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## 1.0 Treatment Activity Summary

### 1.1 Description of the Process

The Hitchin Metal Recycling Facility operates a pre-shredder and a fragmentiser. The pre-shredder is used for the direct shredding of all waste that is going to enter the fragmentiser. This is a metal fragmentiser mill with directly associated automated and manual material handling and separation technologies that produces export grade ferrous and non-ferrous products from mixed metallic and metallic composite items, such as depolluted End of Life Vehicles (ELV) and Waste Electrical and Electronic Equipment amongst other non-hazardous household and commercial products with recovered from waste streams for their ferrous and non-ferrous content.

Metallic scrap materials are tipped by third parties and screened by material handlers and stockpiled beside the pre-shredder. The screening process ensures that hazardous and non-conforming wastes are separate to a quarantine area and not used as feed for the main process. Process feed is loaded by material handling plant into the pre-shredder. Once the waste has been through the pre-shredder it is loaded onto the infeed conveyor that transports the metallic waste to the top of the mill. The main mill is enclosed in and has an acoustic barrier. Infeed drops into the mill where controlled feed rollers pass material into a rotating hammer mill. The mill breaks the metallic waste inputs in to pieces that exit through grill plates once they are reduced to a specific size.

The mill is sealed and has both a water misting system and air extraction system. Together these act to prevent the production of dust and other potential emissions from the process and ensure that the process output material is 'wetted' to minimise dust release during the separating and storage phases of treatment. Air flow is drawn through the mill by negative pressure from a variable speed fan passing through a cyclone and wet scrubber before venting to the atmosphere at a stack directly adjacent to the mill. The air flow from the mill contains particulates and other light fraction material, such as foam from car seats. The light fraction waste is removed by the cyclone and wet scrubber and stored in covered bay prior to collection and removal from site for further recovery operations.

The remaining 'heavy' fraction is moved by conveyor from the mill base to the ferrous separator known as a Cascade. The Cascade uses a sealed air flow system with standalone wet scrubber. Heavy fraction metallic waste falls to a conveyor and passes through drum magnet to separate ferrous from non-ferrous material. Light fraction and fines are removed from the air flow by cyclonic separation. The light fraction removed in the cascade is transported by conveyor to the light fraction storage area.

The ferrous fraction is passed by conveyor to the ferrous picking shed where it is manually picked for remaining mixed ferrous/non-ferrous items, such as armature motors. The picking shed is covered and raised to allow picked material to be dropped into dedicated bins/containment areas by material type. The final clean ferrous fraction leaves the picking shed conveyor and is stacked by a radial stacking conveyor with a capacity to create a 4000 tonne stockpile evenly distributed.

The shredder 'light fraction' separated by the cascade leaves via a sealed chute to the Ferrous Cascade Dirt Conveyor. The covered conveyor deposits the 'dirt' fraction to a walled storage area.

The heavy non-ferrous and rubber fraction falls to a residue conveyor and passes through eddy current separator (ECS) that separates the non-ferrous fraction from any remaining shredder 'dirt' and deposits this in the same storage area as the Cascade separated 'dirt'.

The ECS drops pass by conveyor to the non-ferrous processing lines. An initial rotating trammel produces three sized grades; under 25mm, over 25mm and over 100mm. The under 25 mm fraction is passed over another ECS to produce a mixed non-ferrous (Zorba grade) and a under 25mm 'dirt' fraction, The over 25 mm fraction is manually picked and sorted to produce an over 25mm mixed non-ferrous (Zorba grade) and a large ECS 'Dirt' fraction. The final over size grade from the trammel comprising heavy 'stone' and rubber is transported by conveyor and deposited for storage adjacent to the Non-Ferrous process plant in a covered bay.

## 1.2 Offline Non-Ferrous Downstream Plant.

Located separately but adjacent to the main plant is a secondary recovery plant designed specifically to treat 'waste' outputs from the nonferrous processing plant to recover final entrained ferrous and non-ferrous material. The plant comprises magnetic, eddy current and air jet separation technologies to produce:

- A fine ferrous fraction
- 0-6mm fine 'dirt' fraction
- 6-24mm mixed non-ferrous fraction

- 6-24mm 'waste' fraction
- 24-100mm mixed non-Ferrous fraction
- 24-100mm 'waste' fraction
- Larger than 100mm (oversize) non-ferrous and waste fraction

Each fraction drops into a dedicated bay with Intermediate bins as required for further movement and management on site

The plant is manually loaded by front loader in to a feed hopper. A stepped conveyor carries input material to the top of the plant where it is dropped to a first shaker table. This feeds a rotating magnet which separates a fine ferrous fraction from the infeed. After passing over the rotating magnet material drops to main shaker size separator that produces 4 fractions; 0-6mm, 6-24mm,24-100mm and greater than 100mm (Oversize).

The 0-6mm fine fraction falls to a dedicated bay dropping out of the process. The 6-24mm fraction passes through an Eddy Current Separator (ECS) to separate non-ferrous metal from the other material. Both fractions drop into bays beneath the plant. The 24-100mm fraction is sorted by sensors and air jets to again produced a mixed metal fraction and a 'waste' fraction both dropping to bays beneath the plant. The final oversize fraction is collected below the plant.

#### Summary of Main Process Outputs from Material Treatment

Material	Recycling Option
3B ferrous	Final recycling off site- Furnace
Armatures	Final Recycling off site
Zorba >25mm	Final Recycling off site
Zorba > 25mm	Final Recycling off site
ECS 1 >25mm	Further recovery off site
ECS 2 <25mm	Further recovery off site
Light Fraction Waste	Further recovery /recycling off site
Offline Waste	Further Recovery off site
Offline Non- Ferrous	Final Recycling off site

## 2.0 Review and Assessment of Appropriate Measures

### 2.1 Waste Pre-Acceptance

The company operates a documented system of checks for all new waste customers wishing to send bulk waste to the site. The new account process and waste assessment ensures:

- All waste entering the site in bulk transport is correctly characterised and appropriate information on EWC classification, Company type (SIC) and origin are collated, verified and entered onto the weighbridge system.
- Hazardous waste or waste with hazardous components or contamination is identified and restricted from entering the Fragmentiser process
- Where input waste is mixed from household sources, such as Civic Amenity Sites, an assessment of composition is provided
- Whether the input material is baled, in particular baled ELV's, that suppliers are checked and input material assessed for the risk of concealed materials such as pressure vessels

Prior to waste being accepted the Commercial Manager ensures a completed New Account/Customer Form is completed and authorised prior to accepting new waste streams on site. The pre -acceptance form includes all details and characterisation of the bulk waste to be processed including whether the material is baled. Suppliers of baled waste are logged and material is inspected and monitored on a risk basis for concealed materials.

### 2.2 Waste Acceptance

The sites documented waste acceptance process ensures that all waste material entering the site is:

- Screened for radioactive contamination on entering the site via the RADCOM Weighbridge Radiation Detectors
- Weighed in and details checked for Customer, Account, Vehicle Registration, Waste Description, EWC and Origin
- Visually inspected by camera and gantry (If Required) to confirm load description.
- Directed to the appropriate defined tipping area for the waste description
- Rejected prior to tipping or directed to secure quarantine tipping area if there is unacceptable risk for further transport

All waste entering the site whether from 'Bulk' Account customers or brought to the site by the public/independent traders must pass through the sites radiation detection system and weighbridge. The linked account/weighbridge system logs the appropriate details and in bound weight on the company database. An initial visual check is carried out to ensure the load meets the written description and details registered for the account in question prior to waste being unloaded. If further inspection is deemed required, the load is directed to the secure tipping area where a detailed inspection can be undertaken to ensure waste meets the requirements for non-hazardous metal shredding.

Final inspection is completed on load tipping by the Site Banksman/Crane Operator prior to stock piling. Where non-conforming items are detected in the load these are radioed back to the Site Office and quarantined.

### 2.3 Stock Storage and Handling

Material stock is managed in line with the sites stock plans. Overall stock levels are managed by daily visual inspection and by checking the current stock levels through the company's electronic weighbridge and account management system that records all waste movement by tonnage into and out of the site.

Material is handled and moved on site by use of Material Handling Cranes with mechanical grabs and Front Loading Plant. Loading and material movement is managed to control potential fugitive emissions by the use of portable Dust Bosses which spray a water mist to suppress any possible dust emissions. The site surface is kept clear and wetted across the main site thoroughfares by use of a tractor mounted water bowser and sweeping equipment.

### 2.4 Provision and Maintenance of Suitable Infrastructure

The site is provided with a complete impermeable pavement and sealed drainage system that discharges under consent to the foul sewer. The site operational management system ensures that all pollution prevention aspects of the sites infrastructure are inspected on a regular basis and defective and remedial works logged and undertaken.

Secondary containment is provided for liquid fuel and oil stores by use of double skinned and bunded tanks across the site. Any movement of liquid raw materials, such as hydraulic oil is controlled by use of IBC containers on spill containment pallets.

The movement of material by plant and conveyor could produce dust emissions and is controlled by:

- Active Dust Suppression Misting of the main loading areas- Infeed, Light Fraction Storage and Frag output loading and storage

- Process material is wetted in the fragmentiser process by water spray system and re-circulation
- All material conveyors are covered where possible
- Material sorting is undertaken in closed/covered buildings e.g Ferrous and Non-ferrous picking lines

## 2.5 Process Operational Controls

The fragmentiser process is controlled by an electronic system that offers full real-time monitoring and control of the main plant machinery to ensure the rate of production matches the operational limits of the air control system. The process operator and site manager have control over:

- Rate of feed and composition
- Rate of fragmentation by rotor speed and power
- Rate of input of water/mist suppression
- Rate of flow of the main air extraction and filter system
- Rate of air flow in the main Cascade air separator
- Conveyor belt speeds

The process is optimised for material inputs by reference to previous monitoring data and will be monitored on a quarterly basis by MCERTS approved external monitoring to ensure particulates and total VOC emissions are within limits.

## 2.6 Disposal of Effluents and Waste

The site is completely laid to concrete with a sealed drainage and recirculation system. Water that cannot be recycled on site or/and times of rainfall the site surface drains via an attenuation tank and interceptor to foul sewer under a discharge consent. The drainage system to foul sewer ensures there is no discharge from the site or from site run-off to surface water management systems in the area. The site water discharge is monitored by the water company on an annual basis from the sample chamber/silt trap placed after the final interceptor. The whole drainage system is maintained under the sites maintenance and defect reporting system.

The sites operational process separates metallic waste from mixed metallic/non-metallic inputs for non-hazardous material inputs. Post processing Non-metallic waste from the main process is sent off site for further recovery and recycling operations. Liquid wastes from mobile and fixed plant maintenance and from directly associated ELV de-pollution activities is stored securely in double skin tanks prior to authorised removal for final recovery off site.

Non Target or banned materials such as Fridges and Televisions that are concealed in loads or 'dumped' on site by public traders are secured in sealed containers within site buildings prior to removal to appropriate external waste treatment facilities.

### 3.0 BAT/Appropriate Measures Assessment- Summary of Key Measures and EMS References

<b>BAT/Appropriate Measure</b>	<b>Management System Reference</b>
The operator should have a recognised EMS	ISO 14001 Certificate
The Operator should have an accredited QMS	ISO 9001 Certificate
The Operator should manage the site according to written procedures	IMS Management System Index
Operator should provide a quarantine area	Site Material Management Plan
Operator should provide a waste reception/storage area	Site Material Management Plan
Operator should have documented waste reception/acceptance procedures reflecting the risk of different inputs and suppliers	PM 420-PM425
Treatment products and residue should be stored to minimise risk to the environment	PM426
Operators should have a documented materials handling plan	Material Management Plan
Fluids stored to prevent loss/release	Bunded and Double skin tanks
Preventative maintenance procedure	PM802
Process Efficiency- Manage and monitor	PM 432
Accident Management Plan	PM801
Site Diary	PM 440
Noise Monitoring/plan	Noise Survey
Energy Consumption- Manage and monitor	PM 449
Water Use- Measure manage and monitor	PM 450
Waste Water to sewer only	Discharge Consent
Drainage- sealed to interceptor	PM802
Emissions to air- monitor	PM443
Training- Matrix and records	PM310



BAT/Appropriate Measures Assessment – Fugitive Emissions

BAT/Appropriate Measure	Management System Reference	Description of Management Process controls
Material processing is undertaken in a building	N/A	
Covered Skips	N/A	
Avoid uncovered/outdoor Stock Piles	Material Management Plan	External Stock Piles are wetted and monitored
Use of Sprays	Site Dust Management Plan	Hoses and Dust Bosses are available to control site wide dust if prevailing weather conditions
Regular Road/Wheel Cleaning	Site Dust Management Plan	Yard surfaces are swept with an industrial road sweeper on a monthly basis
Regular House Keeping	Site Dust Management Plan	Daily checks ensure there is no build-up of material around the site or in buildings
Use of Enclosed Containers and sealed Bags	Material Management Plan	Materials are in bulk form and transported off site in covered lorries or sealed containers