



ENVIRONMENTAL MANAGEMENT, MONITORING AND EMERGENCY RESPONSE

APPLICATION FOR ENVIRONMENTAL PROTECTION LICENSE - KATHERINE USED TYRE SHREDDING SERVICE

Northern Waste Reduction Services
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Document Information and Control

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1 INTRODUCTION

Northern Waste Reduction Services (NWRS) is a registered business name held by Katherine Tree Maintenance Pty Ltd (ACN 108 347 691/ABN 61 108 347 691).

NWRS is seeking to obtain an Environmental Protection License for the collection, transport, storage, and processing of used tyres. The intention of establishing this service is to apply a sustainable approach to disposing of used tyres in the Northern Territory (NT). It is expected that the recycling of used tyres will divert them from landfill and reduce fossil fuels wasted.

NWRS proposes to establish two services:

1. Shred used tyres on a proposed site in the industrial suburb of Emungalan NT to meet demand from various local and regional sources; and
2. Run a mobile tyre collection service for remote landfill operators and tyre retailers in the NT.

This document provides the environmental management, monitoring and reporting practices for the various components of each service. It will be annually reviewed to ensure that best practice management continues to be incorporated into the services. The key plans included in this document are:

- Environment Risk Assessment and Management Plan (**Section 4.2**);
- Environmental Monitoring Program (**Section 5**); and
- Emergency Fire Response Plan (**Section 6**).

NWRS is committed to implementing best practice environmental management to reduce the potential for environmental impacts, to reduce the risk of any liabilities associated with environmental impacts and to maintain strong relationships with neighbours, clients, customers and government agencies.

Guidance materials used in the development of this document include:

- *Guideline for the Preparation of an Environmental Management Plan* (NT EPA, 2015); and
- *Best Practice Guidelines for Tyre Storage and Fire and Emergency Preparedness* (Tyre Stewardship Australia, 2017).

2 RELEVANT LEGISLATION

The design of the operation, as described in this document, has been informed by relevant legislation (**Table 1**).

Table 1: Relevant Legislation

Legislation	Description and requirements relevant to the operation
<i>Waste Management and Pollution Control Act (NT)</i>	The governing legislation for the collection, transportation, storing and processing of tyres. This includes the requirement for a license where these activities are undertaken on a commercial basis.
<i>Fire and Emergency Act (and associated Fire and Emergency Regulations 2017; NT)</i>	Section 7A of the Regulations include details of requirements for 'storage of whole tyres' such as heights, dimensions and separation distances.
<i>Bushfire Management Act (NT)</i>	Specifies requirements for properties within Fire Protection Zones.

3 CONTACT DETAILS

The details of NWRS are shown in **Table 2**.

Table 2: Company Details

Item	Detail
Name	Katherine Tree Maintenance Pty Ltd trading as Northern Waste Reduction Services (NWRS)
ABN	61 108 347 691
Address (processing site)	# 8883 Stuart Highway, Emungalan, NT
Postal address	PO Box 569, Katherine, NT, 0851
Contact person	Mr. Peter Wasley
Phone number	0459 640 022
Email	nwrs@westnet.com.au

This document has been prepared by Connect Environmental, whose details are shown in **Table 3**.

Table 3: Consultant Details

Item	Detail
Name	Connect Environmental
ABN	31 693 727 483 (Vaino Mihkel Proos)
Mailing address	PO Box 40444, Casuarina, NT, 0811
Contact person	Mr. Mihkel Proos
Phone number	0411 019 569
Email	mproos@connectenvironmental.com.au

This document has subsequently been modified by the management of NWRS to reflect changes in circumstances surrounding the location of the proposed facility.

4 DESCRIPTION OF ACTIVITIES

4.1 Katherine Service

NWRS intends to operate a tyre shredding service in accordance with the operational details shown in **Table 4**. The service to be provided includes the following main components:

- Collect and/or receive used tyres from external providers and (where necessary) transport to the site;
- Store used tyres (externally);
- Operate a mobile tyre shredder (on the site);
- Store the shredded rubber and metal (separately on site);
- Deliver shredded rubber to Local, interstate and overseas customers;
- Deliver scrap metal to local scrap metal merchants.

NWRS is leasing NTP 2377 (#8883 Stuart Highway, Emungalan NT) for the purpose of conducting tyre processing and recycling of processed products

Additional details are provided in the following sections.

Table 4: Operation details on permanent site

Aspect	Details
Transporting times	Monday to Saturday, 7.00 am to 5.00 pm, all year (except public holidays)
Storage of used tyres	Maximum 2,000 tonnes (outdoor storage)
Storage of processed product	Maximum 5,000 tonnes (outdoor storage)
Processing volume	Estimated 5,000 tonnes per annum
Operational times (tyre shredder)	Approximately 35 hours per week, Monday to Friday, 7.30 am to 5.00 pm, all year (except public holidays)

4.1.1 Site Selection

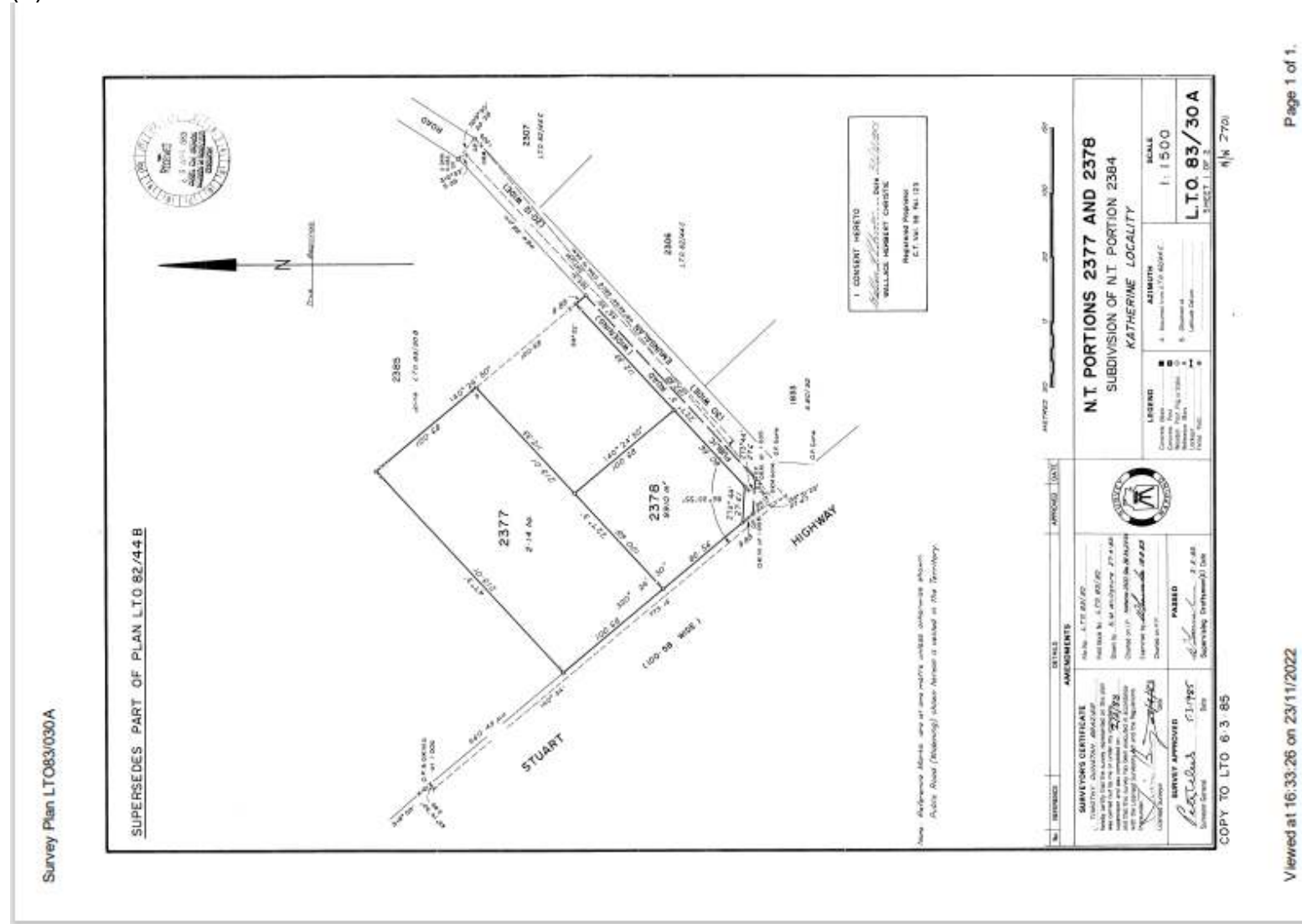
The site, as shown in **Figure 1** including access points, has been selected and configured to minimise the risks of impacts to the environment and human health. Key considerations have been drawn from the *Best Practice Guidelines for Tyre Storage and Fire and Emergency Preparedness* (Tyre Stewardship Australia, 2017) and relevant legislation, and are described in **Table 5**.

4.1.2 Site Layout

The site has been configured in a manner that meets all legislative requirements and best practice. The anticipated stockpile sizes, their configuration on site and separation distances from other stockpiles, infrastructure and boundaries have all be taken into consideration. See **Table 6** for details.

Figure 1 – (a) Site Location, (b) Details and (c) Proposed Layout (Not to Scale)

(a)



(b)



(c)



Table 5: Key Site Selection Characteristics

Factor	Best practice / legislative requirement	Conforms to best practice / legislative requirement?	Further information
Site area / size	The site is large enough to accommodate necessary infrastructure including a tyre storage area with adequate separation distances between stockpiles, truck access and all required plant and equipment.	Yes	This Section (4.1.1)
Slope	Flat and level ground	The site has a slope of less than 1% (according to Google Earth elevation profiling)	Not addressed elsewhere
Zoning of the site	Allowable land use / zoning purpose	The site is zoned LI (Light Industry)	Not addressed elsewhere
Quantity of tyres and separation distances	Tyres to be stored in accordance with the requirements of the NT Fire and Emergency Regulations and the NT <i>Bushfires Management Act</i> .	Yes	4.1.4
Sensitive receptors	Avoid situating the site within 500 m of schools, residences, water bodies, major transportation routes and other sensitive receptors.	The site is located in the industrial suburb of Emungalan, that services industries of a similar nature.	5.2.1 (Fire)

Factor	Best practice / legislative requirement	Conforms to best practice / legislative requirement?	Further information
Access to utilities (primarily for firefighting)	<p>Site entry points should have at least 4 m clearance with access roads designed for large emergency vehicles and their weight limits, including:</p> <ul style="list-style-type: none"> • Access points on opposite ends of the site (ideally either side of the likely path of a potential smoke plume); • A rapid entry feature to access points to allow quick access for emergency services. • Adequate hardstand areas to prevent emergency vehicles becoming bogged and unable to access the site; and • Vegetation close to the site is managed on a regular basis. 	<p>There is currently one entry point (see Figure 2):</p> <ol style="list-style-type: none"> 1. The primary access point is from the service road connected to Emungalan Road. It is ~6 m wide, which is adequate for emergency vehicles to enter. 2. A second entry/exit point will be installed if NT EPA approval of the land parcel is obtained. 3. There are adequate hardstand areas to ensure vehicles do not get bogged 	<p>This Section (4.1.1) and 5.2.1 (Fire).</p>

Table 6: Key Site Layout Characteristics

Factor	Best practice / legislative requirement	Conforms to best practice?	Further information
Adequate storage space	Meets requirements of the NT's <i>Fire and Emergency Regulations</i>	Yes	4.1.5
Control of runoff water for fire control	Containment should be in the form of bunds or catchment pits. In the NT, the <i>Fire and Emergency Regulations</i> state that stockpiles must be either be separated from each other, and from the boundary of the site, by 10 m, or by walls.	Partly – the site will not have bunds however there will be 10 m between each stockpile, and between stockpiles and the site's boundary.	4.1.5
Ignition sources	<p>Separation distances should consist of:</p> <ul style="list-style-type: none"> For non-combustible boundaries – at least 6 m from perimeter; and For combustible boundaries or public roads – at least 20 m from perimeter if the stockpile's long sides face the boundary and 12 m from perimeter if the stockpile's narrow ends are facing the boundaries. 	Partly, the separation distance between the stockpile and (combustible) boundaries are minimum 10 m, in line with the NT <i>Fire and Emergency Regulations</i> .	4.1.5
Site surfaces	Adequate hardstands should be provided to prevent site and emergency vehicles becoming bogged.	Access points to the site, as well as turnaround and parking areas, will be graveled surfaces.	Not addressed elsewhere

4.1.3 Supply of Used Tyres

NWRS is proposing to collect and receive used tyres from land fill centres, tyre retailers, trucking companies and other private sources where stockpiles are located.

NWRS will enter into agreements with each provider to access and remove the used tyres.

4.1.4 Transport of Used Tyres to the Site

Used tyres will be transported from suppliers to the site in an enclosed-bodied truck on a weekly or as-needs basis. Tyres may also be delivered to the site by the tyre retailer in their own trucks.

4.1.5 Storage of Tyres

Tyres will generally only be stockpiled upon delivery and whilst awaiting weekly shredding, or when the operation is in shut down due to plant and equipment maintenance or severe weather conditions.

In accordance with Section 7A of the NT's *Fire and Emergency Regulations 2017*, tyre stockpiles will adhere to the following:

- Maximum width of base – 5 m;
- Maximum length of base – 45 m;
- Maximum height – 3 m;
- Minimum distance between stacks and boundary – 10 m; and
- Maximum side slope (i.e. no steeper than) – 1:1.

Tyres will be stored on their sides and not stacked on their treads.

Figure 1 shows the site's approximate layout which meets the above requirements.

4.1.6 Processing of Used Tyres

The shredding machine is capable of processing 3.5 tonnes of used tyres per hour. This equates to an estimated:

- 110 tonnes per week; or
- 5,292 tonnes per year.

The facility will operate Monday to Saturday for estimated average of 35 hours per week, all year (except public holidays). Variations to this are expected when:

- Maintenance or repair of any plant and equipment is required;
- Demand for processed products reduces;
- Supply of used tyres reduces;
- Any other unexpected event (e.g. extreme weather event).

If any plant or equipment becomes inoperable, or during times of shut down, collection of tyres will cease and un-processed used tyres already on-site will be stored in the areas shown in **Figure 1**.

SHREDDING

Existing used tyres stored on the site will be picked up by an excavator or loader and loaded into the shredder. Used tyres will be transported to the site by customers body trucks or KTM walking floor truck.

Tyres will be shredded into approximately 70 mm chips. As used tyres contain steel wire, the wire is pulled from the rubber through the shredding process then separated by an over band magnet. The wire will be collected and compressed into cube blocks using an electric baling machine. The rubber chips will be loaded into side tipper trucks, bulka bags or enclosed shipping containers.

The shredding process is contained within the shredding chamber and eliminates any possibility of flying debris.

4.1.7 Transport of Processed Products Off-site

Baled steel scraps (i.e. wire) will be dispatched to metal recycling agents and the rubber chips will be dispatched to rubber recyclers (e.g. Road resealing organisations, local industry, southern tyre recycling company's, or overseas, as markets present).

4.1.8 Plant and Equipment

The plant and equipment to be employed by the operation is summarized in **Table 7**.

Table 7: Plant and Equipment

Tyre shredding	Tana Shark 440DT shredder (capable of shredding 5-6 tonnes per hour) with a Cummins 535Hp Tier III diesel engine
Metal scrap storage	Skip bin or tipper truck
Rubber product storage	Bulka bags, Shipping containers, Concrete bays
Transport of shredded rubber product	Side tipper trucks, walking floor trailers, Bulka bags and/or enclosed shipping containers
Transport of metal scraps	Truck
Fire extinguishing	Dry chemical powder ABE extinguishers fitted to shredder and each vehicle Water supply at the site (flow rate 10L/s).

4.1.9 Personnel

It is expected that the Katherine site operation will initially be operated by three employees. This allows for the operation of the shredder, trucks and other equipment on site.

4.2 Remote Area Collection Service

In addition to establishing the site at Katherine, NWRS also intends to operate a remote tyre processing/collection service. This service would service remote sites where the transport of used tyres in their original form and size becomes cost prohibitive and hence the tyres end up in land fill or stockpiles. NWRS has the capability of mobilizing the shredding machine and associated plant & equipment to accommodate regular and efficient removal of tyres from remote communities.

The legacy of stockpiles of used tyres has exposed communities in the NT to a range of environmental risks and health hazards because of inappropriate storage arrangements. These include:

- Creating pooling water for mosquito breeding sites;
- Creating habitat for vermin;
- Leaching of tyre chemicals and heavy metals;
- Increased risk of toxic fires;
- Waste of space and resources; and
- Local councils and tyre retailers appearing irresponsible.

NWRS will enter into agreements with the relevant managers of each site to access and collect the used tyres.

4.2.1 Personnel

It is expected that in addition to the initial three permanent employees, the remote activities will require extra part-time local personnel at each of the sites. NWRS will engage these workers for the period of time that is necessary for the shredding to be completed at each site

5 ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN

5.1 Introduction

An environmental risk assessment has been undertaken in accordance with Australian and New Zealand Risk Management Standard AS/NZS ISO 3100:2009 for all environmental aspects considered relevant to the proposed development. This is based on the data and information gathered during the planning stages of the assessment, which has been presented in **Sections 1 to 3**.

The risk assessment systematically qualifies and quantifies the potential environmental impacts and applies impact mitigation measures to ensure all potential impacts are minimized to an acceptable level.

Only those aspects of the environment that are considered relevant have been included in this risk assessment (i.e. aspects of the environment where there is potential for impact).

The potential significance of an impact is based on the likelihood and consequence of the impact to that aspect of the environment. The definitions used to determine likelihood are shown in **Table 8**. The definitions used to determine the consequence of an impact to environmental aspects are shown in **Table 9**. Following the assessment of likelihood and consequence of the impact, the level of threat can be determined by the matrix shown in **Table 10**.

Table 8 Impact Likelihood Definitions

1	Rare	The outcome is not expected to occur; no record of occurring but not impossible; may occur in exceptional circumstances
2	Unlikely	The outcome will only occur in a few circumstances; uncommon but known to occur elsewhere
3	Possible	The outcome may occur; some evidence to support it will happen
4	Likely	The outcome will occur in most circumstances
5	Almost certain	The outcome is expected to occur

Table 9 Impact Consequence Definitions for Relevant Environmental Aspects

Aspect	Consequence				
	Insignificant	Minor	Moderate	Major	Critical
General Biodiversity	Negligible effect	Small to medium scale native vegetation / habitat loss; habitat fragmented	Medium to large scale native vegetation loss / habitat fragmented.	Significant impact. Recovery measured in years to decades.	Severe impacts; recovery period decades
Water Quality	Negligible effect	Temporary low-level effect on water quality	Sustained impact on sensitive environmental features	Significant impact. Recovery measured in years to decades.	Extensive off-site contamination; sustained damage to the environment; remediation not possible.
Air Quality	Impacts below detectable levels	Impacts within allowable limits	Temporary impact on local air quality exceeds allowable limit	Significant remediation works required	Long-term damage to local or regional air quality
Social	Very few people indirectly affected, insignificant concern	Very few people directly affected, some concern	Several people directly affected	Large number of people directly affected, significant concern	Long-lasting health or social effects

Table 10 Level of Threat Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	Low	Medium	High	Severe	Severe
Likely	Low	Medium	Medium	High	Severe
Possible	Low	Low	Medium	High	Severe
Unlikely	Low	Low	Low	Medium	High
Rare	Low	Low	Low	Medium	High

5.2 Risk Assessment

Table 11 contains the Environmental Risk Assessment and associated impact mitigation measures required to reduce risks to acceptable levels. Key risks have been identified as (i.e. those with an inherent risk rating of 'Medium' or higher):

- Contamination of soils and surface waters from water used for firefighting purposes in the event of a tyre fire;
- Dust from trucks driving on the site;
- Toxic smoke from tyre fire affecting air quality;
- Increased noise levels from increased traffic to and from the site; and
- Fire spreading to neighbouring properties and causing air, water and soil pollution.

These are discussed in further detail in the **Section 4.2.1**. It is expected that the environmental aspects addressed in **Table 11** are relevant to both the operation at the Katherine site as well as when operating remotely.

Table 11 Environmental Risk Assessment and associated impact mitigation measures (shaded rows indicate potential risks from both the site-based and mobile operation; unshaded risks are from the Katherine site only)

	Environmental aspect		1				2		
			Likelihood	Consequence	Rating		Likelihood	Consequence	Rating
1	Waterways	Contamination of surface waters from water used for firefighting purposes in the event of a tyre fire (in the tyre stockpiles on the site)	Possible	Moderate	Medium	<ul style="list-style-type: none">Stockpiles are separated from each other, and from the boundary of the site, by not less than 10 m at any point.Ensure that stockpiles are located on flat and level parts of the site.	Rare	Minor	Low
2		Contamination of surface waters from oil, fuel and lubricant spills	Unlikely	Moderate	Low	<ul style="list-style-type: none">Designated spill tray will be incorporated in the refuelling procedure.Regular inspection and maintenance of all machinery, plant and vehicles.Trucks to be driven appropriate to weather conditions and stick to enforced speed limits on site (to prevent accidents).Used oils and lubricants to be disposed of appropriately through licensed site.	Rare	Moderate	Low
3		Dust from the shredding machine (as it shreds any dirty tyres)	Possible	Minor	Low	<ul style="list-style-type: none">If required, dust suppression using water sprays.	Possible	Insignificant	Low
4	Air quality	Dust from trucks entering and exiting the site (particularly during the dry season when prevailing winds are from the south east)	Likely	Minor	Medium	<ul style="list-style-type: none">All trafficked areas to be concrete, bitumen or gravel hardstand.Enforce 5 km/hr speed limits on the site to reduce dust.	Possible	Minor	Low
5		Exhaust emissions from plant, equipment and vehicles	Possible	Minor	Low	<ul style="list-style-type: none">Maintain appropriate servicing of plant, equipment and vehicles.Enforce 5 km/hr speed limits on the site to reduce dust.	Possible	Minor	Low
6	Noise	Toxic smoke from tyre fire affecting air quality	Likely	Moderate	Medium	<ul style="list-style-type: none">Several smaller stockpiles will be established, rather than a large one, to minimise the volume of tyres that could burn in a fire.Stockpiles are also to be separated by a minimum of 10 m.	Possible	Minor	Low
7		Increase noise levels from increased traffic to and from site (engine noise, exhaust brakes and reversing alarms from trucks resulting in disturbance to neighbouring residents)	Possible	Moderate	Medium	<ul style="list-style-type: none">Avoid driving trucks before 7 am and after 8 pm on Monday to Saturday and before 8 am and after 6 pm on Sundays and public holidays.Enforce 5 km/hr speed limit of trucks driving on the site.All trucks to be fitted with efficient exhaust mufflers.Regular maintenance of vehicles.	Possible	Minor	Low
		Increased noise levels from operation of the shredder resulting in disturbance to neighbouring residents. Highest peak noise level is measured at 116 LWA (107 dB(A)) at the machine (as per attached noise report).	Possible	Minor	Low	<ul style="list-style-type: none">Avoid using shredder before 7.00 am and after 5.00 pm on Monday to Friday.Shredder will not be used on Saturdays, Sundays and public holidays.Avoid using machine substantially more than 35 hours per week.	Possible	Minor	Low

¹ With no impact mitigation measures in place² Following the application of appropriate impact mitigation measures

No.	Environmental aspect	Potential impact	Inherent Risk ¹			Mitigation	Residual Risk ²		
			Likelihood	Consequence	Rating		Likelihood	Consequence	Rating
8	Fire	Fire spreading to neighbouring properties, and causing air, water and soil pollution	Possible	Major	High	<ul style="list-style-type: none"> Execute the Emergency Fire Response Plan in the event of a fire emergency. Tyres will not be stockpiled long term – tyres will be regularly shredded. Maintain a fire break (minimum 4 m wide). Maintain a minimum distance of 10 m between the tyre stockpiles, and between any stockpile and the boundary of the site. Maintain a water access point with flow rate of minimum 2 L/s. Maintain fire extinguishers on all vehicles and shredder. Keep vegetation within site boundary to a minimum. Maintain regular surveillance of fires / smoke of the site, neighbouring properties and the local area. Tyre shredder and yard maintenance equipment (e.g. lawn mowers, whipper snippers) will not be used on the site on days of total fire ban. Designated smoking areas on site will be established. These areas will be in areas away from any vegetation or flammable materials. Hot work (e.g. welding, oxy cutting) will take place on the site after establishing suitable fire prevention measures. Regular inspection and maintenance of all on site electrical appliances 	Rare	Moderate	Low
9	Soils	Contamination of soils from oil, fuel and lubricant spills	Unlikely	Moderate	Low	<ul style="list-style-type: none"> Designated spill tray will be incorporated in the refuelling procedure. Regular inspection and maintenance of all machinery, plant and vehicles. Trucks to be driven appropriate to weather conditions and stick to enforced speed limits on site (to prevent accidents). Used oils and lubricants to be disposed of appropriately through licensed site. 	Rare	Moderate	Low
10		Contamination of soils from water used for firefighting purposes in the event of a tyre fire (in the tyre stockpiles on the site)	Possible	Moderate	Medium	<ul style="list-style-type: none"> Stockpiles are separated from each other, and from the boundary of the site, by not less than 10 m at any point. Contaminated soil, as a result of a tyre fire, will be excavated and appropriately disposed or remediated on site with approval and consultation from the NT EPA. 	Rare	Minor	Low
11		Leaching of tyre chemicals and heavy metals	Possible	Minor	Low	<ul style="list-style-type: none"> Regular shredding of tyres so that tyres are not left in stockpiles for long periods. 	Unlikely	Minor	Low
12		Rubbish / waste contaminating soils	Possible	Minor	Low	<ul style="list-style-type: none"> Only used tyres will be accepted to the facility (no other waste / rubbish) Maintain the site in a neat and tidy fashion. 	Possible	Minor	Low
13	Climate change	Greenhouse gas emissions	Almost certain	Insignificant	Low	<ul style="list-style-type: none"> All plant and vehicles will be turned off when not in use. Regular inspection and maintenance of all machinery, plant and vehicles. 	Almost certain	Insignificant	Low

No.	Environmental aspect	Potential impact	Inherent ¹ Risks			Mitigation	Residual ² Risk		
			Likelihood	Consequence	Rating		Likelihood	Consequence	Rating
14	Mosquitoes	Creating breeding sites for mosquitoes causing local social and environmental issues	Possible	Minor	Low	<ul style="list-style-type: none">Regular shredding of tyres so that tyres are not left in stockpiles for long periods.	Possible	Minor	Low

5.2.1 Key Risks

Key risks associated with the operation are noted as those identified in the risk assessment (**Table 11**) as having a risk rating of 'medium' or higher. It is expected that, through the implementation of the mitigation measures listed in **Table 11**, the risk ratings are each reduced to 'low'. The following sections provide contextual information of these risks.

NOISE

New noise sources may be from:

- Engines, exhaust brakes and reversing alarms from trucks, loaders and other plant associated with the proposed operation; and
- Operation of the shredder.

The estimated vehicle movements generated by the proposed operation is summarized in **Table 12**. The operation will generate a maximum of approximately 988 movements in and out of the site each year at anticipated maximum production and provided there is no down time (which is unlikely).

Employees (in maximum two vehicles) will enter the site at approximately 7.30 am and depart at approximately 4 pm, one will be two days a week and the other once per week.

Table 12: Estimated maximum vehicle movements.

Deliveries of used tyres to the site by external providers	2 per week (104 per year)	4 per week (208 per year)
Collection of used tyres from providers by NRWS	2 per week (104 per year)	4 per week (208 per year)
Trucks transporting shredded tyre chips off site	2 per month (24 per year)	4 per month (48 per year)
Trucks transporting steel wire scraps off site	1 per week (52 per year)	2 per week (104 per year)
Plant and equipment maintenance and refuelling vehicles	1 per fortnight (26 per year)	2 per fortnight (52 per year)
Private vehicles from employees	12 per week (624 per year)	18 per week (936 per year)
Total		1556 per year

FIRES AND ASSOCIATED AIR QUALITY, WATER WAY AND SOIL IMPACTS

Tyres stored on site could burn if set alight, releasing toxic smoke into the air. The most likely causes of a tyre fire are:

- If the tyres are deliberately or unintentionally lit by a person;
- By a neighbouring vegetation fire that spreads to the tyre stockpile;
- By a vegetation fire from within the site.

Vegetation fires in the northern parts of the NT are more likely to occur during the dry season (April to October).

The site is within the Katherine Fire Protection Zone and therefore must adhere to the requirements of the NT Fire and Rescue Services. **An officer from NTFRS will be providing an email to NWRS regarding the fire fighting capability at the property.**

These requirements have been incorporated into the design and maintenance of the site and impact mitigation measures for the operation.

Groundwater is unlikely to be affected by a tyre fire, however localised contamination of the surface soils and water from firefighting foams and water may result. Tyres may also release oily compounds when burnt. In the event of a fire, inspection of the localised area will be undertaken. Any contaminated soil, as a result of a tyre fire, will be excavated and appropriately disposed or remediated on site with approval and consultation from the NT EPA.

The range of impact avoidance and mitigation measures as a result of a tyre fire are shown in **Table 11**. In addition, an Emergency Fire Response Plan (**Section 6**) has been developed and includes procedures to be used for fire emergencies. It will be located:

- On the site;
- In each vehicle (trucks and company vehicles); and
- With the NT Fire and Rescue Service (Katherine branch).

5.2.2 Other Considerations

HAZARDOUS MATERIALS AND CHEMICALS

No hazardous materials or chemicals will be used or stored on the site, except for a small amount of oils and lubricants required for minor maintenance for plant and equipment.

If any used tyres sourced from providers are contaminated with any possible hazardous substance or chemicals, NWRS will refuse collection.

Minor maintenance of the shredder may occur on site by NWRS employees and will require minimal oils and lubricants. Major maintenance and servicing of it will be undertaken by an external contractor. Oils and lubricants for a major service will be provided by the contractor and not stored on-site.

Fueling or maintenance of vehicles associated with the operation is not anticipated to be carried out within the site.

5.3 Employee Inductions and Training

Employee inductions will be conducted for all staff. The inductions will include the impact mitigation measures contained within **Table 11** as well as the fire safety and emergency procedures contained in the Emergency Fire Response Plan (**Section 7**). If considered necessary, Safe Work Procedures may also need to be developed for staff.

Annual training for all staff will also be undertaken for the Emergency Fire Response Plan.

5.4 Site Rehabilitation

The activities involved with the operation, including the storage of used tyres on the site, is not expected to have any long-term impact on the site. The site should be able to be utilised for appropriate alternative uses should the operation cease.

If the event of a tyre fire and there is soil contamination, NWRS will undertake necessary soil sampling and remediation activities if required by the NT EPA.

6 ENVIRONMENTAL MONITORING

Given the environmental risks identified in the previous section, a monitoring program has been developed to ensure that any issues are identified as early as possible and rectified in order to minimise the risk of environmental incidents / issues (**Table 13**).

All inspections required are the ultimate responsibility of the Site Supervisor / Manager.

Table 13: Environmental monitoring schedule

Environmental aspect	Potential impact	Inspection required	Inspection frequency	Performance criteria	Corrective action
All	Public complaints	Check with staff / emails	Daily	No public complaints	Immediately respond to complainant and address complaint
Waterways	Contamination from oil, fuel and lubricant spills	Check for signs of leaks / spills	Daily	No leaks / spills	Clean up leaks / spills and remedy source.
Air quality	Dust from shredder	Check for obvious dust plumes during operation or build-up of dust in immediate vicinity of shredder	Daily	No dust plumes from shredder	Apply water sprayers as necessary
	Dust from trucks	Assess dust levels from trucks when driving on site. Check for dust build up on vegetation adjacent to access path and around site Check truck drivers are observing speed limits	Weekly	No dust build-up on adjacent vegetation No excessive dust generation	Apply water sprayers as necessary Discipline truck drivers, as necessary
	Exhaust emissions	Check for exhaust smoke Check equipment / vehicle service records	Daily Monthly	No exhaust smoke All equipment / vehicles are in service	Get vehicle / machine serviced and repaired

Noise	Increased noise levels	Check for hours of operation Check for truck speed on site	Daily	No excessive noise	<p>Ensure activities are within allowable hours of operation</p> <p>Ensure speed limits are followed</p> <p>Remediate noisy vehicles and/or equipment</p>
Soils	Contamination from oil, fuel and lubricant spills	Check for signs of leaks / spills	Daily	No leaks / spills	Clean up leaks / spills and remedy source.
	Leaching of tyre chemicals and heavy metals	Check how long tyre stockpiles have been present and untouched	Monthly	Stockpiles remaining for longer than one month	Shred tyres in stockpiles that have been there for longer than a month
Fire	<u>Fire spreading to neighbouring properties</u>	Check weather conditions and local fire observations	Daily	No fires	Shut down site and become emergency ready if a fire is observed in local area (as per Emergency Fire Response Plan (Section 6))
	Tyre fire resulting in air quality, soil and waterway impacts	Check smoking areas are enforced Check that yard maintenance equipment or hot work is not being undertaken on days of total fire ban		No smoking outside allowable smoking area No yard maintenance equipment or hot work being used on total fire ban days	Enforce smoking areas Counsel / discipline staff, as necessary.
Climate Change	Greenhouse gas emissions	Check that equipment and vehicles are turned off when not in use	Daily	Equipment and vehicles are only used when in use.	Turn off when not in use.

7 EMERGENCY FIRE RESPONSE PLAN

7.1 Purpose and Scope

This plan details the procedure to be followed in the event of a fire on, or near to, the site.

7.2 Procedure

Follow the steps in **Table 14** to respond to a potential or real fire threat.

Table 14: Action Plan for Fire Emergency

Step #	Action	Tasks
1	Determine the type of fire	<p>Determine whether the fire is a:</p> <ul style="list-style-type: none"> • A tyre fire; or • A bush / grass fire; or • Another <i>nearby</i> fire (e.g. vehicle or building).
2	Assess its location and severity / threat level	Determine where it is and how serious it is (i.e. minor, moderate or major).
3	Contact 000	<p>Regardless of the type or severity of the fire, contact the Fire Brigade on 000. Tell them what type of fire it is, who is there and the address:</p> <p>8883 Stuart Highway, Emungalan, NT</p>
4	Alert all on-site personnel	<p>Inform everyone to implement these emergency response procedures</p> <p>Ensure everybody is safe and ensure there is immediate access to PPE and first aid supplies.</p> <p>If possible, instruct a staff member to alert neighbours.</p>
5	Contact Peter Wasley	Call 0459 640 022 to inform him of the situation.
6	If it's a <u>minor</u> tyre fire, attempt to remove burning tyres and extinguish them IF SAFE	Only attempt this if the risk of injury is low. Try with a shovel or rake.

7	If it's a <u>moderate or major</u> tyre fire, consider using earthmoving machinery to remove burning tyres IF SAFE	Only attempt this if the risk of injury is low, <u>otherwise leave it to the fire brigade</u> . Try spraying removed tyres with water.
8	If it's a <u>bush / grass fire</u>, monitor and defend property IF SAFE	Check for windblown embers and extinguish if possible.
9	Wait for Fire Brigade to arrive and follow their instructions	Aid where possible.

7.3 Fire Safety and Emergency Equipment

Fire safety and emergency equipment required on site always is shown in **Table 15**.

Table 15: Fire Safety and Emergency Equipment Requirements

Requirement	Description
Appropriate equipment for moving tyres	Excavator or loader can be used to move tyres quickly in the event of a fire (if safe to do so) and potentially lessen the size and severity of the fire.
Adequate water supply and accessibility	The site has direct access to bore water supply delivering 10.0 litres per second.
Containment of contaminated fire water	The operator has no current plans to build bunds around the stockpiles. In accordance with the NT <i>Fire and Emergency Regulations</i> , there will be minimum separation distance of 10 m between stockpiles, and to the boundary of the site.
Adequate first response equipment	All plant and vehicles are fitted with portable fire extinguishers. Other equipment may include shovels for burying smouldering fires.
Adequate fire hydrant system	Further capability will be provided by 2 x 10,000Ltr Water Supply Tanks and fire fighter pumps installed alongside the up-processed tyre storage area

8 REVIEWS OF THIS DOCUMENT

An important aspect of best practice is adaptive management, which includes the need to regularly review management documentation associated with the operation. This involves analysis of all information, practices and risks described in this document against best practices and taking steps to improve these over time.

This document, including the Risk Assessment and Management Plan (**Section 5**) and Emergency Fire Response Plan (**Section 7**), will be reviewed annually.

9 REFERENCES

NT EPA (Northern Territory Environment Protection Authority), 2015. *Guideline for the Preparation of an Environmental Management Plan*. NT EPA.

Tyre Stewardship Australia, 2017. *Best Practice Guidelines for Tyre Storage and Fire and Emergency Preparedness*.