



Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6848/2023/1
Applicant	Complete Tyre Solutions Tyre Recycling Pty Ltd
ACN	644 200 528
File number	DER2023/000600
Premises	CTS Tyre Recycling 82 and 86 Altitude Drive NEERABUP WA 6031 Legal description - Lot 104 on Deposited Plan 426671 and Lot 105 on Deposited Plan 425769 As defined by the premises maps attached to the issued works approval
Date of report	17 October 2024
Decision	Works approval granted

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MANAGER WASTE INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986 (WA)*

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6848/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary and overview of premises

On 14 September 2023 the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application relates to the construction of a tyre recycling facility at the premises. The facility includes storage of up to 250,000 end of life tyres with infrastructure to process (shred) and recycle 30,000 tonnes of waste tyres per annum. End products include rubber crumb, tyre derived fuel (shred) and waste steel.

Proposed infrastructure to include:

External yard (Lot 104)

- Tyre receipt and storage bays.
- Tyre feeder and conveyor belt reel.
- Primary shredder

Internal - 5,000m² warehouse (Lot 105)

- Tyre storage bays for extended storage.
- Secondary shredder
- Granulator x2.
- Classifier x2 – textile/fabric separation.
- Aspirator – classification of granular product.
- Crackermill.
- Bulk bag stations x3.
- Steel cleaning plant.
- Dust extraction and air filtration system.
- Product storage bays for the storage of bagged crumb rubber and TDF.

Proposed operations include:

- Receipt and temporary storage of tyres;
- Processing and shredding of tyres; and
- Storage and dispatch of processed crumb rubber (0.5mm to 3mm) and tyre derived fuel (TDF – 10mm to 80mm).

The premises relates to the categories and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6848/2023/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6848/2023/1.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Earthworks, construction of warehouse and associated infrastructure. Placement of tyre processing equipment Vehicle movements	Air / windborne pathway	– Dust controls for construction activities not provided.
Noise and vibration			– Construction noise to comply with requirements of the Environmental Protection (Noise) Regulations 1997 (EP Noise Regulations).
Operation			
Noise and vibration	Receival and unloading of used tyres Operation of tyre shredding equipment and machinery Vehicle movements	Air / windborne pathway	– Most processing machinery to be located within an enclosed building except for the tyre feeder and primary shredder. – Applicable controls recommended in the acoustic report for compliance with the EP Noise Regulations to be implemented.
Dust			– Majority of tyre processing and all of crumb storage take place in an enclosed building. – Dust extraction system and baghouse operated on shredding and granulating plant. – Regular cleaning and housekeeping.

Emission	Sources	Potential pathways	Proposed controls
Smoke and particulates	Fire incident during waste tyre processing and storage	Air / windborne pathway	<ul style="list-style-type: none"> – Tyres stored in consideration with DFES Guidance Note: GN02 Bulk Storage of Rubber Tyres. – Preparation and implementation of a fire and emergency plan for the premises. – Tyres received and stacked in accordance with approved storage plan. – External yard and access way to be kept clear for emergency service vehicle access. – Provision of on-site fire extinguishers in accordance with AS 2441 and fire hose reels in accordance with AS 2444. – Fire Engineering Report to be endorsed by DFES inclusive of sprinkler and hydrant systems. – Fire hydrants to be installed in accordance with AS 2419.1 – Internal waste storage warehouse and belt conveyors to be sprinklered as per AS 2118.1. – European shredding machinery with inbuilt fire controls: <ul style="list-style-type: none"> ○ Spark detection system – baghouse and MPR ○ Cooling augers for crumb discharge – Containment of fire water achieved by bunding the site and retaining water on the pavement, with the stormwater system to be shut off via isolation valves linked to the FIP and triggered in the event of a fire. – Bund height has been set at 150% of requirement.
Fire wash water		Overland runoff potentially causing ecosystem disturbance or impacting surface water/groundwater quality	

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the delegated officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation. Table 2 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

	Human receptors	Distance from prescribed activity
-	Commercial and industrial premises	Immediately surrounding commercial and industrial premises within the Neerabup Meridian Park Estate
A - H	Semi-rural residential premises	Approximately 9 residential premises located within 1km (south) of the prescribed premises (Figure 1)
-	Aboriginal site and heritage place – Lake Neerabup (ID: 3693)	Approximately 300m west of the prescribed premises boundary.
	Environmental receptors	Distance from prescribed activity
-	Threatened/Priority Fauna	5 species mapped within 2km of the prescribed premises.
-	One confirmed and one unconfirmed black cockatoo roost site	Located within 2km of the prescribed premises.
-	Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC)	5 species mapped within 2km of the prescribed premises. Prescribed premises located within a Priority 3 PEC buffer zone.
-	Wanneroo Groundwater Area (1)	Prescribed premises located within this RIWI Act groundwater area.
I	Neerabup Lake	Located approximately 1.5km west of the prescribed premises boundary.
-	Lake Pinjar	Located approximately 2.8km north-east of the prescribed premises boundary.
J	Drinking water source areas	Perth coastal and Gwelup underground water pollution control area (P3) is approximately 2km south-west of the prescribed premises boundary. Gnangara underground water pollution control area (P1) is approximately 2.5km north-east of the prescribed premises boundary.
-	Bushforever area (230)	Located approximately 700m west of the prescribed premises boundary.
-	Groundwater	Groundwater mapped flowing from north-east to south-west across the prescribed premises boundary. Depth to historical max groundwater mapped at approximately 31-32m AHD Groundwater salinity mapped at <500 TDS. Surface geology is Tamala Limestone, predominately calcarenite.



Figure 1: Distance to sensitive receptors

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3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works approval W6848/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
Construction								
Earthworks, construction of warehouse and associated infrastructure.	Dust	Air/windborne pathway causing impacts to health and amenity	Human receptors listed in Table 1	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	The delegated officer considers dust emissions associated with construction activities can be adequately regulated by the general provisions of the EP Act.
Placement of tyre processing equipment Vehicle movements	Noise and vibration				C = Minor L = Unlikely Medium Risk	Y	N/A	The delegated officer considers that noise emissions from construction activities can be sufficiently managed through the EP Noise Regulations.
Operation (including time-limited-operations operations)								
Receival and unloading of used tyres	Noise and vibration	Air / windborne pathway causing impacts to health and amenity	Human receptors listed in Table 1	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	N	Condition 2, Table 1, 1d, 3f <u>Condition 15, 16, 17, 18</u>	Due to uncertainty in the expected noise emissions resulting from operational activities, conditions 15, 16, 17 and 18 require the verification of the noise controls implemented by the applicant and the submission of a noise report to verify operations are compliant with the EP Noise Regulations.
Operation of tyre shredding equipment and machinery Vehicle movements	Dust				C = Moderate L = Possible Medium Risk	N	Condition 2, Table 1, 3c, 3d Condition 9, Table 4, 2a Condition 11, Table 6 Condition 12 Condition 13, Table 7	Additional regulatory controls have been added to the works approval to ensure dust emissions associated with tyre shredding activities are adequately captured and monitored. Refer to section 3.4
Fire incident during waste tyre processing and storage	Fire, smoke and particulates	Air / windborne pathway causing impacts to health and amenity	Environmental receptors listed in Table 1	Refer to Section 3.1	C = Major L = Possible High Risk	Y	Condition 1, a, b, d, e, f, g, h, i Condition 2, Table 1, 1c, 2, 3b, 3e, 3g, 3h, 3i, 4a, 4b, 4c, 4d Condition 9, Table 4, 1a, 1b, 1d, 2b, 3a, 3b Condition 10, Table 5, 2a, 2b, 2c, 3a Condition 19	Conditions have been added in accordance with the applicant's proposed controls and DFES requirements and recommendations. Refer to section 3.3
	Fire wash water	Overland runoff potentially causing ecosystem disturbance or impacting surface water/groundwater quality			C = Moderate L = Possible Medium Risk		Condition 1c Condition 2, Table 1, 1a, 1b, 3a, 5a, 5b Condition 9, Table 4, 1c Condition 10, Table 5, 1a, 1b, 1c, 1d, 1e, 3a	

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Detailed risk assessment for fire events

Tyres are considered a Special Hazard under the provisions of the National Construction Code (Australian Building Codes Board) Volume 1 Part E1.10, whereby 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.

The Department of Fire and Emergency Services (DFES) published Guidance Note: GN02 Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres (GN02) in 2020 to set the minimum fire safety recommendations for the storage of rubber tyres, including those in open yards (external) or stored within buildings and structures (internal).

The applicant has liaised with DFES with submission of a Fire Engineering Brief giving consideration to GN02 (29 December 2022, Saraceni Fire Engineering Group) detailing fire safety engineering, and identifying and documenting the fire safety measures likely to be required for the facility. This Fire Engineering Brief was reviewed by DFES with several requirements and recommendations provided. Additional correspondence was received by the Department from the DFES Built Environment Branch on 22 January 2024 detailing the infrastructure and equipment required for this proposed facility.

Fire suppression systems and management measures include:

- Adherence to the requirements of GN02 which includes tyre separation distances between stacks/piles and minimum boundary and building clearances.
- Processed tyre crumb stored in bulk bags not exceeding 3m in depth within the warehouse.
- A minimum clear width of 6m to be provided around the site and the open yard to allow emergency vehicle access.
- Installation of a fire detection/alarm system in the tyre storage warehouse in accordance with AS 1670.1. The alarm system is to be connected to the Direct Brigade Alarm system.
- Installation of a fire sprinkler system within the tyre storage warehouse in accordance with AS 2118.1. A minimum of 2x sprinkler booster cabinets to be provided.
- A minimum of 3 fire hydrant outlet installations in the external yard and 2 fire hydrant outlet installations in the tyre storage warehouse in accordance with AS 2419.1.
 - Under 'building pump-run' conditions, the proposed hydrant system for this premises will be required to maintain and provide attack fire hydrant performance of not less than 700 kPa at each hydrant while the system provides a total flow rate of 5 L/s per outlet required to flow for 4 hours for both Duty & Stand-by pumps, while the sprinkler running for the design flowrate and duration (2 hours).
- Fire hydrant and fire sprinkler systems to be designed as separate systems.
- Onsite water storage should ensure there is a minimum 4-hour supply available for hydrants at 40 L/s and for sprinklers (based on the design flowrate for 2 hours) for boosting, as necessary.

Firewater containment measures include:

- Concrete lined hardstand throughout the premises graded towards a stormwater sub-surface storage and soakage system on the northern and southern sides of the building.

- Isolation valves installed on sub-surface storage pits connected to the fire control system to isolate firewater from entering the soakage pits in the event of a fire.
- Installation of bunding around the perimeter of the hardstand to contain firewater.
- Storage of firewater until such time as it can be tested to determine contaminants and suitability for
 - Discharge to the onsite soakage system.
 - Treatment on site before discharge to onsite soakage system.
 - Discharge to sewer with approval from Water Corporation WA.
 - Offsite disposal via a suitably licensed liquid waste contractor under the Environmental Protection (Controlled Waste) Regulations 2004.

Key findings:

The delegated officer has reviewed the information regarding fire management and has found:

1. Aspects of the applicant controls and GN02 will be applied as conditions within the works approval to ensure the risk of fire events are mitigated, and in the case of a fire event, that the fire can be effectively contained and extinguished.
2. Conditions have also been added to the works approval to require the implementation of a Fire and Emergency Management Plan to adequately manage emergency events, documentation for which is to be lodged with the licence application for assessment of effectiveness of the controls.
3. After reviewing consultation with DFES, minimum fire equipment and infrastructure requirements have been included as works approval controls to ensure the proposed firefighting system is adequate for the proposed facility.

3.4 Detailed risk assessment for dust emissions

Air emissions from the premises are expected to include dust from materials handling and processing, and particulate matter emissions from a stack connected to a dust extraction system and baghouse on the shredding and granulating plant.

Specifically, these emissions from premises activities are expected to include particulate matter as Total suspended particulate matter (TSP), being nuisance dust and PM₁₀ Particulate matter with equivalent aerodynamical particle diameter of 10 µm or less. PM₁₀ is generally considered as the (upper) threshold particle size fraction that is inhalable.

The performance of the dust filtration system proposed is understood to result in maximum particulate matter emissions of 5 mg/m³. The applicant has determined that a stack height of 12.3m will be installed in accordance with the manufacturer's system standard.

The applicant has not provided detailed modelling for air emissions to determine potential impacts to receptors. Therefore, there are some uncertainties in DWER's risk assessment for this emission. Based on information provided there is expected to be medium risk from dust emissions. Additional regulatory controls for air monitoring have been added to the works approval during time limited operations to ensure the proposed air emissions are achieved. Monitoring results will inform any future application for a licence at the premises.

Key findings:

1. The Delegated Officer notes air emissions monitoring should be conducted to confirm particulate emissions during operation of the premises remain within expected levels.
2. Air monitoring results obtained during the applicant's time-limited operations phase will inform the applicant's subsequent licence application and the Department's assessment for any additional regulatory controls if required.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 03/11/2023 to 25/11/2023	None received	N/A
Local Government Authority advised of proposal on 03/11/2023 (DWERDT871144)	The City of Wanneroo responded on 20/11/2023 advising that the City granted development approval for the tyre recycling facility on 24 February 2023. No restrictions were imposed restricting the hours of operation and the works approval categories 57 and 61A are consistent with the approval granted by the City.	Noted.
Department of Fire and Emergency Services (DFES) advised of proposal 03/11/2023 (A2214071)	DFES responded on 09/01/2023 advising that the suitability of the proposed firefighting system cannot be confirmed until the following documentation is submitted to DFES for assessment: <ol style="list-style-type: none"> 1. Confirmation of fire water tank sizing for sprinkler and hydrant systems and associated calculations supporting the capacity is adequate. 2. Location of final boosters. 	The Department followed up with DFES and received correspondence on 22/01/2024 (DWERDT893977) advising of minimum fire prevention equipment and infrastructure requirements which have been included as controls in the works approval.
Applicant was provided with draft documents on 08/02/2024 (A2253741), revised draft documents on 02/08/2024 (A2299855) and revised draft documents on 08/10/2024	Comment extension time requests were requested and granted until 08/07/2024 with outstanding information provided on 26/09/2024. On 09/10/2024 the applicant requested to add downsizing and rubber matting production machines to the works approval (DWERDT1021693).	The applicant was advised new production machines will need to be included as a works approval amendment, as the works approval was in the final stages of being issued (DWERDT1021693).

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Consultation method	Comments received	Department response
(DWERDT1017450)	On 15/10/2024 the applicant advised they had no further comments and wished to waive the remainder of the comment period (DWERDT1021693).	

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environmental Regulation (DER), July 2015. *Guidance Statement: Regulatory principles*. Perth, Western Australia. Accessed at: www.wa.gov.au
2. DER, October 2015. *Guidance Statement: Setting conditions*. Perth, Western Australia. Accessed at: www.wa.gov.au
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7. Department of Fire and Emergency Services, July 2023, *Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres*. Perth, Western Australia. Accessed at: <https://publications.dfes.wa.gov.au/publications/guidance-note-gn-02-version-1-bulk-storage-of-rubber-tyres-including-shredded-and-crumbed-tyres>
8. Lloyd George Acoustics, August 2023, *Environmental Noise Assessment – Neerabup Tyre Recycling Facility*. Perth, Western Australia. DWER Reference: DWERDT852913
9. CTS Tyre Recycling, September 2023, *DWER Works Approval Application form – Attachment 3B – Proposed Activities*, Perth, Western Australia. DWER Reference: DWERDT852900