Government of Western Australia
Department of Water and Environmental Regulation

Amendment Notice 1

Licence Number	L6917/1997/8
Licence Holder	Town of Port Hedland
File Number:	DER2014/000670
Premises	South Hedland Landfill Reserve 41342 North Circular Road SOUTH HEDLAND WA 6721 Being Lot 5813 on Plan 189435
Date of Amendment	4 July 2018

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Date signed: 4 July 2018

Lauren Fox
A/MANAGER LICENSING – WASTE INDUSTRIES

An Officer delegated under Section 20
of the Environmental Protection Act 1986 (WA)

Definitions and interpretation

1. Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Amendment Notice	refers to this document
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
DFES Tyre Guidelines	Department of Fire and Emergency Services published *Guidance Note GB02: Bulk Storage of Rubber Tyres including Shredded and Crumbed Tyres*
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Town of Port Hedland
m^3	cubic metres
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.

Risk Event	as described in *Guidance Statement: Risk Assessment*
Tyre Pile	means four individual tyre stacks or bales of tyres grouped together.

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment for Category 57 and 64. No changes to the aspects of the original Licence relating to Category 61 have been requested by the Licence Holder.

The following guidance statements have informed the decision made on this amendment

Guidance Statement: Regulatory Principles (July 2015)

- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

2. Amendment description

The amendment was initiated by the Town of Port Hedland (TOPH) to enable the South Hedland Landfill to shred the existing tyre stockpile and bury the shredded tyres in two mono cells.

This amendment is in relation to being non-compliant with conditions 1.3.12 and 1.3.14 relating to the location and dimensions of tyre stockpiles and suitable methods of storing tyres.

At the time that the DWER identified the non-compliance issues, over 50,000 tyres were stored on site. On the 9 January 2018, the TOPH notified DWER of its intention to address the non-compliance issues by shredding and burying the tyres on-site.

The Licence Holder submitted an application to amend the licence to authorise burial of shredded tyres in a dedicated mono cell (refer to Figure 1). To facilitate the construction of the cell, it is necessary to reduce the distance of buried waste to the premises boundary on the southern side from 35 meters to 16.5 meters.

As part of the assessment of the application, the DWER has also assessed existing and proposed tyre storage requirements to ensure they align with the Department of Fire and Emergency Services published Guidance Note GB02: Bulk Storage of Rubber Tyres including Shredded and Crumbed Tyres (DFES Tyre Guidelines).

3. Location and receptors

Table 2 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 2: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Temporary construction camp	600 m west
Residential houses	750 m west
Land adjacent to the southern boundary	Owned by Town of Port Hedland

Table 3 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 3: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Groundwater	4 to 17 m below ground level
Surface Water – Turner River	3.1 km east

4. Risk assessment

Tables 4 below describes the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. The table identifies whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 4: Risk assessment for proposed amendments during operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Cat 57 and 64 Tyre storage and landfilling activities Shredding of tyres	Storage and burial of tyres	Particulates and noxious gases from fire / tyre combustion, (see Section 5 for further information) Firefighting water containing pyrolytic oils and potentially perfuoroctanoic acid (PFOA) and per and poly-fluoroalkyl substances (PFAS)	Nearest sensitive receptor is located 600 m west of the premises.	Air/wind dispersion	Public health effects from inhaled particulates, heavy metals and gases. Impacts to amenity and wellbeing	Major	Rare	Medium	Tyres are considered a hazard when burning. The high calorific value stored in tyres is released during combustion as heat and smoke and typically results in a very hot fire with high volumes of black smoke being generated. There is a requirement to meet the DFES Tyre Guidelines for storage. The Licence Holder is required to comply with the Prescribed standard for tyre storage and burial, as set out in the Environmental Protection Regulations 1987, Part 6 – Tyres. *(see Section 5 for further information)*
	Increased vehicular movements and tyre shredding Shredding of tyres	**Dust**	Nearest sensitive receptor is located 600 m west of the premises.	Air/wind dispersion	Health and amenity impacts	Slight	Unlikely	Low	Dust from increased vehicle movement is expected to be limited due to the short nature of the construction works required at the Premises. The Licence Holder has a water truck at the premises to suppress dust and

									vehicle speed limits are enforced. The Delegated Officer also considers that the provisions of Section 49 of the Environmental Protection Act 1986 are sufficient to regulate dust emissions. The Delegated Officer considers no additional regulatory controls are required.
Cat 57 and 64 Tyre storage and landfilling activities Shredding of tyres		**Noise**	Nearest sensitive receptor is located 600 m west of the premises.	Air/wind dispersion	Health and amenity impacts	Moderate	Possible	Medium	Noise emissions are not expected to significantly impact sensitive premises from heavy vehicle movement associated with the operation of the tyre shedder or constructing and filling the mono cell. The use of the tyre shredder is not expected to increase existing heavy vehicle operational activity. The Licence Holder has an ongoing requirement to comply with the Prescribed standard for noise emissions, as set out in the Environmental Protection (Noise) Regulations 1997. The Delegated Officer considers no additional regulatory controls are required.

Cat 57 and 64 Tyre storage and landfilling activities Shredding of tyres		**Odour:** associated with shredding tyres prior to burial	Nearest sensitive receptor is located 600 m west of the premises.	Air	Health and amenity impacts	Slight	Possible	Low	Odour emissions are not expected to significantly impact sensitive premises from the operation of the tyre shredder. The Delegated Officer considers no additional regulatory controls are required given the licence amendment application risk assessment.
		Leachate: infiltration from burial of shredded tyres	**Groundwater** **Local soils within the Premises**	**Land and groundwater** – direct infiltration into soil and groundwater.	Alteration to soil and /or vegetation. Alteration to groundwater that has the potential to disrupt ecological processes of groundwater with excess, heavy metals and hydrocarbons. Groundwater monitoring is a requirement in the existing licence (Condition 2.4.1)	Slight	Possible	Low	The local groundwater aquifer is between 4 m and 17 m. Groundwater is not of potable quality as defined by the Australian Drinking Water Guidelines (2004). No bores are used in this area. The EP Regs 1987, Part 6 – Tyres, stipulate that tyres must be buried under a final soil cover of no less than 500 mm. The batches must be separated by at least 100 mm of soil and each consisting of not more than 40 m^3 of tyres reduced to pieces. The licence holder intends to cap the shredded tyre cell with a minimum of 1000 mm of restoration soils and 300 mm of soil separating the cell layers.

5. Risk assessment – Air emissions in the event of a tyre fire

Description of air emissions during a tyre fire

Tyre fires can break down the tyres into hazardous compounds including gases, heavy metals and oils. Emissions may include particulates, carbon monoxide (CO), sulfur oxides (SO2), oxides of nitrogen (NO_x), and volatile organic compounds (VOC_s), polycyclic aromatic hydrocarbons (PAHs), benzene, styrene, phenols butadiene and heavy metals. In addition, firefighting foam may contain hazardous materials including surfactants, emulsifiers, modifiers, pyrolytic oils and potentially perfuoroctanoic acid (PFOA) and per and poly-fluoroalkyl substances (PFAS)

Identification and general characterisation of emission

Used tyres pose a considerable risk to the public and the environment due to the potential discharges and emissions produced during tyre fires. Tyre fires are difficult to extinguish and as such pose additional risk of spreading to other areas beyond the Premises. The intense radiant heat produced during a tyre fire can also inhibit fire-fighting efforts, and the incomplete combustion of tyres can cause a health risk from inhalation of particulates.

Description of potential adverse impact from the emission

Toxic gases from fire smoke can significantly impact the respiratory systems of the general public through inhalation and particulates and gases. Emissions generated from combustion of tyres will contain a number of pollutants that can cause significant acute and chronic health impacts to firefighters and nearby residents. Depending on the length and degree of exposure, these health effects could include irritation of the skin, eyes and mucous membranes, respiratory effects, central nervous system depression and cancer.

Criteria for assessment

The National Environment Protection (Ambient Air Quality) Measure (NEPM) 2003 recommends air quality standards that must be maintained. The potential discharges to air that will occur during a tyre fire on the Premises would contain mostly very fine particulates that can cause significant health impacts if inhaled. The NEPM contains criterion for these fine particles ($PM_{2.5}$) which have been applied to inform this Assessment.

Applicant controls

Potential sources of ignition will be restricted in the tyre storage and processing areas and fire-fighting equipment will be maintained on the Premises.
The burning time and severity of tyre fires can be reduced by the appropriate storage of whole and shredded tyres. The Applicant has acknowledged the recommendations made by DFES for the storage of tyres and has stated intended adherence to these standards at the Premises.

This assessment has reviewed the controls set out in Table 5 below.

Control	Description

Infrastructure	• All tyres (whole and shredded) will be stored according to the DFES Guideline GN02.
	• Storage of tyres (whole and shredded) will be located on a level hardstand clear of rubbish and combustible materials.
	• The Premises will be enclosed by fences to prevent arson
	• The existing water storage on site consists of:
	  ○ 1 x 450 m^3 tank with 5 days continuous flow water storage capacity
	  ○ 1 x 10 000L storage tank (containing mains water)
	  ○ 1 x 10 000 L water truck on site.

Management	• The Premises will be secured when unattended • The Licence Holder is required to comply with the prescribed standard for tyre storage and burial, as set out in the Environmental Protection Regulations 1987, Part 6 – Tyres. • Part 6 – Tyres, stipulate that tyres must be buried under a final soil cover of no less than 500 mm. The batches must be separated by at least 100 mm of soil and each consisting of not more than 40 m^3 of tyres reduced to pieces • The licence holder intends to cap the shredded tyre cell with a minimum of 1000 mm of restoration soils and 300 mm of soil separating the cell layers. This is more that the stipulated cover in the EP Regulations, Part 6 – Tyres.

5.1.1 Consequence

If emissions are released from a tyre fire within the Premises, then the Delegated Officer has determined that the impact of emissions of this fire will be a local scale impact with mid-level adverse health effects requiring medical treatment. Therefore, the Delegated Officer considers the consequence of air emissions during a tyre fire to be ***Major***.

5.1.2 Likelihood of consequence

Based upon the Licence Holder's controls and proximity to residences the Delegated Officer has determined that the consequence of air and gas emissions from a fire may only occur in exceptional circumstances. Therefore, the Delegated Officer considers the likelihood to be ***Rare***.

5.1.3 Overall rating of air emissions during a tyre fire

The Delegated Officer has compared the consequence and likelihood ratings described above with the Risk Rating Matrix (**Error! Reference source not found.**) and determined that the overall rating for the risk of negative health impacts from air emissions during a fire is ***Medium***

5.1.4 Key findings

The Delegated Officer has reviewed the information regarding the impact of air emissions on residents generated during a tyre fire and has found:

1. *Shredded tyres are more ignitable than whole tyres given the increased surface area for combustion.*
2. *The previous licence did not include regulatory controls in relation to shredded tyres.*
3. *Tyre storage controls can reduce the risk of impacts from fire;*
4. *Storage of used tyres can be regulated through conditions of the licence; and*
5. *The risk event is acceptable subject to multiple regulatory controls.*

5.2 Risk Assessment – Liquid emissions produced in the event of a tyre fire

5.2.1 Description of liquid emissions produced in the event of a tyre fire

During a tyre fire liquid emissions may be released from the Premises and cause soil and water contamination. Liquid emissions may result from burning tyres and the use of firefighting foams.

Burning tyres may release pryolytic oils containing hydrocarbons, metals and particulate matter to the environment. The use of firefighting foams could result in the release of compounds, such as surfactants, solvents, stabilisers and thickeners to the environment.

5.2.2 Identification and general characterisation of emission

During a tyre fire, a significant amount of contaminated liquid may be produced. The release of this material into the environment may cause environmental harm.

5.2.3 Description of potential adverse impact from the emission

Burning tyres release pyrolytic oil which can pool, run-off or leach into the environment and release acid gasses, Benzene, Butadiene, Volatile and semi- volatile organic compounds (VOCs and SVOCs), Benzoic Acid, Dioxins and Furans, Lead, Zinc, Heavy metals, Polynuclear aromatic hydrocarbons (PAHs) and Sulfur Compounds.

Two main compounds found in firefighting foam include per-fluoroalkyl and poly-fluoroalkyl substances (collectively PFASs). Per-fluorinated compounds such as PFOS and PFOA are compounds with fluorinated carbon atoms making them highly persistent and resistant to hydrolysis, photolysis and biodegrading under environmental conditions. Poly-fluorinated compounds such as 8:2 fluorotelomers have carbon atoms that are not fully fluorinated but on release to the environment will transform or partially degrade, resulting in a per-fluorinated end-point compounds.

The potential adverse impacts of firefighting foam need to be considered in terms of any potential chronic effects related to persistent toxic components as well as immediate effects. Aquatic environments are particularly sensitive to firefighting foam, related firewater and wastewater containing a variety of toxic contaminants. The high BOD (biochemical oxygen demand) of the foam can result in acute adverse impacts to waterways through depletion of oxygen. Firefighting foams have the potential to cause long-term adverse environmental and health impacts.

5.2.4 Criteria for assessment

Australian water quality guidelines (ANZECC and ARMCANZ 2000) provide recommended trigger values for freshwater and marine water. DWER Guidelines: Assessment and Management of Contaminated Sites provide ecological and human health assessment levels for soil.

Any discharges into the environment may be subject to the Environmental Protection (Unauthorised Discharges) Regulations 2004. Fire wastewater and any other wastes generated in the event of a fire may be subject to the Environmental Protection (Controlled Waste) Regulations 2004.

5.2.5 Applicant controls

The Applicants controls to manage pyrolytic oils and firefighting water are set out in Table 6 below.

Table 6: Applicants proposed controls for liquid emissions produced during tyre fires (from Application)

Control	Description
Infrastructure	• Under normal operating conditions, uncontaminated stormwater is pooled and contained in a number of sumps within the boundary where it is left to evaporate (see Figure 1) • The Premises surface has been graded to allow the pooling of stormwater into a series of sumps that funnel water into them in line with the natural flow of the land. • Two dedicated sumps have been designed at either end of the proposed tyre storage cells each totaling an area of 50 m x 20 m x 0.5 m and each with a capacity for 500 m3 and liquid capacity of 500,000 litres (identified in dark blue in Figure 1). • Tyre area sumps can hold more than a 1 in 100 year 24 hour storm event. Bureau of Meteorology (BOM) data indicates that a 1 in 100 storm event could result in 347 mm over the 24 hour period. Storage in the sump equates to 7937 mm.
Management	• Following a tyre fire contaminated liquid contained within the sumps will be left to evaporate. • Housekeeping practices and safe work procedures will be implemented to reduce the likelihood of a fire at the Premises

Figure 1 – Stormwater drainage areas in blue.

5.2.6 Consequence

If liquids used in fire-fighting are released to the environment they have the potential to impact soil, groundwater and the nearby surface water environment. The Delegated Officer has determined that this may lead to environmental criteria exceedances. Therefore, the Delegated Officer considers the consequence of liquid emissions from a tyre fire to be ***Major***.

5.2.7 Likelihood of consequence

The Delegated Officer has determined that the likelihood of liquid emissions from a tyre fire causing a negative impact on the soil, groundwater and surface water environment will be rare, due to the available storage to prevent release of contaminated liquid into the environment. Therefore the Delegated Officer considers the likelihood of a negative impact on soil, groundwater and surface water environment to be ***Rare***

5.2.8 Overall rating of liquid emissions produced during a tyre fire

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Rating Matrix (**Error! Reference source not found.**) and determined that the overall rating for the risk of liquid emissions from a tyre fire is ***Medium***.

5.2.9 Key findings

The Delegated Officer has reviewed the information regarding impacts from liquid emissions from a tyre fire and has found:

1. *The tyre storage catchment sump has the capacity to capture stormwater in a 100 year 24 hour storm event according to data from Bureau of Meteorology.*
2. *The tyre storage catchment sump needs to be suitably sized to capture contaminated liquid produced in a tyre fire and needs to prevent release of contaminants from the Premises.*
3. *Contaminated liquid produced in a tyre fire needs to be fully contained at the Premises and not released to waterways, other bodies of water or soil.*
4. *The tyre storage catchment sump must have the capacity to contain 162,000 litres of liquid (10 litres per second for 3 hydrants for 90 minutes).*
5. *The Delegated Officer has determined that the current sumps for the storage of contaminated liquid are designed to prevent discharge to the environment.*

6. Decision

The Delegated Officer has determined that an amendment be made to the Licence with the inclusion of additional wording in licence conditions to allow the use of the tyre shredder, reduce the distance of the boundary fence and the allowable area of landfilling.

Condition 1.3.3 has been amended to reduce the distance to the boundary where waste can be stored and Condition 1.3.14 and 1.3.15 have been updated to include the requirements for tyre storage outlined in the DFES Tyre Guideline. 1.3.20 has been added to address storage of shredded tyres in accordance with the DFES Tyre Guidelines.

The Delegated Officer considers the amendment of burying shredded tyres will increase the risk of emissions at the premises.

The Delegated Officer considers the additional conditions are appropriate and in line with other premises as assessed across the State, and in accordance with DWER's regulatory approach.

The Delegated Officer has considered DWER's *Guidance Statement: Regulatory Principles, Guidance Statement: Setting Conditions* and *Guidance Statement: Risk Assessment* in granting this amendment, and consider that this amendment will impact the risk profile of the premises, which is currently considered as Medium. The risk profile has changed to High.

Conditions 1.1.3 through to 3.3.1 currently on the Licence capture operational emissions relating to tyre storage, landfilling and receiving and treating liquid waste.

7. Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 30 May 2018. On 2 July 2018 the Licence Holder confirmed that no comments were to be provided on the draft. Amendment Notice 1 was granted following that correspondence.

8. Amendment

1. Definitions of the Licence is amended by the insertion of the red text shown in underline below:

2. Condition 1.3.3 set out in Table 1.3.2 of the Licence is amended by the insertion of the red text shown in underline below:

Table 1.3.2: Waste processing		
Waste type(s)	**Process**	**Process limits** [1,2]
All	Disposal of waste by landfilling	• Shall only take place within designated landfill trenches or cells; • No waste shall be temporarily stored or landfilled within 35 m from the boundary of the premises; and • The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3 m.
Inert Waste Type 2 – Tyres	Receipt, handling, storage prior to re-use or disposal by landfilling	Refer to conditions 1.3.12 – 1.3.15 and 1.3.20
Inert Waste Type 2 – Tyres	Disposal of shredded tyres by landfilling	• Shall only take place within designated landfill trenches or cells as depicted in Schedule 1: Maps • No waste shall be temporarily stored or landfilled within 16.5 m from the eastern boundary of the premises. • The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3 m.

3. Condition 1.3.14 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

1.3.14 The Licensee shall ensure that tyre storage and burial complies with the following:

(a) a maximum of four individual stacks can be grouped;
(b) each ~~stockpile~~ stack is located at a minimum of ~~10~~ 18 m from any fence, combustible materials or walls;
(c) each ~~stockpile~~ stack is a maximum of ~~100~~ 60 m^2 in area;
(d) each ~~stockpile~~ stack is a maximum of ~~3 m~~ 3.7 m in height,
(e) a minimum separation distance of 2.5 m at the base must be maintained between stacks;
(f) a clear separation distance of no less than 18 m must be maintained between each tyre pile (4 stacks),
(g) buried tyre chip layers are less than 3 m deep,
(h) tyre shreds shall be free of contaminants such as oil, grease, petrol and diesel fuels that could create a fire hazard,
(i) in no case should the tyre shreds contain the remains of tyres that have been subjected to fire,
(j) tyre shreds shall have a maximum of 25% (by weight) passing a 38mm sieve,
(k) tyre shreds shall have a maximum of 1% (by weight) passing a 4.75mm sieve,
(l) tyre shreds shall be free of fragments of wood, wood chips and other fibrous organic matter,
(m) tyre shreds shall have less than 1% (by weight) of metal fragments that are not at least partially encased in rubber,
(n) metal fragments that are partially encased in rubber shall protrude no more than 25mm from the cut end of the tyre shred on 75% of the pieces and by no more than 50mm on 100% of the pieces,
(o) there is to be no direct contact between tyre shred and soil containing organic material e.g. topsoil; and
(p) tyre shred to be separated from soil with a geotextile.

4. Condition 1.3.15 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

~~1.3.15 The Licensee shall ensure that tyre stacks at the Premises do not obscure fire protection equipment (including fire hydrants and fire hoses) or related signage.~~

1.3.15 The Licensee shall implement the following measures for managing the risk of fires:

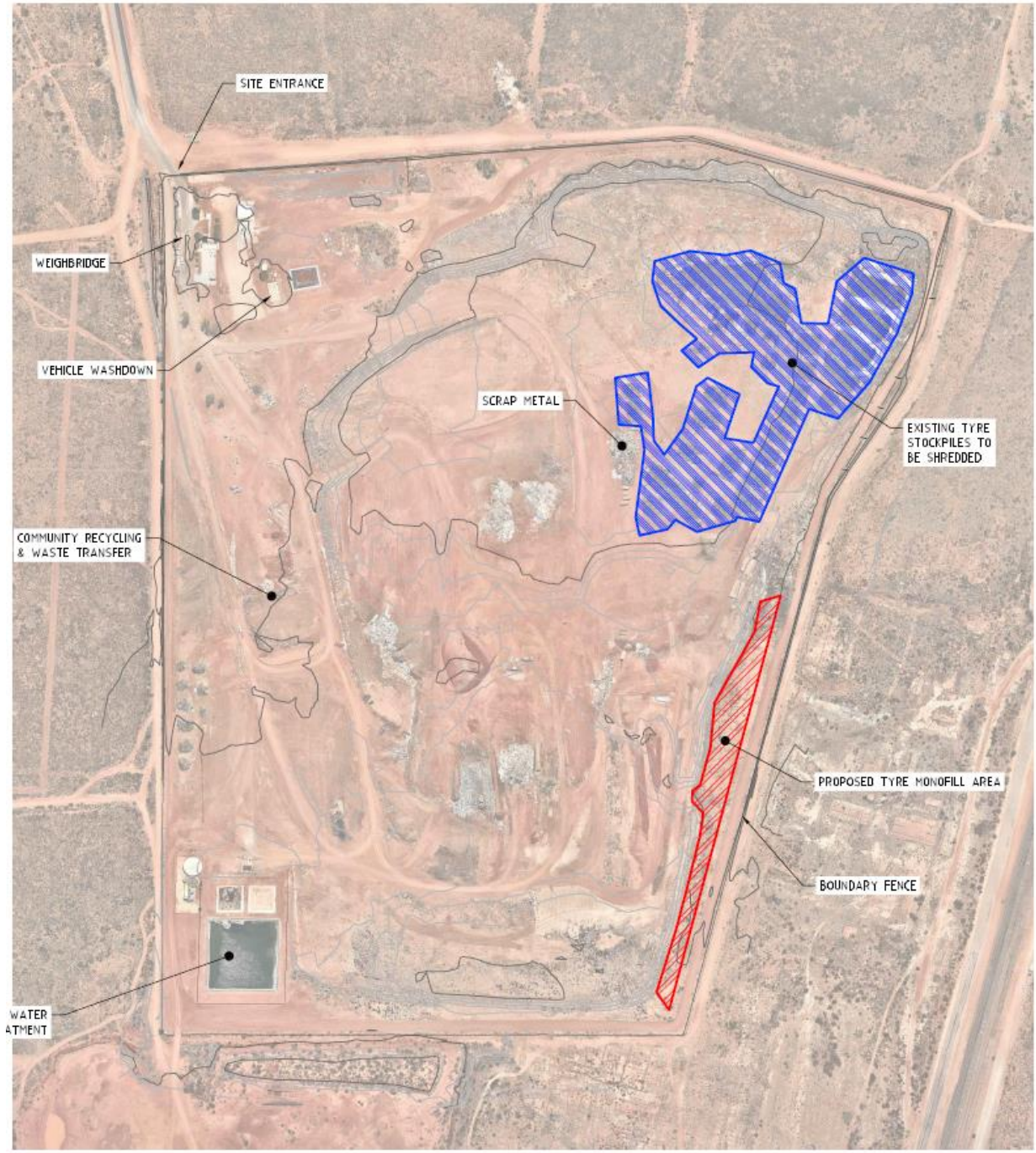
(a) ensure that firefighting equipment stored onsite is capable of controlling and extinguishing a tyre fire;
(b) ensure that tyre stacks do not obscure fire protection equipment (including fire hydrants and fire hoses) or any related signage; and
(c) maintain a firebreak of at least 3 meters around the boundary at the premises.

5. The Licence is amended by the insertion of the following Condition 1.3.20:

1.3.20 The Licensee shall ensure that shredded tyre storage is consistent with the sections of the DFES Tyre Guidelines outlined in Schedule 2.

Schedule 1: Maps

Figure 2: Plan of premises and location of tyre burial cell



Schedule 2: Shredded Tyre Storage (Part of DFES Tyre Guidelines)

If shredded tyres are temporarily stored on the ground in piles, with no containment (internal or external) the preferred configuration of piles for firefighting purposes is for long thin rows rather than square or round piles. This configuration permits the rapid creation of a fuel break in the material either side of the burning area resulting in a more manageable fire size.

12.2 Maximum dimensions and minimum separation distances for rows of shred or crumb

- Max 20 m long (followed by 5 m gaps at ends)
- 3 m high (to avoid heating & spontaneous combustion)
- Width of base 5 m (approximate maximum)
- 6 m between rows (to permit movement of earth moving equipment to create fuel break)
- No closer than 10 m to structures (either same lot or neighbouring)

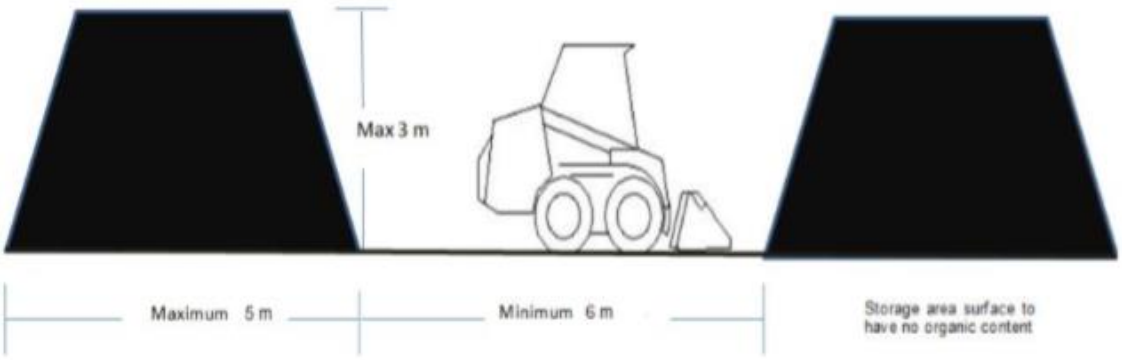


Fig 12.2.1 Cross sectional dimensions of shred and crumb rows

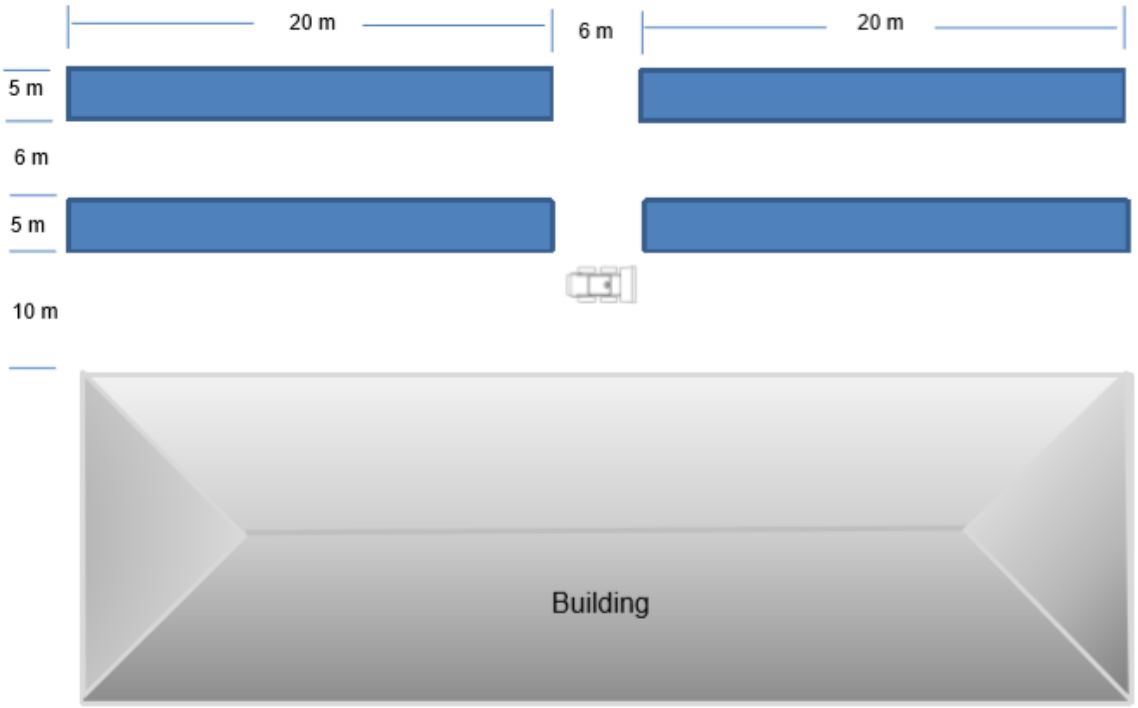


Fig 12.2.2 Plan view of separation distances

Schedule 3: Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 7 below.

Table 7: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 8 below.

Table 8: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite impacts wider scale:** mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	• **onsite impacts**: high level • **offsite impacts local scale**: mid-level • **offsite impacts wider scale**: low level • Short-term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded	• **Adverse health effects:** mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • **Local scale impacts**: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	• **onsite impacts**: mid-level • **offsite impacts local scale**: low level • **offsite impacts wider scale**: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• **Adverse health effects:** low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • **Local scale impacts:** mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	• **onsite impacts**: low level • **offsite impacts local scale**: minimal • **offsite impacts wider scale**: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • **Local scale impacts:** low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	• **onsite impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal to amenity • Specific Consequence Criteria (for public health) met

^ Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting.*

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines.*

"onsite**"** means within the Prescribed Premises boundary.

Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment Table 9 below:

Table 9: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

Appendix 1: Key documents

	Document title	Availability
1	Licence L6917/1997/8 – South Hedland Landfill	accessed at www.dwer.wa.gov.au
2	Department of Fire and Emergency Services (DFES) published Guidance Note GB02: *Bulk Storage of Rubber Tyres including Shredded and Crumbed Tyres* (DFES Tyre Guidelines), which is valid until November 2019.	accessed at www.dfes.wa.gov.au
3	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	accessed at www.dwer.wa.gov.au
4	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	
5	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	
6	DER, February 2017. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	
7	DER, February 2017. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	