



RISK & HAZARD MANAGEMENT

Geocycle UK Ltd

Risk Assessment and Technical Standards



Safety Risk



Business Risk



Environment Risk

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1 Introduction

This document has been prepared as part of the application for a bespoke environmental permit for Geocycle UK Ltd.

The document contains the following information:

- Process description
- Risk assessment
- Technical Standards information

2 Process Description

The alternative fuels platform will be receiving solid recovered fuel (SRF) and refuse derived fuel (RDF) which will be produced by a small number of reputable suppliers to a predefined specification as outlined by Geocycle UK. Whilst these sources are different, the primary feedstock will be commercial, domestic and packaging residue/waste which will go through a rigorous process to ensure it meets the high standards required by the facility. Incoming material will be subject to weekly/monthly testing by each supplier to ensure the material is consistent and therefore can be fed speedily into the cement kiln from the point of discharge.

Material will be brought onsite via truck, and weighed at a single dual-entry weighbridge. Pre-qualification processes will be in place to ensure only acceptable material is brought onsite. When the truck arrives onsite, acceptance processes will be implemented to ensure the load is fit for purpose. Once accepted, the truck will be sent to unload.

No pre-processing is required onsite, all material is brought in ready to burn.

A bridge crane operated storage hall with a storage capacity of 3,735m³ will be installed, with CCTV coverage of the unloading area. This equates to three days of SRF/RDF storage capacity, enabling the feed of solid alternative fuels to the Plant even over bank holiday weekends when no deliveries take place.

The storage hall will be constructed with exposed concrete to a height of 9 m, with a lifting screen truck door. Pedestrian access will be via a single galvanised steel door. Above 9 m, cladding with grey corrugated galvanised steel panels will coat the hall, with the same material in the same colour proposed for the building's roof. Vertical ventilation grids are proposed at higher levels.

The storage hall contains storage bays and areas for the unloading of SRF/RDF and their transfer to conveyor facility. A sunken storage bay at a maximum depth of 5.6m is proposed to be used for the storage of solid fuels, prior to their loading onto the internal feed hopper with screw extraction and belt weigh feeder for onward transport via conveyor.

The overhead grab crane's primary role on the new platform is to load the incoming material into the feed-hoppers. As part of this operation the crane will move and reposition material away from the tipping points (to allow other material to be tipped), to the main storage area before feeding the hoppers at a feed rate set by the cement kiln. Whilst this will naturally see some material streams be stockpiled together, the intention is not for them to be actively mixed together. Material will also not be treated onsite.

The purpose of the conveyor feed is to enable the direct and efficient transfer of solid fuels from the proposed SRF/RDF Storage Hall across the public highway and directly into the preheater tower.

The conveyor to be used will be enclosed within cladding to minimise the visual, dust and noise impacts of transporting solid alternative fuels over Earlsway at height. Two steel towers are proposed to support the conveyor, from which suspension cables will uphold the feed. The total length of the external feed is 79m.

An air floating belt conveyor is proposed to be utilised, which will result in a completely closed system that is dust-free and spill-free. The air floating conveyor has a low power consumption and low noise levels, with fans mounted at ground level to aid the transport of solid fuels at an 18° angle.

In case of a feed rate of 15 t/h, this means 11 cycles per hour. Basically every 5.5 minutes the crane needs to move one bucket into the feed hopper or in total over 22 minutes during one hour the crane is occupied to supply the feed hoppers. As a consequence, it is 38 minute or 15 cycles available for infeed (truck reception), which means roughly a load of a truck (15 x 1.4 = 21 t). At nominal feed rate the crane can unload each hour one truck and at the same time feed the feed hoppers. Assuming that 19 trucks arrive on a weekday, one every hour, then the crane is fully busy with infeed/outfeed during 19 hours. While for the remaining 5 hours, it has basically every hour 38 minute free time available for storage management.

As the bridge crane needs to stop while trucks are off-loading, two truck unloading points are chosen. This also allows the overlapping unloading of two trucks simultaneously.

The SRF/RDF feed system is proposed to be constructed with the capacity to store and feed on average 70,000 tonnes per annum with a peak throughput of 85,000 tonnes per annum.

The material is fed to an airlock screw that provides the airlock on one end and feeding at the other. After the airlock the feed chute feeds the material to a cross screw to the precalciner. A redundant and heat resistant double shut-off gate is automatically and power-fail-safe closing in case of emergency or kiln upset condition.

3 Risk Assessment

The following table contains the risk assessment that has been carried out for the activities proposed at the Geocycle UK Ltd site. Risk Management Techniques specifically implemented as part of the Waste Treatment Sector Guidance note 5.06 are explained in further detail in Section 4.

Hazard	Receptor	Pathway	Risk Management Techniques/Safeguards	Probability of Exposure	Consequence	Overall risk
Dust	Local human population	Wind-blown	<p>Enclosed SRF storage facility. APEX on the beams, cladding and protections against dust deposits. Natural ventilation through dedicated openings. Strategic location of cable trays to prevent dust deposits. All doors are automatic and/or self-closing with facility for manual closing during power outage.</p> <p>Design of roof vents to avoid dust being carried into roof area. Dedusting is not required for the U belt conveyor.</p> <p>Housekeeping.</p> <p>Trucks will be inspected to ensure increased levels of dust are not generated offsite from tyres.</p> <p>Detailed information provided within the Fire Prevention Plan.</p>	Likely – activities carried out can be quite dusty and dust generated during unloading but control measures should prevent dust from reaching receptor	Dust explosion. Potential serious injury/fatality. Nuisance – complaints from neighbours	Not significant due to measures taken in design of facility and the management techniques that will be implemented

Hazard	Receptor	Pathway	Risk Management Techniques/Safeguards	Probability of Exposure	Consequence	Overall risk
Litter	Local human population	Wind-blown	Wind spill protection tent at truck unloading points. Standard operating procedures cover removal of residual debris. All doors are automatic and/or self-closing with facility for manual closing during power outage. Housekeeping.	Likely – spill of material likely during unloading but control measures should prevent litter from reaching receptor	Nuisance – complaints from neighbours	Not significant due to the management techniques that will be implemented
Odour	Local human population	Wind-blown	Rotation of stock. All stock that is delivered is fresh stock and has to be to a certain specification. Typically 3 day storage time of materials. Material is contained within fully enclosed building and odour emissions through open doors etc. are considered as minimal (only open during unloading) and not noticeable in remote distance. Hall cleaning cycle from bridge crane during night shift. No waste will be stored outside the building. Shape of bunker designed to prevent build ups in corners and allow the grab to remove the maximum amount of material. Seals on doors and unloading points.	Likely – nature of material means it can be quite odorous but control measures should prevent odour from reaching receptor	Nuisance – complaints from neighbours	Not significant due to measures taken in design of facility and the management techniques that will be implemented

Hazard	Receptor	Pathway	Risk Management Techniques/Safeguards	Probability of Exposure	Consequence	Overall risk
Noise	Local human population	Airborne	Low noise idlers. Activities within enclosed building.	Likely – nature of operating machinery and vehicles but control measures should prevent noise from reaching receptor	Nuisance – complaints from neighbours	Not significant due to measures taken in design of facility and the management techniques that will be implemented
Self-ignition of SRF due to fermentation/moisture content or delivery of hot material	Onsite impact/local human population	Wind-blown (smoke)	Smoke/fire detection and suppression systems. Firefighting hydrants and sprinkler system, water storage. Emergency crane access. Temperature of material monitored on arrival. Adequate separation distances. No hot loads handled onsite. No direct exposure to sunlight. Routine site inspections regarding fire risk will be undertaken to ensure there are no smouldering wastes or indication that a fire has or may start. The programming of the crane will regularly clear material from all areas within the tipping and storage areas. Housekeeping, regular clean down and maintenance of area.	Likely – self-ignition can occur without careful housekeeping and monitoring	Smouldering fire with smoke generation. Potential for material that needs to be extracted e.g. lump of melted plastic. Potential serious injury/fatality. Onsite damage	Not significant with the management techniques that will be implemented

Hazard	Receptor	Pathway	Risk Management Techniques/Safeguards	Probability of Exposure	Consequence	Overall risk
			Detailed information provided within the Fire Prevention Plan.			
Contaminated firewater	Cauldon Cement Plant	Discharge from site to drainage system	Predominantly retained within SRF building. Rainwater basin installed for excess firewater and can be isolated in an emergency. Analysis of firewater before sent for co-processing.	Unlikely	Contaminated water sent to Cement Plant drainage system	Not significant with the management techniques that will be implemented
Heavy rain/flooding	N/A	N/A	Adequate sizing of rainwater basin used for excess firewater only. Onsite drainage system.	Unlikely	Rainwater basin overwhelmed.	Not significant due to measures taken in design of facility
Vandalism/arson	N/A	N/A	CCTV, 2.4 m high boundary fence, restricted access. Outside of normal operating hours, the site entrance will be closed with security gates.	Unlikely	Onsite damage.	Not significant with the management techniques that will be implemented
System upset/failure and transfer to cement plant halted	N/A	N/A	Materials can be diverted into a waste container for disposal to prevent build-up onsite.	Unlikely	Odour/self-fermentation risk due to stockpiles left	Not significant with the management techniques that will be implemented

3.1 Risk Assessment Summary

Based on the information in the table above, the key environmental issues posed by the AFR platform are in relation to:

- Dust
- Odour
- Noise

There are no point source emissions to air, water, sewer or land from the operation, therefore no screening of emissions against limits has been carried out and the Environment Agency H1 tool has not been utilised.

In terms of dust and odour, both are not expected to cause concern outside of the site boundary and are not expected to be significant in terms of impact on the surrounding environment or populations, specifically with the risk management techniques in place. No significant adverse impacts are therefore proposed to be experienced at any sensitive residential or ecological receptor located within the vicinity of the site.

Due to the nature of the activities, an odour management plan (document reference 009 – Odour Management Plan) has been produced as required and will form part of the site's Environmental Management System.

Regarding noise, a noise risk assessment was carried out by Bureau Veritas as part of the planning application for the site. An assessment of the operational noise impact has been carried out in accordance with British Standard 4142: 2014 to consider the potential noise impact on the nearby residential receptors. The assessment concluded that the noise impact of the plant operation would be below the Lowest Observed Adverse Effect Level at the nearest residential receptors. No specific noise mitigation measures would be required, and the requirements of Staffordshire Moorlands Core Strategy Policy SD4 are considered to have been met. A noise management plan (document reference 010 – Noise Management Plan) has been produced due to the proximity of nearby sensitive receptors and will form part of the site's Environmental Management System.

Cement production operations have been undertaken at Cauldon for many years, at times for long periods with much less stringent environmental controls, without causing adverse impact upon the ecological interest of the area, therefore it is the intention of the Alternative Fuels Platform to uphold the good community relations that the Cement Plant have developed.

3.1.1 Habitats Assessment

A habitats assessment is to be carried out for any Special Protection Area (SPA) or Special Area of Conservation (SAC) located within 5 km of the site boundary. The Peak District National Park Special Area of Conservation (SAC) is located approximately 700 m north of the site (at its closest point). This encompasses The Peak District Dales SAC, Hamps and Manifold Valleys SSSI and Brownend Quarry SSSI. However, as it is believed that there will be no significant cause for concern outside of the site boundary for the activities taking

place, no further assessment has been carried out on the impact on this receptor from the Alternative Fuels Platform.

A full Environmental Impact Assessment and Cumulative Impact Assessment was carried out as part of the planning application for the site, encompassing an Air Quality Assessment. This took into account the impact of the new platform but only from the perspective of emissions from Cauldon Cement Plant from the change in materials and as such is not applicable here. See the Appendix for the Planning Environmental Statement produced as part of this application, which summarises this assessment.

4 Technical Standards

The design and operation of the Alternative Fuels Platform at the Geocycle UK Ltd site will adhere to the relevant requirements of the Sector Guidance Note S5.06 Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste.

4.1 S5.06 Guidance Note

The following aspects of S5.06 that are applicable to the site and the key operating techniques/measures that will be implemented to adhere to them are as follows. Note: the site is currently at the detailed design stage of the project and this section provides the measures agreed for implementation at this stage. More detailed operating procedures which adhere to the relevant sections of the Sector Guidance note will be created as the project progresses and be in place before the site is in operation.

4.1.1 Waste Pre-Acceptance

The site will operate a pre-qualification and supplier approval process which ensures only approved specification material is received, reducing the potential for incompatible materials to arrive onsite in the first instance leading to adverse reactions.

All records relating to pre-acceptance should be maintained for cross-verification and referencing at the acceptance stage.

4.1.2 Waste Acceptance

The acceptance procedures when waste arrives onsite will serve to confirm the characteristics of the waste; most of the characterisation will have been carried out in the pre-acceptance stage to prevent unacceptable material arriving onsite. This serves to minimise the time a vehicle wishing to unload is waiting.

On arrival the loads will be weighed at the weighbridge and all documents checked. At this stage, the waste tracking system unique reference number will be applied to each delivery that arrives onsite.

Waste acceptance procedures will involve systematic testing and analysis of the contents of solid waste trucks weekly, to ensure the materials are within specification. Non-conforming waste will be turned away/re-directed. Trucks can be directed to the parking area if necessary, which is at a safe distance from the storage hall.

A detailed quality control scheme for inbound, production and outbound material will be introduced. The following analysis must be performed with a frequency of once per week / supplier / stockpile:

- Water content
- Calorific Value
- Chlorine
- Heavy Metals

- Ash Content
- Hg

Weekly/monthly samples are taken while the truck is unloading (side access door from where a sample can be taken). SRF process samples (from the conveyor belt, e.g. as fired quality) are taken by a manual sampler upstream of the conveyor.

Temperature checks will also be carried out and no hot loads are allowed onsite. Where unsuitable materials are found, the trucks will be turned away or redirected. If approved, the truck will unload the solid fuels into the reception area with the storage hall.

The waste tracking system will hold all the information generated during pre-acceptance, acceptance, storage, and removal off-site. Records will be made and kept up to date on an ongoing basis to reflect deliveries and despatches. The tracking system will operate as a waste inventory/stock control system and include as a minimum:

- date of arrival on-site
- producers' details
- all previous holders
- a unique reference number
- pre acceptance and acceptance analysis results
- package type and size
- record accurately the nature and quantity of wastes held on site, including all hazards and identification of primary hazards
- where the waste is physically located in relation to a site plan
- identification of operator's staff who have taken any decisions re acceptance or rejection of waste streams and decided upon disposal options

All records relating to pre-acceptance will be maintained and kept readily available for cross-reference and verification at the waste acceptance stage. Records will be held in an area well removed from activities to ensure their accessibility during any emergency.

The system adopted will be capable of reporting on all of the following:

- total quantity of waste present on-site at any one time, in appropriate units,
- breakdown of waste quantities on-site that is, awaiting onward transfer
- comparison of the quantity on site against total permitted
- comparison of time the waste has been on-site against permitted limit

Back-up copies of computer records will be maintained off-site.

The following image provides a snapshot of various aspects that will be tracked within the system and the inputs, activities and outputs for each.

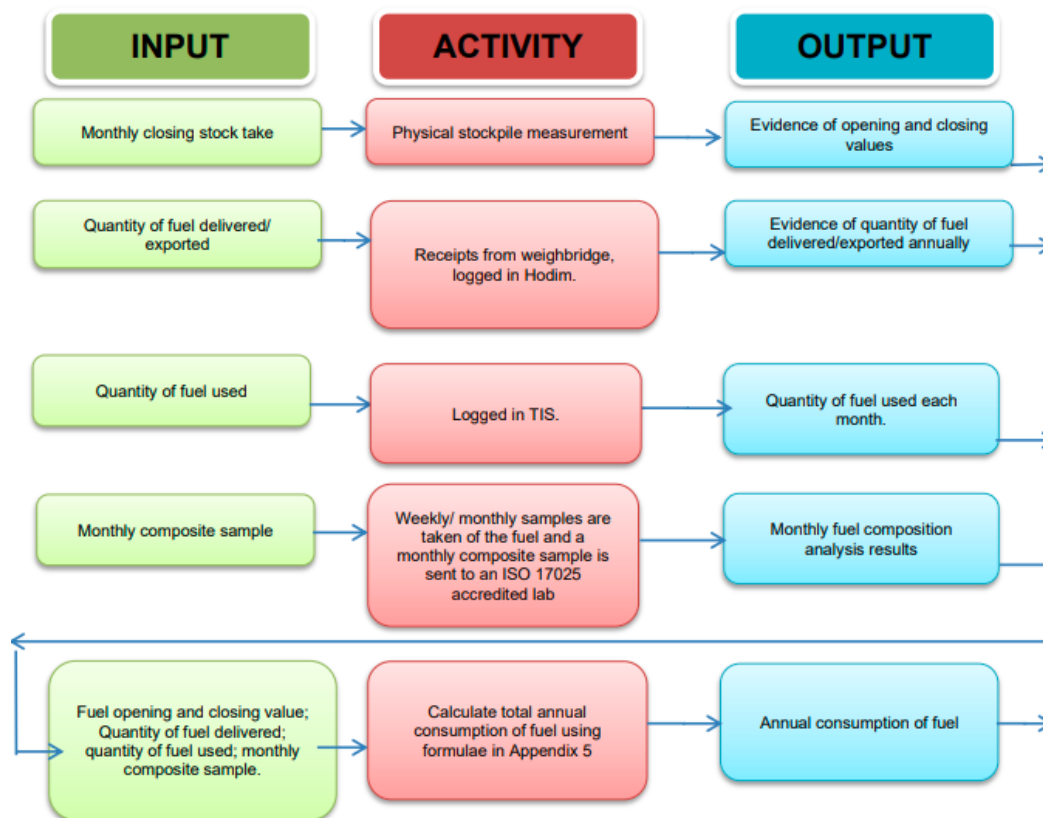


Figure 1 Tracking system snapshot

4.1.3 Waste Storage

All waste accepted onto the site will be allowed to be tipped into the enclosed storage hall. The surfacing of the building will be concrete.

The storage hall is located well away from any watercourses and sensitive perimeters, and a security fence is in place to prevent vandalism.

Procedures will be in place to ensure the storage hall is inspected regularly and routine site inspections regarding fire risk will be undertaken to ensure there are no smouldering wastes or indication that a fire has or may start.

The following details regarding storage will also apply:

- Typical 3-day storage time for materials.
- During periods of prolonged maintenance, the storage hall pile will normally be 'run down' to substantially reduce material volumes. In the event of unforeseen failure the material may stay in the storage hall longer but monitoring will take place.
- Waste will be managed, regularly rotated by different zones via the bridge crane activity.
- Separation distances between process areas, site perimeter, occupied buildings and truck waiting areas area are a minimum of 18.5 m.
- A feature of the bridge crane is to carry out 'hall' cleaning cycles during the night shift.
- Waste will not be exposed to direct sunlight to minimise external heating.

4.1.4 Point Source Emissions

There will be no point source emissions to air, land, water or sewer from the proposed activities.

4.1.5 Fugitive Releases

The following techniques will be employed to prevent fugitive emissions:

- The SRF storage facility and conveyor system will be enclosed, no storage foreseen elsewhere onsite.
- Stock will be rotated and managed to prevent build up.
- APEX will be installed on the beams within the storage hall.
- Trucks will be inspected to ensure increased levels of dust are not generated offsite from tyres.
- Cladding and protections against dust deposits will be installed in the storage hall.
- There will be natural ventilation designed in such a way there will be no fugitive emissions outside the building.
- Strategic location of cable trays within the storage hall to prevent dust deposits.
- There will be a wind spill protection tent at the truck unloading points.
- Standard operating procedures will cover removal of residual debris.
- All doors are automatic and/or self-closing with the facility for manual closing during power outage.
- General good housekeeping will be ensured onsite.

4.1.6 Odour

The general nature of the materials brought onsite means in some instances it can be quite odorous. However, due to the measures to be implemented, it is not believed that odour will be a significant issue. Material is contained within a fully enclosed building and odour emissions through open doors (only open during unloading) and roof openings for natural ventilation are considered as minimal and not noticeable in remote distance or the public highway. There will be regular rotation of stock and all stock that is delivered is fresh stock and has to be to a certain specification (as defined within the pre-acceptance and acceptance stages). The site will typically operate a 3 day storage time of materials to prevent build up and there will be hall cleaning cycles from the bridge crane during the night shift. The shape of the bunker will be designed to prevent build ups in corners and allow the grab to remove the maximum amount of material. No waste will be stored outside the building.

4.1.7 Management

Details of the management of the site are provided within reference 001 Geocycle Management System Summary and thus are not repeated here.

4.1.8 Raw materials/water use

Raw materials on site are limited to the solid fuels and the opportunities for waste minimisation are limited given the nature of the site. Water use is limited to sprinklers and firewater.

4.1.9 Waste recovery/disposal

Not applicable due to the nature of activities.

4.1.10 Accidents

The accident management plan will form part of the Management System implemented onsite, in line with the overarching Integrated Management System operated by Aggregate Industries.

4.1.11 Noise

Good practice measures are proposed to reduce noise and vibration at the facility. These include the storage of wastes within a building, maintenance of plant and equipment and low noise idlers. As discussed earlier, a noise assessment was carried out as part of the planning application for the site and showed noise to be an insignificant issue.

4.1.12 Monitoring

No continuous or detailed emissions monitoring will be carried out due to there being no point source emissions to air, land, water or sewer from the activities and fugitive emissions deemed to cause no adverse impacts to the surrounding environment/populations.

A monitoring and complaints procedure will be implemented to ensure that dust, odour, noise and litter are limited and mitigated against. Any complaints will be responded to promptly to uphold the good community relationships that are currently in place with Cauldon Cement Plant.

Routine site inspections regarding fire risk will be undertaken to ensure there are no smouldering wastes or indication that a fire has or may start due to self-ignition.

Records shall be kept of any monitoring/inspections carried out.

5 Appendix

5.1 Planning Environmental Statement (PES)

This section contains the PES that was submitted as part of the planning application for the site.