



Growing Beds Recycling Services Limited

Fire Prevention Plan

Date: June 2023



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1 INTRODUCTION

1.1 BACKGROUND INFORMATION

This Fire Prevention Plan has been prepared as part of on-site Operational Documentation in support of the Environmental Permit Variation Application for the existing Growing Beds Recycling Services Limited (hereafter known as Growing Beds) site which operates a waste recovery operation predominantly for the production of a PAS100 certified compost. Other additional activities include the acceptance shredding and transfer of waste wood to a local co-incineration facility.

This Fire Prevention Plan will be transposed into the site's Environmental Management System (EMS) following formal approval by the Environment Agency (EA). The plan will be updated and reviewed in accordance with the requirements of the site management systems.

This Fire Prevention Plan is intended to be used as a stand-alone working document for operational staff on a day to day basis. It outlines the main potential fire sources at the proposed site, the mitigation measures to be used to reduce the risk of fire and the monitoring and reporting methods to be used when the site becomes operational. It will be regularly reviewed and revised as required.

1.2 PERMITTING REQUIREMENTS

This document has been developed to provide the key information required for a variation to an Environmental Permit application.

The site currently has a permit (EPR/GP3793LL) in place since 2005 for composting in open systems. The maximum throughput for activities is 49,000 tonnes per annum.

1.3 AIM AND OBJECTIVES OF THE FIRE PREVENTION PLAN

This Fire Prevention Plan has been compiled based on the requirements of Environment Agency Guidance as detailed in 1.4.

This guidance document outlines the standards which must be followed when storing combustible materials at permitted sites.

The fire prevention measures in this Fire Prevention Plan have been designed to meet the 3 key objectives in the guidance which are to:

- Minimise the likelihood of a fire happening;
- Aim for a fire to be extinguished within 4 hours; and
- Minimise the spread of fire within the site and to neighbouring sites.

1.4 RELEVANT GUIDANCE AND DOCUMENTATION

This Fire Prevention Plan has been prepared with reference to the following key guidance:

- <https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits/fire-prevention-plans-environmental-permits>;
- How to comply with your Environmental Permit, Environment Agency, June 2013 and subsequent updates; and
- PPG 18 Managing Fire Water and Major Spillages.

Only the changes proposed as part of this variation application have been considered and presented here and within the main application document.

2 SITE LOCATION AND OPERATIONS

2.1 SITE LOCATION

The installation address and national grid reference are detailed below:

Installation Address: Growing Beds Recycling Services Ltd
Organics & Biomass Recycling Facility
Kimbolton Road
Ravensden
Bedford
Bedfordshire
MK44 2SJ

The site is located approximately 1.1 km North East of the village of Ravensden in rural Bedfordshire.

The site is located at National Grid reference TL 05952 55420.

Figure 13.1 shows the location of the site and the surrounding areas.

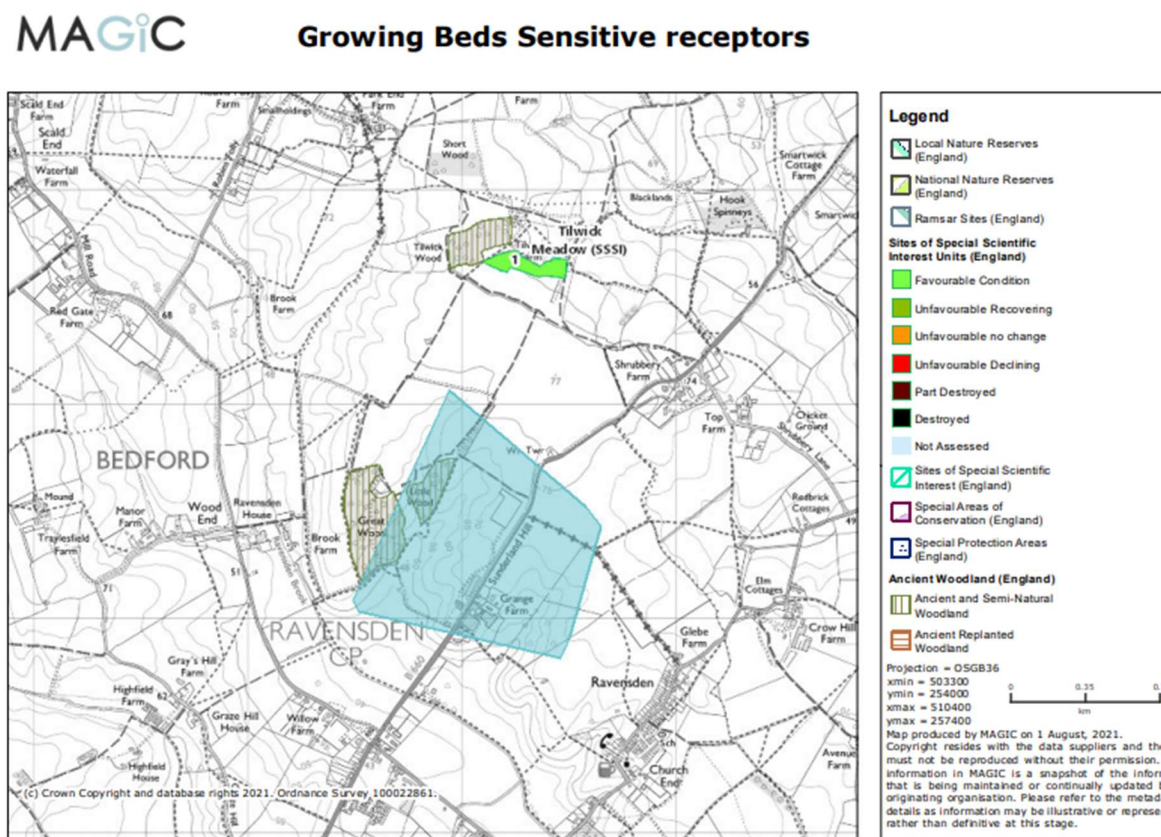
2.2 SITE SURROUNDING

The area immediately surrounding the Installation is comprised of the following key land uses:

- North: Agricultural land.
- South: Commercial properties across the B660 road, agricultural land with Ravensden village at distance.
- East: Agricultural land with the village of Wilden beyond.
- West: Agricultural land, woods and isolated houses beyond that.

The key ecological receptors can be seen in Figure 2.1 below.

Figure 2.1 Sensitive Ecological Receptors



This shows the closest receptors are ancient woodland Little Wood and Great Wood approximately 300m and 400m west of the site respectively.

2.3 SITE ACTIVITIES

The site shreds waste wood into Biomass for a WID Compliant Biomass Power Station located four miles away at Twinwoods Business Park.

They also make a PAS 100 compost on part of the site. This done through outdoor turned windrows by aerobic digestion.

The site has its own on-site lagoon and GP150 Pump, which is used to apply water to the compost piles to aid aerobic digestion and can also be used emergency vehicles.

2.4 SITE PLAN

Site Layout Plan can be seen in Figure 2.2 below.

Figure 2.2 Site Layout Plan



Figure 2.2 Proposed Revised Installation Boundary and Layout



Figure 2.3 Site Layout Plan (Hazardous Materials)

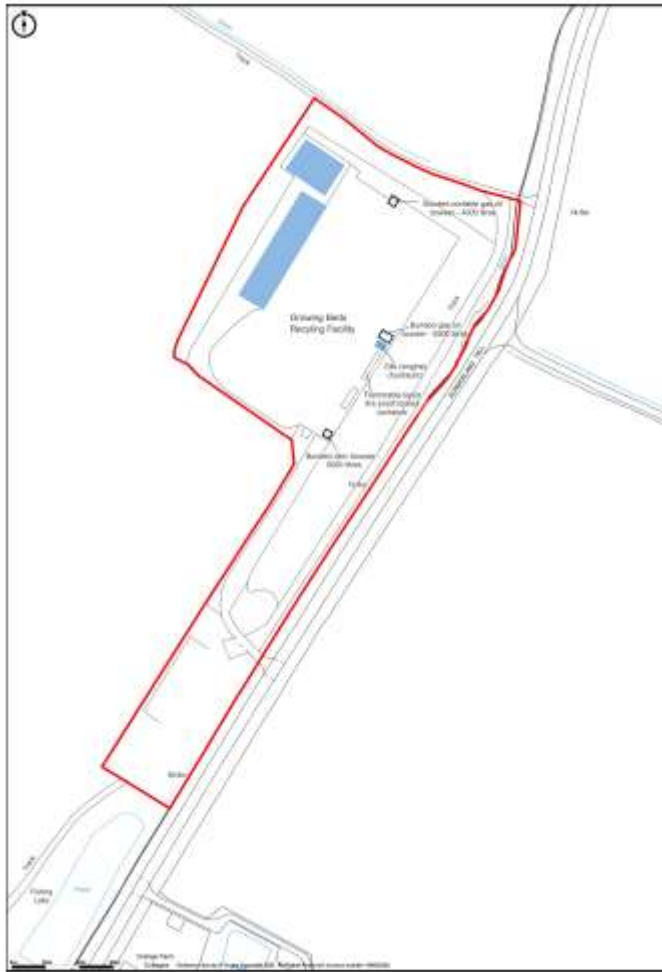


Figure 2.4 Emergency Access and Machine Parking



The only hazardous materials maintained at site are the oils which are stored in the oil store.

Access for the Fire & Rescue Service will be same to that of the deliveries of wood via the main access road and site entrance. See Figure 2.7 below.

Figure 2.5 Site access and exit



Water is supplied from the lagoon and a water tank at the site entrance. There is a fire hose located in the workshop with a fire hydrant at the nearby farm.

All ground at site is concrete internal to buildings and hardstanding everywhere else.

Mobile plant is stored in the compost area as directed by the insurance company.

Wood yard plant is stored away from stockpiles in the wood yard only after cleaning down and inspection of the hot parts of the vehicles (exhaust, engine manifolds etc) for any signs of smoke.

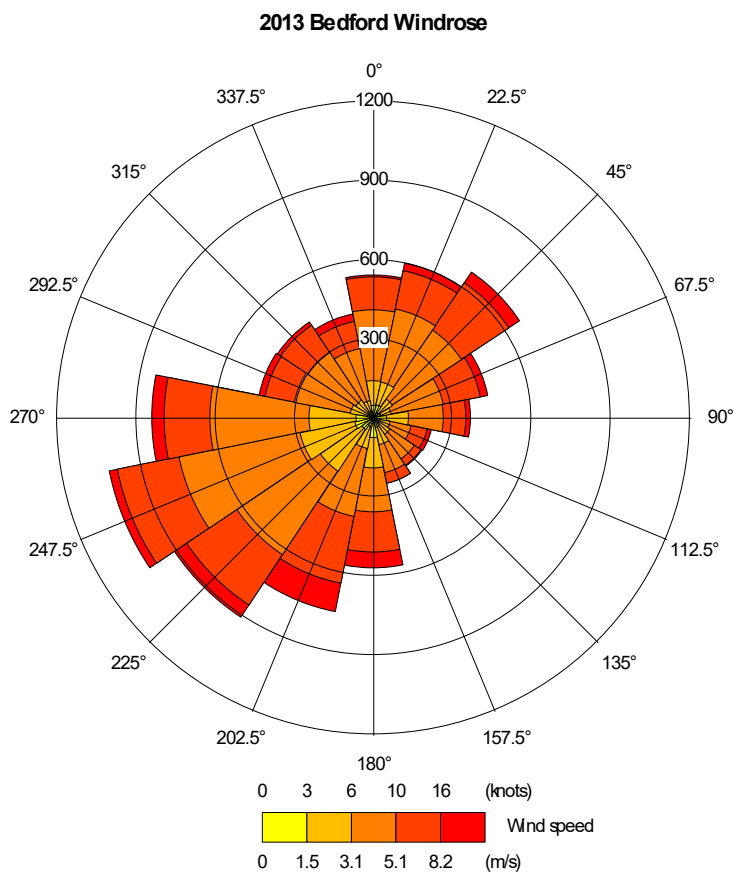
All drainage at site is directed to the lagoon. This would have to pass through a sump and is then pumped via a filter back to the lagoon. There is an old lagoon which is currently filled with rainwater

which can be used as an additional water source and firewater can be pumped between the two lagoons.

2.5 WIND ROSE

A wind rose for the site is shown below in Figure 2.7 which shows that the prevailing wind direction is from the South West which means that the receptors most at risk would be to the North East. The nearest receptor in this direction is isolated farm houses with the closest being 925m away at the Kimbolton Road/Shrubbery Lane junction.

Figure 2.6 Wind Rose



3 MANAGEMENT OF RISK FROM FIRE

3.1 ARSON AND VANDALISM

The site has perimeter fencing and security gate controlled by CCTV access. CCTV coverage is for the whole yard area and also the lorry park area from the gated entrance on the B660, which is locked securely out of hours.

The CCTV is new and was installed in November 2021. Out of hours the CCTV system has monitoring and movement sensors which if broken will alert the owner by a message with the photo. The CCTV can be accessed off-site by the owner who can attend site within 10 minutes in the event of an incident.

A new alarm system is also fitted (November 2021) This system protects all buildings along with a Smartwater Smoke Cloak system which is also fitted within the weighbridge office and workshop. A new out of view Keysafe is also fitted within the weighbridge office. This is protected by the alarm and also the smoke cloak system

The alarm system is also remotely monitored by Blueline Security Ltd, they can attend site within 15 minutes of an initial alarm trigger.

The site is located in a very rural area away from major residential populations which reduces the risk of vandalism, arson and authorised attempts to access the site.

The site is manned as follows:

April – November – Weekdays – 8am-5pm, Saturday – 8am – 4pm, Sundays – 9am – 1pm, Bank Holidays – 9am – 4pm

December – March - Weekdays – 8am-4pm, Saturday – 8am – 1pm, Sundays – Closed, Bank Holidays – 9am – 4pm (Except Christmas Day, Boxing Day and New Years Day)

3.2 PLANT AND EQUIPMENT

All plant and equipment is blown down at the end of each day. Each morning all equipment is checked for oil levels etc and documented on an inspection sheet. The high speed and slow speed shredders have fire Prevention Systems on them.

Mobile equipment is maintained as required. Mobile plant are fitted with fire extinguishers as appropriate. All mobile plant and equipment are stored in the new area to be permitted on concrete hardstanding approximately 100m from the weighbridge near the car parking area.

The site has a daily environmental inspection which includes the mobile plant.

3.3 ELECTRICAL FAULTS INCLUDING DAMAGED OR EXPOSED ELECTRICAL CABLES

All electrical systems are maintained by appropriately qualified personnel and subject to periodic inspection. The following regulations will be adhered to for electrical systems and equipment:

- Earthing and Lightning Protection- BS7671 IEE Wiring Regulations (Relevant section), BS 7430 2011 CoP for practice Earthing, CDA 119 Earthing Practice 97, BS EN 62305 Lightning Protection and Local Supply authority requirements
- Electrical equipment in hazardous areas- European Directive 94/9/EC (ATEX 95), Conformity assessment procedure (CAP) in line with above UK Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 1996 and the Equipment and Protective Systems (Amendment) Regulations 2001, BS EN 60079, BS EN 6124-1 and BS EN 13463 series.
- Electrical Equipment Regulations- Health and Safety at Work Regulations 1999.
- Electrical Equipment is PAT Tested Yearly.
- Fixed Wiring is tested 5 Yearly as required.

3.4 DISCARDED SMOKING MATERIALS

The site is a no smoking site with smoking only allowed at a designated area outside the installation boundary.

3.5 HOT WORKS

No hot works are allowed on site. Any work to be done on machines means that they are moved out of site and next to the 20,000-litre fresh water tank and pump. All machinery is damped down with water whilst hot works undertaken and a man stays with the water pump whilst work is being done (2 men)

3.6 INDUSTRIAL HEATERS

The site is an open area of hardstanding for the storage of biomass and shredded biomass as well as compost in windrows. Therefore, there is no need for industrial heaters.

The only heated area is the office and welfare areas which are well away from areas where the biomass, composting windrows or generated wastes are stored.

3.7 HOT EXHAUSTS

All mobile equipment on site are visually checked and recorded at the end of the working day to ensure that there are no issues of fire or smouldering associated with hot exhausts.

The operator of mobile plant will be on and off the vehicle throughout the day and there are other operators in the yard area who would be able to notice if there are any smouldering or other indications of an issue with equipment exhausts.

3.8 IGNITION SOURCES

There are no naked flames, space heaters, furnaces, incinerators and other sources of ignition within 6 metres of the feedstock reception area.

3.9 BATTERIES IN ELVS

The site does not take end of life vehicles.

3.10 LEAKS AND SPILLAGES OF OILS AND FUELS

There are two Diesel (each 5,000 litres) and a diesel bowser (4,500 litres) self-bunded oil tanks on site. These are visually inspected daily for leaks as part of the daily environmental site inspection. The diesel tanks are also digitally monitored as to their contents.

All vehicles are appropriately maintained to ensure that they remain operational. The hot exhaust check at the end of the day or the day to day operation of the equipment by a trained operator will identify any leaks of oils which would then be repaired.

3.11 BUILD-UP OF LOOSE COMBUSTIBLE WASTE, DUST AND FLUFF

The site is subject to a daily inspection and any build-up of loose wood would be identified and cleaned up.

The biomass and waste to be composted arrives at site in covered HGVs. All material at site is kept in separate piles with greater than 6m between the wood and composting storage areas.

All wastes generated at site from staff areas are stored in enclosed skips/wheelie bins which would prevent their release.

3.12 REACTIONS BETWEEN WASTES

The wastes generated at site would not be incompatible; nonetheless they are kept in separate containers prior to off-site removal. The only waste material brought on to site is the biomass and wastes for composting which would not spontaneously react with each other or any of the wastes generated.

3.13 DEPOSITED HOT LOADS

The wood will not biodegrade readily and will not have hot spots upon delivery so no loads will arrive "hot". All loads are visually inspected prior to being deposited into the appropriate pile and after deposition to ensure that there are no signs of the load being unusual.

3.14 STORAGE OF OIL, GAS BOTTLES AND OTHER HAZARDOUS MATERIALS

There are designated areas for storage of hazardous materials such as smaller quantities of oils in drums for maintenance activities which are kept in the oil store. There are no cylinders on site.

3.15 SHREDDING OF WOOD

The shredder is fitted with a dust suppression system which sprays water into the hopper and also onto the conveyor as the shredded wood goes to be stored in the bay. This should ensure that the wood is adequately damp to prevent any ignition.

The shredder is a low-speed shredder which should ensure that there is no grinding or other potential source of ignition from the use of the equipment.

The equipment is inspected prior to use at the start of the day and at the end of shredding operations to ensure that there are no smouldering embers.

4 PREVENTION OF SELF-COMBUSTION

4.1 MANAGEMENT OF STORAGE TIME

The site will have approximately 4 weeks' worth of supply for Twinwoods Heat and Power limited on site at any given time. This will be in different amounts of non-hazardous wood which can be in shredded and unshredded piles.

As Twinwoods Heat and Power Limited can utilise approximately 4 tonnes per hour of wood this will mean that there will have to be a minimum of 2,500 tonnes of wood on site at any given time.

This helps to keep down the waste storage times between arrival, shredding and transfer off-site to ensure that the wood is utilised swiftly to prevent any issues with regards potential self-combustion.

There are 2 bays for the unshredded wood and 2 bays for the shredded wood with a further 2 shredded bays in the new area within the installation. These are co-located with a fire wall of pre-fabricated concrete between the 2 bays with a 0.5m freeboard maintained. One bay of shredded wood is the active pile for transfer to the waste incinerator whilst the other is being filled by shredding from the main wood pile. This ensures that the shredded wood lanes are completely turned over to ensure that there is no residual wood waste being left to biodegrade.

All bays are constructed of pre-fabricated concrete blocks which are slotted into steel framework to the height of 4.5m.

The maximum storage time for whole wood at site will be three months. Should Twinwoods Heat and Power Limited have an extended maintenance period then alternate sites would be sought for the wood. This can be seen from the six month period in 2019 when Twinwoods was down and the yard area was cleared. This is managed by taking oldest material from back of wood pile to front and then start filling at back again.

Shredded wood will be for no longer than 3-4 weeks and each lane is used to feed Twinwoods Heat and Power Limited ensuring that the stock is rotated.

Outgoing finished compost is treated to PAS 100 and is not on site for more than 3 weeks subsequent to completing treatment process. This is a product and is not subject to the requirements of this fire prevention plan.

The CCTV has total coverage of the yard area of the yard photos are taken weekly of the wood piles and stored on a computer to demonstrate the stock rotation being undertaken at site. The CCTV has 28 days storage which can be used to rewind to any time within this period. Every time a shredded bay is emptied a picture is taken and stored on the sites cloud data storage for a period of 2 years.

See CCTV coverage in Figure 4.1 below.

Figure 4.1 CCTV Coverage Map



4.2 MONITOR AND CONTROL OF TEMPERATURE

The feedstock reception area has a manual alarm which would be raised by operators in the event of a fire.

The site has a calibrated temperature probe which is 1.5m in length for the composting activity which can be used to measure temperature in the wood piles if it is suspected that there is a temperature issue.

The main control with regards to temperature is ensuring the fast turnover of the wood piles. The site stores approximately 4 weeks' worth of wood for Twinwoods Heat and Power Limited. This should ensure that all wood is taken off site prior to there being any issues with degradation and temperature. The woodchip will be monitored three times per week (Mon-Weds-Fri) to ensure that temperature is normal.

The compost oversize is blended immediately into the fresh green pile. Both this pile and the whole wood piles (prior to shredding) will be checked daily in four locations.

Green waste- During COVID Growing Beds have renewed concrete and precast concrete walls and reduced the maximum area available to store incoming fresh green waste. This is to ensure that it is shredded much quicker and put into the active composting phase.

There is precast concrete wall between the green waste and the earth bund on the road and between the green waste and the Ag grade Compost (PAS100 30mm). The Ag Grade Compost will be on site in the winter for a maximum of 12 weeks and in the summer for a maximum of 4 weeks. The PAS 100 10mm Compost is only ever on site for a maximum of 4-6 weeks.

The temperature at which wood combusts varies from 190 to 260 degrees Celsius. The ignition point of wood varies depending on the type of wood and the dryness of the wood. Decayed wood ignites at a temperature of 150 C. <https://www.reference.com/science/temperature-wood-combust-c3b660cef63c9bb7?qo=contentSimilarQuestions>. As the wood is turned over frequently and there are no ignition sources there is no chance that the wood would be able to achieve these temperatures. The trigger temperature for the wood to be more closely watched is 50°C with the action trigger limit at 65°C.

For the composting the temperature is monitored daily and recorded for PAS 100 during the sanitisation period in the first week and weekly during the stabilisation period which can take a further 4-6 weeks.

All temperature records are kept in the site office on the computer in a dropbox file.

4.3 WASTE STORAGE

All biomass is stored within uncovered piles within the yard area. These piles are:

- Non-hazardous waste wood; and
- Shredded non-hazardous waste wood.

These piles are kept to the appropriate size in order to provide the required waste wood to fuel Twinwoods Heat and Power Limited.

Additionally, there are four windrows in winter and six in summer for composting which will be in different stages of aerobic treatment.

All other wastes generated are stored externally in dedicated areas in covered containers.

The yard area where the waste wood is stored and composting activity is undertaken is manned during the day and is covered by CCTV which would also identify any signs of smoke. CCTV footage can be accessed by the site owner at all times.

The composting windrows would take 4-8 weeks, dependent on the time of year, to treat the material suitably for sale. It is then screened for a further week and one windrow of material leaves site each week.

5 MANAGEMENT OF WASTE

5.1 MANAGEMENT OF STORAGE CAPACITIES

Table 5.1 shows the combustible waste storage capacities for both the incoming waste wood (non-hazardous), the composting windrows and the waste generated at site.

Table 5.1 Combustible Waste Types and Storage Capacities

Waste types	Form	Containment	Storage capacity (m ³)	Storage capacity (tonnes)
Non-hazardous wood	Shredded Piles	Open Piles in 2 bays	20m x 20m x 4.0m (2 storage piles separated by firewall) 1,600 m ³ twice for a total of 3,200m ³	1,216 ¹
		New area 2 shredded bays	30m x 25m x 4.0m(2 storage piles separated by firewall) 3,000m ³ each for a total of 6,000m ³	1,140 x2 (2,280) ¹
	Unshredded		Biomass – One-Two shredded piles on the pad (dependent on time of year) 20x20x4 1,600m ³ each	608 ¹ per pile
			Biomass – One-Two shredded piles on the pad (dependent on time of year) 20x20x4 1,600m ³ each Unshredded piles on the pad 40 x 20 x 4 3,200m ³ each	608 ¹ per pile 1,216 ¹ per pile
Windrows	Composting organic waste	Open Piles	Active Compost Area – 50m x 50m x 5m= 12,500m ³	6,250 tonnes
			Fresh Green Waste – 15m x 45m x 5m= 3,375m ³	-

General Waste			PAS 100 30mm – 25m x 25m x 5m PAS 100 10mm – 15m x 5m x 4m	
			The Active compost pile is actively managed in accordance with PAS100. This should not be subject to Fire prevention plan guidance in accordance with legal opinion. PAS 100 compost is no longer considered a waste and not subject to the requirements of the Fire prevention plan.	
	Domestic waste from welfare activities	Wheelie bin	1,100 litre (1.1m ³)	0.165

¹ Based on shredded biomass at 380 kg per m³

The whole wood is kept in 2 piles in bays separated by a concrete fire wall 6 inches thick with a freeboard of 0.5m. The shredded wood is stored in the same way. The new land included within the installation boundary will have 2 further shredded wood bays (number 3 and 4).

In addition, there are 2 shredded and unshredded piles on the pad which are used to feed the working bays. These are over 6m from the shredded and unshredded wood in bays.

The further measures below ensure that there is no risk of fire from the wood side of the business.

To reduce the wood stock further would not allow the site to service current agreements with Bedford Council and to supply Twinwoods Heat and Power Limited. There has never been any issues with the wood at site for the last 14 years and the event in 2005 was related to arson and not with regards the storage and management of the wood.

The maximum storage time for whole wood at site will be three months. This is managed by taking oldest material from back of wood pile to front and then start filling at back again.

Shredded wood will be for no longer than 3-4 weeks and each lane is used to feed Twinwoods Heat and Power Limited ensuring that the stock is rotated.

In the event that Twinwoods Heat and Power Limited is not operational then the wood can be moved to other sites that Growing Beds has agreements with such as Veolia, Sylvagen, Stobart Biomass could also be contacted who would be able to clear the yard.

This is what happened in 2019 when Twinwoods was down for 6 months and the yard was cleared. Recently when the plant was on a week's maintenance 600 tonnes was shipped to other sites to ensure rotation maintained.

This would ensure that there is no risk of self-heating of wood to the ignition point as detailed within Section 4.2. The shredder is a low speed shredder which would ensure that there is no heating in the shredding process.

Photos will be taken weekly and stored on a computer to demonstrate that the turnover and stock rotation is as declared above.

There are no other wastes stored on site other than the general waste which is in a 1,100 litre bin.

5.2 WOOD STORAGE AND HANDLING

The wood received at site will be visually inspected at the gatehouse prior to off-loading in accordance with the waste transfer paperwork. It will then be deposited into the non-hazardous unshredded pile awaiting shredding.

The wood will then be shredded via a low speed shredder and deposited either in the shredded pile awaiting off-site removal to Twinwoods Heat and Power Limited.

The wood in each of the shredded pile would be within the 0-130mm range and the pile size for each pile would be above the limit of 750m³ for this type of wood as specified within <https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits/fire-prevention-plans-environmental-permits>.

The wood in each unshredded pile would be loose and have pieces in excess of 150mm and the pile size for each pile would be above the limit of 450m³ for this type of wood as specified within <https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits/fire-prevention-plans-environmental-permits>.

Whilst it is acknowledged that the pile sizes exceed the recommended guidance it is considered that given the sites location, earthen bund and lagoons for water storage as well as the lack of nearby downwind sensitive receptors the risks posed by the site is considered to be very low. The site has been operational in its current form for a number of years without incident as well as having been inspected by the Environment Agency site inspectors who have not had any issues with regards to the storage arrangements.

5.3 COMPOSTING WASTE STORAGE AND HANDLING

For the composting activities as per the guidance the maximum pile size does not apply when the waste is actively managed and monitored during the composting process. All composting activities are managed in accordance with PAS100.

Compost Windrow Sizes are as follows approx.:

Green Waste: Max 15m x 45m x 5m

Windrows: 50x50m x 5m

Oversize: This is mixed back in with incoming green waste as it is a good source of carbon.

Temperature Monitoring: Very representative. Probe is externally calibrated annually.

Records kept on Dropbox and managed both internally and through an external consultant.

Probe is 1.5m long.

3-4 zones in each windrow

With regards to high temp material, if this is found the windrow is turned and can be soaked with water at any stage of the composting process. The turning means that the top of the windrow becomes the bottom of the next windrow with the bottom becoming the top to allow any hot spots to be cooled and doused.

Outgoing finished compost is treated to PAS 100 and is not on site for more than 3 weeks subsequent to completing treatment process. This is a product and is not subject to the requirements of this fire prevention plan.

There is also 5.29 acres of field storage next to the site for PAS100 compost.

5.4 GENERAL WASTE STORAGE AND HANDLING

Domestic type mixed waste from welfare activities will be collected from the welfare areas and office before being deposited into a wheelie bin. This will be removed by the waste contractor on a regular basis when full.

6 PREVENT FIRE SPREADING

There are 2 main ways to prevent a fire from spreading. These are:

- Separation distances; or
- Fire walls and bays.

The whole wood is kept in 2 piles in bays separated by a concrete fire wall 6 inches thick with a freeboard of 0.5m. The shredded wood is stored in the same way.

The site makes use of separation distances between the wood storage areas and the composting area. This would allow each area to be removed or soaked in the event of one of the areas catching fire.

In addition, the windrows are stored over 6m away from the waste wood piles which would ensure that each of the different areas, composting and waste wood storage are far enough apart to prevent fire spreading between the two areas.

Additionally, the wood is stored over 6m away from the site perimeter and the onsite office buildings and structures.

The earthen bund surrounding the site is grassed but is not heavily vegetated. There are trees at the base of the earthen bund but these are 6m from the wood piles.

7 QUARANTINE AREAS

The site has a quarantine area which can be seen marked in purple in Figure 7.1 below.

Table 7.1 Quarantine Area



The main Quarantine Area is on concrete hardstanding near the recycled fibre bay 1.

This quarantine area is 20m x 20m x 4m for a total of 1,600m³. There is a secondary quarantine area which is the current car park area and is 15m by 15m and can store up to 4m high for a total of 900m³. Furthermore, the existing lorry park within the installation could be used as an emergency quarantine area which would provide more than sufficient storage and can be maintained 6m away from any wood bays.

If one of the piles is moved to the quarantine area this would separate it away from the main piles. These can then be spread out further by active management to create greater separation if required. In addition, the site has vehicles which could be used to move the quarantined material swiftly if required so that the material can be turned over quickly and the quarantine area used multiple times if required until the issue has been resolved. This would not be a static situation and would be led by experience and knowledge of the workforce in managing this type of waste.

If a load is rejected it is taken to the quarantine area if it cannot be returned on the vehicle that delivered it.

Any hot loads or material on site that is hot will be moved to the quarantine area if safe to do so where it will be doused with water pumped from the lagoons. The water run-off would be collected in the sump and returned to the lagoon.

Temperature of any material in the quarantine area will be monitored by probe to ensure that they are no longer hot and pose a risk of self-combustion.

The emergency quarantine area is the car park which is hardstanding and is approximately 15m by 15m and can store up to 4m high for a further 900m³ of temporary emergency storage of unburnt material.

8 DETECTING FIRES

The site will have the following measures in place for the detection of fire in the yard area:

- CCTV to monitor the wood and composting areas for signs of smoke which can be monitored remotely by the Managing Director;
- Manual alarm systems to raise the alarm in the event of a fire. There is no internal waste storage.
- Periodic temperature monitoring using a probe to identify hot spots which would then mean that the wood/compost is turned;
- Daily site environmental inspection to identify any practices likely to give rise to any issues including fire; and
- Operators present on site trained in the prevention of fires.

Temperature Monitoring: Very representative. Probe is externally calibrated annually. Records kept on Dropbox and managed both internally and through an external consultant.

The temperature probe is 1.5m long and there are 3-4 zones in each windrow. The temperature readings in the wood piles will be undertaken weekly and every 5m to identify if there are any issues.

The temperature probe inspection will have two set point alarms a pre-alarm (65°C) for investigation and monitoring and a full alarm (75°C) indicating a serious problem. Corrective action such as turning the wood or removing off-site will occur should these temperatures be detected.

Shredded wood and fresh green piles will have two set point alarms a pre-alarm (50°C) for investigation and monitoring and a full alarm (65°C) indicating a serious problem. Corrective action such as turning the wood/compost or removing off-site will occur should these temperatures be detected.

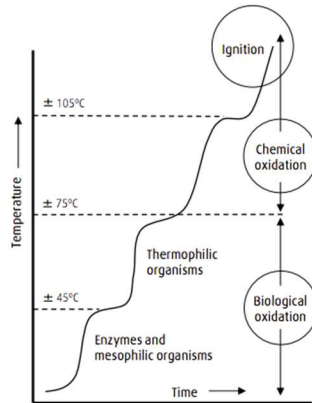
The alarm levels have been set using guidance from BOC See attached graph below:

Figure 8.1 Biomass Auto Ignition Details

Why does Biomass auto ignite?



- Bacterial and fungal activity generate heat in the pile, along with toxic and combustible gases
- If not addressed, the insulating nature of the material causes the temperature to increase
- When the rate of heat generation exceeds the rate of heat loss, the path to ignition and combustion is set
 - Runaway reaction (oxidation)



Example of self-heating temperature increase, Meijjer, 2004

9 SUPRESSING FIRES

The site has an onsite lagoon which is used to collect water run-off and is stored for use on the compost piles to aid the composting process. The site has a GP150 diesel pump which moves water around from the lagoon via a spray bar system. This has a flow of 90 litres per second. The lagoon is 75 metres by 15 metres with a depth of 3.5 metres. This has a capacity of 3,937.5 m³ which would be sufficient to provide water for the site in the event of a fire. In addition, there is the old lagoon which has a capacity of 25m by 25 metres with a depth of 5m for a capacity of 3,125m³. This is currently filled with rainwater which could be used via hose for fire suppression only.

This was sufficient for a recent event in the composting area and no firewater was lost to the surrounding area. All water was contained on site without the need for tankers through recirculation and reuse. This active demonstration of capability is better than an unproven theoretical calculation. However, should tankers be required they can be onsite within the same day.

In the event of a fire the spray bar system would be used to supply water to parts of the site whilst the other parts would be covered by the mains water hydrant which would be available to the Fire and Rescue Service.

There is also a 20,000 litre freshwater tank with pump which can provide water for local fire support for small fires.

The shredders at site have fire suppression. 27KG Dual Agent PAFS Suppression System on both Shredders. AFFF Foam & ABC Powder.

The hoses and pumps on site are sufficient to cover the whole of the site.

There are 6 Fire Hoses each of which are 25m in length. There is a hose splitter so that 2 separate hose lines can be run from the pump.

Fire Hydrant 1 is located just at the bottom of the newly permitted area for the storage of mobile plant and is approximately 200m from the weighbridge and is maintained by Growing Beds Limited. This is tested monthly by opening the hydrant to allow it to flow freely to ensure that there is a sufficient head of water within the hydrant.

The Fire Hydrant 2 is at Junction of B660 & Thurleigh Road and is maintained by Anglian Water. There is good pressure in all area due to location of water tower on B660. The hydrant has been used by Fire and Rescue Service recently and everything was satisfactory.

Lagoons continually 50-70% full throughout the year. Lagoons can be topped up easily by tanker.

10 FIREFIGHTING TECHNIQUES

10.1 ACTIONS TO TAKE IN THE EVENT OF A FIRE

Exclusions - Although due consideration must be given to the potential environmental impacts of a fire on a composting site, e.g. airborne particulates creating air pollution, large amounts of water for extinguishing purposes polluting water sources and possible health hazards affecting people living in the locality, this document has been produced to specifically address fire safety

1: Fires on a composting and recycling site can be caused by:

- Spontaneous combustion within composting piles.
- Hot exhausts on mobile plant/work equipment
- Direct sunlight on glass in wood stacks causing a magnifying glass effect that may ignite the wood and any residual plastics
- Sparks from friction - e.g. non-lubricated mechanical components or moving steel parts running against static steel
- Ignition of dried materials such as wood dust building up around sources of heat such as motors/gearboxes and bearings
- In situ maintenance tasks creating heat or sparks, such as grinding
- Occasional, rather than regular turning, of composting piles allowing oxygen to get to a fire which could already be smouldering, causing it to flare up.
- Discarded smoking materials

And **deliberately**

2: In the event of a fire breaking out a decision need to be made quickly as to whether it is still 'under control', i.e. you have a clear route of escape behind you and there is a good chance that the fire can be extinguished quickly and without creating secondary hazards such as toxic smoke or sparks igniting fuel.

You would also need to consider the risk of the fire being spread quickly by strong winds

Before attempting to fight a fire you must raise the alarm first to alert other people on the site and let them know that you are attempting to fight the fire

3: Possible response to a manageable fire starting in a wood pile or composting pile/stack

- If manageable call for assistance that would include promptly bringing the site water bowser for dousing the fire
- While awaiting assistance look to creating a fire break around the burning/smouldering area

4: Should it be deemed that the fire is not manageable, the following instruction and guidance shall apply:

- **If absolutely safe to do so** (see point 2), **and after the Fire and Rescue Service* has been contacted**, look to using a 'telehandler' machine or loading shovel to create a fire break to prevent or minimise fire spread

- **Further entry to the site must be prevented immediately**
- All site staff and others on site such as drivers, contractors and visitors must be instructed to make their way promptly to the site fire assembly point. There may be a requirement to escort visitors from the site
- Depending on the size and location of the lorries or vans may have to be left where they are
- Should it be assessed by site management that it would be safe to drive a vehicle out of the site, a clear route for the attending fire appliance and possibly other emergency services must be provided and maintained

*The Fire and Rescue Service may well advise that the fire should be allowed to burn, rather than continue to control or tackle it.

5: Should an item of composting machinery catch fire

- Assess the size of the fire - if it still a small, manageable fire and it is visible and accessible , i.e. guarding does not have to be removed, turn off the machine ignition then use a **powder** extinguisher (blue label) using a sweeping action and completely discharging the extinguisher
- Do not climb onto machinery if there is any doubt about the size and location of the fire
- **Extreme Caution:** By design, the flammable fuel storage for mobile machinery is contained within the body of the machine

6: Should a fire start in a site building, e.g. rest room, site office

- Ensure if the fire is still manageable that you have a clear route of escape behind you before attempting to fight the fire, and alert other staff (by radio) what is happening
- If the fire is of a carbon nature, i.e. wood, card, paper etc. use a **water** (red label) or **foam** (cream label) extinguisher, a **powder** extinguisher (blue label) can also be used (although in a small space powder extinguishers are likely to create a cloud that can obscure vision and also create breathing problems) .
- If the fire is of an electrical/electrical equipment nature, use a **carbon dioxide** extinguisher (black label)

7: Should a vehicle on site catch fire

- For automotive fires use a powder extinguisher. Lorry or van drivers should be carrying an extinguisher on their vehicle

8: Should a fire start in an oil, flammable liquid or hazardous substance storage area

- If in doubt, do not attempt to fight a fire involving hazardous substances
- Do not enter a storage area/room that contains flammable liquids or hazardous substances where a fire is suspected
- A powder or foam extinguisher can be used on a flammable liquid fire as long as it is manageable and you have a clear route of escape behind you

10.2 FIRE PREVENTION PLAN AND EQUIPMENT TESTS

Site personnel will be trained on how to use the fire equipment and this will be recorded in training records.

Regular monthly fire drills will be performed and recorded. This will ensure that all staff are familiar with the use of the equipment in a “live” situation and have had practice in using it.

The findings of the above tests and drills will be used to update the fire prevention plan in the event of identifying any potential improvements.

The fire prevention plan will be a controlled document within the site Management System and will ensure that controlled copies of the up to date plan are kept at key points where personnel can access them e.g control room, welfare facility, feedstock reception area as well as on the company computer system.

The Fire and Rescue Service visit the site periodically to familiarise themselves with site operations.

10.3 FIRE FIGHTING TECHNIQUES

Key to the ability to fight the fire is having the right resources which include the following active firefighting measures:

- Having large mobile plant able to move wood if required to do so;
- Fully staffed site who are trained in the emergency plan and fire evacuation and firefighting measures;
- An uninterruptible water supply via the hydrant to ensure that there is enough water to put out a large fire;
- Mobile bowser to target small fires;
- Water filled lagoon with spray bar system to provide water to all areas where waste stored;
- Portable fire extinguishers throughout site for small fires.

10.4 FIRE FIGHTING TECHNIQUES IN THE EVENT THAT THE FIRE IS UNCONTROLLED

Fire prevention plan guidance states that “*you do not need to extinguish a fire within 4 hours at your site, for example because it is not close to sensitive receptors - but you must still meet the other 2 fire prevention objectives*”.

The site is surrounded by an earthen bund with restricted access and is in a very rural area over 1km away from the nearest residential receptor and over 1km away from the nearest ecological receptor at Tilwick Meadows Site of Special Scientific Interest. If the fire was uncontrollable and there was a significant danger to those attempting to put out the fire then it could be left to burn down given that:

- There are no nearby sensitive receptors;
- The earthen bund of 5m height would ensure that there would be no spread of burning material; and
- Any liquids generated would be captured within the onsite lagoon.

11 WATER SUPPLIES

The water supply at site is from the town mains and there are two fire hydrant which would provide the Fire and Rescue Service vehicles the pressure and volume to be able to put out any fire.

Fire hydrant 1 is checked monthly by Growing Beds Limited and is located approximately 200m from the weighbridge.

The second Fire Hydrant is at Junction of B660 & Thurleigh Road and is maintained by Anglian Water. There is good pressure in all area due to location of water tower on B660. The hydrant has been used by Fire and Rescue Service recently and everything was satisfactory.

Due to Growing Beds ability to recirculate run off, the new and old dirty lagoons are continually topping themselves up with run-off water from any fire. This makes them very efficient.

Due to the remote location and type of material on site Fire and Rescue Service Policy is to let it burn. The FRS just utilise fire curtains to reduce potential ability to spread.

In addition, there is a clean water bowser (20,000 litres) at the entrance of the site with a pump capable of providing water as a localised water supply in order to put it out.

There is also a fire hose on the corner of the workshop to provide local water which is connected to the mains.

The lagoon is 75 metres by 15 metres with a depth of 3.5 metres. This has a capacity of 3,937.5 m³. There is a further lagoon associated with the new area to be included within the permit. This lagoon is 75m x 15m x 3.5m for a capacity of 3,937.5 m³. The capacities of these two lagoons should be sufficient to address a fire at the site given that there will be recycling of the firewater. Any additional requirement can be added through the mains water associated with the fire hydrant.

All lagoons are kept 2/3 full at all times to ensure that there is sufficient water in the event of an emergency. This can be topped up by the site hoses. Photos will be taken weekly and stored on the cloud database to demonstrate this is the case.

The hydrant was used in 2005 in order to put out the fire and worked well at the time. See Figures 11-1 and 11-2 for fire hydrant location.

Figure 11-1 Fire Hydrant 1 Location



Figure 11-2 Fire Hydrant 2 Location



12 MANAGING FIRE WATER

The Fire and Rescue Service will be able to access the lagoons by following the site boundary and 6m gap between piles and boundary. Tankers from Haze cleaning will be able to access the lagoons at all times. Tankers will be available at all times 24/7 and can be at site within 25-30 minutes. Haze cleaning can be contacted on 01462-813091.

The 5m earthen bund surrounding site is clay.

All combustible wastes at site are stored on impermeable concrete hardstanding.

All external drainage on site is directed to the surface water system which runs off to the lagoon.

The lagoon is 75 metres by 15 metres with a depth of 3.5 metres. This has a capacity of 3,937.5 m³. The lagoon is lined with a geosynthetic liner and was built to a design approved by the Environment Agency at the time of design and construction.

Based on the fire prevention plan guidance that it will require 2,000 litres a minute for a minimum of 3 hours for a 300 cubic metre pile of combustible material to put out a fire, the amount of firewater storage required to contain the water is detailed below.

2,000 litres per minute for 3 hours is equivalent to 360m³ over 3 hours to put out a 300m³ fire. As the largest pile size at site can hold 3,200m³ of chipped or whole wood. At times there can be two of these co-located for a total of 6,400m³ which would be separated from other biomass stored at site. This would mean that the amount of water required to put out the fire and be contained would be $6,400\text{m}^3/300 \times 360 = 7,680 \text{ m}^3$ of storage. If any pile was to catch fire then the nearest piles can be moved to the quarantine area to prevent it spreading to other piles or to other emergency areas.

It is considered extremely unlikely that both the composting and biomass areas would both be on fire at the same time given the separation distance being implemented. Also, each side whether it be composting or biomass can be damped down or moved by mobile plant away from the fire to prevent the fire spreading between sides of the yard. The individual piles can be moved to ensure that a fire on any pile does not spread to the adjacent piles.

The firewater would flow to a sump which has a diesel pump or electric pump access which would be able to pump the water back into the lagoons for reuse in putting any fire out. There is no secondary containment for the sump. The sump is a sealed sump and is concreted into the floor in the corner of the yard. Sealed concrete retaining walls surround it. Growing Beds have an electric sump pump in it which automatically comes on when it fills up. It can also use our diesel pump to suck out as well.

The water required to be stored is 7,680 m³ against a total of 3,937.5 m³ not taking into account the continued recirculation of water or the availability of tankers to remove firewater. Both of these measures mean that the actual water use is likely to be much lower as the spray system from the lagoon can be used to recycle water back on to the fire rather than use fresh mains water all the time. This was in evidence during the previous green waste fire. Furthermore, water can be pumped between the new and old dirty lagoons which would give a total capacity of 7,875m³ which is more than sufficient to contain the firewater.

For the new land area each wood bay can store 3,000m³ and is separated by a fire wall to prevent both lanes catching fire. 2,000 litres per minute for 3 hours is equivalent to 360m³ over 3 hours to put out a 300m³ fire. Based on 3,000m³ of shredded wood in a bay this would require 3,600 m³ of storage. The lagoon in the new area is 75m x 15m x 3.5m for a capacity of 3,937.5 m³. This would be sufficient to

contain a fire in a bay especially as the water would be recirculated and the wood in the other bay can be moved or soaked with water from the lagoon to prevent ignition.

All firewater is directed to sump pumps through shallow gradient and drainage falls. This would be contained by the concrete edge kerbing allowing for the water to be pumped to the lagoon.

Furthermore, it should be noted that in the 2019 incident the Fire and rescue Service commander allowed for a controlled burn over several days to allow the compost to burn itself out. This was outside the control of both site staff and the Environment Agency.

13 DURING AND AFTER AN INCIDENT

No wood or wastes for composting will be accepted to the site for the duration of the incident. This will require the notification of all feedstock suppliers.

The supervision of any event will be in accordance with Fire and rescue service recommendations. The site has 3 shovel loaders and 2 walking floor HGVs which can remove wood to ensure that the minimum is held on site.

The hardcore car park area can be used as a temporary store for unburnt material as well as the area recently added to the permit which is used for mobile plant storage which is on concrete hardstanding. These can hold the unburnt material until it can be removed off-site to an alternate wood processing facility or waste wood power plant.

In the event of a fire, the Operator will notify the Fire and Rescue Service in the event of an emergency and the Environment Agency as soon as practically possible, using the emergency 24hr phone line (0800 80 70 60). Following the incident, the Site Manager will advise what remedial measures or actions have been taken to prevent further incidents.

Table 13.1 and 13.2 gives the contact details for the key contact in the vicinity of the site who should be contacted in the event of a fire.

Table 13.1 Key Contacts within 1km

Receptors	Approximate distance and direction from installation boundary	Contact Details
Ravensden Village Parish Council	1,100m	TBC

These key receptors are shown in Figure 13.1 below.

Figure 13.1 Map of Sensitive Receptors



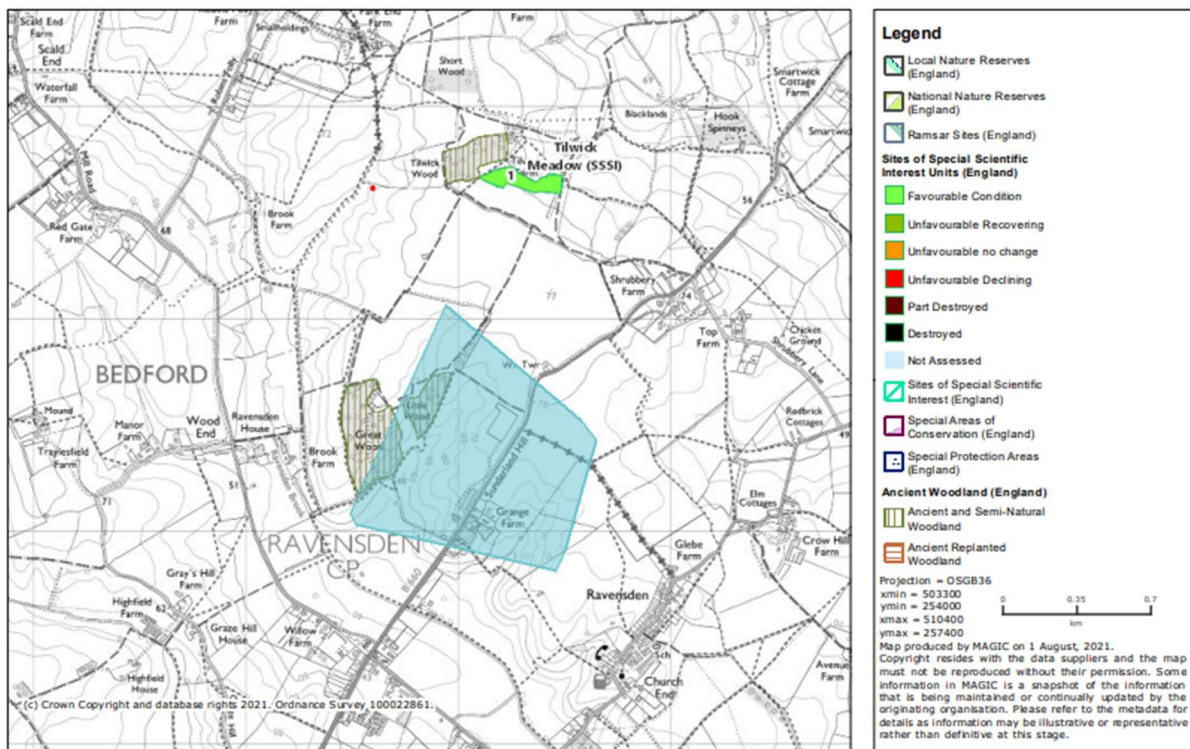
The key internal and external emergency contacts are detailed in Table 13.2 below:

Table 13.2 Key Emergency Contacts

Contact	Position	Contact Details
Mark Evans	Director	01234-772226 07843-562304
Environment Agency Incident Hotline	-	Tel: 0800 80 70 60
Fire, Police and Ambulance Emergency		
Local Fire Service Contact	-	999
Local Police Service Contact		
Local Ambulance Service Contact		
Bedfordshire Council	Environmental Health Officer	01234-718099

The key ecological receptors are shown in Figure 13.2. This shows Great Wood and Little Wood areas of ancient woodland approximately 400m and 600m to the West of the site. In addition, there is Tilwick Meadow Site of Special Scientific Interest (SSSI) approximately 1,700m to the north of the site.

Figure 13.2 Map of Ecological Receptors



13.1 DECONTAMINATION OF THE SITE

All areas will be inspected to ascertain the amount of wastes to be disposed from site and if required appropriate waste containers delivered to site.

The waste containers will be used to clean up and store wastes such as metals, hazardous waste and oils. These containers will be filled and removed off-site by an appropriate waste contractor until the area of the fire has been cleared.

The area will then be cleaned in order to assist in the evaluation of the damage.

All mobile plant will be inspected to ensure it is fit for use prior to activities resuming and all hardstanding areas will be inspected and relaid where appropriate.