Fire prevention and mitigation plan (FPMP)

Mekatek Limited

Environmental permit: TBA

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1. Fire prevention objectives

This fire prevention plan has been prepared to meet five principle objectives as outlined within NRW/EA guidance and is designed to:

- minimise the likelihood of a fire happening
- aim for a fire to be extinguished within 4 hours
- minimise the spread of fire within the site, neighbouring property and the impact of the community
- resources required during an incident
- post incident remediation

2. Application on site.

This guidance applies to this location due to the following materials being processed/held on site:

- Waste Electronic and Electrical Equipment
- Waste/scrap metals
- Non-hazardous waste
- Production of glass/cement type products

3. Types of combustible waste/materials

Combustible waste includes and is listed upon an appropriate record form within the appendices:

- paper or cardboard
- plastics
- scrap metals contaminated or mixed with other waste such as oils or plastics
- mixed waste containing any combustible wastes

The following are also types of combustible waste.

3.1 Wood

This includes:

- planks, boards, crates, pallets.

3.2 Fragmentiser waste

This includes waste from:

- plastics and metal wastes from materials recovery facilities

3.3 Waste Electrical & Electronic Equipment

WEEE, including:

- fridges
- computers, televisions and other WEEE items, listed by their EWC, containing combustible materials such as plastic (including any batteries within this equipment) prior to processing/removal

4. Use of the fire prevention plan (FPMP)

This fire prevention plan forms part of the management system (EMS). It sets out the fire prevention measures and procedures that need to put in place and used at this site.

This fire prevention plan has been developed as a standalone document within the EMS so that all site personnel may gain access to and easily refer to it. It will be readily available at all times and particularly in the event of an incident.

All staff and contractors working on site must understand the contents of the FPMP so that they know what must be done:

- to prevent a fire occurring
- during a fire if one breaks out

To support this, regular exercises will be arranged as appropriate to the activities, and in conjunction with the general site risk assessments i.e. 6/12 monthly, to test how well the developed plan works and ensure site personnel/staff understand what is required in the event of an emergency.

5. Fire prevention plan contents

The following sub-sections outline the appropriate measures put in place to reduce the risk of a potential fire outbreak and based upon the type of activities & processes performed at this location.

5.1 Activities at the site

The following activities are currently performed at this site which is also reproduced within the site EMS and NTS and on the introduction of any additional processes etc. then this FPMP will be updated and submitted to NRW.

These include:

- storage of low risk combustible materials prior to processing as listed in Section 8
- low risk waste transfer via conveyors and mobile plant/equipment
- manual dismantling using electrical and rechargeable tools
- automated equipment such as shredding, granulation, crushing etc.
- temporary storage of recyclates and their storage in segregated bays pending off site transfer as indicated within Section 8
- the storage of fuels necessary for the site plant/equipment

5.2 Site plans and maps

Within the appendices of this FPMP

The following plans/drawings are included as they develop for reference:

- layout of buildings – to indicate services and any isolation points
- the areas where hazardous materials are stored on site (location of gas cylinders, process areas, chemicals, piles of combustible wastes, oil and fuel tanks)
- main access routes for emergency vehicles and any alternative access
- access points around the site perimeter to assist fire fighting
- hydrants and water supplies
- areas of natural and unmade ground
- the location of fixed plant or where mobile plant is stored when not in use
- drainage runs, pollution control features such as drain closure valves and fire water containment systems where appropriate
- storage areas with pile dimensions and fire walls (where applicable) - including wastes stored in a building, bunker, or containers
- the quarantine area – located/identified where containment may be best controlled in the event of waste being transferred to an outside location to aid fire suppression e.g. kerbed areas.

In addition the site location plan indicates any sensitive receptors within a 1km radius of the site that could be affected by a fire including a compass rose showing north and the prevailing wind direction.

6. Managing common causes of fire

The following common causes of fire and the measures taken to reduce the risk for this location/site are presented below.

- Arson or vandalism – no readily combustible materials will be stored within 2 metres of any site boundary with the site being secure/supported due to 24/7 operations to allow rapid access to the site in the event of a breach being recorded.
- Self –combustion – this is a low risk due to the type of materials/recyclate being stored, daily inspection of stockpiles and rapid turn-around of volumes of recyclates from site.
- Plant & equipment failure – these will be monitored during use and any fire detected visually, via the site fire detection system and in conjunction with the site Risk Assessment procedures with regard detection, emergency action and evacuation. All site plant & equipment is subject to regular inspection, service and maintenance agreements/arrangements in conjunction with supplier's recommendations and/or Company policies. Where appropriate and based upon the RA where mobile plant is operated within isolated areas/conditions then these may be subject to being fitted with an extinguisher when compared with fire points being readily accessible in the event of fire outbreak. Fire-fighting equipment will be subject to routine inspection whereupon the fire RA has identified the position and type of fire-fighting equipment for static plant/equipment.
- Electrical faults – these are subject to appropriate testing/approval following the building installation (3 yearly inspection/test) & fixed electrical installation requirements and PAT upon items in conjunction with HSE guidance/requirements as indicated within electricity at work guidance e.g. at least on an annual basis and in conjunction with Company maintenance & usage arrangements.
- Ignition sources/Naked lights – the whole site has been designated as a non-smoking site excepting designated outside areas which are monitored for compliance. Use of equipment using flames such as welding will be performed/controlled via a permit to work (PTW) system and written risk assessment and method statement (RAMS) – see refer to Hot works below.
- Discarded smoking materials – only allowed in a designated area outside of the premises with no combustible materials present.
- Hot works – allowed/controlled via a PTW and RAMS approved by site management with vigilance during and periodic checking for at least thirty minutes and up to an hour after work completion/equipment shut down to ensure cool conditions have been complied with. Fire-fighting equipment will be available nearby whilst work is ongoing. Normal & routine workshop activities are controlled via trained operatives in conjunction with site procedures.
- Industrial heaters – the installation, use and maintenance will be controlled by site management and appropriately located away from combustible materials with regard position (6 metres from combustible materials), guarding etc.

- Hot exhausts – these will be monitored by the operator and any adverse information passed to site management immediately with attention to maintenance and shut down to allow cooling prior to leaving site.
- Open burning – it is not envisaged this will be allowed under the EP unless under an approved exemption.
- Damaged/exposed cables – these will be subject to a daily check by site operatives, monitored by site management and the H&S advisor and in conjunction with HSE guidance for inspection & testing. Faulty items will be quarantined pending repair and/or removed from operations.
- Leaks and spillages – constant vigilance and daily inspections/monitoring will alert site operatives/management of any potential leaks etc. and will be decontaminated where observed. Spill kits are readily available with operatives trained to respond to such incidents.
- Batteries removed from equipment will be appropriately stored within purpose designed containers to reduce the potential for leaks, heat build-up and /or short circuiting.
- Housekeeping – any build-up of wastes/dust/fluff etc. will be monitored on a daily basis with permanent arrangements for regular cleaning.
- Reactions between incompatible materials - this is unlikely to occur due to the limited range of solid, non-COSHH regulated materials being processed.
- Neighbouring site activities – it is not envisaged that any neighbouring site activities are a threat to the fire protection at this location.
- Sparks from loading buckets – there is a low risk of this occurrence leading to a fire outbreak as such activities are performed under supervision.
- Incompatible wastes – due to the types of solid recyclables/wastes undergoing processing then there is no potential for cross reaction.
- Hot loads deposited at the site – no hot loads are to be deposited at this site.
- To ensure pressurised cylinders/waste containers are appropriately stored, secured and managed in a designated enclosure outside of the production buildings.

7. Prevent self-combustion

Any wastes with the potential for self-combustion e.g. which can self-heat, will be monitored on a daily basis with the use of heat detection equipment.

This may be prevented by the management of storage times, pile volumes and height, and the temperature of the wastes pending having sufficient volumes to arrange off-site transfer (see table within appendices).

7.1 Manage storage time

The maximum storage time of all materials on site processed on site will be controlled in conjunction with listed wastes within the table included within the appendices. This is to be monitored and when sufficient volumes of materials are processed suitable arrangements will be made for off-site transfer.

Good stock rotation for all stored materials will be followed with records maintained of batches/volumes of processed recyclate/materials and their storage location managed.

Notwithstanding the above monitoring any combustible wastes will not be stored for longer than 6 months where practical to do so (agreement from NRW will be requested to allow longer storage periods supported with an inherent control strategy e.g. temperature monitoring, stock rotation etc.).

The storage of combustible wastes in conjunction with NRW/EA recommendations for longer than 3 months will be allowable with extra measures to prevent any self-combustion as indicated above.

Where there are seasonal variations in demand or supply for the combustible waste then controls will be applied as that per previous sections. This will include storage, observation and preventative measures on the principle such as older waste despatched first and so on with dates of different stockpiles notes/recorded for correct management.

7.2 Monitoring and temperature control

Potential build-up of heat within stockpiles of wastes will be controlled by:

- reducing the exposed metal content within the waste,
- allowing any heat generated during treatment such as shredding, chipping etc. as per EP to be released so that the waste is cool before storage within stillages/bags pending temporary storage/prior to despatch.
- monitoring temperature with a probe or other device that can take representative readings from the centre of a pile and comparison to the surface temperature.
- comparison of the temperature variation to take action by staff training/awareness and to reduce & dissipate heat build-up by cooling, turning over piles etc.
- taking due account of any external heating during hot weather and/or localised heating or using other techniques to enable heat generated within the pile to be released e.g. turning over, cooling etc.

7.3 Waste bale storage

Where wastes are stored in bales then the following controls will be applied as appropriate to any extended storage prior to despatch:

- to sample/test to ensure at least 10% of the total number are monitored.
- that representative temperature readings are taken from the centre of the bales and from bales within the centre of any pile
- that bales are rotated/turned to ensure stored waste remains at or near to ambient conditions.

8. Manage waste piles

These will be managed in conjunction with this FPMP to:

- prevent the risk of self-combustion
- limit the scale of a fire if one breaks out

To achieve this the following controls will be applied:

- to minimise pile sizes to enable appropriate separation,
- store waste materials in their largest form compared to fines.

The following is appropriate guidance used to manage piles of waste effectively albeit not all will be received at this site within the confines of the EP and NRW guidance documents.

8.1 Maximum pile sizes and minimum separation distance (as appropriate to the types of wastes being processed/stored))

Waste/Material type	Max. height (m)	Length & width (m)	Max. vol (m3)	Max. area (m2)	Min. separation (m)
Paper and cardboard	5	20	750	235	6
Plastic, rubber & other materials	5	20	450	235	6
WEEE containing plastics, including fridges, computers and electrical equipment	5	20	300	235	6
Processed wood including sawdust, shavings, chips	3	10	150	100	6
RDF and fragmentiser dust	5	20	450	235	6

Waste/Material type	Max. height (m)	Length & width (m)	Max. vol (m3)	Max. area (m2)	Min. separation (m)
Unprocessed wood	5	20	750	235	6
Metals other than WEEE	5	20	450	235	6

For all waste piles, the maximum height allowed will be 5 metres with other dimensions being the maximum length or width allowed (whichever is the longest) being 20 metres (unless previously agreed with NRW).

It is however envisaged that only incoming SDA type wastes are to be held in a pile, below the guidance levels and to be processed on a continuous basis.

Where the waste piles contain a mixture of combustible wastes then the maximum limits will be calculated based on the type of waste that makes up most of a mixed pile.

The floor plan has been designed in consideration of the design, access and layout of a building for storing waste so a fire may be accessed to aid in extinguishing at the earliest opportunity as not for any outbreak to become locally uncontrollable.

9. Where maximum pile sizes don't apply

Waste stored in containers

Where waste is stored within containers holding more than 1,100 litres then each will be accessible so any fire inside may be extinguished e.g. skips, roll-on roll-off skips, shipping containers etc. although these will principally be held outside unless being loaded/unloaded.

In addition these will be stored being mindful of them being able to move containers as soon as is reasonably practicable to prevent any fire spreading. These will be monitored on a daily basis with controls such as temperature assessed as outlined in previous sections.

10. Prevention of fire spreading

10.1 Separation distances

The following control measures where practicable will be adopted to prevent fire spreading:

- storage of combustible waste piles with a separation distance of at least 6 metres
- to have a separation distance of at least 6 metres between waste piles and the site perimeter, any buildings, or other combustible or flammable materials

10.2 Fire walls and bays

Where practical to do so then reduction of separation distances will be considered/adopted by using in house fire breaks/walls and bays of concrete blocks designed to:

- resist fire (both radiative heat and flaming)
- to allow waste to be isolated and to enable a fire to be extinguished within 4 hours

Where waste is stored within bays then attention will be given to:

- Frequent stock rotation to ensure a first in, first out policy and this will be monitored and recorded on a daily basis as materials are processed/stored,
- To take representative checks of the temperatures of all the waste within the bays and on the entire volume of the pile.
- To assess the specification, construction and maintenance of the walls to ensure continuance of a thermal barrier and how any joints will be adequately sealed.
- To monitor on a daily basis to ensure any potential heat build-up is not allowed due to the spread of fire between piles caused by overtopping, inadequate separation etc.
- To allow wastes to be removed quickly and effectively from bays to allow isolation during an incident where safe to do so and under the supervision of the emergency services
- To move burning/smouldering wastes as soon as practicable/allowable to a designated, protected, quarantine area of sufficient dimensions to allow safer extinguishing of the offending material and reduce the environmental impact form heat, smoke, smell etc.

11. Fire detection

Early detection will be made possible via visual means and via the in-built fire detection system within the building as indicated within the Fire RA included within the appendices.

These include:

- smoke and heat detectors including temperature probes
- daily monitoring

12. Fire suppression

There is no in-built fire suppression system installed due to the limited range of combustible wastes processed/stored which are deemed to be of low risk.

However the existing fire prevention/fighting system is proportionate to the nature and scale of the waste management activities carried out and the associated risks therein.

The processes and storage is designed to be in discrete areas and thus allows the emergency services being able to gain access to suppress fires and to reduce the potential of spread.

Appropriate fire suppression systems include the following as appropriate and in conjunction with the Fire RA.

- Sprinklers/hoses
- Suitable extinguishers as per the drawings/plans within the appendices and Fire RA documents.
- fire blankets

13. Firefighting techniques

The site design is such as to allow for active firefighting and to further allow a fire to be extinguished within 4 hours where ever possible and practicable to do so.

Active firefighting will consist of having the resources available at all times in the event of a fire although nobody should put themselves at risk by attempting firefighting.

The resources needed include:

- plant that can be used to move waste around the site, for example loaders, excavators, material handlers
- trained and sufficient staff to alert emergency services and take control until they arrive
- be aware of the locations of readily available water supplies
- finances being readily available as appropriate to reduce the risk so far as is reasonably practical to do so.

A variety of firefighting techniques will be available for use together or separately to extinguish a fire. These include:

- applying water to cool unburned material and other hazards
- separating unburned material from the fire using site plant
- separating burning material from the fire to quench it with hoses or in pools or tanks of water where appropriate to do so.
- To locate a Carbon Dioxide extinguisher at/close by each item of equipment capable of generating heat and alongside the segregation and pre-processing operations. This must allow reasonable access to firefighting equipment in conjunction with the general Fire RA.

Firefighting techniques may also include suffocating the fire using soil, sand, inert construction materials. However, this can only be considered/followed if:

- the NRW has agreed it beforehand
- it includes the removal and disposal of contaminated material as soon as it's safe to do so

All these techniques may be used by staff on site if they're suitably trained and are supervised by the fire and rescue service. However, protecting the health and safety of people on site must be the first priority.

14. Water supplies

Enough water will be available for firefighting to take place and to manage a worst case scenario (the largest waste pile catching fire) to include potential water in storage tanks on site and/or access to hydrants or mains water supply as outlined upon the site plans/drawings.

(Note – typically a water supply of at least 2,000 litres a minute for a minimum of 3 hours for a 300 cubic metre pile of combustible material is recommended).

15. Managing fire water

As all stockpiles are to be controlled/stored within the building then it has been deduced that the principle fire water run-of will be contained therein.

However further containment of the run-off from firefighting water at risk of contamination/pollution of the environment will be achieved via the use of appropriate sand/ bags to allow temporary bunding.

This control strategy will take all the steps that are reasonably practicable to minimise pollution from fire water for entering:

- any surface waters, for example rivers, streams, estuaries, lakes, canals or coastal waters
- into the ground

Secondary and tertiary containment facilities for fire water run-off will also include:

- bunds
- pollution control equipment such as fire water booms and drain mats to block drains or divert fire water to holding general areas
- manually operated drain bladders/blockers positioned within external drains to prevent fire water ingress
- to divert fire water to the local sewer where practical to do so and in agreement in principle from the sewerage company.

16. During and after an incident

Where practical to do so then the following contingency measures will be taken in order to allow the site to continue reduced operations.

- diverting wastes to the Companies other sites or to arrange suitable alternative sites during and post fire conditions,
- to liaise with NRW and the Local Authority to alert site users, nearby residents and businesses of any potential pollution and adverse operating conditions e.g. smoke damage etc.
- to make appropriate arrangements to clear the unusable wastes and decontamination of the site e.g. clean up operations, washing down, screening, rebuilding etc.

17. Further development

When the site is fully operational it is anticipated that the potential use of automatic heat detection devices/system is to be considered to monitor the site prior to any ignition/fire outbreak.

In addition as the site develops and plant/equipment is installed/changed etc. then this FPMP will be regularly reviewed to ensure it is fit for purpose whereupon any upgrades will be approved by site management and submitted to NRW for further comment/observation.