# Supporting Statement – Application for a variation to Environmental Permit reference EPR/GP3739VR by Innovative Environmental Solutions UK Ltd (IES)

**IES - Oldbury,**
**Union Road,**
**Oldbury,**
**B69 3EL**

**July 2022**

[1] Contains analysis of the ASR (now know as WWAS2) that is to be stored on site only for subsequent collection and disposal i.e. the waste from EMR that was originally intended for the incineration activity (now ceased operation).
[2] CFD no longer required as only relevant to the incineration activity that has now ceased operation.
[3] HRA no longer required as only relevant to the incineration activity that has now ceased operation (see section 6.5.2 above).
[4] CHP-r no longer required as only relevant to the incineration activity that has now ceased operation.

# 1 Introduction

## 1.1 Layout and purpose of this document

This document has been prepared to support an application for a variation to an existing permit – Environmental Permit reference EPR/GP3739VR.

The original permit was issued in 2014 and enabled the facility to dispose of up to a total amount of 180,000 tonnes per year of waste feedstock (Automotive Shredder Residue - ASR[5]) by incineration[6] (via two incineration lines) and recover energy to generate electricity for use on the site itself and export to the local electricity grid. This was varied in 2019 to enable Fridge Foam - FF[7] and Refuse Derived Fuel - RDF[8] to be incinerated by the same facility.

However, only one of the two incineration lines was ever built/installed and this ceased operation in 2019 and this single incineration line and all of the associated equipment has now been removed – apart from the remaining redundant Nitrogen purge tanks (which have been emptied and will remain so) and the redundant air-cooled condensers (ACCs) from this first incineration line. The Nitrogen tanks and the ACCs will be removed at some point but there is no intention of ever using them again or indeed re-instating any of the previous incineration equipment that has been scrapped. As such, please refer to drawing number 031_A96 (Permit boundaries and Emission Points) in Appendix B. Drawing number 031_A96 shows the remaining redundant Nitrogen tanks and remaining redundant ACCs[9] still in-situ.

[5] ASR (now know as WWAS2) was listed as Automotive Shredder Residues: 19 10 04 – fluff light fraction and dust other than those mentioned in 19 10 03 within the original permit.
[6] The relevant listed activity is section 5.1 Part A(1)(b): the incineration of non-hazardous waste in an incineration plant with a capacity exceeding 3 tonnes per hour.
[7] FF was listed as Fridge Foam: 19 10 06 within the original permit.
[8] RDF was listed as Refuse Derived Fuel: 19 12 10 within the original permit.
[9] Note - the air cooled condensers are the series of 4 x large fans shown on the drawing under which a redundant steam turbine is located and remains also.

In 2020, the permit was varied again to reflect the cessation of the incineration activity (this activity was removed from the permitted activities) and the addition of a mechanical process to the permit for the recovery of metal from the waste feed (processing up 30,000 tonnes per year).

The relevant listed activities for this currently permitted existing mechanical process are as follows –

5.4 Part A(1)(b)(iv) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving…treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components

- should this process be processing non-hazardous waste (as per the potential non-hazardous waste codes and associated waste feed descriptions stipulated within schedule 2 of the current permit and provided again within this supporting statement).

OR

5.3 Part A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving…physico-chemical treatment

- should this process be processing hazardous waste (as per the potential hazardous waste codes and associated waste feed descriptions stipulated within schedule 2 of the current permit and provided again within this supporting statement).

This process will be referred to throughout this document as the '*existing* mechanical process' as opposed to the '*new* mechanical processes' that are being proposed as part of this variation. The only changes being proposed to the existing mechanical process as part of this variation are – 1. The addition of 2 x additional LEV (local exhaust ventilation) systems to remove any airborne particulate around this processing line to improve even further/ensure local workplace air quality; 2. The addition of 2 x new waste codes to the list of wastes that the operator intends to process in the

existing mechanical process & 3. The relocation of the in-feed waste storage areas for the existing mechanical process from inside the main processing building to outside[10].

The existing mechanical process is a processing line for the recovery of metal from the waste feed to this process. The feed to the existing mechanical process is a number of wastes (the potential waste codes and associated waste descriptions already stipulated within schedule 2 of the current permit and provided again within section 5 of this supporting statement – along with the 2 x new waste codes that are being added to the list of wastes that the operator intends to process in the existing mechanical process as part of this variation) containing non-ferrous metals, particularly copper, that need intensive mechanical processing to liberate and separate the metallic value that they contain. This process is solely mechanical and is dry, with no wet processing.

The existing mechanical process equipment is installed in the area of the processing hall originally intended for the second incineration line. All mechanical processing associated with this takes place within this building. Throughput rate is around 6 tonnes per hour with an annual throughput of up to 30,000 tonnes.

The existing mechanical process incorporates three principal processing blocks – 1. A Feedstock Preparation Unit, 2. A Wire Grinding Unit and 3. A Separation Unit with the main outputs being: Copper granules for recycling, Other non-ferrous metals for recycling & Ferrous metals for recycling.

Three principal residue streams are produced by the existing mechanical process – these being up to 7,500 tonnes per year of 'fluff' wastes captured by the air systems, approximately 600 tonnes per year of 'filter' waste captured by the air systems and 10,500 tonnes per year of plastic from the dry density separation.

[10] All external waste storage areas will be covered with a weather-proof covering/roof and sit on an impermeable surface – the whole site has an impermeable surface.

There is extensive use of air within the existing mechanical process to capture the dust produced, transport the materials and separate heavy and light materials. There are 5 air systems as follows: 1 for the feedstock preparation unit, 3 for the wire grinding unit & 1 for the separation unit. Each air system cleans process air through cyclones and bag houses before being discharged to atmosphere via their own stack (i.e. 5 in total). As part of this variation 2 x additional LEV (local exhaust ventilation) systems are being added to remove any airborne particulate around this processing line to improve even further/ensure local workplace air quality) - each cleans workplace air through its own cyclone and bag house before being discharged to atmosphere via its own stack. As workplace air particulate that is being extracted is already minimal, the collected particulate will not impact on the maximum (approximately) 600 tonnes per year of 'filter' waste captured by the existing air systems i.e. 'filter' waste will remain at approximately 600 tonnes per year.

The relevant listed activities for the new mechanical processes that are being proposed as part of this variation will also be the same as the existing mechanical process above i.e. -

5.4 Part A(1)(b)(iv) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving…treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components

- should the new mechanical processes be processing non-hazardous waste (as per the potential non-hazardous waste codes and associated waste description provided within this supporting statement).

OR

5.3 Part A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving…physico-chemical treatment

- should the new mechanical processes be processing hazardous waste (as per the potential hazardous waste codes and associated waste description provided within this supporting statement).

The new mechanical processes will involve the installation of 2 x duplicate granulation and separation lines for the recovery of metal from the waste feed to this process. The feed to the new mechanical processes will be electrical cable (the potential waste codes and associated waste descriptions provided within section 5 of this supporting statement) containing copper that needs mechanical processing to liberate and separate the metallic value that it contains. These processes will be solely mechanical and will be dry, with no wet processing. However, there will also be a sink float density plastic separation system installed to separate the PE & PVC fractions for recycling from the plastic recovered from this process. Water will be used in the float sink tank as the density media although this water is re-circulated within the system.

The core new mechanical processing equipment will be installed in the area of the processing hall where the original incineration line one was installed (the existing mechanical process is already installed in the area where the second incineration line was to be installed).

Besides the pre-shredder line (see below), all mechanical processing will take place within this building. Throughput rate will be around 6 tonnes per hour for each of the 2 x new mechanical processes (around 12 tonnes per hour total) with an annual throughput of up to 42,046 tonnes each (84,091 tonnes total).

Each of the two new mechanical processing lines will incorporate two principal processing blocks –

1. A Granulation unit located within the processing hall and
2. A Separation Unit located within the processing hall with the main outputs being: granulated Copper for recycling, Ferrous metals for recycling & plastic for potential recycling (should it be of suitable quality).

- combined with three ancillary common processing blocks -

1. There will also be an ‘off-line’ pre-shredder unit which can batch process the feed for either processing line which is located externally.

2. There will also be a sink float density plastic separation system to separate the PE & PVC fractions for recycling from the plastic recovered from either processing line.

3. There will also be an ‘offline’ Dryer unit - This is an electrically heated dryer which can batch dry the plastic recovered from either processing line as required in the electrically heated dryer in order to reduce moisture content / increase quality and therefore increase opportunity for sale to third parties for recycling rather than disposal.

In summary –

An ‘offline’ common pre-shredder unit – only ever processing a single batch at a time for either new mechanical processing line #1 or new mechanical processing line #2 (batches for either are never mixed / never re-shredded together).

Mechanical processing line #1 (consisting of its own granulation/separation units – only ever processing material from a single batch of up to 6 tonnes/hour at a time).

Mechanical processing line #2 (consisting of its own granulation/separation units – only ever processing material from a single batch of up to 6 tonnes/hour at a time).

An ‘offline’ common sink float density plastic separation system - only ever separating the PE and PVC fractions from plastic from a processed and separated batch from either mechanical processing line #1 or mechanical processing line #2 (plastic from processed and separated batches from either are never mixed / never subject to sink float plastic separation together).

An ‘offline’ common dryer unit - only ever drying plastic from a processed and separated batch from either mechanical processing line #1 or mechanical processing line #2 (plastic from processed and separated batches from either are never mixed / never dried together).

Two potential principal residue streams will be produced by the new mechanical processes – these being up to 6,727 tonnes per year total of ‘filter’ waste captured by all of the new air systems (via the 3 x new cyclone/bag filters) and 37,000 tonnes total per year of plastic should it not be possible to sell to third parties (see above).

There is extensive use of air within the new mechanical processes to capture the dust produced, transport the materials and separate heavy and light materials. There will be 3 new air systems as follows:

1 for new mechanical processing line #1
1 for new mechanical processing line #2
1 for the new electrical dryer

Each air system will clean process air through cyclones and bag houses before being discharged to atmosphere via their own stack (i.e. 3 in total).

As with the existing mechanical process, the new mechanical processes, when processing hazardous waste, will require the temporary storage of such hazardous waste prior to processing. The listed activity (as already included in the existing permit) –

5.6 Part A(1)(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2, 5.3 and paragraph (b) of this Section.

- is therefore applicable to this temporary storage.

Further to the above, the adjacent European Metal Recycling Ltd (EMR) facility processes raw shredder residue, transported to the facility by road

from EMR shredders around the country. Metals, aggregates and plastics are separated from the refined shredder residue and sent offsite for further reprocessing. The remaining waste (including foam, wood and plastic) material (which was previously referred to as ASR but is now referred to as WWAS2 – see section 5.5 for explanation regarding name change) is delivered directly to IES by a conveyor belt system between the two sites. This ASR/WWAS2 waste was originally to be processed within the incineration activity which has now ceased operation and so is now stored at the IES site prior to collection by covered vehicles for disposal elsewhere. It is important to note that this ASR/WWAS2 waste is just being stored at IES prior to disposal and as such it is included within the Fire Prevention Plan (FPP). It is NOT to be utilised as feed waste material to either the existing mechanical process or the new mechanical processes. This material was identified as non-hazardous within the existing permit and continues to be identified as such. However, it is recognized that it may also have the potential to be identified as hazardous in the future, depending upon the extent to which it has been processed – in which case the temporary storage of this waste also will be covered by the 5.6 Part A(1)(a) listed activity. This activity is currently included within the existing permit and will not change as part of this variation.

The impacts of the proposed variation (as described above) in relation to the specific areas of 1. Resource Use, 2. Energy Efficiency & 3. Emissions are summarized below -

**Resource Use**

The new mechanical processes proposed as part of this variation, along with the existing mechanical process, have replaced the original incineration activity for which the site was originally permitted. Unlike the incineration activity that has ceased operation with its associated equipment removed from site, the waste feeds to the mechanical processes (both proposed new as part of this variation and existing) do not require any secondary raw materials in order for them to be processed or as part of any emissions control.

**Energy Efficiency**

The waste feeds within the new mechanical processes proposed as part of this variation, along with the existing mechanical process, do not require any thermal energy input from natural gas combustion (unlike the original incineration activity for which the site was originally permitted that has ceased operation with its associated equipment removed from site which required a significant thermal input from the energy generated from the natural gas combustion in order for it to be processed). With the proposed variation, a small amount of electrical input is required in order to separate fractions from and dry the plastic recovered via the separation units via the sink float density plastic separation system and the electrically heated dryer. However, by reducing moisture content / increasing quality via this separation and drying, the opportunity to recycle rather than dispose of the plastic is vastly increased.

**Emissions**

The only potential pollutant released to atmosphere from the existing mechanical process is particulate matter ($PM_{10}$) and so an updated air quality (AQ) assessment was undertaken (included in Appendix J) as part of the previous variation which was limited to an assessment of the emissions of $PM_{10}$ from the whole facility ($PM_{2.5}$ was also considered and assessed using the conservative assumption that all the $PM_{10}$ is $PM_{2.5}$). This AQ report modelled the particulate emissions from all 5 exhausts from the existing mechanical processing line along with particulate emissions from the large incinerator stack i.e. the single flue serving the (at the time) still in-situ single incineration line. This AQ assessment concluded that the overall impact on air quality of emissions to atmosphere from adding the particulate emissions from all 5 exhausts from the (what is now) existing mechanical processing line to the particulate emissions from the single flue serving the incineration line could be described as of minor significance.

As already described above, the incineration activity has been removed from site and will not be re-instated. The total mass emission of particulate

from the 3 x new exhausts associated with the new mechanical process AND the 2 x new exhausts associated with the existing mechanical process are less than that from the single flue serving the single incineration line used in the previous AQ assessment referred to above. Therefore, the findings of this assessment i.e. that the overall impact on air quality of emissions to atmosphere could be described as of minor significance are still valid for the proposed variation - with total particulate emissions actually decreasing from those stipulated within the existing AQ assessment. Therefore the AQ assessment is not required to be undertaken again. Further details/specific numbers are provided in the "Air" section later on in this supporting statement.

The new mechanical processes include a sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling. However, the water within the sink float tank (there will be no other chemical additions required) will be re-circulated within the system.

**1.2 Operator: Innovative Environmental Solutions UK Ltd (IES)**

Innovative Environmental Solutions UK Ltd (IES) was formed in order to develop and operate a number of ASR disposal and electricity generation facilities in the UK – the ASR to be supplied by European Metal Recycling Ltd (EMR) and the disposal and electricity generation technology provided by a U.S. manufacturer and operator of gasification technology. IES was originally a joint venture between these two companies (EMR and the U.S. company) but from 2018, IES no longer had any directors from the U.S. company and is now wholly owned by EMR.

A variation to the original permit (granted 28/11/2014) was determined in 2019 (17/09/19) which enabled the importation, storage and use in the incineration activity of further waste types.

A further variation was determined in 2020 (03/11/20) which removed all activities and elements of monitoring and reporting in relation to the incineration activity that the site was originally permitted for and added activities including the mechanical treatment of assorted wastes derived from ASR materials, with the intent of extracting granulated copper wiring from the wastes for recycling i.e. the 'existing mechanical process' as referred to here with other residual wastes being sent for disposal or further treatment off site at another facility and some wastes being accepted on site for storage only (as differentiated by the permit) to be removed and disposed or treated at another facility.

EMR was formed in 1994 and is a global leader in recycling. Its core business is the recycling of metal-rich waste streams arising from end of life vehicles / consumer products, industry and construction/ demolition, resulting in sales of recycled commodities of around 10 million tonnes a year.

The U.S. company referred to above no longer has any involvement with IES.

The first incineration line was installed in 2015 and ceased operation in 2019, after which a decision was also made by IES not to build the second incineration line and to utilise the space originally assigned for this second line for the addition of the existing mechanical process. All incineration equipment apart from the redundant air-cooled condensers (ACCs) from the first incineration line and the redundant Nitrogen tanks have now been removed from site and the space originally used by the first incineration line is to be used for the new mechanical processes as proposed within this variation application.

### 1.3 Site context and surroundings

The installation is located adjacent to the Anglo-African Industrial Estate on Union Road in Oldbury, north west of Birmingham. The site is in a mixed industrial / residential area and has a long history of industrial use, including

coal mining activities, foundry works, waste disposal, concrete works and most recently as a fuel terminal. Planning permission was granted on 22 June 2011 by Sandwell Council (ref: DC/10/52897). The planning consent relates to the IES installation and an adjacent shredder residue processing facility operated by EMR.

The adjacent EMR facility processes raw shredder residue, transported to the facility by road from EMR shredders around the country. Metals, aggregates and plastics are separated from the refined shredder residue and sent offsite for further reprocessing. The remaining waste (including foam, wood and plastic) material is delivered directly to IES by a conveyor belt system between the two sites and was known as ASR (now known as WWAS2). This ASR/WWAS2 waste was originally to be processed within the incineration activity which has now ceased operation and is now stored at the IES site prior to collection by covered vehicles for disposal elsewhere. This ASR/WWAS2 waste is just being stored at IES prior to disposal and as such it is included within the Fire Prevention Plan (FPP). It is NOT to be utilised as feed waste material to either the existing mechanical process or the new mechanical processes.

Condition 26 of Planning permission DC/10/52897 prevented any open storage of waste materials on the site. However, this was varied by way of planning permission DC/19/63123 (dated 13th May 2019) to enable storage of waste on the external area that was originally to be occupied by the external equipment associated with the second incineration processing line (that was never built). This area can now be used for storage of wastes and recovered materials resulting from the existing mechanical process – for example Light air separated wastes, Heavier air separated wastes, Ferrous metal, Non-ferrous metal & Other materials requiring further processing off site. With the addition of the new mechanical processes proposed as part of this variation, further external area is required for storage of wastes and the resultant recovered materials – as such Condition 26 of Planning permission DC/19/63123 was varied again by way of planning permission DC/21/66310 (dated 15/12/21) to enable this.

The nearest residential properties to the development are located on Whitgreave Street that is approximately 130 metres to the north west, on the opposite side of the canal and railway line. There are a small number of houses facing Roway Lane that are approximately 400 metres to the south and on Theodore Close between Roway Lane and Union Road that are approximately 200 metres to the south at the closest point. There is a further, larger area of housing on Campbell Bannerman Way to the south west that is some 180 metres away at the closest point. Planning permission has also been granted for fourteen houses on the former fish ponds near the junction of Roway Lane and Union Road - some 200 metres to the south at the closest point. This was planning permission DC/10/51937 granted in 2010 and is known as "Balaji Avenue". This development however has not been completed.

The Hindu Temple of Shri Venkateswara (Balaji) is located approximately 300 metres to the south west on Dudley Road East in Tividale.
The Meadows School College of Sport is also located approximately 300 metres to the south west on Dudley Road East in Tividale.

National route 81 of the National Cycle Network (that will ultimately connect Aberystwyth to Sandwell via Shrewsbury) runs along the canal towpath to the immediate north of the site.

There are no nationally or internationally designated sites of nature conservation importance within a 2 km radius of the facility.

Sheepwash Local Nature Reserve, which consists of 39 hectares of reclaimed, former industrial land, now colonised by young woodland, grassland, pools, streams and the River Tame linking the various habitats is located on the north side of the Birmingham canal, approximately 400 metres from the facility at its closest point.

Within 2 km of the site there are six Sites of Importance for Nature Conservation (SINC) and six sites of Local Importance for Wildlife

Conservation; the Gower Branch canal on the northwest boundary of the site is designated as an SINC.

## 2 Non-technical summary of application

This application is for a variation to Environmental Permit EPR/GP3739VR – a bespoke permit for a facility located at Union Road, Oldbury, operated by Innovative Environmental Solutions UK Ltd (IES) that allows the operation of an activity that involves the mechanical treatment of assorted wastes derived from ASR materials, with the intent of extracting granulated copper wiring from the wastes for recycling i.e. the 'existing mechanical process' as referred to here with other residual wastes being sent for disposal or further treatment off site at another facility and some wastes being accepted on site for storage only (as differentiated by the permit) to be removed and disposed or treated at another facility.

Planning permission for the facility was granted on 22nd June 2011 by Sandwell Council (Application ref: DC/10/52897) which has been varied by way of Planning permission DC/10/52897 dated 13th May 2019 and DC/21/66310 dated 15th December 2021.

### 2.1 Summary description of activities

The principal purpose of the existing mechanical process is to provide a processing line for the recovery of metal from the waste feed to this process - the waste feed being a number of wastes containing non-ferrous metals, particularly copper, that need intensive mechanical processing to liberate and separate the metallic value that they contain. This existing mechanical process is summarised below and shown in Figure 1.

The existing mechanical process involves the operation of a processing line for the recovery of metal from the waste feed to this process. The feed to the existing mechanical process is a number of wastes (the potential waste codes and associated waste descriptions stipulated within schedule 2 of the existing permit) containing non-ferrous metals, particularly copper, that need intensive mechanical processing to liberate and separate the metallic value that they contain. This waste feed could be either hazardous or non-hazardous waste. This process is solely mechanical and dry, with no wet

processing. The processing equipment is installed in the area of the processing hall originally intended for the second incineration processing line. All associated processing takes place within this building.

Waste throughput rate in the existing mechanical process is around 6 tonnes per hour with an annual throughput of up to 30,000 tonnes. Of this - up to 5,700 tonnes per year is recovered as Copper granules for recycling, up to 2,850 tonnes per year is recovered as non-ferrous metals for recycling and up to 2,850 tonnes per year is recovered as ferrous metals for recycling.

The existing mechanical process incorporates three principal processing blocks –

1. A Feedstock Preparation Unit; 2. A Wire Grinding Unit and 3. A Separation Unit with the main outputs being: Copper granules for recycling, Other non-ferrous metals for recycling & Ferrous metals for recycling.

The variation proposed is to reflect the continuation of all activities as per the existing permit, the addition of 2 x additional LEV (local exhaust ventilation) systems to remove any airborne particulate around this processing line to improve even further/ensure local workplace air quality; the addition of 2 x new waste codes to the list of wastes that the operator intends to process in the existing mechanical process; the relocation of the in-feed waste storage areas for the existing mechanical process from inside the main processing building to outside and the addition of the new mechanical processes i.e. the installation and operation of 2 x duplicate mechanical processing lines and associated common equipment for the recovery of metal from the waste feed to these processes. The feed to the new mechanical processes will be electrical cable (the potential waste codes and associated waste descriptions provided within this supporting statement) containing copper that needs mechanical processing to liberate and separate the metallic value that it contains. These processes will be solely mechanical and will be dry, with no wet processing. However, there will also be a sink float density plastic separation system installed to separate the PE & PVC fractions for recycling from the plastic recovered

from the new mechanical processes. Water will be used in the float sink tank as the density media although this water is re-circulated within the system.

The core new mechanical processing equipment will be installed in the processing hall (the existing mechanical process is already installed in the processing hall). Besides the pre-shredder line (see below), all mechanical processing will take place within this building.

Waste throughput rate in each of the new mechanical processing lines will be around 6 tonnes per hour (12 tonnes per hour total) with an annual throughput of up to 42,046 tonnes each (84,091 tonnes total). Of this - up to 36,159 tonnes per year total is recovered as Copper granules for recycling, up to 4,205 tonnes per year total is recovered as ferrous metals for recycling and up to 37,000 tonnes per year total is recovered as plastic for potential recycling should it be of suitable quality.

Each of the two new mechanical processing lines will incorporate two principal processing blocks –

1. A Granulation unit located within the processing hall and
2. A Separation Unit located within the processing hall with the main outputs being: granulated Copper for recycling, Ferrous metals for recycling & plastic for potential recycling (should it be of suitable quality).

- combined with three ancillary common processing blocks -

1. There will also be an 'off-line' pre-shredder unit which can batch process the feed for either processing line which is located externally.

2. There will also be a sink float density plastic separation system to separate the PE & PVC fractions for recycling from the plastic recovered from either processing line.

3. There will also be an 'offline' Dryer unit - This is an electrically heated dryer which can batch dry the plastic recovered from either processing line as required in the electrically heated dryer in order to reduce moisture content / increase quality and therefore increase opportunity for sale to third parties for recycling rather than disposal.

The installation boundary is shown in Drawing number 031_A96 and covers the entire plant i.e. the existing mechanical process equipment (the existing mechanical processing line feedstock preparation unit, wire grinding unit and separation unit as well as the bag filters/cyclones and discharges stacks associated with these existing mechanical processing line units), the 2 x additional LEV (local exhaust ventilation) systems for the existing mechanical processing line and the new mechanical processes equipment i.e. the pre-shredder unit, 2 x new mechanical processing lines (granulation units #1 & #2 & separation units #1 & 2), sink float density plastic separation system and electrical dryer as well as the bag filters/cyclones and discharge stacks associated with these new mechanical processing line units AND the 2 x additional LEV (local exhaust ventilation) systems for the existing mechanical processing line.

As with the existing mechanical process, the new mechanical processes, when processing hazardous waste, will require the temporary storage of such hazardous waste prior to processing.

The adjacent EMR facility will also continue to deliver waste directly to IES by a conveyor belt system between the two sites. This is known as ASR within the existing permit (now known as WWAS2) and is the waste that was originally to be processed within the incineration activity which has now ceased operation and so will now be stored at the IES site prior to collection for disposal elsewhere. It is NOT to be utilised as feed waste material to either the new mechanical processes or the existing mechanical process. Should this ASR/WWAS2 be identified as hazardous then this too will also involve the temporary storage of hazardous waste. This activity is currently included within the existing permit and will not change as part of this variation.

## 2.2 Energy use

The existing mechanical process (including the 2 x additional LEV systems proposed as part of this variation) has an electrical power consumption (running at full throughput) of 1.415 MW.

The new mechanical processes will have a total electrical power consumption (running at full throughput) of 5.02 MW.

## 2.3 Raw materials and chemicals

As with the existing mechanical process, the principal raw material used by the new mechanical processes is the feed waste. No other additional chemicals are required in order for the waste to be processed or as part of any emissions control. Again, materials are stored in suitable containers / silos, within bunds as appropriate, to minimise the risk of spillage and contamination of surface waters.

## 2.4 Emissions

Emissions to air from the existing mechanical process are from the existing 5 x exhaust stacks and the 2 x new exhaust stacks as proposed as part of this variation and the only potential emissions to air are particulate (dust) which are controlled by cyclones/baghouses fitted prior to each exhaust.

Emissions to air from the new mechanical processes will be from the 3 x new exhaust stacks and the only potential emissions to air are particulate (dust) which are controlled by cyclones/baghouses fitted prior to each exhaust.

Emissions from each of these 5 x new stacks will be fully compliant with the "Point source emissions to air – emission limits and monitoring requirements" stipulated within schedule 3 of the existing permit (included in Appendix R for reference) which is already applicable to the 5 x existing

exhausts associated with the existing mechanical process. Specifically an emission limit value for dust ONLY is set of 5 mg/$Nm^3$ which will be complied with for each of the five new stacks (this is inline with the BAT-AEL for dust as detailed within the relevant BAT Conclusion document for the mechanical processes (Both this BAT Conclusion document and the updated BAT assessment prepared to demonstrate how each of the BAT conclusions, where relevant, are met are included within Appendix N for reference)). There will be NO discharges to water from either the existing or new mechanical processes as they are dry processes. The new mechanical processes does however include a sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling. However, the water within the sink float tank (there will be no other chemical additions required) will be re-circulated within the system.

**2.5 Residues**

The principal residue streams produced by the existing mechanical process are up to 7,500 tonnes per year of 'fluff' wastes captured by the air systems, approximately 600 tonnes per year of 'filter' waste captured by the air systems and 10,500 tonnes per year of plastic from the dry density separation. All of these residue streams will be disposed of to a suitably licensed facility. As workplace air particulate that is being extracted is already minimal, the collected particulate form the 2 x new LEV systems proposed as part of this variation will not impact on the maximum (approximately) 600 tonnes per year of 'filter' waste captured by the existing air systems i.e. 'filter' waste will remain at approximately 600 tonnes per year.

Two potential principal residue streams will be produced by the new mechanical processes – these being up to 6,727 tonnes per year total of 'filter' waste captured by the air systems (via the 3 x new bag filters) and up to 37,000 tonnes per year total of plastic should it not be possible to sell to third parties (see above).

## 2.6 Monitoring

Monitoring requirements from each of the 5 x new stacks will be fully compliant with the "Point source emissions to air – emission limits and monitoring requirements" stipulated within schedule 3 of the existing permit (see Appendix R) which is already applicable to the 5 x existing stacks associated with the existing mechanical process. Specifically monitoring is required for emissions of Brominated Flame Retardants, Dioxin-like PCBs, Dust, Metals, Dioxins and TVOCs which will be complied with for each of the five new stacks (this is inline with the BAT assessment (Appendix N) for all the mechanical processes under BAT 8 for channelled emissions to air (emissions to water not applicable as they are totally dry processes)).

## 2.7 Management

An Environmental Management System was developed for the facility and this will be amended in accordance with the proposed permit variation as described here.

## 2.8 Environmental risks / impacts

Assessments have been undertaken of the impact of emissions that concluded there would be no significant impacts from the operation of the proposed variation. Under normal operation there will be no process discharges to water. A noise assessment has been undertaken which concludes that operation of the installation will not result in significant adverse noise or vibration impacts.

## 2.9 Summary

The installation has been designed, and is operated, to ensure that there are no significant adverse impacts as a result of its operation. The technology is proven and control measures / operational techniques selected are BAT.

## 3 Application forms and plans

Appendix A contains the following EA application forms:

- A
- C2
- C3
- F1

Appendix B contains the following plans and drawings:

- Drawing 031_A96 – permit boundaries and emission points
- Note Drawing 031_A96 – Also includes all Raw materials storage information
- Drawing 031 – A103 – sensitive receptors
- Drawing MA8605-200U – drainage layout sheet 1
- Drawing MA8605-201V – drainage layout sheet 2

# 4 Management

## 4.1 Environmental Management System

IES are implementing an environmental management system (EMS) that conforms to the requirements of ISO14001 Environmental Management Systems alongside ISO 45001 and medium term ISO 9001. This EMS enables IES to operate effectively, preventing pollution and complying with the requirements of the environmental permit. The EMS is documented as follows –

ENVIRONMENTAL POLICY:
This entails the commitment of the directors and site management to the continuous improvement of environmental performance.

PLANNING:
Environmental aspects/ impacts;
Pegasus - Legal and other requirements;
Objectives, targets 2020 – Critical 5 (awareness and reduction).

IMPLEMENTATION AND OPERATION:
Resources, roles, responsibility and authority;
Competence, training and awareness;
Communication;
Documentation;
Operational control – Management of Change;
Waste stream management;
Emergency Planning;
Fire Prevention Plan.
(The approved Fire Prevention Plan (FPP) has been updated as part of this permit variation and will form an integral part of the EMS but has been produced as a stand-alone document and is included in Appendix O).

CHECKING:

Monitoring and measurement – Permit requirements;

Evaluation of compliance – internal inspection;

Non-conformity, corrective action and preventative action;

Control of records;

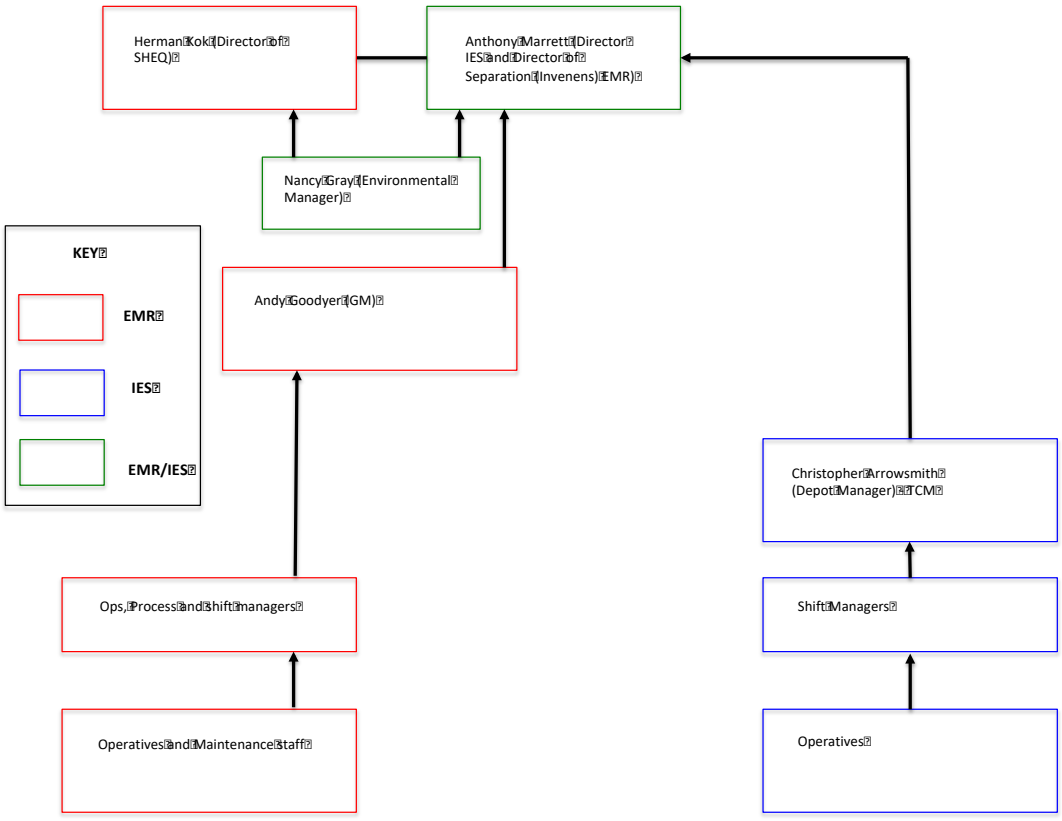
Preventative maintenance of inoperable fixed plant (or dismantle, management of change);

Internal audit;

Continual Improvement;

Management review.

ORNANOGRAM:



As the installation is likely to be handling Persistent Organic Pollutants (POPs) waste, this will also be recognised within the EMS along with the need to ensure any POPs waste is processed in a manner which leads to the destruction or irreversible transformation of the POP (in accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants). It is also recognised that this could impact both wastes that arrive as POPs waste (for example SMW – see sections 5.5 and 5.5 below) as well as plastic fractions derived from other wastes.

### 4.2 Site records

#### 4.2.1 Security of records

All records that are required to be made under the conditions of the Environmental Permit are maintained in accordance with management system procedures and kept secure from loss, damage and deterioration. Records are stored either on paper in a secure cabinet or on computer disk with a back up copy. Records are kept for a minimum of six years (two years in the case of duty of care records) and in the case of records related to off-site environmental effects and matters that affect the condition of land and groundwater, until permit surrender.

#### 4.2.2 Availability of records

The records are available for inspection at the site office upon request from the EA or other approved agency.

#### 4.2.3 Records of waste movement

Records are kept of each load of waste accepted at the site together with all products and any waste materials dispatched from the site.

### 4.2.4 Site diary

This is kept secure/available for EA inspection & is a comprehensive record of all site operations & includes at least the following:

- Any plant modifications
- Start and finish time of daily operations on the site
- Maintenance activities
- Breakdowns
- Emergencies
- Problems associated with receipt and disposal of waste (and remedial action taken)
- Site manager's reports and inspections
- Dispatch of information and records to the EA
- Specific plant issues and remedial action taken
- Complaints and actions taken
- Environmental problems and remedial actions

Each record is completed within 24 hours of the relevant event.

The following daily records will be used to make sure that the Technically Competent Manager (TCM) (See Appendix Q) meets the agreed attendance requirements –

1. The hours of operation of the site;
2. When the TCM arrives and leaves site.

### 4.3 Preventative maintenance

Plant and equipment is maintained, refurbished and replaced as required to ensure the continuous operation of the site for a minimum of 20 years. Buildings and infrastructure are designed and constructed to ensure that with the correct maintenance and refurbishment as required they will provide continuous operation at a high degree of availability for a minimum of 20 years. Fixed plant and equipment is maintained in accordance with

equipment suppliers' specifications that are incorporated into the installation's maintenance programmes. A replacement programme for major items of plant is incorporated, once again in line with equipment suppliers' recommendations. The aim of the maintenance / replacement programme is to deliver the maximum availability for the installation. The onsite team comprising skilled engineers are responsible for all scheduled maintenance and inspections on site, with additional specialised staff brought in as required. The maintenance programme is linked into the Environmental Management System.

### 4.4 Staffing

The installation provides significant local employment and has generated 59 permanent and shift-based jobs as follows:

General manager: 1
Site manager: 1
Shift managers: 4
Supervising engineers: 4
Operatives: 45
Administrators: 4

This remains unchanged with the proposed variation as described here.

### 4.5 Training

All staff undergo suitable training, tailored to individual requirements as appropriate, to ensure that they are fully aware of the requirements of the Environmental Permit, management procedures and policies. Training addresses both normal operations and abnormal / emergency situations. Specific procedures have been developed addressing training, competence and responsibilities as part of the EMS. Training needs and provision are reviewed at specific instances as follows:

- Induction for new employees – to cover identification of training needs, introduction / awareness of the EMS and any requirements relevant to the employee's specific job.
- Annual appraisal / performance review – to ensure compliance with legal requirements and operating criteria. Identification of any additional training requirements / needs.
- As required to maintain employee's certificates e.g. first aid, COTC, CCS etc.
- In response to changes e.g. when procedures are revised, employees are promoted or change job function etc.

Job specifications are defined and include details of relevant qualifications and training required. Training records are maintained as part of the EMS. All staff, including contractors, are made aware of the permit requirements, as part of their initial induction.

## 5 Detailed process description and operating techniques

### 5.1 Overview

The principal purpose of the existing mechanical process is to recover metal from the waste feed to this process. The feed to the existing mechanical process is a number of wastes (the permitted potential waste codes and associated waste descriptions are stipulated within schedule 2 of the existing permit and are provided again within section 5 of this supporting statement along with the two new waste codes that are being added as part of this variation) containing non-ferrous metals, particularly copper, that need intensive mechanical processing to liberate and separate the metallic value that they contain. The existing mechanical process uses a number of mechanical processes developed by the operator (incorporating a feedstock preparation unit, wire grinding and separation unit) to process up to 30,000 tonnes per year of waste feed and of this - up to 5,700 tonnes per year is recovered as Copper granules for recycling, up to 2,850 tonnes per year is recovered as non-ferrous metals for recycling and up to 2,850 tonnes per year is recovered as ferrous metals for recycling with up to 7,500 tonnes per year of 'fluff' wastes, approximately 600 tonnes per year of 'filter' waste and 10,500 tonnes per year of plastic waste produced also. The existing mechanical process operates as shown in figure 1. The principal activities undertaken as part of the existing mechanical processing activity comprise:

1. Receipt of waste feed
2. Storage of waste feed
3. Raw materials storage and handling
4. Waste feed preparation
5. Wire grinding
6. Separation
7. Product and by-product handling
8. Product and by-product storage
9. Waste handling
10. Waste storage

The principle purpose of the new mechanical processes is also to recover

metal from the waste feed to these processes. The feed to the new mechanical processes will be electrical cable (the potential waste codes and associated waste descriptions provided within section 5 of this supporting statement) containing copper that needs mechanical processing to liberate and separate the metallic value that it contains.

The new mechanical processes use a number of mechanical processes developed by the operator (incorporating a pre-shredder unit, granulation and separation units and a dryer unit) to process up to 84,091 tonnes per year total of waste feed and of this up to 36,159 tonnes per year total is recovered as Copper granules for recycling, up to 4,205 tonnes per year total is recovered as ferrous metals for recycling and up to 37,000 tonnes per year total is recovered as plastic for potential recycling with up to 6,727 tonnes per year total of 'filter' waste captured by the air systems and up to 37,000 tonnes per year total of plastic waste should it not be possible to sell it all to third parties for recycling (see above). The new mechanical processes operate as shown in Figure 2. The principal activities undertaken as part of the new mechanical processing activities comprise:

1. Receipt of waste feed
2. Storage of waste feed
3. Raw materials storage and handling
4. Waste feed preparation
5. Wire granulation
6. Separation
7. Product and by-product handling/drying
8. Product and by-product storage
9. Waste handling
10. Waste storage

## 5.2 Site security and access

The site is securely fenced with 2.7 m high fencing and CCTV monitoring and recording equipment is installed. Access for all waste/materials is via the entry / exit gate adjacent to the weighbridge, which is shared with the adjacent facility operated by EMR, and then through the second set of gates in the north west corner of the installation itself. The installation is operational 24 hours / day, seven days / week and so there will always be personnel present on site.

### 5.3 Site identification board

In accordance with EA guidance (How to comply with your environmental permit) a notice is displayed at the personnel entrance to the site stating:

1. The permit holder company name
2. An emergency contact number and the permit holder's telephone number
3. A statement that the site is permitted by the EA with the permit number
4. EA national contact numbers

### 5.4 Waste acceptance and handling

Details of the waste acceptance procedures are included within the waste acceptance techniques as detailed within BAT 2 of the relevant BAT Conclusion document for the activities[11] as set out in the updated specific BAT assessment review document (See Appendix N)**.** The EWC codes for the wastes to be handled by the installation are given in Tables 1a and 1b below. As can be seen, both the EWC waste code and EWC description are included. However, it is critical that the EWC codes for the wastes to be processed in the mechanical processes (new and existing) are used alongside the appropriate descriptions. Therefore (where appropriate), a further description is included which addresses this.

Further detailed information on the wastes handled by the installation are also included in section 5.5 below.

[11] *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN*

**Table 1a: Material to be processed by the existing mechanical processes – European Waste Catalogue codes (remains unchanged from and stipulated already within schedule 2 of the existing permit APART from the two new waste codes added as part of this variation)**

| | EWC Waste Code | EWC Description of waste | Further description |
|---|---|---|---|
| 1. | 19 10 04 | Fluff-light fraction and dust other than those mentioned in 19 10 03 | - |
| 2. | 19 10 02 | Non-ferrous waste [from shredding of metal-containing waste] | - |
| 3. | 19 12 03 | Non-ferrous metal [from the mechanical treatment of waste] | - |
| 4. | 19 12 12 | Other wastes (including mixtures of materials) other than those mentioned in 19 12 11 [from the mechanical treatment of waste] | 19 12 11* or 19 12 12 consisting only of waste from the processing of wastes from the shredding of metal-containing wastes. |
| 5. | 19 12 11* | Other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances. | |
| 6. | 19 02 04* | Premixed wastes composed of at least one hazardous waste. | 19 02 04* - consisting only of shredded mixed WEEE. |
| 7. | 16 02 15* | Hazardous components removed from discarded equipment | - |
| 8. | 16 02 16 | Components removed from discarded equipment other than those mentioned in 16 02 15 | - |
| 9. | 17 04 10* | Cables containing oil, coal tar and other hazardous substances | - Added as part of this variation |
| 10. | 17 04 11 | Cables other than those mentioned in 17 04 10 | - Added as part of this variation |

**Table 1b: Material to be processed by the new mechanical processes – European Waste Catalogue codes**

| | EWC Waste Code | EWC Description of waste | Further description |
|---|---|---|---|
| 1. | 16 02 15* | Hazardous components removed from discarded equipment | "Raw Cable" (i.e. finished form for electrical uses / installation) categorised in various forms e.g. Low grade armoured high grade cable, telecom cable – poly-poly, drop wire, paper curse. |
| 2. | 16 02 16 | Components removed from discarded equipment other than those mentioned in 16 02 15 | As above. |
| 3. | 17 04 10* | Cables containing oil, coal tar and other hazardous substances | As above. |
| 4. | 17 04 11 | Cables other than those mentioned in 17 04 10 | As above. |
| 5. | 19 12 03 | Non-Ferrous Metals | As above. |

For all mechanical processes (new and existing) - Weights of all material streams will be measured at the site weighbridge when arriving at or leaving site. In addition, the bags of copper will be weighed as they are produced.

### 5.5 Raw materials storage and handling

Table 2 below lists the principal raw materials to be used in the installation. Drawing 031_A96 in Appendix B shows where these materials will be stored within the installation boundary.

The feed to the existing mechanical process is a number of wastes containing non-ferrous metals, particularly copper, that need intensive mechanical processing to liberate and separate the metallic value that they contain.

These can be summarised as follows –

1. 'Mixed Waste' which typically will be made up of Plastic coated copper wire, Stainless steel, Aluminium, Iron & steel, Rag, Foam, Plastic, Rubber,

Inert grit and glass - the proportions of which will vary depending on the preceding waste treatment processes and the original type of waste. This waste feed is principally derived from the recycling of metal containing wastes such as depolluted end of life vehicles, large domestic appliances and similar post consumer products. Following initial shredding, a concentrate of plastic coated copper wire (together with other materials as described above) is produced from the further processing of the shredder heavy and light fraction wastes.

As such, all of the following EWC codes are potentially applicable to this 'mixed waste' -

i. 19 10 04 - fluff light fraction and dust other than those mentioned in 19 10 03;
ii. 19 10 02 – non-ferrous waste [from shredding of metal-containing waste] – non ferrous metal [from the mechanical treatment of waste];
iii. 19 12 03– non ferrous metal [from the mechanical treatment of waste]
iv. 19 12 12– other wastes (including mixtures of materials) other than those mentioned in 19 12 11 (from the mechanical treatment of waste) (see also further description in table 1a above);
v. 19 12 11* - other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances (see also further description in table 1a above).

However, it is already understood that the 'mixed waste' should be coded as 19 12 11*/12 as the EWC specifically says 'including mixtures of materials' in the description. Even so, 19 10 02 and 19 12 03 are included in the existing permit but it is accepted that these codes should only be used for inputs that are for all intents and purposes, just non-ferrous metal.

The mechanical processing to produce this 'mixed waste' will have been undertaken elsewhere (predominantly the EMR Oldbury, Newmarket & Liverpool sites although other sites may also provide the same waste).

2. Small Mixed WEEE (SMW) - some material for the existing mechanical processing activity may be derived from the recycling of small mixed WEEE in a suitably permitted approved authorised treatment facility (AATF). The following EWC code are applicable to this SMW -

vi. 19 02 04* - premixed wastes composed of at least one hazardous waste (see also further description in table 1a above).

3. Cable from electrical and electronic equipment e.g. fridges - some material for the existing mechanical processing activity may be derived from the recycling of fridges and other WEEE in a suitably permitted approved authorised treatment facility (AATF). The following EWC codes will therefore be applicable to this waste -

vii. 16 02 15* - hazardous components removed from discarded equipment;
viii. 16 02 16 - components removed from discarded equipment other than those mentioned in 16 02 15;
ix. 17 04 10* - Cables containing oil, coal tar and other hazardous substances;
x. 17 04 11 – Cables other than those mentioned in 17 04 10.

ix and x are to be added as part of this variation.

Therefore, in summary, there are potentially 10 (ten) separate EWC codes applicable to the wastes to be processed by the existing mechanical process that are summarised in Table 1a above (the eight (8) currently permitted are listed in schedule 2 of the existing permit).

The feed to the new mechanical processes will be electrical cable containing copper that needs mechanical processing to liberate and separate the metallic value that it contains and the following EWC codes will therefore be applicable to this waste -

16 02 15* - hazardous components removed from discarded equipment;

16 02 16 - components removed from discarded equipment other than those mentioned in 16 02 15;
17 04 10* - Cables containing oil, coal tar and other hazardous substances;
17 04 11 - Cables other than those mentioned in 17 04 10;
19 12 03 – Non-ferrous metals.

Therefore, in summary, there are potentially 5 (five) separate EWC codes applicable to the wastes to be processed by the new mechanical process that are summarised in Table 1b above.

Due to the variability in the input waste streams for all mechanical processes (both new and existing), it is important to note the following –

a. As part of the pre-acceptance/waste acceptance checks – all individual input waste feeds will be accompanied with the appropriate analyses prior to acceptance on site. This will ensure that the waste batch is accepted under a specific EWC code and as such will also identify whether it is a hazardous or non-hazardous waste. As part of this consideration will be given to the presence of Persistent Organic Pollutants (POPs)[12] and other hazardous substances used as flame-retardants such as antimony trioxide for example.

b. The existing mechanical process is batch processing. As such, when one of these specific waste batches is delivered to IES (all waste will be delivered to site via covered vehicles), the purchased amount will be stored and processed completely, emptying the individual bay completely in which it was stored and then paying the producing site. Therefore, there will never be any mixing of EWC codes (and as such never any mixing of hazardous and non-hazardous wastes also which need to be segregated).

The new mechanical processes will also be batch processing. As such, when one of these specific waste batches is delivered to IES (all raw cable will be

[12] See section 5.3 POPs of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

delivered to site via either walking floor, bulk tipper or RoRo – all covered), the purchased amount will be stored in the raw cable storage area (received from walking floor, bulk tipper or emptied RoRo skip) and processed according to batch no. Various storage bays will allow the site to pre-shred the material ready for final granulation. Once a batch bay is emptied completely in which the batch was stored then the producing site is paid. Therefore, again, there will never be any mixing of EWC codes (and as such never any mixing of hazardous and non-hazardous wastes also which need to be segregated).

Further to the above, the adjacent EMR facility processes raw shredder residue, transported to the facility by road from EMR shredders around the country. Metals, aggregates and plastics are separated from the refined shredder residue and sent offsite for further reprocessing. The remaining waste (including foam, wood and plastic) material (which was previously referred to as ASR) is delivered directly to IES by a conveyor belt system between the two sites. This waste was originally to be processed within the incineration activity which has now ceased operation and the facility no longer permitted for and so is now stored at the IES site prior to collection by covered vehicles for disposal elsewhere (This activity is currently included within the existing permit and will not change as part of this variation). It is important to note that this waste is just being stored at IES prior to disposal and as such it is included within the updated Fire Prevention Plan (FPP) – Appendix O. It is NOT to be utilised as feed waste material to either the new or existing mechanical processing activities. This material was identified as 19 10 04 within the original permit EPR/GP3739VR and continued to be identified as such. However (as detailed in the supporting information for the last permit variation), it was recognized that either of the 19 12 codes (19 12 11* or 19 12 12 could also be applicable, depending upon the extent to which it had been processed).

Since the issue of the last permit variation, although there have been no changes to the process at EMR which results in the same waste material still being sent over to IES, the waste being sent over is no longer referred to as ASR and is now referred to as WWAS2 with the 19 12 12 EWC code

being consistently applicable (as per above, this was already detailed as one of the potential codes for the current permit). Therefore in summary –

1. The waste from EMR sent directly to IES has been renamed WWAS2 from ASR. This is the only change – see below.
2. The process at EMR that results in the WWAS2 has not changed.
3. The WWAS2 waste continues to be stored at the IES site prior to collection by covered vehicles for disposal elsewhere.
4. 19 12 12 EWC code has consistently been applicable to the WWAS2 waste and is expected to continue to be so. However, as before, it is recognized potentially the material could be identified as 19 10 04 (as was within the original permit EPR/GP3739VR but (as detailed in the supporting information for the last permit variation), it is recognized that either of the 19 12 codes (19 12 11* or 19 12 12 may also be applicable, depending upon the extent to which it has been processed). Therefore, as with the wastes to the existing mechanical process, if any one of these three codes becomes applicable to this waste and is different to the waste code in use for the waste already being stored at IES for disposal then the operator will ensure that the waste stored is completely emptied from its bay before accepting the incoming waste from EMR under the new code.

IES maintains records of raw materials use and the quality and composition of raw materials used is checked annually by reference to manufacturer's data to confirm that they comply with the required specification. Checks are undertaken whenever a supplier is changed.

The raw materials inventory is reviewed on an annual basis. If suitable alternatives with a lower environmental impact have become available, these alternatives are evaluated and substituted subject to financial and operational constraints.

### 5.5.1 Incoming waste

Up to 1,250 $m^3$ of the waste for the existing mechanical process is stored on site (this waste will be relocated from inside the main processing building

to outside as part of this variation)[13] and up to 1,250 $m^3$ of the waste for the new mechanical process will be stored on site in the 'raw cable storage area'[14]. ASR/WWAS2 waste from the adjacent EMR facility which was originally to be processed within the incineration activity (which has now ceased operation) is also stored at the IES site (up to 1,250 $m^3$) prior to collection by covered vehicles for disposal elsewhere. Details of how all wastes are stored are provided within the updated Fire Prevention Plan (FPP) – Appendix O.

### 5.5.2 Bulk chemicals

Neither the new or existing mechanical processes require bulk chemicals.

A 10,000 litres bunded diesel storage tank is located in the SE corner of the IES permit boundary and provides fuel for onsite-vehicles. Liquid storage tanks are contained within bunds of 110% capacity of the storage tank. Bunds are constructed to appropriate standards and lined with materials that are impervious to, and non reactive with, the contents of the materials they hold. Smaller amounts of other materials are required for operation and maintenance of the overall installation including:

1. Test and calibration gases
2. $CO_2$ / fire fighting foam agents
3. Electrical switchgear
4. Hydraulic oils etc.

[13] All external waste storage areas will be covered with a weather-proof covering/roof and sit on an impermeable surface – the whole site has an impermeable surface.
[14] ibid.

**Table 2: Principal raw materials <u>used in/stored at</u> the facility**

| Substance | Used/Stored | Quantity | | Storage arrangements | Chemical composition | Environmental fate | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Maximum stored | Annual throughput | | | Air (%) | Water (%) | Land (%) | Impact potential | |
| Waste feed for the existing mechanical process. | Used - Metals Recovery | 1,250 $m^3$ | Up to 30,000 tonnes | See FPP - Appendix O | See section 5.5 above | 0<br><br>62 | -<br><br>- | 100<br><br>38 | Low<br><br>Significant | Mechanical, dry process - 38% product with 62% waste landfilled. Should the waste feed be POP waste then destruction or irreversible transformation of the POP will be required. By doing so, the thermal destruction of the up to 62% waste remaining after processing would mean an environmental fate of this to air under this scenario[15] |

[15] In accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants.

| Substance | Used/Stored | Quantity | | Storage arrangements | Chemical composition | Environmental fate | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Maximum stored | Annual throughput | | | Air (%) | Water (%) | Land (%) | Impact potential | |
| Waste feed for the new mechanical processes. | Used - Metals Recovery | 1,250 $m^3$ | Up to 84,091 tonnes | See FPP - Appendix O | See section 5.5 above | 0<br><br><br><br><br><br>52 | -<br><br><br><br><br><br>- | 100<br><br><br><br><br><br>48 | Low<br><br><br><br><br><br>Significant | Mechanical, dry process - 48% product with up to 52% waste landfilled.<br>Should the waste feed be POP waste then destruction or irreversible transformation of the POP will be required. By doing so, the thermal destruction of the up to 52% waste remaining after processing would mean an environmental fate of this to air under this scenario[16] |
| Diesel | Used - Maintenance of plant and | 10,000 litres | Approximately 85,000 litres | Bunded tank | Hydrocarbon | 100 | - | - | Significant – particularly | No alternative |

[16] In accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants.

| Substance | Used/Stored | Quantity | | Storage arrangements | Chemical composition | Environmental fate | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Maximum stored | Annual throughput | | | Air (%) | Water (%) | Land (%) | Impact potential | |
| | fuelling of onsite vehicles | | | | | | | | to aquatic ecosystem | |
| ASR/WWAS2 | Stored – Stored prior to collection and disposal elsewhere | 1,250 $m^3$ | Up to 200,000 tonnes | See FPP - Appendix O | See Appendix D | 0 | - | 100 | Low | For storage only. It is NOT utilised in either the new or existing mechanical processes |

**5.6a Detailed process description – EXISTING Mechanical Process**

The process is solely mechanical and dry, with no wet processing.

It involves the operation of a processing line for the recovery of metal from the waste feed to this process. The processing equipment is installed in the area of the processing hall originally intended for the second incineration processing line that has been removed and scrapped. All processing takes place within this building.

Operating hours are typically 24 hrs/day x 7 days per week. Throughput rate is around 6 tonnes per hour with an annual throughput of up to 30,000 tonnes.

Of this 30,000 tonnes per year –

1. Up to 5,700 tonnes per year is recovered as Copper granules for recycling,
2. Up to 2,850 tonnes per year is recovered as non-ferrous metals for recycling,
3. Up to 2,850 tonnes per year is recovered as ferrous metals for recycling,
4. Up to 7,500 tonnes per year of 'fluff' wastes captured by the air systems – discharged to covered skips and disposed of to a suitably licensed facility,
5. Approximately 600 tonnes per year of 'filter' waste captured by the air systems – discharged to covered skips and disposed of to a suitably licensed facility,
6. Up to 10,500 tonnes per year of plastic wastes from the dry density separation – discharged to covered skips. The wastes are disposed of to a suitably licensed facility.

Wastes will be produced at different stages of the process and are either discharged to bulk bags within the building or discharged by enclosed

conveyor to covered hook-lift containers, located outside the building prior to removal from site once full.

The process incorporates three processing blocks as follows:

**Block 1: Feedstock Preparation Unit**

This comprises the following steps:

1. Waste feed is loaded by grab onto a feed conveyor,
2. A low speed shredder size reduces the raw material,
3. Screening removes small aggregate and fines metals, and also large material (for re-shredding),
4. A Magnet to remove large ferrous pieces,
5. Eddy current separator to remove large Aluminium pieces.

The by-product metal mixtures separated by each of these stages will be removed from site for further processing elsewhere to recover materials for recycling. The prepared wire will then pass to the grinding unit.

**Block 2: Wire Grinding Unit**

The size reduced and prepared wire will be moved by loading shovel or forklift bin to the grinding unit which is comprised of 3 identical process lines.

Processing will comprise the following steps:

1. Tipping into feed hopper,
2. Removal of heavy items that might damage the grinder (these will be re-shredded),

3. Intensive size reduction to completely liberate the metal from the non-metallic material, extracting the copper in the wire from the plastic insulation,
4. Air separation of light waste (fibres, fluff, dust) from the heavier metals and plastics.

The light wastes will be discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full. The heavier material (a mixture of metals and heavier plastic particles) will then be passed to the separation unit.

**Block 3: Separation Unit**

After grinding, the liberated metals and heavier plastics are moved to the Separation stage by loading shovel or forklift bin.

The separation unit comprises the following steps:

1. Tipping into a feed hopper,
2. Screening into different size ranges,
3. A Magnet removes any ferrous metals,
4. Dry density separation of the remaining waste and light metals from heavier metals is undertaken to produce clean saleable copper and aluminium granules.

The waste is discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full. The metal products are discharged into bulk bags and stored securely within the building prior to being loaded by forklift onto artic trailers for delivery to customers.

**Product and By-Product Handling**

The copper and aluminium granule products are discharged from the process into bulk bags, as discussed above. The metallic by products

produced in the Feedstock Preparation Unit are stored in external bays and loaded out loose for further processing elsewhere.

**Waste Handling**

As discussed above, the wastes produced at the different stages of the process are discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full. The wastes are disposed of to a suitably licensed facility.

**Dust control**

There is extensive use of air within the process to capture the dust produced, transport the materials and separate heavy and light materials.

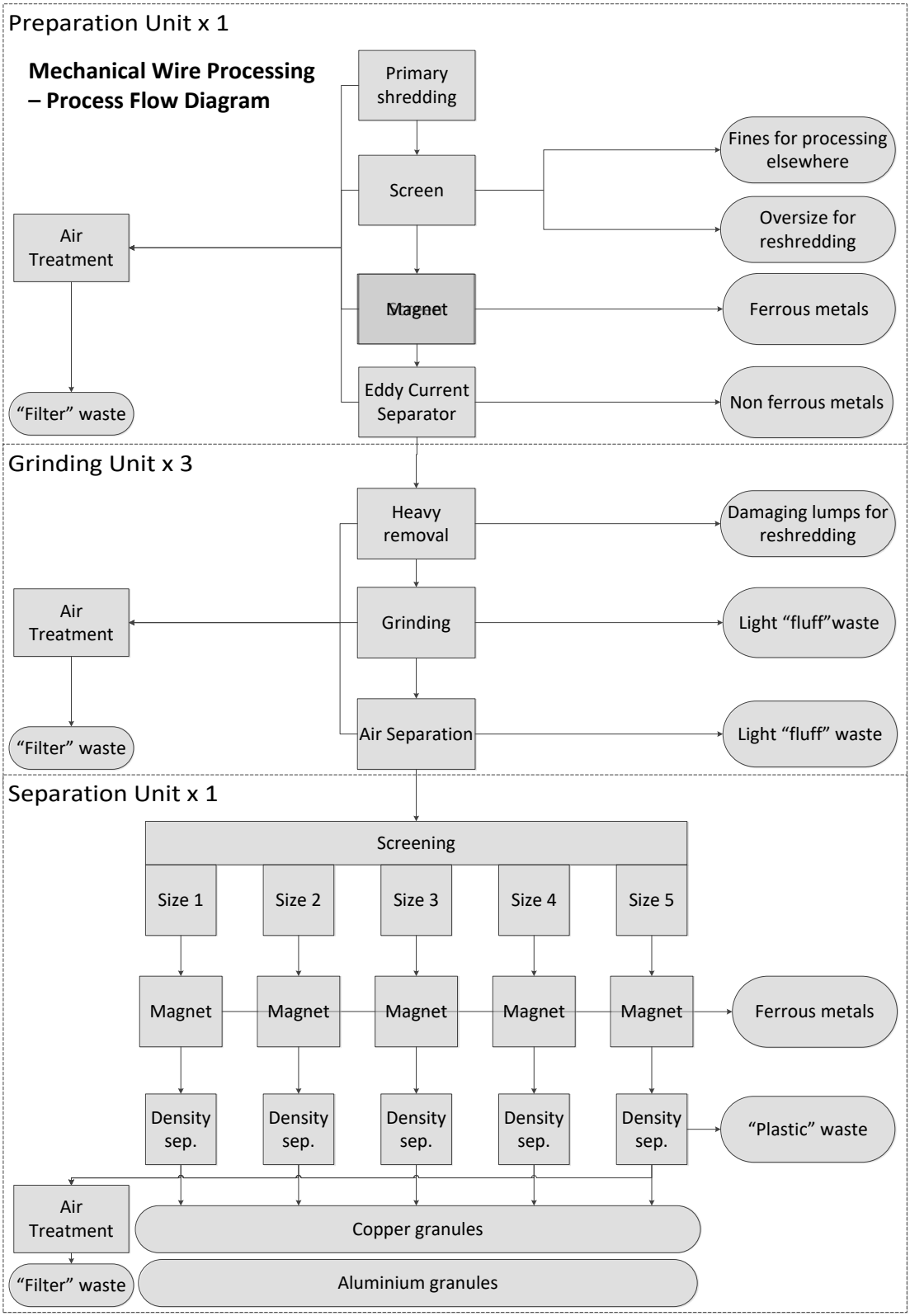
There are 5 existing air systems as follows:

- 1 x preparation unit
- 3 x grinding unit
- 1 x separation unit

Each air system cleans process air through their own cyclone and bag house before being discharged to atmosphere via their own exhaust stack. This includes air extraction of the grinders, to prevent dust emissions during this aggressive process, when most light material is liberated. As part of this variation 2 x additional LEV (local exhaust ventilation) systems are being added to remove any airborne particulate around the existing mechanical processing line to improve even further/ensure local workplace air quality) - each cleans workplace air through its own cyclone and bag house before being discharged to atmosphere via their own exhaust stack.

The majority of the wastes collected by the air systems (including the proposed new LEV systems) are discharged by enclosed conveyor to covered hook-lift containers, located outside the building with only a small amount (approximately 2%) collected in bulk bags. All collected waste are disposed of to a suitably licensed facility.

Figure 1: Existing MECHANICAL Process – PROCESS FLOW DIAGRAM




Note: The proposed variation will add 2 x additional LEV systems to remove any airborne particulate around this existing processing line to improve even further/ensure local workplace air quality.

## 5.6b Detailed process description – NEW Mechanical Processes

These processes will be solely mechanical and will be dry, with no wet processing. However, a sink float density plastic separation system has been included in order to separate the PE and PVC fractions of the plastic recovered for recycling although the water within the sink float tank (there will be no other chemical additions required) will be re-circulated within the system.

The new mechanical processes involve the operation of 2 x duplicate mechanical processing lines and associated common equipment for the recovery of metal from the waste feed to these processes. The core new mechanical processing equipment will be installed in the processing hall (the existing mechanical process is already installed in the processing hall). Besides the pre-shredder line (see below), all mechanical processing will take place within this building.

Operating hours will be typically 24 hrs/day x 7 days per week. Waste throughput rate in each of the new mechanical processing lines will be around 6 tonnes per hour (12 tonnes per hour total) with an annual throughput of up to 42,046 tonnes each (84,091 tonnes total).

Of this 84,091 tonnes per year –

1. Up to 36,159 tonnes per year total is recovered as Copper granules for recycling,
2. Up to 4,205 tonnes per year total is recovered as ferrous metals for recycling,
3. Up to 6,727 tonnes per year of 'filter' waste is captured by the air systems,
4. Up to 37,000 tonnes per year of plastic wastes* from the separation units.

The wastes are discharged by enclosed conveyor to covered hook-lift containers, located externally prior to removal from site once full. The wastes are disposed of to a suitably licensed facility. The metal products are discharged into bulk bags and stored securely within the building prior to being loaded by forklift onto articulated trailers for delivery to customers.

*If customers require plastic products i.e. these are to be sold as products for recycling rather than disposed of as waste then it will be diverted to sink float density plastic separation and drying plant for further processing.

Wastes will be produced at different stages of the process and are either discharged to bulk bags within the building or discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full.

The process incorporates five processing blocks (2 x principal per new mechanical processing line and 3 x common ancillary) as follows:

**BLOCK 1: Pre-Shredder Unit (common ancillary)**

<u>This comprises the following steps:</u>

1. The cable[17] will be fed via a grab into the shredder's inlet hopper located above the shredder.
2. The shredder can reduce the material to between 200 mm - 12mm. Typical set point will be 25mm.
3. The material will be discharged via a vibrating feeder that is installed underneath the shredder.
4. An over-band magnet will be installed at the discharge end of the feeder to recover the ferrous pieces out of the product. The ferrous will be collected in a 1m$^3$ bin

[17] The raw cable is initially moved from the raw cable storage area to the pre-shredder and post pre-shredding stored in the sorted cable storage area.

and tipped into a RoRo skip to be sent to the Ferrous sites (other sites).

5. The copper product will be either discharged into bays or RoRo skips for batch processing from the conveyor belt.

The Ferrous metals separated by this primary processing stage will be removed from site for further processing at other sites to recover materials for recycling.

The prepared copper wire will then be processed via Block 2.

In summary, processing here will comprise the following steps -

- Crane grab;
- Primary shredder;
- Vibrating feeder;
- Over-band Magnet.

**BLOCK 02: Granulation unit (2 x Granulation units in total – one per processing line).**

Secondary, tertiary and quaternary processing stages.

The pre-shredded material that has been prepared by Block 01 will be moved via a Front End Loader (FEL) or forklift bin to the granulation in-feed hoppers.

The material will be discharged into the hopper and conveyed to the secondary shredder which will reduce the material to the desired sizes e.g. approx. 12mm. The material will be discharged via a vibrating feeder that is installed underneath the shredder and an over-band magnet will be installed at the discharge end of the feeder to recover the ferrous pieces out of the product. The ferrous will be collected in a $1m^3$ bin and tipped into a RoRo skip to be sent to the Ferrous sites (other sites).

The approx. 12mm copper wire will then be conveyed indirectly into the tertiary shredder that will reduce the product to approx. 8mm. The material will be discharged via a vibrating feeder that is installed underneath the shredder and an over-band magnet will be installed at the discharge end of the feeder to recover the ferrous pieces out of the product. The ferrous will be collected in a $1m^3$ bin and tipped into a RoRo skip to be sent to the Ferrous sites (other sites). The approx. 8mm copper wire will then be conveyed indirectly into the quaternary shredder that will reduce the product to the final copper sizes. This copper will be mixed with the plastic.

The approx. 4mm copper material will then be conveyed to the separation plant that will remove the 'heavies' and 'lights' from each other.

Heavies = Copper product;
Lights = Plastic (by-product / waste).

In summary, processing here will comprise the following steps –

1. FEL tipping into an in-feed hopper;
2. Secondary shredder;
3. Tertiary shredder;
4. Quaternary shredder;
5. Transfer conveyors;
6. Over-band Magnets;
7. Screw conveyors.

**BLOCK 3: Separation Unit <u>(2 x Separation units in total – one per processing line)</u>**

Following Granulation, the liberated metals and heavier plastics are moved to the Separation stage by loading shovel or forklift bin.

The separation unit comprises the following steps –

1. Tipping into a feed hopper;
2. Screening into different size ranges;
3. Removal of any ferrous metals via magnet. The ferrous will be collected in 1m$^3$ bin and tipped into a RoRo skip to be sent to the Ferrous sites (other sites);
4. Dry density separation of the remaining waste and copper is undertaken to produce clean saleable copper.

The waste (plastic) is discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full. The copper is discharged into bulk bags and stored securely within the building prior to being loaded by forklift onto articulated trailers for delivery to customers.

If customers require plastic products i.e. these are to be sold as products for recycling rather than disposed of as waste then it will be diverted to the sink float density plastic separation and drying plant for further processing.

**BLOCK 4: Sink Float Density Plastic Separation Unit (common ancillary)**

The plastic product will be received from the separation system.

This will separate the PE & PVC fractions for recycling from the plastic recovered from this process. Water will be used in the float sink tank as the density media although this water is re-circulated within the system.

**BLOCK 5: Drying Unit (common ancillary)**

The PE and PVC plastic products will be received from the sink float density plastic separation unit.

The Plastic drying unit comprises the following steps –

1. Inlet hopper;
2. Drier unit;
3. Conveyors;
4. Bagging system.

The plastic by-product is discharged by enclosed conveyor to either the bagging station or bulker storage unit.

**Product and By-Product Handling**

The copper granule products are discharged from the process into bulk bags, as described above and stored securely within the building prior to being loaded by forklift onto articulated trailers for delivery to customers. The ferrous material will be collected in $1m^3$ bins and tipped into RoRo skips to be sent to the Ferrous sites (other sites). The plastic by-product is discharged by enclosed conveyor to either the bagging station or bulker storage unit.

**Waste Handling**

As discussed above, the plastic (if disposed of as waste – see above) is discharged by enclosed conveyor to covered hook-lift containers, located outside the building prior to removal from site once full. The waste is disposed of to a suitably licensed facility.

**Dust control**

There is extensive use of air within the new mechanical processes to capture the dust produced. There will be 3 new air systems as follows:

1 for new mechanical processing line #1
1 for new mechanical processing line #2
1 for the new electrical dryer

Each air system will clean process air through cyclones and bag houses before being discharged to atmosphere via their own stack (i.e. 3 in total). The majority of the wastes collected by the air systems are discharged by enclosed conveyor to covered hook-lift containers, located outside the building with only a small amount (approximately 2%) collected in bulk bags. All collected waste are disposed of to a suitably licensed facility.

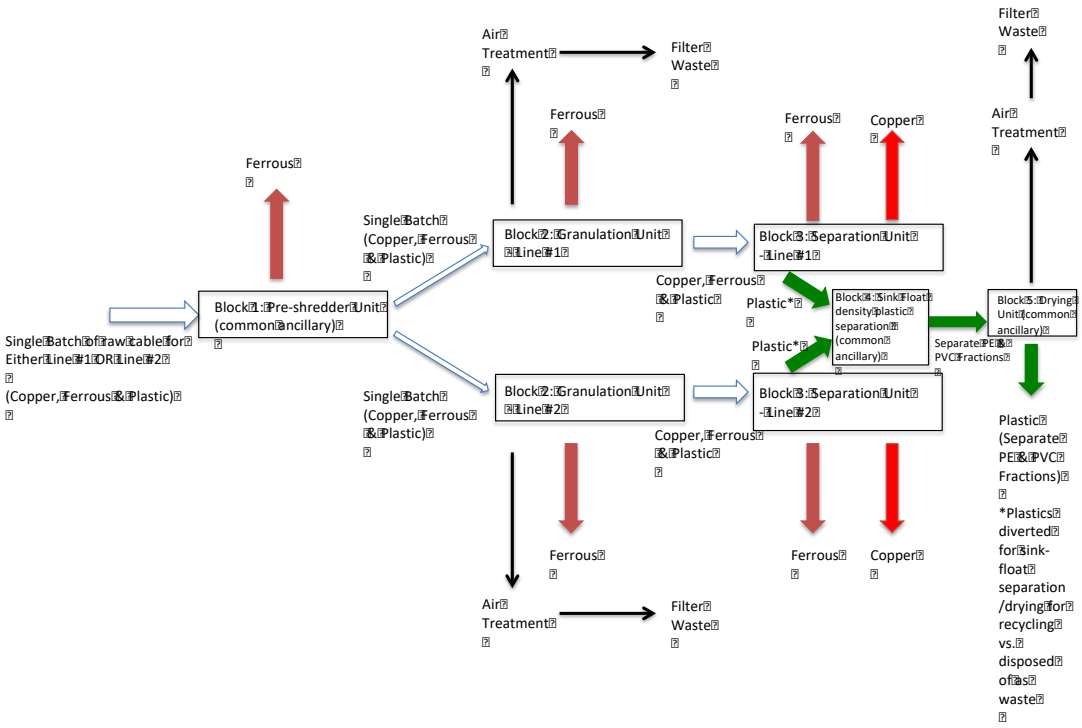
The relevant BAT Conclusion document (included within Appendix N for reference) for both the existing and new mechanical processes is:

COMMISSION IMPLEMENTING DECISION (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C(2018) 5070), L208/38[18].

The BAT conclusions (53 in total) are set out in the updated BAT assessment document (See Appendix N) and each has been addressed and (where applicable) details of how each will be implemented/adhered to regarding the new 5.4 Part A1(1)(b)(iv), 5.3 Part A(1)(a)(ii) and 5.6 Part A(1)(a) activities are provided. This has also been updated to account for the new mechanical processes to which it is also relevant.

Figure 2: New MECHANICAL Process – PROCESS FLOW DIAGRAM

[18] *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN*




## 5.7 Waste handling, recovery and disposal

### 5.7.1 Feedstock

The waste feeds for both the existing and new mechanical processes are predominantly provided by EMR sites (otherwise from other suitably permitted approved authorised treatment facilities) and so the likelihood of any of this waste feed containing waste that cannot be processed by the respective mechanical processes is therefore extremely low.

The waste feed to the existing mechanical process is delivered in bulk loads of 20-25 tonnes by road going articulated lorries.

The waste feed to the new mechanical processes is delivered in bulk loads of 20-25 tonnes by either walking floor, bulk tipper or RoRo.

All vehicles are part of EMR's transport network which maximises back-loading whenever possible.

The waste for the existing mechanical process was historically landfilled prior to EMR's development of the existing process at the IES facility. There is significant value in this waste (primarily due to its copper content) and prior to the existing development there were no sites operating in the UK capable of recycling it so EMR were previously stockpiling this waste - hence its development and current operation at IES as described here.

With regards to the waste for the new mechanical processes then currently the same waste is being processed at two other existing EMR granulation facilities. However, these have both reached their capacity levels – hence the need for the development and operation at IES as described here. As with the waste to the existing mechanical process, there is significant value in the waste to the new mechanical processes (primarily due to its copper content)

Considering the above, it is expected that the majority of waste will be provided by EMR sites.

Waste acceptance procedures for all waste accepted at the facility are included within the waste acceptance techniques as detailed within BAT 2 of the relevant BAT Conclusion document for the activities[19] as set out in the updated specific BAT assessment review document (See Appendix N)**.**

### 5.7.2 General office wastes

All staff are trained to segregate office wastes for recycling wherever and whenever possible, with appropriate facilities provided.

### 5.7.3 Residues

[19] *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN*

The principal residue streams arising from the existing mechanical process are as follows:
MT1: Up to 7,500 tonnes per year of 'fluff' wastes captured by the air systems - disposed of to a suitably licensed facility,
MT2: Up to 600 tonnes per year of 'filter' waste captured by the air systems - disposed of to a suitably licensed facility,
MT3: Up to 10,500 tonnes per year of plastic from the dry density separation - disposed of to a suitably licensed facility.

The principal residue streams arising from the new mechanical processes are as follows:
MT4: Up to 6,727 tonnes per year of 'filter' waste captured by the air systems - disposed of to a suitably licensed facility,
MT5: Up to 37,000 tonnes per year of plastic from the separation unit - disposed of to a suitably licensed facility (should it not be of suitable quality for sale to third parties for recycling).

Other wastes will include general office wastes.

### 5.7.4 Storage

Wastes for disposal are stored in appropriate containers / storage facilities in (a) designated area(s) of the site and segregated to prevent contamination of waste streams. With regards to both the existing and the new mechanical process, in order to reduce the environmental risk associated with the storage of waste, all of the techniques detailed within BAT 4 of the relevant BAT conclusion document are used as described within the specific BAT assessment (see Appendix N).

### 5.7.5 Records and procedures for waste handling

Records will be maintained of the mass and nature of each waste stream and disposal or recovery routes.

Procedures will be implemented as part of the installation's EMS to ensure that the risks of leaks or spillage during waste handling are minimised.

Waste minimisation audits will also be undertaken as part of the installation's EMS with the first audit within the first two years and subsequent audits at least every following four years.

All wastes will be stored and exported from the site in accordance with Duty of Care requirements and appropriate records maintained.

The principal waste streams from the mechanical processes (both the existing and new) i.e. Wastes captured by the air systems and plastic from separation - and their potential impacts will be minimised by:

1. Putting in to place pre-acceptance procedures that are fully in line with Sector Guidance Note S5.06[20] section 2.1.1[21],
2. Putting in to place waste acceptance procedures that are fully in line with Sector Guidance Note S5.06 section 2.1.2[22],
3. Implementing all of the pre-acceptance & waste acceptance techniques as detailed within BAT 2 of the relevant BAT Conclusion document for these activities[23] as set out in the updated specific BAT assessment review document (See Appendix N)**.**

### 5.7.6 Summary

Waste management options will be regularly audited as part of the site's environmental management system. The proposals for waste handling, recovery, disposal, and waste minimisation audits comply with the

[20] Sector Guidance Note S5.06 (Issue 5) 'Guidance for the recovery and disposal of hazardous and non-hazardous waste'. Environment Agency 2013.
[21] Also section 3.1 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures
[22] Also section 3.2 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures
[23] *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN*

indicative BAT requirements given in Sector Guidance Note S5.06 as well as the relevant BAT Conclusion document as detailed above.

### 5.8 Fire prevention and control

Refer to the updated Fire Prevention Plan (FPP) – Appendix O.

## 6 Environmental risk assessment

### 6.1 Introduction

An assessment of the potential environmental risks from the installation has been undertaken using the guidance and approach contained in Horizontal Guidance Note H1 – Environmental risk assessment for permits[24] and its associated annexes. The H1 database is contained in Appendix F.

An environmental impact assessment (EIA) was also undertaken to accompany the planning application for the installation. It should be noted that the EIA covers both the installation, which is the subject of this permit variation application and the adjoining facility (section 1.3). The full Environmental Statement is contained in Appendix G.

Step 1 of the H1 overview identifies that the following assessment annexes need to be undertaken for installations:

(a) Amenity and accidents
(d) Surface water (basic)
(f) Air
(g) Site waste
(h) Global warming potential
(j) Groundwater
(k) Justifying and cost benefit analysis of control measures (if needed)

[24] Environment Agency H1 Environmental Risk Assessment – Overview v2.0 April 2010

The assessments required by annexes (a), (d), (f), (g), and (j) are contained in this section. The assessment of global warming potential (Annex (h)) is contained in section 9.2.

## 6.2 Potentially sensitive receptors

Section 1.3 describes the site context and surroundings.

The nearest potentially sensitive receptors to the installation are given in Table 3 below and shown in Drawing 031 – A103.

**Table 3: Potentially sensitive receptors**

| Receptor type | Name | Distance | Direction |
|---|---|---|---|
| Residential | Whitgreave Street | 130 m | north |
| | Theodore Close | 200 m | south |
| | Campbell Bannerman Way | 180 m | west |
| | 'Balaji Avenue' (planning permission granted for 14 houses – not completed) | 200 m | south |
| Public | Meadows College of sport | 300 m | southwest |
| | Hindu Temple of Shri Venkateswara (Balaji) | 300 m | southwest |
| Industrial and commercial | Anglo-African Industrial estate | 50 m | south |
| | William King Ltd | 100 m | north |
| Surface waters | Birmingham Canal | 20 m | north |
| | Gower Branch Canal | 300 m | west |
| | River Tame | 200 m | southwest |
| Nature conservation | Sheepwash LNR | 250 m | northwest |
| | Gower Branch Canal Site of importance for nature conservation (SINC) | 300 m | west |
| | Brades Hall Site of local importance for nature conservation (SLINC) | 310 m | west |
| | Land at Edale SINC | 1,500 m | south |
| | Rowley Hills SLINC | 1,400 m | south |
| Recreation | Cycle path - national route 81 and footpath | 20 m | north |
| | Playground | 250 m | southwest |

The site does not lie over a groundwater source protection zone.

## 6.3 Amenity and accidents

This section contains risk assessments for amenity – odour, noise and vibration, visible plume, fugitive emissions (Annex A of the H1 guidance) and accidents.

### 6.3.1 Odour

Unlike some of the waste that was to be processed by the incineration activity that has now ceased operation / no longer permitted for (i.e. RDF), the wastes that will be processed by the new mechanical processes (as already is the case with the existing mechanical process) do not have the potential to emit odour. As such an odour management plan is not required.

### 6.3.2 Noise and Vibration

A detailed noise impact assessment has been undertaken in relation to the proposed variation and is included in Appendix I. This report concluded that:

- a BS 4142:2014 assessment of the site has been undertaken with a low impact outcome.
- the proposed variation has been assessed in line with original operating criteria at the nearest noise sensitive receptors, and is found to be below the target values during daytime and overnight, despite the recent encroachment of the residential area to the SW of the site.

The standalone Noise Management Plan (NMP) document has also been updated and is included in Appendix I. This has been produced using the guidance outlined in the Environment Agency Technical Guidance Note H3 (Part 2) – Horizontal Guidance for Noise (part 2), Sector Guidance Note (SGN) IPPC 5.06[25] and this is included separately within Appendix I. The NMP also outlines how the requirements of BAT 17 ('Noise and Vibrations') of the BAT conclusion document for the existing and new mechanical processes (included within Appendix N) are fulfilled. The purpose of the NMP is to describe the measures that have been taken to control noise emissions from the site and procedures that will be followed to control, monitor and rectify any issues identified. The complaints management procedure, including the management responsibilities, are also addressed. The NMP outlines the methods by which IES (the Operator) will systematically assess and minimise the potential impacts of noise generated at the facility. The noise management plan is a working document with the specific aim of ensuring that: Noise impact is considered as part of routine inspections; Noise is primarily controlled at source by good operational practices including physical and management control measures; and All appropriate measures are taken to prevent or, where that is not practicable, to reduce

[25] Also section 6.3 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

noise emissions from the operations.

### 6.3.3 Visible Plume

The new mechanical processes, as with the existing mechanical process, are completely dry processes and as such there is no risk of visible plume posed from any of the three new exhaust points associated with the new mechanical processes as well as the two new exhausts proposed for the existing mechanical process. As described above, there are three new exhaust points serving the cyclones/bag filters for new mechanical processing line #1, new mechanical processing line #2 and the new electrical dryer. Mechanical processing lines #1 & #2 result in no moisture from the feed waste being driven off during processing. The new electrically heated dryer will drive off some moisture but the amount is negligible and will not result in any visible plume formation from the associated stack – for example, maximum moisture content in the plastic is up to 10% which needs to be dried down to 5%. As part of this variation 2 x additional LEV (local exhaust ventilation) systems are being added to the existing processing line. These will simply remove only airborne particulate around the existing processing line to improve even further/ensure local workplace air quality and as such will not release any moisture from their individual, associated stacks.

**6.3.4 Fugitive emissions (See also Appendix N – BAT Assessment BAT 14 with regards to further specific techniques employed by the new mechanical process in order to prevent/reduce diffuse emissions).**

**Table 4**

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| **To air** | | | | | | |
| Dust from waste/raw material handling operations<br><br>Dust from handling of post-processing residues | Industrial and commercial receptors<br>Surface water<br>Public highway<br>Residential receptors | Air | Dedicated dust extraction is already provided for each of the five processing units associated with the existing mechanical processing line (preparation, 3 x grinding & separation) with further dust extraction of general process air from the existing processing line being provided by the 2 x LEV systems proposed as part of this variation. Dedicated dust extraction will also be provided for the new mechanical processing lines #1 & #2 and electrically heated dryer.<br><br>Waste collected from dust extraction (post processing residues) will be discharged by enclosed conveyor to covered hook lift containers. | Low | Nuisance – dust on cars, clothing etc. | Not significant |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | All machinery and equipment, floors and walls will be cleaned on a regular basis to prevent accumulation of significant quantities of dust.<br><br>Site roads and hard-standing are concrete and unlikely to generate dusts – site roads will be cleaned on a regular basis as required.<br><br>The Site Manager will be responsible for implementing risk management measures. | | | |
| **To water** | | | | | | |
| Runoff from car park and internal access roads and from external areas. | Groundwater, surface water, drains | Groundwater / surface water | Site has an impermeable surface with all runoff from car-park and access roads routed via interceptors prior to discharge.<br><br>The Site Manager will be responsible for implementing risk management measures. | Low | Contamination of surface and groundwater | Not significant |
| Runoff from external waste storage areas. | Groundwater, surface water, drains | Groundwater / surface water | Site has an impermeable surface so all storage will be on an impermeable surface plus all external waste storage areas are covered with a weather-proof covering/roof in order to avoid contamination of surface water. | Low | Contamination of surface and groundwater | Not significant |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | The Site Manager will be responsible for implementing risk management measures. | | | |
| Flood water coming into contact with waste materials | Groundwater, surface water, drains | Groundwater / surface water | Site is in flood zone 1 i.e. < 1 in 1000 risk of flooding.<br><br>The Site Manager will be responsible for implementing risk management measures. | Low | Contamination of surface and groundwater | Not significant |
| **Litter** | | | | | | |
| Vehicle movements on site | Industrial and commercial receptors<br>Surface water<br>Public highway<br>Residential receptors | Air - windblown | Low numbers of HGV movements on site – restricted to those delivering waste and removing mechanical process residues (new and existing).<br>The Site Manager will be responsible for implementing risk management measures. | Low | Litter nuisance and loss of amenity | Not significant |
| Waste handling operations | Industrial and commercial receptors<br>Surface water<br>Public highway<br>Residential receptors | Air - windblown | Materials handling activities for the existing mechanical process take place inside buildings; Material handling activities for the new mechanical processes take place either inside buildings or where outside i.e. the pre-shredder unit then this is enclosed by a covered area (the other outside area is the 2 x loading hoppers for the granulation units but these are loaded with material post shredding and so the nature of this material | Low | Litter nuisance and loss of amenity | Not significant |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | post shredding means that there is no light material available for windblown dispersion when loaded) – thus minimising the potential for litter.<br><br>Waste will be delivered to the site by enclosed conveyor (the ASR/WWAS2)/covered vehicles directly into the respective materials storage areas.<br><br>All materials storage areas will be enclosed within steel reinforced concrete bays with a weather-proof roof over which will prevent any windblown dispersal.<br><br>Daily visual inspection by site management will identify any problems with litter, which will be cleaned up as soon as possible.<br><br>The Site Manager will be responsible for implementing risk management measures. | | | |
| **Mud** | | | | | | |
| Vehicle movements on site | Industrial and commercial receptors<br>Public roads | Tracked by vehicles delivering waste to site | External vehicle circulation areas and roadways are hard-standing and the floor of the materials storage building / external storage areas is concrete. | Low | Nuisance and loss of amenity | Not significant |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | It is not expected that any mud will be brought onto or taken off the site given the nature of the waste treated being treated in either the new or existing mechanical processes.<br>Daily visual inspection by site management will identify any problems with mud, which will be cleaned up as soon as possible.<br>The Site Manager will be responsible for implementing risk management measures. | | | |
| **Pests** | | | | | | |
| Materials processed and activities undertaken on site will not attract pests | – | – | – | – | – | – |

### 6.3.5 Accident management plan

Overview

The original accident management plan has been updated to reflect the proposed variation to the permit described here and (as before) takes in to account Sector Guidance Note EPR 5.06[26] and the measures listed within 'BAT 21' of the BAT conclusion document referred to above.

The assessment of the potential for the installation to cause environmental harm as a result of accidental releases into the environment has three main components:

1. Identification of hazards posed by the installation;
2. Assessment of the risks (hazard x probability) of accidents and their possible consequences; and
3. Implementation of measures to reduce the risks of accidents, and contingency plans for any accidents that do occur.

Methodology

Risk reduction techniques are based on the operator's experience and those identified in Sector Guidance Notes 5.06[27].

HAZID / HAZOP studies for ALL of the process equipment associated with the existing mechanical process have been completed and will be undertaken and completed prior to operation of the new mechanical processes

Accidental hazard and risk assessment

The initial accident risk assessment and management plan is presented in table format below.

This plan will be regularly reviewed throughout the life of the installation.

[26] Also section 2.3 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

[27] Also section 2.4 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

**Table 5: Accident risk assessment**

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| Delivery of feed wastes for the existing and new mechanical processes, delivery of ASR/WWAS2 for storage only and export of mechanical process residues – accidental spillage | Escape of wastes / process residue into surrounding areas, including surface waters. Reduction in amenity | Air (windblown) | Feed wastes for the existing and new mechanical processes will be delivered to site by covered vehicles and deposited directly inside the materials storage areas. All materials storage areas will be enclosed within steel reinforced concrete bays with a weather-proof roof over. Post processing residues will be discharged by enclosed conveyor to covered hook lift containers. ASR/WWAS2 will be transported to the ASR/WWAS2 storage area via enclosed conveyor from the adjacent EMR facility. Conveyor integrity will be inspected regularly. | Unlikely | Significant (should waste be hazardous) | Acceptable<br><br>Immediate action<br><br>Any wastes deposited outside their storage areas will be cleaned up immediately<br><br>Any residues deposited outside their out-loading areas will be cleaned up immediately |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| Delivery diesel – minor spillage | Contamination of drains / watercourses | Surface water drainage system | All deliveries take place on sealed drainage areas for potentially polluting materials<br>Level measurement and alarms to prevent overfilling<br>Pipework to be routed within bunded area<br>Tanker connection points to be within bund<br>Deliveries to be supervised | Unlikely | Minor | Insignificant<br><br>Immediate action<br>Implement spill response procedure – minor spills to be cleaned immediately using sand / proprietary absorbent<br><br>Post accident procedure<br>Review fuel / chemical delivery procedures |
| Delivery of diesel – Major spillage due to collision, overfilling of containers etc. | Contamination of land, drains, groundwater, watercourses<br>Reduction in amenity<br>Injury to wildlife | Air, surface water drainage system | All deliveries take place on sealed drainage areas for potentially polluting materials<br>Level measurement and alarms to prevent overfilling<br>Pipework to be routed within bunded area<br>Tanker connection points to be within bund<br>Deliveries to be supervised | Unlikely | Noticeable | Insignificant<br><br>Immediate actions:<br>Follow spill response procedure<br>Notify the emergency services if appropriate.<br>Notify the Environment Agency if appropriate.<br>Cleanup of materials<br><br>Post accident procedure |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | Very low vehicle numbers mean deliveries can be easily controlled so that so that only one vehicle is present at a time in loading / unloading areas<br>Roads will be clearly marked and sign posted and speed on site will be limited.<br>Crash barriers installed around sensitive equipment | | | Review traffic management procedures.<br>Investigate causes of accident |
| Vehicle / equipment refuelling – spillage of fuel | Contamination of land, drains, groundwater and watercourses. | Surface water drains | Refuelling of plant / equipment to take place in designated areas with impermeable surface with drip trays | Fairly probable | Minor | Acceptable<br><br>Immediate action:<br>Implement spill response procedure – minor spills to be cleaned immediately using sand / proprietary absorbent<br><br>Post accident procedure<br>Review refuelling procedures |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| Storage of incompatible substances – risk of fire, explosion or reaction | Fire and or explosion | Air | The nature of the incoming feedstock wastes to both the existing and new mechanical processes means that any non-permitted waste will be easily identified.<br>Waste received on site will be visually inspected for non-permitted waste.<br>Waste acceptance procedures mean there is a very low risk of non-permitted wastes being delivered to the installation. All individual input waste feeds will be accompanied with the appropriate analyses prior to acceptance on site. This will ensure that the waste batch is accepted under a specific EWC code and as such will also identify whether it is a hazardous or non- | Unlikely | Significant | Acceptable<br><br>Immediate action:<br>• Notify the fire services if appropriate.<br>• Notify the Environment Agency if appropriate.<br><br>Post accident procedure<br>• Review waste acceptance procedure if appropriate.<br>• Implement mitigation measures as appropriate to reduce the likelihood of the situation occurring in the future |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | hazardous waste. The new and existing mechanical processes will be / are batch processing. As such, when one of these specific waste batches is delivered to IES, it will be stored and processed completely, emptying the specific individual bay completely in which it was stored. Therefore, there will never be any mixing of EWC codes (and as such never any mixing of hazardous and non-hazardous wastes also which need to be segregated).<br>All tanks and storage areas are labelled.<br>Deliveries and unloading of hazardous wastes/materials undertaken by suitably trained staff only. | | | |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| Fuel oil / diesel tank containment failure – Release of fuel into ground | Contamination of land, drains, groundwater and watercourses<br>Reduction in amenity<br>Injury to wildlife | Surface water drains | Fuel to be stored in above ground bunded tanks<br>Bunds to be impermeable and resistant to stored materials<br>Regular visual inspection of primary and secondary containment<br>Bunds to have no outlet and drain to a blind collection point<br>Bund capacity to be 110% of tank capacity | Unlikely | Significant | Acceptable<br><br>Immediate action:<br>• Site drainage blocked<br>• Hire of tankers to remove fuel offsite for disposal<br>• Notify Environment Agency<br><br>Post accident procedure:<br>• Review procedures<br>• Ground and surface water monitoring if required<br>• Remediation of contaminated land if required |
| Fire / explosion on site<br><br>Failure / fault of electrical equipment that could provide an ignition source<br><br>Maintenance activities that could present potential fire risk in | Smoke, pollution<br>Contamination of land, groundwater and watercourses from firewater | Air, drains, watercourses | Use of non-combustible construction materials in design<br>Automatic fire protection installed in all electrical rooms and areas with relevant fire risk<br>Fire extinguishers provided at dedicated locations | Extremely unlikely | Significant | Insignificant<br><br>Immediate action:<br>Notify emergency services<br>Implement fire procedure – burning area will be isolated and attempts made to extinguish the fire if it is safe to do so, |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| absence of appropriate precautions | | | Separation of incompatible materials and of combustible materials and ignition sources<br>Regular checks on electrical equipment as part of plant inspection schedule<br>Limit size of material stockpiles<br>Smoking not permitted on site<br>Fire training and emergency drills | | | site drainage blocked, site will be evacuated if necessary.<br>Notify the Environment Agency<br><br>Post accident procedure:<br>Establish cause<br>Review fire procedure<br>Amend operating procedures if required |
| Equipment failure<br><br>Slowing / stopping of operational procedures – release of fugitive emissions | Contamination of land, drains, groundwater and watercourses.<br>Reduction in amenity.<br>Injury to wildlife. | Air, surface water drainage system. | Regular and planned maintenance / replacement of plant equipment.<br>Controlled and emergency shutdown procedures in place<br><br>Power failure will stop all drives immediately. Standby power redundancy is provided by a combination of UPS (uninterrupted power supply) to | Probable | Minor | Insignificant<br><br>Immediate action:<br>• Plant equipment mended / replacement sought as soon as possible.<br>• Essential spares maintained on site |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | protect control systems and all equipment connected to the 110v supply from unexpected power disruption and 2MVA emergency power connection (fed separate from the main grid). Once power is restored from the emergency feed, key drives are re-started so that the system can be safely shutdown [note: it is a manual operation to close the emergency feed breaker upon main grid power failure so power may not be restored for several minutes]. | | | |
| Air filters failure caused by e.g.:<br>Power failure/ blockage / damage | Release of unfiltered process air (dust) to atmosphere. | Air | Waste feed quality control.<br>Standby power redundancy (see above).<br>Key parameter monitoring e.g. filter pressure drop. | Unlikely | Minor | Insignificant<br><br>Immediate action:<br>• Plant equipment mended / replacement sought as soon as possible. |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | | | | • Essential spares maintained on site. |
| Power failure<br><br>Failure of computer control system, air filters, mechanical equipment etc. | Release of dust<br>Contamination of land, groundwater and watercourses | Air, drains | Automatic process shut down in event of extended power failure.<br>Standby power redundancy (see above). | Unlikely | Minor | Insignificant<br><br>Immediate action<br>• Manual shut down of process<br>• Notify utility company |
| Vandalism – damage to building / equipment | Contamination of land, groundwater and watercourses<br>Slowing / stopping of operational procedures | Air, drains, surface watercourses | Site is only accessible via monitored entry / exit gate<br>When fully operational, site will be occupied 24 /7<br>Site will be fenced with 2.7 m high fencing<br>Security system in place comprising guards, patrols and CCTV monitoring and recording equipment<br>Gates and fencing will be inspected regularly to identify any deterioration / damage<br>Tanks and valves locked when not in use | Unlikely | Noticeable | Insignificant<br><br>Immediate action<br>• Implement spill response procedure<br>• Repair damage<br><br>Post accident procedure<br>• Review security procedures |

| Hazard<br>What has the potential to cause harm? | Receptor<br>What is at risk? What do I wish to protect? | Pathway<br>How can the hazard get to the receptor? | Risk management<br>What measures will I take to reduce the risk?<br>If it occurs, who is responsible for what? | Probability of exposure<br>How likely is this contact? | Consequence<br>What is the harm that can be caused? | What is the overall risk?<br>What is the risk that still remains? |
|---|---|---|---|---|---|---|
| | | | Infrequently used plant and equipment locked in secure storage when not in use. | | | |
| ID fans breakdown (individual ID fans serving the 10 x air filters serving the existing (7 i.e. 5 plus 2 new) and new (3) mechanical processes. | Release of gases to atmosphere. | Air | Regular and planned maintenance / replacement of fan components.<br>Controlled and emergency shutdown procedures in place | Unlikely | Minor | Insignificant<br><br>Immediate action:<br>• Fan mended / replacement sought as soon as possible.<br>• Essential spares maintained on site. |

Summary

Using this methodology six accidental releases have been identified as having a potentially 'noticeable' or 'significant' impact on the environment:
Delivery of feed wastes (should the waste be hazardous) for the existing and new mechanical processes – accidental spillage
Delivery of fuel / diesel – major spillage
Storage of incompatible substances – risk of fire, explosion or reaction
Fuel oil / diesel tank containment failure - release of fuel into ground
Fire / explosion on site
Vandalism

It is considered that all the other risks identified in the assessment will have a minor impact on the environment in the event of their occurrence.

The accident risk assessment detailed in Table 5 above has shown that proposed operational procedures are stable, with appropriate back up mechanisms, and that any failures or accidents pose an 'insignificant' or 'acceptable' risk to the environment with the procedures in place. The management procedures implemented by the operator combined with the safeguard measures detailed above will minimise the likelihood of accidents. The accident management plan will be reviewed at least every four years or as soon as practicable after an accident and any appropriate changes will be made and the EA advised as appropriate.

### 6.4 Surface water

There will be no process discharges to surface water. The existing and new mechanical processes are dry processes. The new mechanical processes do however include a common sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling. However, the water within the sink float tank (there will be no other chemical additions required) will be re-circulated within the system.

In accordance with the flowchart given in H1 Annex D, as there are no dangerous substances discharged to sewer, no further assessment of risk to surface water is required.

## 6.5 Air

### 6.5.1 Dispersion modelling results

The impacts on air quality of the original two incineration lines were detailed in the original air quality assessment that supported the original permit application (included again in Appendix J for reference). However, as described above – the incineration activity has now ceased operation and is no longer permitted for. Given that the only pollutant released to atmosphere from the existing mechanical process was particulate matter ($PM_{10}$) an updated air quality assessment was undertaken in 2019 (included again in Appendix J for reference) as part of the previous permit variation which was limited to an assessment of the emissions of $PM_{10}$ from the whole facility ($PM_{2.5}$ was also considered and assessed using the conservative assumption that all the $PM_{10}$ is $PM_{2.5}$). This concluded that the overall impact on air quality of emissions to atmosphere from the previous variation was of minor significance.

This AQ report modelled the particulate emissions from all 5 exhausts from the existing mechanical processing line along with particulate emissions from the stack i.e. the single flue serving the (at the time) still in-situ single incineration line. As above, this AQ assessment concluded that the overall impact on air quality of emissions to atmosphere from adding the particulate emissions from all 5 exhausts from the (what is now) existing mechanical processing line to the particulate emissions from the single flue serving the incineration line could be described as of minor significance.

The incineration activity has been removed from site, is no longer permitted for and will not be re-instated. The total mass emission of particulate from the 3 x new exhausts associated with the new mechanical process AND the 2 x new exhausts associated with the existing mechanical process are less

than that from the single flue serving the single incineration line used in the previous AQ assessment referred to above. Therefore, the findings of this assessment i.e. that the overall impact on air quality of emissions to atmosphere could be described as of minor significance are still valid for the proposed variation - with total particulate emissions actually decreasing from those used within the existing AQ assessment that came to this finding. Therefore, it has been concluded that the AQ assessment is not required to be undertaken again. Further details/specific numbers used to make this conclusion are provided below –

Table 6: Taken from the 2019 AQ assessment (Table 4.1 – Emissions and Physical Properties)

| Stack Number | A01 | A04 | A05 | A06 | A07 | A08 |
|---|---|---|---|---|---|---|
| OS Grid Reference (m) | 398429<br>290777 | 398462<br>290832 | 398470<br>290827 | 398485<br>290817 | 398483<br>290865 | 398492<br>290861 |
| Release height above ground level (m) | 50 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 |
| Exhaust gas oxygen content (% v/v wet) | 4.1 | - | - | - | - | - |
| Exhaust gas water content (% v/v) | 13.5 | - | - | - | - | - |
| Flue diameter (m) | 1.35 | 0.98 | 0.62 | 1.10 | 0.62 | 0.62 |
| Exit velocity (m $s^{-1}$) | 30.6 | 9.9 | 13.8 | 11.7 | 13.8 | 13.8 |
| Flue gas emission temperature (deg C) | 150 | 20 | 20 | 20 | 20 | 20 |
| Actual volumetric flow rate ($Am^3$ $s^{-1}$) | 43.8 | 7.5 | 4.2 | 11.1 | 4.2 | 4.2 |
| Normalised volumetric flow ($Nm^3$ $s^{-1}$) (a) | 40.1 | 7.5 | 4.2 | 11.1 | 4.2 | 4.2 |
| $PM_{10}$ emission conc (mg $Nm^{-3}$) | 10 | 5 | 5 | 5 | 5 | 5 |
| $PM_{10}$ emission rate (g $s^{-1}$) | 0.40 | 0.038 | 0.021 | 0.056 | 0.021 | 0.021 |
| (a) Corrected for: temperature; 273 k; pressure; 101.3kPa (1 atmosphere); dry; 11% v/v $O_2$. | | | | | | |

A01 = Incineration Line stack (now removed)
A04 – A08 = Existing mechanical process line 5 x exhausts (remaining)

As can be seen, the flow for A01 used for the modelling was 40.1 $m^3/s$ (at reference conditions) with an associated Particulate matter concentration (previously permitted ELV for this stack) of 10 $mg/m^3$ which resulted in a Particulate matter mass emission rate of 0.40 g/s i.e. (40.1 $m^3/s$ x 10 $mg/m^3$) / 1,000 mg per g.

The flows and particulate concentrations associated with the 5 x new stack exhausts proposed with this variation are as follows ->

New mechanical process line #1 exhaust: A09 – 23.29 $m^3$/s and 5 mg/$m^3$ i.e. (23.29 x 5 mg/$m^3$) / 1,000 mg per g = 0.12 g/s

New mechanical process line #2 exhaust: A10 – 23.29 $m^3$/s and 5 mg/$m^3$ i.e. (23.29 x 5 mg/$m^3$) / 1,000 mg per g = 0.12 g/s

Electrically heated dryer exhaust: A11 – 11.65 $m^3$/s and 5 mg/$m^3$ i.e. (11.65 $m^3$/s x 5 mg/$m^3$) / 1,000 mg per g = 0.06 g/s

New (#1) LEV Exhaust for existing processing line: A12 – 6.47 $m^3$/s and 5 mg/$m^3$ i.e. (6.47 $m^3$/s x 5 mg/$m^3$) / 1,000 mg per g = 0.03 g/s

New (#2) LEV Exhaust for existing processing line: A13 – 6.47 $m^3$/s and 5 mg/$m^3$ i.e. (6.47 $m^3$/s x 5 mg/$m^3$) / 1,000 mg per g = 0.03 g/s

*Note that each of the 5 x new exhausts are to have a particulate ELV as per those already stipulated for the existing 5 x exhausts of 5 mg/$m^3$.

TOTAL: A09 plus A10 plus A11 plus A12 plus A13 = 0.12 + 0.12 + 0.06 + 0.03 + 0.03 = 0.36 g/s

0.36 g/s (as per variation proposed here) versus 0.40 g/s (as used for current permit).

### 6.5.2 Assessment of potential impact on human health

An assessment of potential impact on human health from the incineration activity was detailed in the original health risk assessment of emissions to atmosphere. The assessment considered the uptake of PCDD/Fs (dioxins/furans) by an adult Hypothetical Maximum Exposed Individual (HMEI) who is exposed to dioxins / furans over a lifetime at this location and who eats food only from produce grown locally. However, the

incineration activity has now ceased operation and the only pollutant released to atmosphere from the existing mechanical process and new mechanical processes is particulate matter ($PM_{10}$) i.e. no PCDD/Fs produced – as such a new health risk assessment was not required for the previous variation and is not required now.

### 6.5.3 Assessment of potential impact on nature conservation sites

The existing AQ assessment is included in Appendix J of the supporting statement – the findings of which are still valid as per the reasons given in 6.5.1 above. Given that the only pollutant released to atmosphere from the proposed existing mechanical process and the new mechanical processes is particulate matter ($PM_{10}$) - that has no impact on ecology - then it can therefore be screened out with regards to presenting any new environmental risk to the ecological receptors identified within the EA's 2019 Screening report for the previous variation as provided in Appendix P.

### 6.5.4 Visible plume

The new mechanical process, as with the existing mechanical process, is a dry process (apart from the sink float density plastic separation system which is enclosed and where the water within the sink float tank is re-circulated within the system) and all emissions from each of the 3 x new emission points will not produce any plume.

All emissions from each of the 10 x emission points (5 x existing process plus 2 x new for existing process plus 3 x new process) will not produce any plume. As described above, mechanical processing lines #1 & #2 result in no moisture from feed waste being driven off during processing and the 2 x LEVs for the existing process handle dry airborne dust only so again result in no moisture. The new electrically heated dryer will drive off some moisture but the amount is negligible and will not result in any visible plume formation from the associated stack.

## 6.6 Site waste

The principal waste streams arising from the existing mechanical process are the 'fluff' wastes captured by the air systems, the 'filter' waste captured by the air systems and the plastic from the dry density separation. The 2 x additional LEV (local exhaust ventilation) systems that are being added to remove any airborne particulate around the existing processing line will also produce 'filter' waste.

The principal waste streams arising from the new mechanical processes are the 'filter' waste captured by the air systems and the plastic from the separation unit.

As described already above, the new and existing mechanical processes will be processing hazardous as well as non-hazardous waste and so these waste streams could be potentially hazardous or non-hazardous also. Also, as the installation is likely to be handling Persistent Organic Pollutants (POPs) waste then post processing to recover the metals as described above, the resulting waste streams would also be POPs wastes which would need to be processed in a manner which leads to the destruction or irreversible transformation of the POP (in accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants) which would mean thermal treatment i.e. incineration [28]. The waste impact score calculation shown below has therefore been performed twice; a worst case assuming that all of the waste streams are disposed of to hazardous waste landfill (hazardous non-POPs waste) / incinerated (hazardous POPs waste) and a best case assuming that all waste streams are disposed of to non-hazardous waste landfill (non-hazardous non-POPs waste).

[28] See section 5.3 POPs of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

The waste impact score calculations are presented below.

**Table 7a: Waste impact score calculation – Best Case**

| Waste stream | Mass (tonnes / year) | Final treatment / disposal method | Score | Waste type | Score | Impact score |
|---|---|---|---|---|---|---|
| Existing Mechanical Process | | | | | | |
| 'Fluff' wastes | 7,500 | Landfill (D5) | 30 | Other non-hazardous | 2 | 450,000 |
| Filter wastes | 600 | Landfill (D5) | 30 | Other non-hazardous | 2 | 36,000 |
| Plastic wastes | 10,500 | Landfill (D5) | 30 | Other non-hazardous | 2 | 630,000 |
| New Mechanical Processes | | | | | | |
| Filter wastes | 6,727 | Landfill (D5) | 30 | Other non-hazardous | 2 | 403,620 |
| Plastic wastes | 37,000 | Landfill (D5) | 30 | Other non-hazardous | 2 | 2,220,000 |
| Total Impact Score | | | | | | 3,739,620 |

**Table 7b: Waste impact score calculation – Worst Case**

| Waste stream | Mass (tonnes / year) | Final treatment / disposal method | Score | Waste type | Score | Impact score |
|---|---|---|---|---|---|---|
| Existing Mechanical Process | | | | | | |
| 'Fluff' wastes | 7,500 | Landfill (D5), Incineration (D10) | 30 | Hazardous | 10 | 2,250,000 |
| Filter wastes | 600 | Landfill (D5), Incineration (D10) | 30 | Hazardous | 10 | 180,000 |
| Plastic wastes | 10,500 | Landfill (D5), Incineration (D10) | 30 | Hazardous | 10 | 3,150,000 |
| New Mechanical Processes | | | | | | |
| Filter wastes | 6,727 | Landfill (D5), Incineration (D10) | 30 | Hazardous | 10 | 2,018,100 |
| Plastic wastes | 37,000 | Landfill (D5), Incineration (D10) | 30 | Hazardous | 10 | 11,100,000 |
| Total Impact Score | | | | | | 18,698,100 |

However, as already described above, the new mechanical processes include a sink float density plastic separation unit (to separate PE and PVC plastic fractions) and a Dryer unit which is an electrically heated dryer which can batch dry the plastic recovered from either processing line as required in order to reduce moisture content / increase quality and therefore both of these units help increase the opportunity for sale to third parties for recycling rather than disposal. Should this be the case (and the plastic be non-hazardous) then the plastic recovered from the new mechanical

processes would no longer be a waste and the following would be the best case scenario –

**Table 7c: Waste impact score calculation – Best Case (assuming all plastic available for recycling from new mechanical process)**

| Waste stream | Mass (tonnes / year) | Final treatment / disposal method | Score | Waste type | Score | Impact score |
|---|---|---|---|---|---|---|
| Existing Mechanical Process | | | | | | |
| 'Fluff' wastes | 7,500 | Landfill (D5) | 30 | Other non-hazardous | 2 | 450,000 |
| Filter wastes | 600 | Landfill (D5) | 30 | Other non-hazardous | 2 | 36,000 |
| Plastic wastes | 10,500 | Landfill (D5) | 30 | Other non-hazardous | 2 | 630,000 |
| New Mechanical Processes | | | | | | |
| Filter wastes | 6,727 | Landfill (D5) | 30 | Other non-hazardous | 2 | 403,620 |
| Total Impact Score | | | | | | 1,519,620 |

In reality, the waste impact score is likely to lie somewhere between the two extremes i.e. 1,519,620 -> 18,698,100

### 6.7 Groundwater

There will be no discharges to ground or groundwater and therefore in accordance with H1 Annex J, there is no need to consider risk to groundwater.

### 6.8 Photochemical ozone creation potential (POCP)

Unlike the original incineration activity that has now ceased operation, there will be no emissions of carbon monoxide, sulphur dioxide and nitrogen dioxide from the either the existing or new mechanical processes and therefore no potential to give risk to the creation of ozone. The total POCP from the installation is therefore zero.

## 7 Emissions

### 7.1 Point source emissions to air

The only pollutant released to atmosphere from the existing and new mechanical processes is particulate matter.

BAT 25 ('Emissions to Air') of the BAT conclusion document (see Appendix N) states that in order to reduce emissions to air of dust etc. BAT is to apply BAT 14d (containment, collection and treatment of diffuse emissions) and to use a combination of the following techniques –
Cyclone, Fabric filter, Wet Scrubbing, Water injection into the shredder.

For the existing mechanical process, tipping and storage of input waste is proposed as part of this variation to move from inside the building to an external area but the waste will be enclosed within steel reinforced concrete bays with a weather-proof roof over preventing any air dispersion and all processing takes place within a building and the 'fluff' and 'plastic' wastes are transported by enclosed conveyor to covered hook-lift containers, without being handled by mobile plant. "Filter" waste from the air treatment systems are discharged directly into closed top bulk bags.

For the new mechanical processes, tipping and storage of input waste is in an external area but the waste will be enclosed within steel reinforced concrete bays with a weather-proof roof over preventing any air dispersion with the heavy nature of this raw cable input also preventing any air dispersion (as is the case at other EMR facilities undertaking the same processes) and the main processing (granulation and separation) takes place within a building or where outside i.e. the pre-shredder unit then this is enclosed by a covered area also (the other outside area is the 2 x loading hoppers for the granulation units but these are loaded with material post shredding and so the nature of this material post shredding means that there is no light material available for windblown dispersion when loaded). The 'plastic' wastes are transported by enclosed conveyor to covered hook-

lift containers, without being handled by mobile plant. "Filter" waste from the air treatment systems are discharged directly into closed top bulk bags.

Each of the existing 5 process units (1 x preparation, 3 x grinding and 1 x separation) have independent air treatment systems comprising fans, cyclones and bag filters. These are connected to potential points of dust emissions by galvanised ducting and hoods. As part of this variation 2 x additional LEV (local exhaust ventilation) systems are being added to remove any airborne particulate around the existing processing line to improve even further/ensure local workplace air quality) - each cleans workplace air through its own cyclone and bag house. These too are connected to potential points of dust emissions by galvanised ducting and hoods.

The 2 x new mechanical processing lines and the new electrically heated plastic dryer also each have independent air treatment systems comprising fans, cyclones and bag filters. These too are connected to potential points of dust emissions by galvanised ducting and hoods.

A combination of both cyclones and fabric filters are being utilised on each of the existing five exhausts and will be used on each of the five new exhausts to control emissions where the BAT-AEL of 5 mg/Nm$^3$ for dust will be guaranteed – as is the stipulated ELV for dust within Table S3.1 of the existing environmental permit for the existing five exhausts.

BAT-AEL -

*Table 6.3*

**BAT-associated emission level (BAT-AEL) for channelled dust emissions to air from the mechanical treatment of waste**

| Parameter | Unit | BAT-AEL (Average over the sampling period) |
|---|---|---|
| Dust | mg/Nm$^3$ | 2-5 (1) |

(1) When a fabric filter is not applicable, the upper end of the range is 10 mg/Nm$^3$.

The impacts on air quality of the original two incineration lines were detailed in the original air quality assessment that supported the original permit application (included again in Appendix J for reference). However, as described above – the incineration activity has now ceased operation and is no longer permitted for. Given that the only pollutant released to atmosphere from the existing mechanical process was particulate matter ($PM_{10}$) an updated air quality assessment was undertaken in 2019 (included again in Appendix J for reference) as part of the previous permit variation which was limited to an assessment of the emissions of $PM_{10}$ from the whole facility ($PM_{2.5}$ was also considered and assessed using the conservative assumption that all the $PM_{10}$ is $PM_{2.5}$). This concluded that the overall impact on air quality of emissions to atmosphere from the previous variation was of minor significance.

This AQ report modelled the particulate emissions from all 5 exhausts from the existing mechanical processing line along with particulate emissions from the stack i.e. the single flue serving the (at the time) still in-situ single incineration line. As above, this AQ assessment concluded that the overall impact on air quality of emissions to atmosphere from adding the particulate emissions from all 5 exhausts from the (what is now) existing mechanical processing line to the particulate emissions from the single flue serving the incineration line could be described as of minor significance.

The incineration activity has been removed from site is no longer permitted for and will not be re-instated. The total mass emission of particulate from the 3 x new exhausts associated with the new mechanical process AND the 2 x new exhausts associated with the existing mechanical process are less than that from the single flue serving the single incineration line used in the previous AQ assessment referred to above. Therefore, the findings of this assessment i.e. that the overall impact on air quality of emissions to atmosphere could be described as of minor significance are still valid for the proposed variation - with total particulate emissions actually decreasing from those used within the existing AQ assessment that came to this finding. The BAT-AEL of 5 mg/$Nm^3$ for dust has been used for all 10 (5 existing process, 2 new for existing process and 3 new process) exhausts

in order to reach this finding and as such is proposed as the ELV to be applied to the 5 x new exhausts included as part of this variation.

Taking the above in to account, the requirements of BAT 25 ('Emissions to Air') of the BAT conclusion document will be met for the existing and new mechanical processes.

### 7.2 Fugitive emissions to air

With regards to the new and existing mechanical processes - BAT 14 of the BAT conclusion document highlights the techniques that can be used in order to prevent or, where that is not practicable, to reduce diffuse emissions to air with BAT 14d (already mentioned above) being 'especially relevant'. The specific BAT assessment (see Appendix N) describes in detail how all of these are met.

### 7.3 Point source emissions to surface water, sewer and groundwater

Both the existing and new mechanical processes are dry processes. The new mechanical processes include a sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling but the water within the sink float tank will be re-circulated within the system.

There will be no emissions to groundwater from the facility.

### 7.4 Emissions to land

The existing mechanical process will generate 7,500 tonnes/year of fluff waste, 600 tonnes/year of filter waste & 10,500 tonnes/year of plastic waste. The new mechanical processes will generate 6,727 tonnes per year of filter waste & up to 37,000 tonnes per year of plastic waste - which will ALL be disposed of to landfill (either hazardous or non-hazardous) unless –

a.) This waste is POPs waste in which case it would need to be processed in a manner which leads to the destruction or irreversible transformation of the POP (in accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants) which would mean thermal treatment i.e. incineration.
OR
b.) The plastic from the new mechanical processes is of sufficient quality to enable the opportunity for sale to third parties for recycling rather than disposal.

### 7.5 Emissions of substances not controlled by emissions limits

The fugitive emissions assessment (section 6.3.4) has identified potential fugitive emissions to air, water and land. The assessment has demonstrated that, with the implementation of risk management measures where appropriate, none of the potential releases is significant.

Good housekeeping practices will be implemented to ensure that any spillages of potentially dusty materials are cleared up at the earliest opportunity.

Potential fugitive releases to surface water, sewer and groundwater are likely to occur only as a result of an incident or accident. Procedures to be implemented in the event of an accident are described in the accident management plan (section 6.3.5).

# 8 Monitoring

## 8.1 Monitoring of emissions to air

The ten emission points (5 existing process, 2 new for existing process and 3 new process) from the mechanical processes will all comply with the monitoring requirements for channelled emissions to air as detailed within the table associated with BAT 8 of the BAT conclusion document (where applicable) – see Appendix N.

The monitoring requirements (i.e. parameters to be monitored along with associated monitoring frequencies and standards) for the existing 5 emission points are currently detailed within Table S3.1 of the existing permit i.e. –

| **Table S3.1 Point source emissions to air – emission limits and monitoring requirements** | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point reference & location** | **Parameter** | **Source** | **Limit (including unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard(s) or method(s)** |
| Process Unit Exhaust – Preparation unit (A4), Grinding Unit 1 (A5), Grinding Unit 2 (A7), Grinding Unit 3 (A8), and Process Unit Exhaust – Separation Unit (A6) As shown on drawing number IES-00-L00645 | Brominated Flame Retardants | Bag filter exhaust from the cyclone | No limit set | -- | Annually or as agreed in writing with the Environment Agency | -- |
| | Dioxin-like PCBs | | No limit set | -- | Annually or as agreed in writing with the Environment Agency | EN1948-1, -2 and -4 |
| | Dust | | 5 mg/Nm$^3$ | -- | Every 6 months or as agreed in writing with the Environment Agency | EN13284-1 |
| | Metals (including As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V) | | No limit set | -- | Annually or as agreed in writing with the Environment Agency | EN14385 |
| | Dioxins | | No limit set | -- | Annually or as agreed in writing with the Environment Agency | -- |
| Grinding Units 1 (A5), 2 (A7) and 3 (A8) and Process Unit Exhaust – Separation Unit (A6) As shown on drawing number IES-00-L00645 | TVOCs | Bag filter exhaust from the cyclone | -- | -- | Every 6 months or as agreed in writing with the Environment Agency | -- |

Note that none require continuous monitoring.

It is proposed that the same monitoring requirements for ALL parameters (1. Brominated flame retardants; 2. Dioxin-like-PCBs; 3. **Dust;** 4. Metals; 5. Dioxins and 6. TVOC) are applied to ALL the new exhausts (A09-A13 – see updated emissions points drawing # 031_A96 in Appendix B) included as part of this variation as these were based on the detailed BAT review (see again specific BAT assessment – Appendix N) as previously undertaken.

The sampling locations for the periodic monitoring of emissions to air in each of these 10 exhaust stacks (5 existing process, 2 new for existing process and 3 new process) will be in accordance with the requirements of Agency Technical Guidance Note M1: Sampling requirements for stack emission monitoring.

### 8.2 Monitoring of process variables

For both the new and existing mechanical processes, the amount of waste material processed, the residue streams for disposal produced and the metals recovered will be continually monitored – along with the internal energy usage (to evaluate installation efficiency).

### 8.3 Monitoring of emissions to sewer and surface water

Both the new and existing mechanical processes are dry processes. The new mechanical processes does include a sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling. However, the water within the sink float tank will be re-circulated within the system.

### 8.4 Monitoring of waste emissions

As the installation (including both the new and existing mechanical processes) is likely to be handling Persistent Organic Pollutants (POPs) waste, then any residue streams arising from the processing of such waste (which have been identified as such as part of the waste acceptance procedures) will automatically be deemed to be POPs waste and will be sent for disposal at a facility to ensure that they are processed in a manner which leads to the destruction or irreversible transformation of the POP (in accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants). As such (due to this automatic designation as POPs waste and assignment for this specific disposal route, these residue streams will not be sampled

further prior to dispatch from the installation). It is also important to note that any plastics arising from processing of such waste will NOT be sent to the sink float plastic separation system and as such (due to this automatic designation as POPs waste and assignment for this specific disposal route, these residue streams will not be sampled further prior to dispatch from the installation).

As described previously, the sink float plastic density separation system will be utilised in order to separate the Polethylene (PE) plastic component from the PVC plastic component from the plastic recovered for recycling from the new mechanical process. The water within the sink float tank (there will be no other chemical additions required) will be recirculated within the system. However, should the water at any time need replacing then the water within the tank will be tested and then tankered to an authorised facility for destruction or to sewer depending upon the analytical results.

All other residues streams will be sampled prior to dispatch from the installation and analysed for specific determinands to be agreed with the EA. Frequency of such analysis is also to be agreed with the EA.

**8.5 Amenity monitoring**

General amenity monitoring will be undertaken each working day with activities on the installation monitored by personnel as they carry out their duties.

Any loss of containment, spillages, litter, unacceptable odours or other impacts will be noted and action to prevent such occurrences taken as soon as possible. A record will be made of any such incidents and any corrective actions taken in the site diary.

Boundary monitoring will be undertaken each day by suitably trained personnel and wind speed and direction at the installation will be recorded.

Any litter found during daily monitoring will be removed as soon as practicable and within 24 hours of any deposit being noted.

## 9 Resource efficiency and climate change

### 9.1 Energy supply, utilisation and export

Energy consumption is presented in Tables 7 & 8 below.

**Table 7: Estimated delivered and primary energy consumption**

| Energy source | Energy consumption | | |
|---|---|---|---|
| | Delivered (MWh) | Primary (MWh) | % of total |
| **Existing Mechanical Process** | | | |
| Electricity | 1.42 | 1.42 | 22% |
| **New Mechanical Processes** | | | |
| Electricity | 5.02 | 5.02 | 78% |
| **TOTAL** | **6.44** | **6.44** | **100%** |

**Table 8: Energy Breakdown**

| Equipment | Electrical Consumption | Percentage of Overall Electrical Consumption |
|---|---|---|
| **Existing Mechanical Process** | | |
| Feedstock Preparation Unit | 0.215 MWe | 3.3% |
| Wire Grinding Unit #1 | 0.34 MWe | 5.3% |
| Wire Grinding Unit #2 | 0.34 MWe | 5.3% |
| Wire Grinding Unit #3 | 0.34 MWe | 5.3% |
| Separation Unit | 0.155 MWe | 2.4% |
| Waste Handling Systems | 0.025 MWe | 0.4% |
| SUB-TOTAL | 1.415 MWe | 22% |
| **New Mechanical Processes** | | |
| Pre-Shredder | 1.00 MWe | 15.5% |
| Granulation Unit #1 | 1.50 MWe | 23.3% |
| Separation Unit #2 | 0.50 MWe | 7.8% |
| Granulation Unit #1 | 1.50 MWe | 23.3% |
| Separation Unit #2 | 0.50 MWe | 7.8% |
| Waste Handling Systems | 0.02 MWe | 0.3% |
| SUB-TOTAL | 5.02 MWe | 78% |
| **TOTAL** | **6.44 MWe** | **100%** |

### 9.1.1 Specific energy consumption

Specific energy consumption information (Maximum MWe) is detailed in Table 9 below.

**Table 9: Specific energy consumption**

| Energy Source | Per annum MWhrs | Per tonne waste processed | Per MWh exported |
|---|---|---|---|
| **Existing Mechanical Process** | | | |
| Electricity consumption of process (1.415 MWe) | 7,075 (A) | 0.24 | - |
| Notes: Assumes 5,000 hours operational and 30,000 tonnes / year waste input. | | | |
| **New Mechanical Processes** | | | |
| Electricity consumption of process (5.02 MWe) | 35,178 (B) | 0.42 | - |
| Notes: Assumes 7,008 hours operational and 84,091 tonnes / year waste input. | | | |
| **TOTAL** | A + B | | |
| Electricity consumption of all processes (6.44 MWe) | 42,253 | 0.37 | - |
| Notes: Assumes total waste input of 114,091 tonnes / year | | | |

## 9.2 Measures for improving energy efficiency

In order to use energy efficiently in the mechanical processes (both existing and new), both of the techniques listed within BAT 23 of the BAT conclusion document for this activity (see Appendix N) will be used i.e. an energy efficiency plan to define and calculate the specific energy consumption of the activity, setting key performance indicators and planning periodic improvement targets; an energy balance record which (in this case because the sole energy input is electrical) will incorporate energy flow information showing how the energy is used throughout the process.

## 9.3 Energy savings due to metals recovered from the facility

The existing mechanical process enables the recovery of 11,400 tonnes / year of metals and the new mechanical processes enable the recovery of 40,364 tonnes / year of metals - avoiding their production from primary sources i.e. ores, which are highly energy intensive processes.

The energy saved by the facility as a whole therefore through the avoidance of production of copper, aluminium and steel from primary sources can be quantified as follows:

Existing mechanical process:

- Up to 5,700 tonnes / year of Copper
- Up to 2,850 tonnes / year of Aluminium
- Up to 2,850 tonnes / year of Steel

SUB-TOTAL: 11,400 tonnes / year of Metal

New mechanical process:

- Up to 36,159 tonnes / year of Copper
- Up to 4,205 tonnes / year of Steel

SUB-TOTAL: 40,364 tonnes / year of Metal

**Table 10: Energy savings from metals recovery**

| Energy required to produce metal from primary source | | | Energy required to replace metals currently landfilled each year |
|---|---|---|---|
| **Metal** | **MMBtu/ton** | **MW-hr/tonne** | **MW-hr** |
| **Existing mechanical process** | | | |
| Copper | 35[29] | 11.3[30] | 64,410 |
| Steel | 12.6[31] | 4.1 | 11,685 |
| Aluminium | - | 14[32] | 39,900 |
| Total MW-hr saved / year | | | 115,995 |
| Total MW saved: 115,995/5,000 annual operational hours | | | 23.20 (A) |
| **New mechanical processes** | | | |
| Copper | 35 | 11.3 | 408,597 |
| Steel | 12.6 | 4.1 | 17,240 |
| Total MW-hr saved / year | | | 425,837 |
| Total MW-hr saved: 425,837/7008 annual operational hours | | | 60.77 (B) |
| **TOTAL** | | | |
| Copper | 35 | 11.3 | 473,007 |
| Steel | 12.6 | 4.1 | 28,925 |
| Aluminium | - | 14 | 39,900 |
| Total MW-hr saved / year | | | 541,832 |
| Total MW-hr saved (A + B) | | | 83.97 |

## 9.4 $CO_{2e}$ savings from the facility

The existing mechanical process and the new mechanical processes at the facility also generate substantial $CO_{2e}$ savings when compared with landfilling of the waste that they process which is what would occur should such processes not be in place as shown in Table 11 – Table 13 below.

$CO_{2e}$ from metals production / recovery

The facility also enables the metals within the waste to be recycled; without the facility the metals would be landfilled as part of the waste. To replace these lost metals through the smelting of primary metals would produce up to 10.15 tonnes of $CO_{2e}$ per hour (50,730 tonnes of $CO_{2e}$ per year or 1,014,600 tonnes of $CO_{2e}$ per lifetime) for the existing process and up to 17.11 tonnes of $CO_{2e}$ per hour (119,914 tonnes of $CO_{2e}$ per year or

[29] http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_copper_WB/$FILE/copper_PPAH.pdf
[30] 35/0.9072 = 38.58 MMBtu/tonne = 38.58/3.412 = 11.3 MW-hr/tonne
[31] http://www.climatevision.gov/pdfs/Saving_1005.pdf
[32] http://www.recyclenow.com/why_recycling_matters/how_is_it_recycled/aluminium/aluminium_the.html

2,398,276 tonnes of $CO_{2e}$ per lifetime) for the new mechanical processes. The total savings therefore for the whole facility then being – 27.26 tonnes of $CO_{2e}$ per hour (170,644 tonnes of $CO_{2e}$ per year or 3,412,876 tonnes of $CO_{2e}$ per lifetime) as shown in Table 11 below.

**Table 11: $CO_{2e}$ from metals production / recovery**

| Metal supply type | Metal supplied Tonnes / hour | $CO_{2e}$ released through production of metal | | |
|---|---|---|---|---|
| | | Tonnes / hour | Tonnes / year | Tonnes / lifetime* |
| **Existing Mechanical Process** | | | | |
| Production from smelting of primary metals | 2.28 | 10.15 | 50,730 | 1,014,600 |
| Recycled from waste | 2.28 | - | - | - |
| Difference | - | 10.15 | 50,730 | 1,014,600 |
| **New Mechanical Processes** | | | | |
| Production from smelting of primary metals | 5.76 | 17.11 | 119,914 | 2,398,276 |
| Recycled from waste | 5.76 | - | - | - |
| Difference | - | 17.11 | 119,914 | 2,398,276 |
| **Total** | | | | |
| Production from smelting of primary metals | 8.04 | 27.26 | 170,644 | 3,412,876 |
| Recycled from waste | 8.04 | - | - | - |
| Difference | - | 27.26 | 170,644 | 3,412,876 |

*Based on a twenty year lifetime

$CO_{2e}$ from transport movements

Without the facility, the waste feeds to both the existing and new mechanical processes would be disposed of to landfill.

For the existing mechanical process, this means that the potential to dispose of 30k TPA of waste to landfill is reduced to a disposal of 18.6k TPA of waste residues following recovery of recyclates in he process.

For the new mechanical processes, this means that the potential to dispose of 84,091 TPA of waste to landfill is reduced to a disposal of up to 43,727 TPA of waste residues (assumes all plastics sent for disposal) following recovery of recyclates in the process.

**Table 12: $CO_{2e}$ from transport movements – existing and proposed**

| Waste process | Tonnes / year | No. of truck journeys / year | $CO_{2e}$ released | | |
|---|---|---|---|---|---|
| | | | Tonnes / hour | Tonnes / year | Tonnes / lifetime* |
| **Existing mechanical process** | | | | | |
| Straight to landfill | 30,000 | 1,500 | 0.0087 | 43.5 | 870 |
| Residues for disposal | 18,600 | 930 | 0.0054 | 27 | 540 |
| Difference | 11,400 | 570 | 0.0033 | 16.5 | 330 |
| **New mechanical processes** | | | | | |
| Straight to landfill | 84,091 | 4,204 | 0.0244 | 170.9 | 3,418 |
| Residues for disposal | 43,727 | 2,186 | 0.0127 | 88.9 | 1,777 |
| Difference | 40,364 | 2,018 | 0.0117 | 82.0 | 1,641 |
| **Total** | | | | | |
| Straight to landfill | 114,091 | 5,704 | 0.0331 | 214.4 | 4,288 |
| Residues for disposal | 62,327 | 3,116 | 0.0181 | 115.9 | 2,317 |
| Difference | 51,764 | 2,588 | 0.0150 | 98.5 | 1,971 |

* Based on a twenty year lifetime

Summary of potential carbon reductions from the proposed facility

When the individual carbon reductions above are combined, the existing mechanical process offers potential carbon reductions of over 1,000,000 tonnes of $CO_{2e}$ over its lifetime compared to landfilling as shown in Table

13 below. As can be seen from this table also, when adding the new mechanical processes as proposed within this variation application, total potential carbon reductions for the facility increase this further by nearly 2,500,000 tonnes to 3.4 Million tonnes of $CO_{2e}$ over the lifetime of both the existing and proposed new mechanical processes compared to landfilling.

**Table 13: Carbon efficiency summary table**

| Process | $CO_{2e}$ released | | |
|---|---|---|---|
| | Tonnes / hour | Tonnes / year | Tonnes / lifetime* |
| **Landfill** | | | |
| 2.28 tonnes/hr metal production from primary metals | 10.15 | 50,730 | 1,014,600 |
| Truck journeys – landfill disposal | 0.0087 | 43.5 | 870 |
| Total | 10.16 | 50,773.5 | 1,015,470 |
| **Existing Mechanical Process** | | | |
| 2.28 tonnes/hr metal recycling | - | - | - |
| Truck journeys - disposal | 0.0054 | 27 | 540 |
| Total existing development | 0.0054 | 27 | 540 |
| Difference between landfill and existing | 10.15 | 50,746.5 | 1,014,930 |
| **Landfill** | | | |
| 5.76 tonnes/hr metal production from primary metals | 17.11 | 119,914 | 2,398,276 |
| Truck journeys – landfill disposal | 0.0244 | 170.9 | 3,418 |
| Total | 17.134 | 120,084.9 | 2,401,694 |
| **New Mechanical Processes** | | | |
| 5.76 tonnes/hr metal recycling | - | - | - |
| Truck journeys - disposal | 0.0127 | 88.9 | 1,777 |
| Total new development | 0.0127 | 88.9 | 1,777 |
| Difference between landfill and new | 17.1213 | 119,996 | 2,399,917 |
| **Landfill** | | | |
| 8.04 tonnes/hr metal recycling | 27.26 | 170,644 | 3,412,876 |
| Truck journeys – landfill disposal | 0.0331 | 214.4 | 4,288 |
| Total | 27.2931 | 170,858.4 | 3,417,164 |
| **Total** | | | |
| 8.04 tonnes/hr metal recycling | - | - | - |
| Truck journeys - disposal | 0.0181 | 115.9 | 2,317 |
| Total existing and new development | 0.0181 | 115.9 | 2,317 |
| Difference between landfill and existing and new | 27.275 | 170,742.5 | 3,414,847 |

## 9.5 Global warming potential

Unlike the incineration activity which has now ceased operation, there are no direct $CO_2$ emissions from either the existing or new mechanical processes.

### 9.6 Energy efficiency plan

Energy use will be regularly reviewed in accordance with the guidance given in Horizontal Guidance Note H2 and development of an energy efficiency and action plan will be addressed in operating procedures forming part of the installation's management system.

The energy efficiency plan will be prepared within two years of the commencement of operations and will be reviewed and updated at least every four years thereafter.

### 9.7 Summary

The measures outlined above comply with the indicative BAT requirements for Basic Energy Requirements given in Sector Guidance Note S5.06[33] and How to comply with your Environmental Permit EPR 1.00. The techniques listed within BAT 23 of the updated BAT conclusion document for the existing and new mechanical processes (see Appendix N) will also be used to enable energy to be utilised efficiently.

### 9.8 Efficient use of raw materials and water

Raw materials used in the installation have been described in section 5.5.

#### 9.8.1 Feedstock homogeneity

[33] Also section 8.1 of https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/3-waste-pre-acceptance-acceptance-and-tracking-appropriate-measures

The nature of the incoming waste material to both the existing and new mechanical processes means that it will be relatively stable in terms of composition & handling (The waste feed will be predominantly provided by EMR's own sites (otherwise from other suitably permitted approved authorised treatment facilities)). The feedstock therefore meets the indicative BAT requirements in sector guidance note EPR5.06.

### 9.9 Minimising water use

Both the new and existing mechanical processes are dry processes.

The new mechanical processes include a sink float density plastic separation system in order to separate the PE and PVC fractions of the plastic recovered for recycling but the water within the sink float tank will be re-circulated within the system thus minimising water use.

As a further measure for minimising water use, rainwater generated from the site is collected and used in the adjacent facility operated by EMR.

The installation therefore meets the indicative BAT requirements for minimising water use.

## 10. Part C3 Q3a1 – Changes to Table 1.2 (From Existing Permit)

Existing Permit -

| Table S1.2 Operating techniques | | |
|---|---|---|
| **Description** | **Parts** | **Date Received** |
| Response to Schedule 5 Notice dated 17/06/14 | Responses to:<br>Item 8 (Bund Capacity) | 04/07/14 |
| Application | Application Form Parts A and F1<br>Noise Management Plan - reference 1700339 and dated October 2019 | 18/11/2019 |
| Response to request for more information | Appendix A – PCCW Drawing (reference IES-00 0 00-L00610)<br>Appendix B – Emergency Plan/Sensitive Receptors Drawing<br>Appendix C - Fire Environmental Risk Assessment (referenced H2001-IES)<br>Appendix D – Legato Fire Wall Specifications<br>Appendix F – IES Site Drainage Plan<br>Noise Impact Assessment – Letter Report addendum dated 20th March 2020.<br>Emissions Point Drawing (referenced IES-00 0 00-L00645) | 26/03/2020 |
| Response to request for more information | The following documents and management plans:<br>• BAT Assessment;<br>• Updated Supporting Statement (updated June 2020);<br>• Fire Prevention Plan (version 6). | 05/06/2020 |
| | Application Forms Parts C2 and C3 as updated (all Parts). | 12/06/2020 |

| Reference within Table S1.2 'Operating Techniques' of Existing Permit | Change/unchanged etc. | Further details |
|---|---|---|
| Response to Schedule 5 Notice dated 17/06/14 | Item 8 (Bund capacity) - **Unchanged** | - |
| Application | Application Form Parts A and F1 – **Both Updated**<br><br>Noise Management Plan – reference 1700339 and dated October 2019 - **Updated** | Updated forms included in Appendix A to the Supporting Statement<br><br>Updated NMP included in Appendix I to the Supporting Statement |
| Response to request for more information | Appendices A – F – **Updated** | All of these appendices relate to those included as part of the original Fire Prevention Plan. The Fire Prevention Plan has been updated and |

| | | |
|---|---|---|
| | | is included in Appendix O to the Supporting Statement |
| | Noise Impact Assessment – **Updated** | Updated NIA included in Appendix I to the Supporting Statement |
| | Emissions Points Drawing - **Updated** | Updated emissions points drawing (Drawing #: 031_A96) included in Appendix B to the Supporting Statement |
| Response to request for more information | BAT Assessment – **Updated** | Updated BAT Assessment included in Appendix N to the Supporting Statement |
| | Updated Supporting Statement – **Updated** | Updated and included here |
| | Fire Prevention Plan – **Updated** | The Fire Prevention Plan has been updated and is included in Appendix O to the Supporting Statement |
| | Application Form Parts C2 and C3 – **Both Updated** | Updated forms included in Appendix A to the Supporting Statement |