

Technical Note

Project title	Tyrecycle Erskine Park
Job number	283146-10
File reference	
cc	
Prepared by	Elizabeth Sieverts
Date	7 December 2023
Subject	Site Review against FRNSW 'Guideline for Bulk Storage of Rubber Tyres' Fire Safety Guideline

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1. Introduction

The intent of this technical note is to provide additional information for the Tyrecycle facility at 1-21 Grady Crescent, Erskine Park (the Site) to facilitate its *Modification Application: PPSSWC-326 – Penrith – MOD230058 – 1-21 Grady Crescent, Erskine Park*.

The existing development was approved as integrated development by the Sydney Western City Planning Panel (SWCPP) on 20 December 2020 under Part 4, Division 4.3 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) (DA20/0589), which permits up to 29,000 tonnes per annum (tpa) of passenger, four-wheel drive and truck tyres are processed at the site. The authorised amount of waste permitted at the Premises under the Site's EPL cannot exceed 970 tonnes at any one time.

Tyrecycle are seeking approval through the modification application to increase production at the Site from 29,000 tpa to 60,000 tpa (the modification), to accommodate the increased market demand for recycled tyre products.

The modified EPA licence under application is to authorise the increase tyre receipt and processing from 29,000 tpa to 60,000 tpa, however the following existing licence conditions remain the same: that the maximum amount of waste permitted on the Premises cannot exceed 970 tonnes at any one time; and the maximum of 60 tonnes of waste lead acid batteries and/or waste oil is permitted to be stored at the premises at any time.

This technical note updates the aspects of the Fire Risk Assessment Report (FRA) by Arup (283146-10 FRA I1 Tyrecycle Erskine Park, dated 9 September 2022) relating to storage arrangements. The FRA was based on the Site increasing its maximum storage capacity, however this is no longer part of the conditions sought through the modification application. The proposed storage arrangement therefore differs from the FRA.

This technical note is to be read in conjunction with the FRA and where conflicts exist between the documents this technical note is to take precedence.

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This is intended an interim update to the FRA to facilitate the modification application, this document in and of itself is not an FRA nor a fire safety study.

The proposed storage arrangement is shown in Appendix A.

2. Review against the FRNSW Guideline

The new storage arrangement is reviewed against the *FRNSW 'Guideline for Bulk Storage of Rubber Tyres' Fire Safety Guideline's* (FRNSW guideline).

The application of the FRNSW guideline, as per the guideline:

The guideline should be used by managers of ... any existing facility that is being modified to store rubber tyres in bulk quantities.

Note: related subsidiary products include the by-products of used tyre waste processing such as shredded or granular tyre scrap.

This guideline provides the minimum recommended requirements for both internal (i.e. within a building or structure) and external bulk storage of rubber tyres.

The Site and the proposed storage arrangement has been reviewed against section 7 of the FRNSW guideline, internal tyre storage (i.e. buildings).

Section 7 Heading	Guideline Requirements	Comment
General requirements	Buildings with a floor area of 2000m ² or more and contain more than 20 tonnes of tyres should have a sprinkler system complying with AS 2118.1.	<p>Building is sprinkler protected, in accordance with BCA Spec. E1.5, AS2118.1-1999 & Fire Engineering Report No. 2320000-PPT02-3 by Bodycote issued on 27/04/09 and FER prepared by Exova Warrington Fire no. 2320004-RPT02-1 dated 30/10/13.¹</p> <p>Rack storage shall be configured to maintain compliant coverage requirements.</p> <p>As documented in the FRA</p> <ul style="list-style-type: none"> The ESFR sprinkler system must be capable of providing a sprinkler coverage area of 144m² with 12 sprinkler heads operating simultaneously; and Able to operate continuously for up to 90 minutes. <p>Note that in-rack sprinklers (if necessary under the relevant standards) may be required to be installed. This is to be checked with a fire services engineer to determine the level of protection appropriate to the storage.</p>

¹ As per the building's Annual Fire safety Statement

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Section 7 Heading	Guideline Requirements	Comment
	Buildings with a floor area of 2000m ² or more and contain more than 10 tonnes of tyres should have smoke and heat vents complying with specification E2.2c of the BCA (Volume one).	Smoke clearance fans are provided to the warehouse, in accordance with Fire Engineering Report No. 2320000-PPT02-3 by Bodycote Warrington issued on 24/04/09 and FER prepared by Exova Warrington Fire no. 2320004-RPT02-1 dated 30/10/. ¹
	Individual tyre stacks within the building or structure should not exceed 3.7m in height and 30m ² in area.	Individual tyre stacks (whole tyres) will comply with this requirement, refer section 4.
	Stored tyres must remain at least 1m clear in all directions from the underside of the building's roof or ceiling, roof structural members, lights (including light fixtures) and sprinkler heads.	Stored tyres (whole tyres and recycled tyre products) will comply with this requirement, refer section 4.
	A minimum clearance of 1m must be maintained along paths of travel to required exits and firefighting equipment (e.g. hose reels, extinguishers, hydrants). The paths of travel must be kept clear and unobstructed at all times.	Stored tyres (whole tyres and recycled tyre products) will comply with this requirement, refer section 4.
Unsprinklered buildings	-	N/A – Building is sprinkler protected.
Sprinklered buildings	Where installed, the sprinkler system design should be suitable to for the hazard (i.e. rubber tyres).	ESFR Sprinkler (AS2118.1) fitted throughout the building.
	A minimum clearance of 2m should be provided between tyre stacks in a sprinklered building.	Stored tyres (whole tyres and recycled tyre products) will comply with this requirement, refer section 4.
	A minimum clearance of 1.5m should be provided between tyre stacks and any building structural member in a sprinklered building.	Stored tyres (whole tyres and recycled tyre products) will comply with this requirement, refer section 4.
Site water containment	If the tyre storage facility has a hydrant or sprinkler system, provision should be made for the retention of contaminated water run off. ...	As per the FRA

3. Site Activities

Below is a summary of section 4.2 of the FRA.

The Tyrecycle site primarily receives waste tyres (whole) and recycles them either by shredding or crumbing, the product of which is then on-sold to others.

A brief high-level description of the current site processes are as follows, and as show in Figure 2:

- Trucks carrying tyres arrive and are measured on the weighbridge.
- Tyres are deposited onto a general stockpile in the designated area within the warehouse floor.
- Large truck tyres are separated to be shipped to Melbourne for processing.
- The tyres are processed through the Superchopper (which has shredding and crumbing capabilities) which will produce a number of products and by products: Tyres are shredded to

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produce feed stock (WIP stock) or be used as tyre derived fuel (TDF), WIP stock is further process to become tyre crumb/ granules. By-products include waste steel and general waste material.

- Tyre crumbs/ granules are bagged and stored in dedicated storage racks.
- TDF is stored in piles until it is loaded into shipping containers.
- The post-processed materials (Tyre crumbs, TDF etc...) are then moved to external facilities.

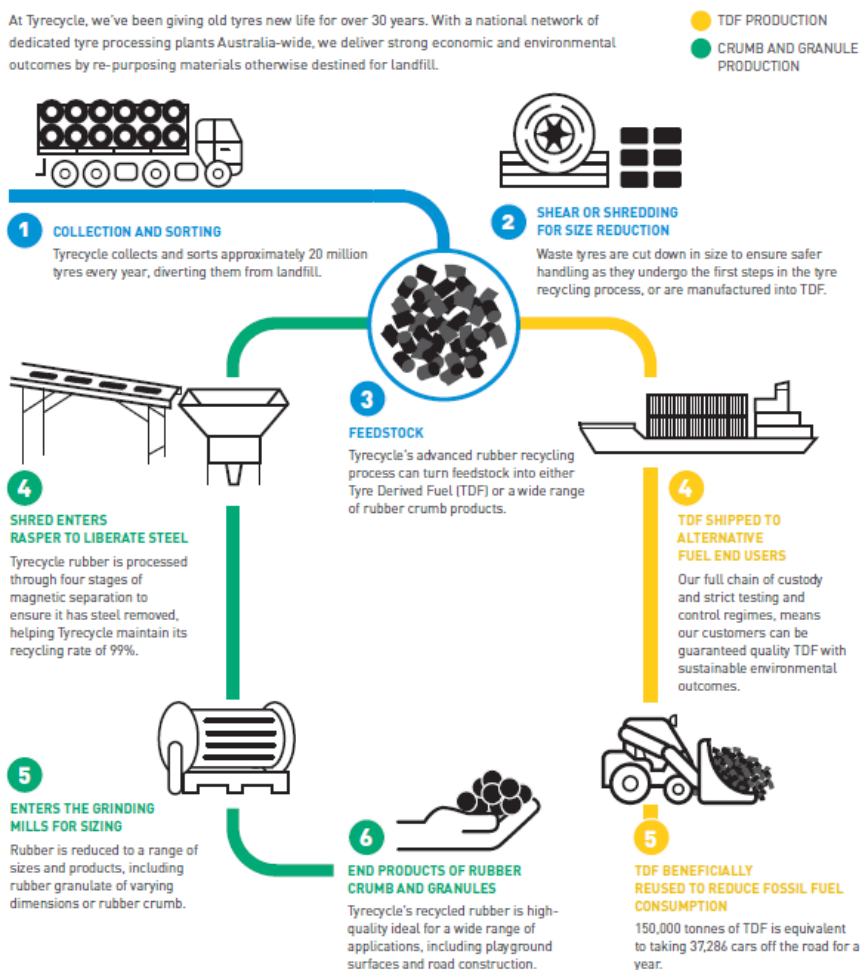


Figure 1: Tyrecycle Process [Source: <https://tyrecycle.com.au/what-we-do/the-process/>]

Note: there is also a wash bay to clean incoming tyres, if required. The wash bay system is a closed system with a reticulated water supply.

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4. Stockpile Management Plan

Stockpiles will be in stored according to the following principles:

- Whole tyre stacks within the building or structure should not exceed 3.7m in height and 30m² in area. Unless specifically noted any other storage piles/ bays will also maintain the same storage configurations.
- A minimum clearance of 2m should be provided between tyre stacks in a sprinklered building.
- A minimum clearance of 1m must be maintained along paths of travel to required exits and firefighting equipment (e.g. hose reels, extinguishers, hydrants). The paths of travel must be kept clear and unobstructed at all times.
- Stored tyres must remain at least 1m clear in all directions from the underside of the building's roof or ceiling, roof structural members, lights (including light fixtures) and sprinkler heads.
- A minimum clearance of 6m between the rack storage and other storage piles/ bays.

This will be controlled by:

- Storage bays/ piles areas demarcation, depending in the location is to be identified by, as a minimum by painted line markings on the floor. Additional controls depending on the location and the accessibility requirements of the piles include bounding by concrete barriers (approx. 1m high), pens created by non-combustible (steel) walls.
- Columns are to have a height marker of 3.7m painted on to them to provide a reference to the maximum storage height.

The stockpiles on Site are to be controlled as outlined in Table 1 below.

Table 1: Stockpile Management by Stockpile Type

Stockpile	Management Plan
OTR bays	Bays painted on the floor, located to comply with the separation requirements identified above. Note: Tyres should not be stored 'thread up' unless suitable retained.
Car tyre stockpiles	Bays painted on the floor, located to comply with the separation requirements identified above. Concrete barriers may be used to provide physical separation between the racking and the stockpiles.
Active tyre feeding bay	Bays painted on the floor, located to comply with the separation requirements identified above. Concrete barriers may be used to provide physical separation between the racking and the feed bay.
Product bay	Bays painted on the floor, located to comply with the separation requirements identified above.
Product steel bay	Bays painted on the floor, located to comply with the separation requirements identified above.
TDF piles (including steel active pile)	Storage area proposed to be 7m x 7m (refer pile size assessment in FRA, note the FRNSW guidelines limits the storage area of pile for whole tyres only) Interim measure: Bays painted on the floor, located to comply with the separation requirements identified above.

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Stockpile	Management Plan
	Pens with at least 2 sides to be created with steel partition walls, example shown in Figure 3 is a 3-sided pen installed onsite, additional pens to be progressively installed.
Oil and battery storage	Stored in a bunded area, aluminium bunding to the floor. Alternative or optional additional measure is to be stored on bunded pallets.
Steel storage bins	Recommend area is demarcated with line markings painted on the floor.
Finished product storage	The racking (and associated storage) is installed so that it complies with the restrictions/ limitations of the ESFR system. Note that in-rack sprinklers (if necessary under the relevant standards) may be required to be installed. This is to be checked with a fire services engineer to determine the level of protection appropriate to the storage.

The stock management plan is shown below in Figure 1, a higher resolution markup is also provided in Appendix ADOCUMENT CHECKING.

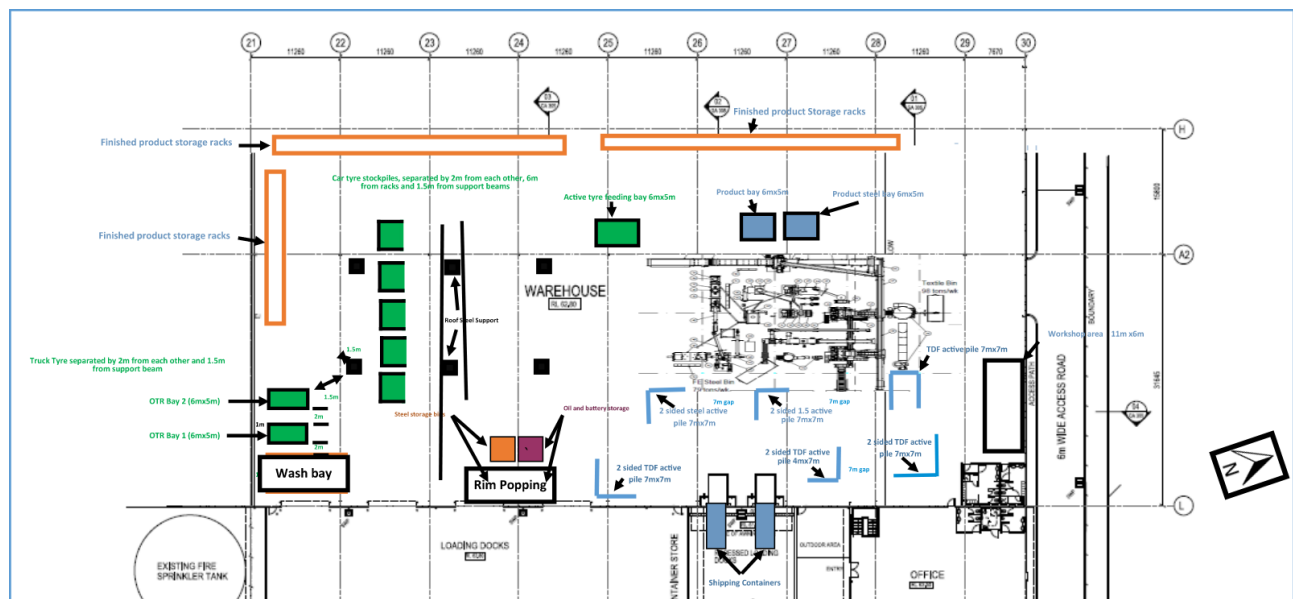


Figure 2: Stockpile Management Plan

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Figure 3: 3-sided TDF Stockpile Pen

It is noted that there is no long-term whole tyre storage on this site as it is predominantly a processing facility. It is expected that Tyrecycle would stop receiving any incoming truckloads when they reach the storage limits. In the event that tyres are required to be stored for an extended period of time (more than one shift), due to equipment break down or other unforeseen circumstances, the stockpiles shall be converted from loose piles to stacked so that they are stored in a method approved by section 4 of the FRNSW guidelines i.e.

- Bundled Tyres
- Pallet Systems
- Horizontal Systems
- Portable systems

Note: Tyres should not be stored ‘thread up’ unless suitably retained to prevent rolling.

5. Other Fire Safety Measures

Of the fire safety measures recommended by the FRA, Tyrecycle have confirmed², the following have been implemented:

- Site security measures associated with doors and sliding doors providing access to the building to be locked and secured during after-hour times.
- Tyre stocks are monitored to ensure that no organic material contamination is present that could provide more readily ignitable material from heat accumulation in the piles. Note the wash bay has been installed to clean incoming tyres as required.

² Adoption of the fire safety measures have *not* been independently verified in the preparation of this technical note.

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- Thermal scans of all major electrical systems are recommended to be undertaken annually to ensure that thermal hot spots in circuits through poor connections and other deterioration are detected before they lead to potential ignition sources.
- Maintenance checklists are followed in accordance with the MEX system for all new and existing equipment on-site.
- Emergency response plans have been updated to include:
 - an appropriate approach to perform full extinguishment of the burning tyres,
 - how to separate the fire-involved material (if safe to do so) from various storage piles within the facility.
 - Staff training to be provided to enable staff to effectively undertake early fire suppression using tools such as portable fire extinguishers or hose reels.
- A fire extinguisher appropriate to the lead-acid batter risk has been installed adjacent to the battery storage cupboard.

6. Conclusion




This technical note has been provided to outline an update to the proposed stockpile management requirements.

This can be read in conjunction with the Fire Risk Assessment Report (FRA) by Arup (283146-10 FRA I1 Tyrecycle Erskine Park, dated 9 September 2022). The FRA was based on the Site increasing its maximum storage capacity, this is no longer part of the conditions sought through *Modification Application: PPSSWC-326*.

The basis of this technical note is the that the following existing licence conditions remain unchanged, being: that the maximum amount of waste permitted on the Premises cannot exceed 970 tonnes at any one time; and the maximum of 60 tonnes of waste lead acid batteries and/or waste oil is permitted to be stored at the premises at any time. Any change in the building including use and storage conditions outside the parameters of this report may invalidate the conclusions of this report.

The conclusions of this technical note may not apply if all requirements are not fully implemented as described in this technical note.

DOCUMENT CHECKING

	Prepared by	Checked by	Approved by
Name	Lizzie Sieverts	Nigel Cann	Nigel Cann
Signature			

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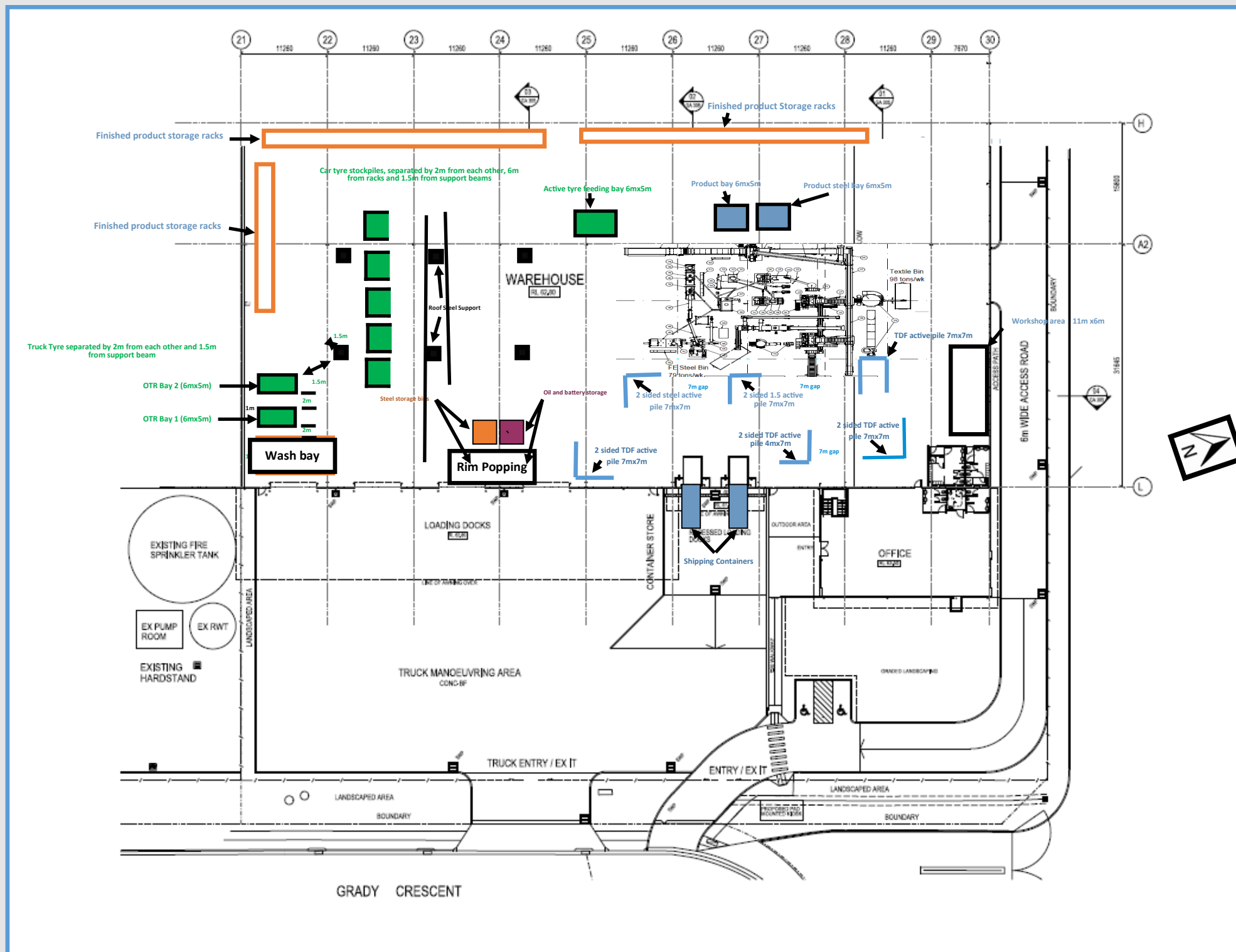
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Appendix A

NSW — 1 - 21 Grady Crescent, Erskine Park, NSW 2759



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LEGEND			
			Indoor tyre piles = no >30m ² x 3.7m high
	 Oil filters and battery storage	 Steel Storage Bins	 Roof Support steel beams