

## WASTE MANAGEMENT PLAN

# ROTHERHAM ENERGY SCHEME RENEWABLE ENERGY CENTRE

Prepared for Rolton Kilbride Rotherham Ltd & Andy Owen McGee



**PLANNING APPLICATION FOR A  
RENEWABLE ENERGY CENTRE (GASIFICATION)  
AND MECHANICAL TREATMENT FACILITY**

**WASTE MANAGEMENT PLAN**

**FORMER TEMPLEBOROUGH STEEL WORKS,  
SHEFFIELD ROAD, TEMPLEBOROUGH, ROTHERHAM**

**ON BEHALF OF ROLTON KILBRIDE ROTHERHAM LTD & ANDY OWEN  
MCGEE**

**TOWN & COUNTRY PLANNING ACT 1990 (AS AMENDED)  
PLANNING AND COMPULSORY PURCHASE ACT 2004**

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## 1. INTRODUCTION

- 1.1 This Waste Management Plan (WMP) has been prepared by Pegasus Group to accompany a full planning application, submitted on behalf of Rolton Kilbride Rotherham Ltd and Andy Owen McGee (“the Applicants”), with respect to demolition of existing buildings, construction and operation of a Renewable Energy Centre for the recovery of energy (heat and power) from non-hazardous residual waste using an Advanced Conversion Technology process called ‘gasification’, and a Mechanical Treatment Facility for the recovery of recyclable materials with the associated plant and infrastructure, weighbridge office and landscaping on land at the Former Templeborough Steel Works, Sheffield Road, Templeborough, Sheffield (“the application site”).
- 1.2 This WMP sets out the approach to waste management that will be applied to the design, construction and occupation (operational phase) of the proposed development of a Renewable Energy Centre (REC) at the Former Templeborough Steel Works, Sheffield Road, Rotherham.

### **Site Description and Context**

- 1.3 The application site covers an area of approximately 3.4 hectares in size, and lies within an industrialised/urbanised area located to the northern side of Sheffield Road (A6178) in Templeborough.
- 1.4 The site is approximately 2km south west of Rotherham town centre, 7.5km north east of Sheffield City Centre and 1.5km east of the M1 Junction 34 near Meadowhall. The western boundary of the site aligns the boundary division of Rotherham Metropolitan Borough Council (RMBC) to the east and Sheffield City Council (SCC) to the east.
- 1.5 The nearby uses to the west and south are generally industrial and/or commercial in nature, although the residential area of Tinsley is located approximately 200m south west of the site just east of the motorway junction. The Magna science adventure centre (former Templeborough Steelworks site) lies to the east. To the north beyond the railway line and the River Don lies Blackburn Meadows Waste Water Treatment Works and Blackburn Meadows Nature Reserve and Local Wildlife Site.

1.6 The River Don, a main river is located approximately 0.1km to the north east of the site and flowing east. At its closest point to the site the river is approximately 20m wide. An Ordinary Watercourse, The Chapel Flat Dike, lies a short distance to the east of the site flowing in a northerly direction, within a culvert, to discharge into the River Don

### **Proposed Development**

- 1.7 A full planning application is submitted which comprises the following elements:
- Demolition of existing buildings;
  - Construction of a Renewable Energy Centre (REC) and a Mechanical Treatment Facility (MTF);
  - Ancillary offices, workshop, warehouse and education centre;
  - Weighbridge office;
  - Landscaping proposals to enhance the existing environment; and
  - Associated works and infrastructure necessary for the implementation of the development.

### **Definitions**

- 1.8 For the purpose of this report, 'waste' is defined as materials that are unwanted, having been left over after the completion of a process which would otherwise be discarded. Waste minimisation is the process of reducing the quantity of each materials arising, requiring processing and/or disposal.
- 1.9 The priority at the application site will not be producing waste in the first place. To do this, the waste implications of the proposals need to be considered at the earliest possible stage.

## 2. PLANNING POLICY CONTEXT

### National Policy Context

2.1 The relevant extant and emerging national waste management policy and strategy is set out within the following documents:

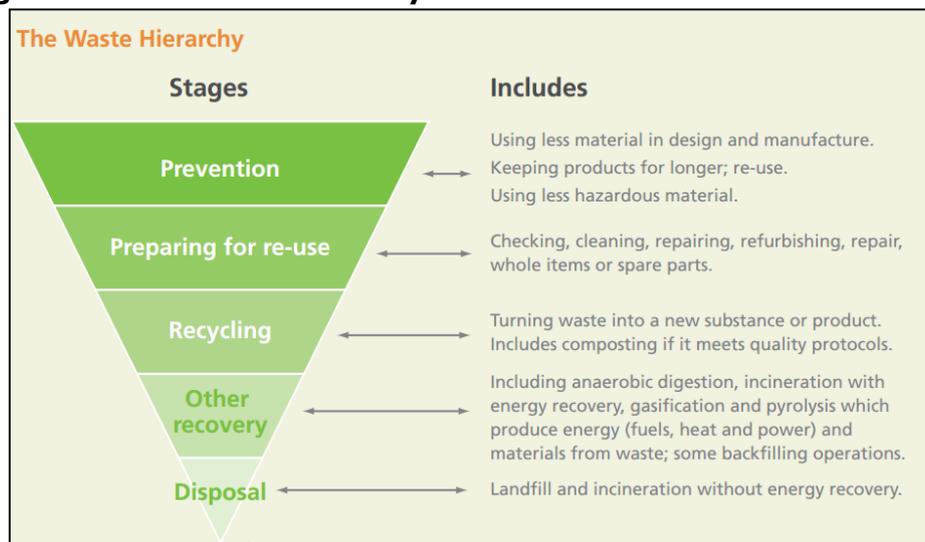
- Waste Management Plan for England (December 2013);
- National Planning Policy for Waste (October 2014);
- National Planning Policy Framework (March 2012).

### Waste Management Plan for England (December 2013)

2.2 The Waste Management Plan for England (WMPE) is a high level strategy that supersedes the former Waste Strategy 2007, and supports the implementation of the objectives and provisions set out within the revised Waste Framework Directive, specifically Article 28 which requires that Member States establish one or more waste management plans covering their territory.

2.3 The WMPE states that the key aim for waste management in England is to work towards a 'zero waste economy' in which material resources are reused, recycled or recovered wherever possible and disposed of as the option of last resort. The WFD defines waste management as "*the collection, transport, recovery and disposal of waste, including supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker*". This means the adoption of the waste hierarchy (see figure 1) as the guiding principle to sustainable waste management.

**Figure 1: The Waste Hierarchy**



- 2.4 The proposed development falls within the scope of 'Other Recovery' for which the WMPE (page 13) states that "*The Government supports the efficient energy recovery from residual waste – of materials that cannot be reused or recycled - to deliver environmental benefits, reduce carbon impact and provide economic opportunities*", albeit noting that the Government aims to get the most energy out of waste, not to get the most waste into energy recovery. With this regard it is noted that "*It is for the Environment Agency to determine on a case by case basis whether an application for an environmental permit constitutes a waste recovery or a disposal operation*".
- 2.5 The WMPE advises of the Government's 'Waste Prevention Programme for England' which works towards the zero waste economy with detailed actions to:
- *encourage businesses to contribute to a more sustainable economy by building waste reduction into design, offering alternative business models and delivering new and improved products and services,*
  - *encourage a culture of valuing resources by making it easier for people and businesses to find out how to reduce their waste, to use products for longer, repair broken items, and enable reuse of items by others,*
  - *help businesses recognise and act upon potential savings through better resource efficiency and preventing waste, to realise opportunities for growth; and*
  - *support action by central and local government, businesses and civil society to capitalise on these opportunities.*

National Planning Policy for Waste (October 2014)

- 2.6 The National Planning Policy for Waste (NPPW) sets out the detailed waste planning policies, and replaces Planning Policy Statement 10 (PPS10) which was previously in force until the 16<sup>th</sup> October 2014.
- 2.7 The NPPW sets out the Government's national policies that should be taken into account by waste planning authorities in discharging their responsibilities and ensuring that planning provision of new capacity and spatial distribution of waste management facilities is based on the best available data. Also, by ensuring there is a collaborative approach amongst planning authorities and the need for waste management facilities is considered amongst other spatial concerns, the NPPW

recognises the effective contribution it can bring to the progression of sustainable communities.

2.8 The overall objective of Government Policy on waste, as set out within the NPPW (paragraph 1) is:

**“To work towards a more sustainable and efficient approach to resource use and management...”**

2.9 Accordingly, the Government seeks for waste to be managed by moving it up the ‘waste hierarchy’ for prevention, preparing for re-use, recycling, other recovery and disposal only as a last resort.

2.10 With respect to determining waste planning applications, waste planning authorities should (paragraph 7):

- **“only expect applicants to demonstrate the quantitative or market need for new or enhanced waste management facilities where proposals are not consistent with an up-to-date Local Plan. In such cases, waste planning authorities should consider the extent to which the capacity of existing operational facilities would satisfy any identified need;**
- **recognise that proposals for waste management facilities such as incinerators that cut across up-to-date Local Plans reflecting the vision and aspiration of local communities can give rise to justifiable frustration, and expect applicants to demonstrate that waste disposal facilities not in line with the Local Plan, will not undermine the objectives of the Local Plan through prejudicing movement up the waste hierarchy;**
- **consider the likely impact on the local environment and on amenity against the criteria set out in Appendix B and the locational implications of any advice on health from the relevant health bodies. Waste planning authorities should avoid carrying out their own detailed assessment of epidemiological and other health studies;**
- **ensure that waste management facilities in themselves are well-designed, so that they contribute positively to the character and quality of the area in which they are located;**
- **concern themselves with implementing the planning strategy in the Local Plan and not with the control of processes which are a matter for the pollution control authorities. Waste planning authorities should work on the assumption that the relevant pollution control regime will be properly applied and enforced;**

- **ensure that land raising or landfill sites are restored to beneficial after uses at the earliest opportunity and to high environmental standards through the application of appropriate conditions where necessary.”**

2.11 To deliver sustainable waste management, planning authorities should monitor and report the take-up in allocated sites, existing stock and any changes in the stock of waste management facilities and their capacity, the amount of waste recycled, recovered or disposed in order to inform the preparation of local plans and the determination of planning applications.

National Planning Policy Framework (March 2012)

2.12 The National Planning Policy Framework (NPPF) was published on the 27<sup>th</sup> March 2012 and sets out the Government’s planning policies for England, and how these are expected to be applied.

2.13 The NPPF reiterates that planning law requires planning applications to be determined in accordance with the development plan unless material considerations indicate otherwise, and confirms that the NPPF is a material planning consideration in the determination of planning applications (paragraph 2).

2.14 The NPPF does not contain specific policies with regards to waste-related development as this is provided within the National Waste Management Plan for England (discussion on this document provided above). However, the NPPF requires that in the preparation of waste plans and the taking of decisions on waste-related planning applications, local authorities should have regard to the policies in the NPPF in so far as they are relevant (paragraph 5).

2.15 The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development by balancing the economic, social and environmental roles of development. These roles should not be undertaken in isolation as they are mutually dependent. To achieve sustainable development, the planning system should therefore play an active role in guiding development to sustainable solutions (paragraphs 7 & 8).

2.16 The NPPF identifies the key role the planning system has to play in supporting the delivery of renewable energy which is considered central to the economic, social and environmental dimensions of sustainable development. To help increase the use and supply of renewable energy local planning authorities are directed to recognise the responsibility on all communities to contribute to energy generation

and should, inter alia, have a positive strategy to promote energy from renewable and low carbon sources, design policies to maximise renewable and low carbon energy development whilst ensuring the adverse impacts are satisfactorily addressed, and identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems (paragraphs 95 to 97).

### **Local Policy Context**

#### Barnsley, Doncaster and Rotherham Joint Waste Plan (March 2012)

2.17 The Barnsley, Doncaster and Rotherham Joint Waste Plan (BDRJWP) was adopted in March 2012 and sets out the overall approach to managing waste across the metropolitan boroughs over the period to 2026.

2.18 **Policy WSC6 (General Considerations for all Waste Management Proposals)** sets out a range of criteria against which waste development proposals in the plan area (on both allocated and unallocated sites) will be assessed. Proposals will only be permitted where they can demonstrate how they would, inter alia, provide:

- Support the vision, aims and overall strategy of the BDRJWP;
- Provide access to and from the main transport network;
- Ensure there is adequate highway capacity to accommodate additional vehicles generated;
- Ensure there is adequate space on site for vehicles to enter, wait, unload and leave safely;
- Propose technology which is suitable for the location and nature of the site;
- Provide high quality design and architecture sympathetic to its context and surroundings;
- Provide adequate means of controlling noise, vibration, glare, dust, litter, odour and vermin, and other emissions (e.g. greenhouse gases and leachate);
- Would not result in loss or damaged to the diversity of wildlife and habitats;

- Will not have an adverse impact upon the quality of ground and surface water or drainage;
- Will not have an adverse impact upon the significance of heritage assets and features;
- Will not reduce the safety of air travel;
- Will not increase the risk of flooding elsewhere in the catchment areas and will, where possible, improve the existing flood risk situation; and
- Will maximise any training and educational opportunities arising from the development.

2.19 The policy goes on to advise that proposals must include sufficient information with the planning application to demonstrate how they comply with the criteria. This will include:

- the type of process;
- the amount and type of waste to be handled or treated at the site (together with any residues) and how they will be addressed (including estimated annual throughput); and

2.20 Details of proposed hours of working, expected number of existing and proposed employees and the anticipated number and type of vehicle movements per day both in and out of the site.

2.21 **Policy WCS7 (Managing Waste in all Developments)** advises that all development proposals, including waste management facilities, must submit a Waste Management Plan as part of the planning application. Such plans will need to, inter alia, include:

- Information on the amount and type of waste that will be generated from the site;
- Measures to reduce, re-use and recycle waste within the development;
- An assessment to re-use or adapt existing buildings on the site – if demolished an explanation why it is not possible to retain them;

- Construction and design measures that minimise the use of raw materials and encourage the re-use of recycled or secondary resources; and
- Details on how the development will be monitored following its completion.

Furthermore, where waste management plans include on-site recycling, recovery and re-processing provision they must demonstrate how these activities will comply with the requirements set out under Policy WCS6.

### 3. ANTICIPATED WASTE STREAMS

3.1 Anticipated waste streams during the demolition, construction and occupation phases of the proposed development are outlined below.

#### Demolition

3.2 The proposed development would involve the demolition of the existing buildings and structures on the site, and where relevant the breaking up of existing hardstanding.

3.3 The Applicant has given careful consideration to the potential re-use or adaption of the existing buildings on the application site but due to the nature and scale of the development proposed it is not possible to retain the existing buildings and demolition is required.

#### Construction

3.4 There is potential during the construction phase to result in the generation of waste. The average amount of waste produced in the construction of industrial buildings has been estimated at 20.0m<sup>3</sup> per 100m<sup>2</sup> floor area and commercial offices are estimated to produce 20.1m<sup>3</sup> per 100m<sup>2</sup> of floorspace<sup>1</sup>.

3.5 These figures give an indicative level of construction waste arising from the entire site. Benchmarks can be set, with the aim of achieving waste arising at the application site below these levels.

#### Occupation

3.6 During the operational phase, the REC will have the capacity to process up to 215,000 tonnes of non-hazardous residual waste per annum.

3.7 All residual waste would be loaded into the MTP hoppers where it would be passed through a series of shredders and magnets and Eddy Currents to enable any ferrous and non-ferrous materials not previously recovered to be extracted and to shred the material to the size required by the gasification process. The recovered metals will be collected and stored in a bunker, which will be periodically collected and sent for recycling.

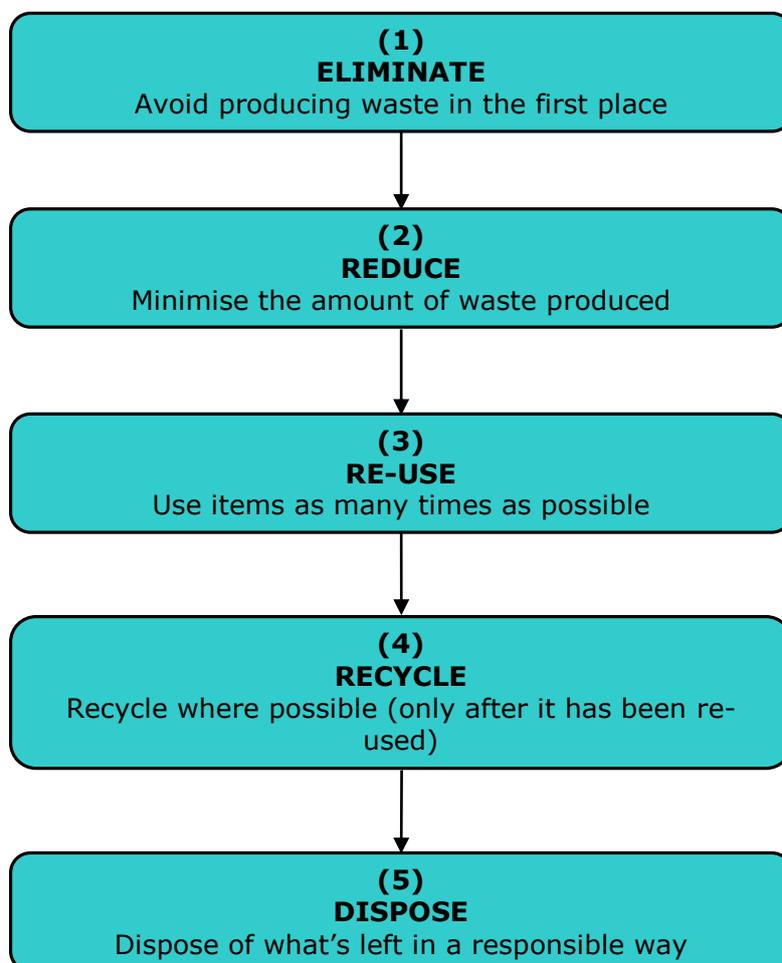
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<sup>1</sup> Benchmarks for Predicting and Forecasting Construction Waste, Annex 3, February 2009

3.8 In the operation of the REC, flue gases are passed through a bag house filter, where upon lime and activated carbon will be injected to adsorb any contaminants in the flue gas. The bag house filter residue (referred to Air Pollution Control Residue (APCR)), comprises the salts created with the lime and the contaminants such as SO<sub>2</sub>, HCl, HF, etc, and with the activated carbon and the heavy metals and dioxins and furans, which is collected and stored in the filter dust silo. The APCR is a hazardous waste, due to its high alkaline content, which would be disposed of at an appropriately licenced hazardous waste landfill. The cleaned flue gas is then discharged to the atmosphere via the stack.

## 4. SITE MANAGEMENT

- 4.1 The fundamental strategy applied to the application site will be to minimise waste produced by applying a waste hierarchy to implement actions to Eliminate, Reduce, Reuse and Recycle before considering Disposal.



- 4.2 Surplus waste materials arise from either the materials imported to the site or from those generated on site. Imported materials are those which are brought to the project for inclusion into the permanent works. Generated materials are those which exist on the site such as topsoil, sub-soil, trees and materials from demolition works, etc.

- 4.3 The minimisation techniques which relate to design efficiencies and procurement of materials form part of the overall design of the proposed development and the developer's procurement procedure, and are therefore excluded from this Waste Management Plan which deals solely with the on-site issues during production.

- 4.4 The Applicant will monitor and review the sustainability credentials of the development project, and all relevant contractors will be required to seek to minimise waste arising at source and, where such waste generation is unavoidable, to maximise its recycling and reuse potential.

## 5. MANAGING WASTE ON SITE

### Construction

- 5.1 Waste materials can be generated during the site preparation stage of construction and during the erection of buildings and installation of infrastructure.
- 5.2 Care will be taken during the design stage of the development to ensure that any material arising from site clearance and preparation can be re-used elsewhere on site wherever possible and practical.
- 5.3 Where appropriate, sustainable building construction techniques will be used in line with current Building Regulations. Sustainable construction measures typically comprise a combination of the following:
- Improved energy efficiency through siting, design and orientation;
  - Water conservation measures;
  - Considering fabric efficiency in the design of buildings;
  - Use of building materials capable of being recycled; and
  - An element of construction waste reduction or recycling.

### Operation

- 5.4 The proposed REC will manage residual waste, which is waste that is left following the practicable removal of recyclable materials (i.e. pre-treated waste), either as RDF or as other pre-treated wastes. Furthermore, the proposed REC would use a proven form of Advanced Conversion Technology (ACT), known as gasification, to generate circa 23MW of exportable electricity depending on the amount of heat to be exported, which in itself is dependent on the temperature and quantity of heat required by the eventual heat off-taker(s).
- 5.5 The proposed REC would have capacity to process up to 215,000 tonnes of waste per annum. In accordance with the waste hierarchy the proposed REC constitutes 'other recovery', that is a technology that produces energy from the waste.
- 5.6 The residual waste will be managed according to the different sizes of waste provider organisations, anticipated to be: Tier 1 from the major waste companies will account for approximately 60% of the waste entering the plant; Tier 2 will

consist of waste from local operators and will account for 30% waste; and Tier 3 where 10% of the waste will come from the spot market. Economic and contractual obligations will play a large factor in the distance waste travels to a facility (the greater the waste needs to travel, the greater the waste management cost to the operator) and hence waste will not generally be transported over long distances. Although waste from Tier 1 will be transported from major waste organisations it is anticipated that this would be sourced from within South Yorkshire and/or from within the 1-hour drive catchment.

- 5.7 It is anticipated that residual waste will be delivered to the site via a combination of refuse collection vehicles (RCVs) which will typically be 18 to 22 tonne vehicle (gross weight) or articulated bulk haulage vehicles from nearby waste transfer stations under a Duty of Care Waste Transfer Note. The facility is expected to generate up to 126 heavy goods vehicle (HGVs) movements per day (63 in / 63 out), which is the equivalent of 55 deliveries and 8 collections per day.
- 5.8 *Waste Reception* – All residual waste would be loaded into the MTP hoppers where it would be passed through a series of shredders and magnets and Eddy Currents to enable any ferrous and non-ferrous materials not previously recovered to be extracted and to shred the material to the size required by the gasification process. The recovered metals will be collected and stored in a bunker, which will be periodically collected and sent for recycling.
- 5.9 *Thermal Conversion* – Unlike incineration, gasification does not burn (combust) the residual waste, but heats the materials at high temperatures until their composition breaks down. The thermal conversion will take place in two stages. The first stage involves the gasification (heating) of the residual waste within the gasification unit (primary chamber). The outputs from the gasification process is a synthetic gas called 'syngas' and 'bottom ash' (see Ash Management below). The second stage involves the high temperature oxidation of the syngas within the high-temperature oxidation unit (secondary chamber), whereupon there is a complete breakdown of Carbon Monoxide (CO), Total Organic Carbon (TOC) with a final production of a flue gas with low Nitrogen Oxides (NO<sub>x</sub>) content.
- 5.10 Changing the residual waste to syngas, means the combustion environment can be finely controlled to achieve compliance with the emissions thresholds of the Industrial Emissions Directive (IED) related to combustion (Directive 2010/75/EU of the European Parliament and the Council on industrial emissions).

- 5.11 *Air Pollution Control / Flue Gas Cleaning System* – The gasses generated during the thermal conversion process, having passed through the heat recovery system, enter the flue gas cleaning system. This will comprise a bag house filter, a storage silo for lime and activated carbon, and a filter dust silo. In summary, the flue gases are passed through a bag house filter, where upon lime and activated carbon will be injected to adsorb any contaminants in the flue gas. The bag house filter residue (referred to Air Pollution Control Residue (APCR)), comprises the salts created with the lime and the contaminants such as SO<sub>2</sub>, HCl, HF, etc, and with the activated carbon and the heavy metals and dioxins and furans, which is collected and stored in the filter dust silo. The APCR is a hazardous waste, due to its high alkaline content, which would be disposed of at an appropriately licenced hazardous waste landfill. The cleaned flue gas is then discharged to the atmosphere via the stack.
- 5.12 *Control and Monitoring System* – The facility will operate within the terms and conditions set out with the statutorily required Environmental Permit, which is independently authorised, monitored and enforced by the Environment Agency. The facility will be equipped with a control and monitoring system that will provide automatic control of the process during normal operating conditions and continually monitored by fully trained and experienced staff. The emissions from the flue stack are continually monitored to ensure compliance with the emissions thresholds of the Industrial Emissions Directive (IED); in the unlikely event that emissions thresholds could be breached the facility would be temporarily shut-down until resolved. All emissions data is collated and made available to the Environment Agency.
- 5.13 *Maintenance* – Maintenance will be programmed to occur three times a year and necessitates the ceasing of operations for two minor shutdowns for inspection of around one week each and one major shutdown for maintenance of around three weeks. These times would be programmed to coincide with the manufacturer's shutdown periods. Across the rest of scheduled operation, ad-hoc maintenance and other generation drop-out periods associated with grid-synchronisation and the processing of non-homogenous wastes may result in the need for short-term shutdowns. This includes periods when one line is shut down for maintenance whilst the other lines remain operational. Total shutdown will only be required for maintenance of common systems.
- 5.14 *Bottom Ash Management* (ash from the gasification process) – The ash discharged from the gasification unit (primary chamber) is temporarily stored on site within

the bottom ash bunker before being transferred off-site disposal. The ash can be either recycled/recovered, or disposed of at an appropriately licensed landfill site.

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## **6. SUMMARY AND CONCLUSIONS**

- 6.1 This WMP sets out the principles of managing waste during the construction and operation of the development. The proposed REC complies with the principles of the waste hierarchy, such that the RDF and other pre-treated wastes would be treated at the highest tier possible. There is a demonstrable national need for such facilities to reduce the export of RDF abroad and support the achievement of the UK's renewable energy targets and providing security of UK energy supplies. At a local level the proposed REC would address an identified need for recovery facilities. The facility would primarily source the waste materials from within the South Yorkshire area and is compliant with the principles of the proximity principle.
- 6.2 Through this report, a strategy will be in place to ensure that the Council has certainty, prior to development commencing, that a robust process would be adhered to by the Applicants in minimising waste.
- 6.3 The Waste Management Plan seeks to ensure the movement of waste up the 'waste hierarchy' as defined in the NPPW, and the proposed development is fully in accordance with the objectives set out in European, National and Local planning policy.