



Tyrecycle Erskine Park | Tyre recycling facility

OPERATIONAL PLAN OF MANAGEMENT

Prepared for Tyrecycle Pty Ltd | 16 September 2020







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TYRE RECYCLING FACILITY | OPERATIONAL PLAN OF MANAGEMENT

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[Element Project Number PR136]

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| Date | 16 September 2020 | 16 September 2020 |

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DOCUMENT CONTROL

| Revision | Date | Description | Prepared by | Reviewed by |
|----------|-------------------|--|---------------------|-------------------|
| 0 | 31 August 2020 | For Tyrecycle review | Element Environment | Tyrecycle Pty Ltd |
| 1 | 16 September 2020 | For submission to Council (within the Appendix of the SEE) | Element Environment | Tyrecycle Pty Ltd |

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1 INTRODUCTION

This operational plan of management (OPM) has been prepared on behalf of Tyrecycle Pty Ltd (Tyrecycle) to support the development application (DA) for a proposed tyre recycling facility at 1-21 Grady Crescent, Erskine Park.

1.1 Purpose of operational plan of management

This OPM is a dynamic document which can be updated to respond to changing procedures and practices.

This OPM will be complied with by all operators on the site and should be read in conjunction with the Statement of Environmental Effects (SEE) and subsequent development consent issued for the site.

The objectives of the OPM are to:

- assist Council to understand all activities at the site to the fullest extent possible;
- demonstrate the project commitment to the ongoing amenity of staff, and adjoining and nearby properties;
- set out the specific operational process for the facility and activities on site;
- detail times each activity is undertaken (in terms of 24 hour operations), including staff movements, deliveries, plant and machinery, vehicle movements and other specific project operations;
- outline key mitigation measures and safeguards outlined within the SEE; and
- set out specific actions and procedures including how to remedy community complaints.

1.2 The site

The site is within an existing leased warehouse and distribution complex in the Erskine Business Park at 1-21 Grady Crescent, Erskine Park (Lot 4, DP 1253870). The site is approximately 10.8 kilometres (km) southwest of Blacktown and approximately 5.6 km southeast of St Marys. The project and site is further described within the SEE.

2 OPERATION

2.1 Proposed project

Tyrecycle is seeking approval to operate a tyre recycling facility (the 'project'), with primary operational activities including:

- receival and temporary storage of tyres;
- processing and shredding of tyres (up to 29,000 tonnes per annum); and
- dispatch of processed tyre derived fuel (TDF) and other tyre derived products (TDP).

2.2 Activities and operational process

The project would be contained within the northern section of the existing warehouse building (covering a total floor space of 9,620 m²), which has capacity to house new plant and equipment, without the need to expand or upgrade the existing warehouse building. The project will require minor alterations to electrical and fire safety infrastructure at the site, however no significant earthworks or ground disturbance will be necessary. New, state of the art, operational plant will be designed to fit within the existing warehouse footprint. A ventilation (air filtration) system for the plant would be installed and require two small openings to be constructed within the roof of the existing warehouse building (western side of the building).

Appendix C of the SEE provides a detailed architectural plan outlining the floor plans of the office layout.

Mechanical processing plant and equipment within the warehouse building is likely to include a combination of the following:

- Weighbridge.
- Tyre receival and storage bay.
- Tyre feeder.
- Primary shredder – super chopper.
- Two secondary process – rasper.
- Primary granulator.
- Primary classifier – textile/fabric separation.
- Secondary granulation.
- Secondary classifier – textile/fibre separation.
- Aspirator – classification of granular product.
- Cracker mill.
- Sieve.
- Bulk bag stations.
- Steel cleaning plant.
- Two dust extraction and air filtration systems.
- Waste storage and collection areas.
- Conveyor.
- Forklift.
- Skidsteer loader.
- Front-end-loader.

Appendix D of the SEE includes the existing architectural plan of the warehouse overlaid with a schematic (approximate location only not drawn to scale) of the new state of the art operational plant, which will be located within the existing warehouse building. **Appendix D** of the SEE also shows the approximate location of waste bins for collection.

The operational process is outlined in **Table 2.1**.

Table 2.1: Operational process

| Operational process | Operational detail |
|----------------------------------|---|
| Receival and storage of tyres | Tyres are collected by the Tyrecycle truck fleet, weighed in over the weighbridge and then unloaded into dedicated storage areas in the warehouse, ready for processing. In the absence of a mechanical breakdown within the plant, it is anticipated that all feedstock collected will be processed within 24 hours of receipt. |
| Tyre feeding | Tyres are fed into the tyre feeder utilising mobile plant. The main purpose of the tyre feeder is to buffer the tyres to ensure automatic and continuous feeding to the super chopper. |
| Primary shredder – super chopper | The super chopper is fed by the tyre feeder. In the super chopper, the tyres are processed through a set of knives and reduced to a rubber chip of approximately 6 inches in size. The material from the super chopper is discharged through a disc screen that separates oversized material from material that is uniformly 6 inches in size. The oversized material is returned to the super chopper for further processing and the material that passes through the screen is the first product stream (6 inch TDF). |
| Secondary shredding – raspers | A reversible conveyer allows the 6 inch product from the super chopper to feed into two raspers. One of the raspers converts the 6 inch chips into 1.5 inch TDF, which is one of the final products. The second rasper is connected to the granulation line and material from the rasper is further reduced in size during the granulation process. During the rasping process, the steel reinforcement of the tyre is removed as a by-product for sale as recyclable steel. |
| Granulation | The granulation line consists of a primary and secondary granulator, each with a classifier, and a central aspirator. The granulators further reduce the size of the granules, and in the process liberates the fabric/textile and additional steel. |
| Fabric/textile separation | The new state of the art operational plant, includes a fabric separator, allowing processing of a combination of passenger and truck tyres into rubber crumb in the one facility. After liberation by the granulators, the classifiers remove the fabric/textile and any remaining steel as a by-product for sale as an alternate energy source and recyclable steel. The rubber product then passes through the aspirator where it is further classified and either bagged as granular product (third final product with some 'work in progress' for later processing in the cracker mill) or processed directly through the cracker mill. |
| Cracker mill | The cracker mill is fed with the granular product from the aspirator or WIP bulk bags. The energy efficient cracker mill utilises two large rolls, rotating at different speeds. The granular rubber is forced through a small gap between the rolls, sheering the rubber, further reducing the size of the granules to 30 mesh ¹ or 40 mesh crumbed rubber. The product from the cracker mill is passed over a screen with oversized material |

¹ Mesh is the unit used for sizing of the rubber crumb. 30 mesh is equivalent to 0.595 mm.

| Operational process | Operational detail |
|-----------------------------|---|
| | returned to the cracker mill for another pass through the mill. Material that meets the specification is conveyed to the bulk bagging area and placed into bulk bags as 30 or 40 mesh (final product). |
| Fabric separator | The fabric separator, allows processing of passenger and truck tyres in the one facility. During the process, the steel and textile (fibre from passenger/4WD tyres) are removed as by-products for sale as recyclable steel and textile. |
| Dispatch of processed tyres | The TDF is loaded into shipping containers, ready for export. Bulk bags (on standard pallets) of granular material and crumbed rubber is stored in pallet racking and delivered to customers utilising B-doubles. |

2.3 Further detail on project operations

Table 2.2 provides further operational details of the project.

Table 2.2 Project operations

| Operational aspect | Comment |
|--|--|
| Volume of material processed per annum | The project would process up to 29,000 tpa, recovering the following products: <ul style="list-style-type: none"> 30 Mesh – 9,397 tpa; 1.5 inch TDF – 12,620 tpa; Steel – 4,344 tpa; and Fibre/Textile – 2,639 tpa. |
| Size and area of warehouse required. | 9,620m ² (9,300 m ² warehouse and 320m ² ancillary office). |
| Employment | The project will generally operate across three shifts as follows: <ul style="list-style-type: none"> Day shift (7 am to 3 pm) – 24 full time employees Afternoon shift (3 pm – 11 pm) – three full time employees. Night shift (11 pm to 7 am) – three full time employees. The operations would be supported by four full time management staff who will typically work from 8 am to 5 pm weekdays. |
| Hours of operation | 24 hours per day, seven days a week. |
| Proposed operating hours per activity | <ul style="list-style-type: none"> Trucks (collection): <ul style="list-style-type: none"> Monday – Friday: <ul style="list-style-type: none"> Day: 4 am to 6 pm. Night: 5 pm to 1 am. Saturday: 4 am to 6 pm (as required). Plant operation (shredding): Monday – Friday, 7 am start and Saturday, 7 am finish Plant operation (crumbing): 24 hours, seven days per week. Deliveries (containers): Monday – Friday 8 am to 5 pm and Saturday 8 am to 6 pm (as required) |
| Vehicle access and parking | Vehicle access is as per the existing arrangements specified in Table 2.1 . The maximum number of car spaces required at any one time is 28 (comprising employees for the day shift, and management personnel). The parking requirements for the project can be accommodated by existing parking available at the site. Heavy vehicles would be parked in the loading dock of the site when not in use. |
| Utilities and servicing | The project would not require the construction of additional utility infrastructure (other than minor electrical upgrade) and would continue to be serviced by existing utilities. The following minor alterations/upgrades would be required: |

| Operational aspect | Comment |
|---|---|
| | <ul style="list-style-type: none"> The project would require minor upgrade to electrical infrastructure, with the current 500 kilovolt ampere (kVA) transformer upgraded to 3,500 kVA. Appendix E of the SEE includes the electrical infrastructure plan. The existing fire system at the warehouse was reviewed by a qualified fire engineer and considered project parameters (including materials to be stored and height of stacking), with the existing fire system to remain compliant with AS 2118:1 during operation of the project. No upgrade to the existing fire systems are required for the project. A ventilation (air filtration) system for the plant would be installed and require two small openings to be constructed within the roof of the existing warehouse building (western side of the building), protruding through the roof by approximately two metres. Despite this, the pitch on the existing roof would account for a similar distance and as such, the vents would not significantly alter the current visual amenity of the warehouse. |
| Traffic generation and internal movements | <p>The project would generate the following traffic during the morning and afternoon peak:</p> <ul style="list-style-type: none"> Morning peak (5 am to 7 am) - seven outbound heavy vehicles trips and 30 light vehicle trips (25 inbound and 5 outbound). Afternoon peak (4 pm to 6 pm) - seven inbound heavy vehicles trips and 30 light vehicle trips (5 inbound and 25 outbound). <p>The above traffic generation is considered a worst case scenario, however it is likely that heavy vehicles which depart the site in the morning peak would depart and return at staggered times of the day.</p> <p>Heavy vehicles associated with the project would vary in size, with the most common vehicle type being rigid trucks, and largest a B-Double truck.</p> <p>As heavy vehicles return to site with tyres, they would drive into the warehouse, offload the tyres into the designated area inside the warehouse, from which a front end loader would move the product within the warehouse to the tyre feeder feeding the processing equipment.</p> <p>Tyre retailers may also deliver tyres to the warehouse periodically throughout business hours (8 am to 5 pm). General deliveries to the site would also occur periodically throughout business hours as required. It is estimated that an average of 125 containers of tyre products would be delivered or collected by customers per month (average of six per day).</p> <p>Forklift and Bobcat (skid-steer loader) movements will occur inside the warehouse during operational hours. Forklifts used as part of the operation would unload incoming tyres, and load palletised crumbed and granule product into pallet racking for storage or onto outgoing B-Double trucks. It is estimated that approximately 50 pallets would be loaded and dispatched per day, equating to approximately two B-Double collections per day.</p> |
| Lighting requirements | The project would utilise existing lighting at the warehouse during night operations. There is no requirement to upgrade existing lighting at the site. |
| Building code requirements | A Building Code of Australia/NCC Compliance Assessment report will be provided separately to Council. |
| Security requirements | <ul style="list-style-type: none"> Security fencing: The existing security fencing for the site does not require upgrading for the project. On-site security system: The warehouse building is alarmed to prevent unauthorised access. Security lighting. CCTV. Security gates (gate to be left open during the day and shut overnight and on weekends). |
| Signage requirements | <p>The following signage will be required for the site:</p> <ul style="list-style-type: none"> Site safety sign: This will be free standing and dimensions approximately 3015 millimetres (mm) x 1500 mm. Tyrecycle branding sign: The sign will be located on the front of the building against the Terracotta wall at the office entry. The final dimensions and type of this sign will depend on available wall space and material. The sign will not impact traffic or distract in any unlawful way. Tyrecycle quality signage: This sign would be located on the building near the loading docks. The dimensions will be approximately 1220 mm x 2440 mm. |

| Operational aspect | Comment |
|--------------------------------------|---|
| Amenities | <p>The project would be serviced by existing amenities within the administration office. Such amenities would include toilet and hand washing facilities, kitchen and break room.</p> <p>The internal floor space of the existing office facility would be modified as part of the project to accommodate a meeting room and other desirable operational requirements. Refer to Appendix C of the SEE for an office layout plan.</p> |
| Capital investment value (CIV) | Refer to Appendix F of the SEE. |
| Commencement of operations | The project is anticipated to commence in December 2020 (subject to approval), with establishment of plant and equipment to take up to two months prior to the commencement of operations. |
| Landscaping | <p>Existing landscaping from the warehouse includes a selected range of Australian native ground covers, shrubs and non-deciduous trees to the local areas. The existing landscape plan for the warehouse building was prepared by Viridian Designs and is included in Appendix G of the SEE.</p> <p>The project would require minor upgrade to electrical infrastructure, with the current 500 kilovolt ampere (kVA) transformer upgraded to 3,500 kVA. This would result in an additional substation to be located within the site, requiring the removal of one juvenile Spotted Gum (<i>Corymbia maculata</i>).</p> |
| Waste management | Refer to section 5.4.7 and Appendix M of the SEE. |
| Public safety management | <p>Public safety risks may arise from un-authorised access of members of the public.</p> <p>All visitors to the site are required to report to the site administration office and register prior to gaining entry to the active areas of the site.</p> |
| Work health and safety | <p>Tyrecycle has a workplace health and safety policy, as required by the NSW <i>Work Health and Safety Act 2011</i> (WHS Act), whereby workers must conform to. All workers, contractors and visitors are inducted on safety protocols and procedures before entering active parts of the site. All personnel working on the site are trained in safety procedures (such as LOTO²) and required to wear personal protective equipment (PPE) such as high visibility clothing, safety glasses, steel toe cap enclosed footwear and other task specific PPE such as gloves, hearing protection etc. Regular communication of safety requirements and initiatives is also undertaken on a regular basis.</p> <p>Provided the implementation of workplace health and safety protocols during operation of the project, as required by the WHS Act and other relevant regulations or standards, the potential for injuries or fatalities to workers, contractors or visitors to the site would be minimised.</p> <p>Designated first aid and emergency rescue facilities and equipment would be available at the site. Appropriately trained personnel will be on site throughout the life of the project and operation of the plant to provide first aid and respond to site emergencies.</p> <p>Any injuries incurred at the site would be reported and investigated in consultation with SafeWork NSW and other relevant authorities as required and as outlined in Tyrecycle's incident management procedure. Any recommendations or findings of investigation reports would be implemented by Tyrecycle where feasible and practical.</p> |
| Environmental management and impacts | <p>Refer to the SEE for key environmental risks and management measures. Table 2.3 provides a summary of mitigation measures/safeguards outlined in the SEE.</p> |

² LOTO Lockout/Tagout, or Control of Hazardous Energy (29 CFR 1910.147), is an safety proecudre implemented to protect maintenance and service workers in the performance of their duties. It specifically addresses hazards that could inure employees from the unexpected energization or start up o machines or equipment, or when stored energy could be released, while servicing or maintain equipment. Employees are protected by LOTO to shut down the machine and ensure that it cannot activate while they are working on it.

2.4 SEE safeguards

Table 2.3 lists key mitigation measures outlined within the SEE.

Table 2.3: Summary of key mitigation measures outlined within the SEE

| Aspect | Mitigation measure |
|---------------------------|---|
| Noise | <p>Keep roller doors closed where possible.</p> <p>Truck engines to be switched off when not in use for extended periods.</p> <p>Noise complaints should be logged and investigated.</p> |
| Dust (general) | <p>Engines of on-site vehicles and plant to be switched off when not in use.</p> <p>Vehicles and plant are to be fitted with pollution reduction devices where practicable.</p> <p>Vehicles are to be maintained and serviced according to manufacturer's specifications.</p> <p>Visual monitoring of activities is to be undertaken to identify dust generation.</p> <p>Cyclones (air filtration system) to be maintained and operated in accordance with manufacturer's specification.</p> |
| Dust (material handling) | <p>Reduce drop heights from loading and handling equipment where practical.</p> |
| Dust (hauling activities) | <p>Spills on trafficked areas to be cleaned immediately.</p> <p>Driveways and hardstand areas to be swept/cleaned regularly as required etc.</p> <p>Vehicle traffic is to be restricted to designated routes.</p> <p>Co-ordinate the delivery schedule to avoid a queue of the incoming or outgoing trucks for extended periods of time.</p> <p>Speed limits are to be enforced.</p> <p>Vehicle loads are to be covered/secured when travelling off-site to prevent spillage.</p> <p>Regularly inspect roads and maintain surfaces to remove potholes or depressions.</p> |
| Traffic and access | <p>A Loading Dock Management Plan is recommended to ensure that only three trucks are parked in the loading bay and the other three truck spaces are vacant during the times when B-Doubles access the site</p> <p>Although the vehicle access, circulation, aisle width and car space dimensions comply with AS 2890.1 and 2890.2, however, two convex safety mirrors are recommended in the basement level car park between car spaces 12 and 13, and 15 and 16 to avoid conflict between entering and existing vehicles.</p> |
| Contamination | <p>All transportation vehicles will be refuelled off-site, with forklifts and other mobile equipment periodically re-fuelled within a bunded area of the warehouse. Personnel will regularly check and maintain machinery to minimise the risk of oil leaks. The re-fuelling of mobile equipment at the site and storage of oil filters in bunded areas</p> |

| Aspect | Mitigation measure |
|------------------|--|
| | <p>would also minimise the potential for leaks and spills to enter the Council stormwater system along Grady Crescent.</p> <hr/> <p>If contaminated material (such as absorbent material for leaks and spills) is generated during operation of the project, relevant statutory requirements, including waste classification, will be complied with, and the material managed and disposed of appropriately.</p> |
| Waste management | <p>Waste management practices would be managed as set out in the WARR Act by adopting the principles of the waste management hierarchy during the project's operations.</p> <hr/> <p>Regular programmed maintenance of the shredder system to ensure efficient operation, which keeps losses to a minimum and involves reviewing capture systems around the shredder to maximise recovery of material.</p> <hr/> <p>All waste generated as a result of the project would be managed in accordance with the Waste Classification Guidelines (EPA, 2014) and relevant regulatory requirements. This will include (i) its classification prior to leaving the site and (ii) recording (via an appropriate waste tracking system) its legal off-site transportation for re-use, recycling or disposal.</p> <hr/> <p>Any waste generated would be stored in a suitable container, with a lid (where appropriate), and transported from the site to an appropriately licensed facility. A sufficient number of suitable receptacles for general waste, hazardous waste and recyclable materials would be provided for waste disposal at the site, including sufficient bins to allow separation of wastes for recycling.</p> <hr/> <p>All wastes will be securely stored to ensure that any pollutants are prevented from escaping.</p> <hr/> <p>Any fuel, lubricant or hydraulic fluid spillages would be collected using absorbent material and the contaminated material disposed of immediately at a licensed waste facility;</p> <hr/> <p>All hazardous or contaminated wastes on site (if identified) will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials. Hazardous materials will only be removed by suitably qualified, licensed and experienced contractors.</p> <hr/> <p>Documents and records of the transport and fates of all materials removed from the project site would be kept as proof of correct disposal and for environmental auditing purposes.</p> <hr/> <p>Waste streams will be sorted to maximise the reuse/recycling potential and minimise disposal costs.</p> <hr/> <p>Materials would be re-used or recycled wherever possible. Details relating to the recycling of materials at appropriately licensed recycling facilities would be provided.</p> <hr/> <p>waste would be covered stored and removed in a timely manner so as not to attract native animals or vermin.</p> |

| Aspect | Mitigation measure |
|--|--|
| | All waste material handling, transport and disposal will be in accordance with the requirements of the POEO Act (1997), WARR Act and relevant UP, EPA or WorkCover Guidelines. |
| Public safety management | All visitors to the site are required to report to the site administration office and register prior to gaining entry to the active areas of the site. |
| Hazardous substances and dangerous goods | <p>A Pollution and Incident Response Management Plan (PIRMP) would be developed by Tyrecycle for the project to manage any potential chemical or hydrocarbon spills. The PIRMP would include the following management and mitigation measures:</p> <ul style="list-style-type: none"> ▪ All personnel would complete awareness training that includes hazardous substance management, emergency response and the use of spill kits. ▪ Appropriately sized and stocked spill response kits would be provided within strategic areas of the building, and within mobile vehicles used to transport hazardous materials to and from the site. ▪ Spill response kits would be maintained, clearly identified and readily accessible on site for use in case of accidental spillages. Key staff would be skilled in their location as well as usage, application and disposal of contaminated material; ▪ All potential chemical pollutants (e.g. fuels, oils, lubricants, paints, etc.) would be stored in appropriate containers in bunded areas within mobile vehicles, or designated storage areas to minimise the risk of spillages and mobilisation of any pollutants into stormwater drains. ▪ Equipment would not be used if there are any signs of fuel, oil or hydraulic leaks. Leaks would be repaired immediately, or the equipment will be removed from site and replaced with a leak-free item. ▪ Any contaminated material resulting from spills would be collected, classified in accordance with Waste Classification Guidelines, and disposed of at a licensed waste management facility. |
| Fire safety | <ul style="list-style-type: none"> ▪ fire systems would be regularly maintained and tested in accordance with AS2118.1; ▪ storage and stacking of tyres, and tyre derived fuel, to be stored in accordance with the <i>NSW Guidelines for bulk storage of rubber tyres</i> ▪ the stacking of tyres and rubber crumb products would be limited to 3.8 m and 4.6 m respectively in height to ensure the existing fire systems at the warehouse remain compliant with AS2118 (refer to Appendix O of the SEE). ▪ make provision so on-site containment of fire-water has the capacity to hold the projected volumes of fire-water in the event of a fire emergency; and ▪ site emergency procedures are maintained to ensure systems and people are prepared for emergency events that may involve fire |

| Aspect | Mitigation measure |
|------------------------------------|--|
| Monitoring of tonnage requirements | Tyrecycle will monitor tonnage limits and outgoing product using the weighbridge and reporting requirements, ensuring tonnage thresholds are not exceeded. |



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