SMITHFIELD MATERIALS RECOVERY FACILITY FIRE MANAGEMENT STRATEGY OVERVIEW

POLYTRADE RECYCLING
Providing Best Solutions & Services

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1 INTRODUCTION

Polytrade Pty Ltd (Polytrade) is looking to establish a materials recovery facility (MRF) at Smithfield. This document provides an overview of the propose fire management measure to be implement for the operation of MRF.

The fire management strategy will adhere to the below hierarchy:

- Fire Risk Analysis
- Fire Prevention System
- Fire Detection System
- Fire Suppression System

A fire management infrastructure will be designed for the MRF which accounts for a robust fire systems design, will be prepared by experts according to requirements of relevant building codes and standards as follows:

- National Construction Code (NCC) and all relevant Australian Standards including:
    - AS 1603 Automatic fire detection and alarm systems
    - AS 1670 Automatic fire detection and alarm systems – System design, installation, and commissioning
    - AS 2118 Automatic fire sprinkler systems
    - AS 2419 Fire hydrants
    - AS 2441 Fire hose reels
    - AS 2444 Portable fire equipment – Selection and location
    - AS 4428.1 Control and indicating equipment: Fire
- Fire Safety in waste facilities guideline, Fire and Rescue NSW (FRNSW) [https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/guidelines_fire_safety_in_waste_facilities.pdf]
- Access for fire brigade vehicles and firefighter's guideline, FRNSW [https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/vehicle_access.pdf]

2 FIRE MANAGEMENT SYSTEMS

2.1 RISK ANALYSIS

The risk of fire is predominantly in the receiving area where co-mingled recyclables are tipped before conveying to the sorting process. Presence of non-conforming waste within the co-mingled recyclables such as batteries, gas bottles, aerosol canisters etc are the main reasons for triggering risk of fire. The facility would have stockpile location maps, clear separation between the receival area, processing area and product storage area. The layout has been specifically adopted to minimise fire risk, by separating waste and product stockpile to the greatest extent possible. Fire risk analysis will be undertaken as part of the fire engineering process, during the leadup towards the operation of the facility and during operations.

An Environmental Aspects and Impacts (EAI) register will also be developed, an indicative EAI register is enclosed as Appendix A. The risk analysis and EAI register will remain a live document to assess performance against mitigation measure and to determine potential improvements.

2.2 FIRE PREVENTION SYSTEM

Forward Looking InfraRed cameras will be deployed providing colourised thermal video with hotspot overlay and temperatures which will allow early warnings alerts to operational site. The early alert will provide location of hotspot allowing the operational site to assess the risk of fire therefore assist in early intervention if safe to do so.

An indicative coverage by four thermal cameras is shown below:

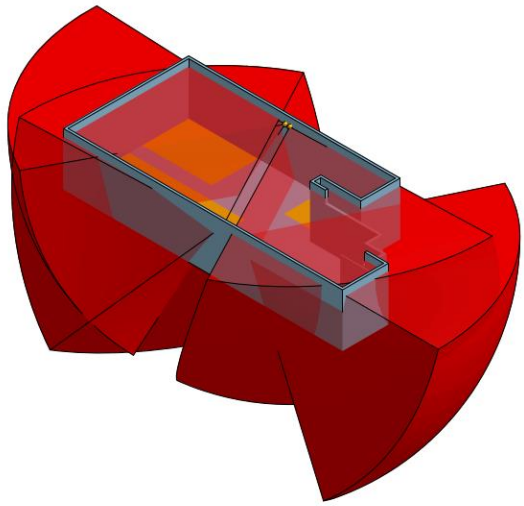

Figure 2.2A: Thermal Camera Coverage

2.3 FIRE DETECTION AND ALARM SYSTEM

The fire detection system will be a combination of multicriteria or similar smoke detectors and aspirated smoke detection system. The issues of dust particles impacting the smoke detection will be considered as part of the design process. Experienced experts will be involved in adapting the appropriate system to help with smoke detection and alarm system. Typically, the facility is expected to be equipped with:

- Fire Indicator Panels
- Aspirated smoke detectors at the process area
- Multicriteria smoke detectors to office area
- Visual Alarm Devices as required
- Fire trips to security and mechanical systems as required

2.4 FIRE SUPPRESSION SYSTEM

The fire suppression system will consist of fire hydrant and sprinkler system.

2.4.1 FIRE EXTINGUISHERS

Relevant types for fire extinguishers will be housed onsite to aid when trying to suppress small fires. Fire blankets will also be made available in the office areas.

2.4.2 HYDRANT SYSTEM

The system is expected to comprise of the following:

- Water storage tanks
- Diesel fire pump sets and associated ancillary equipment
- A fire brigade booster and suction point
- Hydrant ring main
- Double pillar fire hydrants

2.4.3 FIRE SPRINKLER SYSTEM

The facility will also contain fire sprinklers within the fire infrastructure design as follows:

- Sprinkler alarm valve sets to service the process areas
- Sprinkler alarm valve set to service offices
- Fire sprinkler heads & associated pipe work to offices
- Fire sprinkler heads & associated pipe work at the process areas

2.5 ANCILLARY PROCEDURES AND TRAINING

The facility will have an emergency evacuation plan and a response plan to identify the evacuation procedures for staff and site users. The key operational staff will be trained on:

- Fire awareness
- Using firefighting equipment
- Emergency evacuation procedures
- Site information to convey location of fire systems and stockpile locations

Annual fire safety statement will be maintained with assistance from expert fire inspection contractors.

3 CONCLUSION

The implementation of the above fire management systems and relevant operational practices is expected to minimise the fire risk at various sections of the facility. On event of an unforeseen fire the operational crew is expected to be well equipment to manage the situation in liaison with the local Fire Brigade.

4 ATTACHMENT

4.1 ENVIRONMENTAL ASPECTS AND IMPACTS REGISTER TEMPLATE

Activity	Aspect	Impact	Potential Significance (Not significant, minor, moderate or major significance)	Applicable Legislation	EPA Licence # Condition Reference	Basis for Determining Potential Significance	Proposed Controls that Mitigate Environmental Impacts and Controls Considered	Controls to be Implemented to Further Mitigate Environmental Impacts	Action No.
Receipt of comingled recycling	Escape of comingled recycling from trucks	Litter to streets visual unsightliness				Complaints from EPA, Council, neighbouring sites and the public.	• Comingled is deposited within MRF buildings • Stormwater drains are protected by screens and 3mm aperture mesh • Stormwater drains are cleaned usually by one person dedicated to the task • Cleaning up of escaped recycled product from the site and on the verge is performed daily according to amount being processed and wind conditions • Monthly walkarounds inspect site for litter and cleanliness of stormwater drains		
		Litter to stormwater system				Complaints from EPA, Council and the public.			
	Pollution of air	Greenhouse gas emission from putrescible recycled product				Putrescible components in the recycled product is low	• If a load of recycling is found to be too contaminated, the respective client is informed and the need to disposal to landfill		
		Dust emissions from site				Dust is not observable in received material. Dust emissions are not observable from site boundaries.	• Monthly walkarounds inspect site for dust emissions		
		Unpleasant odour from recycled product				Offensive odour is detectable within MRF but odour is not detectable from site boundaries.	• Monthly walkarounds inspect site for offensive odours		
	Traffic management	Local road congestion by trucks arriving and leaving site				Site and roads designed for truck management and commercial use	• Truck drivers receive instruction on traffic management		
Use of mobile plant to process and store recycled product	Pollution of air	Greenhouse exhaust emissions from internal combustion engines				Throughput and OH&S requirements necessitate use of mobile plant	• Loader pre-start check performed using Form Loader Pre-start Checklist' • Forklift pre-start check performed using Form 'Forklift Pre-start Checklist' • Operational Change Notices exist to evaluate impact of new, modified and decommissioned plant and equipment • Service agreement exists for the regular servicing of loaders and forklifts		
						Leaking from forklift LPG cylinders a possibility			
		Particulate emissions (smog)				Forklifts use LPG, a clean burning fuel			
						Diesel front end loaders can produce particulates			
	Use of industrial plant	Depletion of finite non-renewable natural resources (metals, oil and its byproducts)				Throughput and OH&S requirements necessitate use of mobile plant			
						Replacement of components at an expected rate			
						Mobile plant achieves life expectancy or its performance no longer matches operational requirements			
	Noise	Nuisance effect on neighbours				Noise at nearest identified sensitive receptor	• Monthly walkarounds inspect site for emission of detrimental noise		
	Escape of recycled product and waste from site due to mobile plant operations	Litter to streets visual unsightliness				Complaints from EPA, Council, neighbouring sites and the public.	• Recycled product is processed and baled within MRF building • Stormwater drains are protected by screens and 3mm aperture mesh • Stormwater drains are cleaned usually by one person dedicated to the task • Cleaning up of escaped recycled product from the site and on the verge is performed daily according to amount being processed and wind conditions • Monthly walkarounds inspect site for litter and cleanliness of stormwater drains, material being stored according to the 'Combustible Material Storage Plan', material/equipment being stored outside is not able to contaminate stormwater or land		
		Litter to stormwater system				Complaints from EPA, Council and the public.			
	Release of oils and engine fluids from the mobile plant	Soil contaminated by escaping oils and engine fluids				Ground is raised up from hardstand and mobile plant do not go onto it.	• Servicers of mobile plant remove oily wastes • Spill kits and absorbent readily available • Monthly walkarounds inspect for machinery leaking fluids • Staff have been trained in competency 'Spill Response'		
		Escaping oil and engine fluids to stormwater system				Leaks would be small quantities and easily contained.			
		Used oil and oil filters							
		Used tyres				Industrial Waste able to be disposed to landfill if shredded or to recyclers			
		Rags and absorbent impregnated with oil and engine fluids							
	Release of diesel held in storage for fuelling mobile plant	Escaping oil from tanks, IBCs or drums to stormwater system				Diesel storage adjacent stormwater drain.	• Diesel is stored internally in a 5500 litre self-bunded (double wall) storage tank complying with AS1692 and AS1940. • Spill kit and absorbent readily available • Staff have been trained in competency 'Spill Response' • Monthly walkarounds inspect for storage of potentially contaminating material		
	Release of chemicals held in storage to maintain mobile plant	Escaping chemicals to stormwater system				Do not hold stores of oil , radiator fluids for loaders and forklifts	• Monthly walkarounds inspect for storage of potentially contaminating material • Spill kits and absorbent readily available • Staff have been trained in competency 'Spill Response'		
Use of fixed mechanical and electrical plant to process recycled product	Use of industrial plant	Depletion of finite non-renewable natural resources (metals, oil and its byproducts)				Throughput and OH&S requirements necessitate use of industrial plant	• Operational Change Notices exist to evaluate impact of new, modified and decommissioned plant and equipment • Monthly Maintenance Checklist requires for balers inspection of oil level and check for oil leaks		
						Replacement of components at an elevated rate due to abrasiveness of recycled product			
						Fixed plant achieves life expectancy or its performance no longer matches operational requirements			
	Escape of in-process recycled product and waste from the site	Litter to streets visual unsightliness				Complaints from EPA, Council, neighbouring sites and the public.	• Recycled product is processed within MRF buildings • Stormwater drains are protected by screens and 3mm aperture mesh • Stormwater drains are cleaned usually by one person dedicated to the task • Cleaning up of escaped recycled product from the site and on the verge is performed daily according to amount being processed and wind conditions • Monthly walkarounds inspect site for litter and cleanliness of stormwater drains		
		Litter to stormwater system				Complaints from EPA, Council and the public.			
		Soil contaminated by solid and liquid recycled product and waste				Recycled product only contacts hardstand and little opportunity for liquid waste to contact soil			
		Health of site flora				Recycled product only contacts hardstand and little opportunity for liquid waste to contact flora			
	Pollution of air	Dust emissions from site				Dust is present within MRFs and in MRF3 extracted through a dust extractor. Dust emissions are not observable from site boundaries.	• Monthly walkarounds inspect site for dust emissions		
	Consumption of electricity	Greenhouse gas emissions				Emission of greenhouse gases is a government, industry and community concern	• Operational Change Notices exist to evaluate impact of new, modified and decommissioned plant and equipment • Plant is stopped during breaks • Plant is equipped with Variable Speed Drive motors main conveyers • Electricity consumption is monitored		
	Noise	Nuisance or health affect on neighbours				Noise at boundary 78.4 dB(A)	• Monthly walkarounds inspect site for emission of detrimental noise		
	Non-recyclable waste in waste stream	Non-recyclable waste to landfill				Significant presence in the recycled product stream	• When comingled recycling reaches fixed plant it is not possible to attribute it to a Council and thus becomes Polytrade's cost to dispose of it. The percentage of waste to landfill is constantly measured (needs to be no more than 10%) and is included as a measure in the Business Plan		
		Sustaining inordinate numbers of birds				Sporadically birds are attracted to recycled glass and waste from it. Numbers small and have no operational impact			
		Sustaining population of rats				Local rat population exists in MRFs	• Vermins and pests are controlled through regular baiting program		
		Waste oil					• Waste oil removed from waste by Sorters (refer Sorter work instruction and training record) • Waste oil in segregated storage and disposed of as Reportable Priority Waste to oil recyclers		
		Lead acid batteries					• Small batteries removed from recycled product by process plant • Lead acid batteries removed from recycled product by Sorters (refer Sorter work instruction and training record) • Lead acid batteries stored in segregated bins and disposed of as Reportable Priority Waste to metal recycler		
		Fire extinguishers					• Fire extinguishers removed from recycled product by Sorters (refer Sorter work instruction and competency record) • Fire extinguishers in segregated storage with gas cylinders and disposed of to metal recycler		
		E-waste				Corded and battery powered equipment	• E-recycled product removed from recycled product by process plant and by Sorters (refer Sorter work instruction and training record) • E-recycled product sent to steel bin (undercover) and disposed of to metal recycler		
		Waste that is dangerous goods - pressure vessels				Class 2.1. and 2.2 gas cylinders	• Gas cylinders removed from recycled product by Sorters (refer Sorter work instruction and training record) • Gas cylinders in segregated storage with fire extinguishers and disposed of to metal recycler		
	Release of hydraulic oils from fixed plant	Soil contaminated by escaping hydraulic oil				In use and stored balers remains on hardstand.	• Spill kits and absorbent readily available • Monthly walkarounds inspect for machinery leaking fluids • Monthly Maintenance Checklist requires for balers inspection of oil level and check for oil leaks • Staff have been trained in competency 'Spill Response'		
		Escaping hydraulic oil to stormwater system				Leaks from balers would be contained within MRF.			
						Leaks fom redundant balers in close proximity leak to stormwater drains.			
		Used hydraulic oil							
		Rags and absorbent impregnated with hydraulic oil							

	Release of hydraulic oil held in storage to maintain fixed plant	Escaping hydraulic oil from IBCs or drums to stormwater system	Hydraulic oil storage held in quantities able to reach stormwater drain.	• Spill kits and absorbent readily available • Staff have been trained in competency 'Spill Response' • Monthly walkarounds inspect for potentially contaminating material • 1000 litre IBCs containing hydraulic oil are stored inside on a bunded pallet that retains 1300 litres and within a flexible/collapsible bund that retains 810 litres • Bags of absorbent are readily available for use
	Release of chemicals held in storage to maintain fixed plant	Escape of greases, paints, solvents to stormwater system	Quantities being stored are small and confined to maintenance stores.	• Spill kits and absorbent readily available • Staff have been trained in competency 'Spill Response' • Monthly walkarounds inspect for potentially contaminating material
	Inability of plant to process recycled product volume	Recycled product to landfill	Complaints from Council, scrutiny from EPA and media and the public	• Polytrade has capacity to divert incoming comingled to other MRFs that it operates
Handling of comingled and recycled product external to the shed during transition for offsite transport	Pollution of air	Greenhouse gas emission from putrescible recycled product	Putrescible components in the comingled and recycled product is low (mainly liquid food residue adhering to containers)	
		Unpleasant odour from comingled or recycled product	Offensive odour is detectable within MRF but odour is not detectable from site boundaries.	• Monthly walkarounds inspect site for offensive odours
	Pollution of water through leaching of contaminants by action of rain	Leachate (water in contact with waste) to stormwater system	Baled materials are tightly compressed and stacked so that only one surface is directly exposed to the rain and thus little surface area of the recycled product to be exposed to rain water.	The transition times for the bales are kept to a minimum.
Despatch of processed recycled product	Escape of material from trucks	Litter to streets visual unsightliness	Hydraulic oil storage held in quantities able to reach stormwater drain.	• Recycled product is loaded and secured within MRF buildings • Stormwater drains are protected by screens and 3mm aperture mesh • Stormwater drains are cleaned usually by one person dedicated to the task
		Litter to stormwater system	Complaints from EPA, Council and the public.	Set up commiunity hotline to receive and attend to complaints
	Traffic management	Local road congestion by trucks arriving and leaving site	Site and roads designed for truck management and commercial use	• All truck drivers picking up material report to the office for instruction
Sale or disposal of processed recycled product	Ability of recyclable material processors to manage quantity received	At recipient's premises, recyclable material escapes to the environment	Subject of much government and community concern	• Operator does a visual face-off check for contamination of bales • Paper sent to paper recycler; generally no specification though some recycled paper contracts require 150 to 200 kg of a bale to be examined, no capacity constraints • Paper exported in containers to paper processors; specification is under 4% prohibitives, no capacity constraints • Glass sent to glass processors; specifications on organics, metals and non-magnetic inorganics, no capacity constraints • Fine glass sent to roadbase manufacturere; no specification, no capacity constraints • Loose metal items to a local metal recycler(s); no specification, no capacity constraints • Baled magnetic metals exported in containers to steel processors; specification is under 2% non nonferrous material, no capacity constraints • Aluminium exported in containers to processors; specification is under 2% non-Al material, no capacity constraints • Plastic - sent to secondary sorting plant; no specification, no capacity constraints
		At recipient's premises, recyclable material stockpiles catch fire	Subject of much government and community concern	
		At recipient's premises, recyclable material stockpiles cause community concern	Community concern expressed on the ground and through media	
		Statutory authorites recognise quantity of received recyclable material is of national concern	Statutory authority concern expressed between governmants and through media	
	Processed recyclable material does not meet specification	Recipient of recyclable material unable to process it	Rejected recycled product is subject of much government and community concern	• Non recyclable waste disposed to authorised disposal or energy recovery facilities.
		Statutory authorites recognise recycled product not meeting specification is of national concern	Statutory authority concern expressed between governments and through media	
Provision of infrastructure	Consumption of electricity	Lighting	Factory lit with LED lighting	
		Compressed air	Compressed air used to blow down machinery (supplied by MRF3/4). Portable compressor for ad hoc purposes.	
		Heating and cooling	Only offices and lunchroom are heated and cooled	
		Offices, stores and amenities	Small staff numbers using equipment typical to businesses	
	Use of office equipment and supplies	Depletion of finite non-renewable natural resources (metals, oil and its byproducts)	Office equipment is typical to businesses	
	Landscaping	Visual amenity	Visual aspect of premises and site influences community perception	• Gardening contractor attends monthly to maintain site plantings and verge
	Consumption of potable water	Potable water supplies	Water utilised for domestic puposes, not for operations	
	Vehicle parking	Local road congestion by parked vehicles	Vehicle parking areas adequate	• Spill kits and absorbent readily available
		Escaping oil and engine fluids to stormwater system	Leaks would be small quantities and easily contained	• Staff have been trained in competency 'Spill Response'
	Disposal of infrastructure associated wastes	Recyclable wastes	Small quantities and processed onsite	
		General wastes	Small quantities and disposed to landfill waste stream onsite	
		E-waste	Occasional items and disposed to metal waste stream onsite	
		Sewage	Sewer utilised for domestic puposes, not for operations	
	Pollution of water through release of chemicals held in storage to maintain infrastructure	Escaping chemicals to land or stormwater to stormwater system	Small quantities of paint, cleaning flids, lubricants held	• Monthly walkarounds inspect for storage of potentially contaminating material • Spill kits and absorbent readily available • Staff have been trained in competency 'Spill Response'
Fire in MRF	Refer Fire Risk Register			