens			
86.	231	Avellinia michelii	Y		
87.	234	Avena fatua (Wild Oat)	Y		
88.	235	Avena sativa (Common Oat)	Y		
89.		Backobourkia brounii			
90.	1800	Banksia attenuata (Slender Banksia, Piara)			
91.	1819	Banksia grandis (Bull Banksia, Pulgarla)			
92.	1822	Banksia ilicifolia (Holly-leaved Banksia)			
93.		Barnardius zonarius			
94.	740	Baumea arthrophylla			
95.	743	Baumea juncea (Bare Twigrush)			
96.	7046	Bellardia trixago (Bellardia)	Y		
97.	48868	Bellardia viscosa	Y		
98.	24319	Biziura lobata (Musk Duck)			
99.	749	Bolboschoenus caldwellii (Marsh Club-rush)			
100.	16636	Boronia crenulata subsp. viminea			
101.	6341	Brachyloma preissii (Globe Heath)			
102.		Briza maxima (Blowfly Grass)	. <i>(a)</i> .		
		the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.	Conserv	ent of Biodiversity, vation and Attractions	WESTERN AUSTRALI

	Name ID	Species Name	Naturalis	ed Conservation Code	¹ Endemic To Quer Area
			Y		
103.		Briza minor (Shivery Grass)	Y		
104. 105.		Bromus diandrus (Great Brome) Bromus hordeaceus (Soft Brome)	Y		
105.		Burchardia congesta	ř		
107.	12110	Byssomerulius corium			
108.	25713	Cacatua galerita (Sulphur-crested Cockatoo)			
109.	25714	Cacatua pastinator (Western Long-billed Corella)			
110.	25715	Cacatua roseicapilla (Galah)			
111.	25716	Cacatua sanguinea (Little Corella)			
112.	24729	Cacatua tenuirostris (Eastern Long-billed Corella)	Y		
113.	25598	Cacomantis flabelliformis (Fan-tailed Cuckoo)			
114.	1276	Caesia micrantha (Pale Grass Lily)			
115.	2846	Calandrinia calyptrata (Pink Purslane)			
116.		Calandrinia granulifera (Pygmy Purslane)			
117.		Callitris preissii (Rottnest Island Pine, Maro)			
118.		Calothamnus lateralis			
119.		Calothamnus quadrifidus subsp. quadrifidus			
120.		Calyptorhynchus banksii (Red-tailed Black-Cockatoo)			
121.		Calytrix fraseri (Pink Summer Calytrix)			
122.		Cartonema philydroides			
123. 124.		Cassytha racemosa (Dodder Laurel)	V		
124.		Cenchrus setaceus (Fountain Grass)	Y		
125.		Centaurium erythraea (Common Centaury) Centella asiatica	Ŷ		
126.		Centrolepis drummondiana			
127.		Cerastium glomeratum (Mouse Ear Chickweed)	Y		
120.		Chaetanthus aristatus	1		
130.		Chalinolobus gouldii (Gould's Wattled Bat)			
131.		Chamaescilla corymbosa (Blue Squill)			
132.		Charadrius ruficapillus (Red-capped Plover)			
133.		Chelodina colliei (South-western Snake-necked Turtle)			
134.		Chenonetta jubata (Australian Wood Duck, Wood Duck)			
135.		Christinus marmoratus (Marbled Gecko)			
136.		Chroicocephalus novaehollandiae			
137.	24288	Circus approximans (Swamp Harrier)			
138.	7937	Cirsium vulgare (Spear Thistle, Scotch Thistle)	Y		
139.	24774	Cladorhynchus leucocephalus (Banded Stilt)			
140.		Clynotis albobarbatus			
141.		Clynotis severus			
142.	25675	Colluricincla harmonica (Grey Shrike-thrush)			
143.	24399	Columba livia (Domestic Pigeon)	Y		
144.	4552	Comesperma confertum			
145.		Comesperma integerrimum			
146.	6217	Conium maculatum (Hemlock)	Y		
147.		Conospermum triplinervium (Tree Smokebush)			
148.		Conostylis aculeata (Prickly Conostylis)			
149.		Conostylis aculeata subsp. aculeata			
150.		Conostylis aculeata subsp. preissii			
151.		Conostylis candicans subsp. candicans			
152.		Coracina novaehollandiae (Black-faced Cuckoo-shrike)	V		
153. 154.		Cortaderia selloana subsp. selloana Conrus coronoides (Australian Raven)	Y		
154.		Corvus coronoides (Australian Raven) Corvus splendens (House Crow)			
155.		Corynotheca micrantha var. micrantha			
157.	11203	Coryphaena hippurus			
157.	25595	Cracticus tibicen (Australian Magpie)			
159.		Cracticus torquatus (Grey Butcherbird)			
160.		Crassula colorata (Dense Stonecrop)			
161.		Crassula glomerata	Y		
162.		Crinia glauerti (Clicking Frog)			
163.		Crinia insignifera (Squelching Froglet)			
164.		Cryptoblepharus buchananii			
165.		Cryptostylis ovata (Slipper Orchid)			
166.		Ctenophorus adelaidensis (Southern Heath Dragon, Western Heath Dragon)			
167.	25027	Ctenotus australis			
168.	25039	Ctenotus fallens			
169.	25040	Ctenotus gemmula (Jewelled South-west Ctenotus (Swan Coastal Plain subpop P3), skink)			
170.	6663	Cuscuta epithymum (Lesser Dodder, Greater Dodder)	Y		
			12:001	Department of Biodiversity,	WESTER

	Name ID	Species Name	Naturalise	d Conservation Code	¹ Endemic To Quer Area
171.	24322	Cygnus atratus (Black Swan)			Alou
172.	30901	Dacelo novaeguineae (Laughing Kookaburra)	Y		
173.	30902	Dacelo novaeguineae subsp. novaeguineae (Laughing Kookaburra)	Y		
174.		Dactylopus dactylopus			
175.	25673	Daphoenositta chrysoptera (Varied Sittella)			
176.	18560	Daviesia divaricata subsp. divaricata			
177.	3845	Daviesia triflora			
178.	25766	Delma fraseri (Fraser's Legless Lizard)			
179.		Dianella revoluta (Blueberry Lily)			
180.		Dianella revoluta var. divaricata			
181.		Dichopogon capillipes			
182.		Dielsia stenostachya			
183.	17000	Dingosa serrata			
184.	2011	Diplotaxis muralis (Wall Rocket)	Y		
185.		Dischisma arenarium	Y		
			ř		
186.		Diuris brumalis			
187.		Diuris laxiflora (Bee Orchid)			
188.		Diuris magnifica			
189.		Drosera erythrorhiza (Red Ink Sundew)			
190.	3106	Drosera macrantha (Bridal Rainbow)			
191.	3131	Drosera stolonifera (Leafy Sundew)			
192.		Egretta novaehollandiae			
193.	347	Ehrharta calycina (Perennial Veldt Grass)	Y		
194.	349	Ehrharta longiflora (Annual Veldt Grass)	Y		
195.		Elanus axillaris			
196.	47937	Elseyornis melanops (Black-fronted Dotterel)			
197.		Eolophus roseicapillus			
198.	24567	Epthianura albifrons (White-fronted Chat)			
199.		Eragrostis sp. indet.			
200.	17175	Eremophila glabra subsp. albicans			
201.		Eryngium pinnatifidum subsp. pinnatifidum			
202.		Erythrogonys cinctus (Red-kneed Dotterel)			
203.		Eucalyptus decipiens (Limestone Marlock, Moit)			
204.		Eucalyptus foecunda (Narrow-leaved Red Mallee)			
205.		Eucalyptus gomphocephala (Tuart, Duart)			
205.					
		Eucalyptus marginata (Jarrah, Djara)			
207.		Eudyptula minor (Little Penguin)			
208.		Euphorbia terracina (Geraldton Carnation Weed)	Y		
209.		Falco berigora (Brown Falcon)			
210.		Falco cenchroides (Australian Kestrel, Nankeen Kestrel)			
211.		Falco longipennis (Australian Hobby)			
212.	24041	Felis catus (Cat)	Y		
213.		Fomitopsis lilacinogilva			
214.	25727	Fulica atra (Eurasian Coot)			
215.	24761	Fulica atra subsp. australis (Eurasian Coot)			
216.	907	Gahnia trifida (Coast Saw-sedge)			
217.	7323	Galium murale (Small Goosegrass)	Y		
218.	24763	Gallinula tenebrosa subsp. tenebrosa (Dusky Moorhen)			
219.	25730	Gallirallus philippensis (Buff-banded Rail)			
220.		Gamochaeta coarctata	Y		
221.	4339	Geranium molle (Dove's Foot Cranesbill)	Y		
222.		Gerygone fusca (Western Gerygone)			
223.		Gladiolus caryophyllaceus (Wild Gladiolus)	Y		
223.		Gompholobium tomentosum (Hairy Yellow Pea)			
224.		Grallina cyanoleuca (Magpie-lark)			
225. 226.		Grailina cyanoleuca (Magpie-lark) Grevillea crithmifolia			
227.		Grevillea preissii subsp. preissii			
228.		Grevillea vestita			
229.	12824	Grevillea vestita subsp. vestita			
230.		Gymnothorax woodwardi			
231.		Haematopus longirostris (Pied Oystercatcher)			
232.	2175	Hakea lissocarpha (Honey Bush)			
233.	2214	Hakea trifurcata (Two-leaf Hakea)			
234.	24295	Haliastur sphenurus (Whistling Kite)			
235.	3961	Hardenbergia comptoniana (Native Wisteria)			
236.	25410	Heleioporus eyrei (Moaning Frog)			
237.		Heliophila pusilla	Y		
238.		Heliotropium europaeum (Common Heliotrope)	Y		
239.		Hemiergis quadrilineata			
240.		Heterodontus portusjacksoni			
			. John		
			Land Do	partment of Biodiversity,	WESTERI

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To G Area
241.	5135	Hibbertia hypericoides (Yellow Buttercups)			
242.	5162	Hibbertia racemosa (Stalked Guinea Flower)			
243.	48381	Hibbertia striata			
244.	47965	Hieraaetus morphnoides (Little Eagle)			
245.	25734	Himantopus himantopus (Black-winged Stilt)			
246.	24491	Hirundo neoxena (Welcome Swallow)			
247.		Hogna crispipes			
248.	6222	Homalosciadium homalocarpum			
249.		Hordeum glaucum (Northern Barley Grass)	Y		
250.		Hovea trisperma (Common Hovea)			
251.		Hovea trisperma var. trisperma			
252.		Hybanthus calycinus (Wild Violet)			
253.		Hybanthus debilissimus			
254.		Hydrocotyle blepharocarpa			
255.					
		Hydrophis elegans (Elegant Seasnake, Bar-bellied Seasnake)			
256.		Hydrophis platurus (Yellow-bellied Seasnake)			
257.		Hypocalymma angustifolium subsp. Swan Coastal Plain (G.J. Keighery 16777)			
258.		Hypocalymma robustum (Swan River Myrtle)			
259.	8086	Hypochaeris glabra (Smooth Catsear)	Y		
260.		Idiommata blackwalli			
261.	910	Isolepis cernua (Nodding Club-rush)			
262.		Isolepis cernua var. cernua			
263.	917	Isolepis marginata (Coarse Club-rush)			
264.		Isopeda leishmanni			
265.	8092	Ixiolaena viscosa (Sticky Ixiolaena)			
266.	1178	Juncus bufonius (Toad Rush)	Y		
267.	1185	Juncus kraussii (Sea Rush)			
268.	4044	Kennedia prostrata (Scarlet Runner)			
269.	24070	Kogia breviceps (Pygmy Sperm Whale)			
270.	1370	Lachenalia reflexa	Y		
271.	467	Lagurus ovatus (Hare's Tail Grass)	Y		
272.		Lampona cylindrata			
273.	30920	Larus crassirostris (Black-tailed Gull)			Y
274.		Larus novaehollandiae subsp. novaehollandiae (Silver Gull)			
275.		Lepidosperma angustatum			
276.		Lepidosperma longitudinale (Pithy Sword-sedge)			
277.	001	Lepidosperma sp.			
278.	15/18	Leptoceras menziesii			
279.		Lerista elegans			
280.		-			
280. 281.		Leucopogon parviflorus (Coast Beard-heath)			
		Leucopogon propinquus			
282.		Lialis burtonis			
283.		Lichmera indistincta (Brown Honeyeater)			
284.		Limnodynastes dorsalis (Western Banjo Frog)			
285.		Linum marginale (Wild Flax)			
286.		Litoria adelaidensis (Slender Tree Frog)			
287.		Litoria moorei (Motorbike Frog)			
288.	9289	Lobelia anceps (Angled Lobelia)			
289.		Lobelia tenuior (Slender Lobelia)			
290.	1223	Lomandra caespitosa (Tufted Mat Rush)			
291.	1231	Lomandra maritima			
292.	1198	Luzula meridionalis (Field Woodrush)			
293.		Lycosa godeffroyi			
294.	1097	Lyginia barbata			
295.	85	Macrozamia riedlei (Zamia, Djiridji)			
296.	25654	Malurus splendens (Splendid Fairy-wren)			
297.		Maxillicosta scabriceps			
298.	25758	Megalurus gramineus (Little Grassbird)			
299.		Melaleuca huegelii subsp. huegelii			
300.		Melaleuca rhaphiophylla (Swamp Paperbark)			
301.		Melaleuca teretifolia (Banbar)			
302.		Melaleuca viminea subsp. viminea			
302. 303.		Melia azedarach (White Cedar)			
304. 205		Menetia greyii			
305.		Menetia maini			
306.		Menetia surda subsp. cresswelli			
307.		Menetia surda subsp. surda			
308.		Merops ornatus (Rainbow Bee-eater)			
309.	955	Mesomelaena pseudostygia			
310.		Microcarbo melanoleucos	2.5		WES AUS

WESTERN AUSTRALIAN

Name ID Species Name

Naturalised Conservation Code ¹ Endemic To Qu
--

911 445. Morelina singundas 913 Missuina progri 913. Missuina progri 913. 2518 914. 2519 915. 2519 916. 2519 917. 2512 918. 2519 918. 2519 919. 2519 919. 2519 911. 910. 912. 400. 913. 2519 914. More sample and provide a subge, nucleade 915. 911. 912. 401. 913. 912. 914. More sample (Possi Muscue) 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914. 915. 914.	Conservation Code Endemic To Que Area
313Massukan agriankaa31442518Massukan agriankaa31542518Marahib achakaanaa3162519Marahib achakaanaa3172519Marahib achakaanaa31825113Marahib achakaanaa31925113Marahib achakaanaa31025114Marahib achakaanaa31125114Marahib achakaanaa31224120Marahib achakaanaa31325114Marahib achakaanaa31444008Marahab achakaanaa31524223Marahab achakaanaa3162423Marahab achakaanaa3172423Marahab achakaanaa3182423Marahab achakaanaa3192423Marahab achakaanaa3108440Marahab achakaanaa3117430Marahab achakaanaa31224430Marahab achakaanaa3137430Barahaba akhakaanaa31424430Marahaba achakaanaa31574450Parahabahanaa31624530Parahabahanaa (Spatiana)31725820Parahabahanaa (Spatiana)3182583Parahabahanaa (Spatiana)31925830Parahabahanaa (Spatiana)31025830Parahabahanaa (Spatiana)31125840Parahabahanaa31225830Parahabahanaa31325840Parahabahanaa31425840Parahabahanaa31524450Parahabahahanaa316<	
914 2519 Moreahin advectoral functional	
114.218.March in accounting accounting115.2519More in a lange of accounting126.2519More in a lange of accounting127.2519More in a lange of accounting128.2519More in a lange of accounting129.2519More in a lange of accounting120.2519More in a lange of accounting121.4400More accounting of accounting122.2422Marken accounting (Austing Saine) (Austing Saine) (Austing Saine)123.24223Marken accounting (Austing Saine) (Austing Saine) (Austing Saine)124.Marken accounting (Austing Saine) (Austing Saine) (Austing Saine)125.25227Note character accounting safe, accounting (Austing Saine) (Austing Saine)126.25279Note character accounting safe, accounting (Austing Saine)127.2441Marken accounting (Austing Saine)128.25564More character accounting (Austing Saine)129.24470Department (Character Alphara)120.244470Department (Character Alphara)121.25580Pacholeans protecting (Austing Marken)123.24680Pacholeans protecting (Austing Marken)124.25680Pacholeans protecting (Austing Marken)125.25641Partholean protecting (Austing Marken)126.25691Pacholeans protecting (Austing Marken)127.24642Pace character (Austing Marken)128.24649Pace character (Austing Marken)129.24649	
918. 22189 Montha backungori 918. 22191 Montha infocuoda sudzo, requisita 918. 22191 Montha infocuoda sudzo, requisita 918. 22191 Montha infocuoda sudzo, requisita 918. 22191 Montha informado sudzo, requisita 918. 22191 Montha informado sudzo, requisita 918. 2211 4000 Montha informado sudzo, requisita 918. 22141 Montha backnet (Austabalasian Gamet) Y 918. 22191 Montha backnet (Flops Fack) Y 918. 22191 Montha backnet (Flops Fack) Y 918. 22191 Montha backnet (Flops Fack) Y 918. 22101 Nationa fack fack fack fack fack fack fack fac	
1112131Morefa bancomellan11225131Morefa in Alcoude subap. exquisite11325141Morefa in Alcoude subap. exquisite11425141Morefa in Stand S	
11. 24193 Monthin a facture a subge, surging 13. 25194 Monthin a facture a subge, rufanuata 13. 25195 Monthin a facture a subge, rufanuata 13. 25196 Monthin a subge, rufanuata 13. 25195 Monthin a subge, rufanuata 13. 25195 Monthin a subge, rufanuata 13. 25195 Monthin a subge, rufanuata 13. 2512 Mathin Subsettin (Floors Roke) 13. 2525 Monthin a subge, rufanuata 13. 2525 Monthin a subge, rufanuata 13. 2525 Monthin a subge, rufanuata 13. 2536 Monthin a subge, rufanuata 13. 25401 Maydis fin Ganada (Royab D Balypent) 13. 7480 Descularita hisplaia (Harpad Stahweed) 13. 24815 Parlopplaia subge, rufanuata (Karla Markata) 13. 24816 Parlopplaia subge, rufanuata (Karla Markata) 13. 24817 Parlopplaia facha turbas, fuctora Markata) 13. 24818 Parlopplaia facha turbas <td< td=""><td></td></td<>	
1913 25193 Monthis nificauds autop. nuficauds 231 25195 Monthis stort 232 25195 Monthis stort 233 2423 Monthis stort Y 234 44000 Monthis Stort Y 235 2423 Monthis Stort Y 236 2425 Monthis Stort Y 237 2411 Monthis Stort Y 238 24201 Monthis Stort Y 238 2401 Opphase Indepice (Cester Preprint Y 238 2404 Opphase Indepice (Cester Preprint Y 238 2404 Opphase Indepice (Cester Preprint Y 238 2405 Parabiolas stratus (Causa Indepice) Y 234 2408 Parabiolas incluse Stratus Indepice) Y 235 516 Parabiolas incluse Stratus Indepice) Y 236 24031 Parabiolas incluse Stratus Indepice) Y 237 24041 Paracoinas anoconsits (Funct Parabiolas Indepice) <td< td=""><td></td></td<>	
1919. 2519.4 Morentia nificaudia subria 321. 44008 Marcus serrator (Australassian Gannel) 322. 2412 Mulanhanckia seprasor (Inturing Lignam) 323. 2423 Marta macanite (Fuera Roleas) Y 324. Maya macanite (Fuera Roleas) Y 325. 2523 Marta macanite (Fuera Roleas) Y 326. 2519 Molansconce arratus autop, ornana International (Charitam Series, Rulaja) Y 333. 8149 Oleania nulas (Rough Daisytuch) Y International (Charitam Series, Rulaja) Y 334. 24080 Polytopast series (Statu Martania) Y International (Charitam Series) Y 335. 518 Randholas incurva (Coass Barligmas) Y International (Charitam Series) Y 336. 24042 Passar voltam Series (Statu Stratal Roleania) Y Internation (Charitam Series)	
120.21193Monital scarafier (Marshaltsen Gamed)221.24101Marshaltsekka adpressa (Cambing Lguan)232.2422Mars macuka (House Mouse)Y233.2422Marshaltsekka adpressa (Cambing Lguan)Y234.Mayerida belochasY235.2422Marshaltsekka (House Mouse)Y236.2523Matchins scattala (Tiger Sinkle)Y237.24401Mayerida belochas (House Mouse)Y238.24407Orophaps lephotes (Created Pigeon)Y239.24407Orophaps lephotes (Created Pigeon)Y230.61419Oger admin halpskila (Hagd Stahweod)Y231.7348Oger admin halpskila (Hagd Stahweod)Y232.0photes inciclus (Rathi)Y233.24681Paradolous stratus scatour wateriansis (Stratud Parchaloto)Y234.25890Paradolous stratus scatour wateriansis (Stratud Parchaloto)Y235.24681Paradolous stratus (Stratud Parchaloto)Y236.24691Paradolous stratus (Stratud Parchaloto)Y237.25882Paradolous stratus (Stratud Parchaloto)Y238.24642Paradocas cables (Parafe Parchaloto)Y239.24642Paradocas cables (Parafe Parchaloto)Y231.2464Paradocas cables (Parafe Parchaloto)Y232.2468Paradocas cables (Parafe Parchaloto)Y234.2464Paradocas cables (Parafe Parafe Parafe Parafe Parafe Parafe P	
14003 Monipal endocida adprassa (Cimbing Lgnum) 322. 2412. Mus minacula diprassa (Cimbing Lgnum) 323. 2422. Mus minacula diprassa (Cimbing Lgnum) 324. Magning bachcata Y 325. 252.5 Mus minaculata (Tiger Stake) Image: Cimbing State (Cimbing Cimbing State, Mulaja) 326. 25197 Motoscince ormatus autop, ornans Image: Cimbing Cimbing Cimbing State, Mulaja) 327. 24407 Ocytologica calebonicas (Cinstand Pigeon) Image: Cimbing Cimbing Cimbing State, Mulaja) 328. 25644 Mysini Riphotias (Cinstand Pigeon) Y 338. 12408 Orphisurus senens Y 338. 24088 Parologicas curiculus (Robid Paradoke) Y 338. 24088 Parologicas curiculus (Strader Paradoke) Y 338. 24089 Paradokins punctus (Strader Paradoke) Y 338. 24081 Paradokins punctus (Strader Paradoke) Y 341. 24042 Pasar contaxis substate, Strate Substate	
1220412Markhanbackia adprassa (Cimaing Lgurn)123.2423Mar muscuk (House Mouse)Y124.Markan bainciaY125.2252Notechis contatas subp. matus.Y126.22517Notechis contatas subp. matus.Y127.4041Natisa Robunda (Cinairma Tree, Mulaja)Y128.22544Notechis Markan Mula (Southan Schlage Natholas)Y129.24007Opphaps kaphotes (Crested Pigeon)Y130.6143Operational inspicula (Hippi Schweed)Y131.7348Operational inspicula (Hippi Schweed)Y133.24050Opciclogue uniculus (Robit)Y134.25610Paridotis nurcatus (Schott Bardgrass)Y135.24631Paridotis nurcatus (Schott Bardgrass)Y136.24632Paridotis nurcatus (Schott Bardgrass)Y137.24632Paridotis nurcatus (Schott Bardgrass)Y138.24632Paridotis nurcatus (Schott Bardgrass)Y139.24632Paridotis nurcatus (Schott Bardgrass)Y131.24671Paridotis nurcatus (Schott Bardgrass)Y132.24672Paridotis nurcatus (Schott Bardgrass)Y134.24674Paridotis nurcatus (Schott Bardgrass)Y135.2467Palearocoax carbo (Great Cormarn)Y136.2468Paridotis nurcatus (Schott Bardgrass)Y137.24674Palearocoax carbo (Great Cormarn)Y138. <td></td>	
232 24223 Mar maculas (Huse Mouse) Y 334. Myandra bicrica Y 335. 25252 Notechis scatatus (Tipr Snake) X 326. 25197 Noteschruss contatus study, ornatus X 327. 3241 Nurgisa findrunda (Chrismas Tree, Mudgi) X 328. 2554 Nytechoras caledonicus (Rulus Night Horon) X 328. 2556 Nytechoras caledonicus (Rulus Night Horon) X 331. 734 Operabura seponts Y 333. 8149 Operabura seponts Y 334. 25680 Pachycephal unflemtrik (Rulus Whiteler) Y 335. 516 Parapholis incurva (Coast Barbagrass) Y 336. 25681 Pardolous striatus (Striated Parabiole) Y 337. 25882 Pardolous striatus (Striated Parabiole) Y 338. 24630 Parabious striatus (Striated Parabiole) Y 344. 1509 Patersonia occidentalis (Purple Fag, Kona) Y 344. 24648 Palengonum titrak (Striated Parabiole) Y 344. 24648 Palengonum titrak (Striated Parabiole) Y 344. 24648 Palengonum	
232 24223 Mar maculas (Huse Mouse) Y 334. Myandra bicrica Y 335. 25252 Notechis scatatus (Tipr Snake) X 326. 25197 Noteschruss contatus study, ornatus X 327. 3241 Nurgisa findrunda (Chrismas Tree, Mudgi) X 328. 2554 Nytechoras caledonicus (Rulus Night Horon) X 328. 2556 Nytechoras caledonicus (Rulus Night Horon) X 331. 734 Operabura seponts Y 333. 8149 Operabura seponts Y 334. 25680 Pachycephal unflemtrik (Rulus Whiteler) Y 335. 516 Parapholis incurva (Coast Barbagrass) Y 336. 25681 Pardolous striatus (Striated Parabiole) Y 337. 25882 Pardolous striatus (Striated Parabiole) Y 338. 24630 Parabious striatus (Striated Parabiole) Y 344. 1509 Patersonia occidentalis (Purple Fag, Kona) Y 344. 24648 Palengonum titrak (Striated Parabiole) Y 344. 24648 Palengonum titrak (Striated Parabiole) Y 344. 24648 Palengonum	
124.Mancha bioincia235.2525Notechis scutula (Tiper Snoke)236.2517Notechis scutulas (tiper Snoke)237.4241Nytiska finkthunka (Christmas Tree, Mutja)238.25447Opyhaps kaphotes (Crested Pigeon)239.24447Opyhaps kaphotes (Crested Pigeon)230.4149Oparian andia (Kough Dainybush)231.17348Operationa hapidula (Hispith Sinkweed)232.Ophicurus supers233.25680Pechogobala ruficaritis (Rulcus Whistor)234.25681Pardolous purchas (Spoted Pardolous)235.5161Parapholis rutina (Stored Pardolous)236.25681Pardolous purchas (Spoted Pardolous)237.25682Pardolous purchas (Spoted Pardolous)238.25691Pardolous contexils (Stored Pardolous)239.24642Passer montanus (Urssian Tree Sporon)240.1550Paratolous contexils (Australian Pelican)241.2464Paser montanus (Crussian Tree Sporon)242.Pagaus voltans244.24648Peleranus conspicituus (Australian Pelican)245.16000 multitorale246.16000 multitorale247.16000 multitorale248.25691248.16000 multitorale (Cruston Contron)248.16000 multitorale (Cruston Contron)249.16000 multitora vir. anditori241.2469242.16000 multitora vir. anditori244.16000 multitora vir. anditori </td <td></td>	
325. 2552 Noteschics corrators subap. ornators 326. 25197 Noteschicus ornators subap. ornators 327. 4241 Notysia forbuinda (Chrismas Tree, Mudg) 328. 25544 Mytcharax caledonicus (Rubus Nigh Heron) 328. 25545 Mytcharax caledonicus (Rubus Nigh Heron) 328. Openicums septies (Paper Schick (Rubus Nigh Heron) 331. 7348 Openicums septies (Paper Schick (Rubus Nigh Heron) 333. 24085 Opricolague cuniculus (Rabus Nighted Nighted) (Paper Schick (Rubus Nighted Nighted) 333. 24085 Porprologue cuniculus (Schotd Pardshole) (Paper Schick (Rubus Nighted) 334. 25681 Pardsholus a triatus subg, westralienss (Striated Pardshole) (Yathed) 335. 24630 Pardsholus a triatus subg, westralienss (Striated Pardshole) (Yathed) 335. 24642 Paser monito accidentiats (Parple Flag, Korna) (Yathed) 341. 24647 Pearocan compicilitus (Australian Paelson) (Yathed) 342. Paterschica compicilitus (Australian Paelson) (Yathed) 344. 24648 </td <td></td>	
325 25197 Notschnuts omela subp. omelas 327. 2401 Naysia fonbunda (Chrismes Tree, Mudga) 328. 2554 Nuclicosa caledionicus (Rubus Nght Heron) 329. 24407 Oophaps kaphotes (Cossed Pagon) 321. 17348 Operativita (Rough Dailystus) 322. Ophisuus serpens 9 323. 20405 Opricabus ankalus (Rabbi) Y 323. 20405 Opricabus ankalus (Rabbi) Y 333. 20405 Opricabus ankalus (Rabbi) Y 334. 2650 Parcholous purcelus (Spotted Pardolote) Y 335. 2561 Pardolous strintus subap, metrafonsis (Striated Pardolote) Y 336. 2643 Pardolous strintus (Striated Pardolote) Y 337. 25628 Pardolous strintus (Striated Pardolote) Y 348. 26437 Paro cristatus (Common Peafox) Indian Peafox) Y 344. 2464 Peleosus conducts (Carter Morin) Y 344. 2464 Peleosus conducts (Carte Morin) Y	
327. 2401 Nuytsia floribunda (Christmas Tree, Mudje) 328. 22564 Nychocina całedonicus (Nulus Night Heron) 330. 8140 Olearia rudis (Rough Dalsybush) 331. 81480 Olearia rudis (Rough Dalsybush) 332. Ophistrus serpens 9 333. 24085 Orychalgus anirotuka (Rabbi) Y 335. 25680 Pachycoga nairotuka (Rabbi) Y 335. 516 Parapholis incurva (Coast Barbgrass) Y 336. 22680 Pachycoga nairotuka (Rabbi) Y 337. 25852 Paradolots strikus (Striated Paradolote) Y 338. 24630 Parakolus strikus (Striated Paradolote) Y 338. 24642 Passer montanus (Eurasam Tree Sparony) Y 341. 2464 Pelescania conspicilitats (Australian Pelican) Y 342. Pelasyoniam ittorate Y 343. 4364 Pelecanus conspicilitats (Australian Pelican) Y 344. 24648 Pelecanus conspicilitats (Australian Pelican) Y 344. 24648 Pelecanus conspicilitats (Australian Pelican) <td></td>	
328. 25564 Nyckicoras caledonicus (Rufous Night Heron) 329. 24470 Oopharus (Rough Dasyous) 331. 7340 Operacutaris (Rough Dasyous) 333. 24085 Oryctolagus cuniculus (Robbit) Y 333. 24085 Oryctolagus cuniculus (Robbit) Y 334. 25680 Pachycophala nifwentris (Rufous Whister) Y 335. 516 Parapholis incurva (Coas Bedropass) Y 336. 25681 Paralolous striatus (Stotted Paradolot) Y 337. 25682 Paralolous striatus (Stotted Paradolot) Y 338. 24642 Passer montanus (Eurasian Tree Sparow) Y 340. 1550 Patersonia cocidential (Pupe Flag, Kona) Y 341. 24642 Passer montanus (Eurasian Tree Sparow) Y 342. Pelecanus conspicifiatus (Australian Pelcan) Y 343. 44648 Pelecanus conspicifiatus (Australian Pelcan) Y 344. 24649 Pelecanus conspicifiatus (Australian Pelcan) Y 345. 166661	
329. 24407 Ocyphaps lophotes (Created Pigeon) 330. 8149 Delera' rulis (Rough Delsybush) 331. 1738 Oprisurus serpens 332. 24065 Oprisurus serpens 333. 24065 Oprisurus serpens 334. 25680 Prachyoephala ruliventris (Rulous Whistler) 335. 516 Prarabous punctatus (Coast Barbgrass) Y 336. 225631 Paradous stratus suba, westraliensis (Strated Paradote) Y 337. 25622 Paradotus stratus suba, westraliensis (Strated Paradote) Y 338. 24630 Paradotus stratus (Strated Paradoten) Y 340. 1550 Patersonia occidentalis (Purple Fiag, Korna) Y 341. 24674 Paeroscinia compolicitatis (Australian Paelowi) Y 342. Pelagonium littorale Y 344. 24484 Pelaconzo carbot (Garcen Robin) Y 345. 16964 Pericoicnia lapathicia Y 346. 4061 Perocheidon rugicoans carbot (Garcen Carmonn) Y 347. 4966 Perocheidon comorani Garcei (Fobin) Y	
331.8149Olerain rudis (Rough Daisybush)331.7480Ophisturus separas333.24680Ophisturus separas333.24680Noycologuas curiculus (Robbi)Y334.2580Pachycophalan dihentris (Rohots Mhister)Y335.516Parapholis incurva (Coast Barbgrass)Y336.25611Paralolus punctatus (Spotted Paralolot)Y337.224522Paradolus striaus (Striated Paralolot)Y338.24452Passer montanus (Eurasian Tee Sparrow)Y341.24570Paralolus striaus (Suta Paralow, Indian Paelow, Indian	
331. 7348 Opercularia hispidula (Hispid Stinkweed) 332. 2065 Oprisfugs euniculus (Rebbit) Y 333. 22680 Pardispophia nulnentis (Rubus Mistaler) Y 335. 516 Parapholis incurva (Coast Bartynass) Y 336. 22581 Pardisotus punctatus (Spotted Pardalote) Y 337. 25852 Pardisotus stinatus (Stapated Pardalote) Y 338. 224642 Passer montanus (Eurasian Tree Sparrow) Y 341. 1550 Patersonia occiande (Intraha Paalow), Indian Paalow) Y 342. Pagasus voltans (Standa Pardalotus 2) Y 343. 4346 Palergonium ittorale Y 344. 24648 Pelecanus conspiciellatus (Australien Pelican) Y 344. 24648 Pelecanus conspiciellatus (Australien Pelican) Y 344. 24649 Pelecanus conspiciellatus (Australien Pelican) Y 344. 2468 Peleconcorax carlo (Green Commant) Y 345. 16964 Patrochorax carlo (Green Commant) Y 351. 24667 Phalacococorax walius (Feled Com	
331. 7348 Opercularia hispicula (Hispid Stinkweed) 332. Qohisurus sarpars 333. 24085 Oyrobingus cuniculus (Rabbil) Y 334. 25681 Paralycephala nilventris (Rulous Whitsler) Y 335. 5165 Paralpolis incurva (Casat Barbaprass) Y 336. 22681 Paralobus punctatus (Strated Paralote) Y 337. 25682 Paralobus striaus (Strated Paralote) Y 338. 24642 Passer montanus (Eurasian Tree Sparrow) Y 340. 1550 Patersonia occitabus (Churash Paralokus) Y 341. 24642 Passer montanus (Eurasian Tree Sparrow) Y 342. Pagasus voltans Y Y 343. 4346 Pelacynus fitorale Y 344. 2448 Pelacynus fitorale Y 344. 2448 Pelacynus fitorale Y 345. 16984 Persicaria lapathiola Y 346. 46061 Pertrohele ningrava (Tree Marin) Y 347. 48066 Petrohele ningrava (Tree Marin) Y	
332. Ophiaurus serpens Y 333. 24065 Oryctolegus cuiculus (Rabit) Y 334. 22580 Pachycophia Inflventin (Rufcus Whister) Y 335. 25681 Paradolots punctatus (Spötted Pardalote) Y 336. 25681 Pardalotus striatus (Spötted Pardalote) Y 337. 25682 Pardalotus striatus (Striated Pardalote) Y 338. 24632 Parseer montanus (Eurasian Tree Sparrow) Y 338. 24642 Passer montanus (Eurasian Tree Sparrow) Y 341. 12674 Pageser voltanus Y 343. 4346 Pelasynovitins Y 344. 24648 Pelasynovitins Y 345. 16984 Parsical lapabit/Olia Y 346. 48061 Perioca boodong (Scarlet Robin) Y 348. 25997 Pelastrocorax ande (Great Cormorant) Y 350. 25698 Phalacrocorax sullis (Plot Cormorant) Y 351. 24667 Phalacrocorax sullis (Plot Cormorant	
333. 24085 Öryctolögus cuniculus (Rabbit) Y 334. 25680 Pachycephela ruftwentris (Kuluus Whistler) Y 335. 516 Parajholis Incurva (Casa Barbgrass) Y 336. 25681 Paralholus spunctatus (Spotted Paralalote) Y 337. 25682 Paralalotus striatus (Striated Paralalote) Y 338. 24630 Paralalotus striatus (Carsian Tee Sparrow) Y 340. 1550 Parasonia occidentalis (Purple Fig, Korna) Y 341. 24647 Pavo cristatus (Common Peafowi, Indian Peafowi) Y 342. Fegasus volltars Y Y 343. 4486 Pelescanus conspiciliatus (Australian Pelicon) Y 344. 24648 Pelescanus conspiciliatus (Australian Pelicon) Y 345. 16984 Pereico boodeng (Scafel Robin) Y 346. 48061 Perochelion Ingincaris (Tree Martin) Y 347. 25699 Phalecrocarax uchos (Littel Bied Cormorant) Y 351. 24667 Phalecrocarax uchos (Littel Bied Cormorant) Y 352. 25699 Phala	
334. 25680 Parapholis incurva (Caust Barbgrass) Y 335. 25681 Paradholus striatus (Caust Barbgrass) Y 337. 25682 Paradholus striatus (Striated Paradalote) Y 338. 24630 Paradholus striatus (Striated Paradalote) Y 338. 24642 Passer motanus (Eurasian Tree Sparov) Y 341. 24674 Pavo cristatus (Common Peafow), Indian Peafow) Y 343. 4484 Pelersonia occidentalis (Purple Fag, Korna) Y 343. 4448 Pelersonia compolicitatus (Lournon Peafow), Indian Peafow) Y 344. 24648 Pelersonia compolicitatus (Lustralian Pelican) Y 345. 16980 Parascina kapathilolia Y 346. 46061 Parochilotan ingicans (Tree Martin) Y 347. 48066 Perroica bordang (Scarif Robin) Y 348. 25997 Phalacrocorax audo (Creet Cornorant) Y 351. 24667 Phalacrocorax uslic/ted Cormorant) Y 353. Puble audo parascina kapathilolia Y 355. Philebia rufe Philoia subocraoca	
335. 516 Parapholis incurva (Coast Barbgrass) Y 336. 25681 Pardalotis punctatus (Spotted Pardalote) Similar Stratus	
336. 25681 Pardalotus ginusus (Striated Pardalote) 337. 25682 Pardalotus srintus usbur, westraliensis (Striated Pardalote) 338. 24642 Parsa montanus (Eurasian Tree Sparrow) Y 339. 24642 Passer montanus (Eurasian Tree Sparrow) Y 341. 1550 Patersonia occidentalis (Purpe Flag, Korna) Y 342. 42674 Pavo: cristus (Cornorne Paelow, Indian Pealow, Passer,	
337. 25682 Pardalotus striatus (Striated Pardalote) 338. 24630 Pardalotus striatus subsp. westraliensis (Striated Pardalote) 338. 24642 Passer montanus (Eurssin Tree Sparnow) Y 340. 1550 Patersonia occidentalis (Purple Flag, Korna) Y 341. 24674 Passer vontanus (Common Pealowi, Indian Pealowi) Y 342. Pergesus voltans Y 343. 4346 Pelargonium littorale Y 344. 24648 Pelargonium littorale Y 344. 24689 Pelargonium littorale Y 345. 16984 Persicia lapathifolio Y 346. 48061 Petrocheldon nigricans (Tree Martin) Y 348. 225697 Phalacrocorax carbo (Great Cormorant) Y 350. 25698 Phalacrocorax varius (Pied Cormorant) Y 351. 24667 Phalacrocorax varius (Pied Cormorant) Y 352. 25699 Phalacrocorax varius (Pied Cormorant) Y 353. 24407 Philebia subcaracea Y 355. Philebia subcaracea	
338. 24630 Pardalotus striatus subsp. westraliensis (Striated Pardalote) 338. 24642 Passer montanus (Eurasian Tree Sparrow) Y 340. 1550 Patersonia occidentalis (Purple Fig, Koran) Y 341. 24674 Pave cristatus (Common Peadowi, Indian Pealowi) Y 342. Pegasus voltans Y 343. 4346 Pelargonium littorale Y 344. 24648 Pelaconus conspicibilus (Australian Pelican) Y 346. 48061 Pertochelidon nigricans (Tree Martin) Y 348. 22699 Petrochelidon nigricans (Tree Martin) Y 348. 22699 Petrochelidon nor anno (Startet Robin) Y 350. 25657 Phalacrocorax uslicrostris (Little Piel Cormorant) Y 351. 24667 Phalacrocorax value (Net Cormorant) Y 353. 24409 Phages chalcopters (Commont) Y 354. Philebia rufa Y Y 355. Philebia rufa Y 356. 6734 Phylophyris norweinol Honsyeater) Y 356. 6734 <td< td=""><td></td></td<>	
339. 24642 Passer montanus (Eurasian Tree Sparrow) Y 340. 1550 Patersonia occidentalis (Purple Plag, Koma) Y 341. 24674 Pavo cistatus (Common Peafowl, Indian Peafowl) Y 342. Pagasus voltans Y 343. 4346 Pelaconic conspicilitus (Australian Pelican) Y 344. 24648 Pelaconic conspicilitus (Australian Pelican) Y 345. 16984 Parsicani kapathifolia Y 346. 42061 Pertocheldon nigricans (Tree Marin) Y 348. 2239 Petrophile linearis (Pixie Mops) Y 348. 25687 Phalacrocorax arbio (Greet Cormorant) Y 351. 24667 Phalacrocorax valus (Pied Cormorant) Y 353. 24409 Phalacrocorax valus (Pied Cormorant) Y 354. Philebia rula Y 355. Philebia rula Y 356. 1478 Philebia rula Y 357. Philebia rula Y 358.	
340. 1550 Patersonia occidentalis (Purple Flag, Koma) Y 341. 24474 Pavo cristatus (Common Peadow), Indian Peadow) Y 342. Pegasus volitans Y 343. 4346 Pelargonium littorale Y 344. 24648 Pelocanus conspicillatus (Australian Pelican) Y 345. 16984 Persocheidon nigricans (Tree Martin) Y 346. 48061 Persocheidon nigricans (Tree Martin) Y 347. 48066 Persocheidon nigricans (Tree Martin) Y 348. 22597 Phalacrocorax carlo (Great Cormorant) Y 350. 25698 Phalacrocorax subic/ostris (Little Biack Cormorant) Y 351. 24467 Phalacrocorax subic/ostris (Little Biack Cormorant) Y 352. 25599 Phalacrocorax subic/ostris (Little Biack Cormorant) Y 353. 24409 Phage subacrocaea Y 354. Phibbia rufa Y Y 355. Phibbia subcracea Y 356. 1747 P	
341. 24674 Pavo cristatus (Common Pealow, Indian Pealow) Y 342. Pegasus voltans	
341. 24674 Pavo cristatus (Common Pealow, Indian Pealow) Y 342. Pegasus voltans	
342. Pegasus volitans 343. 4346 Pelargonium littorale 344. 24648 Pelacanysus conspicillatus (Australian Pelican) 345. 16844 Periscana lapathifolia Y 346. 16844 Periscana lapathifolia Y 346. 16844 Periscana lapathifolia Y 346. 48061 Periocab boodang (Scarlet Robin) 347. 48066 Periocab boodang (Scarlet Robin) 348. 2259 Priophel Ineards (Phie Mops) 348. 25697 Phalacrocorax varius (Pied Cormorant) 351. 24667 Phalecrocorax varius (Pied Cormorant) 352. 25699 Phalecrocorax varius (Pied Cormorant) 353. 24409 Phalebia rufa Y 355. Phiebia subceracea Y 356. 1478 Phiya nodiflora var. nodiflora Y 358. 4534 Phyla nodiflora var. nodiflora Y 358. 4545 Phylinentinus	
343. 4346 Pelargonium littorale 344. 24648 Pelocanus conspicillatus (Australian Pelican) 345. 16984 Perscheildon nigricans (Tree Martin) 346. 48061 Perrocheildon nigricans (Tree Martin) 347. 48066 Perrocheildon nigricans (Tree Martin) 348. 2299 Perscheildon nigricans (Tree Martin) 351. 24667 Phalacrocorax carbo (Great Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phags chalcoptere (Cormorant Ponzewing) 354. Phiebia subceracea	
344. 24648 Peleorus conspicillatus (Australian Pelican) 345. 16994 Persicaria lapathifolia Y 346. 48061 Petroica boodang (Scarler Robin) Y 348. 2299 Petrophile linearis (Pixie Mops) Y 348. 2299 Petrophile linearis (Pixie Mops) Y 349. 25697 Phalacrocorax carbo (Great Cormorant) Y 350. 25698 Phalacrocorax varius (Pied Cormorant) Y 351. 24667 Phalacrocorax varius (Pied Cormorant) Y 352. 25699 Phalacrocorax varius (Pied Cormorant) Y 353. 24409 Phage chalcoptera (Cormon Bronzewing) Y 355. Philebia subceracea Y 356. 1478 Phileboarya ciliata Y 357. Phrylandruyris niger (White-cheeked Honeyeater) Y 360. 24596 Phylidonyris novaehollandiae (New Holland Honeyeater) Y 361. 4675 Phylandrus calycinus (False Boronia) Y 362. Phylidonyris singer (White-cheeke	
345. 16984 Persicaria lapathifolia Y 346. 48061 Petrochelidon nigricans (Tree Martin)	
346. 48061 Petrochelidon nigricans (Tree Martin) 347. 48066 Petroica boodang (Scarlet Robin) 348. 2299 Petrophile linearis (Pixie Mops) 349. 25697 Phalacrocorax carbo (Great Cormorant) 350. 25698 Phalacrocorax relanoleucos (Little Pied Cormorant) 351. 24667 Phalacrocorax suis (Pied Cormorant) 352. 25699 Phalacrocorax visis (Pied Cormorant) 353. 24009 Phage chalcoptera (Cormon Bronzewing) 354. Phebia subceracea 355. Phebia subceracea 356. 14778 Phabocaya candidus 357. Phyganoporus candidus Y 358. 6734 Phylionyris niger (White-cheeked Honeyeater) 360. 24595 Phylionyris novaehollandiae (New Holland Honeyeater) 361. 4675 Phylanthus calycinus (False Boronia) 362. Phyliopryre scortea Y 363. 20652 Physalis peruviana (Cape Gooseberry) Y 364. 6933 Physalis peruviana (Cape Gooseberry) Y 365. 24479 Platogracuris usubsp. gracilis (Ke	
347. 48066 Petrojca boodarg (Scarlet Robin) 348. 2299 Petrophile linearis (Pixie Mops) 349. 25697 Phalacrocorax carbo (Great Cormorant) 350. 25698 Phalacrocorax carbo (Great Cormorant) 351. 24667 Phalacrocorax valus (Pied Cormorant) 352. 25699 Phalacrocorax valus (Pied Cormorant) 353. 24409 Phaps chalcoptera (Common Bronzewing) 354. Phiebia unfa	
348. 2299 Petrophile linearis (Pixie Mops) 349. 2597 Phalacrocorax carbo (Great Cormorant) 350. 25698 Phalacrocorax sulciostris (Little Pied Cormorant) 351. 24667 Phalacrocorax varius (Pied Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phaps chalcoptera (Common Bronzewing) 354. Philebia subceracea 355. Philebia subceracea 356. 1178 Philebocarya ciliata 357. Phryganoporus candidus Y 358. 6734 Phyle nordifora var. nodifora Y 350. 24596 Phylidonyris niger (White-cheeked Honeyeater) Y 360. 24596 Phylidonyris novaehollandiae (New Holland Honeyeater) Y 361. 4675 Phylinpryne scortea Y 363. 20652 Physalis peruviana (Cape Gooseberry) Y 364. 6983 Physalis peruviana (Cape Gooseberry) Y 365. 24814 Platokar gracilis subsp, gracilis (Keeled Legless Lizard) Y	
349. 25697 Phalacrocorax carbo (Great Cormorant) 350. 25698 Phalacrocorax melanoleucos (Little Pied Cormorant) 351. 24667 Phalacrocorax sulcirostris (Little Black Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phalacrocorax varius (Pied Cormorant) 354. Phlebia rufa	
350. 25698 Phalacrocorax melanoleucos (Little Pied Cormorant) 351. 24667 Phalacrocorax sulcirostris (Little Black Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phage chalcoptera (Common Bronzewing) 354. Phlebia rufa	
350. 25698 Phalacrocorax melanoleucos (Little Pied Cormorant) 351. 24667 Phalacrocorax sulcirostris (Little Black Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phago chalcoptera (Common Bronzewing) 354. Philebia rufa	
351. 24667 Phalacrocorax varius (Pied Cormorant) 352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phaps chalcoptera (Common Bronzewing) 354. Philebia rufa 355. Philebia subceracea 356. 1478 357. Phryganoporus candidus 358. 6734 359. 48071 360. 24596 24596 Phylidonyris niger (White-cheeked Honeyeater) 360. 24596 361. 4677 362. Phyllanthus calycinus (False Bornia) 363. 20652 364. 6983 365. 24459 366. 1478 367. Phylanthus calycinus (False Bornia) 368. 20652 Phylasils angulata Y 365. 24481 Platoer Isozonarius subsp. semilorquatus (Twenty-eight Parrot) 366. 24750 367. 25007 Pletohalar gracilis subsp. semilorquatus (Twenty-reight Parrot) 368. 577 370. <	
352. 25699 Phalacrocorax varius (Pied Cormorant) 353. 24409 Phaps chalcoptera (Common Bronzewing) 354. Phlebia rufa 355. Phlebia subceracea 356. 1478 Phlebia curda 357. Phryganoporus candidus Y 358. 6734 Phyla nodilora var. nodilora Y 359. 48071 Phylidonyris niger (White-cheeked Honeyeater) Y 360. 24596 Phylidonyris novaehollandiae (New Holland Honeyeater) Y 361. 4675 Phylidonyris novaehollandiae (New Holland Honeyeater) Y 362. Phylilophyne scortea Y 363. 20652 Physalis angulata Y 364. 6983 Physalis peruviana (Cape Gooseberry) Y 365. 24841 Platea flavipes (Yellow-billed Spoonbill) Y 366. 24750 Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot) Y 367. 25007 Pletholax gracilis subsp. gracilis (Keeled Legless Lizard) Y 370. 25047 Podragus strigoides subsp. brachypterus (Tawny Frogmouth) Y <	
353.24409Phaps chalcoptera (Common Bronzewing)354.Phlebia rufa355.Phlebia subceracea356.1478Phleboarya ciliata357.Phryganoporus candidus358.6734Phyla nodiflora var. nodiflora359.48071Phylidonyris niger (White-cheeked Honeyeater)360.24596Phylidonyris novaehollandiae (New Holland Honeyeater)361.4675Phylanthus calycinus (False Boronia)362.Phylanthus calycinus (False Boronia)363.20652Physalis angulata364.6983Physalis angulata365.24841Platalea flavipes (Vellow-billed Spoonbill)366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis (Keeled Legless Lizard)368.577Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Graet Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. minor (Dwarf Bearded Dragon)375.24909Pogona minor subsp. minor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Brego)377.24522Polytelis anthopeplus (Regent Parrot)378.4681Poinanthera microphylia (Small Poranthera)379.25731Porphyrio porphyrio (Purpl	
354.Philebia rufa355.Philebia subceracea356.1478Philebocarya ciliata357.Phryganoporus candidus358.6734Phyla nodiflora var. nodiflora359.48071Phylidonyris niger (White-cheeked Honeyeater)360.24596Phylidonyris niger (White-cheeked Honeyeater)361.4675Phyllanthus calycinus (False Boronia)362.Phylanthus calycinus (False Boronia)363.20652Physalis angulata364.6983Physalis peruviana (Cape Gooseberry)365.24841Platelae flavipes (Vellow-billed Spoonbill)366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)368.577Poa poiromis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarl Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarl Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Policoephalus policoephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parnot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio por	
355. Phlebia subceracea 356. 1478 Phlebocarya ciliata 357. Phryganoporus candidus 358. 6734 Phyla nodiflora var. nodiflora Y 359. 48071 Phylidonyris niger (White-cheeked Honeyeater) Y 360. 24596 Phylidonyris niger (White-cheeked Honeyeater) Y 361. 4675 Phyllonyris novaehollandiae (New Holland Honeyeater) Y 362. Phyllonyrine scortea Y 363. 20652 Physalis angulata Y 364. 6983 Physalis peruviana (Cape Gooseberry) Y 365. 24841 Platalea flavipes (Yellow-billed Spoonbill) Y 366. 24750 Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot) Y 367. 25007 Pletholax gracilis subsp. gracilis (Keeled Legless Lizard) Y 368. 577 Poa porphyroclados Y 370. 24679 Podargus strigoides subsp. brachypterus (Tawny Frogmouth) Y 371. 25704 Podiceps cristatus (Great Crested Grebe)	
356. 1478 Phlebocarya ciliata 357. Phryganoporus candidus 358. 6734 Phyla nodiflora var. nodiflora Y 359. 48071 Phylidonyris niger (White-cheeked Honeyeater) Y 360. 24596 Phylidonyris novaehollandiae (New Holland Honeyeater) Y 361. 4675 Phyllanthus calycinus (False Boronia) Y 362. Phyllophyne scortea Y 363. 20652 Physalis angulata Y 364. 6983 Physalis peruviana (Cape Gooseberry) Y 366. 24450 Platylea flavipes (Yellow-billed Spoonbill) Y 366. 24451 Platalea flavipes (Yellow-billed Spoonbill) Y 366. 24457 Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot) Y 367. 25007 Pletholax gracilis subsp. gracilis (Keeled Legless Lizard) Y 368. 577 Poa porphyroclados Y 371. 25047 Podiceps cristatus (Great Crested Grebe) Y 372. 8175 Podolopis g	
357.Phryganoporus candidus358.6734Phyla nodiflora var. nodifloraY359.48071Phylidonyris niger (White-cheeked Honeyeater)360.24596Phylidonyris novaehollandiae (New Holland Honeyeater)361.4675Phyllanthus calycinus (False Boronia)362.Phyllphryne scorteaY363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24441Platalea flavipes (Yellow-billed Spoonbill)366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis (Keeled Legless Lizard)368.577Poa poformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachyterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona nullarbor (Nullabor Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
358. 6734 Phyla nodiflora var. nodiflora Y 359. 48071 Phylidonyris niger (White-cheeked Honeyeater)	
359.48071Phylidonyris niger (White-cheeked Honeyeater)360.24596Phylidonyris novaehollandiae (New Holland Honeyeater)361.4675Phyllanthus calycinus (False Boronia)362.Phyllophryne scortea363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa polformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. minor (Dwarf Bearded Dragon)Y375.24909Pogona ninor subsp. mitchelli (Dwarf Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio (Purple Swamphen)Y	
359.48071Phylidonyris niger (White-cheeked Honeyeater)360.24596Phylidonyris novaehollandiae (New Holland Honeyeater)361.4675Phyllanthus calycinus (False Boronia)362.Phyllophryne scortea363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa polformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. minor (Dwarf Bearded Dragon)Y375.24909Pogona ninor subsp. mitchelli (Dwarf Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio (Purple Swamphen)Y	
360.24596Phylidonyris novaehollandiae (New Holland Honeyeater)361.4675Phyllanthus calycinus (False Boronia)362.Phyllophryne scortea363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa poiformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. minor (Dwarf Bearded Dragon)Y375.24909Pogona ninor subsp. minor (Dwarf Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio (Purple Swamphen)Y	
361.4675Phyllanthus calycinus (False Boronia)362.Phyllophryne scortea363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa poiformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. minor (Dwarf Bearded Dragon)Y375.24909Pogona nullarbor (Nullabor Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio porphyrio (Purple Swamphen)Y	
362.Phyllophryne scortea363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa poiformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y372.8175Podolepis gracilis (Slender Podolepis)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)Y375.24909Pogona nullarbor (Nullabor Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio porphyrio (Purple Swamphen)Y	
363.20652Physalis angulataY364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)Y366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)Y367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)Y368.577Poa poiformis (Coastal Poa)Y369.578Poa porphyrocladosY370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)Y371.25704Podiceps cristatus (Great Crested Grebe)Y372.8175Podolepis gracilis (Slender Podolepis)Y373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)Y374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)Y375.24909Pogona nullarbor (Nullabor Bearded Dragon)Y376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)Y377.25722Polytelis anthopeplus (Regent Parrot)Y378.4691Poranthera microphylla (Small Poranthera)Y379.25731Porphyrio porphyrio (Purple Swamphen)Y	
364.6983Physalis peruviana (Cape Gooseberry)Y365.24841Platalea flavipes (Yellow-billed Spoonbill)366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)368.577Poa poiformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
365.24841Platalea flavipes (Yellow-billed Spoonbill)366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)368.577Poa poiformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
366.24750Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)368.577Poa polformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
367.25007Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)368.577Poa polformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
368.577Poa polformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
368.577Poa polformis (Coastal Poa)369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio porphyrio (Purple Swamphen)	
369.578Poa porphyroclados370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
370.24679Podargus strigoides subsp. brachypterus (Tawny Frogmouth)371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio porphyrio (Purple Swamphen)	
371.25704Podiceps cristatus (Great Crested Grebe)372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio porphyrio (Purple Swamphen)	
372.8175Podolepis gracilis (Slender Podolepis)373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
373.24907Pogona minor subsp. minor (Dwarf Bearded Dragon)374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
374.24908Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
375.24909Pogona nullarbor (Nullabor Bearded Dragon)376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
376.24681Poliocephalus poliocephalus (Hoary-headed Grebe)377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio porphyrio (Purple Swamphen)	
377.25722Polytelis anthopeplus (Regent Parrot)378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
378.4691Poranthera microphylla (Small Poranthera)379.25731Porphyrio (Purple Swamphen)	
379. 25731 Porphyrio (Purple Swamphen)	
380. 24767 Porphyrio porphyrio subsp. bellus (Purple Swamphen)	
p is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.	ation and Attractions

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Q Area
381.		Porzana fluminea (Australian Spotted Crake)			
382.		Porzana tabuensis (Spotless Crake)			
383.	1670	Prasophyllum drummondii (Swamp Leek Orchid)			
384.		Prionosternum nitidiceps			
385.		Prionosternum scutatum			
386.	25199	Proablepharus reginae			
387.	25200	Proablepharus tenuis			
388.	25201	Pseudemoia baudini			
389.	25511	Pseudonaja affinis (Dugite)			
390.	25259	Pseudonaja affinis subsp. affinis (Dugite)			
391.	42416	Pseudonaja mengdeni (Western Brown Snake)			
392.	24702	Pterodroma brevirostris (Kerguelen Petrel)			
393.	15426	Pterostylis aspera			
394.	2751	Ptilotus polystachyus (Prince of Wales Feather)			
395.		Purpureicephalus spurius			
396.	25008	Pygopus lepidopodus (Common Scaly Foot)			
397.		Pygopus nigriceps			
398.		Rattus rattus (Black Rat)	Y		
399.		Recurvirostra novaehollandiae (Red-necked Avocet)	·		
400.		Rhagodia baccata subsp. baccata			
401.			Y		
401.		Rhamnus alaternus (Buckthorn) Rhinidura albiscana (Grav Fantail)	T		
		Rhipidura albiscapa (Grey Fantail) Rhipidura lausaphas (Willia Wagtail)			
403.		Rhipidura leucophrys (Willie Wagtail)	V		
404.		Romulea rosea (Guildford Grass)	Y		
405.		Rostraria cristata	Y		
406.		Samolus junceus			
407.		Samolus repens (Creeping Brookweed)			
408.	7595	Scaevola anchusifolia			
409.	7606	Scaevola crassifolia (Thick-leaved Fan-flower)			
410.	48834	Schinus terebinthifolia	Y		
411.	982	Schoenus clandestinus			
412.	1004	Schoenus nitens (Shiny Bog-rush)			
413.	6033	Scholtzia involucrata (Spiked Scholtzia)			
414.	25878	Senecio condylus			
415.	25534	Sericornis frontalis (White-browed Scrubwren)			
416.		Servaea spinibarbis			
417.	2909	Silene gallica (French Catchfly)	Y		
418.		Simaetha tenuior			
419.	25267	Simoselaps littoralis (West Coast Banded Snake)			
420.		Smicrornis brevirostris (Weebill)			
421.		Solanum nigrum (Black Berry Nightshade)	Y		
422.		Solanum symonii	•		
423.		Sonchus hydrophilus (Native Sowthistle)			
424.		Sonchus oleraceus (Common Sowthistle)	Y		
			Ť		
425.		Sowerbaea laxiflora (Purple Tassels)			
426.		Sporobolus virginicus (Marine Couch)			
427.		Stellaria media (Chickweed)	Y		
428.		Stenopetalum gracile			
429.		Sterna bergii (Crested Tern)			
430.		Sternula nereis (Fairy Tern)			
431.		Stirlingia latifolia (Blueboy)			
432.		Strepera versicolor (Grey Currawong)			
433.	25589	Streptopelia chinensis (Spotted Turtle-Dove)	Y		
434.	25590	Streptopelia senegalensis (Laughing Turtle-Dove)	Y		
435.	24942	Strophurus spinigerus subsp. spinigerus			
436.	7774	Stylidium piliferum (Common Butterfly Triggerplant)			
437.	25705	Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)			
438.	24682	Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-			
		throated Grebe)			
439.	24331	Tadorna tadornoides (Australian Shelduck, Mountain Duck)			
440.		Templetonia retusa (Cockies Tongues)			
441.		Tersonia cyathiflora (Button Creeper)			
442.		Tetragnatha demissa			
442.		Tetragnatha nitens			
443. 444.	1700	Thelymitra fuscolutea (Chestnut Sun Orchid)			
		. , ,			
445.		Thomasia cognata			
446.		Threskiornis spinicollis (Straw-necked Ibis)			
447.		Thysanotus multiflorus (Many-flowered Fringe Lily)			
448.		Tiliqua multifasciata (Central Blue-tongue)			
449.	25203	Tiliqua occipitalis (Western Bluetongue)	6.3		
	tive project of t	he Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.	Departmen Conserva	at of Biodiversity, tion and Attractions	WEST AUST

WESTERN AUSTRALIAN

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
450.	25519	Tiliqua rugosa			
451.	25207	Tiliqua rugosa subsp. rugosa			
452.		Torquigener pleurogramma			
453.	6280	Trachymene pilosa (Native Parsnip)			
454.	1481	Tribonanthes australis (Southern Tiurndin)			
455.	25723	Trichoglossus haematodus (Rainbow Lorikeet)			
456.	25521	Trichosurus vulpecula (Common Brushtail Possum)			
457.	24158	Trichosurus vulpecula subsp. vulpecula (Common Brushtail Possum)			
458.	1361	Tricoryne elatior (Yellow Autumn Lily)			
459.	1363	Tricoryne tenella			
460.	4292	Trifolium campestre (Hop Clover)	Y		
461.	151	Triglochin striata			
462.	708	Triticum aestivum (Wheat)	Y		
463.	24069	Tursiops truncatus (Bottlenose Dolphin)			
464.	99	Typha orientalis (Bulrush, Cumbungi)			
465.	25762	Tyto alba (Barn Owl)			
466.	38388	Ursinia anthemoides subsp. anthemoides	Y		
467.	25227	Varanus tristis subsp. tristis (Racehorse Monitor)			
468.		Venatrix pullastra			
469.	722	Vulpia bromoides (Squirrel Tail Fescue)	Y		
470.	724	Vulpia myuros (Rat's Tail Fescue)	Y		
471.	12052	Vulpia myuros forma megalura	Y		
472.	33101	Vulpia myuros forma myuros	Y		
473.	6658	Wilsonia backhousei (Narrow-leaf Wilsonia)			
474.	1394	Wurmbea dioica (Early Nancy)			
475.	12072	Wurmbea dioica subsp. alba			
476.	1256	Xanthorrhoea preissii (Grass tree, Palga)			
477.	1049	Zantedeschia aethiopica (Arum Lily)	Y		
478.	25765	Zosterops lateralis (Grey-breasted White-eye, Silvereye)			

Conservation Codes T - Rare or likely to become extinct X - Presumed extinct IA - Protected under international agreement 5 - Other specially protected fauna 1 - Priority 1 2 - Priority 2 3 - Priority 2 4 - Priority 4 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

APPENDIX 2

Protected Matters Search Tool Report



Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

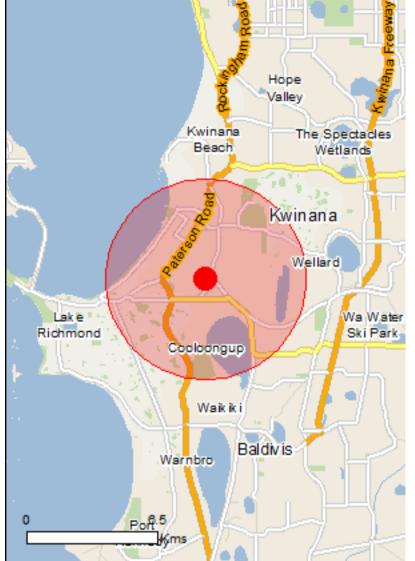
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

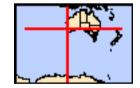
Report created: 05/08/21 19:01:10

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the <u>Administrative Guidelines on Significance</u>.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	48
Listed Migratory Species:	51

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	80
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Becher point wetlands	Within 10km of Ramsar
Forrestdale and thomsons lakes	Within 10km of Ramsar
Peel-yalgorup system	20 - 30km upstream

Listed Threatened Ecological Communities

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

produce indicative distribution maps.		
Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area
Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
<u>Botaurus poiciloptilus</u> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
<u>Calidris canutus</u> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat

[Resource Information]

Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]

Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769] Endangered

Calyptorhynchus latirostris

Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]

Diomedea amsterdamensis

Amsterdam Albatross [64405]

Vulnerable

Species or species habitat known to occur within area

Species or species habitat likely to occur within area

Species or species habitat known to occur within area

Endangered

Endangered

Species or species habitat may occur within area

Name	Status	Type of Presence
<u>Diomedea dabbenena</u> Tristan Albatross [66471]	Endangered	Species or species habitat
	Endangered	may occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea exulans</u> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related
Diomedea sanfordi		behaviour likely to occur within area
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur
		within area
<u>Halobaena caerulea</u> Blue Petrel [1059]	Vulnerable	Species or species habitat
		may occur within area
<u>Leipoa ocellata</u> Malleefowl [934]	Vulnerable	Species or species habitat
		likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-	Critically Endangered	Species or species habitat
tailed Godwit [86432]		known to occur within area
Macronectes giganteus	Endongorod	Species or species babitat
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica		
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat
Dteredreme mellic		likely to occur within area
<u>Pterodroma mollis</u> Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat

Solt-plullayeu reliei [1030] vuinerable Species of species nabilat may occur within area Rostratula australis Australian Painted Snipe [77037] Endangered Species or species habitat known to occur within area Sternula nereis nereis Australian Fairy Tern [82950] Vulnerable Foraging, feeding or related behaviour known to occur within area Thalassarche carteri Indian Yellow-nosed Albatross [64464] Vulnerable Foraging, feeding or related behaviour may occur within area Thalassarche cauta Shy Albatross [89224] Endangered Foraging, feeding or related behaviour likely to occur within area Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross Vulnerable Species or species habitat may occur within area [64459] Thalassarche melanophris Black-browed Albatross [66472] Species or species habitat Vulnerable may occur within area

Name	Status	Type of Presence
<u>Thalassarche steadi</u> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi		
Woylie [66844]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroii		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis		
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis		
Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
Diuris micrantha		
Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area

Diurio nurdioi

<u>Diuris purdiei</u>		
Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica		
Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha		
Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Synaphea sp. Serpentine (G.R. Brand 103)		
[86879]	Critically Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
<u>Chelonia mydas</u>		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur

Name	Status	Type of Presence
		within area
Natator depressus		.
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
		KIOWIT to occur within area
Sharks		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias		On a size, an an a size, hakitat
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		Creation or organize hebitat
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on	the EPBC Act - Threatened	· · · · · · · · · · · · · · · · · · ·
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus		On a sing an an a sing habitat
Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus		On a sing an an a sing habitat
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		Foreging fooding or related
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur
		within area
Diomedea amsterdamensis	Endonastad	Species or openies habitat
Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Triston Albetropa [66471]	Endonasiad	Province of one-size bability
Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related

Diamadaa ayulana		behaviour likely to occur within area
<u>Diomedea exulans</u>		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia		
Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus		
Bridled Tern [82845]		Foraging, feeding or related
		behaviour likely to occur within area

Name	Threatened	Type of Presence
Sterna dougallii Roseate Tern [817] Thalassarche carteri		Foraging, feeding or related behaviour likely to occur within area
Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<u>Thalassarche impavida</u> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
<u>Balaenoptera edeni</u> Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
<u>Chelonia mydas</u> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
<u>Lamna nasus</u> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
<u>Manta birostris</u> Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
<u>Natator depressus</u> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
<u>Orcinus orca</u> Killer Whale, Orca [46]		Species or species habitat may occur within area
<u>Rhincodon typus</u> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis		
Red-necked Stint [860]		Species or species habitat known to occur within area

Calidris subminuta Long-toed Stint [861]

Charadrius dubius Little Ringed Plover [896]

Limosa lapponica Bar-tailed Godwit [844]

Limosa limosa Black-tailed Godwit [845]

Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]

Pandion haliaetus Osprey [952]

Philomachus pugnax Ruff (Reeve) [850] Species or species habitat known to occur within area

Species or species habitat known to occur within area

Species or species habitat known to occur within area

Species or species habitat known to occur within area

Critically Endangered Species or species habitat likely to occur within area

Species or species habitat known to occur within area

Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Tringa glareola		
Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name		
Commonwealth Land -		
Defence - ROCKINGHAM - NAVY CPSO		
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on	the EPBC Act - Threatened	Species list.
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area

Anous tenuirostris melanops Australian Lesser Noddy [26000]

Apus pacificus Fork-tailed Swift [678]

Ardea ibis Cattle Egret [59542]

Calidris acuminata Sharp-tailed Sandpiper [874]

Calidris canutus Red Knot, Knot [855]

Calidris ferruginea Curlew Sandpiper [856]

Calidris melanotos Pectoral Sandpiper [858]

Vulnerable

Species or species habitat may occur within area

[Resource Information]

Species or species habitat likely to occur within area

Species or species habitat may occur within area

Species or species habitat known to occur within area

Endangered

Species or species habitat known to occur within area

Critically Endangered

Species or species habitat known to occur within area

Species or species

Calidris ruficollis Red-necked Stint [860]habitat known to occur within areaCalidris subminuta Long-toed Stint [861]Species or species habitat known to occur within areaCalidris subminuta Long-toed Stint [861]Species or species habitat known to occur within areaCatharacta skua Great Skua [59472]Species or species habitat known to occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [6471]EndangeredSpecies or species habitat may occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea santordiSpecies of species fuel cocur within areaSpecies or species habitat may occur within area	Name	Threatened	Type of Presence
Calidris ruficollisSpecies or species habitat known to occur within areaCalidris subminuta Long-toed Stint [861]Species or species habitat known to occur within areaCatharacta skua Great Skua [59472]Species or species habitat known to occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			
Calidris subminuta Long-toed Stint [861]Known to occur within areaCatharacta skua Great Skua [59472]Species or species habitat known to occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat may occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Calidris ruficollis		within area
Calidris subminuta Long-toed Stint [861]Species or species habitat known to occur within areaCatharacta skua Great Skua [59472]Species or species habitat may occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [6471]EndangeredSpecies or species habitat may occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			· ·
Long-toed Stint [861]Species or species habitat known to occur within areaCatharacta skua Great Skua [59472]Species or species habitat may occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaWandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			known to occur within area
Catharacta skua Great Skua [59472]Species or species habitat may occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			
Catharacta skua Great Skua [59472]Species or species habitat may occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Long-toed Stint [861]		· ·
Great Skua [59472]Species or species habitat may occur within areaCharadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur			
Charadrius dubius Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			Species or species babitat
Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Great Skua [59472]		• •
Little Ringed Plover [896]Species or species habitat known to occur within areaCharadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Charadrius dubius		
Charadrius ruficapillus Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			Species or species habitat
Red-capped Plover [881]Species or species habitat known to occur within areaDiomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [8923]VulnerableForaging, feeding or related behaviour likely to occur within area			known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Charadrius ruficapillus		
Diomedea amsterdamensisEndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Red-capped Plover [881]		· ·
Amsterdam Albatross [64405]EndangeredSpecies or species habitat may occur within areaDiomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			known to occur within area
Diomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			
Diomedea dabbenena Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Amsterdam Albatross [64405]	Endangered	• •
Tristan Albatross [66471]EndangeredSpecies or species habitat may occur within areaDiomedea epomophora Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulans Wandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area			
Diomedea epomophoraForaging, feeding or related behaviour likely to occur within areaSouthern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulansVulnerableForaging, feeding or related behaviour likely to occur within areaWandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area		Endangorod	Spacios or spacios babitat
Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulansVulnerableForaging, feeding or related behaviour likely to occur within areaWandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area		Lindangered	• •
Southern Royal Albatross [89221]VulnerableForaging, feeding or related behaviour likely to occur within areaDiomedea exulansVulnerableForaging, feeding or related behaviour likely to occur within areaWandering Albatross [89223]VulnerableForaging, feeding or related behaviour likely to occur within area	Diomedea enomonhora		
Diomedea exulans behaviour likely to occur within area Wandering Albatross [89223] Vulnerable Foraging, feeding or related behaviour likely to occur within area		Vulnerable	Foraging, feeding or related
Diomedea exulans Vulnerable Foraging, feeding or related Wandering Albatross [89223] Vulnerable Foraging, feeding or related within area Vulnerable Senage of the s			behaviour likely to occur
behaviour likely to occur within area	Diomedea exulans		within area
within area	Wandering Albatross [89223]	Vulnerable	
	Diomedea sanfordi		
Northern Royal Albatross [64456] Endangered Foraging, feeding or related behaviour likely to occur	Northern Royal Albatross [64456]	Endangered	
within area			•
Haliaeetus leucogaster			Chapter of chapter habitat
White-bellied Sea-Eagle [943] Species or species habitat likely to occur within area	vville-belled Sea-Eagle [943]		

Halobaena caerulea Blue Petrel [1059]

<u>Himantopus himantopus</u> Pied Stilt, Black-winged Stilt [870]

Larus pacificus Pacific Gull [811]

Limosa lapponica Bar-tailed Godwit [844]

Limosa limosa Black-tailed Godwit [845]

<u>Macronectes giganteus</u> Southern Giant-Petrel, Southern Giant Petrel [1060]

Endangered

Vulnerable

Macronectes halli Northern Giant Petrel [1061]

Vulnerable

Species or species habitat may occur within area

Species or species habitat known to occur within area

Foraging, feeding or related behaviour may occur within area

Species or species habitat known to occur within area

Species or species habitat known to occur within area

Species or species habitat may occur within area

Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur		
Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax		
Ruff (Reeve) [850]		Species or species habitat known to occur within area
Pterodroma mollis		
Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis		
Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes		Fananian, faadin oon salatad
Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae		Spacios or operios hebitat
Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area

Sterna anaethetus

Bridled Tern [814]

<u>Sterna caspia</u> Caspian Tern [59467]

<u>Sterna dougallii</u> Roseate Tern [817]

<u>Thalassarche carteri</u> Indian Yellow-nosed Albatross [64464]

Thalassarche cauta Shy Albatross [89224]

<u>Thalassarche impavida</u> Campbell Albatross, Campbell Black-browed Albatross Vulnerable [64459]

<u>Thalassarche melanophris</u> Black-browed Albatross [66472]

Vulnerable

Foraging, feeding or related behaviour likely to occur within area

Foraging, feeding or related behaviour known to occur within area

Foraging, feeding or related behaviour likely to occur within area

Foraging, feeding or related behaviour may occur within area

Foraging, feeding or related behaviour likely to occur within area

Species or species habitat may occur within area

Species or species habitat may occur within area

Vulnerable

Endangered

Name	Threatened	Type of Presence
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Thinornis rubricollis</u>		
Hooded Plover [59510]		Species or species habitat known to occur within area
<u>Tringa glareola</u>		
Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Fish		
Acentronura australe		
Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei		
Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna		
Upside-down Pipefish, Eastern Upside-down Pipefish Eastern Upside-down Pipefish [66227]	l,	Species or species habitat may occur within area
Hippocampus angustus		
Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps		
Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus		
West Australian Seahorse [66722]		Species or species habitat

Histiogamphelus cristatus

Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]

Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]

Lissocampus fatiloquus Prophet's Pipefish [66250]

Lissocampus runa Javelin Pipefish [66251]

Maroubra perserrata Sawtooth Pipefish [66252]

Mitotichthys meraculus Western Crested Pipefish [66259]

Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]

Species or species habitat may occur within area

may occur within area

Species or species habitat may occur within area

Name	Threatened	Type of Presence
Phycodurus eques		
Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus		
Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris		
Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis		
Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus		
Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra		
Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris		
Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer		
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi		
Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus		
Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		

Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]

Neophoca cinerea

Australian Sea-lion, Australian Sea Lion [22]

Endangered

Species or species habitat known to occur within area

Species or species habitat may occur within area

Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii		
Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Brudolo Mibolo [25]		Spacios or openios habitat
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata		
Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus		Cracico er erecioo hobitat
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata		
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		
Bottlenose Dolphin [68417]		Species or species habitat

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Leda	WA
Unnamed WA51658	WA
Invasive Species	[Resource Information]
Weeds reported here are the 20 species of national signif	icance (WoNS), along with other introduced plants

that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name Status	Type of Presence
-------------	------------------

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus		
Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis		
Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis		
Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris		
Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula		
Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		

Bos taurus Domestic Cattle [16]

Species or species habitat likely to occur within area

Canis lupus familiaris Domestic Dog [82654]

Felis catus Cat, House Cat, Domestic Cat [19]

Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]

Mus musculus House Mouse [120]

Oryctolagus cuniculus Rabbit, European Rabbit [128]

Rattus norvegicus Brown Rat, Norway Rat [83]

Rattus rattus Black Rat, Ship Rat [84] Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur

Name	Status	Type of Presence
Vulpes vulpes		within area
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica		
Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris		
Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera		
Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera		
Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia		
Flax-leaved Broom, Mediterranean Broom, Flax Broo [2800]	m	Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana		
Broom [67538]		Species or species habitat may occur within area
Lantana camara		
Lantana, Common Lantana, Kamara Lantana, Large- leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum		
African Boxthorn, Boxthorn [19235]		Species or species habitat

Olea europaea Olive, Common Olive [9160]

Species or species habitat may occur within area

likely to occur within area

Opuntia spp. Prickly Pears [82753]

Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]

Rubus fruticosus aggregate Blackberry, European Blackberry [68406]

Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]

Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]

Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018] Reptiles Species or species habitat likely to occur within area

Species or species habitat may occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Name	Status	Type of Presence
Hemidactylus frenatus		
Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.26939 115.77587

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Department of Land and Resource Management, Northern Territory -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbarium -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbarium -Australian National Herbarium, Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Australian Tropical Herbarium, Cairns -eBird Australia -Australian Government – Australian Antarctic Data Centre -Museum and Art Gallery of the Northern Territory -Australian Government National Environmental Science Program

-Australian Government National Environmental Scien

-Australian Institute of Marine Science

-Reef Life Survey Australia

-American Museum of Natural History

-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania

-Tasmanian Museum and Art Gallery, Hobart, Tasmania

-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

© Commonwealth of Australia Department of Agriculture Water and the Environment GPO Box 858 Canberra City ACT 2601 Australia +61 2 6274 1111

APPENDIX 3 Flora Species List

SPECIES LIST – Lots 12 and 13 Lodge Drive, East Rockingham

MONOCOTYLEDONS	*Erigeron bonariensis
ASPARAGACEAE	*Hypochaeris glabra
*Asparagus asparagoides	*Sonchus asper
ASPHODELACEAE	*Sonchus oleraceus
*Asphodelus fistulosus	*Taraxacum officinale *Urospermum picroides
*Trachyandra divaricata	
	BRASSICACEAE
PAPAVERACEAE	*Raphanus raphanistrum
*Fumaria capreolata	
	CARIFOLIACEAE
POACEAE *Avena fatua	*Sixalix atropurpurea
*Briza minor	
*Bromus diandrus	CARYOPHYLLACEAE
*Ehrharta longiflora	*Petrorhagia dubia
*Lagurus ovatus	
*Lolium perenne	CRASSULACEAE
*Lolium rigidum	*Crassula glomerata
DICOTYLEDONS	EUPHORBIACEAE

ANACARDIACEAE
*Schinus terebinthifolius

APOCYNACEAE

*Cirsium vulgare

*Gomphocarpus fruticosus ASTERACEAE *Arctotheca calendula Acacia rostellifera Acacia saligna *Medicago polymorpha *Melilotus indicus Trifolium sp

FABACEAE

*Trifolium campestre

*Euphorbia peplus

*Euphorbia terracina

MALVACEAE

*Malva parviflora

MYRTACEAE Eucalyptus gomphocephala Melaleuca huegelii

Melaleuca rhaphiophylla

OXALIDACEAE

*Oxalis pes-caprae

PAPAVERACEAE

*Fumaria capreolata

PRIMULACEAE

*Lysimachia arvensis

RANUNCULACEAE

Clematis linearifolia

RHAMNACEAE

*Rhamnus alaternus

Spyridium globulosum

RUBIACEAE

*Galium murale

SOLANACEAE

*Solanum nigrum

APPENDIX 4 Quadrat Data

50 384615 E 6428945 N

Vegetation:	Eucalyptus gomphocephala (Tuart) Woodland over weeds
Condition:	Completely Degraded
Landform:	Flat
Soil:	Mulch
Date:	15.10.21
Recorder:	P. van der Moezel



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus gomphocephala	12	25
*Avena fatua	1.2	10
*Rhamnus alaternus	1.2	1
*Gomphocarpus fruticosus	1.1	15
*Schinus terebinthifolius	1	<1
*Ehrharta longiflora	1	25
Acacia rostellifera	0.8	1
*Melilotus indicus	0.6	<1
*Raphanus raphanistrum	0.6	<1
*Lolium rigidum	0.5	2
*Sonchus asper	0.5	1
Acacia saligna	0.5	<1
*Solanum nigrum	0.4	5
*Trachyandra divaricata	0.4	<1
*Sonchus oleraceus	0.4	<1
*Bromus diandrus	0.4	<1
*Briza minor	0.4	<1
*Lysimachia arvensis	0.3	2
*Euphorbia terracina	0.3	1

SPECIES	HEIGHT (m)	COVER (%)
*Asphodelus fistulosus	0.3	<1
*Arctotheca calendula	0.3	<1
*Malva parviflora	0.2	1
*Oxalis pes-caprae	0.2	10
*Fumaria capreolata	0.1	10
*Euphorbia peplus	0.1	<1
*Trifolium sp	<0.1	<1
*Taraxacum officinale	Flat	<1
*Cirsium vulgare	Flat	<1
*Hypochaeris glabra	Flat	<1
*Asparagus asparagoides	Climber	2

50 384589 E 6428959 N

Vegetation:	Eucalyptus gomphocephala (Tuart) Woodland over mulch and	
	weeds	
Condition:	Completely Degraded	
Landform:	Flat	
Soil:	Mulch	
Date:	15.10.21	
Recorder:	P. van der Moezel	



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus gomphocephala	15	20
*Avena fatua	1	10
*Ehrharta longiflora	0.7	5
*Rhamnus alaternus	0.5	1
*Bromus diandrus	0.4	10
*Sonchus asper	0.4	<1
*Euphorbia terracina	0.3	<1
*Medicago polymorpha	0.3	40
*Fumaria capreolata	0.3	<1
*Oxalis pes-caprae	0.2	20
*Sixalix atropurpurea	0.1	<1
*Lysimachia arvensis	0.1	<1
*Asparagus asparagoides	Climber	<1

50 384623 E 6429172 N

Vegetation :	Eucalyptus gomphocephala (Tuart) Woodland over mulch and	
	weeds	
Condition:	Completely Degraded	
Landform:	Flat	
Soil:	Mulch	
Date:	15.10.21	
Recorder:	P. van der Moezel	



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus gomphocephala	15	25
*Rhamnus alaternus	2	2
*Avena fatua	1	20
Melaleuca huegelii	1	1
*Gomphocarpus fruticosus	0.8	1
*Ehrharta longiflora	0.7	1
*Bromus diandrus	0.4	5
*Euphorbia terracina	0.3	<1
*Oxalis pes-caprae	0.2	2
*Trifolium campestre	0.2	1
Acacia rostellifera	0.2	<1
*Asphodelus fistulosus	0.2	<1
*Solanum nigrum	0.1	<1
*Lysimachia arvensis	0.1	<1
*Asparagus asparagoides	Climber	1
Clematis linearifolia	Climber	<1

50 384722 E 6429230 N

Vegetation:	Eucalyptus gomphocephala (Tuart) Woodland over weeds
Condition:	Completely Degraded
Landform:	Flat
Soil:	Mulch
Date:	15.10.21
Recorder:	P. van der Moezel



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus gomphocephala	14	20
Spyridium globulosum	1	2
*Rhamnus alaternus	1	1
*Solanum nigrum	1	1
*Gomphocarpus fruticosus	0.8	10
*Ehrharta longiflora	0.8	50
*Sonchus oleraceus	0.8	20
Acacia rostellifera	0.7	10
*Bromus diandrus	0.5	5
*Euphorbia terracina	0.5	<1
*Euphorbia peplus	0.2	4
*Lysimachia arvensis	0.2	1
*Trifolium campestre	0.2	<1
*Fumaria capreolata	0.1	1
*Hypochaeris glabra	Flat	<1
*Taraxacum officinale	Flat	<1
*Asparagus asparagoides	Climber	1
Clematis linearifolia	Climber	<1

50 384574 E 6428903 N

Vegetation:	Weeds
Condition:	Completely Degraded
Landform:	Flat
Soil:	Mulch
Date:	15.10.21
Recorder:	P. van der Moezel



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
*Avena fatua	1	10
*Bromus diandrus	0.5	10
*Rhamnus alaternus	0.4	<1
*Solanum nigrum	0.4	<1
*Lolium rigidum	0.3	<1
*Ehrharta longiflora	0.3	<1
*Trifolium campestre	0.2	15
*Fumaria capreolata	0.2	2
*Euphorbia terracina	0.2	1
*Medicago polymorpha	0.1	5
*Oxalis pes-caprae	0.1	1

50 384549 E 6429225 N

Vegetation:	Melaleuca rhaphiophylla/M. huegelii Low Open Woodland over
	weeds
Condition:	Completely Degraded
Landform:	Flat
Soil:	Mulch
Date:	15.10.21
Recorder:	P. van der Moezel



QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Melaleuca rhaphiophylla	5	10
Melaleuca huegelii	4	2
Spyridium globulosum	1.4	5
*Gompholobium fruticosus	1.4	1
*Avena fatua	1.2	2
Acacia rostellifera	0.6	2
*Urospermum picroides	0.6	1
*Ehrharta longiflora	0.5	25
*Euphorbia terracina	0.5	1
*Lolium perenne	0.4	5
*Sonchus oleraceus	0.4	1
*Petrorhagia dubia	0.4	<1
*Asphodelus fistulosus	0.4	<1
*Erigeron bonariensis	0.3	<1
*Lagurus ovatus	0.3	<1
*Briza minor	0.2	<1

SPECIES	HEIGHT (m)	COVER (%)
*Lysimachia arvensis	0.1	4
*Trifolium campestre	0.1	2
*Crassula glomerata	0.1	1
*Euphorbia peplus	0.1	1
*Galium murale	<0.1	<1
*Taraxacum officinale	Flat	<1
*Asparagus asparagoides	Climber	<1

APPENDIX 5 Conservation Codes

Conservation Codes for Western Australian Flora and Fauna

Specially protected fauna or flora are species* which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such. Conservation codes have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018*.

T Threatened species – Schedules 1-4

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

- **Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.
- **Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "facing a high risk of extinction in the wild in the mediumterm future, as determined in accordance with criteria set out in the ministerial guidelines".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife*

Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

EX Presumed extinct species

Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.*

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation* (Specially Protected Fauna) Notice 2018.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation* (Specially Protected Fauna) Notice 2018.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority 4: Rare, Near Threatened and other species in need of monitoring

- (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
- (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
- (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Western Australian Ecological Communities

Threatened Ecological Communities

The BC Act provides for the statutory listing of threatened ecological communities (TECs) by the Minister.

Presumed Totally Destroyed (PD)

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

Critically Endangered (CR)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

Endangered (EN)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Vulnerable (VU)

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

Priority Ecological Communities

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities

Ecological communities that are known from very few occurrences with a very restricted distribution (generally \leq 5 occurrences or a total area of \leq 100ha).

Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

Priority Two: Poorly-known ecological communities

Communities that are known from few occurrences with a restricted distribution (generally \leq 10 occurrences or a total area of \leq 200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

- (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:
- (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;
- (iii) munities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

- (i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.
- (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category.
- (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Commonwealth of Australia Conservation Codes

Threatened Flora and Fauna

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

Extinct

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

Extinct in the wild

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

- a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
- b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Critically endangered

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

Conservation dependent

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

- a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
- b) the following subparagraphs are satisfied:
 - i. the species is a species of fish;

- ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
- iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
- iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

Threatened Ecological Communities

Threatened Ecological communities under the EPBC Act are listed in three categories.

Critically endangered

If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).

Endangered

If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).

Vulnerable

If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).

Appendix 7 Transport Impact Statement



transport planning traffic engineering modelling

Proposed Workshop/ Warehouse Development Lots 12 (6) & 13 (4) Lodge Drive, East Rockingham

Transport Impact Statement

PREPARED FOR: Ovest Industrial

December 2022

Document history and status

Author	Revision	Approved by	Date approved	Revision type
Roger Bajwa	r02	B Bordbar	19/12/2022	Final
Roger Bajwa	r02a	B Bordbar	19/12/2022	Revised Final

File name:	t22.147.rb.r02a
Author:	Roger Bajwa
Project manager:	Behnam Bordbar
Client:	Ovest Industrial
Project:	Lots 12 (6) & 13 (4) Lodge Drive, East Rockingham
Document revision:	r02a
Project number:	t22.147

2022 Copyright in all drawings, reports, specifications, calculations and other documents provided by the Consultant in connection with the Project shall remain the property of the Consultant.

The Client alone shall have a license to use the documents referred to above for the purpose of completing the Project, but the Client shall not use, or make copies of, such documents in connection with any work not included in the Project, unless written approval is obtained from the Consultant or otherwise agreed through a separate contract.

TABLE OF CONTENTS

1	INTRODUCTION	1
2	PROPOSED INDUSTRIAL BUILDING	3
3	VEHICLE ACCESS AND PARKING	4
3.1 3.2	Access Parking Supply	
4	PROVISION FOR SERVICE VEHICLES	7
5	DAILY TRAFFIC VOLUMES AND VEHICLE TYPES	8
5.1 5.2 5.3 5.4	Existing Development Trip Generation Proposed Building Trip Generation Traffic Flow Impact on Surrounding Roads	8 10
6	TRAFFIC MANAGEMENT ON THE FRONTAGE STREETS	
7	PUBLIC TRANSPORT ACCESS	13
8	PEDESTRIAN ACCESS	14
9	CYCLE ACCESS	15
10	SITE SPECIFIC ISSUES	16
11	SAFETY ISSUES	17
12	CONCLUSIONS	18

APPENDIX A: PROPOSED DEVELOPMENT PLAN APPENDIX B: TURN PATH PLANS



REPORT FIGURES

Figure 1: Location of the proposed building and subject site	2
Figure 2: Subject site with location of existing, approved and proposed crossover locations	5
Figure 3: RAV network configuration (Main Roads WA)	7
Figure 4: Estimated traffic movements for the proposed building - AM Peak Hour/ PM Peak Hour/ Weekday Daily Traffic	
Figure 5: Westbound view along Lodge Drive	.12
Figure 6: Public transport services (Transperth Maps)	.13
Figure 7: Extract from Perth Bicycle Network (Department of Transport)	.15

REPORT TABLES

Table 1. Land use schedule	.3
Table 2. Estimated peak hour trips for the proposed building	.9



1 Introduction

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of Ovest Industrial with regard to the proposed workshop and warehouse development with incidental office & associated carparks and modifications to vehicle access and circulation at Lots 12 (6) & 13 (4) Lodge Drive, East Rockingham in the City of Rockingham.

The subject site is currently occupied by an industrial building, and the proposed development involves a new industrial building containing a warehouse/workshop and associated office, additional parking and modifications to access and vehicle circulation. The subject site is bounded by Scandium Way (currently under construction) and vacant land to the east, Lodge Drive to the west and south; and vacant land to the north as shown in Figure 1.

Vehicle access/egress to the subject site is currently available via three existing fullmovement crossovers on Lodge Drive. Moreover, one additional crossover on Lodge Drive and two additional crossovers on Scandium Way (currently under construction) are already approved.

As part of the proposed development, five additional crossovers including four additional crossovers on Lodge Drive and one additional crossover on Scandium Way are proposed to serve the subject site.

The Transport Impact Assessment Guidelines (WAPC, Vol 4 – Individual Developments, August 2016) state: "A Transport Impact Statement is required for those developments that would be likely to generate moderate volumes of traffic¹ and therefore would have a moderate overall impact on the surrounding land uses and transport networks".

Section 5.2 of Transcore's report provides details of the estimated trip generation for the proposed building. Accordingly, as the total peak hour vehicular trips are estimated to be less than 100 trips, a Transport Impact Statement is deemed appropriate for this development.

Key issues that will be addressed in this report include the traffic generation and distribution of the proposed workshop/warehouse building, access and egress movement patterns and parking supply.

¹ Between 10 and 100 vehicular trips per hour

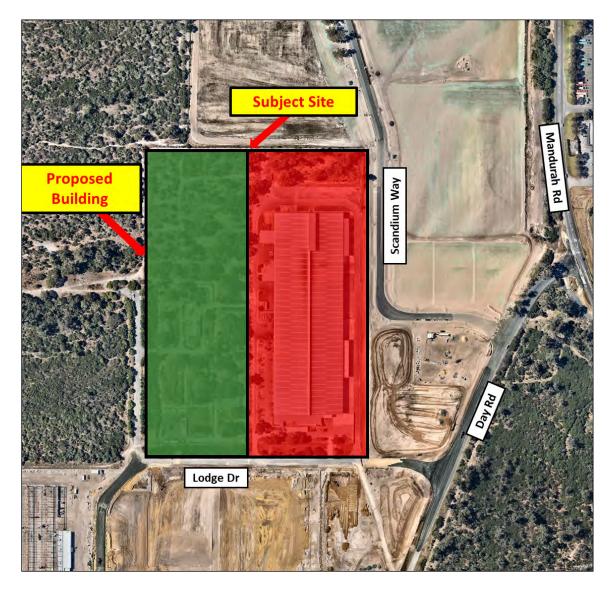


Figure 1: Location of the proposed building and subject site

2 Proposed Industrial Building

The subject site is presently occupied by an industrial building. The Development proposal proposes to build a workshop/ warehouse with an incidental office and two associated carparks adjacent to the proposed building. The breakdown of the floor space for each component of the proposed workshop/warehouse building is detailed in **Table 1**. Refer to **Appendix A** for the development plan.

Facility	Area (m²)		
Workshop	6,050		
Warehouse	5,226		
Roof extended as canopy	2,400		
Office and workshop amenities	680		

Table 1. Land use schedule

As part of the development proposal, two new car parks are proposed adjacent to the proposed building (along the western and southern boundary of Lot 12) which will compromise 69 parking bays including an ACROD bay. These car parking bays can be accessed from the existing and proposed crossovers (on Lot 12) on Lodge Drive.

Moreover, three new carparks with a total of 49 bays including two ACROD bays are already approved on Lot 13 but these carparks are yet to be constructed. These car parking bays can be accessed from the existing, approved and proposed crossovers (on Lot 13) on Lodge Drive and Scandium Way (currently under construction).

It should be noted that a total of 96 existing bays are located on Lot 13 as detailed in **Section 3.1** of this report.

3.1 Access

The subject site currently entails three full-movement crossovers on Lodge Drive. Moreover, one additional crossover on Lodge Drive and two additional crossovers on Scandium Way (currently under construction) are already approved.

As part of the proposed development, five additional crossovers including four additional crossovers on Lodge Drive and one additional crossovers on Scandium Way (currently under construction) are proposed to serve the subject site.

Lot 12 currently entails one existing 6m full-movement crossover on the western boundary of the subject site. Lot 12 will be served by four additional crossovers including one 6m crossover & two 10m crossovers along the southern boundary of the proposed workshop/warehouse building and one 12m crossover along the western boundary of the proposed workshop/warehouse building. All the proposed crossovers are proposed to be full-movement crossovers.

Lot 13 currently entails two existing full-movement crossovers with widths of 6m and 10m on the southern boundary of the existing building. Moreover, one 6m wide, full-movement crossover on Lodge Drive, and two 10m wide, full-movement crossovers on Scandium Way are already approved but not constructed yet.

As part of the proposed development, one additional 10m wide, full-movement crossovers on Scandium Way (northernmost) is proposed to serve the subject site. The locations of existing, approved and proposed crossovers are shown in Figure 2.

It should be noted that the proposed new crossover along the Scandium Way (the northernmost crossover) is relevant to future developments.

A 15m auto-gate is provided between Lot 12 and Lot 13, to provide shared internal access between the lots within the subject site. The movements of light and heavy vehicles are segregated to provide safe manoeuvre of vehicles within the site.

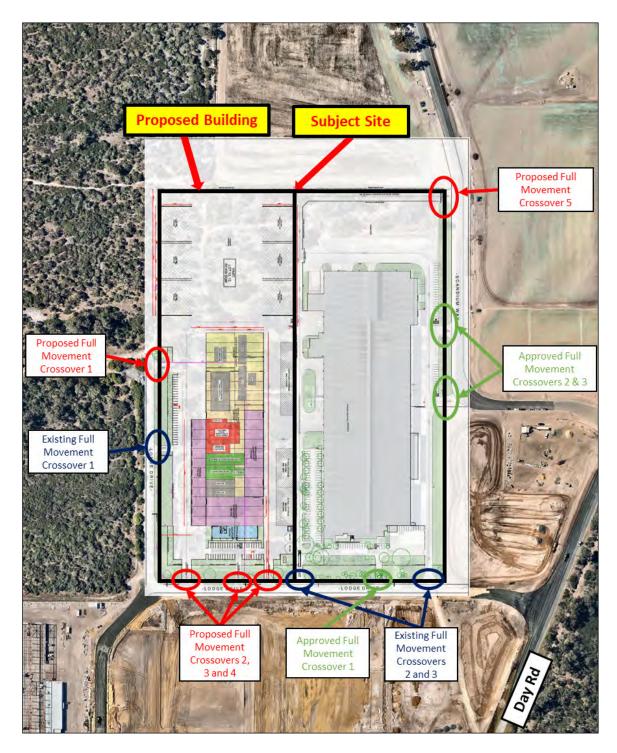


Figure 2: Subject site with location of existing, approved and proposed crossover locations

3.2 Parking Supply

As part of the proposed development, a total of 214 parking bays (96 existing, 49 approved and 69 new) including three ACROD bays will be provided on the subject site to address the parking demand of both the existing and proposed industrial buildings.

Lot 13 currently contains 96 bays within two existing carparks. Moreover, three new carparks with a total of 49 bays including two ACROD bays are already approved on Lot 13 but these carparks are yet to be constructed. These car parking bays can be accessed from the existing, approved and proposed crossovers (on Lot 13) on Lodge Drive and Scandium Way (currently under construction). Two of these carparks will be located to the east of the existing building and one will be located to the south of the existing building.

Lot 12 will entail a total of 69 parking bays including one ACROD bay in two new carparks. These carparks will be located to the west and south of the proposed workshop/warehouse building respectively.

4 Provision for Service Vehicles

In accordance with Restricted Access Vehicles (RAV) Network classification on Main Roads WA website, Day Road is classified as Tandem Drive RAV Network 4.

As shown in **Figure 3**, the eastern section of Lodge Drive is also classified as RAV 4 with the condition that "All operators must carry current written approval from the road asset owner permitting use of the road." However, the western section of Lodge Drive is currently not classified for RAV 4.

The largest vehicle anticipated for the proposed workshop/ warehouse building on Lot 13 will be as of right vehicles up to 19.0m semi-trailer.



Figure 3: RAV network configuration (Main Roads WA)

Waste collection, service and delivery vehicles are expected to access the site generally outside the peak road network and peak site activity periods to minimise on-site conflicts.

Turn path analysis undertaken with a 19m semi-trailer confirms satisfactory entry, egress, and circulation within the proposed development. Turn path plans are included in Appendix B.

5 Daily Traffic Volumes and Vehicle Types

5.1 Existing Development Trip Generation

The subject site is presently occupied by an industrial building containing three tenancies and it is proposed to build a new warehouse/workshop building with an associated incidental office. The trip generation is undertaken for the proposed industrial building only and the existing trip generation has not been incorporated into the modelling.

5.2 Proposed Building Trip Generation

The traffic volumes likely to be generated by the proposed building have been estimated based on the proposed land uses in accordance with the *ITE Trip Generation Manual (11th Edition)* which provides peak hour trip rates and directional traffic split for different types of land uses. The adopted trip rates are conservative resulting in a robust assessment considering the site location, surrounding land uses and adjacent road traffic.

The trip rates which were used to estimate the proposed building traffic generation are as follows:

Manufacturing (140) - 1000 Sq. Ft. GFA

- Weekday daily: 4.75vpd per 1000sqft GFA/ 0.929 = 5.11 vpd/ 100m² GFA;
- Weekday AM peak hour: 0.80vph per 1000sqft GFA/ 0.929 = 0.86vph/ 100m² GFA; and,
- Weekday PM peak hour: 0.80vph per 1000sqft GFA/ 0.929 = 0.86vph/ 100m² GFA.

The incidental office building is associated with the workshop/warehouse use and therefore it is not a standalone office development. Accordingly, it is estimated that the traffic generations for the workshop component (including the incidental office and extended roof canopy) of the proposed development are:

- Weekday daily: [5.11 x 9,130/100 (GFA)] = 467vpd;
- Weekday AM peak hour: [0.86 x9,130/100 (GFA)] = 79vph; and,
- Weekday PM peak hour: [0.86 x 9,130/100 (GFA)] = 79vph.

Warehouse (150) – 1000 Sq. Ft. GFA

- Weekday daily: 1.71vpd per 1000sqft GFA/ 0.929 = 1.84vpd/ 100m² GFA;
- Weekday AM peak hour: 0.21vph per 1000sqft GFA/ 0.929 = 0.23vph/ 100m² GFA; and,
- Weekday PM peak hour: 0.23vph per 1000sqft GFA/ 0.929 = 0.25vph/ 100m² GFA.

Accordingly, it is estimated that the traffic generations for the warehouse component of the proposed development are:

- Weekday daily: [1.84 x 5,226/100 (GFA)] = 96vpd;
- Weekday AM peak hour: [0.23 x 5,226/100 (GFA)] = 12vph; and,
- Weekday PM peak hour: [0.25 x 5,226/100 (GFA)] = 13vph.

Accordingly, it is estimated that the proposed building would generate a total of approximately **563** vehicular trips per regular weekday with about **91** trips during the typical weekday AM peak hour and **92** trips during the typical weekday PM peak hour. These totals include both inbound and outbound vehicle movements. However, considering the overlap of activities between the warehouse and the office and the number of employees, the actual traffic generation is expected to be less than the estimated total.

The traffic generation and peak hour split detailed in **Table 2** were based on the following directional split assumptions for peak hour periods referenced from ITE Trip Generation Manual:

The morning (AM) peak split is estimated at the following rates:

- 73%/27% for inbound/outbound trips associated with the workshop facility,
- 66%/34% for inbound/outbound trips associated with the warehouse facility.

The afternoon (PM) peak split is estimated at the following rates:

- 42%/58%, for inbound/outbound trips associated with the workshop facility,
- 24%/76% for inbound/outbound trips associated with the warehouse facility.

Table 2. Estimated peak hour trips for the proposed building

Land Uses	Direction	Weekday Daily Traffic		Weekday AM Peak Hour Traffic		Weekday PM Peak Hour Traffic	
Workshop	Inbound	50%	234	73%	57	42%	33
(including office and roof extended as canopy)	Outbound	50%	234	27%	21	58%	46
Warehouse	Inbound	50%	48	66%	8	24%	3
	Outbound	50%	48	34%	4	76%	10
Total	Inbound		282		66		36
	Outbound		282		25		56
Overall			564		91		92

5.3 Traffic Flow

With respect to the location of the development, permeability and layout of the surrounding road network and the existing and proposed crossovers, the assumed distribution for traffic arriving/departing at the site is assumed as follows:

- 60% to/from the north via Mandurah Road; and,
- 40% to/from the south via Mandurah Road (10%) and Ennis Avenue/Day Road (30%).

Moreover, it is also assumed that approximately 20 percent of the traffic will use the three new crossovers (two approved and one proposed) on Scandium Way and the remaining 80 percent of the traffic will use the existing, approved and proposed crossovers on Lodge Drive.

Accordingly, the directional morning, afternoon, and total daily trip distribution of the development-generated traffic for the proposed building is illustrated in Figure 4.

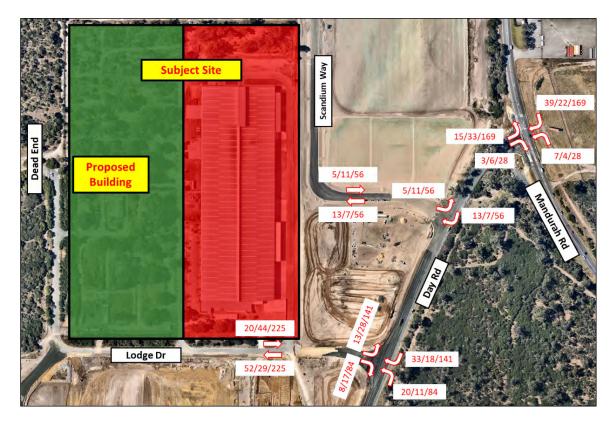


Figure 4: Estimated traffic movements for the proposed building - AM Peak Hour/ PM Peak Hour/ Weekday Daily Traffic

5.4 Impact on Surrounding Roads

The WAPC *Transport Impact Assessment Guidelines* (2016) provides the following guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

It is clear that the traffic increase from the proposed building would be less than the critical threshold (100vph per lane) with the most pronounced traffic increase being 72vph on Lodge Drive during the afternoon peak hour.

Therefore, the impact on the surrounding road network is within the capacity limits and standard of the road network.

6 Traffic Management on the Frontage Streets

Lodge Drive, in the vicinity of the subject site, is constructed as an approximately 9m wide, single-carriageway, two-lane undivided road with no pedestrian footpaths on either side of the road. Refer to **Figure 5** for more details.

Lodge Drive is classified as a *Local Road* in the Main Roads WA *Functional Road Hierarchy* and operates under the 50km/h default speed limit in this area. There are no formal traffic counts available for this road. Lodge Drive provides access from Day Road to the subject site and terminates with a cul-de-sac at its western end.



Figure 5: Westbound view along Lodge Drive

7 Public Transport Access

According to the current Transperth bus network map, the subject site does not have direct access to the public transport system. The closest bus routes are Transperth route 549 operating on Dixon Road. The nearest bus stops are located on Dixon Road which is approximately 1.2km walking distance from the subject site. These bus routes provide links to Rockingham Centre, Rockingham Train Station, Wellard Square and Wellard Train Station.

The public transport services available to the subject site are illustrated in the relevant Transperth service map (see Figure 6).



Figure 6: Public transport services (Transperth Maps)

8 Pedestrian Access

The subject site is not directly accessible to pedestrians as no paths are in place on the immediately adjacent roads.

9 Cycle Access

According to the current Department of Transport Bike Maps, there are no specific cycling facilities on the road network in the immediate vicinity of the subject site. However, shared path facilities are available on Dixon Road to the south of the subject site as shown in **Figure 7**.



Figure 7: Extract from Perth Bicycle Network (Department of Transport)

No site-specific issues are identified for the proposed building.

11 Safety Issues

No particular transport safety issues have been identified for this proposed building.

12 Conclusions

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of Ovest Industrial with regard to the proposed workshop/warehouse development with incidental office & associated carparks and modifications to vehicle access and circulation at Lots 12 (6) & 13 (4) Lodge Drive, East Rockingham in the City of Rockingham.

The subject site is currently occupied by an industrial building, and the proposed development involves a new industrial building containing a warehouse/workshop and associated office, additional parking and modifications to access and vehicle circulation.

The subject site currently entails three full-movement crossovers on Lodge Drive. Moreover, one additional crossover on Lodge Drive and two additional crossovers on Scandium Way (currently under construction) are already approved but not yet constructed.

As part of the proposed development, five additional crossovers including four additional crossovers on Lodge Drive and one additional crossover on Scandium Way are proposed to serve the subject site.

As part of the proposed development, a total of 214 parking bays (96 existing, 49 approved and 69 new) including three ACROD bays will be provided on the subject site to address the parking demand of both the existing and proposed industrial buildings.

Turn path analysis undertaken with 19.0m trucks confirms the satisfactory entry, egress, and circulation for the proposed development.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed building is estimated to be in the order of 563 daily trips, 91 AM peak hour trips and 92 PM peak hour trips respectively. These totals include both inbound and outbound vehicle movements. Accordingly, the traffic generation of the proposed building would be less than the critical threshold (100vph per lane) set by WAPC and as such would not have a significant impact on the surrounding road network.

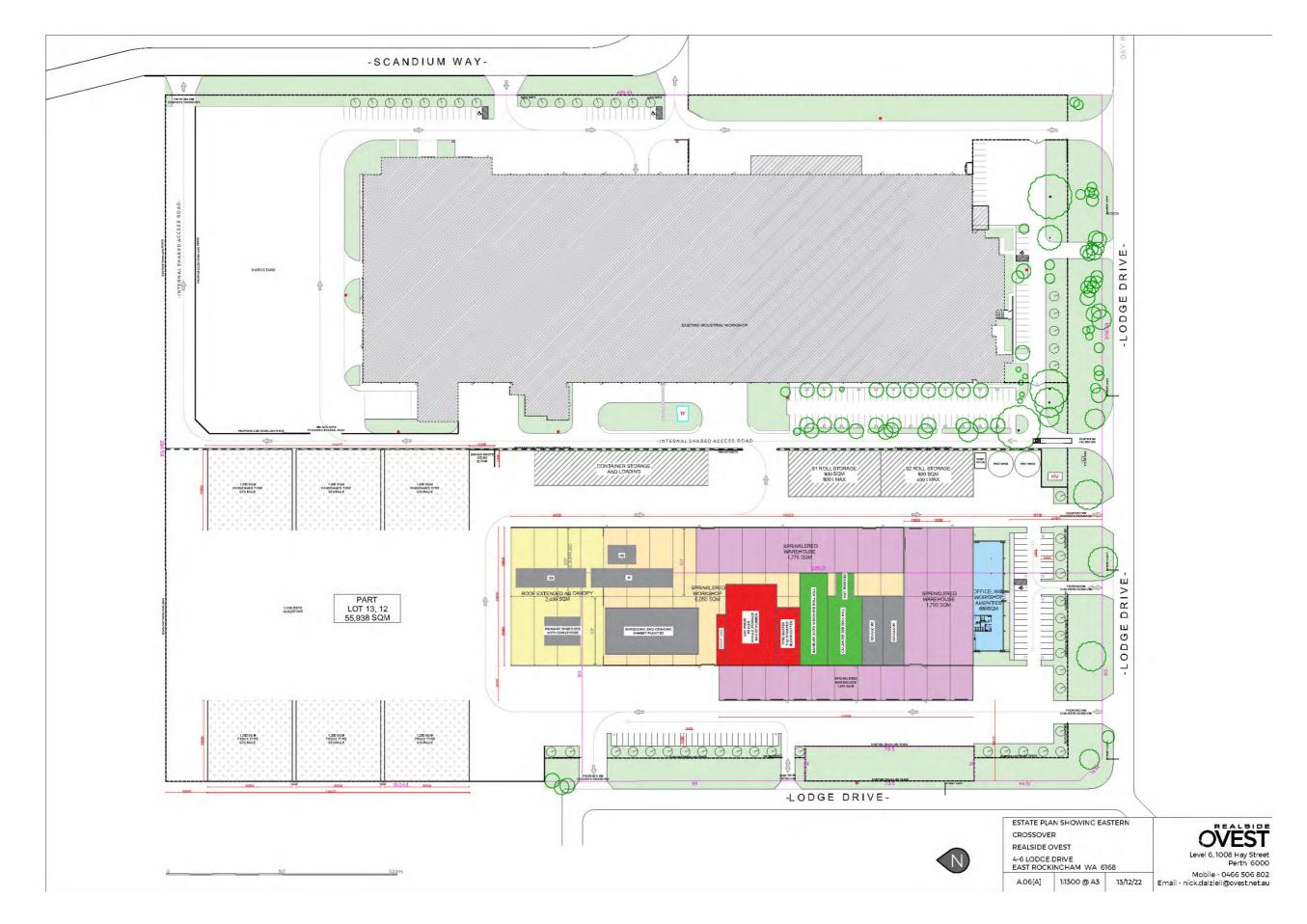
It is finally concluded that the traffic-related issues should not form an impediment to the approval of the proposed, workshop/ warehouse development.

Appendix A

PROPOSED DEVELOPMENT PLAN

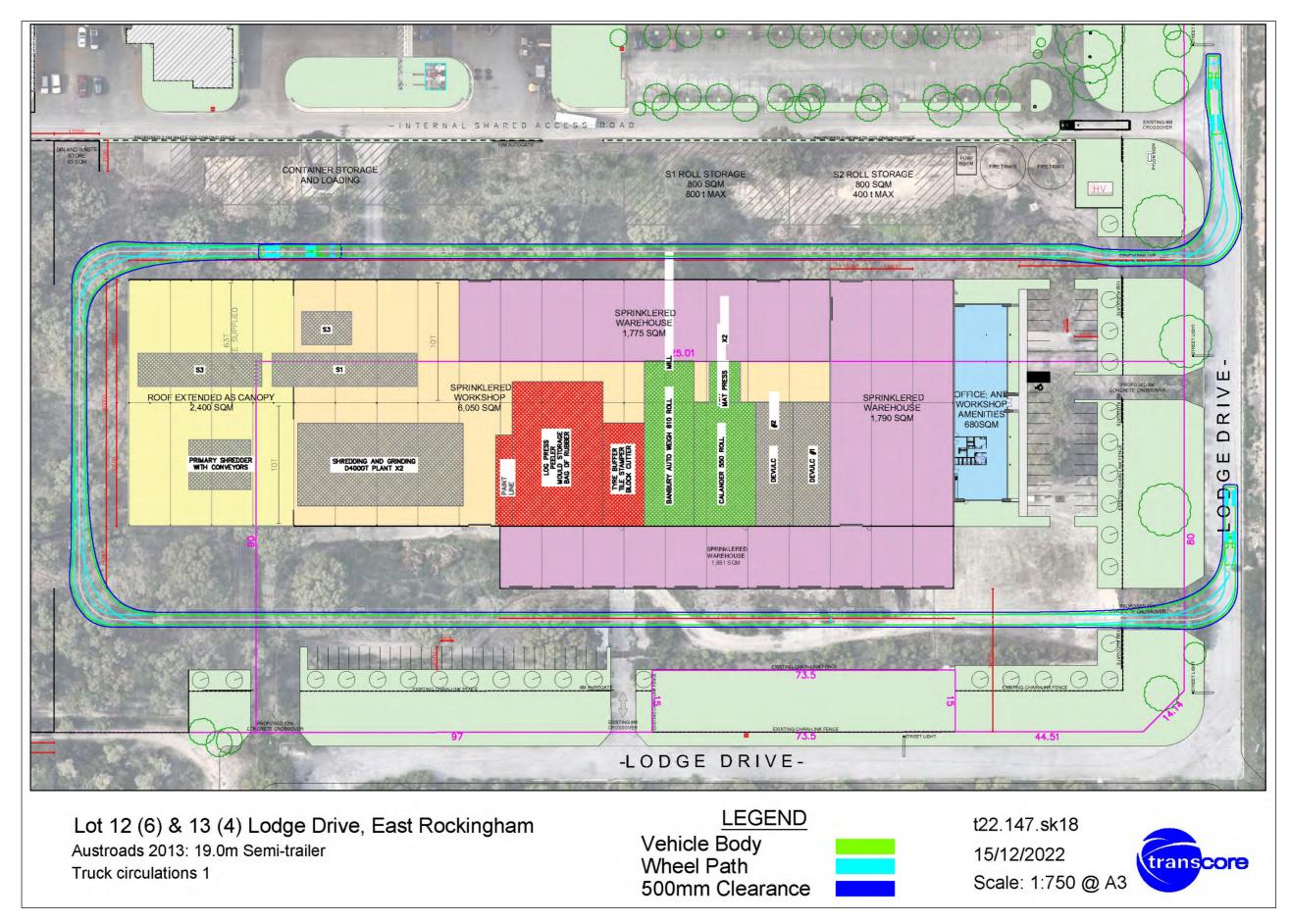


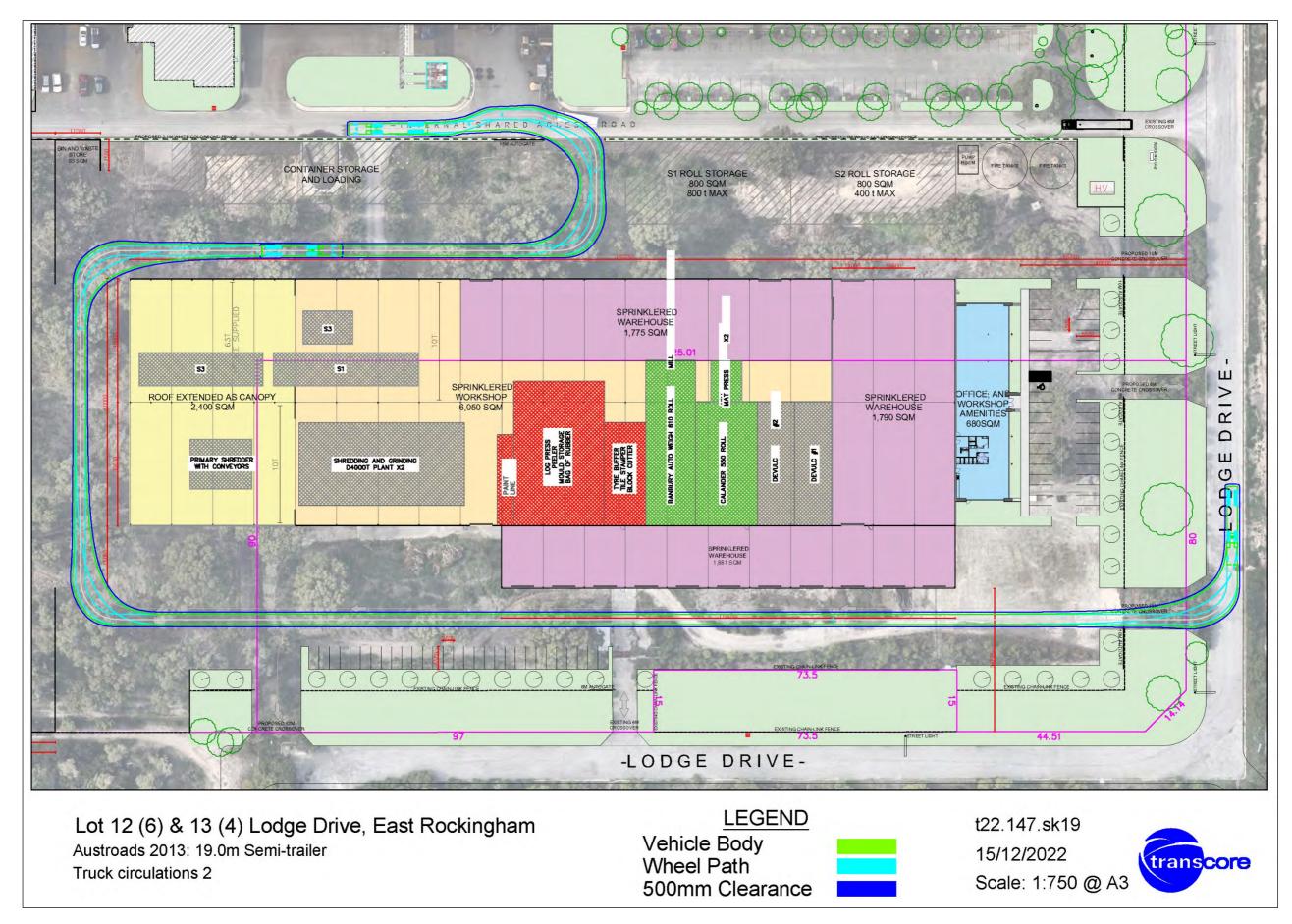
transport planning traffic engineering modelling

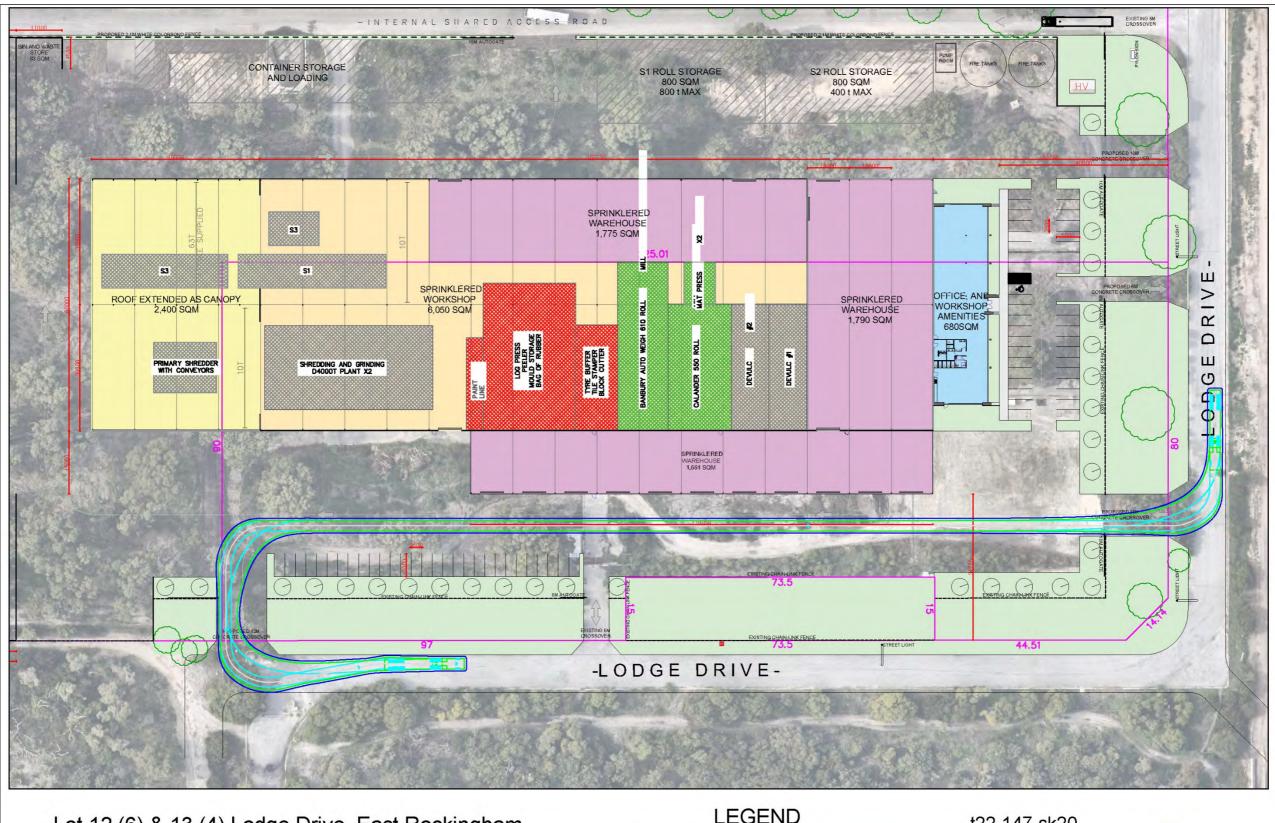


Appendix B

TURN PATH PLANS







LEGEND Vehicle Body Wheel Path 500mm Clearance	t22.147 15/12/2 Scale: *
	Vehicle Body Wheel Path

17.sk20 /2022 : 1:750 @ A3

transcore

ATTACHMENT3

WASTE MANAGEMENT PLAN



TITLE: Waste Management at Tyre Recycling manufacturing Plant

1.0 PURPOSE

This procedure provides instruction for the management and disposal of waste to eliminate or minimise risks to health, safety and the environment.

2.0 SCOPE

This procedure is applicable to all areas within the organisation.

3.0 DEFINITIONS/REFERENCES

3.1 EPA

Environmental Protection Agency/Authority (the Regulators).

3.2 MUNICIPAL WASTE

Domestic-type waste, such as those typically generated from lunchrooms.

3.3 INDUSTRIAL WASTE

Component of the waste stream arising from industrial processes and manufacturing operations.

3.4 INTRACTABLE WASTE

Hazardous waste which are difficult to manage.

3.5 HAZARDOUS WASTE

Component of the waste stream, which by its characteristics poses a threat or risk to public health, safety or to the environment.

3.6 SCHEDULED WASTE

Waste listed in of the Environmental Protection (Waste Management) Regulations, typically these wastes pose a significant risk to health and safety or the environment.

3.7 SCHEDULED WASTE



Defined or prescribed by regulation, legislation, or government authority.

3.8 WASTE

Materials and energy which have no further use and are released to the environment as a means of disposal.

3.9 WASTE MANAGEMENT

Management of the entire process from production to final disposal.

3.10 WASTE STREAM

- Tyre and Conveyor belts
- Steel Fibre / will be recycled by a Steel recycling company
- Textiles / will be disposed of by the licenced disposal company
- Hazardous Materials / will be disposed of or recycled by licenced disposal companies
- General Waste / will be disposed of by a licenced disposal company

4.0 RELATED DOCUMENTATION

- 4.1 Controlled Log "Waste Tracking Log"
- 4.2 Procedure "Control of Records"

4.3 REFERENCES

- As/NZS ISO 45001 Occupational Health and Safety Management Systems
- AS/NZS ISO 14001:2015 Environmental Management Systems

5.0 RESPONSIBILITIES/AUTHORITIES

5.1 MANAGER

Responsible for ensuring this procedure is followed, all waste production is reduced as far as practicable, and waste produced is appropriately managed.

5.2 EMPLOYEES

Responsible for working in accordance with this procedure, as outlined to them by the Manager or Supervisor.



6.0 PROCEDURE

6.1 WASTE MANAGEMENT / MINIMISATION PRINCIPLES

In accordance with waste management objectives, the organisation's waste will be managed based on the following hierarchy.

6.1.1 AVOIDANCE

RubberGem avoids waste at the outset. Key strategies in waste avoidance are, ensuring appropriate qualities of materials are ordered and ensuring design plans are accurate; this will reduce the likelihood of waste-generating rework being required.

6.1.2 REDUCE

Waste prevention is always the preferred option to waste management. The use of cleaner production methods, energy-efficient designs and reduced packaging are all methods of waste prevention. So RubberGem has purchased high-quality equipment to reduce waste. Additionally, the employees will be well-trained in the use of products and materials to minimise waste.

6.1.3 REUSE

RubberGme will try to reuse the produced wastes as much as possible. This means the material is used for a similar purpose as its original function.

6.1.4 RECYCLING / REPROCESSING

Where reuse is not feasible, the next best option is recycling. Recycling means the waste is used as a raw material in the production of another product.

- Scrap steel will be sold to a scrap metal facility
- General office/lunchroom refuse, such as bottles, cans, and papers, will be recycled via the local council collection facilities.
- RubberGem is conducting studies to find a use for waste textiles to be used in the alternative product



6.1.5 RECLAIM / ENERGY RECOVERY

The waste textile will be sent to an Energy recovery company to be burnt as fuel.

6.1.6 TREATMENT / CONTAINMENT / DISPOSAL

Containment will be used only for Scheduled waste. Non-Scheduled waste will be disposed of using local waste disposal companies.

6.2 STORAGE OF WASTE

Waste stored on site prior to reuse, recycling or treatment and disposal will be contained in a manner that minimises risk to the environment and health and safety.

6.2.1 GENERAL

The following are the minimum requirements for storage on site:

- Containers storing waste will be closed.
- Stored waste will be labelled so that it is readily apparent what type of material it is,
- There will be adequate containment measures to prevent the offsite migration of spills.
- Necessary clean-up equipment (spill kit) will be provided,
- No liquid wastes, washdown waters, or stormwater waste contaminated with waste will be disposed of via the stormwater drainage system designed by OVEST.

6.2.2 LIQUID WASTE

Liquid waste, such as used oils and solvents, will be stored in drums or containers without leaks. The storage container will be appropriately labelled using the word waste, and the original label will be removed. All liquid waste will be stored in bunded areas and protected from the weather.

Where liquid waste is produced on-site, the waste will be contained to the smallest area possible and removed from the site.

Where significant volumes of liquid waste are being produced, a sucker truck may be required on-site for disposal. For smaller quantities of waste production, the liquid waste will be pumped or otherwise removed from the storage location as soon as possible. It may be stored in sealed, labelled containers in a bunded area on site until sufficient quantities are collected, and offsite disposal is practicable.



6.2.3 SOLID WASTE

The storage method for solid waste is dependent on the type of waste. If the waste is environmentally inert and of limited risk to health and safety, such as steel will be stockpiled prior to recycling or disposal at a suitable location on site. The chosen location will be accessible for stockpiling and removal but sufficiently out of the way not to present a hazard during normal work activities.

Where the waste is an environmental hazard or presents a risk to health and safety, it will be stored on-site for the shortest period possible. Storage must be in a manner that eliminates risks to health, safety and the environment.

6.3 GENERAL WASTE MANAGEMENT

To conserve material resources and landfill space and reduce waste disposal costs, disposal of waste through landfill will be the last option. Where possible, material life will be extended by recovering the waste for alternative uses.

6.3.1 REUSE

If this waste can't be reused due to the scope of the site, other opportunities for reuse will be explored before resorting to disposal. In some instances, it is possible to sell waste, such as scrap metal, to recyclers.

6.3.2 RECYCLING

Table 1: Recycle wastes products by RubbereGem

Туре
Passenger tyres
Truck tyres
Off the road (OTR) tyres

Besides recycled wastes mentioned above, Recycling site waste from both the contracted works and general office or lunchroom refuse will occur wherever possible using other recycling companies.

Where sites are located within council boundaries that run recycling programs, suitable containers will be provided for recyclable materials from the general waste stream.



This waste will include but not be limited to:

- Cardboard, paper and recyclable packaging
- Aluminium and steel cans
- Recyclable plastic materials
- Steel

6.3.3 DISPOSAL

The bins for the site will be emptied on a regular schedule.

Table 2: Estimated recyclable steel and textile waste/waste to energy

Commodity / waste	Collection frequency	Treatment	
Steel	Daily	Recycling	
Textiles	Weekly	Burning for Fuel	
General office or lunchroom	Fortnightly	Recycling	
General Waste	Fortnightly	Landfill	
* Pased on stool /taytile 20% of car ture and 25% truck ture weight split 3/ stool weight : 1/			

*Based on steel/textile 30% of car tyre and 35% truck tyre weight, split ¾ steel weight : ¼ textile weight

6.4 MOVEMENT OF WASTE WITHIN THE SITE

Waste segregation will be maintained during the movement and handling of waste if waste is mixed or loses identification during movement. Movement of waste through amenities areas will be avoided.

Bookings for deliveries of all waste types will be scheduled with the Administration Office. Scheduled waste deliveries and receival dates/times will be communicated to the Site Supervisor. All drivers will report to the Resource Coordinator upon arrival on site. No unauthorised access will be permitted. Controlled Waste Tracking forms will be provided, where applicable.

The Site Supervisor or trained personnel will assess waste tyres to ensure that they can be accepted and processed at the facility with relevant DWER Works Approval / Licence conditions and DWER Controlled Waste requirements.

The load of waste tyres will be assessed, specification tyres and overly contaminated loads will be rejected, and materials re-loaded (where necessary) to the contractor's vehicle. Once assessed, tyres will be received at the site and site personnel will direct delivery contractors to unload waste tyres at the relevant 'car tyre storage' or 'truck tyre storage' bunker (refer to Figure 3)



6.4.1 EMERGENCY SPILL KITS

The site will have an appropriate spill kit to clean up any spills that may occur. Emergency spill kits will be easily accessible. The spill kit will be checked and maintained at all times. A spill kit may include, but is not limited to:

- Buckets
- Shovels
- Torch
- Single-use containers
- Disinfectants
- Plastic waste bags with appropriate labelling
- And so on

6.5 HANDLING

People involved in collecting and transporting the waste, whenever waste is handled, will wear appropriate personal protective equipment. Such equipment may include (but is not limited to):

- Hard hat/headgear
- Protective eyewear
- Mask/respirator
- Long sleeves
- Heavy duty gloves
- Long pants
- Work boots

Prescribed safe work practices will be always followed.

7.0 RECORDS

- All records pertinent to this procedure are to be maintained per the "Control of Records" procedure.
- External Licenced companies will do Waste Transports.

ATTACHMENT2

RISK ASSESSMENT AND MANAGEMENT PLAN



TITLE: Management Plan for the tyre recycling facility processes, storage, handling, transportation, and disposal

The below information is being used at DWER application by RubberGem. Encycle consulting company and OVEST have engaged with DWER and DFES. RUBBERGEM has also engaged Cygnetech to undertake any required dangerous goods manifest to DMIRS.

1.0 TYRE RECYCLING

RUBBERGEM propose to progressively increase tonnes received and processed at the facility over a 24-month period at full capacity of the infrastructure and equipment. Notwithstanding, the progressive receival and processing of waste, the Works Approval and environmental emissions assessment, DFES reviewed Fire Management Plan, DGs Manifest and supporting information is based on processing at full capacity.

Туре	Approx. tonnage per annum
Passenger tyres	15,000
Truck tyres	20,000
Off the road (OTR) tyres	10,000
Total	45,000

Table 1: Waste recycling tonnages in full capacity

2.0 TYRE PROCESSING PLANT

Table 2: Tyre processing plant & equipment

Process step	Reference	Equipment	Description
Waste storage	Car tyre, truck	Concrete bunker	Bays to be constructed in line with
	tyre storage	bays	Fire Management Plan
Primary	Primary	Primary Shredder	Stage 1 mechanical process that
mechanical	shredder with		shreds whole tyres into smaller
shredding	conveyors		pieces
Separation steel & textiles Shredding & Grinding	Shredding & grinding plant	Tyre Grinding and Screening Plant (or similar)	Stage 2 mechanical process that shreds and grinds smaller rubber pieces from Stage 1. Steel and textiles separated between Stage 1 and 2 shredding



Process step	Reference	Equipment	Description
Bagging	Will be located end of shredding & grinding plant	Bagging plant supplied as part of shredding plant	Crumb automatically bagged in large bags 1,000kg
Storage	Car tyre rubber granule bulka bag storage. Truck tyre mesh bulk bag storage	External storage	Temporary storage for car & truck crumb rubber bags in preparation further production processes
Colouring	Paint line	Rubber Granule Colouring plant	This process coats the granules with paint, and then drying occurs
Product storage	Sprinklered warehouse	In enclosed facility	Bagged coloured crumb rubber, agricultural mats stored on pallets and in racking
Moulding	Log press and peeler	Log Press and Peeler	A mechanical process that uses hydraulic force to compress rubber granules and urethane in a mould to produce a rubber log or cube
Cutting	Tile stamper	Tile Stamper (or block cutter)	A mechanical process that receives logs and cuts an interlock pattern around the edges
	Block cutter	Block Cutter	A mechanical process that slices slab off of a preformed rubber cube
Product storage	Sprinklered warehouse	In enclosed facility	Finished stock of mats / rolls stored on pallets
Devulcanisation & Vulcanisation	Devulc No 1 & 2	Devulcanization Line No 1 & 2	A mechanical process that devulcanizes cured rubber compound. This process changes the state of cured rubber to a form where it can be reformed into another product. The process uses mechanical shearing forces to change the molecular structure of cured rubber



Process step	Reference	Equipment	Description
	Auto weigh 610 roll	Rubber Compounding Line	A mechanical process that mixes uncured rubber and accelerators to form a mixture to a set recipe in readiness for curing
	Calander 550 roll	Rubber Calandering line	A mechanical process that forms the uncured rubber compound produced in the compounding line to a required dimension in width and thickness
	Mat press x 2	Vulcanizing Presses	A process that uses heat and pressure to cure a rubber compound in a mould to a finished product

3.0 ACTIVITIES

Table 3 outlines the infrastructure and activities and overview of potential emissions points. These emission points are shown on the infrastructure and equipment.

Emission Point	Location	Activity	Emission type
EP1	Waste deliveries	Waste receival to site from road network	Noise, traffic amenity, waste
EP2	Car & truck tyre storage bunkers	Unloading & storage of EOL tyres to dedicated bunkers located external to the workshop building	Fire, noise, leachate, waste
EP3	Primary shredding with conveyors	Primary shredding of tyres, located externally and undercover	Noise, dust, equipment fire
EP4	Workshop building	Secondary shredding & granulation of waste. Colouring and moulding of products. Product storage of crumb rubber / mats on pallets. All in enclosed building with dedicated processing and storage areas	Noise, dust, waste, equipment fire, Dangerous Goods (DGs), hazardous waste

Table 3: Infrastructure and activities and potential emission points



EP5	Product storage	Located externally in dedicated bunker. Crumb bags stored on pallets	Fire, noise
EP6	Product distribution	Product collection from site from road network	Noise, traffic amenity

4.0 WASTE TYPES AND SOURCES

Up to 45,000 tpa of material across these waste types will be processed into beneficial recycled products including rubber matting for the dairy industry, mats and rolls for play surfaces, crumb for use by Main Road Western Australia (MRWA) and coloured crumb for use by a variety of manufacturing sectors.

Table 4: Waste types and sources

Waste type	Sources	Schedule 1 Category	Controlled waste code
Passenger & commercial tyres	Tyre retail outlets, mechanics, local government transfer stations, transport & logistic businesses	57	T140
'Off the road' tyres	Tyre retail outlets, mechanics, local government transfer stations, agricultural stockpiles, mining stockpiles, transport & logistic businesses	57	T140

5.0 OVERVIEW OF PROCESS

RUBBERGEM propose to receive waste in a staged approach with processing of passenger and truck tyres, and then OTR tyres. Wastes will be processed into crumb, dairy flooring and matting. Tyres will be delivered by external parties to site, unloaded and inspected prior to consolidation and storage in dedicated and purpose-built fire safety rated bunkers. Tyres and tyre crumb are to be stored in accordance with the Fire Management Plan developed with reference to DFES 'Guidance Note: GN02 Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres' (DFES v1, 2020).

Following assessment and acceptance, waste tyres will be processed mechanically (i.e. shredded). Shredded and downsized rubber will then either be mixed with urethane and moulded or passed through a colouring plant. The granulated coloured crumb products and moulded logs (cut to thickness for market requirements) will be stored for market distribution.

The tyre recycling process flow is shown in Figure 5 and the description for the tyre recycling process is as follows:



Assessment

- Bookings for deliveries of all waste types will be scheduled with the Administration Office. Scheduled waste deliveries, receival dates / times will be communicated to the Site Supervisor
- All drivers must report to the Resource Coordinator upon arrival on site. No unauthorised access will be permitted. Controlled Waste Tracking forms will be provided, where applicable
- Waste tyres will be assessed by the Site Supervisor or trained personnel to ensure that they can be accepted and processed at the facility with relevant DWER Works Approval / Licence conditions, and DWER Controlled Waste requirements
- The load of waste tyres will be assessed and out of specification tyres and overly contaminated loads will be rejected and materials re-loaded (where necessary) to the contractor's vehicle
- Once assessed, tyres will be received to site and site personnel will direct delivery contractors to unload waste tyres at the relevant 'car tyre storage' or 'truck tyre storage' bunker
- Primary mechanical shredding
 - Waste tyres will be transferred from the bunkers and loaded on to the infeed conveyor, by front-end loader, to the primary shredder. Tyres shredded to approximately 50-60mm length pieces
- Separation of steel / textiles
 - Steel wire will be removed through magnetic separation and collected in bins as part of the primary and before secondary mechanical shredding processes
 - Textiles are extracted during the shredding stages and collected in bags/containers
- Secondary mechanical shredding & granulating
 - This step involves size reduction of the rubber pieces which are shredded in the 'shredding and grinding plant'. Pieces are shredded to produce approximately 12-20mm length pieces
- Bagging of granulated crumb
 - At the end of the shredding & granulating processes, crumb will be bagged into approx.
 1,000kg bags. The bagging plant will form part of the shredding & granulating processing plant and fully equipped with dust filtration systems
- Storage of granulated crumb product
 - Bagged granulated crumb will be stored external to the facility building (car granule bulk bag storage)
- Colouring & Bagging of crumb
 - A proportion of the crumb rubber will be coloured



• Bagging & Distribution of coloured crumb

- The bagged coloured crumb product will be stored internally for distribution to markets. Bags will be stored off the ground on pallets in the 'sprinklered

• Moulding & Cutting

- Granules will be mixed with urethane and press moulded into logs or cubes using a mechanical process of heat and pressure. Logs or cubes are then mechanically cut to lengths and thickness and generally 'made to order' for markets
- Storage & Distribution of moulded & cut products
 - The mats or rolls will be stored internally for distribution to markets. Rolls and mats will be stored off the ground on pallets in the 'sprinklered warehouse'

• Devulcanisation & Vulcanisation

- Crumb is decvulcanised and vulcanised and processed into mats for dairy flooring

• Storage & Distribution of mats products

- The mats will be stored internally for distribution to markets. Mats will be stored off the ground on pallets in the 'sprinklered warehouse'

-

6.0 CONTINGENCIES

The following contingencies will be in place:

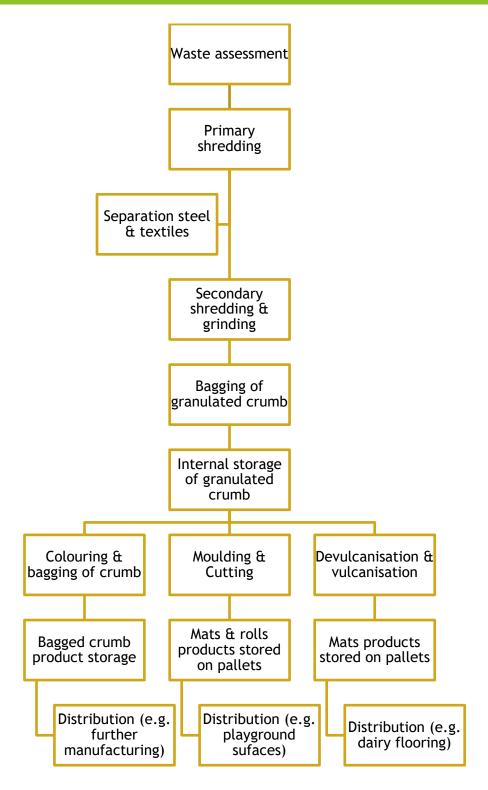
- No waste is to be accepted on site without prior notice or booking of waste delivery with Site Administration
- Wastes are weighed over the onsite weighbridge and Administration staff and the Supervisor will be briefed on volumes required for processing in tool box or similar meetings. The volume of waste will be communicated so as to prevent any storage issues
- If tyre waste storage bunkers are at maximum height for any material stream, Supervisor is to advise Administration staff and re-scheduling of deliveries to be arranged until sufficient space is available for storage
- Design and construction of the facility to process up to 45,000 tpa allows for sufficient storage of waste, equipment & machinery 'down time' and scheduled maintenance time and 24 / 7 operations
- Assessment of the waste is to be conducted in line with Standard Operating Procedures (SOPs) to be developed for the facility operations
- Regular maintenance will be conducted on all plant & equipment as per a 'Maintenance Schedule' to be developed for when the facility is operational



- In the event of unscheduled maintenance requirements, additional storage has been factored into the storage and processing capacity of the facility. Administration staff will know volumes of waste 'in stock'. Further, RUBBERGEM are in the process of establishing participation in an extended producer responsibility (EPR) which will also track and manage volumes being processed and 'in stock' (inventory)
- In the event of any unforeseen delays in distribution of products, RUBBERGEM utilise their storage warehouses in Sydney and Melbourne. Additional warehouse space may be hired in the unlikely event of requiring storage space for products. Note that RUBBERGEM has well established markets for products.



7.0 TYRE RECYCLING PROCESS FLOWCHART





8.0 EMISSION AND DISCHARGES

Table 5: Emissions and Discharges

Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
Transport of waste to site	Noise / amenity from vehicles transporting waste to site	Waste vehicles – estimated < 30 daily movements (varying in size) Staff cars c.20 daily movements	 The facility is located and serviced by major arterial routes including Mandurah Road and Kwinana Freeway. Waste will not be trafficked through residential areas to the site Site is located in industrial zone and access by vehicles not in proximity to residential receptors Contractors / clients to be sent communications instructing them not to idle if the facility is not open, to adhere to relevant speed limits and to service and maintain vehicles to mitigate noise impacts Appropriate vehicle ingress / egress plans are in place that accommodate large waste vehicles The site will be landscaped to screen operations Staff will park in designated parking bays Staff will be inducted and appropriately trained in the use of site facilities including parking
Unloading of wastes on site	Noise from unloading	Waste vehicles estimated < 30 daily movements (varying in size)	 Scheduling of wastes to be booked in with Administration. No unauthorised deliveries to be managed except on occasional circumstances Unloading of wastes to be coordinated by site Supervisor Contractors to adhere to site 15Km speed limit (or lower)



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
			 Preference for contractors to use 'croakers' not 'beeping' when reversing The closest sensitive receptor is located 1Km away with bushland and other industry in between to buffer noise Waste will be stored in dedicated bunkers. Fire Management Plan being developed with DFES Premises is not located adjacent to high noise generating activities External and internal roads on sites
	Dust from unloading		 will be sealed Scheduling of wastes to be booked in with Administration. No unauthorised deliveries to be managed except on occasional circumstances Unloading of wastes to be coordinated by site Supervisor Contractors to adhere to site 15Km speed limit (or lower) Waste will be tipped as slowly as possible into dedicated bunkers Height of bunkers will mitigate any dust generation If necessary, waste tyres will be wetted down lightly to prevent dust
	Waste		 Loads are to be inspected prior to unloading. Any over contaminated or 'out of spec' tyres will be rejected In the event of any general waste or recyclables being disposed with waste loads, this will be removed to appropriate bins on site



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
	Leachate	Possible runoff from bunkers	 Stormwater is being assessed and will be designed in line with site requirements for water balance as well as any discussion from DFES input to the Fire Management Plan
Storage of tyres	Fire	c.5,600 tonnes capacity	 Waste tyres to be stored in bunkers designed with reference to DFES Guidance Note Fire Management Plan is under development in consultation with DFES The Fire Management Plan is to include Bushfire Management Plan and provision for the management of Dangerous Goods
Movement of waste tyres to processing	Noise	c.95 t/day	 Internal roads will be sealed Site limit of 15Kms or lower to be adhered to 'Croakers' not 'beeping' to be used on equipment (e.g. loaders, forklifts)
Primary shredding	Noise	<95 t/day	 Primary shredder is located whereby storage bunkers will serve to buffer noise Primary shredder will include a roof cover to mitigate noise Staff will be properly trained on how to operate the shredder Shredder will be regularly maintained
	Dust		 Shredder will include extraction unit whereby dust is captured Primary shredder is located whereby storage bunkers will serve to buffer generation Primary shredder will include a roof cover to mitigate noise



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
			 Staff will be properly trained on how to operate the shredder Shredder will be regularly maintained
	Equipment fire		 Waste is inspected prior to receival and unloading to remove any contamination Staff will be properly trained on how to operate the shredder and what to do in the event of a fire (i.e. 'shut down' procedure if safe to do so) Shredder will be regularly maintained Fire Management Plan being developed in consultation with DFES Appropriate firefighting equipment and infrastructure will be established on site RUBBERGEM will develop a 'Site Emergency Plan' including
Shredding & grinding	Noise	<95 t/day	 equipment fire Shredding & grinding plant is located inside the building to mitigate noise Building will have air ventilation Staff will be properly trained on how to operate the shredder Shredder will be regularly maintained
	Dust		 Shredder will include extraction unit whereby dust is captured Staff will be properly trained on how to operate the shredder and will wear appropriate personal protective equipment (PPE)



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
			 Shredder will be regularly maintained
			 Waste is inspected prior to receival and unloading to remove any contamination
			 Staff will be properly trained on how to operate the shredder and what to do in the event of a fire (i.e. 'shut down' procedure if safe to do so)
	Equipment fire		 Shredder will be regularly maintained
			 Fire Management Plan being developed in consultation with DFES
			 Appropriate firefighting equipment and infrastructure will be established on site
			 RUBBERGEM will develop a 'Site Emergency Plan' including equipment fire
	Waste		 Steel will be extracted during the shredding processes to containers and subsequently disposed to larger bins on site for collection for recycling Textiles and dust extracted will be collected in containers and bags and subsequently disposed to
			general waste bins on site for collection
Colouring, Moulding, Devulcanisation & Vulcanisation	Hazardous materials	To be provided in DGs Manifest	 RUBBERGEM have engaged a Dangerous Goods consultant, Cygnetech to develop a DGs Manifest and Plan in line with relevant legislation and for submittal to DMIRS for a DGs licence



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
			 The Plan will include management of any hazardous waste (e.g. containers to be generated) An appropriately licenced contractor will collect hazardous waste and dispose of accordingly
Capped belt production	Noise	<95 t/day	 Shredding & grinding plant is located inside the building to mitigate noise Staff will be properly trained on how to operate the shredder and will wear appropriate PPE Shredder will be regularly maintained
	Dust		 Shredder will include extraction unit whereby dust is captured Staff will be properly trained on how to operate the shredder Shredder will be regularly maintained
	Waste	Table 6	 Waste rubber will be collected in containers subsequently disposed to general waste bins on site for collection
	Hazardous materials	To be provided in DGs Manifest	 RUBBERGEM have engaged a Dangerous Goods consultant, Cygnetech to develop a DGs Manifest and Plan in line with relevant legislation and for submittal to DMIRS for a DGs licence The Plan will include management of any hazardous waste (e.g. containers to be generated) An appropriately licenced contractor will collect containers that contained any relevant DGs on the Manifest and recycle them



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
Product stored external to building	Fire		 Product is to be stored in dedicated bunkers Staff will be trained on how to properly store products Fire Management Plan being developed in consultation with DFES Appropriate firefighting equipment and infrastructure will be established on site RUBBERGEM will develop a 'Site Emergency Plan'
Product stored internal to building	Fire		 Product is to be stored in 'sprinklered warehouse' building section Staff will be trained on how to properly store products Fire Management Plan being developed in consultation with DFES Appropriate firefighting equipment and infrastructure will be established on site RUBBERGEM will develop a 'Site Emergency Plan'
Transport of waste to site	Noise / amenity from vehicles transporting products from site	Product vehicles – estimated < 20 daily movements (varying in size)	 The facility is located and serviced by major arterial routes including Mandurah Road and Kwinana Freeway. Product will not be trafficked through residential areas to the site Site is located in industrial zone and access by vehicles not in proximity to residential receptors Contractors / clients to be sent communications instructing them not to idle if the facility is not open, to adhere to relevant speed limits and to service and maintain vehicles to mitigate noise impacts



Source of emission or discharge	Emission or discharge type	Volume / frequency	Proposed controls
			 Appropriate vehicle ingress / egress plans are in place that accommodate large vehicles The site will be landscaped to screen operations

Council Resolution

Moved Cr Liley, seconded Cr Buchan:

That Council **ADOPTS** the Responsible Authority Report for the application for the proposed Industry: General (Licenced) Tyre Recycling Facility at Lot 12 and 13 Lodge Drive East Rockingham, contained as Attachment 1 as the report required to be submitted to the presiding member of the Metro Outer Joint Development Assessment Panel (MOJDAP) pursuant to Regulation 12 of the Planning and Development (Development Assessment Panels) Regulation 2011, which recommends:

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/22/02419 and the accompanying plans received on 5 December 2023 and Amended Plans received on 20 February 2023:

- Aerial Underlay Site Plan Drawing no. A.01(F), Dated 20/03/2023;
- Site Plan Drawing no. A.03(AL), Dated 20/03/2023;
- Zoomed Office Plan Drawing no. A.04(C), Dated 18/11/2022;
- Estate Plan Drawing no. A.06(B), Dated 01/03/2023;
- Site Elevations Drawing no. E.01(F), Dated 22/02/2023;
- Main Building Elevations Drawing no. E.02(D), Dated 22/02/2023;

In accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 subject to the following conditions as follows:

Conditions:

- 1. This decision constitutes planning approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
- 2. Prior to applying for a Building Permit, arrangements must be made to the satisfaction of the City of Rockingham for the amalgamation of lot 12 Lodge Drive and lot 13 Lodge Drive into one Certificate of Title. The amalgamation must be completed prior to occupation of the development.
- 3. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for approval. All stormwater generated by the development must be managed in accordance with Local Planning Policy 3.4.3 -Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.
- 4. Prior to applying for a Building Permit, a Construction Management Plan is to be submitted to and approved by the City of Rockingham addressing but not limited to:
 - (i) Hours of construction;
 - (ii) Temporary Fencing;
 - (iii) Traffic Management including, a Traffic Management Plan addressing site access, egress and parking arrangement for staff and contractors;
 - (iv) Management of vibration and dust;
 - (v) Management of construction noise and other site generated noise.
- 5. Prior to applying for a Building Permit, the Applicant must submit full detailed engineering drawings showing the various pavement types and cross sectional profiles to be adopted across the entire development site and adjoining road reserves, for review and approval by the City of Rockingham.
- 6. Prior to applying for a Building Permit, a Sign Strategy must be prepared (which must include the information required by Planning Policy 3.3.1, Control of Advertisements) to the satisfaction of the City of Rockingham and it must thereafter be implemented for the duration of the development.

- 7. Prior to occupation of the development, pavement marking and signage must be provided at the vehicular crossover locations, to the satisfaction of the City of Rockingham, to clearly delineate the intended traffic flow within the site as follows:
 - (i) Restricted entry/exit only for heavy vehicles at 10m and 12m wide crossovers;
 - (ii) Full movement entry and exit for staff and visitor vehicles only at the 6m crossover for the administration building.
- 8. The buildings must be designed, constructed and maintained to BAL- 29 as specified in Australian Standard AS3959-2018: Construction of Buildings in Bushfire-Prone Areas (AS3959). The building must be maintained in accordance with the specified requirements of the BAL for the duration of the development.
- 9. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:
 - (i) the location of bin storage areas and bin collection areas;
 - (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
 - (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
 - (iv) frequency of bin collections.

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

- 10. Prior to applying for a Building Permit, bin storage area/s must be designed with a size suitable to service the development and screened from view of the street to the satisfaction of the City of Rockingham. The bin storage area/s must be constructed prior to the occupation of the development and must be retained and maintained in good condition for the duration of the Development.
- 11. Prior to applying for a Building Permit, a Landscaping Plan must be submitted and approved to the satisfaction of the City of Rockingham and shall include the following detail:
 - (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
 - (ii) any lawns to be established and areas to be mulched;
 - (iii) any natural landscape areas to be retained;
 - (iv) those areas to be reticulated or irrigated;
 - (v) the provision of shade trees at a ratio of 1 tree per 4 car bays;
 - (vi) use of species consistent with the prescribed plant species list in the East Rockingham Development Guidelines;
 - (vii) fencing type, height and alignment, demonstrating that the street frontage fencing is located behind the extent of the Landscaped setback area;
 - (viii) internal footpath and kerb ramps providing linkages between car parking areas to the main office, including any proposed lighting; and
 - (ix) proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas.

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

- 12. Prior to the occupation of the development, the recommendations in the Bushfire Management Plan prepared by Eco Logical dated 24 March 2023 shall be implemented in the design, construction and ongoing operation of the development at all times to the satisfaction of the City of Rockingham including but not limited to the following requirements:
 - (i) Ensure proposed buildings are located outside of areas subject to BAL-FZ and BAL-40.
 - (ii) Ensure all APZs are established and maintained to the standard in the Guidelines.

- (iii) Six (6) fire hydrants and monitoring systems are installed and extend reticulated water supply to appropriate areas.
- (iv) Construct the internal road network as per the approved development plans.
- 13. Prior to the occupation of the development, the recommendations in the Bushfire Risk Management Plan prepared by Eco Logical dated 23 January 2023 shall be implemented in the design, construction and ongoing operation of the development at all times to the satisfaction of the City of Rockingham including but not limited to the following requirements:
 - (i) The proposed building will be fitted with a sprinkler system, automatic fire detection system and automatic smoke exhaust system;
 - (ii) Bund areas (where truck and passenger tyres will be collected and stored prior to processing) will be:
 - (a) Fitted with radiometric thermal cameras (operating 24 hours a day, 7 days a week), which when activated will trigger an automatic response to the nominated emergency services;
 - (b) Limiting storage areas to Passenger Tyre Storage 3,840m² and Truck Tyre Storage 3,840m²;
 - (c) Bund walls to be 7m in height and constructed from fireproof material.
- 14. Prior to the occupation of the development, the car parking areas must:
 - (i) provide a minimum of 80 car parking spaces;
 - (ii) be designed, constructed, sealed, kerbed, drained and line marked in accordance with User Class 1A for staff parking, User Class 2 for visitor bays, User Class 4 for universal bays of Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to commencement of development;
 - (iii) provide One (1) car parking space(s) dedicated to people with disability, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
 - (iv) be constructed, sealed, kerbed, drained and clearly marked prior to the development being occupied and maintained thereafter;
 - (v) have lighting installed, prior to the occupation of development;
 - (vi) any semi-trailer parking bays shall be clearly line marked and designed in accordance with AS2890.2 for the purposes of parking trailers only at all times; and
 - (vii) confine all illumination to the land in accordance with the requirements of Australian Standard AS 4282-1997, Control of the obtrusive effects of outdoor lighting, at all times.
- 15. Prior to the occupation of the development and in accordance with City of Rockingham Local Planning Policy 3.3.14 Bicycle parking and End of Trip Facilities, at least two (2) showers and change rooms must be provided for the development which must be designed in accordance with that Policy and approved by the City of Rockingham. The showers, change rooms and lockers must be retained and maintained in good and safe condition for the duration of the development.
- 16. Prior to the occupation of the development, eight permanent (8) bicycle parking spaces must be designed in accordance with AS2890.3-1993, *Parking facilities, Part 3: Bicycle parking facilities*, and located within the development to the satisfaction of the City of Rockingham.
- 17. The Environmental Noise Report prepared by Herring Storer Acoustics dated March 2023 shall be reviewed within 30 days of the occupation of the development to determine compliance with the Environmental (Noise) Regulations 1997.

- No vegetation within the Conservation Area (Reserve ID R/52979 Alumina Reserve) shall be removed or disturbed during development works, including any secondary impacts from works to provide infrastructure and drainage.
- 19. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures shall be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.
- 20. Crossovers shall be designed and constructed in accordance with the City's *Commercial Crossover Specifications*.
- 21. Materials, sea containers, goods or bins must not be stored within the carpark areas at any time. Car parks shall remain freely accessible at all times.

Advice Notes

- 1. This Approval relates to the details provided in the application; to undertake the development in a different manner to that stated in the application a fresh application for Development Approval must be submitted to the City.
- 2. In relation to Condition 3, dust management is to be in accordance with the Department of Environment and Conservation Guideline: A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.
- 3. It is advised that the applicant is required to obtain a Works Approval license from the Department of Water and Environmental Regulation before commencing operations at the site. The applicant is encouraged to liaise directly with Department of Water and Environmental to ensure compliance with all relevant regulations and requirements.
- 4. The proponent is advised that this approval is not a building permit, which constitutes a separate legislative requirement. Prior to any building work commencing on site, a building permit must be obtained.
- 5. A Sign Permit must be obtained for any advertising associated with the development, including signage painted on the building; the applicant and owner should liaise with the City's Building Services in this regard.
- 6. With respect to the Landscape Plan and Stormwater Management Plan, the applicant is to liaise with the City's Land Development and Infrastructure Services in this regard.
- 7. All works in the road reserve, including construction of a crossover or footpath and any other works to the road carriageway must be to the specifications of the City of Rockingham. The Applicant should liaise with the City of Rockingham's Land and Development Infrastructure Services and Engineering Services in this regard.
- 8. No battering, fill or waste shall be deposited within the Conservation Area (Reserve ID R/52979 Alumina Reserve). The landowner/applicant must immediately report any fill or construction waste that is deposited within the Conservation Area (Reserve ID R/52979 Alumina Reserve) to the Department of Biodiversity, Conservation and Attractions.
- 9. The disposal of wastewater into the Water Corporation's sewerage system must be with approval of the Water Corporation; the applicant and owner should liaise with the Water Corporation in this regard.
- 10. The development must comply with the Environmental Protection (Noise) Regulations 1997; contact the City of Rockingham's Health Services in this regard.
- 11. All vehicle access to the site via Scandium Way must be provided by the internal access road to be constructed prior to occupation of the development pursuant to the Subdivision Approval issued by WAPC (ref 160809).

Carried – 12/0

The Council's Reason for Varying the Committee's Recommendation

Not Applicable