JM ENVIROFUELS (Barry) WOOD PROCESSING FACILITY

FIRE PREVENTION and MITIGATION PLAN

BY

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CONTENTS PAGE

1 Introduction

1.1 General Statement 1
1.2 Mitigation 8
1.2.1 Inadequate Waste Acceptance
1.2.3 Waste Storage
1.2.4 Transfer of Substances
1.2.5 Overfilling Vessels
1.2.6 Emissions from Plant & Equipment
1.2.7 Failure of Containment
1.2.8 Fires
1.2.9 Failure to Contain Fire Water
1.2.10 Connections to drains
1.2.11 Failure of Mains Services
1.2.12 Operator Error
1.2.13 Dust
1.2.14 Mud & Debris
1.2.15 Security
1.3 Core Procedure 19

2 Site Setting 20

2.1 Material Processing
2.2 Product Quality

3 Appendices

3.1 Fire Audit 21
3.2 Fire Prevention Plan 25
3.3 Fire Risk Assessment (Fire Management & Temperature Checking of stockpiles) 33
3.4 Fire Management Plan 35
3.5 Receptor Plan 41
3.6 Site layout / access plan 42
3.7 Drainage calculations 43
3.8 iTOM SOP 44

1 Introduction-+

General Statement

1.1.1 This document describes the systems and procedures that will be used for the prevention of Fires and Accidents at JM Envirofuels Barry. This Management Plan is based on:

(i) a risk assessment; carried out to identify potential hazards arising from

the JME Barry Facility and any possible pathways and receptors,

(ii) mitigation measures; designed to minimise the risk, and consequences

of, an accident,

(iii) the core procedure for the prevention and management of accidents,

which forms part of the Company Environmental Management System.

Table 1 lists the potential hazards that have been considered and identifies the possible pathways and receptors;

Table 1 – Potential environmental hazards, pathways & receptors

Hazard	Pathway	Receptor
Inadequate waste acceptance procedures resulting in the receipt of non-permitted wastes	Airborne / Land based	Site personnel, visitors, local residents, neighbouring facilities
Inadequate waste storage leading to odour, litter & dust	Airborne / Land based	Site personnel, visitors, local residents, neighbouring facilities
Transfer of materials leading to spillage	Airborne / Land based	Site personnel, visitors, local residents, neighbouring workforces,
Overfilling vehicles/ vessels leading to spillage	Airborne / Land based	Site personnel, visitors, local residents, neighbouring facilities
Emissions from plant & equipment	Airborne / Land based	Site personnel, visitors, local residents, neighbouring facilities
Failure of containment	Absorption to ground, un-off & site drains	Site personnel, visitors, local residents & neighbouring facilities, Groundwater, surface water & soils , Port / Estuary
Fires	Airborne	Site personnel, visitors, local residents, neighbouring facilities, air quality,
Failure to contain firewater	Absorption to ground, run-off, site drains	Groundwater, surface water & soils, Port / Estuary
Wrong connections made in drains/ other systems	Absorption to ground, run-off & site drains	Groundwater, surface water & soils, Port / Estuary
Failure of main services	Airborne	Site personnel, visitors, local residents, neighbouring facilities
Operator error	Airborne, land & water	Site personnel, visitors, local residents, neighbouring facilities, Groundwater, surface water,

		Port / Estuary air quality & soils.
Dust from processes & site roads	Airborne	Site personnel, visitors, local residents, neighbouring facilities
Mud / debris on roads due to site activities	Site roads, public highway	Users of site roads and public highway
Breach of security	Fences / gates	Site personnel, plant / equipment, intruders
Release of effluent before adequate checks are made	Absorption to ground, run-off & site drains	Groundwater, surface water & soils, Port / Estuary

1.1.2 It is necessary to apportion a level of significance to the environmental risks identified in Table 1. The risk prioritization methodology, detailed in A Practical Guide to Environmental Risk Assessment for Waste Management Facilities (Environment Agency, 2000), has been used to achieve this. This methodology includes a scoring system within which scores are apportioned to:

- The probability of the hazard occurring, without the use of protective measures,
- The consequences of the hazard to the environment or human health, and
- the effectiveness of the mitigation used to prevent the hazard occurring.

1.1.3 Tables 2, 3 and 4 identify the scoring system;

Table 2 - Probability of hazard occurring without the use of protective measures

Frequency	Score
Never	0
Annually or less frequently	1
Monthly or less frequently	2
Weekly or less frequently	3
Daily or less frequently	4
More frequently than daily	5

Table 3 - Consequence of hazard to the environment or human health

Consequence	Score
Harmless	0
Almost harmless	5
Some harm	10
Harmful	15
Very harmful	20
Extremely harmful	25

Table 4 - Mitigation factor

Mitigation	Score
Ineffective or non-existent	1
Partly effective	2
Effective	3
Very effective	4
Entirely effective	5

1.1.4 The probability of the hazard occurring is multiplied by the consequences of the hazard to the environment, or human health, to give a risk factor. The risk factor is then divided by the mitigation factor, to give the mitigated risk factor. The higher the mitigated risk factor, the greater the level of risk.

1.1.5 The risk assessment matrix, for JME Barry facility, is shown in Table 5;

Table 5 - Risk Assessment Matrix

Hazard	Probability of Hazard Occurring Without Protective Measures	Consequence of Hazard	Risk Factor (Probability x Consequence)	Summary of Preventative Measures/Controls	Mitigation Factor	Mitigated Risk Factor (Risk Factor/ Mitigation Factor)
Inadequate waste acceptance procedures	5	10	50	Pre-acceptance procedures are in place to confirm compliance with list of permitted waste types. On arrival at the facility, waste loads will be checked against the details given on waste transfer notes/season tickets. All waste loads will be inspected visually on deposit in the waste reception area. Any non-permitted wastes deposited inadvertently at the site, will be reloaded onto the delivery vehicle for off-site removal or placed in a quarantine area. Hazardous wastes will not be accepted.	4	12.5
Inappropriate waste storage	5	10	50	After inspection, wastes will be stored in the waste reception area to wait processing. Materials unsuitable for processing are stored in containers or bays as appropriate.	5	10
Transfer of substances (e.g. filling or emptying of vessels)	2	15	30	Diesel Oil, Plant oil and lubricant tanks will either, be self-bunded or, surrounded by bunds with a minimum capacity of 110% of the tank's contents. Bund bases and sides will be impermeable. All vents, sight glasses and pipework connections etc will be located within the bunded area. Absorbent material will be used to treat any spillage that may arise.	5	6
Overfilling of vessels	3	15	45	Diesel Oil, Plant oil and lubricant tanks will be bunded (see above). The volume of liquid in these tanks will be recorded. The level will be checked before deliveries are made, to ensure sufficient capacity within the tank. Absorbent material will be used to treat liquid spillages.	5	9
Emissions from plant or equipment, E.g. due to abnormal conditions.	5	15	75	Alarms and interlocks will be used on major items of plant and equipment in the facility as part of the control system. There will be strict compliance with startup , shut down and operating procedures. Maintenance of plant and equipment will be in accordance with the manufacturers' recommendations.	5	15

Table 5 - Risk Assessment Matrix

Hazard	Probability of Hazard Occurring Without Protective Measures	Consequence of Hazard	Risk Factor (Probability x Consequence)	Summary of Preventative Measures/Controls	Mitigation Factor	Mitigated Risk Factor (Risk Factor/ Mitigation Factor)
Failure of containment	1	15	15	Diesel Oil, Plant oil and lubricant tanks will be fully bunded (see above). The effective capacity of the bunds will be maintained at all times. The site will have an impermeable surface, with waste handling areas drained to an underground storage tank. Tanks, bunds, raw materials storage containers and the surface water drainage system and sumps etc. will be inspected on a weekly basis. Any repairs will be undertaken as soon as practicable and no later than 5 working days from discovery (subject to the availability of replacement materials). Mitigation measures will be undertaken immediately, if there is a possibility of pollution or harm.	5	3
Fires	1	25	25	No wastes will be burned within the boundaries of the site. Fire extinguishers will be located at the site. All fire extinguishers will be clearly marked and, tested at appropriate intervals, to confirm their integrity. Site personnel will be made aware of their location and trained in their correct use. There will be strict compliance with pre-acceptance and acceptance procedures to ensure only permitted wastes are accepted. Explosive, flammable and oxidizing wastes will not be received. Implementation of Fire Prevention and Mitigation Plan. Thermal radiation damage will be minimal owing to the impermeable surface and bay walls being concrete, these structures will absorb heat up to 1200^{o}c. There is no infrastructure adjacent that could be affected by thermal effects. Following a fire the integrity of the floor and blocks will be inspected by a suitably qualified engineer and a report provided, any actions resulting from this will be acted upon. There is a no smoking policy within the operational area.	4	6.25
Failure to contain firewater	1	15	15	There are no outlets to allow drainage off site, containment of potentially contaminated firewater will be in the storage tank.	4	3.75
Wrong connections made in drains or other systems	1	15	15	Suitably qualified engineers will ensure that materials and plant are in accordance with approved specifications and, their installation is in accordance with the approved designs.	4	3.75
Failure of main services	1	10	10	The facility will incorporate process controls, to ensure plant can be operated safely at all times, including during emergency shut down in the event of a power cut.	5	2
Operator error	2	15	30	Strict compliance with the operator's Environmental Management System (EMS). Use of Technically Competent Persons, as part of the Fit and Proper Person requirement, to manage activities at the site. Health and safety and environment, accident, management training, will be provided for all employees.	4	7.5

Table 5 - Risk Assessment Matrix

Hazard	Probability of Hazard Occurring Without Protective Measures	Consequence of Hazard	Risk Factor (Probability x Consequence)	Summary of Preventative Measures/Controls	Mitigation Factor	Mitigated Risk Factor (Risk Factor/ Mitigation Factor)
Dust from waste handling operations , processing and loading etc.	3	10	30	The waste accepted at the site is not intrinsically dusty. There will be strict compliance with waste pre-acceptance and acceptance procedures. Waste will be deposited, stored and processed in a controlled manner, in accordance with site operational procedures. The site will be hard-surfaced with concrete on the operational area. The site will utilize dust suppression, as well as manual or mechanical sweeping as necessary. Dust protection netting will be used in areas where dusty operations are undertaken. Visual monitoring for dust will be undertaken daily.	5	6
Mud on adjacent highways due to activities on site	2	15	30	All internal roads and waste storage and processing areas will comprise a paved, impermeable surface that is fit for purpose. Internal roads, site entrance and public highway will be cleaned by mechanical sweeper, as appropriate. Waste will only be stored on paved areas. Waste handling activities are unlikely to generate mud. Site staff will inspect the roadways regularly and instigate remedial action if required.	5	6
Breach in site security	3	15	45	Perimeter fencing and lockable gates are installed. CCTV will be used.	4	11.25
Explosions	0	15	0	There is no risk of explosions owing to the waste streams accepted and the waste acceptance procedures that are in place.	5	0
Sources of ignition from plant / equipment	4	15	60	The plant is routinely maintained, thereby reducing the potential for electrical faults. The loading buckets do scrap up debris from the impermeable surface; the potential for sparks from this activity is minimal as there is not any aggregate on the wearing surface. The impermeable surface is routinely checked as is replaced when defects are identified.	4	15

Table 5 *taken from 'A Practical Guide to Environmental Risk Assessment for Waste Management Facilities (Environment Agency 2000)*

1.1.6 All identified hazards, which could cause harm, will be subject to strict, preventative measures or control at the site, to ensure that all risks are minimized.

1.1.7 The preventative measures/controls, detailed in Table 5, must be maintained to ensure a high level of good operational practice. To achieve this, the monitoring of relevant control systems, the utilization of collated data and the review of preventative measures will be carried out. Repairs and/or improvements will be made, where monitoring shows this to be necessary.

1.1.8 The operation of the JME Barry facility will rely on the performance of well-trained site personnel and well-maintained plant, to store and process the incoming waste streams correctly. Monitoring of procedures and maintenance schedules will aid the risk management process, in relation to environmental controls. General good housekeeping checks will be employed to ensure the smooth and efficient running of the site.

1.1.9 Engineered containment systems on site will be inspected and maintained, to ensure their integrity, throughout the operational life of the site.

1.1.10 It is also recognized that there is a close link between environmental risk and health and safety. It is envisaged that the environmental risk assessment, carried out here, will assist in the overall risk appraisal for the operation of the facility.

1.2 Mitigation

1.2.1 Inadequate waste acceptance procedures

Without the use of protective measures, the receipt of non-permitted wastes or incompatible wastes is predicted to occur more frequently than daily.

The consequences of using inappropriate waste acceptance procedures could be potentially harmful, as non-permitted wastes could be accepted at the site.

Pre-acceptance procedures will ensure compliance with the waste types the facility is permitted to accept. Third parties will be required to provide the operator, in advance, with all necessary information/documentation to satisfy the requirements of the Environmental Protection (Duty of Care) Regulations 1991 and, the conditions of the Environmental Permit. Further information is provided in the Management techniques section.

A waste stream will only be accepted where pre-acceptance documentation shows that it is suitable for storage and processing at the site and, that it is authorised by the Environmental Permit. Checks will be made to establish whether the haulier is a registered waste carrier, or has a valid exemption from registration. Only registered waste carriers, or those who are lawfully exempt from registration, will be permitted to use the site.

Wastes will be checked on arrival against the details given on the waste transfer note/season ticket. If necessary, the weighbridge operator, or other suitably qualified person, will make a visual inspection of loads received in sheeted or netted containers. All waste loads, including those received in enclosed containers, will be inspected visually, upon deposit.

Any non-permitted wastes, deposited inadvertently, will be reloaded onto the delivery vehicle for off-site removal to an authorised facility. Where this is not practical the waste will be removed to the designated quarantine area for secure storage, prior to off-site removal to an authorised site.

1.2.3 Waste storage

Without the use of protective measures, inappropriate waste storage is predicted to occur more frequently than daily.

The consequences of inappropriate waste storage are potentially harmful. Such an event could result in windblown wastes and/or odorous compounds escaping the site boundary. It may also generate dust or leachate and/or attract vermin to the site.

Following the acceptance procedures detailed above, waste loads will be deposited into the dedicated waste reception area, and processed in accordance with the operational procedures.

The site plans show the areas for wood reception and the areas for storage bays. The bays will have concrete block walls that facilitate being able to move the walls according to process demand. The stacks within the bays will be in accordance with TGN7.01, Fire Prevention Plans V1 March 2015 (FPP 2015) and Fire Prevention and Mitigation Plan – waste V1 May 2016 (FPMP 2016). Staff will be informed of the procedures for processing and storage.

The feedstock material will be evaluated and stockpiled prior to Screening (where required). The material will be handled on FIFO principles, e.g. first in, first out. The Bays will be numbered to aid with batch control and to ensure FIFO is achieved. The site will operate an information management system that will record the types, quantities, sources of waste received at the site.
The nature of the incoming feedstock material is considered to be medium risk from a fire assessment, the stock will be managed to the compliance limits within the designated storage bays (as per FPMP 2016). It is intended due to the demand for the contracted outlets, that the material will not be on site for a prolonged period. When the material has been processed, it becomes a higher risk. This material will be removed from site within 24hrs of production. This will insure that there is effective stock rotation eliminating the situation for old stock to remain in the back of bays.

The construction of the floor is with re-enforced concrete and stock bay walls are concrete blocks, it is considered that this construction is in line with the requirements of the CIRIA (C736) guidance.
The Stocks will be stored within Maltese Cross configurations, 17.5m x 17.5m x 5m, each quadrant storing 735m^3 , 1m freeboard and a minimum of 6m between the cross configurations (in accordance with FPP 2016). See 3.8.
The processing of waste in accordance with procedures will minimise and control wind-blown litter and the formation of harmful leachate. Following operation procedures for processing and good housekeeping will minimise places for pests and vermin to shelter or breed, as well as reducing the potential for odour generation. Commissioning tests will be undertaken at the site, to ensure that plant will operate to the design specifications and to check integrity of equipment. Regular servicing and maintenance of plant / equipment will reduce the risk of electrical faults.
Waste treatment and storage activities will be carried out on an impermeable surface, with drainage directed to a sealed tank, giving an added level of protection

to soils, surface water and groundwater. Regular checks of site surfacing, drainage, bunding and storage vessels and these will be repaired as necessary, to ensure that they retain their integrity.

1.2.4 Transfer of substances

Without the use of protective measures, the inappropriate transfer of substances is predicted to occur at a frequency of monthly or less.

The consequences of an inappropriate transfer of substances, should it occur, could be harmful. Polluting substances could drain into the site's drainage system, measures are taken to prevent run-off paved areas onto adjoining land and pollute groundwater, surface water and soils.

All tanks and drums used for the storage of diesel, plant oil and lubricants, will be suitable for the material being contained. All tanks will be either self-bunded or sited on impervious bases and surrounded by impervious walls. The size of the bunded area for a single tank will be at least equivalent to the capacity of the tank plus 10%. Where multiple tanks are used, the impervious, bunded compound will be at least equivalent to the capacity of the largest tank plus 10%, or 25% of the total volume of the tanks (whichever is the greater). All filling points, vents and sight glasses will be located within the bund. The bunds will be inspected weekly. Each bund will be fully enclosed and will fall to a sump from which liquid can be removed once its chemical constituents are identified. Each sump is sealed, to prevent migration of lost material off-site. Drums will be kept in appropriate bunds or drip trays.

All pipes, bunds and other relevant infrastructure will be inspected and maintained on a regular basis.

The effective capacity of the bunds will be maintained at all times. Accumulated liquid will be removed from the bunds and its composition will be confirmed, to allow for appropriate disposal at a suitably authorised facility.

The site will incorporate an impermeable pavement with drainage via an above ground tank. The tank has no outlet to prevent contaminated water entering surface water (e.g. following a fire). All waste storage areas will drain to the tank.

An inventory will be maintained to record the substances used or produced at the site; COSHH assessments and other details will be recorded. Incompatible materials will be stored separately to prevent adverse reactions. Storage of potentially hazardous materials will be indicated on a plan. The plan will be made available to the Emergency Services when necessary (e.g. in the event of a fire).

1.2.5 Overfilling of vessels

Without the use of protective measures, the overfilling of vessels is predicted to occur at a frequency of weekly or less.

The consequences of overfilling vessels, should it occur, could be harmful. Polluting substances could drain into the site's drainage system or run-off paved areas onto adjoining land and pollute groundwater, surface water and soils.

All tanks and containers used for the storage of diesel, plant oil and lubricants will be bunded. The effective capacity of the bunds will be maintained at all times.

The volume of material in the receiving tanks will be measured and recorded manually, prior to filling.

Should a spillage of a polluting liquid occur, absorbent material will be used to clear the spillage. The used, absorbent material will be removed and stored in a sealed container, prior to authorised disposal.

The site will incorporate an impermeable pavement with self-contained drainage. There are no discharges from site to surface / ground water.

1.2.6 Emissions from plant and equipment

Without the use of protective measures, the risk of potentially harmful emissions from plant or equipment occurring at the site has a predicted frequency of more than daily.

The consequences of such emissions from plant or equipment could be harmful. Site personnel and visitors would be at most risk, but there would also be risk to local residents, neighbouring work forces, air quality, groundwater, surface water and soils.

It should be noted that the facility has been designed and built with protective measures and process controls incorporated. The above risks and consequences are theoretical only, as they are based on no protective measures or process controls being in place.

All equipment will be of suitable construction for the materials contained. Equipment will be operated, inspected and maintained in accordance with the manufacturers' recommendations, to minimise fugitive emissions.

The site design incorporates a concrete pavement and engineered surface water drainage system and waste storage areas. Installation of pollution control measures will be subject to construction quality assurance, by suitably qualified engineers.

The sealed drainage system, concrete pavements, storage tanks, bunds and waste storage and processing areas will be inspected weekly. Any repairs will be made as soon as practicable and, subject to the availability of replacement materials. Mitigation measures will be undertaken immediately, if there is a risk of pollution or harm.

Operation of the facility will be subject to the site operational procedures. Site management will monitor the process on a regular basis to ensure effective function of all stages of every process.

1.2.7 Failure of containment

Without the use of protective measures, a failure of containment is predicted to occur at a frequency of annually or less.

The consequences of a failure of containment, should it occur, could be harmful. Polluting substances could run-off paved areas onto adjoining land or permeate beneath the site and pollute groundwater, surface water and soils.

All tanks and containers used for the storage of diesel, plant oil and lubricants, will be bunded. The effective capacity of the bunds will be maintained at all times. An inventory of the substances held and their hazardous properties will be kept at the site and be updated regularly. This will provide information for appropriate clean-up of any leaks or spillages.

Tanks, bunds, storage containers, gullies and the sealed drainage system will be inspected weekly.

If there is a potential for pollution or harm, mitigation measures will be implemented immediately, including:

- removal of liquid from a damaged tank and transfer to a replacement tank or sealed container
- Immediate repair of any damaged bund and/or removal of any liquid contained therein
- Temporary disuse of any damaged tank or container.

Pollution control materials will be stored within the site store, this will consistent of initially a stock of sand for use on oil spills.

1.2.8 Fires

Without the use of protective measures, the risk of fire occurring at the site has a predicted frequency of less than annually.

The consequences of fire, should it occur, could be harmful, with site personnel and visitors at most risk. If a fire develops, there could also be a risk of harm to local residents, neighbouring facilities and air quality and the Estuary.

Fire extinguishers will be located at the facility, in the loading shovels and in selected locations. All fire extinguishers will be clearly marked and tested, at appropriate intervals, to confirm their functionality. Site personnel will be made aware of their location and trained in their correct use.

There will be strict compliance with pre-acceptance and acceptance procedures to ensure that explosive, highly flammable, flammable and oxidising wastes (hazard codes H1, H2, H3a and H3b) will not be received.

No waste materials will be burned within the confines of the site and a fire will be regarded as an emergency. Site security systems will be in place, including CCTV, to prevent unauthorised entry.

A Fire Safety Strategy is set out as follows:

- separation and / or control of hazards
- control / elimination of ignition sources. All plant is mobile and will be parked away from the stacks in a secure location at the end of the day. Visual inspections are undertaken daily to monitor for build-up of dust/ blockages and washed frequently, bearings are greased. Temperature checks are also under taken on bearings / engines. The shredders are slow speed which develop less friction.
- adequate passive fire safety measures; fire breaks, plus means of escape, and concrete wall bunding
- in the event of fire in one of the bays within a quadrant, to prevent fire spread or for general safety consider removing materials from the other bays to the quarantine area for safety
- detection systems to provide an early warning of fire before initiation of flaming and combustion (iTOM system see Appendix 3.8)
- first aid, mobile firefighting equipment suitable for use in enclosed spaces.
- No Smoking Policy in place

- Fire Action Plan will be implemented at the facility. Following a fire the FPMP will be reviewed. Where shortfalls are identified, these will be amended into the plan and any new measures / procedures will be implemented.

Controlled Burn:

Considering recent experiences of wood fires, it is to be considered in consultation with the local FRS a controlled burn will be allowed should a fire take hold. This is to be backed up by a report from BRE Global regarding storage/ thermal radiation/ fire risk for unprocessed stock piles.

1.2.9 Failure to contain firewater

Without the use of protective measures, the risk resulting from the failure to contain fire water at the site has a predicted frequency of less than annually.

The consequences of a failure to contain firewater, should it occur, could be harmful; groundwater and surface water being most at risk; firewater run-off could also cause some contamination of soils or the Estuary.

There are no outlets from the site drainage pipes, the storage tank has the capacity to allow containment of potentially contaminated firewater on site (See 3.7).

The sealed storage tank system is used for site drainage from the impermeable surface. The water from the tank will be removed daily for use on site and tankered off site when required (should the need arise during a fire).

It is intended to utilise a 6" mains fire hydrant or water from the Dock should water be required for firefighting. These removes the need to have a tank containing sufficient water for 4 hours firefighting, as the site has a continuous supply of high pressure water.

This information along with additional plans / instructions will be in an Emergency Box fixed externally to the site office for use by the FRS in the event of an Emergency.

1.2.10 Connections for drains and other systems

Without the use of protective measures, the risk of faulty connections being made in drains or other systems is predicted to occur annually or less frequently.
The consequences of a faulty connection being made could be harmful as polluting liquids could be discharged from the drainage system onto adjoining land and pollute groundwater, surface water, soils and Estuary.

At the development stage of the site, the installation of plant and drainage works has been subject to construction quality assurance by suitably qualified engineers. An as built drawing will be provided, which will be updated to provide an up to date drainage record of the site.

1.2.11 Failure of main services

Without the use of preventative measures or controls, the risk of failure of main services is predicted to occur annually or less frequently.

Failure of main services will not result in any impacts on the environment.

Loss of electrical power
The site's electricity requirements will be derived from the use of mains electricity.

In the event of a loss of electrical power, site processes can continue as the plant operates on individual engines.

It is important to note that the site operations will include process controls to ensure safe operation at all times, including periods of emergency shutdown.

Contingency plans will be in place; in the event of a major shut down of the site, waste can be diverted to another facility.

Loss of water supply

Loss of mains water would not have a major impact on the waste treatment process, water can be sourced from the water from the site drainage tank.

The Site has mains water. It is not anticipated that silting of pumps will be a problem owing to the daily removal of water.

Due to the location of the site and the receptors it would be expected that a controlled burn would be instigated – in agreement with the Fire Rescue Service.

1.2.12 Operator error

Without the use of preventative measures or controls, the risk of operator error, which could result in an adverse effect on the environment, is predicted to occur monthly or less frequently.

The consequences of operator error, should it occur, could be harm to site personnel, visitors, local residents, neighbouring workforces, groundwater, surface water, air quality, soils and Estuary.

In order to ensure the safe operation of the facility, employees, and contractors working at the site will be required to comply with the operator's Environmental Management System. Staff training will be provided, to ensure that staff and contractors understand their roles and responsibilities. Waste management activities will be subject to control by a Technically Competent Person, as part of the Fit and Proper Person requirement.

1.2.13 Dust from waste handling operations and from traffic on internal roads

Without the use of preventative measures or controls, the risk of dust arising from the facility is predicted to occur weekly or less frequently.

The consequences of a release of dust, should it occur, could be some harm to site personnel, visitors, local residents and neighbouring workforces.

Wastes received in refuse collection vehicles, closed containers or sheeted lorries will not give rise to significant dust release, during delivery. Pre-acceptance procedures will be used to ensure that only non-dusty wastes are received in netted/ enclosed containers. Wastes will be deposited, stored and processed in accordance with operational procedures to minimise any fugitive emissions.

The site will be managed to minimise dust generation, the loading of vehicles and processing will be carried out in the middle of the site. Active dust suppression will be carried out using appropriate measures. Further details regarding dust management are detailed in the Site-Specific Dust Management Plan.

Any potentially dusty, waste loads, dispatched from the site, will be in enclosed or sheeted vehicles.

The site entrance and internal roads will be paved and all waste storage and processing areas will be on a concrete pavement. Vehicles will not drive over unpaved surfaces. Daily checks will be made to ensure that the site surfaces are clean. The public highway, site entrance and internal roads will, when required, be kept clean by a mechanical sweeper.

1.2.14 Mud and debris on the public highway

Without the use of preventative measures or controls, the risk of mud/debris from the site being deposited on the public highway, is predicted to occur monthly or less frequently.

The consequences of mud on the highway could be harm to road users from an accident, resulting from the deterioration in the road surface.

The site entrance and internal roads are paved and all waste storage and processing areas will be on a concrete pavement. Vehicles will not drive over unpaved surfaces or waste.

The site entrance and internal roads will be maintained in a good condition and will be laid to fall so that surface water will not accumulate. This will minimise the potential accumulation of mud and debris.

The public highway, site entrance and internal roads will be inspected at least daily and any mud deposits removed by site personnel or mechanical sweeper.

1.2.15 Breach of site security

Without the use of preventative measures or controls, the risk of a breach in site security is predicted to occur at a frequency of weekly or less.

The consequences of a breach in site security may be injury to intruders or site personnel.

Only non-hazardous waste will be stored. Waste will be stored in a secure site, minimising access by unauthorised personnel. Incompatible materials will be kept separately.

The site will be monitored under contract by CCTV 24 hours a day, 7 days a week.

The site's perimeter fencing will be inspected daily, should a breach of site fencing be identified, a temporary repair will be made before the end of the working day and a permanent repair will be repaired within 5 days.

Security gates will be located at the site entrance. The gates will be kept closed and locked should the site be non-operational at any time. The gates will be inspected daily and any defect repaired as soon as practicable and in any event, within 5 days of discovery.

In the event of access by unauthorised persons, security measures will be reviewed and upgraded where necessary.

1.3 Core procedure for the prevention and management of accidents

The core procedure for the prevention and management of accidents defines the steps required to:

- Ensure all accidents, incidents, dangerous occurrences and emergencies are reported promptly, investigated and recorded accurately and that remedial actions are put in place where necessary.

- Ensure the company complies with, the Reporting of Incidents, Diseases and Dangerous Occurrences Regulations (RIDDOR) and, good practice with regard to the investigation of all incidents.

The core procedure forms part of the operator's Environmental Management System.
Systems will be in place to communicate health and safety and environmental issues to all relevant staff and contractors, in order to minimise the risk of accidents.
All staff will receive training, appropriate to their post, to help minimise accidents. Records will be kept ensuring training needs are assessed and addressed.
The site will be audited on a regular basis, accidents and near misses will be investigated and the findings recorded. This information will be used to develop an improvement programme to prevent future accidents.
Operating procedures include the safe shut down of the plant in an emergency.

Outcome Summary:

The Risk Assessment Matrix (Table 5) identifies 5 areas with a high mitigated risk factor (Value over 10);

- Inadequate waste acceptance criteria
- Inappropriate waste storage
- Emissions from plant/ equipment
- Breach in Security
- Sources of ignition

Site Management are made aware of these areas of importance, these will be addressed through regular monitoring / checking / Supervision of activities. Where concerns or issues arise, a review of procedures will be undertaken and improvements made to continually improve and manage the risks.

2 Site Setting

JM Envirofuels Barry Limited is a permitted wood recovery facility for the storage and handling of wood. The facility is situated to the east of Barry town centre, north west of No.2 Dock, Berth 31 off Wimborne Road. The location of the facility is shown in the site location plan. Wood waste processing will be carried out on an area of the existing site and all operations will be carried out on impermeable hard standing, all surface waters will drain to centralised storage facility on the existing site. There will not be any discharges off site.

It is anticipated that the total amount of wood waste grade B and C and oversize material to be handled will not exceed 85,000 tonnes per annum. It is anticipated that production will be ramped up in the autumn owing to the storage requirements for this material at the power station for the Christmas close down period. The operational requirements for this material will be approximately 10,000 tonnes maximum to provide sufficient buffer during the winter periods when the demand for supply is expected to increase. It is intended due to the contract arrangements in place that material is handled within a day or so of acceptance at site. Should situations arise such as plant breakdown / temporary closure of outlets, contingency plans are in place to divert materials within Jack Moody Recycling sites.

2.1 Material Processing

The material tends to be relatively consistent because of the two principal control mechanisms. Firstly, the source-segregated wood waste tends to generate a relatively consistent input material and secondly, the material is relatively free from fine particulate matter / contaminants.

Wood waste streams originate from transfer stations, C&D wastes and Local Authority wood waste collections from civic amenity sites and private customers and contracts for disposal of waste wood.

Generally, the site or origin of the wood wastes are audited to ensure that the site has the capability to load the vehicles with high sides and the types of wood waste received for reprocessing are suitable to be reprocessed into a fuel.

2.2 Product Quality

Wood waste grade B and C will be sourced mainly from contractors, transfer sites and local authority contracts in the local area. All wastes are assessed for their suitability to be received on site with the accepted waste types.

Wood waste generally has a number of physical contaminants, metal from the screws and hinges and other furniture. Plastics and felt from wrappings and coatings, glass from windows and doors. Other contaminants from glues, paints and adhesives usually do not affect the materials properties as a fuel.

3 Appendices:

3.1 Audit template for Fire Audit

Fire Priority Information Gathering Form V7 13/12/16 **Please circle all applicable answers unless a description is required**							
Site and Operator Name: JM Envirofuels Barry Limited, Berth 31 Wimborne Road, Barry							
Person Completing Form	Permit Ref	Date of Desktop Assessment **19/05/2017**		Date of Inspection Assessment:			
Location Risk Assessment							
Q1. From local knowledge do you know whether there any sensitive receptors that could be impacted by a fire on site? This info is being gathered for us by a national project group using GIS, so just circle anything that is obvious and/or you already know about.							
.					**Yes** - Please circle all relevant		
Watercourse **Barry Dock**	Abstraction **No**	Groundwater SPZ/Aquifer	Protected Site (SSSI, SAC SPA) Estuary	School	Hospital	Housing Estate	Rail
Major A Road or Motorway	Airport **No**	Petrol Station	Sporting Venue	Power Supply	Other. Please specify. Industrial Park and the Docks		
Permit Risk Assessment							
Q2 Has the site had a fire before?			**No**– Go to Q3				
Q3 What type of permit does the site have?			Modern with 1.1.1 Management System (MS) – Go to Q4				
Q4 Does the site have an accident management plan (AMP)? This could be part of the MS or be a separate document.			**Yes** – Go to Q5				
Q5 Does it include a fire prevention and response plan?			**Yes** – Go to Q7				
Q6 Does the Working Plan include a fire response plan?							
Q7 When was the fire response plan last reviewed?		**Within the last year**					
Q8 Does it reflect current activities and waste types on site?			**Yes** – Go to Q9				
Q9 Has the plan been reviewed and / or agreed by the FRS?			**No** – Not yet				

Q10 Is the plan being implemented?	**Yes –**	
Q11 Are there any permit conditions that relate to controlling Fire Risk?		
Q12 Please list and describe the permit conditions below.		
Q13 Does the MS or Working Plan contain Maximum Storage Capacities for wastes?	**Yes** – Go to Q15	
Q14 Does the permit include conditions relating to Maximum Storage Capacities for wastes?	**Permit not issued yet**	
Q15 What are the Maximum Storage Capacities for wastes included in the MS or Working Plan? Please list below. **10,000 tonnes at any one time (Subject to review).** The types of stock on site will vary according to market outlets, there is the potential to have a combination of unprocessed, chipped and fine grades.		
Q16 What are the permitted Maximum Storage Capacities for wastes? Please list below. **Permit not issued yet**		
Q17 Does the MS or Working Plan include details of maximum storage periods or turnaround times?	**Yes** – Go to Q18 **FPMP also limits times per material type**	
Q18 Are these being implemented?	**Not yet** – Go to Q19	
Q19 What are the permitted Annual Tonnages? **85,000tns**		

Site Activity Risk Assessment							
Q20 Does the site carryout any processes or use any equipment and/or machinery that may create a fire risk?	**Yes** –						
	Welding **For plant repairs**	**Using Scoop Shovels**	**Mechanical Cutting Shredding**	**Equipment that generates heat or a potential spark**	**Use of vehicles within or upon waste**		

Q21 What types of combustible materials are stored on site? Please circle all applicable.	Q22 What are the estimated quantities on site for each waste/material stored? Tonnages or Litres if applicable.	Q23 What are the heights and widths of the stockpiles/stacks in metres. H=??m W =??m L=??m	Q24 In what form are they stored? E.g. stockpiles, bales, cages, bunded areas, loose in a building etc. S = Stockpiles B = Bales C = Cages Bun = Bunded Areas Buil = Building You can choose a combo of these options.	Q25 Does the material / waste consist of large items, large lumps, or piles of fines/chips/ shredded material? L = Large lumps F = Finer material

Wood	**Nothing at present**	**H=m, W=, L=m 5m x 17.5 x 17.5m**	**S, Bun**	**L**
Compost				
Frag Waste				
WEEE				
Fridges				
RDF				
Paper/Cardboard				
Plastics				
Other. Please describe:	**Nothing at present**	**H=m, W=m, L=m**	**S, Bun**	**F**

Q26 Are there any fire breaks or physical fire barriers between wastes / material stacks, stockpiles or bales?	**Yes** – Go to Q27 When operational						
Q27 How big are the fire breaks? Please circle.		6m					
Q28 What are the physical barriers? Please describe and Go to Q29 **Concrete blocks, soil bund around perimeter (wind break) and impermeable pad**							
Q29 How much separation is there between stacks, stockpiles or bales and other features on site? E.g. buildings, boundary fences etc? Please circle.		**1m – 10m**					
Q30 Are any of the following heat/fire detection and suppression systems in place at the site? E.g. smoke detectors/sprinklers/heat probes.	**Yes.**			Other. Please describe **Fire watch at end of day with heat guns. iTOM monitoring system 24/7**			
Q31 Is there 24 hour security in place at the site?				**No** – Go to Q32			
Q32 Can fire water be contained on site?	**Yes** – Go to Q33						
Q33 How is it contained? In a sump, is there a stop valve on the interceptor? Please describe. **Storage tank**							

Q34 Has this containment been assessed as appropriate by the Fire and Rescue Service?	**No** – Go to Q36	
Q35 Where will fire water be discharged? A watercourse, a surface water drain, a foul sewer, into land? Please describe. **Site tank, if not tankered off site for treatment.**		
Q36 Where is the nearest water supply? Please describe if known. FRS can supply if unknown. **Hydrants.** **Barry Docks, site surface water storage tank**		
Q37 Do you need to make the local Fire and Rescue Service (FRS) aware of the site? Should it be included in any FRS Risk Information Plans for the site?	**Yes** – Go to 38	

Q38 When was the last EA site inspection carried out?						

Q39 What is the site's compliance score?	New site
Q40 Are there any other reasons why this site should be prioritised due to potential fire risk? **No**	Please describe

3.2 Fire Prevention Plan

Fire Sources:

- Plant
  - Wheeled loading shovels
  - Mobile screener

- Material
  - Processed Mixed Wood
  - Fines

All the above materials are flammable however, they need to be risk assessed for their susceptibility to self-combustion. It is considered that this is more closely related to the size of the woodchip, hence the categorisation of processed wood products does not state the grade of the feed stock.

Receptors:

- Human
  - Employees }
  - Site users } Health (smoke inhalation) & Safety (burns)
  - Public }

- Environment
  - Air - Smoke / windblown ash
  - Land - Impact of fire on ground & fire residue
  - Water - Firewater run-off

Risks to people & prevention of harm is covered by operational Risk Assessments, Safe Working Procedures, and Emergency Procedures (including those detailed in the Fire Log Book).

Risks to the environment are addressed by the site infrastructure and the prevention measures in this document.

- Air -Bund around perimeter of pad & internal stock bay walls create windbreaks.
- Land- Impermeable pad constructed to protect ground beneath & provide containment.
- Water - Pad constructed with falls to contain run-off, all run-off collected in above ground tanks.

Fire Prevention Measures:

- Wind breaks
- Fire breaks
- Concrete stock bay walls and Maltese Cross arrangement
- Limited stockpile sizes – dependent on risk of material to TGN7.01 and FPMP 2016 guidance
  Daily Temperature and moisture monitoring of processed stocks at risk of self-combustion, either using a temperature and moisture probe or a thermal heat gun. It is intended to monitoring with online probes to a live monitoring system- iTOM when daily monitoring indicates that a thermal event could develop. This system is not UKAS approved, we have not been able to find a UKAS system that will work in our facilities. Flame ionisation detectors and thermal cameras will not work in an outdoor environment; also with the design of the site with the Maltese crosses it is not possible to get a clear field of view (therefore black spots would be a problem).
  This system has been working at our other permitted facilities without any cause for concern. This will be in addition to the contracted monitoring by CCTV.
- Stock rotation, insures that stock is not left on site longer than necessary (within 4 weeks), helping to reduce the possibility of self-combustion. The stock bays (numbered) will be filled and emptied in rotation. With the demand required for contracted outlets that are in place, the bays will be emptied frequently. Contingency plans are in place to divert wood to other Wood recycling facilities should the need arise.
- Site inspection for any signs of self- combustion at the start & end of each day
- Fire watch (following cessation of production) at the end of each processing shift
- Mobile plant parked at a suitable distance away from stockpiles outside operating hours
- Site security to reduce potential for arson (Monitored 24hr CCTV) and fencing
- Housekeeping – processing plant regularly cleaned
- Plant maintenance
- Stockpiles arranged to permit access from at least 2 sides in case of need to fight fire

Fire Risk Assessment of Stockpiles & Maximum Capacities

This has been developed referring to TGN7.01 'Reducing fire risk at sites storing combustible material' and Fire Prevention and Mitigation Plans V1 2016.
Additionally for background reference, the Wood Recycling Association guidance document 'Methodology for Assessing Stockpile Fire Risks' which is being considered for inclusion as part of the ongoing development of the sector specific guidance document 'Pollution Prevention Guidelines – Safe Storage & Treatment of Waste Wood' is also included as this gives a detailed assessment as a comparison for the different grades of wood.

It is intended to store stacks in accordance with the guidance given in TGN7.01,FPP 2016 and FPMP 2016;

- The Processed Stock Bays will be in bunkers 20m x 20m x 3m, each storing no more than 150m^3.
- The unprocessed Stocks will be stored within Maltese Cross configurations, 17.5m x 17.5m x 5m, each quadrant storing 735m^3. See drawing in 3.8.

The stockpiles of material at can be considered as 4 types:

Stockpile Description	Stockpile Type
Unprocessed Mixed Wood	A
0-10mm Mixed Wood Fines	D
10-100mm Mixed Wood Chip	B
Unprocessed Clean Wood	A
0-50mm Clean Wood Chip	C
10-60mm Clean Wood Chip	B

These are covered by the 4 assessments below:

Stockpile Type A, Unprocessed Feedstock

Element	Risk Rating	Comments
Risk of Arson	2	Remote site, reasonable security
Risk from Adjacent Source	2	Separation distances maintained. Firewatch at end of day
Risk of Self Combustion	1	
Risk of Fire Starting	**5**	
Risk from Stockpile Duration	1	All material processed within 26 weeks
Risk from Method of Stockpiling	3	Occasional use of tracked machine on stockpile
Risk from Re-handling	1	Only re-handled to move nearer to processing plant
Risk from Material Degradation	**5**	
Risk from Type of Fire	5	
Risk to Sensitive Receptors	1	Remote location, interceptor to catch firewater
Risk if 'On Fire'	**6**	

Therefore SCoR Rating:

5 x 5 x 6 = **150**

Hence stockpile limitations: 25,000 m3 (circa 4,000 tonnes)

Stockpile Type B, Chip with < 5% under 5 mm (screened chip)

Element	Risk Rating	Comments
Risk of Arson	2	Remote site, reasonable security
Risk from Adjacent Source	2	Separation distances maintained. Firewatch at end of day
Risk of Self Combustion	3	
Risk of Fire Starting	**7**	
Risk from Stockpile Duration	1	All material moved within 12 weeks
Risk from Method of Stockpiling	2	Stockpiled with loading shovel from ground level
Risk from Re-handling	1	Only re-handled to stockpile, then when loading out
Risk from Material Degradation	**4**	
Risk from Type of Fire	3	
Risk to Sensitive Receptors	1	Remote location, interceptor to catch firewater
Risk if 'On Fire'	**4**	

Therefore SCoR Rating: 7 x 4 x 4 = **112**
Hence stockpile limitations: 12,500 m3 (circa 3,100 tonnes).

Stockpile Type C, Chip with > 5% under 5 mm (unscreened chip)

Element	Risk Rating	Comments
Risk of Arson	2	Remote site, reasonable security
Risk from Adjacent Source	2	Separation distances maintained. Firewatch at end of day
Risk of Self Combustion	4	
Risk of Fire Starting	**8**	
Risk from Stockpile Duration	2	All material moved within 4 weeks
Risk from Method of Stockpiling	2	Stockpiled with loading shovel from ground level
Risk from Re-handling	1	Only re-handled to stockpile, then when loading out
Risk from Material Degradation	**5**	
Risk from Type of Fire	3	
Risk to Sensitive Receptors	1	Remote location, interceptor to catch firewater
Risk if 'On Fire'	**4**	

Therefore SCoR Rating:

8 x 5 x 4 = **160**
Hence stockpile limitations: 8,500 m3 (circa 2,380 tonnes).

Stockpile Type D, Fines

Element	Risk Rating	Comments
Risk of Arson	2	Remote site, reasonable security
Risk from Adjacent Source	2	Separation distances maintained. Firewatch at end of day
Risk of Self Combustion	5	
Risk of Fire Starting	**9**	
Risk from Stockpile Duration	2	All material moved within 4 weeks
Risk from Method of Stockpiling	2	Stockpiled with loading shovel from ground level
Risk from Re-handling	1	Not an issue – already fines
Risk from Material Degradation	**5**	
Risk from Type of Fire	2	
Risk to Sensitive Receptors	1	Remote location, interceptor to catch firewater
Risk if 'On Fire'	**3**	

Therefore SCoR Rating:
9 x 5 x 3 =**135**
Hence stockpile limitations: 6,000 m3 (circa 2,300 tonnes)

WRA METHODOLOGY FOR ASSESSING STOCKPILE FIRE RISKS

There are many factors which should be considered in order to determine stockpile size limitations.

The following calculation may be used:

Risk of Fire Starting	**X**	**Risk of Material Degradation**	**X**	**Risk if 'On Fire'**	**=**	**Stockpile Combined Risk Rating (SCoR Rating)**

Where:

Risk of Fire Starting = Risk of arson (location, state of site security) + Risk from adjacent source (e.g. separation distances, plant, fire-watch routines) + Risk of self-combustion

Risk from Material Degradation = Risk from stockpile duration + Risk from method of stock-piling (e.g. do you use tracked vehicles on stock-piles?) + Risk from re-handling

Risk if 'On Fire' = Risk from Type of Fire + Risk to Sensitive Receptors (smoke, heat, fire-water run-off)

The Risk Ratings for each individual element will be scored as follows:

Negligible	1
Slight	2
Low	3
Moderate	4
High	5
Very High	6

Guidance tables are attached below.

Potential for Self-Combustion

Material Type	Production Process	Likely Mechanism	Potential for Self-Combustion	Risk Rating
Unprocessed feedstock (no mechanical processing to reduce size)	N/A	Chemical oxidation of metals/contaminants (rusting/corrosion)	Negligible	Negligible (1)
Pre-crushed feedstock (average fraction size >100mm in any dimension)	Slow speed shred + screen	Unlikely	Negligible	Slight (2)
Chip with <5% under 5mm (i.e. screened)	High speed shred + screen	Aerobic biological decomposition	Low	Low (3)
Chip with >5% under 5mm (i.e. unscreened)	High speed shred	Aerobic biological decomposition	Moderate	Moderate (4)
Fines (average fraction size <5mm in any direction)	Slow speed shred + screen	Anaerobic biological decomposition	High	High (5)

Note. These figures assume that the wood is stored outside and is therefore probably damp. If chipped wood and fines are stored under cover, the risk of self-combustion will be reduced. Daily temperature monitoring will ensure that the risk of self-combustion is reduced.

Risk from Stockpile Duration

Material Type	Up to 1 week	1 – 4 weeks	4 – 12 weeks	12 – 26 weeks	Over 26 weeks
Unprocessed feedstock (no mechanical processing to reduce size)	Negligible (1)	Negligible (1)	Negligible (1)	Negligible (1)	Negligible (1)
Pre-crushed feedstock (average fraction size >100mm in any dimension)	Negligible (1)	Negligible (1)	Negligible (1)	Negligible (1)	Slight (2)
Chip with <5% under 5mm (i.e. screened)	Negligible (1)	Negligible (1)	Negligible (1)	Low (3)	Moderate (4)
Chip with >5% under 5mm (i.e. unscreened)	Negligible (1)	Slight (2)	Low (3)	Moderate (4)	High (5)
Fines (average fraction size <5mm in any direction)	Negligible (1)	Slight (2)	Moderate (4)	High (5)	Very High (6)

Note. These figures assume that the wood is stored outside and is therefore probably damp. If chipped wood and fines are stored under cover, the risk of self-combustion will be reduced. Daily temperature monitoring will ensure that the risk of self-combustion is reduced.

Nature of Fire

Material Type	Likely Burn Characteristics	Risk from Type of Fire	Risk Rating
Unprocessed feedstock (no mechanical processing to reduce size)	Difficult to start, but deep-seated once established.	Moderate	High (5)
Pre-crushed feedstock (average fraction size >100mm in any dimension)	Difficult to start, but deep-seated once established.	Moderate	High (5)
Chip with <5% under 5mm (i.e. screened)	Easier to start, material likely to smoulder, relatively slow to spread, but faster than fines	Low	Low (3)
Chip with >5% under 5mm (i.e. unscreened)	Easier to start, material likely to smoulder, relatively slow to spread but faster than fines.	Low	Low (3)
Fines (average fraction size <5mm in any direction)	Easier to start, material likely to smoulder, relatively slow to spread.	Low	Slight (2)

SCoR Ratings will then be used to determine stockpile size limitations:

SCoR Rating

Material Type	<250	251-350	351 - 450	451 – 550	>551
Unprocessed feedstock (no mechanical processing to reduce size)	25,000 m3	20,000 m3	15,000 m3	10,000 m3	5,000 m3
Pre-crushed feedstock (average fraction size >100mm in any dimension)	25,000 m3	20,000 m3	15,000 m3	10,000 m3	5,000 m3
Chip with <5% under 5mm (i.e. screened)	12,500 m3	10,000 m3	7,500 m3	5,000 m3	2,500 m3
Chip with >5% under 5mm (i.e. unscreened)	8,500m3	7,500 m3	6,000 m3	4,000 m3	3,000 m3
Fines (average fraction size <5mm in any direction)	6,000m3	5,000 m3	4,000 m3	3,000 m3	1,500 m3

Note:

To convert cu metres to tonnes (approx.):

- Unprocessed feedstock - 0.16 tonnes = 1 cu m
- Pre-crushed feedstock - 0.20 tonnes = 1 cu m
- Screened chip - 0.25 tonnes = 1 cu m
- Unscreened chip - 0.28 tonnes = 1 cu m
- Fines - 0.38 tonnes = 1 cu m

3.3 Fire Risk Assessment

Risk Assessment for:

Work Activity: Fire Safety Management **No: RAR-016**

Risk Value: Likelihood 3 Consequences 2 Risk Low

Significant Hazards	Persons Affected	Existing Risk Rating L x C = R			Measures to Control Hazard to an Acceptable Risk Level	Residual Risk Rating L x C = R			Additional Control Measures If required
Fire and explosion	Operatives	3	2	6	• Specific fire risk assessments have been completed for all areas and operations. • Fire risk assessments are reviewed regularly and revised as appropriate. • Employees have been made aware of the significant findings of the fire risk assessments. • There is a suitable means of raising the alarm in the event of a fire. • The fire alarm system is checked and maintained by a competent person at regular intervals. • Fire drills are carried out at least twice every twelve months. • Fire exits and escape routes are unobstructed and are clearly identified with suitable signs. • Fire exits are unobstructed and are clearly identifie with suitable signs. • The operation of fire exits is checked regularly. • A sufficient number of suitable fire extinguishers are provided. • Fire extinguishers are wall mounted or positioned in purpose made holders on all exit routes from the premises. • Fire extinguishers are located on exit routes from the premises. • Fire extinguishers are identified by suitable labels and notices. • Fire extinguishers are checked and maintained by a competent person annually. • Employees have been trained in the recognition and use of fire extinguishers. • All new employees undergo documented fire	3 3 2 3	1 1 1 1	3 3 2 3	• Works site rules to be adhered to.

					safety induction training. • All employees have received relevant fire safety instruction and training on an annual basis.				

How to Calculate Residual Risk Values:
To calculate the Residual Risk Value multiply the likelihood of an incident occurring by the consequences of that incident happening. This simple calculation will give you a Risk Value

Likelihood:	**Consequences:**	Risk Levels:
1 = Very Unlikely 2 = Unlikely 3 = Likely 4 = Very likely 5 = Certain	1 = Non reportable 2 = Minor Injury 3 = 3 Day Injury 4 = Major Injury 5 = Fatality	1 – 9 = **Low Risk Acceptable** 10 – 14 = **Medium Risk Try to reduce risk** 15 – 25 = **High Risk NOT acceptable**

Residual Risk Value **Likelihood: 3** **Consequences: 1** **Risk Value Low 3**

PPE, training and competence
Ensure PPE is used –
Safety helmets EN 397:1995,
Safety footwear BS EN 346-1:1992,
Gloves BS EN 388, 407,420, or 511 as appropriate
High Visibility Clothing BS EN 471 2003Ensure operatives have been trained in manual handling; COSHH assessments

Name:	Date:
Name:	Date:
Name:	Date:
Name:	Date:

Risk Assessment for:

Work Activity: Temperature checking a windrow or stockpile No: RAR-036

Risk Value: Likelihood 3 Consequences 2 Risk High

Significant Hazards	Persons Affected	Existing Risk Rating L x C = R			Measures to Control Hazard to an Acceptable Risk Level	Residual Risk Rating L x C = R			Additional Control Measures If required
Temperature checking a windrow or stockpile Actions taken if a windrow or stockpile was found to be higher than normal temperatures	Operatives	4	4	12	• The entire stockpiles are mapped with the temperature probe if temperatures are found to be high the operative must inform the recycling Manager • If the recycling manager decided to open up the stockpile and dig out this hotspot to see if there was any evidence of fire. • Once this had been dug out the excavated. • The excavated material is segregated from the main stockpile. • If there is evidence of smoldering water would be applied to the material and the covered with soils/clay material • This would continue until the recycling manager was happy with the material and it was not smouldering. • Temperatures would be continued to be check through out the day	3 3 2 3	1 1 1 1	3 3 2 3	• Works site Management Plan to be adhered to.

					• Un-till the stock pile or windrow returns to normal temperatures				

How to Calculate Residual Risk Values:

To calculate the Residual Risk Value multiply the likelihood of an incident occurring by the consequences of that incident happening. This simple calculation will give you a Risk Value

Likelihood:	**Consequences:**	**Risk Levels:**
1 = Very Unlikely	1 = Non reportable	1 – 9 = **Low Risk Acceptable**
2 = Unlikely	2 = Minor Injury	10 – 14 = **Medium Risk Try to reduce risk**
3 = Likely	3 = 3 Day Injury	15 – 25 = **High Risk NOT acceptable**
4 = Very likely	4 = Major Injury	
5 = Certain	5 = Fatality	

Residual Risk Value Likelihood: 3 Consequences: 1 Risk Value Low 3

PPE, training and competence

Ensure PPE is used –
Safety helmets EN 397:1995,
Safety footwear BS EN 346-1:1992,
Gloves BS EN 388, 407,420, or 511 as appropriate
High Visibility Clothing BS EN 471 2003Ensure operatives have been trained in manual handling; COSHH assessments

Name:	Date:
Name:	Date:
Name:	Date:
Name:	Date:

3.4 Fire Management Plan

Fire Management Plan

- Introduction

The fire safety plan has been established for the safe working of the Barry site to ensure that:

- This plan covers the action to be taken in the event of a fire on the Barry Site
- How fire hazards will be controlled.
- Emergency responders will be notified of a fire emergency.
- Emergency responders will not be delayed in carrying out their duties.
- Firefighting operations will be managed effectively without unnecessary delays.
- Designated supervisory staff will be appointed and organized to respond to fire emergencies.
- Instructions including schematic diagrams describing the type, location and operation of building fire emergency systems will be established.
- Building facilities, systems, equipment and devices will be properly inspected and maintained.

The fire safety plan reflects the unique characteristics of the compost site consider the available firefighting infrastructure. The fire safety plan includes the following information:

- Emergency procedures for an emergency

In the event of a Fire all operatives must inform Mr ..... by radio or by mobile phone his number is ..... He will then inform the Fire Brigade 999 and the Natural Resources Wales Incident Hotline 0800 80 70 60. In the event of the fire effecting residents the police may need to be involved because the residents may need evacuation.

Other contact numbers are: Mr (Site Manager) Mobile
Mr (Regional Manager) Mobile
Mr Alan webb (M.D) Mobile : 07764 289530

- Training of site personnel on evacuation procedures

Site operatives have the evacuation procedures explained at their induction provided by the Health and Safety Manager. Regular site fire safety meetings a part of regular safety meetings and fire drills are conducted throughout the year.

- The Assigned site personnel are responsible to maintain fire safety duties

These are Mr ..... and Mr..... They are responsible for controlling combustibles on the site and around the buildings. Also, general site housekeeping this done by asking staff to removing excess pallets, rubbish /waste material and other combustibles on a regular basis.

Other things to take into consideration are maintaining separation of combustibles from open flame devices. They maintain and clear unobstructed from access route(s) for fire brigade. Maintaining there is a clear exit from the office.

The parking of vehicles or delivery trucks should not obstruct fire department access if needed to attend site.

- Firefighting Services – Access Route

Site drawings are in weighbridge / site office for the fire brigade and show the location of firefighting equipment. The site address signs are visible and legible to emergency crews from the street. The site road is 12 metres wide, allowing good access for appliances (See 3.6 site layout / access plan).

- Fire Extinguishers

There is a sufficient quantity and type on-site and servicing is undertaken annually by Diamond Fire or another certified company.
They are provided at or near fuel operated equipment and are they adjacent to any hot works operations (e.g. cutting torch, welding, torching, etc.). The extinguishers are intended for small fires and plant fires. Water is intended for extinguishing wood fires.

- Hot Spots

Wood chip / fines begin to heat after production due to breathing (microbiological oxidation), it is possible to reach temperatures of 65^{o}C after two weeks. Usually charring is an indication that temperatures are getting critical, this occurs sometime before smoke develops.
Daily checking of stock piles for temperature and signs of temperature increase as well as not keeping material onsite for two weeks will minimise the potential for hot spots.
Should a hot spot be identified and requires digging out, this will be undertaken in a controlled manner;

- Identify a concrete block bay or an isolation area minimum 20m from other sources and materials with sufficient room to spread the materials to cool it down
- Monitoring of temperature with temperature probe or electronic hand held infrared monitor
- Provision of a water spray or fogging
- Flooding of the stock pile by inserting perforated pipes and pumping water in
- Dug out material will be put away from stock piles in an isolated area and dampened down, temperatures will be monitored until the temperature is no longer a risk with a temperature probe or hand-held monitor.

• Hot Works Operations

The area is to be kept clear of flammable and combustible materials for a distance of 6 metres. A fire watch takes place during the hot works operation and for 60 minutes after its completion and then a final inspection is completed at the end of the day. No hot works must be conducted in the proximity of combustible or flammable materials and provisions have been made for protection of such materials by non-combustible materials, where hot works is conducted must be properly ventilated. Appropriate signage will be used during these works.

• Flammable and Combustible Storage

There are no flammable or combustible liquids stored within the wood yard.

• Electrical Installations and Petroleum Gases

The electrical installations, storage and use of petroleum gases comply with the requirements of the Safety Standards Act.

• Security

On-site security is provided: e.g. locked gate, monitored alarm and the site has Monitored 24-hour CCTV.

• Contact Personnel

There a list of names and telephone numbers of persons to be contacted during and after normal operating hours or in the event of an emergency are below.

All the contact personnel are able to respond in a timely fashion with a response time of about 30 minutes.

- ## Building Diagrams:

The diagrams for the site are:

- Plans of the site;
- Muster point(s);
- Location of water sources
- Location of fire protection equipment

The fire safety plan will be reviewed and updated as the site developers and then periodically afterwards. The plan will evolve and will be used to maintain and protect the buildings and site operatives.

- ## Fire Precautions and Evacuation procedures

The Managing Director will ensure that: -

All employees receive comprehensive induction before commencing work, to ensure that they are fully aware of all the arrangements in place during the evacuation procedure.

A register of employees is kept up-to-date at all times. This register must be available for inspection at all times and will be taken to the fire assembly point in the event of an evacuation for the purpose of calling the roll.
The requirements for employee training in fire safety are adhered to.

A fire logbook is kept up-to-date with all relevant records relating to fire safety and ensure that it is made available for inspection by the local authority fire brigade.

All fire-fighting equipment is tested on a regular basis as per the manufacturer's guidelines and records kept.

A fire evacuation drill is carried out at least annually which will be recorded in the fire logbook.

A fire risk assessment is undertaken within the workplace, outlining who may be affected by a fire along with any special requirements that may be identified.

A regular check is made to ensure escape routes and doors are not obstructed. Fire exit doors should be unlocked and available for use at all times when persons are in the building. Fire doors should be closed at all times and not wedged open.

In the event of a fire, the safety of a life shall override all other considerations, such as saving property and extinguishing the fire.

The company does not expect employees to fight fires, however, extinguishing action can be undertaken if it is safe to do so. On no account, should a closed room be opened to fight a fire.

Employees should report any concerns regarding fire safety to management, so that the company can investigate and take any remedial actions that may be necessary. The hazard detection form can be used for this function.

Office
In the event of a fire breaking out in the site office all staff must follow the company's fire instructions, and evacuate the office by following the green man to the fire exits.

Re-entering the building is strictly prohibited until the incident control officer from the emergency services declares that it is safe to do so.

Process Yard
In the event of a fire in the stockpiles operatives must inform the Site Manager Mr ..... by radio or mobile, his number is ..... who will then inform the fire brigade and the Natural Resources Wales. After this he will instruct the appropriate members of staff assist in the fire action plan.

At present temperature monitoring will be undertaken daily during operational hours using a temperature and moisture probe. If concerns occur regarding temperatures, it is hoped that monitoring with online probes to a live monitoring system- iTOM when daily monitoring indicates that a thermal event could develop Refer to Wood SOP (standard operating procedures) for trigger levels. Following ABPR guidance (currently the only standard detailing continued monitoring) there will be a minimum of two probes per storage bay and one per unprocessed bay during evenings and weekends. This will be in addition to the contracted monitoring by CCTV.

- **Extinguishing Fires.**

Only attempt to put out fires if safe to do so. If in doubt, evacuate the buildings or site area. Fire extinguishers are located at various positions around the site and in the site offices. Familiarise with their positions.

The following table summarises the various fires on which the different types of extinguishers should be used. These will only be used for small fires, it is not practicable to fight large fires with extinguishers. For large fires the Fire Rescue Service will be requested. Staff will work alongside FRS to extinguish the fire if practically possible by removing to the Quarantine area or concrete bay to contain the fire.

Type	Solid fires (wood, paper, cloth, etc.)	Liquid fires (petrol, oil, paints, fats)	Safe in vicinity of live electrical apparatus
Water (gas cartridge)	YES	NO	NO
AFFF spray	YES	YES	YES
Halon 1211 (BFC)	NO	YES	YES
Dry powder	NO	YES	YES
CO2	NO	YES	YES

- **Points of Importance**

i) All operatives must familiarise themselves with the 'Fire Evacuation' drawing displayed in the weighbridge and in recycling site office any contractor Prior to commencing work, must have an induction and pointed out all how this relates to the actual site layout.

ii) No hot works are to be carried out without prior agreement of JM Envirofuels Site Management and must be carried out under a 'permit to work'. Appropriate firefighting equipment must be at hand during hot works operations.

iii) In the case of a fire, all operatives and staff must report to the fire assembly point adjacent the outside the site gate. Then a role call will be done to ensure all personnel have evacuated.

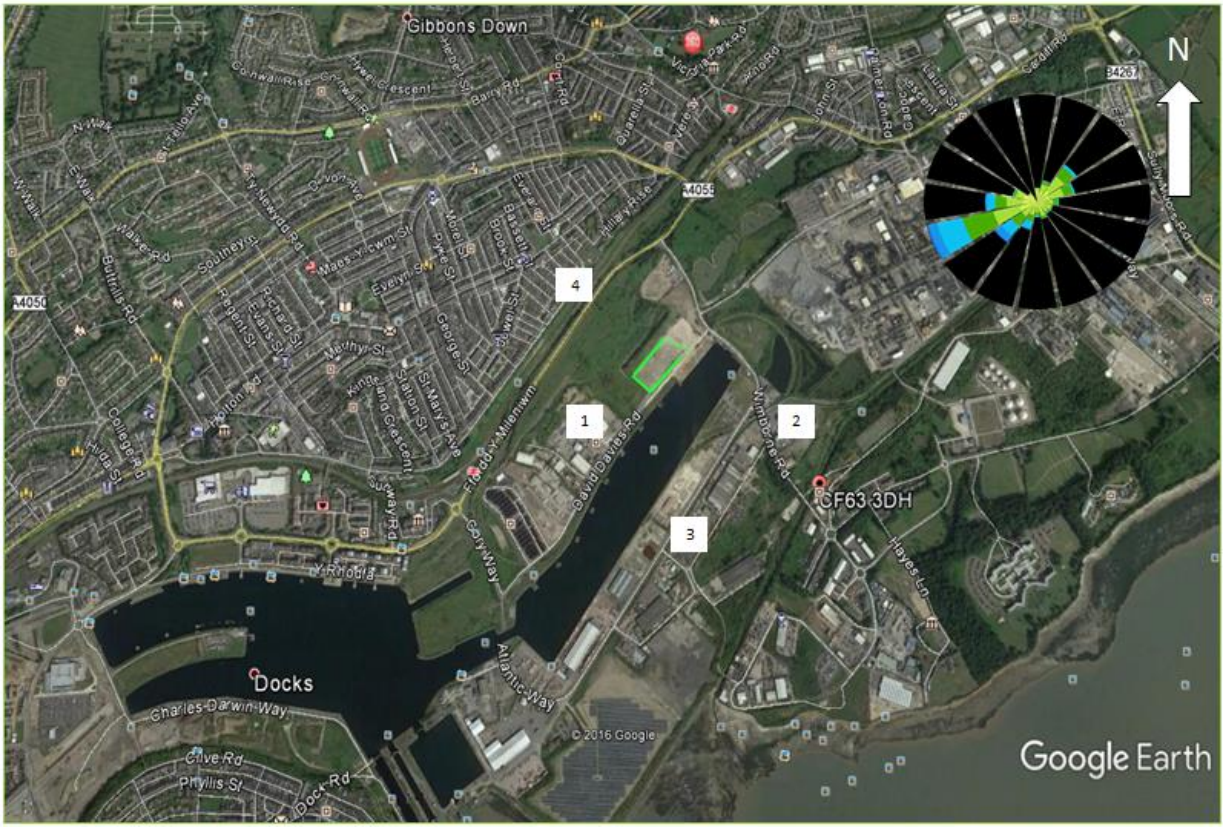
v) Operatives must not leave the Fire Assembly Point area until they are told to do so by JM Envirofuels Site Management.

Important

Many activities are the cause of fire. It is your responsibility to prevent fires by safe working practices.

Mr …..... will inform the Fire Brigade and the Natural Resources Wales Incident Hotline 0800 807060

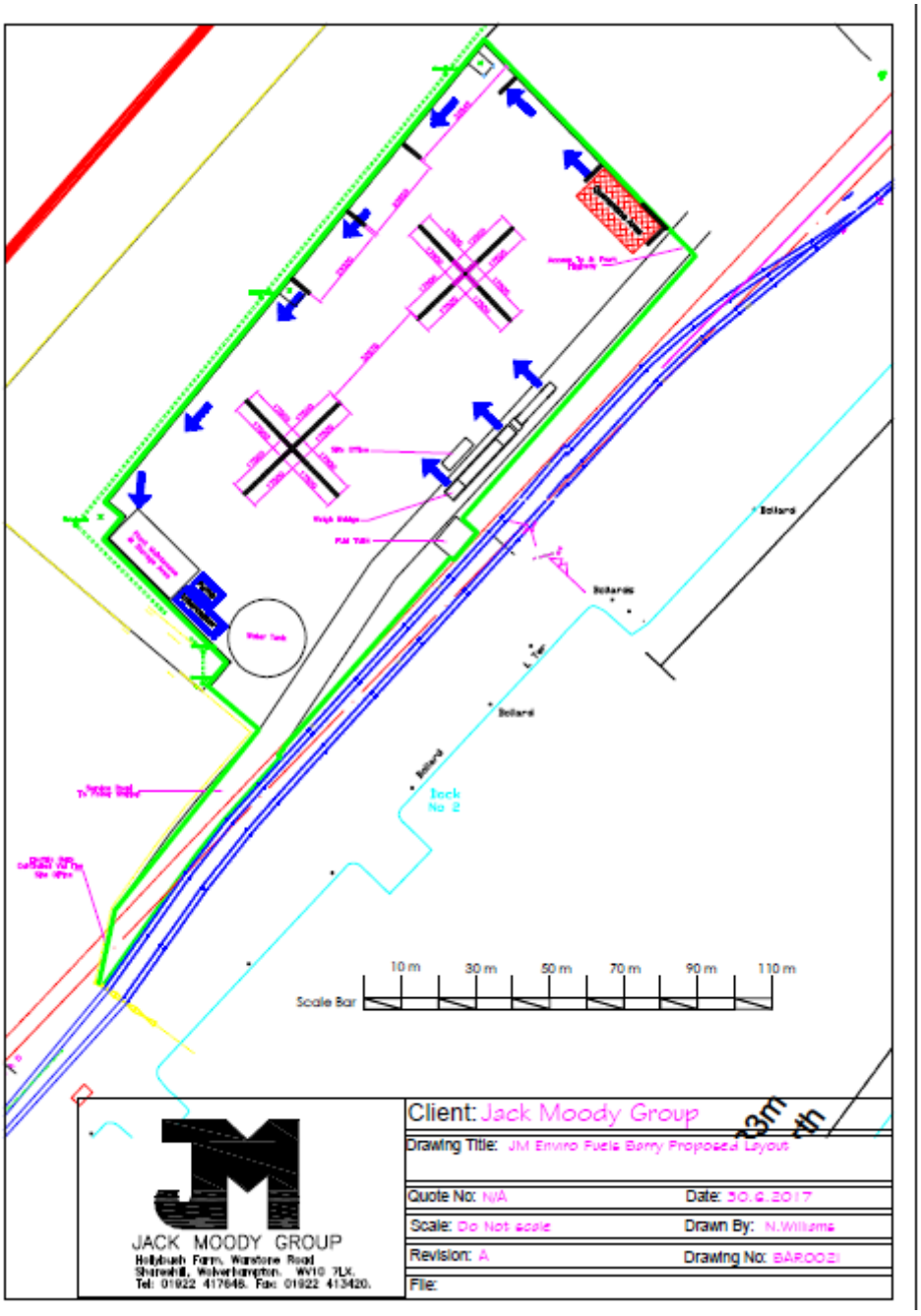
3.5 Site / Receptor Plan



Permit Boundary = Green line

Location	Receptor	Distance
1	Harris Pye International	166m SW
2	Container Storage	320m SEE
3	Industrial	371m SE
4	Residential	330m NW

3.6 Site Layout / access plan



3.7 Drainage Calculations

Drainage design and Storage

JM Envirofuels Limited is developing Berth 31, Wimbourn Road as a new wood waste facility. The development includes construction of rigid pavement for the site access road and processing area. The runoff from these areas will be controlled and managed through the use of sustainable drainage systems and water harvesting for re-use at the wood waste facility.

Operational Area (total area 15310m^2)

The new area for operating is approximately 15310m^2. Taking a M5-48hr event of 50mm a runoff volume of 7655m^3 would be generated at the site. To handle this runoff, a new storage tank will be construction with a capacity of 10500m^3 (allowing for 33.5% extra/free space storage capacity).

This will be managed via a pumping chamber and surface mounted 1million ltre tank shown on the site layout drawing

Firefighting water usage on site will be part of the fire prevention plan but for ease we have provided the calculation as part of the drainage design also.

Fire Fighting Water (stockpile 750 m3 for 4Hrs)

4hrs firefighting water requirements for site, with wood stockpiles of 750m3. Wood piles in case of emergency require a rate of 5m3 or 5000 litres of water per minute of burn.

4 hrs or 240 minutes at 5m3 per minute equates to 1200m3 per hr requirement. Total storage capacity on site for fire prevention is 15000m3 in surface water tank. Site design is such that if a fire event would occur all water stays bunded on site by the site infrastructure. The site infrastructure includes a perimeter drainage channel directing water to the sump for pumping and raised concrete kerbs around the site for containment.

3.8 iTOM SOP