Lion Mushrooms Composting Facility

Fire & Emergency Management Plan

18 March 2024

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PREPARED FOR:

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Revision Schedule

Revision No.	Date	Description	Prepared by	Approved
03	18/03/2024	Draft Issue updated with DWER Comments	KHC	SDK
02	11/03/2024	Draft Issue updated with Client Comments	KHC	SDK
01	29/02/2024	Draft Issue for comment	KHC	SDK

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Contents

Emergency Contact Information

Site Contacts

Role	Name	Contact Number
Branch Manager	TBC	TBC
Emergency Controller	TBC	TBC
Technical Supervisor	TBC	TBC
Area Warden	TBC	TBC
First Aider	TBC	TBC
First Aider	TBC	TBC
First Aider	TBC	TBC

External Contacts

Name		Contact Number		
Fire Brigade	DFES	000	or	112
Police		000	or	112
Ambulance		000	or	112
Poisons Information Centre		13 11 26		
Water Corporation		13 13 75		
Electrical Supply Authority	Western Power	13 13 51		
Gas Supply Authority	ATCO Gas	13 13 52		
Medical	Gingin Medical Centre	08 9575 2300		
Medical	Joondalup Hospital	08 9400 9400		
Shire of Gingin	Ranger	08 9575 5140		
Crisis Counselling	To be confirmed	TBC		
Work Health and Safety (WHS)	To be confirmed	TBC		
State Emergency Service		08 9780 1900	or	132 500

1. Introduction

1.1 Purpose

The purpose of this document is to outline the emergency provisions and procedures applicable to the Lion Mushrooms Composting Facility, based on assessment of the risk of different fire events and relevant publications in order to fulfil the facility licence requirements from the Department of Water and Environmental Regulation (DWER).

The Fire & Emergency Management Plan (FEMP) includes the following:

- Site information, including site configuration, types of materials processed and stored, operational processes and emergency equipment
- Emergency Contact Information
- Identification of Key Risks to the Site
- Pre-planning requirements
- Fire Emergency Response Procedures
- Summary of fire water run-off and containment provisions

1.1 Sources of Information

The following primary sources of information have been used in the preparation of this document, in addition to other documents identified in Section 7:

- Mushroom Composting Facility Works Approval Application dated 1 September 2023
- Site Plan – Lion Mushroom Composting Facility, prepared by Hindley & Associates Building Designers
- DFES Guidance Note: GN01: Firefighting Water Supply Considerations for Special Hazard and Dangerous Goods Sites [1]
- DFES Guidance Note: GN03: Fire Safety Considerations for Open Yard Storage [2]
- Australian Standard AS 2419.1:2005 – Fire Hydrant Installations | Part 1: System Design, Installation and Commissioning [3]

1.2 Risk Assessment Process

1.2.1 Context and Objectives

A simplified risk assessment has been undertaken to identify the most relevant fire emergencies to be considered for pre-planning for emergency responses and potential adverse outcomes.

1.2.2 Likelihood Ratings

The “Likelihood” for difference scenarios occurring is presented below based on a qualitative description of likelihood.

Almost certain:	A	Will occur during the lifetime of the site, regardless of maintenance or human error
Likely:	B	Strong possibility that the event will occur during the lifetime of the building
Moderate:	C	Probable that the event will occur during the lifetime of the building
Unlikely:	D	Not expected to occur during the lifetime of the facility based on reasonable standards of maintenance and management in use
Rare:	E	Unlikely that conditions will arise that would result in the event occurring during the lifetime of the building

Table 1.1 - Definition of Likelihood used for Risk Assessment

1.2.3 Consequence Ratings

The “Consequence” for different outcomes are outlined below in Table 1.2 below. On the basis that the buildings on site contain few occupants and are provided with egress points which are within the distances prescribed under the BCA Deemed-to-Satisfy provisions, the life safety considerations are not directly included in the risk assessment.

Major:	5	Full replacement of building(s), spread to adjoining properties
Significant:	4	Full refurbishment or replacement of the building
Moderate:	3	Replacement of fixed equipment or large mobile plant
Minor:	2	Facility offline for short period for minor repairs or investigation
Insignificant:	1	Localised damage, operations resume within one business day

Table 1.2 - Categorisation of Consequence, Property Protection Considerations

1.2.4 Risk Rating Matrix

The overall “Risk Rating” for a particular fire scenario is determined based on the combination of the “Likelihood” of an event occurring, and the “Consequence” of the outcome of the event.

	Risk Rating				
	Consequence				
Likelihood	Insignificant (1)	Minor (2)	Moderate (3)	Significant (4)	Major (5)
Almost Certain (A)	Moderate	High	High	Extreme	Extreme
Likely (B)	Moderate	Moderate	High	High	Extreme
Moderate (C)	Low	Moderate	Moderate	High	High
Unlikely (D)	Low	Low	Moderate	Moderate	High
Rare (E)	Low	Low	Low	Moderate	Moderate

Table 1.3 - Risk Rating Matrix

2. Facility Information

2.1 Location and Site Plan

The new Lion Mushrooms Composting Facility will be constructed at Lot 800 & Lot 801 Military Road, Muckenburra, WA, 6503, with an overall site area of approximately 13,200 m^2. Figure 2.1 shows the location of the site. The site is located adjacent to bush fire prone areas.

Figure 2.1 - Site Location

2.2 Site Layout

The site will be generally configured as a single building with open yard storage. All sides of the building remain closed, with the exception of roller door openings to allow truck access.

The layout of the site is shown in Figure 2.2.

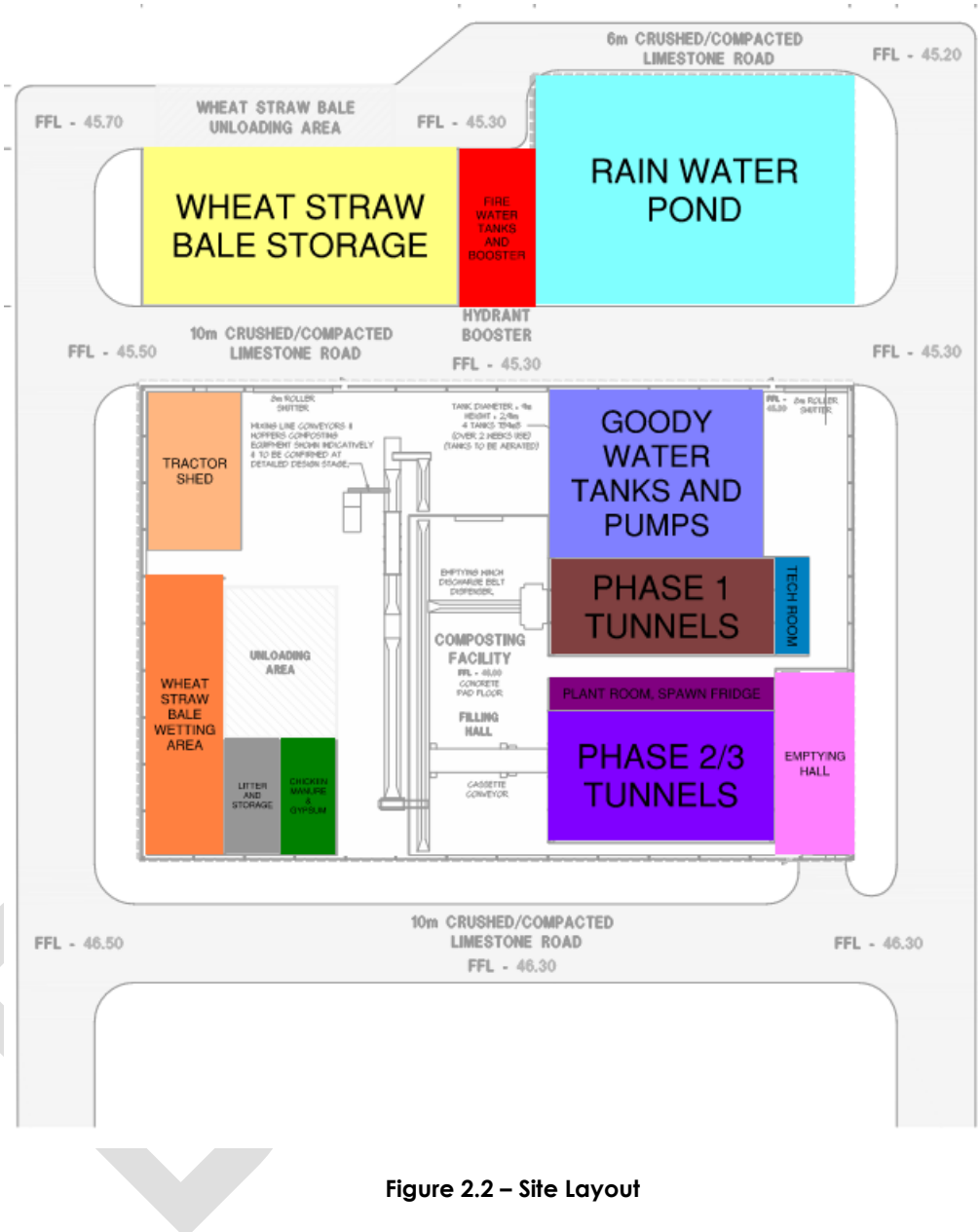

Figure 2.2 – Site Layout

2.3 Operations

The operation of the site is described below, with a flow chart of the process shown in Figure 2.3:

- The trucks and trailers enter the site to deliver raw materials via the two unloading areas the raw materials including wheat straw bales, canola seed, gypsum and chicken manure.
- Wheat straw bales are moved from the wheat what straw bale storage to the wheat straw bale wetting area to be wet with “Goody water”.

- Chicken manure, gypsum and canola seeds are mixed with the wet straw bales and transferred via conveyor to the Phase 1 tunnels
- Compost is left within the Phase one tunnels to sit.
- Compost is transferred to the Phase 2/3 tunnels. The composting process results in a temperature increase which kills off weeds, plant seeds, moulds and micro-organisms.
- Mushroom spawn is added and grown through the substrate for a minimum of two weeks prior to recovery from the tunnels.
- Compost product is removed from the tunnels and loaded into storage crates and loaded onto trucks for transport to a mushroom farm.

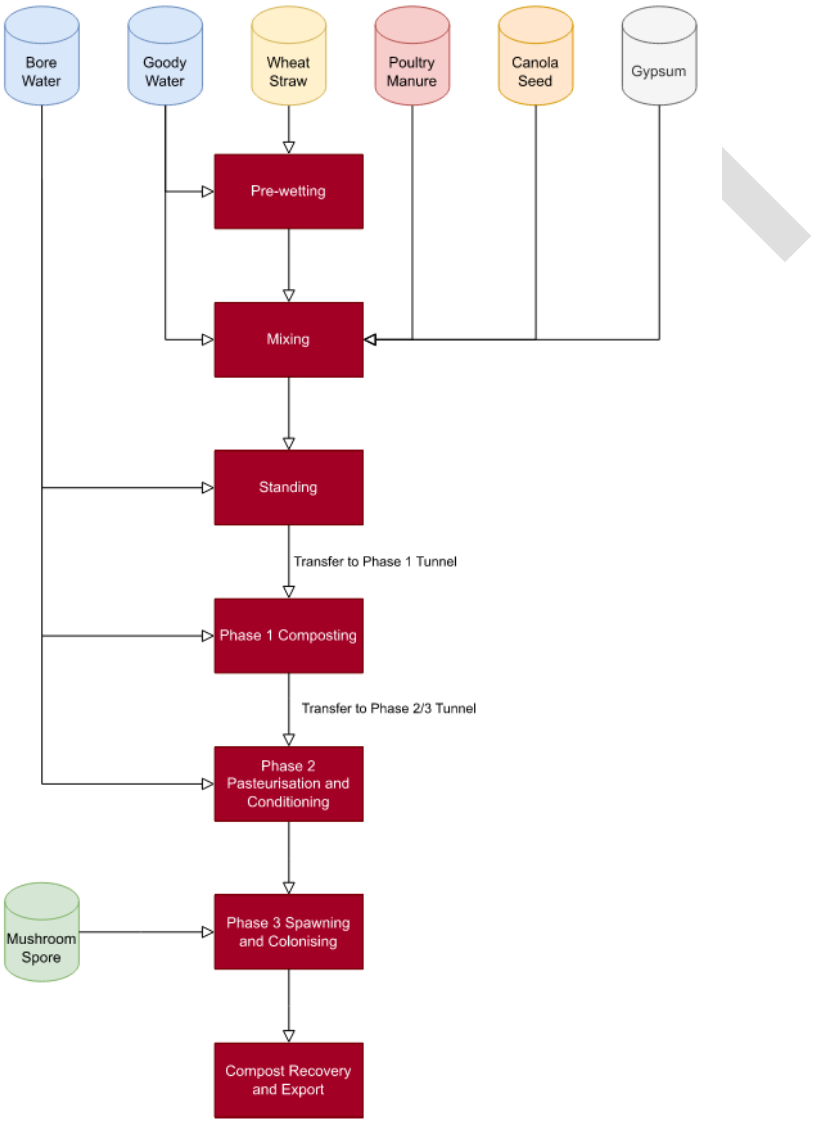

Figure 2.3 – Process Flow Chart

2.4 Material Type and Process

The site will process raw materials to produce mushroom compost, including the following:

- Delivery of wheat bales to the external storage area
- Delivery of raw materials such as gypsum, canola seed and chicken manure to the internal storage bunkers
- Wetting and mixing of wheat bales with other raw materials
- Transport of mixed materials to composting tunnels via conveyor systems
- Composting and wetting of mixed materials within tunnels which raise temperatures to approximately 80°C.
- Wetting of compost within composting tunnels
- Transferring of compost between tunnels via conveyor system
- Mixing of mushroom spores with compost
- Loading of compost onto trucks for transport.

2.5 Dangerous Goods

Dangerous Goods are not present on site in quantities which exceed “minor storage” under AS 1940.

Diesel will be stored in a bunded tank with LPG being stalled in bottles located externally.

- 2 kL of Diesel stored in a bunded tank
- 6 Bottles of LPG
- Materials are kept stored in Australian Dangerous Goods approved packages provided by manufacturers

2.6 Equipment and Machinery

2.6.1 Mobile Equipment

The site is provided with the following mobile equipment:

- Trucks
- Forklifts
- Front end loader operators
- Tractors

2.6.2 Communication Equipment

The site is provided with the following on-site communication equipment:

- Two-way Radios
- Mobile phones

2.7 Emergency Services Response

2.7.1 Emergency Services Provisions

The site is provided with a combination of fixed and portable firefighting and emergency response equipment, including the following:

- Fixed on-site fire hydrants
- Fire hose reels, portable fire extinguishers and fire blankets
- Emergency Eyewash stations
- First Aid Kits

2.7.2 Emergency Services Access

Emergency Services access to the site is from Military Road, and the nearest fire station is the Gingin West Fire Station, located at 60 King Drive, Woodridge WA 6041, approximately 17 km from the site, as shown in Figure 2.4.

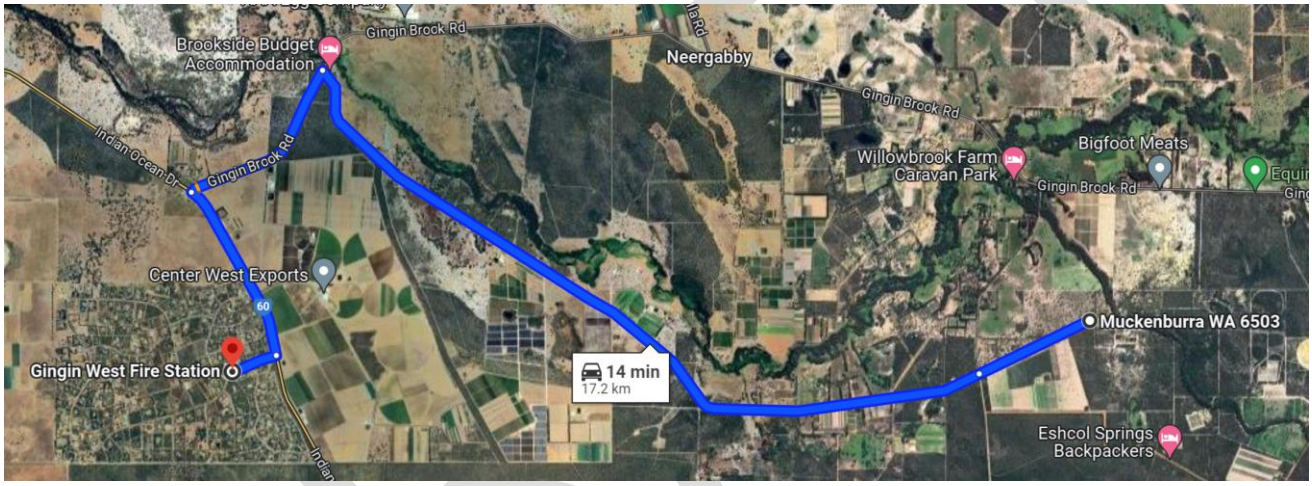

Figure 2.4 - Emergency Services Access to Site

Figure 2.5 shows the emergency services vehicle access routes on the site. Access is from the site entry off Chitna Road.

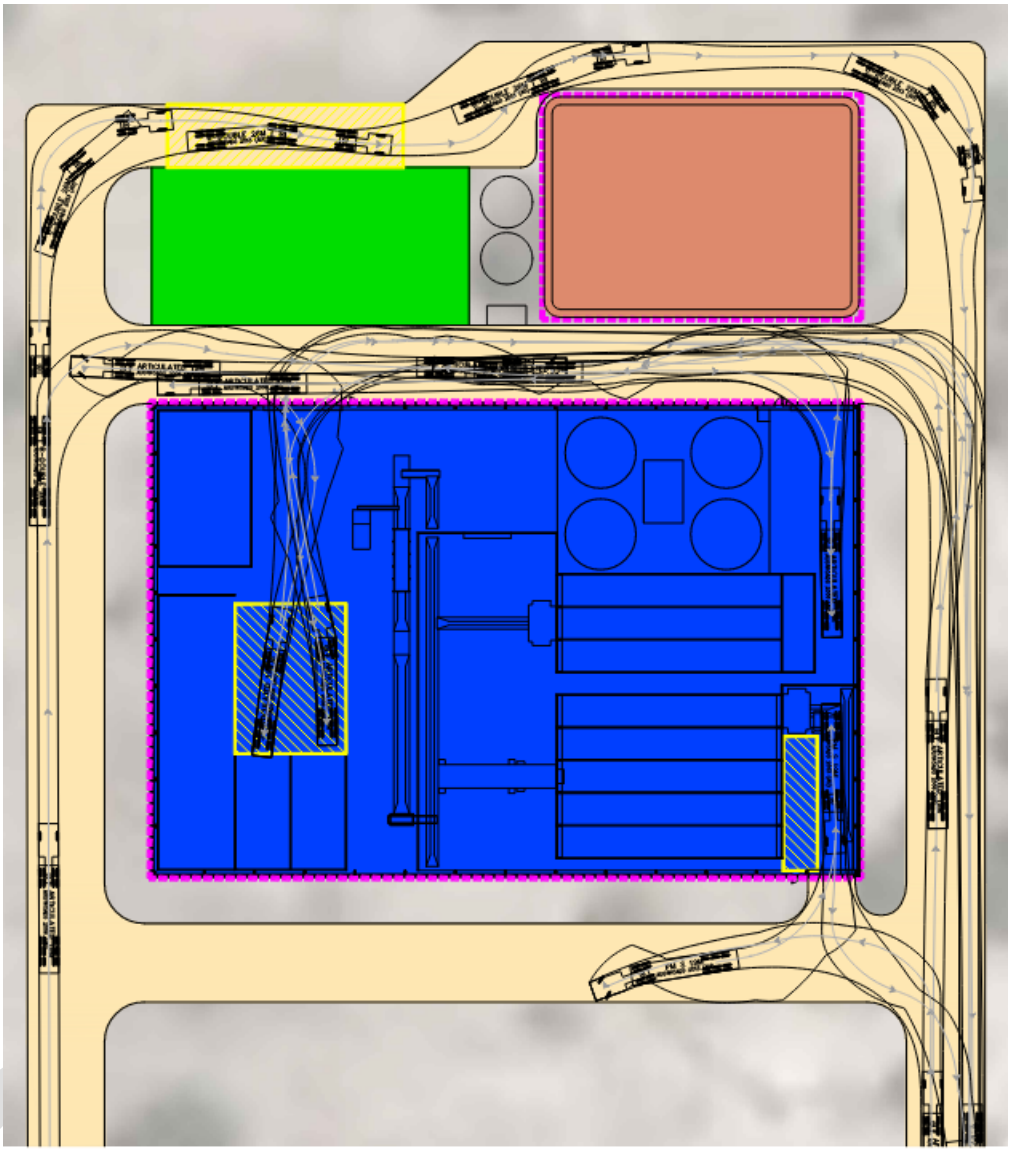

Figure 2.5 - Emergency Vehicle Site Access Routes

2.7.3 First Attack Fire and Emergency Equipment

The site shall be provided with first attack fire and emergency equipment for initial firefighting activities undertaken by staff.

- Portable fire equipment in accordance with AS 2444 [4]
  - Dry chemical powder portable fire extinguishers adjacent to each building entry
  - Wet chemical portable fire extinguishers to
- Fire hose reels based on open yard in accordance with AS 2441 [5]
  - Coverage shall reach all point of the floor with 36 metres of hose and 4 metres water stream
  - Located at the perimeter of the site and provided with bollards against mechanical damage

2.7.4 Fire Brigade Equipment

The site shall be provided with fire brigade equipment in accordance with AS 2419.1 [3] and DFES Guidance Notes GN01 Firefighting Water Supply Considerations for Special Hazard & Dangerous Goods Sites and GN03 Fire Safety Considerations for Open Yard Storage.

- Fire hydrant system providing coverage based on open yard in accordance with AS 2419.1.
  - Coverage shall reach all areas of the open yard with 60 metres of hose and 10 metres water stream
  - System shall be designed to provide a minimum of 4 hours water supply, based on two operating hydrants at 10 L/s each

3. Fire Risk Assessment

Further to the risk assessment process outlined in Section 1.2, and considering the site details as outlined in Section 2, the following table presents the identified risk ratings determined in accordance with Table 1.3, based on the physical and management controls, in relation to the Fire Emergencies considered under this plan. The likelihood and consequence have been determined in accordance with Table 1.1 and Table 1.2 respectively:

Emergency Type	Location	Primary Fuel / Ignition Source	Likelihood	Consequence	Risk Rating	Comment
Fire	What Straw Bale Storage	Large what straw bale stacks Wheat bales may be ignited from vehicles, smoking or embers from bushfire.	Moderate	Moderate A large potential fire due to large wheat bale stack Area is separated from main facility	Moderate	Limit wheat bale stacks Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.
Fire	Unloading area and storage bunkers	Wet Wheat Bales, Chicken Manure and Gypsum Stock may be ignited from vehicles, smoking or embers from bushfire.	Unlikely	Moderate Localised impact only. Area is separated from storage areas by concrete bunkers	Moderate	Limit chicken manure stacks Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.
Fire	Tractor Shed	Tractors parked within tractor shed Ignition from vehicles	Unlikely	Moderate Localised impact only. Area is separated from storage areas.	Moderate	Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.

Emergency Type	Location	Primary Fuel / Ignition Source	Likelihood	Consequence	Risk Rating	Comment
Fire	Conveyors	Stock or conveyor belts. Ignited by malfunction conveyor equipment	Unlikely	Significant Potential shut down of conveyors leading to the reduction of production	Moderate	Detectors below conveyor belts Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.
Fire	Goody Water Pumps	Pump hardware may be ignited from spark, smoking or embers from bushfire.	Unlikely	Moderate Localised impact only. Area is separated from storage areas by sea containers.	Low	Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.
Fire	Phase 1 Tunnels	Stock within Tunnels may ignite due to high temperatures	Unlikely	Significant Fire potentially undetected due to covered nature of tunnel Localised impact only. Area is separated from other areas by tunnels	Moderate	Provide temperature sensors within tunnels to detect high temperatures and activate pumps to inject water into the tunnels and maintain moisture levels Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.

Emergency Type	Location	Primary Fuel / Ignition Source	Likelihood	Consequence	Risk Rating	Comment
Fire	Techroom	Control equipment may be ignited from spark.	Moderate	Moderate Damage to control equipment may result in halting of production	Moderate	Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment. Automatic suppression systems may be considered to reduce risk of impact on operations.
Fire	Phase 2/3 Tunnels	Stock within Tunnels may ignite due to high temperatures	Unlikely	Significant Fire potentially undetected due to covered nature of tunnel Localised impact only. Area is separated from other areas by tunnels	Moderate	Provide temperature sensors within tunnels to detect high temperatures and potentially activate pumps to inject water into the tunnels Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.
Fire	Plant Room, Spawn Fridge	Plantroom may be ignited from spark, smoking or embers from bushfire	Moderate	Moderate Damage to plant may result in halting of production	Moderate	Provide detection within plantroom Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.

Emergency Type	Location	Primary Fuel / Ignition Source	Likelihood	Consequence	Risk Rating	Comment
Fire	Emptying Hall	Stock catching fire from vehicle sparks or bush fire embers	Unlikely	Moderate Localised impact only, unlikely to ignite other materials Damage to vehicles	Moderate	Fire and emergency equipment are provided to site for initial fire attack. Fire brigade equipment is provided. Regular servicing maintenance on fire equipment.

Table 3.1 - Risk Identification and Rating

4. External Impacts from Fire Event

4.1 General

This section outlines the anticipated external impacts of critical fire events in terms of water runoff and smoke production.

4.1.1 Water Run-off

In the event of a fire at the areas for compost activities, i.e. within the composting facility, fire water will be contained by impermeable swales, preventing run-off to other areas.

In the event of a fire within external areas of the site, the water is directed to the rain water pond through external swales, which is sized to 1258 m^3, based on a 1/20 year 24 hour storm event. The pond is provided with a HDPE liner.

4.1.2 Smoke Spread

In the event of a fire, smoke from an internal fire will vent to atmosphere or via the ridge vent at the top of the roof.

External smoke movement will be governed by the prevailing wind. Monitoring of smoke and combustion products may be undertaken by DFES or DWER at the discretion of the emergency services.

Smoke outside is unlikely to affect the general public. A public health alert will be issued by Government if smoke is likely to affect residential areas.

5. Emergency Response Procedures

5.1 General Requirements

In the event of a FIRE, the following procedures shall be followed:

1. ALERT and ASSIST anyone in immediate danger, unless this will put you in danger
1. IF the fire is in an isolated area AND YOU HAVE BEEN TRAINED, attempt to extinguish with a portable fire extinguisher or fire hose reel
2. NOTIFY the Emergency Response Team – Branch Manager, Emergency Controller, Area Warden
3. CALL 000 and state the following:
    a. Your Name
    b. Type of Incident (e.g. Vehicle Fire, Wheat Bale Fire, Conveyor fire)
    c. Site Address – Lion Mushroom Composting Facility, **Lot 800 Military ROAD, Gingin**.
    d. Any INJURIES
4. SHUTDOWN any operating plant with RED ISOLATION BUTTON
5. ALERT driver at compactor to SHUT DOWN and stand by to move vehicle away from compactor and Recycling Shed
6. FRONT END LOADER OPERATOR
    a. Fire smaller than 2 m^2 – if trained, remove burning material and unload on external road
    b. Fire larger than 2 m^2 – if safe to do so, ensure clearance to other combustible material exceeds 10 metres
7. Keep clear of emergency personnel and provide assistance when requested.
8. Await instruction from Emergency Response Team.
9. If in doubt, proceed to the MUSTER POINT, taking care to avoid vehicles.

5.2 Additional Actions – Branch Manager and Emergency Controller

Additional actions to be coordinated and undertaken by the Branch Manager and Emergency Controller:

10. Meet Emergency Services at site entry and provide briefing and copy of relevant Safety Data Sheets
11. Notify neighbouring properties
12. Initiate Evacuation where required.
13. Commence Roll Call for staff and ensure all public and off-site personnel are accounted for. NOTIFY FIRE BRIGADE if any staff or visitors are unaccounted for.

5.3 Post Emergency Actions

Following all-clear from Emergency Services and Chief Warden / Area Warden, the following actions are required:

1. Debrief staff and confirm contacts for Employee Assistance Program, Work Health and Safety

2. Identify areas which may recommence operations
3. Barricade affected areas and lock-out associated equipment until repaired
4. Provide assistance to any investigators and emergency responders

6. Prevention and Preparedness

6.1 Inspections and Maintenance

Regular inspections of the site are to be carried out to confirm the following requirements are satisfied, including maintenance of fire safety equipment in accordance with the requirements of AS 1851:2012:

6.1.1 Fire and Safety Equipment

- Fire hose reels are in place and accessible
- Portable fire extinguishers are in place and accessible
- Fire hydrants are tagged and maintained
- Fire hydrant system pumps are online and ready
- Fire hydrant pump backup generator fuel tank is at least ¾ full

6.1.2 Building and General Site Features

- Road and access are clear and free from obstruction
- Ensure storage limits and markings are in place and visible
- Ensure Safety Data Sheets are located at the site entry
- Site is secure

6.2 Site Access

Access to the site is to be controlled via the site office.

Site visitors and personnel who have not been inducted shall be escorted at all times, except when moving to designated public drop-off areas.

6.3 Staff Training and Drills

Site staff shall be provided with emergency awareness training, at commencement with refresher within six months of starting on site. Training shall include primary training in the use of on site emergency equipment, portable fire extinguishers, fire blankets, fire hose reels, spill response kits, and the location of emergency shut-off points.

Additional training applies to Emergency Response Team members, including additional responsibilities and contact requirements in the event of an emergency.

Emergency response drills shall be undertaken on a six-monthly basis, including emergency alarm testing and responses, and evacuation times. Emergency response drills shall include different emergency scenarios and locations. Post-drill debriefs shall be carried out, with the date, time, and nature of the drill recorded and retained on site.

6.4 Review

This Fire & Emergency Management Plan shall be reviewed every three years, when change to the function or use of the site, or when change in key personnel occurs.

7. References

[1] DFES Hazmat Branch, Guidance Note: GN01 | Firefighting Water Supply Considerations for Special Hazard & Dangerous Goods Sites, Perth: Department of Fire & Emergency Services, 2020.

[2] DFES HAZMAT Branch, Guidance Note: GN03 | Fire Safety Considerations for Open Yard Storage, Perth: Department of Fire & Emergency Services, 2020.

[3] Standards Australia, Australian Standard 2419.1:2005 - Fire Hydrant Installations, Part 1: System Design, Installation and Commissioning, Sydney: Standards Australia, 2005.

[4] Standards Australia, Australian Standard 2444:2001 - Portable Fire Extinguishers and Fire Blankets - Selection and Location, Sydney: Standards Australia, 2001.

[5] Standards Australia, Australian Standard 2441:2005 - Installation of Fire Hose Reels, Sydney: Standards Australia, 2005.

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