Main Installation Report (Substantial Variation) Celsa Manufacturing (UK) Ltd, Tremorfa New Melt Shop. Tremorfa Works, Seawall Road, Cardiff, CF24 5TH Permit Ref: EPR/TP3639BH

On behalf of:
Celsa Manufacturing (UK) Ltd

Project Reference:
021-1892

Revision:
REV01

Date:
March 2023

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Revision	**Date**	**Author(s)**	**Authorised by**	**Reason for Change**
00	20/07/22	MS	SPR	First issue to Client
01	02/03/23	MS	SPR	Amendments due to proposed Cardiff Council improvements to Rover Way

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Photographs

Abbreviations

AST	Above Ground Storage Tank
ASR	Application Site Report
BAT	Best Available Technique
BGS	British Geological Survey
BREF	Best Available Techniques Reference Documents
DEFRA	Department for Environment Food and Rural Affairs
EA	Environment Agency
EAME	Earth & Marine Environmental Consultants Ltd
EMS	Environmental Management System
EPR	Environmental Permit
FCA	Flood Consequences Assessment
FRA	Flood Risk Assessment
FPMP	Fire Prevention Mitigation Plan
IPPC	Integrated Pollution Prevention and Control
IBC	Intermediate Bulk Container
mg/l	milligrams per litre
NGR	National Grid Reference
NRW	Natural Resources Wales
Opra	Operational Risk Appraisal
PPE	Personal Protective Equipment
PPM	Planned Preventative Maintenance

SAB	Sustainable Drainage Approval Body
SCR	Site Condition Report
SINC	Sites of Interest for Nature Conservation
SuDS	Sustainable Drainage Systems
SSSI	Site of Special Scientific Interest
µg/l	micrograms per litre
WFD	Water Framework Directive

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1 Introduction

1.1 Background

This document has been prepared by Celsa Manufacturing (UK) Ltd ("Celsa") and its environmental consultant Earth & Marine Environmental Consultants Ltd ("EAME") in support of a substantial permit variation as required under Regulation 20 (variation) of the *Environmental Permitting (England and Wales) Regulations 2016* in relation to current activities and proposed activities to be undertaken at Tremorfa New Melt Shop. Tremorfa Works, Seawall Road, Cardiff, CF24 5TH (Permit No. EPR/TP3639BH).

An environmental permit application is required where an operator carries out certain prescribed activities, namely installations that undertake Schedule 1 activities, a waste operation, or a mobile plant (carrying out either one of the Schedule 1 activity or a waste operation). The status log (history) for the permit is outlined in ***Table 1-1***.

The Authorised company contact is Hannah Powell (Celsa Manufacturing (UK) Ltd, Environmental Manager). A letter authorising this application is provided as an attachment.

The document represents the Main Application Report submitted as part of the application package to the NRW (EAME Ref. 021-1892).

Table 1-1: *New Melt Shop permit log (main events)*

Description	Date	Comments
Application TP3639BH.	Received 15/10/2004	-
Permit determined (TP3639BH).	03/05/2005	-
Variation and consolidation (**EPR/TP3639BH/V002**).	24/04/2012	Varied and consolidate permit issued in modern format. The following permits have been consolidated: EPR/TP3639BH, EPR/BU2098IP and EPR/WP3699FQ.
Regulation 6(1) notice of request for more information.	03/09/2013	-
Regulation 60(1) response received.	30/04/2014	Implementation of BAT conclusions under IED.

Description	Date	Comments
Natural Resources Wales Iron and Steel Sector Review 2014 permit EPR/3639BH. Variation issued **EPR/TP3639BH/V003**.	17/11/2015	Varied and consolidated permit issue in modern IED condition format.
Application PAN-000449. Variation determined **EPR/TP3639BH/V004**.	20/07/2016	Application to vary permit to add waste codes.
Application PAN-001189. Variation determined **EPR/TP3639BH/V005**.	24/01/2017	Application to increase millscale storage capacity.
Application for variation PAN-001610. Variation determined **EPR/TP3639BH/V006**.	20/06/2017	Application to add mechanical shearing to permitted activities as part of scrap metal pre-treatment.
Application for variation PAN-005161. Variation determined **EPR/TP3639BH/V007**.	08/07/2019	Application to increase the shearing scrap metal limit to 5000 tonnes per month.
Application for variation **EPR/TP3639BH/V008** (PAN-005485). Schedule 5 notices. Variation determined EPR/TP3639BH/V008	07/02/2020	Application to consolidate waste permit EPR/DP3699FM, add integrated recycling centre, remove Carbon Monoxide limit and update/increase permit boundary.
Variation application EPR/TP3639BH/V009 (PAN-008611). Schedule 5 notices. Variation determined **EPR/TP3639BH/V009**.	05/05/2020	Application to add asphalt plant and slag processing

1.2 Pre-Application Advice and Consultation

A request for preapplication advice for an environmental permit activity was submitted to NRW on 17/03/2022 via the NRW website[1]. A formal response was received on 21/03/22 (NRW Ref. WPCC11752, Our Ref. PPN-00745).

The current NRW site inspector (Richard Taylor) was contacted by email on 31/03/22. Advice and comments have been incorporated into this variation. A copy of the NRW email is provided as an attachment.

1 https://naturalresources.wales/permits-and-permissions/environmental-permits/pre-application-advice-for-environmental-permits/?lang=en

Further advice was provided by NRW within a letter (Ref. PAN-018725, EPR/TP3639BH/V010) and during a conference call on 09/02/2023. A copy of Celsa's response is provided as an attachment.

1.3 Permit Boundary

The current permit boundary is outlined in Schedule 7 of the environmental permit. The permit boundary is reproduced in ***Figure 1-1***.

Figure 1-1: *Current New Melt Shop permit boundary (Schedule 7 – Site Plan)*

No revision to the existing permit boundary is required for this variation as all proposed activities will occur fully within the existing permit boundary. If, at some time in the future,

Cardiff Council propose to implement the Rover Way improvement scheme Celsa will apply for and amend the permit boundary. As no timescale for the Rover Way improvement scheme has been stated Celsa would propose to maintain the current permit boundary. This approach was discussed with NRW (09/02/23) and it was agreed as acceptable.

1.4 Technical Standards

The application has been produced in accordance with Natural Resources Wales (NRW), Environment Agency (EA) and Department for Environment, Food & Rural Affairs (Defra) current guidance. Celsa has applied the following Appropriate Measures as representing Best Available Techniques (BAT) for the sector and the proposed activity (***Table 1-2***).

Table 1-2: *Technical Standards and Guidance (Appropriate Measures)*

Type	Reference
EPR Guidance	NRW (2014). Guidance to help you comply with your Environmental Permit. Version 8. https://cdn.cyfoethnaturiol.cymru/media/2110/how-to-comply-with-your-environmental-permit.pdf?mode=pad&rnd=131467604540000000 UK Government (2021). Develop a management system: environmental permits. https://www.gov.uk/guidance/develop-a-management-system-environmental-permits
Horizontal Guidance	UK Government (2016). Risk assessments for specific activities: environmental permits, https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmental-permits UK Government (2019). Guidance Energy efficiency standards for industrial plants to get environmental permits. https://www.gov.uk/guidance/energy-efficiency-standards-for-industrial-plants-to-get-environmental-permits UK Government (2022). Guidance Noise and vibration management: environmental permits. https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits UK Government (2011). Guidance Environmental permitting: H4 odour management. https://www.gov.uk/government/publications/environmental-permitting-h4-odour-management NRW (2014). Guidance for applicants H5 Site condition report – guidance and templates. https://cdn.cyfoethnaturiol.cymru/media/1215/environmental-permitting-regulations-guidance-for-applicants-h5-site-condition-report-guidance-and-template.pdf

Type	Reference
BREFs	**Iron and Steel** European Commission (2013). Best Available Techniques (BAT) Reference Document for Iron and Steel Production. https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/IS_Adopted_03_2012.pdf European Commission (2012). Establishing the best available techniques (BAT) conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for iron and steel production. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012D0135&from=EN **Waste** European Commission (2018). Best Available Techniques (BAT) Reference Document for Waste Treatment. https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/JRC113018_WT_Bref.pdf European Commission (2018). Establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN
Monitoring	NRW (2014). Technical Guidance Note M1 (Monitoring) Sampling requirements for stack emission monitoring. https://cdn.cyfoethnaturiol.cymru/media/2127/technical-guidance-note-m1-monitoring-sampling-requirements-for-stack-emission-monitoring.pdf?mode=pad&rnd=131463298300000000 NRW (2004). Technical Guidance Note M18 (Monitoring) Monitoring of discharges to water and sewer. https://cdn.cyfoethnaturiol.cymru/media/2109/technical-guidance-note-m18-monitoring-monitoring-of-discharges-to-water-and-sewer.pdf?mode=pad&rnd=131468463810000000 NRW (2014). Technical Guidance Note M15 (Monitoring) Monitoring PM10 and PM2.5. https://cdn.cyfoethnaturiol.cymru/media/2126/technical-guidance-note-m15-monitoring-monitoring-pm10-and-pm25.pdf?mode=pad&rnd=131466562310000000 UK Government (2014). Guidance M17 monitoring of particulate matter in ambient air around waste facilities. https://www.gov.uk/government/publications/m17-monitoring-of-particulate-matter-in-ambient-air-around-waste-facilities

Type	Reference
Sector Guidance	NRW (2017). Fire Prevention & Mitigation Plan Guidance – Waste Management, Guidance Note 16, Document Owner: Regulatory Business Board, Version 2.0, August 2017. https://cdn.cyfoethnaturiol.cymru/media/684379/guidance-note-16-fire-prevention-mitigation-plan-english.pdf?mode=pad&rnd=131654969480000000 NRW (2014). Metal Recycling Industry Environment Management Toolkit Waste Sector - Metal Recycling Sites, Version 2.0, October 2014. EA (2013). S5.06 Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste, Version 5, May 2013. UK Government (2021). Treating metal waste in shredders: appropriate measures for permitted facilities. https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities

1.5 Application Package

The application package includes completed application forms that are cross-referenced to various technical documents, which are intended to address all the areas required by the variation application. The various documents included with this application package are outlined within **Table *1-3***.

Table 1-3: *Application Documents*

Type	Reference
Air and Noise Model Files	ADMS Files E3195 - Noise Model_200522
Application Forms	021-1892 Part A (Version 1, July 2016), 021-1892 Part C2 (Version 2, October 2018) 021-1892 Part C3 (Version 2, October 2018) 021-1892 Part F1 (Version 3, October 2018)

Type	Reference
BAT and Impact Assessments	021-1892 Boundary Dust Monitoring Survey FINAL 021-1892 Celsa Cardiff Variation - BAT Assessment REV01 021-1892 Celsa Cardiff Variation - Fugitive Dust Assessment REV00 021-1892 Celsa Cardiff Variation – General Risk Assessment REV01 021-1892 Celsa Shredder AQ Risk Assessment REV02 021-1892 E3195 - Celsa Noise Impact Assessment Report_v1-1
Certification	Celsa BES 6001 Certificate Celsa ISO 45001 Certificate Celsa ISO9001 Certificate Celsa ISO14001 Certificate Celsa Suststeel Certification
Consultation	021-1892 Cardiff Council ES Screening Opinion 021-1892 NRW Consultation March 2022 021-1892 PPN-00745 - Pre-app Acknowledgement Letter 021-1892 Celsa Shredder NRW Response March 2023 REV00
Drainage Strategy	21121 C01 Rev A Site Location Plan 21121 C02 Rev C Existing Site Plan 21121 C03 Rev I Proposed Site Plan 21121 C04 Rev D Proposed Drainage Plan 21121 C09 Rev B Proposed Drainage Plan - Shredder Yard Area 21121 C10 Rev B Proposed Drainage Plan - Amenity Block 21121 C11 Rev B Proposed Drainage Plan - Road Area 1 21121 C12 Rev B Proposed Drainage Plan - Road Area 2 21121 C13-1 Rev B Proposed Drainage Catchment Plan 21121 C14 Rev C Fire Water Containment Plan 21121 C15 Rev B Drainage Construction Details 230217 21121 Issue 3 Scrap Handling Facility, Tremorfa - Drainage Strat Flood Consequence Assessment Filter Media - Aqua-X-change-Datasheet
Ecology Survey	Celsa Shredder PEA April 2022 Celsa Shredder ecology addendum letter Jan 2023

Type	Reference
Equipment Technical Data	021-1892 Emission Point A11 Stack Design REV00 021-1892 Shear-LIDEX 1000 tonne Technical Specs
Figures and Plans	021-1892 Figure A1 Site Location REV00 021-1892 Figure A2 Permit Boundary REV00 021-1892 Figure A3 Proposed Site Layout REV01 021-1892 Figure A4 Proposed Shredder Layout REV01 021-1892 Figure A5 Scrap Metal Shear Layout REV00 021-1892 Figure A6 Drainage and Surfacing REV01 021-1892 Figure A7 Surrounding Receptors REV00 021-1892 Figure A8 Schedule 7 - Site Plan REV01 021-1892 Figure A9 Vehicle Tracking Layout REV00 021-1892 Figure A10 Proposed Elevations - Shredder REV00 021-1892 Figure A11 Proposed Amenity Block Plan and Elevations REV00 021-1892 Celsa NRW Designations and Access Map REV00 021-1892 Celsa NRW Flood Map for Planning REV00 021-1892 Celsa NRW Flood Risk Map Development Advice REV00 021-1892 Celsa NRW Flood Risk Map REV00
General Information	021-1892 Celsa Companies House Certificate 021-1892 Celsa Permit Application Authorisation
Main Installation Report	021-1892 Celsa Cardiff Variation - Installation Report REV01 021-1892 Celsa Cardiff Shredder Variation - EWC Codes REV00
Management Plans	ECPXX Shredder and Shear - Deflagration Management Plan - Rev 0 ECPXX Shredder and Shear - Dust Management Plan - Rev 0 ECPXX Shredder and Shear - Fire Prevention Management Plan - Rev 0 ECPXX Shredder and Shear - Noise and Vibration Management Plan - Rev 0 ECP59 - Tin Can Stockpile Management Procedure
Non-technical Summary	021-1892 Celsa EPR Normal Variation - NTS REV01
Opra Assessment	200505-V009-OPRA Profile-score 193

Type	Reference
Site Condition Report	021-1892 Celsa Cardiff Variation - SCR REV01 021-1892 Annex B Celsa SCR Geotechnical Report
Sustainability Assessments	Celsa Rod and Bar Mill - BREG EN EPD 000187 Celsa Section Mill - BREG EN EPD 000188 Celsa_UK_EMAS_Environmental_Statement_2021
Technical Competence	Carl Jones - WAMITAB Certificate Carl Jones -COTC- WAMITAB November 2022 Richard O'Neill - WAMITAB Certificate Richard O'Neill -COTC-WAMITAB March 2023

The above items should be regarded as constituting the variation application. In-line with the Form F1 guidance (Version 3, October 2018) the various application sections have been submitted via email to permitreceiptcentre@naturalresourceswales.gov.uk

The remainder of this document outlines the requirements requested by the NRW to progress the permit application.

1.6 Operational Risk Appraisal (Opra)

The fees associated with this variation application **(£22,388)** have been calculated using the current Opra spreadsheet (200505-V009-OPRA Profile-score 193). The current Opra assessment is provided (as required). All charges and bands have been checked with the current NRW Environmental Permitting Charging Scheme 2022/23 (effective from 1 April 2022).

1.7 Payment Details

Celsa Manufacturing (UK) Ltd has paid the application fee via BACS to the following account:

- Company name – Natural Resources Wales, Income Dept. PO Box 663, Cardiff, CF24 0TP
- Bank – RBS, National Westminster Bank PLC, 21/2 Devonshire Square, London, EC2M 4BA
- Sort code – 60-70-80
- Account number – 10014438

- Payment reference number – EPRCELSAMANU0001

Notification of payment has been sent (including reference number) to: banking.team@cyfoethnaturiolcymru.gov.uk.

2 Permitted Activities

2.1 Proposed Changes

This variation includes the following elements all located on the Rover Way site.

2.1.1 New fixed scrap metal shredder (Rover Way Site).

Status: This is a new proposed installation (stationary technical unit).

This activity should be captured as a new Part A activity under *The Environmental Permitting (England and Wales) Regulations 2016*, Schedule 1, Part 2 Activities, Section 5.4, Part A(1)(b)(iv) *i.e. Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC— (iv) treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components.*

At the time of the application the final supplier of the shredder equipment has not yet been selected. However, the proposed equipment (technical specifications) and operational procedures will be employed in all cases and does not impact or significantly alter the presented BAT assessment.

From a technology perspective shredding of materials is considered BAT as it reduces the volume and size of scrap metal (improves densification) whilst aiding the separation of ferrous from non-ferrous metals and other materials. The process also significant contributes to the Circular Economy Package (CEP) that introduced a revised legislative framework, identifying steps for the reduction of waste and establishing an ambitious and credible long-term path for waste management and recycling in Wales (Welsh Government, 2020) and throughput the UK.

2.1.2 New fixed shear (Rover Way Site)

Status: This is a replacement unit (mobile unit replaced by a fixed unit).

The current environmental permit was varied (EPR/TP3639BH/V006) in June 2017 to include the use of mobile scrap metal shear (maximum of 1,000 tonnes per month). Due to the nature of the scrap market and the size of the incoming materials the maximum monthly processing limit was increased to 5,000 tonnes (EPR/TP3639BH/V007).

The proposal is to cease use of the mobile shear (remove from Site) and create a new fixed shear installation (compound) on a new fully engineered impermeable surface. Celsa would also like additional flexibility and thus would like to increase the monthly limit to 7,000 tonnes.

Currently this area is occupied by the asphalt plant slag processing equipment. The proposal is to relocate this equipment within the Rover Way Site (*Section 2.1.4*).

As this is existing (permitted) operation no further information will be provided, however, the impact of the proposed fixed shear will be incorporated into the noise and vibration impact assessment.

Where oversized material arrives within a load this can be separated for processing using a hand-held oxypropane cutting kit. The oversize material shall be processed using a competent Celsa operator in an area located away from the main unprocessed and processed stockpiles.

2.1.3 New End-of-Life Vehicle (ELV) Depollution Station

Status: This is a new unit for a permitted activity that was never installed the site.

The current permit includes an ELV acceptance, storage, and processing area, although permitted, this activity has never been undertaken by Celsa. Celsa would like to revise the permit to include a new (BAT standard) ELV depollution station.

At the time of the application the final supplier of the equipment has not yet been selected. However, the proposed equipment (technical specifications) and operational procedures will be employed in all cases and does not impact or significantly alter the presented BAT assessment.

2.1.4 Movement of slag processing equipment (Rover Way Site)

Status: No new equipment is to be installed on-site. Redeployment only. Movement of emission points A6, A7, A8, A9 and A10.

The environmental permit was varied in May 2020 to include an asphalt plant (EPR/TP3639BH/V009). The asphalt plant uses a feedstock provided from a slag crushing and screening operation. Due to the proposed creation of the scrap metal shear compound, it is proposed to move the mobile slag processing equipment (*i.e.* one scalping screen, one cone crusher and a two 4-way finishing screens) to a new location on the Rover Way site. The new location will remain close to the asphalt plant to minimise transportation distances.

There are no proposed equipment changes. All current operational and management controls will remain in place.

NRW requested, during the May 2020 variation, that the equipment exhausts associated with the slag processing equipment be listed within the permit as emissions points A6 to A10. Given the proposed relocation of this equipment the Schedule 7 – Site Plan within the permit will need to be revised. The current Schedule 7 Site Plan is outlined within ***Figure 2-1*** and the proposed revised Schedule 7 Site plan (including revised and additional emission points) is outlined within **Figure *2-2***.

As this is existing (permitted) equipment no further information will be provided, however, the impact of the proposed redeployment will be incorporated into the noise and vibration impact assessment.

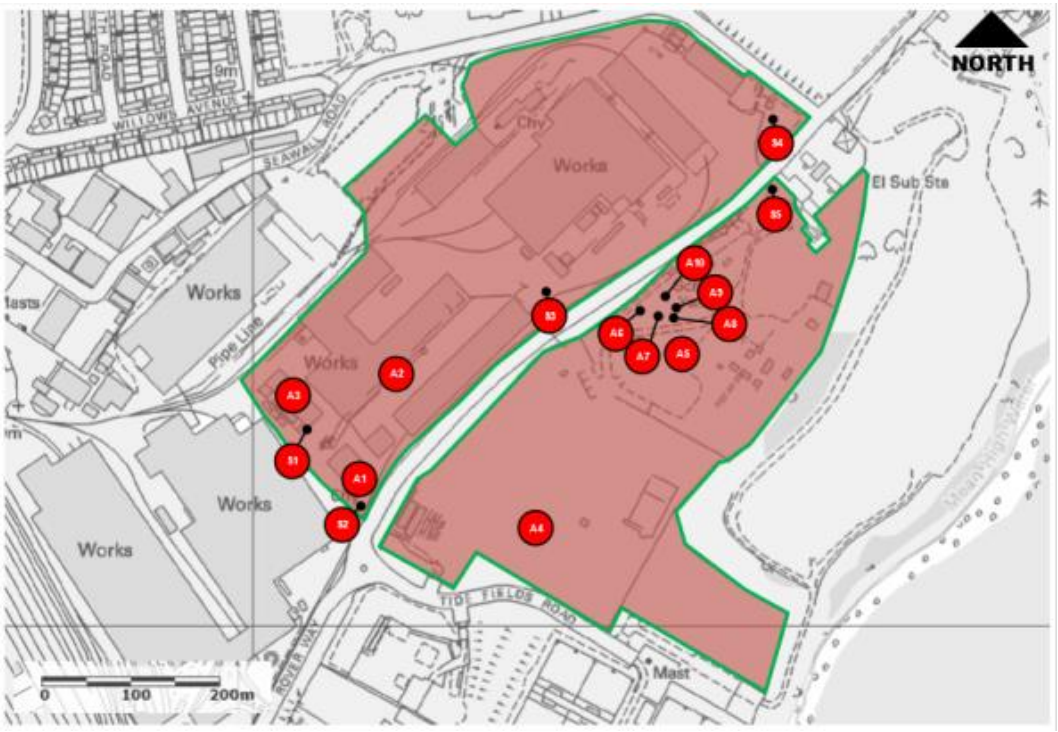

Figure 2-1: *Current Schedule 7 - Site Plan*

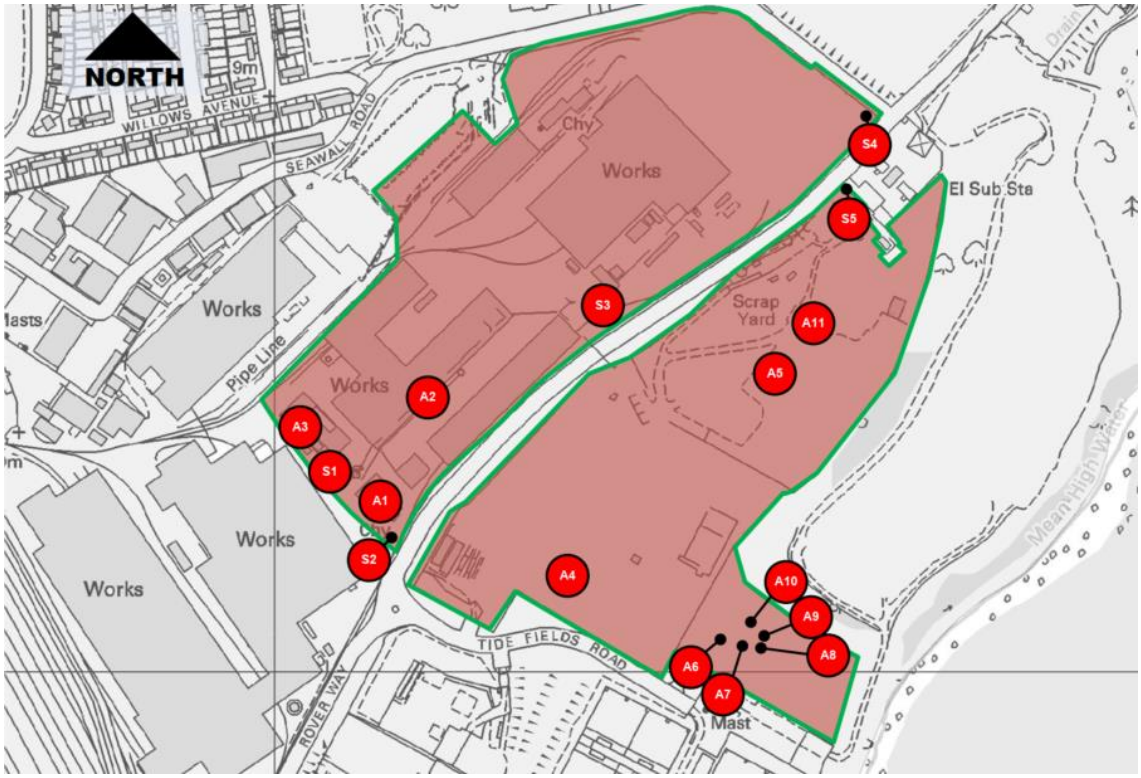

Figure 2-2: *Proposed revised Schedule 7 - Site Plan*

2.1.5 New car park and amenity block (Rover Way Site)

Status: Site improvements.

Given the extensive Rover Way developments Celsa would like to take the opportunity to re-organise employee and contractor amenities through the provision of a dedicated amenity block and employee car park. This will be located near to the current entrance to the site with Rover Way.

No specific information has been provided regarding this activity as it has limited effect on either pollution risk or emissions. However, drainage from this new area of hardstanding will be addressed within this report and the associated drainage strategy.

2.1.6 Improvement of internal roadways (surfacing) (Rover Way Site)

Status: Site improvements (in-line with BAT).

NRW is probably aware that the internal roadways within the Rover Way site are currently compacted but unsurfaced ground. Due to the increased internal movements and the

additional on-site processing capacity Celsa would like to improve (hard surface) the internal roadways between the Tide Fields Way site entrance and proposed shredder compound.

No specific information has been provided regarding this activity as it has limited effect on either pollution risk or emissions. However, drainage from this new area of hardstanding will be addressed within this report and the associated drainage strategy.

All proposed changes are located on the Rover Way site within the current permit boundary. There is adequate space for both the proposed operational plant and equipment and the necessary input and output waste streams. A formal Flood Consequence Assessment (FCA) has been undertaken as part of the planning application process; this is provided as an attachment.

The proposed location and extent of these activities and changes are outlined within ***Figure 2-3***.

2.2 Request for Permit Amendments

The current environmental permit (EPR/TP3639BH) includes several permitted requirements that are either no longer required or were not actually implemented by Celsa (**Table *2-1***).

Table 2-1: *Requested permit amendments*

Reference	Request and Justification
Schedule 7, Plan 3	**REMOVAL** – The permit contains a plan that shows an ELV acceptance, storage, and processing area. Although permitted this activity has never been undertaken by Celsa.
Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements	**REMOVAL** – The table refers to 'surface run off from the treatment and storage areas within the licensed areas of A11 A12. Discharge via a class one bypass interceptor in series with a class one full retention interceptor'. As the process was never installed the section is not applicable.
Table S4.1 Reporting of monitoring data	**REMOVAL –** The table refers to 'Discharge to soakaway on plan 3 in schedule 7 marked "15 – Sampling Point and Discharge Consented Point 1'. As the process was never installed the section is not applicable.

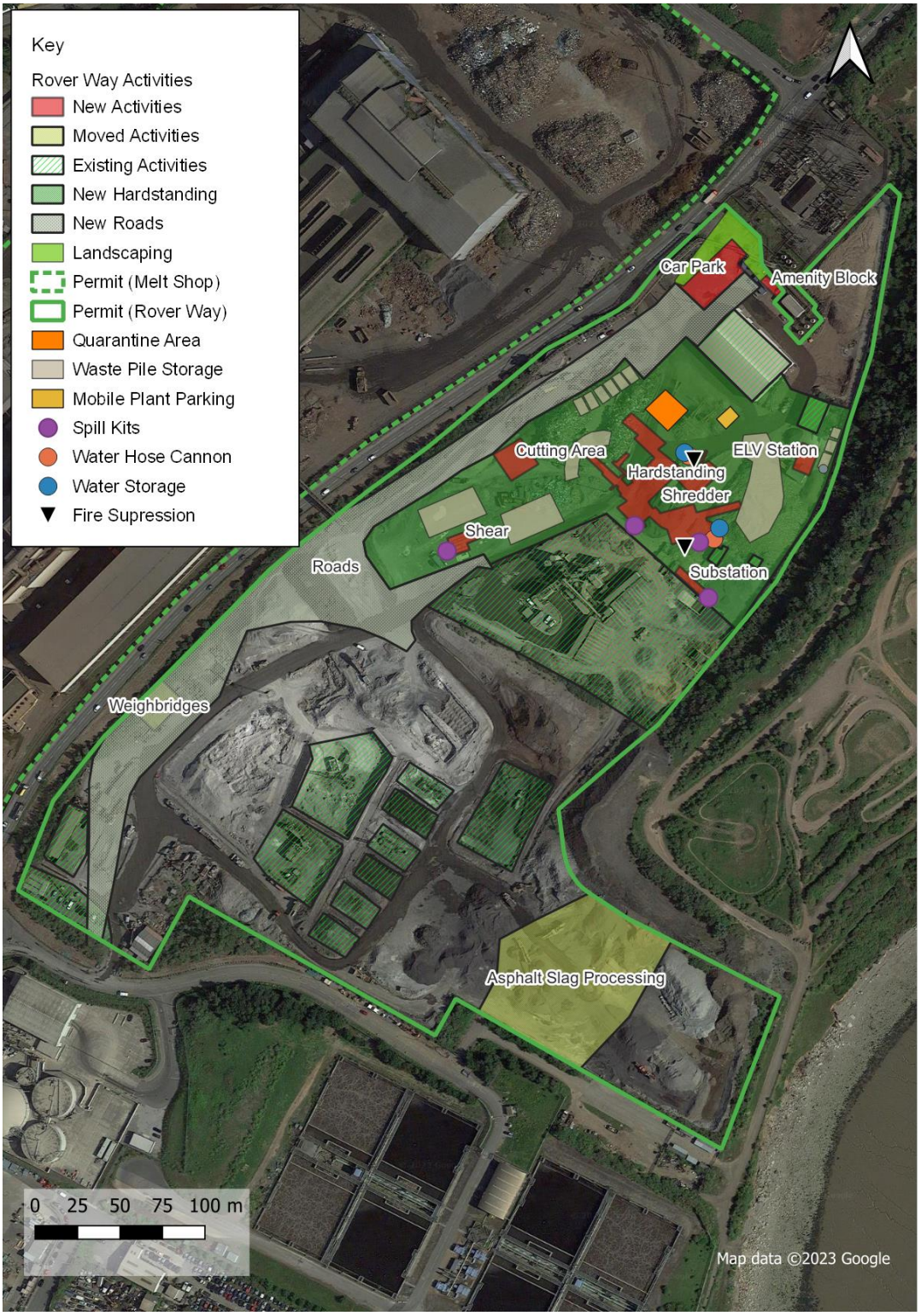

Figure 2-3: Proposed permit changes

3 Operations – Scrap Metal Shredder

3.1 Introduction

Shredding is the reduction of waste down to fist-sized lumps of metal. Out of the total scrap generated in the UK, 25% is processed using metal shredding plants. The first shredders started to appear in the UK around 30 years ago revolutionising the scrap industry. Today there are approximately 45 shredding plants operating in the UK making the UK world leaders in scrap processing technology. Shredding of metals increases speed of processing/volume throughput ensuring efficient processing. The plant will undertake:

- R13 (storage of waste pending any of the operations numbered R1 to R12); and
- R4 (recycling/reclamation of metals and metal compounds) activities.

In general, the shredding process will involve the following stages:

- **Incoming unprocessed materials** – General scrap metals (in-line with stated waste codes) are brought to the facility. The scrap is unloaded, manually sorted using tracked material handler/scrap picker and taken to the shredder plant input material storage area in readiness for processing.
- **Loading and infeed** – The scrap material is then fed by excavator grab onto the infeed conveyor of the plant.
- **Shredding** – The material is then shredded. The internal rotor breaks down the material under it is small enough to pass through a grid around the rotor. Baffle plates are arranged above the drum to facilitate enhanced shredding. Air containing particulate matter is dampened down with an automatic water injection system into the shredding chamber. The auto system only injects water when it is required by reading the load of the shredder, thus minimising water usage.
- **Sorting and cleaning** – Material that passes out of the shredder through the grids is fed onto an output conveyor. This material is a mixture of metal, rubber, foam, stone, wood, plastic *etc.* This material is fed into a cascade air chamber. This chamber is a zig zag in shape that allows the material to fall, banging on the sides, loosening the material which may be clumped together. Whilst the material is falling down the chamber, airflow is directed up through the material. This air flow takes all light materials (*e.g.* fluff, plastics, wood *etc.*) upwards and out of the chute. All heavy materials (mostly metals) fall down the chamber and are removed. The light fraction travels up the inlet duct and is carried

into a high efficiency cyclone, this separates the large pieces out of the air stream as shredder waste and the air then travels through a bag filter (c. 30,000 m^3/hr with ≤5 mg/Nm^3 particulates) to be cleaned before release to the atmosphere. Periodically the bag filter is cleaned by reverse jet pulse. The bag filter incorporates a continuous monitoring system that measures pressure differential and alarms if the filter efficiency decreases at all, to ensure that particulate emissions to atmosphere are maintained at <5mg/Nm^3. All captured particulates (from the cyclone and bag filter) are removed from the site for authorised off-site disposal.

- **Light fraction separation** – The light fraction separated by the air sifter is transferred via a covered conveyor and overband magnet to a sizing screen where various sizes are passed over eddy current separators. The non-ferrous metals separated by the eddy current separator are referred to as Zorba (*i.e.* mixed non-ferrous metals) and are stored in a dedicated bay for supply to off-site customers; whereas the residual materials, referred to as the Shredder Light Fraction (SLF) (*e.g.* fines, plastic, foam, textiles etc) are collected in a separate and roofed bay. The light fraction (*i.e.* residual waste) comprises granular fines and a mixture of fibres, plastics, residual metals and other non-metallic waste that have not been removed by the process. As the residual waste is produced, it is pulled to the front of the bay to allow the other material to collect. This way the oldest material is removed first (*i.e.* first in, first out).

- **Ferrous and non-ferrous separation** – The heavy fraction (ferrous and non-ferrous metals) is conveyed out of the air sifter via a rotary drum magnet, producing a ferrous metals stream and a non-ferrous metals stream. The non-ferrous metal stream is transferred via a conveyor and overband magnet to a sizing trommel where various sizes are passed over eddy current separators. The non-ferrous metals separated by the eddy current separators are referred to as Zorba (mixed non-ferrous metals) and are stored in a dedicated bay for supply to off-site customers; whereas the residual materials referred to as Shredder Heavy Fraction (SHF) are removed off-site for further processing due to the heavy fraction high content of recoverable metallics. The ferrous metals stream is transferred via a picking station for removal of any contaminants onto a 'stacking conveyor' to the 'shred stockpile' for storage and supply. The ferrous material is the main product some 70% of input and this passes onto a picking conveyor for further cleaning checks before finally being discharged into a pile.

3.2 Waste Types

Schedule 2 of the current environmental permit lists permitted waste types and quantities against specific permitted activities:

- Table S2.2 – Melt Shop;
- Table S2.3 – Waste Transfer Station (WTS);
- Table S2.4 – Scrap centre; and
- Table S2.5 Mixed MRS.

The proposed list of wastes associated with the scrap metal shredder, shear and ELV processing operations are outlined within the supporting technical information Ref. 021-1892 Celsa Cardiff Shredder Variation - EWC Codes REV00.

3.3 Waste Volumes

The predicted volume flows associated with the shredder installation are outlined below:

- INPUT (Unprocessed Scrap Metal) – 320,000 t/pa
- PROCESSED (Shredder)
- OUTPUT (Processed Scrap Metal) – 224,000 t/pa (processed on-site within Melt Shop EAF)
- OUTPUT (Waste – disposal off-site) – 80,000 t/pa
- OUTPUT (Zorba scrap for Sale) – 16,000 t/pa

Typically, Zorba scrap is defined as shredded mixed non-ferrous metals consisting primarily of aluminium generated by eddy-current separator or other segregation techniques.

3.4 Process Flow

The basic process flow associated with the shredder is outline within **Figure *3-1***.

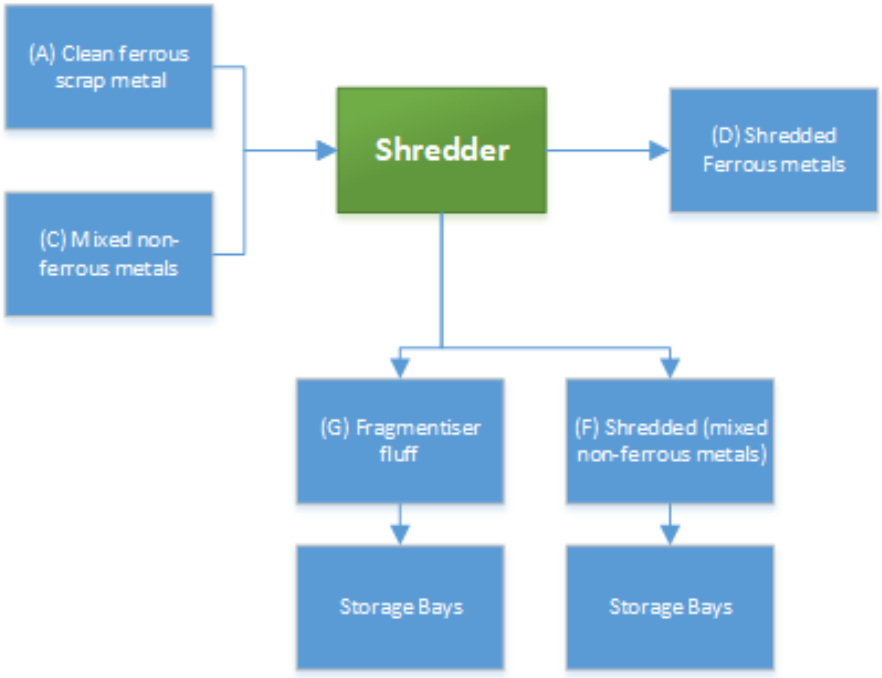

Figure 3-1: *Shredder Material Process Flow*

3.5 Operating Hours

The shredder design concept is based on 250 operating days per annum, working 7 days a week (one shift per day), for 40 hours a week an equivalent of 2,000 hours per annum. The plant yield (down time) is estimated at 5% hence, the net operational (running) hours are estimated at 1,900 hours/per annum.

3.6 Shredder Layout

The proposed layout within the shredder compound is outlined within **Figure *3-2***.

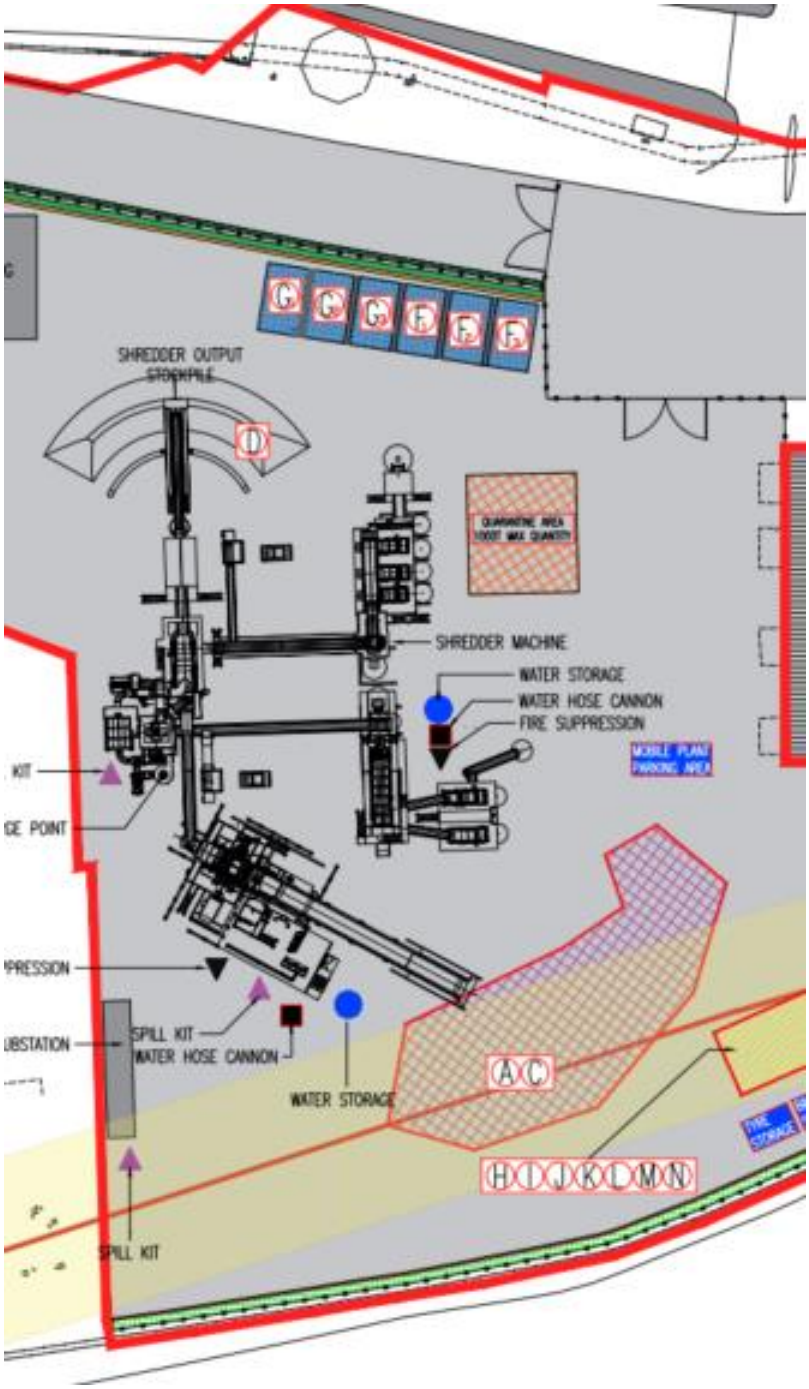

Figure 3-2: *Proposed shredder layout*

James & Nicholas (2023). Redevelopment, Scrap Handling Facility, Mineral Site, Tremorfa, Celsa, Proposed Permitting Layout, Job No. 01/03/23, DWG No. C05, Scale 1:1000 @ A1

3.7 Noise Enclosure

The enclosed metal shredder would be in the south-east extent of the site and accessed from the southern side of the internal road. This operational area will benefit from an additional gated entrance and exit from the internal access route.

The shredder would be comprised of three enclosed structured to accommodate each of the relevant operational processes. Each enclosed structure would be connected by a series of conveyor belts that conclude at a dedicated shredder output stockpile area.

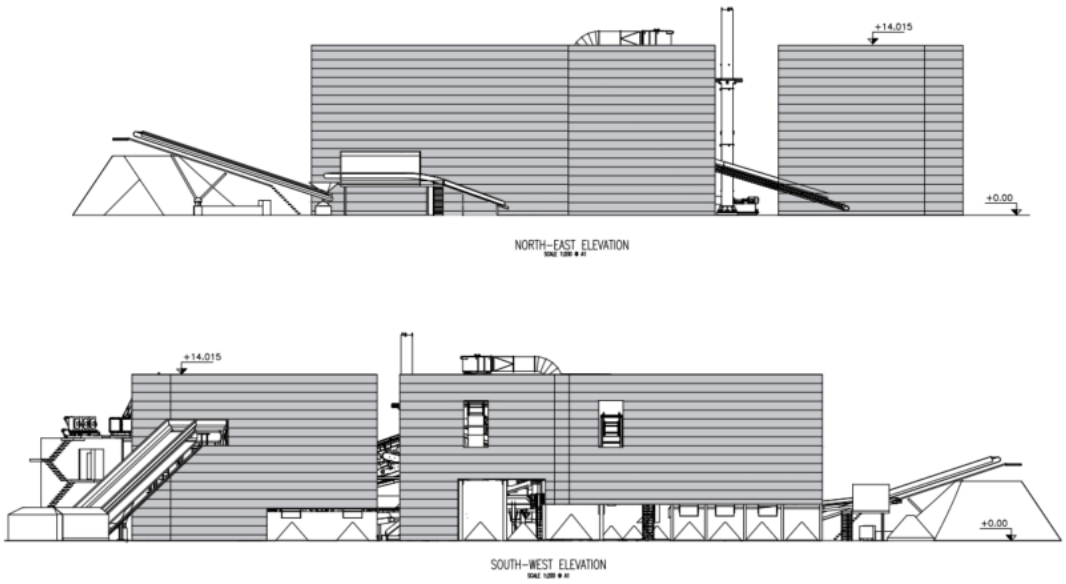

Figure 3-3: *Proposed shredder elevations (showing enclosures)*

James & Nicholas (2023). Redevelopment, Scrap Handling Facility, Mineral Site, Tremorfa, Celsa, Proposed Elevations, Job No. 21.121, 15/02/23, DWG No. C07.

The enclosed structures would contain custom built noise protection enclosures with integrated crane equipment. Noise absorption elements in galvanised finishes will also feature, together with sliding doors and roof elements to ensure the enclosures can be opened up for plant servicing and cleaning.

Special splinter mesh will be present to prevent metal particles escaping and ensure the safety of operators.

A sorting cabin will be provided and form part of the modular design.

The shredder machine enclosures would have height of 11.50 m, 14.00 m and maximum height of measure 16.90 m. The Control Building would stand 10.00 m tall.

The full shredder structure would span 102.79 m along the south-western and north-eastern elevations, 47.77 m along the south-eastern elevation, and 61.87 m along the north-western elevation.

The shredder machinery would be enclosed within a noise-reducing system designed to handle over-pressure events and the extreme environment around an auto shredder. The modular construction and robust build provide maximum noise reduction, occupational safety, stability, and durability and are installed using conventional steel construction as well as soundproofing elements/panels that are installed in vertical and horizontal modules.

The indicative design for the enclosure system has been developed by ILG-International GmbH (https://ilg-international.com). The Company has been developing and manufacturing noise reduction systems and enclosures for decades with their main speciality being the enclosure of recycling machines (i.e. shredders, sorting plants, dust removal equipment, walls for enclosure on the property boundary, sorting cabins and control platforms) (***Photograph 3-1***).

Photograph 3-1: *Typical shredder enclosure (ILG-International GmbH)*

4 Operations – Shear

4.1 Introduction

Shearing is the mechanical treatment of scrap metal to prepare, reduce and to densify an incoming waste stream.

The current environmental permit was varied (EPR/TP3639BH/V006) in June 2017 to include the use of mobile scrap metal shear (maximum of 1,000 tonnes per month). Due to the nature of the scrap market and the size of the incoming materials the maximum month processing limit was increased to 5,000 tonnes (EPR/TP3639BH/V007).

The proposal is to cease use of the mobile shear (remove from Site) and create a new fixed shear installation (compound) on a new fully engineered surface immediately adjacent to the proposed shredder. Celsa would also like additional flexibility and thus would like to increase the monthly limit to 7,000 tonnes.

4.2 Shear Layout

The proposed layout within the shear compound is outlined within **Figure *4-1***.

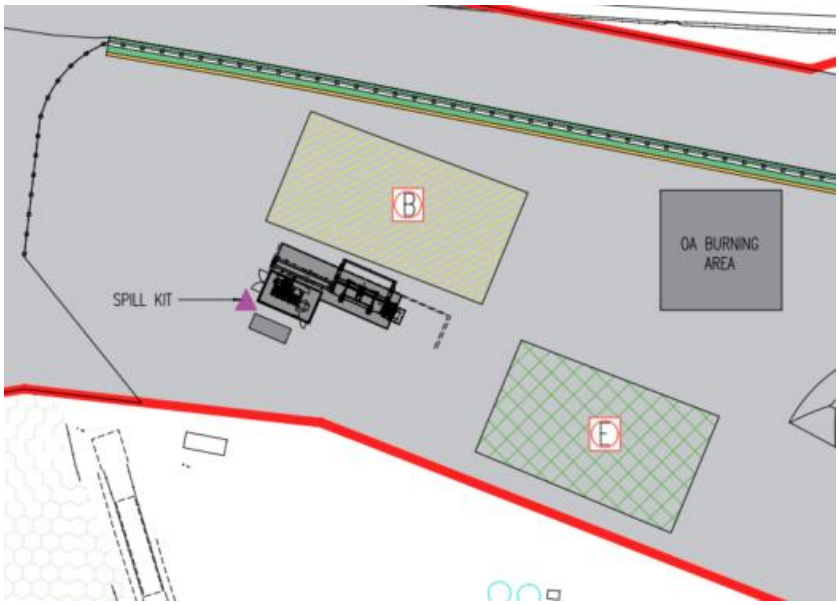

Figure 4-1: *Shear compound*

James & Nicholas (2023). Redevelopment, Scrap Handling Facility, Mineral Site, Tremorfa, Celsa, Proposed Permitting Layout, Job No. 01/03/23, DWG No. C05, Scale 1:1000 @ A1

4.3 Process Flow

The process flow associated with the shear is outlined within **Figure *4-2***

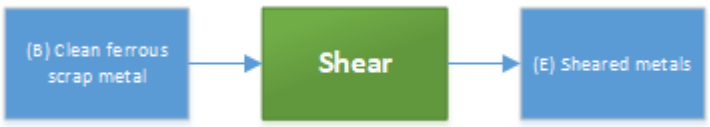

Figure 4-2: *Shear Material Process Flow*

4.4 Processing Equipment

Celsa proposes to install a Copex LIDEX 1000t/800 (box 8m x 2m) (**Photograph *4-1***).

Photograph 4-1: *LIDEX Scrap Shears with Side Compression*

The hydraulic power is provided by a group of four 110 kW motor pumps groups. The entire hydraulic circuit of the unit contains 12,600 litres of oil whilst the shear is fitted with an internal 8,000 litre hydraulic oil tank. An electro-valve directly integrated into the pump system is used for cancelling the flow when this pump is not under strain so the energy consumption, and the unnecessary oil heating, can be considerably reduced. This also means that the pumps are much quieter, especially when they are in stand-by mode.

The unit can make 4 to 7 cuts per minute producing between 16 and 42 tonnes per hour. Productions rates depend on the material density, the machine feeding way and the cutting length.

Full details regarding the installed equipment are provided as a separate attachment.

Where oversized material arrives within a load this shall be separated for processing using a hand-held oxypropane cutting kit. The oversize material shall be processed using a competent Celsa operator in an area located away from the main unprocessed and processed stockpiles. A fire watch would be undertaken for a minimum of 30 minutes after the completion of hot work. This is the minimum time recommended by the Health and Safety Executive (HSE). Hot works would be controlled in-line with Celsa Procedure 'SCP17 Hot Work Procedure'.

All works will be undertaken in compliance with the FPMP and the current Health and Safety Executive (HSE) guidance on Safety in gas welding, cutting and similar processes (indg 297) (Health and Safety Executive, 2012).

No routine hot works will be undertaken in any other area. If hot works are to be undertaken in any other area a formal permit to work will be required.

5 Operations – ELV Processing

5.1 Introductions

The Site is currently permitted to undertake vehicle depollution and dismantling in-line with the requirements of article 6(1) of the End-of-Life Vehicles Directive 2000/53/EC, although, the activity has not been undertaken on the site. As part of this variation Celsa would like to amend and replace Schedule 7 – Site Plan – Plan 3 with a new BAT compliant ELV depollution station.

At the time of the application the final supplier of the equipment has not been decided. However, all operations would be undertaken in-line with current guidance (Environment Agency, 2017).

Photograph 5-1: *Containerised ELV drainage system*

https://www.seda-international.com/gb/portfolio/seda-mds9-container-jumboline/?portfolioCats=212

5.2 Layout

The location of the proposed operation is outline within **Figure *5-1***.

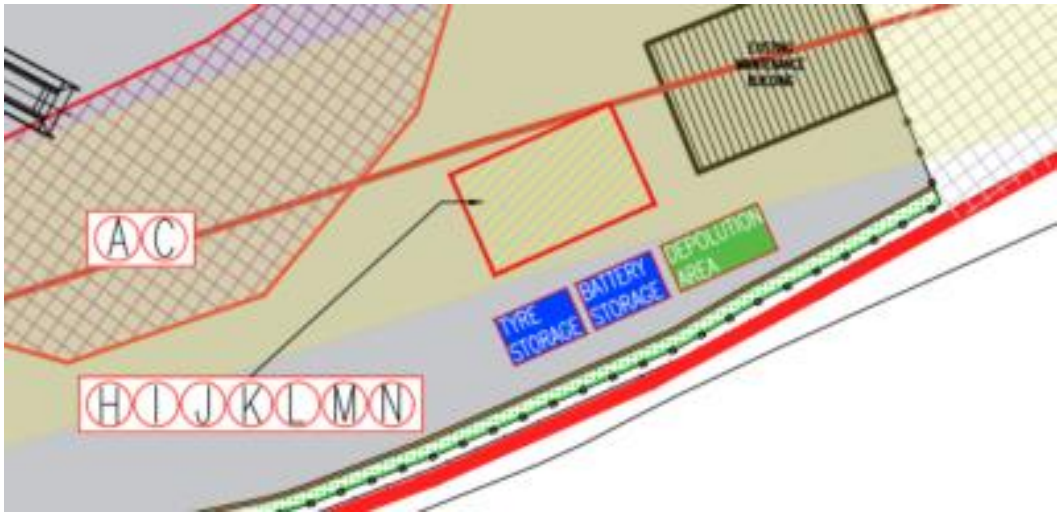

Figure 5-1: *ELV processing area*

James & Nicholas (2023). Redevelopment, Scrap Handling Facility, Mineral Site, Tremorfa, Celsa, Proposed Permitting Layout, Job No. 01/03/23, DWG No. C05, Scale 1:1000 @ A1

5.3 BAT Assessment

The requirements with respect to ELV processing are outlined within **Table *5-1***.

Table 5-1: *ELV Processing BAT Assessment*

Requirement	Comments
All End-of-Life Vehicles must be depolluted inside a building.	**Meets BAT** The proposal is to either create a new standalone building or (more likely) purchase a standalone ELV processing station that that includes a roof (prevents water ingress) ***Photograph 5-1***.
Uncontaminated plastic and glass arising from the treatment of end-of-life vehicles, uncontaminated ferrous metal wastes or alloys and uncontaminated non-ferrous metal wastes shall be stored on hard standing or an impermeable surface with sealed drainage system.	**Meets BAT** All processing will be undertaken within a shelter that is located on hardstanding that includes a sealed drainage system.

Requirement	Comments
Lead acid batteries shall be stored in containers with an impermeable, acid resistant base and a cover to prevent ingress of water.	**Meets BAT** Celsa will purchase specific battery storage boxes. The batteries shall be covered whilst on-site.
Other batteries and accumulators from ELVs shall be stored under weatherproof covering or in suitable containers.	**Meets BAT** Any such items removed from an ELV will be stored within a suitable covered box.
Whole undepolluted and undamaged vehicles shall be stored on an impermeable pavement with a sealed drainage system.	**Meets BAT** All undepolluted ELVs will be stored on hardstanding that includes a sealed drainage system.
All other wastes shall be stored on an impermeable surface with sealed drainage system.	**Meets BAT** All wastes from ELVs processing will be stored on hardstanding that includes a sealed drainage system.
Storage operations are to be carried out avoiding damage to components containing fluids or to recoverable components or spare parts.	**Meets BAT** Storage procedures will be operated to prevent damage to stored ELVs where there is an increased risk of leaks or spills.
Spillage collection facilities shall be provided and used to deal with any spillage of vehicle fluids	**Meets BAT** Spillage kits will be available in the area surrounding the ELV processing station.
All wastes shall be treated on an impermeable surface with sealed drainage system.	**Meets BAT** All wastes from ELVs will be treated and stored on hardstanding that includes a sealed drainage system.

6 General Management Measures

6.1 Management System

Celsa Manufacturing (UK) Ltd has implemented and maintains an Environmental Management System (EMS) that is certified to ISO14001:2015 (Certificate No. ES113432).

The EMS continues to be maintained and is externally audited (by Bureau Veritas) whilst delivering all indicative Best Available Technique (BAT) requirements for an effective management system. The current management systems will be updated to include the proposed operations as the activities at this site will provide a direct connection into the existing operations at the Cardiff site (*i.e.* the activity is directly associated with the operation of an electric arc furnace (EAF).

Celsa Manufacturing (UK) Ltd also operates a certified ISO 45001:2018 Occupational health and safety management systems and a certified ISO9001:2015 quality management system. These systems will also be applied to the shredding process.

6.2 Management Plans

In-line with the statutory guidance and BAT requirements the following management plans have been established and will be maintained as part of the EMS, as outlined within **Table *6-1***.

Table 6-1: *Management Plans*

Plan	Comments
Inventory of emissions to air and water	A new standalone inventory of emissions to air and water has not been created for the installation. Celsa operates a certified ISO14001 EMS that includes a Register of Environmental Aspects and Impacts. This process has been established to document all environmental emissions and impacts.

Plan	Comments
Residues management plan	It is important to note that the plant will undertake R13 (storage of waste pending) and R4 (recycling/reclamation of metals and metal compounds) activities. The whole purpose of the plant is the recovery of scrap metals thus limiting the generation of residuals. Most of the material will be processed and recycled within the EAF. Where Zorba scrap is generated, this will be sold. Where residuals are produced, they shall be managed and disposed of off-site in-line with the current ISO14001 EMS procedures Ref. ECP14 Waste Management. A new standalone Residues Management Plan has not been developed due to current existing systems.
Accident management plan	The installation operates a standard procedure as part of the ISO14001 EMS and ISO 45001 SMS. The plan Ref. ECP34 Emergency Action Plans has been updated in-light of the proposed changes.
Site condition report (SCR)	A revised and updated SCR has been provided with the variation application.
Energy efficiency plan	Celsa operates a formal ISO14001 EMS. This includes monitoring and tracking the consumption of raw materials and energy throughout the installation. A formal energy efficiency plan (for this part of the installation) is not proposed due to the existing ISO14001 systems. However, a key performance indicator (KPI) will be created for the shredder plant based on kWh per tonne of processed scrap metal.
Fire prevention and management plan	A new FPMP has been produced for the shear and shredder installation and is provided as an attachment.
Deflagration management plan	A deflagration management plan has been developed and is provided as an attachment.
Noise and vibration management plan	A noise and vibration management plan has been developed and is provided as an attachment.
Dust management plan	A new dust management plan has been established and will be maintained for the shear and shredder process.

Plan	Comments
Pest Management Plan	Potential issues have been identified with Tin Can Stockpiles. As a result, an operational procedure has been drafted for the Rover Way Site Ref. ECP59 Tin Can Stockpile Management Procedure (Revision 1, July 2022) that incorporates limited (but specific) systems for the identification and management of potentials pests. This procedure is provided as an attachment. Given the limited nature of the potential pest issues (i.e. one small volume specific waste stream) a pest management plan has not been produced.

The draft plans (prior to NRW comments) are provided within the application package. It is important to note that these are likely to be amended once final equipment suppliers are selected.

6.3 Operations and Maintenance

The company uses a "risk" based approach for assessing the criticality of site equipment in terms of Health, Safety, Environment requirements. As well as the criticality of the plant the equipment is given a priority which determines how quickly an unplanned failure of said equipment is responded to.

The spare parts that are typically maintained or required (for shredders) include conveyor parts, coolers, gears, guards, hydraulic parts, motors, sensors, pumps and valves. Typical wear parts include bearings, cutting tables, filters, fittings, grease, hoses, oil, shafts and wear plates. Celsa will ensure, to maximise plant availability, that spares and wear parts are readily available.

The site will establish and will maintain a Planned Preventative Maintenance (PPM) schedule for the new operations in-line with manufacturer's recommendations. This will identify all critical environmental equipment that is used to mitigate or prevent environmental impacts. All records associated with these activities will be maintained on-site and controlled as part of the ISO14001 management system. Any breakdown or malfunction of plant or equipment that could result in abnormal emissions of dust or odours and/or increased energy or resource consumption will be dealt with promptly and process operations adjusted until normal operations can resume. Any such events are recorded in the site diary and on the company ProSafety system.

6.4 Accidents

The site has established and maintains an Accident Management Plan which is subject to regular review and update and is controlled via the EMS. The plan details site drainage, site services, location of hazardous materials (*e.g.* fuels and oils), emergency response equipment, pollution control points *etc.* Where required the emergency plan will be revised to take in to account any identified deficiencies.

Appropriate spill kits and absorbents will be available throughout the site. These will be subject to regular inspection to ensure stock levels are maintained. All operatives will be trained in their use.

Celsa Manufacturing (UK) Ltd has also established and will maintain a stand-alone Fire Prevention and Mitigation Plan (FPMP) in-line with NRW Guidance.

6.5 Incidents and non-conformances

Accidents, Incidents, complaints, and non-conformances are to be handled through the existing processes that form part of the ISO 14001 EMS.

6.6 Site security

The wider Rover Way site itself is surrounded by a 2.4-metre-high palisade fence. All access on to the wider site is controlled. No unauthorised access is permitted. The shredder compound itself will also feature boundary controls *i.e.* a 3 metre high retaining wall (along southern boundary) and 1 metre concrete panel wall fence around the rest of the perimeter. All access into the shredder compound will be controlled. No unauthorised access will be permitted.

6.7 Staff Competence

The total manning of the activity can vary depending upon the level of activity being undertaken. Based on proposed current activities there will be up to 36 additional people (at any one time) associated with the shredding operations, they include an Office Manager (1), Accounts personnel (2), weighbridge operator (1), Traders (2), Site Manager (1), Maintenance manager (1), Fitters (2), Welder/fabricators (2), Operatives (8), Plant Operator (2), Machine Operators (3), Banksmen (1), Drivers (6) and Mobile plant operatives (4). Existing staff will be retained to operate the shear process located adjacent to the shredder.

Celsa Manufacturing (UK) Ltd will provide centralised engineering, technical, transport, administration, and environmental support (as required). Celsa Manufacturing (UK) Ltd will provide a comprehensive training programme for the site and the proposed operations in-line with the required competency requirements (*e.g.* general environmental awareness, maintenance and operational activities, accident and emergency response). This training will be provided to all site operatives.

6.7.1 Technical Competence

The proposed technically competent persons are outlined within **Table *6-2***. Copies of all certificates are provided as attachments.

All site operatives will be made aware of the requirements of the EPR Permit and will be briefed as to the contents of the various management plans including the Fire Prevention and Mitigation Plan.

Table 6-2: *Technical Competence*

Name	Units
Carl Jones	Certificate of Technical Competence: Level 4 in Waste Management Operations – Managing Transfer Hazardous Waste (4TSH) – 30/04/03, Certificate No. 05168. Continuing Competence Certificate No. 5171825, expiry 25/11/2022, TSH - Transfer – Hazardous Waste and TMH – Treatment – Hazardous Waste.
Richard O'Neill	Certificate of Technical Competence: Level 4 in Waste Management Operations – Managing Treatment Hazardous Waste (4TMH) – 06/11/2012, Certificate No. 12815. Operator Competence Certificate: Level 4 in Waste Management Operations – Managing Treatment Hazardous Waste (4TMH) – 06/11/2012, Certificate No. OCC3418. Continuing Competence Certificate No. 5175652, expiry 09/03/2023, TSH - Transfer – Hazardous Waste and TMH – Treatment – Hazardous Waste.

6.8 Records that demonstrate your management system

Records relating to the operation of the site are to be handled through the existing processes that form part of the ISO 14001 EMS. All records relating to the operation of the installation will be maintained as per the stated procedures.

Non-hazardous waste transfer documentation will be maintained on-site for a period of 2 years. If any consignments of hazardous waste are removed the consignment notes will be maintained on-site for a period of 3 years.

The site condition at the start of the permitted period will be recorded within a photographic record. In addition, the site operator will keep records of the:

- design, construction, inspection, monitoring and maintenance of all pollution prevention infrastructure;
- spills and incidents and any resulting corrective and/or preventative actions;
- actions taken if the NRW identify relevant non-conformances or failures; and
- off-site impacts such as pollution incidents that caused, or are alleged to have caused, harm or health effects.

6.9 Access to your permit

Access to the permit will be through existing internal systems (*i.e.* intranet and on-site noticeboard). Where contractors undertake work within the site the requirements of the permit will be actively brought to their attention.

6.10 Permit surrender and closure

Upon cessation of activities the following site closure plan would be initiated:

- disconnection of electrical supply and make safe;
- drain down and empty any tanks or hydraulic systems;
- remove all plant and equipment down to slab level;
- remove and dispose of all remaining waste materials in-line with current regulatory requirements; and

- undertake site surrender SCR monitoring (*i.e.* provide the evidence necessary to demonstrate to NRW that the site does not pose a pollution risk and is in a satisfactory state).

7 Waste Management Processes

7.1 Waste Pre-acceptance

Waste will only be accepted on to site based on prior information, and where necessary, relevant analysis. Where analysis is required, it will be undertaken by suitably qualified laboratories against current industry approved standards. Wastes will not be accepted on to site without a clear method or defined treatment and/or disposal route being determined in advance before the waste is accepted at the installation.

The process for pre-acceptance is outlined below:

- **Initial enquiry** – Details regarding the waste producer (address and contact details), specific process source from where the waste streams would arise and an indication of the waste stream characteristics (*i.e.* quantity, form, composition, properties, classification, and description *etc.*).

- **Determination of potential suitability (Technical Assessment)** – Celsa would assess potential suitability of the potential waste stream(s) in relation to safety and EHS compliance (including ability to treat within the installation).

All records relating to pre-acceptance processes will be maintained for a minimum of 3 years.

7.2 Waste Acceptance and Tracking

Upon arrival of any waste at the site the amount of waste is weighed, and the gross weight is recorded.

All wastes must be accompanied by a waste transfer note, and this shall be inspected to ensure it matches the load of waste being delivered. Visual inspection will be carried out by the weighbridge operative. The vehicle then proceeds to the correct area of the site for that waste stream to be tipped. If the waste arrives in a sealed or high-sided vehicle, inspection will be carried out by the operative supervising the waste as it is tipped in the compound.

When the vehicle leaves site, it is weighed again and the net weight of waste calculated, and a receipt issued.

In-line with the requirements of the *Scrap Metal Dealers Act 2013* the following information shall be recorded for all scrap metal received at the facility:

- a description including type, form, condition, weight, any marks identifying previous owners or distinguishing features;
- the date and time;
- the registration mark of the vehicle it was delivered in or on;
- the full name and address of the person received from; and
- the full name of the person who makes the payment acting for the dealer.

In addition, Celsa will keep a record of all scrap metal disposals, this will include:

- a description including type, form, and weight;
- the date and time;
- the full name and address of the person disposed to; and
- if payment is made (by sale or exchange), the price of other consideration received.

All records will be maintained for a minimum of 3 years.

If it appears that the any waste does not comply with the description on the waste transfer note, or that it may be hazardous or otherwise not acceptable under the site's permit, then the waste will either be re-loaded and rejected (if the person delivering the waste remains on site), or it will be isolated from the rest of the waste in the quarantine area for removal. Where required, NRW shall be notified.

7.3 Waste Storage and Segregation

The unprocessed and processed materials that will be stored on site, related to the shear and shredder process, are outlined within **Table *7-1***.

Table 7-1: *Shear and Shredder Waste storage (Processed and Unprocessed)*

Location Ref and Materials	Daily Maximum (tonnes)	Maximum On-site (tonnes)	Comments
LOCATION A (Pile) Clean ferrous scrap metal (shredder feed)	1,100	2,000	Solid (unprocessed) material stored on impermeable concrete hardstanding. Pile size approximately 30 m x 20 m. Minimum of 6 metres separation.
LOCATION B (Pile) Clean ferrous scrap metal (shear feed)	200	1,000	Solid (unprocessed) material stored on impermeable concrete hardstanding. Pile size approximately 35 m x 15 m. Minimum of 6 metres separation.
LOCATION C (Pile) Mixed non-ferrous metals	200	500	Solid (unprocessed) material stored on impermeable concrete hardstanding. Pile size 15 m x 10 m. Minimum of 6 metres separation.
LOCATION D (Pile) Shredded Ferrous metals	900	3,000	Solid/granular (processed) material stored on impermeable concrete hardstanding. Pile size approximately 25 m x 12 m. Minimum of 6 metres separation.
LOCATION E (Pile) Sheared metals	200	2,000	Solid (processed) material stored on impermeable concrete hardstanding. Pile size approximately 35 m x 15 m. Minimum of 6 metres separation.

Location Ref and Materials	Daily Maximum (tonnes)	Maximum On-site (tonnes)	Comments
LOCATION F1 – F3 **(Pile and 2 bays)** Shredded (mixed non-ferrous metals)	65	550	**LOCATION F1 (Pile)** Solid/granular (processed) material stored on impermeable concrete hardstanding. Pile size approximately 10 m x 6 m. Minimum of 6 metres separation. **LOCATION F2 (Storage Bay)** Solid/granular (processed) material stored on impermeable concrete hardstanding. Pile size (in bay) approximately 10 m x 6 m. **LOCATION F3 (Storage Bay)** Solid/granular (processed) material stored on impermeable concrete hardstanding. Pile size (in bay) approximately 10 m x 6 m.
LOCATION G1 – G3 **(Pile and 2 Bays)** Fragmentiser fluff	320	200	**LOCATION G1 (Pile)** Solid granular waste (processed) stored within a single loose pile on impermeable concrete hardstanding. Pile size approximately 10 m x 6 m. Minimum of 6 metres separation. **LOCATION G2 (Bay)** Solid granular waste (processed) stored within an engineered bay on impermeable concrete hardstanding. Pile size (in bay) approximately 10 m x 6 m. **LOCATION G3 (Bay)** Solid granular waste (processed) stored within an engineered bay on impermeable concrete hardstanding. Pile size (in bay) approximately 10 m x 6 m.

The unprocessed and processed materials that will be stored on site, related to the ELV process, are outlined within **Table *7-2***.

Table 7-2: *ELV Materials Waste storage (Processed and Unprocessed)*

Location Ref and Materials	Daily Maximum (As stated)	Maximum On-site (As stated)	State	Form
LOCATION H (Stack) End-of-life vehicles (undepolluted)	5 to 10 cars	10 cars	Whole cars	Whole cars (unprocessed) stored on impermeable concrete hardstanding. Stack no greater than 3 high. Minimum of 6 metres separation.
LOCATION I (Stack) End-of-life vehicles (undepolluted)	200	300	Whole cars	Whole cars (processed) with required pollutants removed stored on impermeable concrete hardstanding. Stack no greater than 3 high or placed on scrap metal pile prior to processing. Minimum of 6 metres separation.
LOCATION J (Container) Tyres	10	50	Solid	Solid (stored in suitable 30 cu yd open container) on impermeable concrete hardstanding.
LOCATION K (Battery Box) Car batteries	1 to 2	25	Solid and liquid	Mixed solid and liquid (stored in suitable battery boxes) on impermeable concrete hardstanding in building, appropriate battery boxes 1.2 W x 1.2 L x 0.8 H, 610 Litres capacity.

Location Ref and Materials	Daily Maximum (As stated)	Maximum On-site (As stated)	State	Form
LOCATION L **(Bunded Containers)** Engine, gear, and lubricating oils	>1 litre	2,000 litres	Liquid	Liquid, unprocessed material stored within drums or tanks on impermeable concrete hardstanding. All materials stored within secondary containment.
LOCATION M **(Bunded Containers)** Diesel and Fuel oil	1,500 litres	5,000 litres	Liquid	Liquid, unprocessed material stored within drums or tanks on impermeable concrete hardstanding. All materials stored within secondary containment.
LOCATION N **(Bunded Containers)** Petrol	>0.5 litre	1,000 litres	Liquid	Liquid, unprocessed material stored within drums or tanks on impermeable concrete hardstanding. All materials stored within secondary containment.

Further information on storage arrangements is provided within the Shredder and Shear Fire Prevention and Management Plan (Ref. ECPXX Shredder and Shear - Fire Prevention Management Plan - Rev 0).

All storage areas are outlined on 021-1892 Figure A4 Proposed Shredder Layout REV01.

8 Process Efficiency

8.1 Energy Efficiency

As part of Celsa's ISO 14001 Environmental Management System, Celsa has identified its potentially significant environmental aspects, whilst considering its legal requirements. Objectives and targets are set on an annual basis to deliver continual improvement in the management of these environmental aspects, this includes energy usage. Celsa is careful to ensure that its processes are efficient to minimise the use of energy and to avoid waste.

There is no gas or fuel oil use associated with this variation, all power is provided via electrical supply via the National Grid. The information provided below includes plant and equipment not previously permitted or plant that has been subject to replacement and upgrade (*e.g.* scrap metal shear).

8.1.1 Electricity Use – Shear

The COPEX LIDEX 1000-tonne shear are the only side compression shearing presses offering a complete automatic cycle, from the discharge of the pre-load table into the compression box to the box closing. The bundling and shearing cycles are fully automatic. With a cutting force of 1,000 tonnes, the LIDEX has a cutting width of 800 mm, a box of 8 x 2 m and an electric drive of 4 x 110 kW. The machine can process up to 42 tonnes per hour.

Assumptions (worst-case):

- Operating 8 hours/day for 250 days a year
- Continuous 42 tonnes/hour (7,000 tonnes/month)
- Estimated 880,000 kW/year

It is important to note that this is just a worst-case estimate which assumes continuous load during each processing cycle. Actual monitoring would be required to determine actual usage rates.

8.1.2 Electricity Use – Shredder

The exact specification (supplier) of the shredder has yet to be determined, however, based on the experience of similar sized equipment the estimated in the range of between 3,500 to 4,000 KWh. This can only be confirmed when plant running, due to variations in throughput.

Assumptions (worst-case):

- Operating 8 hours/day for 250 days a year (2,000 hours per year)
- Continuous 160 tonnes/hour (320,000 tonnes/year)
- Estimated 7,000,000 kW/year

It is important to note that this is just a worst-case estimate which assumes continuous load during each processing cycle. Actual monitoring would be required to determine actual usage rates. No further information is currently available.

8.1.3 Energy Use within the Installation

The energy usage within the installation has been calculated by identifying and reviewing all the new plant and equipment within the scope of the installation.

Direct releases occur where primary energy is converted to heat and/or electricity at the installation. Indirect releases are those associated with the consumption of electricity or heat generated elsewhere (*i.e.* third-party supply or from an off-site power station). The conversion factor from electricity delivered to primary is 2.4 as per current guidance. This considers both generation losses and transmission losses associated with the transfer across the National Grid. The total and specific energy consumption for the installation is outlined within **Table *8-1***.

Table 8-1: *Energy sources and annual consumption*

Source	Type	Delivered (MWh/year)	Conversion Factor	Primary (MWh/year)
Electricity from public supply	Indirect emissions	7,880	2.4	18,912
Total		**7,880**		**18,912**

Notes:

(1) Energy efficiency conversion factor - indirect emissions (Electricity from National Grid) from https://www.gov.uk/guidance/assess-the-impact-of-air-emissions-on-global-warming

8.1.4 Carbon Dioxide Emissions as a Result of Energy Use

The reporting of direct and indirect emissions of carbon dioxide resulting from the consumption or generation of energy by the activities covered in the permit is included as part of this overall reporting of environmental emissions. Environmental emissions relating to the consumption of energy at the installation are limited to those emissions arising from the use of LPG at the site itself and indirectly from the use of fossil fuels at the power station providing the electricity to the installation. The estimated carbon emissions are outlined within **Table *8-2***.

Table 8-2: *Energy sources and annual carbon dioxide emissions*

Source	Type	Primary (MWh/year)	CO_2 Factor	CO_2 (tonnes/year)
Electricity from public supply	Indirect emissions	18,912	0.166 (1)	3,139
Total		**18,912**		**3,139**

Notes:

(1) CO2 conversion factor (electricity) is from https://www.gov.uk/guidance/assess-the-impact-of-air-emissions-on-global-warming

8.1.5 Climate Change Levy

Climate change agreements are voluntary agreements made by UK industry and the Environment Agency to reduce energy use and carbon dioxide (CO_2) emissions. In return, operators receive a discount on the Climate Change Levy (CCL), a tax added to electricity and fuel bills. The Environment Agency administers the CCA scheme on behalf of the whole of the UK.

CELSA currently operates under a Climate Change Levy Agreement (CCLA) within the UK Steel Association sector. UKSA/CELSA/N/00001 will apply to the varied installation.

8.1.6 Management of Energy Use

Celsa is committed to managing and reducing the environmental impact of its operations (wherever possible). Energy reduction programmes are established and maintained throughout the business. The aim of this is to evaluate the environmental impact Celsa's activities (*i.e.* buildings, processes and transport) and identify opportunities for improvement.

These opportunities can be reflected in the site improvement objectives (if deemed feasible). In all cases these objectives form part of the ISO 14001 EMS. In addition, the regular monitoring of site energy consumption and the planned preventative maintenance of equipment is carried out on a regular inspection cycle.

8.2 Raw Materials

8.2.1 Shredder

The raw material use associated with the shredder operations are minimal apart from when routine maintenance is required. The on-board systems make use of cooling water, compressed air, electricity, hydraulics (oils), and greased lubrication.

No special fluids are required for the operation of the plant. However, the hydraulic equipment should be filled appropriately and topped up with the correct grade of hydraulic oil when required, and that all filter maintenance intervals must be observed. Failure to do so will result in shortened life of the pump equipment and subsequent failure of the hydraulic motors on the shredder and infeed conveyor.

The volumes of hydraulic oil are not currently available as this will depend on the final equipment.

8.2.2 Shear

The shear contains an 8,000-litre internal oil tank connected to the hydraulic circuit which has a total installed capacity of 12,600 litres.

8.3 Water Use

The main water use within the shredder is related to the high-pressure water injection system utilised for dust suppression. The system is rated for up to 30 litres per tonne of scrap throughput which could equate to between 65 to 80 litre/minute (maximum). However, this depends greatly on type of scrap and prevailing weather conditions. Application of the water is controlled via programmable logic controller (PLC). The air surrounding the shredder rotor assembly (containing metallic and non-metallic particulates) is dampened down with an automatic water injection system into the shredding chamber. The system only injects water when it is required by reading the load of the shredder, thus minimising the water usage. The water from the injection process is lost to atmosphere as steam.

Water is also used across the installation for general cleaning, portable use and for fugitive dust suppression purposes.

8.4 Waste Minimisation, Recovery and Disposal

It is important to note that the plant will undertake R13 (storage of waste pending any of the operations numbered R1 to R12) and R4 (recycling/reclamation of metals and metal compounds) activities. The whole purpose of the plant is the recovery of scrap metals thus limiting the generation of residuals. Most of the material will be processed and recycled within the EAF installation. Where Zorba scrap is generated, this will be sold off-site.

Where residuals are produced, they shall be managed and disposed of off-site in-line with the current ISO14001 EMS procedures. A new standalone Residues Management Plan is not proposed given the existing procedures and systems.

9 Emissions to Air, Water and Land

9.1 Point Source Emissions to Air

9.1.1 Introduction

The nature, characteristics, and volume of air emissions from a shredder depends primarily on the type and configuration of the system. As previously described the shredder includes an input conveyor that feeds metals into the hammer mill. The output from the hammer mill, includes metal and non-metal materials that then pass through a downstream separation process which removes the non-metal residuals. The metal fraction is then segregated into ferrous and non-ferrous waste streams. As a result, there are two air emission sources:

- the hammer mill; and
- the downstream output separation process.

9.1.2 Shredder

There are two types of hammer mills used in fragmentisers (shredders), damp and dry. In the UK the damp mill is the dominant methodology, whereas a dry mill is the most used system in the EU. In the damp system water is injected into the mill chamber under regulated conditions to ensure it turns to vapour, producing a damp atmosphere. This objective is to control the mill temperature, suppress dusts and vapours and minimise the risk of generating potentially flammable conditions within the chamber. The lack of air extraction on the wet hammer mill means that there are no point emission sources and that the emissions are diffuse.

The output from the mill is damp, not wet, which maintains the density differential between metals and non-metals, enabling the use of air suction separation to draw off the light fragmentiser residue fraction.

The damp system also reduces the likelihood and severity of fires within the mill compared to the dry system. It also produces less dust and fewer diffuse air emissions than a dry system. However, the addition of too much water can result in steamy conditions within the mill that reduces visibility and increases the moisture content in the non-metals, thereby affecting the separation efficiency of the output and (potentially) increasing disposal costs. Water injection is controlled and monitored via an intelligent Programmable Logic Controller (PLC) control system.

As stated above, the primary control measures to mitigate against the emissions from the mill from having a negative impact environmental impact are:

- the injection of water mist into the mill to supresses dust generation;
- use of an ELV depollution unit to the removal all fuel, oils, and fluids; and
- acceptance of WEEE from approved producers and sources only *e.g.* producers that have measures in place to ensure all any fluids *e.g.* oils and dielectric fluids in electrical equipment are removed before delivery to the facility for processing.

9.1.3 Downstream Separation Process

As stated within *Section 2.1.1* the lighter fraction from the shredder metal cleaning process is carried into a cyclone. In the cyclone, the heavier fluff/dirt waste drops down to the waste out conveyor via a rotary valve (**Figure *9-1***).

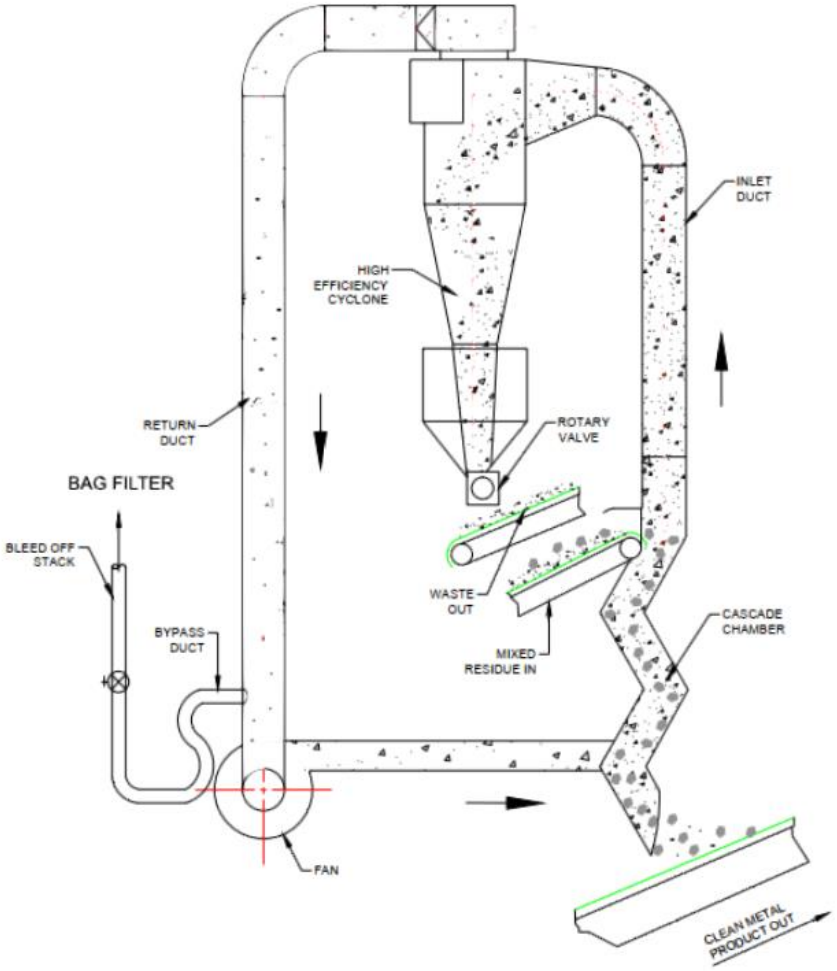

Figure 9-1: *Metal cleaning process*

The lighter dust is carried upwards back to the fan, where a bleed off is taken to extract the dirty air through a filter bag house for cleaning with a capacity of 30,000 m^3/hr. The outlet from the bag filter unit discharges to a stack 18 metres in height **(Permit Emission Point Ref: A11)**. This form of abatement is considered BAT for shredders.

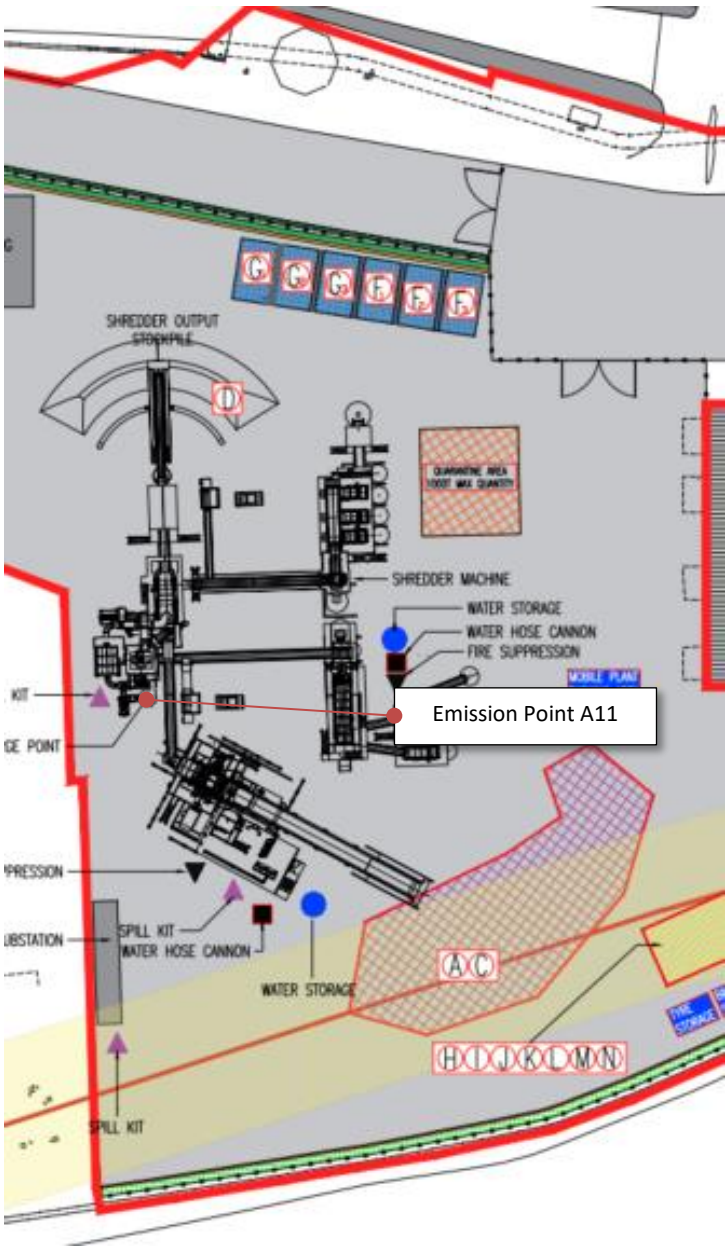

Figure 9-2: *Emission point A11 – Shredder Sorting and Cleaning Plant*

James & Nicholas (2023). Redevelopment, Scrap Handling Facility, Mineral Site, Tremorfa, Celsa, Proposed Permitting Layout, Job No. 01/03/23, DWG No. C05, Scale 1:1000 @ A1

The operational characteristics of the emission point are outlined within **Table 9-1**.

Table 9-1: *Shredder sorting and cleaning plant (Point A11) operational data*

Parameter	Units	Stack and Emission Data
Effective stack height	m	18 m
Stack diameter	m	1.0 m
Stack location	UK NGR	321509 176296
Efflux velocity	ms^{-1}	10.6 ms^{-1}
Total Flow	m^3/hr	30,000 m^3/hr
Operating mode	Hours	Operating hours will be seven days per week, 6 am to 6 pm, including 2 hours of maintenance per day.

According to the technical specifications the bag filter should meet a <2 mg/m^3 particulate emission standard. This is significantly below the 5 mg/m^3 suggested Emission Limit Value (ELV) which is BAT.

There are no other point source emissions (to air) associated with any other parts of this variation.

9.1.4 Nature and Characteristics of Air Emissions

In the absence of plant specific data, a literature review has been undertaken to identify the likely emission characteristics from the mill. This has included United Nations Stockholm Convention, Guidelines on best available techniques and guidance on best environmental practices (United Nations, 2007), European Commission Best Available Techniques (BAT) Reference Document for Waste Treatment (European Comission, 2018), UK Government Treating metal waste in shredders: appropriate measures for permitted facilities (UK Government, 2021) and European Commission, Establishing best available techniques (BAT) conclusions for waste treatment (European Comission, 2018).

The literature states that emissions to air from a shredder plant are likely to be dust, particulate bounded metals, Mercury, Volatile Organic Compound (VOC), water vapour and occasionally smoke in the event of a fire.

Where certain waste streams are treated *e.g.* end-of life-vehicles (ELVs) or waste electrical and electronic equipment (WEEE) the Guidelines of BAT and Provisional Guidance on Best

Environmental Practices (United Nations, 2007) states there is the potential to form and release unintentional persistent organic pollutants (POPs) that include Polychlorinated dibenzodioxins (PCDDs) and Polychlorinated dibenzofurans (PCDFs) or Polychlorinated biphenyls (PCBs). The report contains the results of a European dioxin inventory. This identified there was limited measured PCDD or PCDF data; however, the results were generally, very low with concentrations <0.01 ng I-TEQ/m³.

In general, while the facility is not a source of new POPs (PCDD/PCDF and PCB), there is the potential for the release of unintentional POPs to atmosphere during the processing of the ELVs and electrical equipment. Operational controls are therefore in-place to minimise potential emissions. The primary measures to be employed include:

- **Removal of ELV fluids** - removal of ELV fluids, like brake fluid, petrol, steering fluid, motor oil, fuels, coolants, and transmission fluids before shredding.
- **Screening of incoming waste streams to identify electrical equipment** – specific attention should be given to transformers and condensers (potential for PCBs). Suspected equipment shall be identified and removed from the shredder feed.
- **Removal of batteries and gas tanks** – The removal of batteries and liquified gas tanks.
- **Removal of potential explosive items** – This could include the removal or neutralization of potential explosive components such as air bags.
- **Removal of ELV components** – This includes the removal of catalysts, tyres, and large plastic components (such as bumpers, dashboards, fluid containers, *etc.*).

The current UK Guidance also outlines the potential presence of brominated flame retardants (BFRs). These are organobromine compounds that have an inhibitory effect on combustion chemistry and tend to reduce the flammability of products containing them. They can be present in certain plastics and textile applications like electronics, clothes, and furniture.

Historically the primary sources of the VOC in shredder emissions were associated with the ELV fuels and fluids and refrigerant gases. The implementation of the Priority Waste Stream Directives for ELV and WEEE, which require specific depollution measures to extract fuels and oils from vehicles and refrigerant gases, means that VOC are less likely to be emitted.

9.2 Point Source Emissions to Surface Water

There will be no new point source releases to surface water.

9.3 Point Source Emissions to Sewer

No new point source emissions to sewer are associated with the installation.

The discharge from the proposed amenity block (*e.g.* toilets and sinks), adjacent to the car park, will be discharged into the existing Welsh Water sewer discharge point used by the Scrap Centre **(Permit Emission Point Ref: S5)**.

9.4 Point Source Emissions to Groundwater

There are no new (direct) point source emissions to groundwater from the installation.

9.5 Point Source Emissions to Land (via Soakaway)

9.5.1 Introduction

Historically on the Rover Way site scrap metal has been stored on compacted but unsurfaced ground and rainwater has been subject to infiltration. In general, with other steel works, the storage area design was aligned to the BREF Iron and Steel Production (Scrap yards and handling) (pp.37) (European Comission, 2013) which states:

"Scrap metal is normally stored outside on large, uncovered and often unpaved ground. The ferrous scrap is loaded into baskets by magnets or by grabs. The handling minimises any rogue, non-magnetic material like stones, wood or non-ferrous metals from entering the process"

However, due to the increased development on the Rover Way site Celsa would propose to upgrade all areas to impermeable hardstanding with sealed drainage systems. The system is described below based on specific zones and associated designs:

- Area 1 – Shear and Shredder Yard Area – This area includes the processing plant (shear and shredder) and associated yard areas for the processing of scrap metal. It is proposed that the yard is to be served by 2 no. separate proprietary infiltration-based drainage systems.

- Area 2 – West Entrance and Internal Circulation – It is proposed that the Tide Fields Road entrance will be the main point of access for scrap deliveries, with internal circulation being achieved via a new concrete road layout. It is proposed that drainage to the area immediately adjacent to the Tide Fields Road entrance and that of the internal circulation around that the drainage will be via an infiltration-based proprietary drainage system.

- Area 3 – East Entrance & Car Park – It is proposed that drainage to this area will be via a number of close-to-surface infiltration rain gardens.

9.5.2 Sustainable Drainage Systems (SuDS)

From January 7th, 2019, all new developments where the construction area is of 100m^2 or more require sustainable drainage to manage on-site surface water. Surface water drainage systems must be designed and built in accordance with mandatory standards for sustainable drainage published by Welsh Ministers.

These systems must be approved by the local authority acting in its SuDS Approving Body (SAB) role before construction work begins. The SAB will have a duty to adopt compliant systems so long as it is built and functions in accordance with the approved proposals, including any SAB conditions of approval.

The plan outlining the full drainage system strategy is provided as an attachment (James & Nicholas, 2023).

9.5.3 Pollution Control

All filter strips are designed to utilise an engineered treatment media called SDS Aqua-Xchange™. This is an engineered pollution control and enhanced filter media which uses ionic exchange and filtration to remove soluble and solid pollutants from surface water runoff. According to SDS Ltd the filter media has proven capability to remove and retain dissolved heavy metals including copper, zinc and cadmium whilst also filtering out finer solid particles.

SDS Ltd testing, carried out in accordance with the British Water Code of Practice 'Assessment of Manufactured Treatment Devices Designed to Treat Surface Water Runoff' found treatment and retention efficiencies of:

- Zinc – 99.8 % capture and 99.6 % retention.
- Copper – 99.5 % capture and 100.0 % retention.
- Cadmium – 92.1 % capture and 98.6 % retention.

The treated discharge from the filtration strips would then infiltrate to ground via a below ground cellular soakaway system (95% void ratio). Typically, this type of installation has a design life of up to 60 year and is 100% recyclable (polypropylene) at the end of its service life.

The results of Waste Acceptance Criteria (WAC) leaching tests performed on Made Ground samples completed as part of the Geotechnical & Geo-environmental study (Terra Firma,

2022) have been used to estimate the likely leaching of analytes from the runoff prior to infiltration. The results, outlined within the Terra Firma Report are very similar to that for the adjacent asphalt plant area where surface water is permitted to infiltrate the ground. As with the asphalt area it is concluded that the disposal of treated surface water runoff via a soakaway into the underlying Made Ground will have no significant impact on groundwater. It is fair to conclude, post development, that there is a lower risk than the current baseline (*i.e.* untreated infiltration through an unsurfaced site), largely due to the silt treatment proposed, and the presumption that the surface water quality at the soakaway points is the same as the rest of the site and not significant. Therefore, the residual impact (post development) is likely to be beneficial (with respect to groundwater quality).

An oil separator is not proposed for the car park as it is smaller than 800m^2 and has less than 50 parking spaces (Environment Agency, 2019).

Full details are outlined within the provided drainage strategy report.

9.6 Fugitive Emissions to Air

There are two principal sources of fugitive emission to air from the installation:

- dust (potential suspended and nuisance dust) from the handling of incoming scrap metal and from the shredding process; and
- combustion products from the use of diesel plant, equipment, and vehicles.

9.6.1 Dust – Shredding

The shredder (mill) includes a high-pressure water injection system used to cool the shredder and to provide suppression of localised fugitive dust surrounding the disc rotor (**Figure *9-3***).

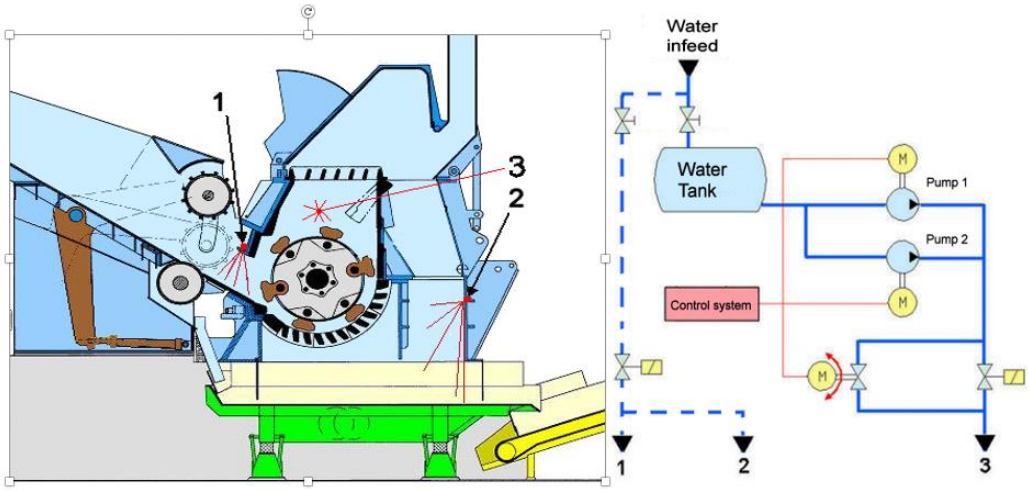

Figure 9-3: *Typical shredder middle section*

The system is rated for up to 30 litres per tonne of scrap throughput which could equate to between 65 to 80 litre/minute (maximum). However, this depends greatly on type of scrap and prevailing weather conditions. Application of the water is controlled via PLC. The air surrounding the shredder rotor assembly (containing metallic and non-metallic particulates) is dampened down with an automatic water injection system into the shredding chamber. The system only injects water when it is required by reading the load of the shredder, thus minimising the water usage. The water from the injection process is lost to atmosphere as steam. The objective is to evaporate all as steam and therefore keeping the output dry.

The system is fitted with the (manual) ability to discharge (deluge) up to 5,000 litres of water into the system quickly in the event of a fire. This not only supresses fire in the middle section of the shredder but also carries it forward on to adjacent conveyor systems providing additional protection.

9.6.2 Dust – Storage Piles and Handling

Dust emissions can occur at several points in the storage cycle, such as material loading onto the storage piles, disturbance by strong wind currents, and loadout from the storage piles. The movement of trucks and loading equipment in the storage pile area can also a source of dust.

Dust control techniques include source reduction (mass transfer reduction), source handling improvement (*e.g.* work practices, transfer equipment, loading and unloading, drop heights,

wind sheltering, moisture retention) and source treatment (*e.g.* water sprays or dust suppression).

A fugitive dust impact assessment has been undertaken and is submitted with the application alongside an operational dust management plan.

9.6.3 Vehicle and Plant Emissions

Movement of diesel-powered vehicles (*i.e.* material handlers and road transport) in to and around the site will generate diesel particulate emissions. All plant and equipment shall be maintained in accordance with manufacturers recommendations. Where unplanned emissions are noted, corrective actions shall be instigated.

In the UK, the legislation governing emissions produced by engines fitted in Non-Road Mobile machinery (NRMM) is the *Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999*, as amended. This sets emission standards for carbon monoxide, hydrocarbons, oxides of nitrogen and, for diesel engines, particulate matter. The proposed equipment will meet specified current standards.

Where available, the equipment will be fitted with Selective Catalytic Reduction (SCR). SCR technology is used to reduce the NOx content in the exhaust gases. A chemical process is started by injecting reductant, a urea & water mixture (Ad-blue), into the exhaust gas stream. During injection the water evaporates & the urea breaks down to form ammonia. The ammonia then reacts with the nitrogen gases in the catalytic converter & forms harmless products such as nitrogen gas & water.

The use of alternative fuels (such as electrical or hybrid supply) is not yet commonplace within the mobile plant industry. Various suppliers such as Terex Finlay are in the process of bringing to market hybrid technology dual power equipment. The dual powered machines are electrically driven allowing the end user to run from mains supply with the aim of giving significant savings on energy costs. However, at the current time the range of models is limited and largely untested.

The Centre for Low Emission Construction (CLEC), part of the Environmental Research Group at King's College London[2], has stated that:

"*This technology is still in its early days and the fuels savings, which will be a driver behind sales, and emission reductions in real-world operation are still being evaluated. A fuel saving of up to 28% and reduction in emissions of up to 90% compared with conventional equipment*

2 https://clec.uk/

has been reported. Some tests found these to be significantly less when tested in comparison with the latest non-hybrid equipment with new engine technology and tail-pipe scrubbers and these are not representative of many of the older diesel equipment commonly in use today".

At the current time, until the hybrid market matures, Celsa feels diesel powered equipment (fitted with efficient clean engines and abatement systems) represents BAT.

9.7 Fugitive Emissions to Land, Surface Water, Sewer and Groundwater

9.7.1 Introduction

There are some types of emission that may cause pollution but do not have set limits within permit conditions. In permits these are called emissions not controlled by emissions limits or fugitive emissions. For there to be a potential impact there needs to be a source, pathway, and receptor (**Figure 9-4**).

Figure 9-4: *Fugitive emissions (Source - Pathway - Receptor)*

The principal means of pollution prevention is the careful handling and storage of potentially polluting substances. In most cases this is determined by the level of containment of a substance, *i.e.* spill prevention. Three levels of containment have been considered:

- **Primary Containment** – *e.g.* a drum, vessel, pipe, bag, *etc.* containing the substance.
- **Secondary Containment** – *e.g.* a bund, double wall vessel or pipe, vent pipe, catch-pit *etc.* designed to retain the substance in the event of a failure of primary containment.
- **Tertiary Containment** – additional measures provided to contain an unplanned release (*e.g.* an oil interceptor in a surface water drain, a concrete hardstanding for road-tankers offloading to a bulk storage tank, *etc.*).

In all cases the actual technique (*i.e.* the physical control) is supplemented by effective management control through the development and use of appropriate operational procedures with the overall aim of breaking the S-P-R pollution linkage.

9.7.2 Sources

On-site sources that could lead to potential fugitive emissions to land, surface water, sewer or groundwater include:

- leaks and spills from the handling, storage and use of process chemicals, maintenance chemicals and vehicle and plant fuels;

- leaks and spills from on-site vehicles and plant during use and refuelling;
- loss of containment due to in-plant failure (e.g. hydraulic systems);
- losses to ground from the handling and loose storage of dry materials; and
- fire water run-off.

9.7.3 Pathways and Receptors

It is important to note that a pathway, such as groundwater, can be both a pathway and a receptor for site-derived fugitive emissions.

The Site Condition Report (SCR) (Ref. 021-1892 Celsa Cardiff Variation - SCR REV01) indicates that the installation is directly underlain by:

- **Made Ground** – Made Ground (Undivided) - Artificial Deposit.
- **Superficial Deposits** – Tidal Flat Deposits - Clay, Silt and Sand.
- **Bedrock Deposits** – Mercia Mudstone Group – Mudstone.

From historical maps and information provided by Celsa representatives it is known that the site was reclaimed from the Severn Estuary in the 1960s. Reclamation materials comprised slag and other steel manufacturing waste materials from local steel manufacturing facilities, hence historic pollution (due to the nature of the fill materials) is likely to be present.

From a review of the environmental database, the hydrogeological deposits are classified as:

- **Made Ground** – Not classified.
- **Superficial Deposits** – Secondary Aquifer - Undifferentiated. Secondary Undifferentiated has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- **Bedrock Deposits** – Secondary B Aquifer. These are predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

The site is not within a groundwater Source Protection Zone (SPZ). The closest existing abstraction licence (Ref. 21/57/25/78) is operated by Celsa Manufacturing (UK) Ltd with a borehole located at ST 21350 76100. The water is used for process cooling and dust suppression as part of a steel works operation.

The site is located adjacent to the Cardiff Flats (edge of the Severn Estuary). There are no surface water abstractions associated with the site or any other site within 1-km.

9.7.4 Subsurface Structures

The operator has established and recorded the routing of all installation drains and subsurface pipework. Inspection and maintenance programmes for all subsurface structures has been established and will be implemented as per the planned preventive maintenance schedule.

9.7.5 Site Surfacing

The operator has designed appropriate tertiary containment surfaces for all operational areas, taking into consideration collection surface water capacities, surface thicknesses, strength/ reinforcement, falls, materials of construction, permeability, resistance to chemical attack and inspection and maintenance procedures.

Where required (based on risk) the operational areas have been equipped with impervious surface, spill containment kerbs, sealed construction joints and a connection to a sealed drainage system.

9.7.6 Above Ground Storage Tanks (ASTs)

There are no standalone ASTs associated with the shear or shredder installation (*e.g.* fuel storage ASTs *etc.*). All vehicle refuelling will take place using existing (permitted) facilities and storage arrangements.

There is an internal 8,000 litre hydraulic oil tank associated with the shear. The volume of the shear hydraulic circuit totals 12,600 litres. All hydraulic tanks are part of the equipment as supplied from the manufacturer.

The shredder includes hydraulic systems (*i.e.* cylinder hydraulic power unit, hydraulic motor power unit, nearing lubrication unit and hydraulic distribution piping system). All hydraulic tanks are part of the equipment as supplied from the manufacturer. Until such time as the supplier is selected the hydraulic volumes cannot be stated.

Various ASTs are associated with the ELV processing station for the storage of petrol/diesel, waste oil, coolant, washer fluid and brake fluid. The tanks will be provided with adequate secondary containment (once purchasing source has been selected).

9.7.7 Storage areas for IBCs, drums, bags

All storage areas shall be located away from drains and sensitive boundaries and should be protected against vandalism. The site (as a whole) is protected by a 2.4 m high palisade fence.

Storage areas shall have appropriate signs and notices and shall be clearly marked out, and all containers and packages should be clearly labelled. All raw materials are supplied and stored in labelled UN approved containers. Incompatible substances shall be kept apart, segregated and/or isolated in-line with HSG71 (Health and Safety Executive, 2009).

Where spillage of any stored substance could be harmful to the environment, the area shall be appropriately kerbed or bunded.

The maximum storage capacity of storage areas shall be stated (within management system documentation) and not exceeded, and the maximum storage period for containers should be specified and adhered to.

Containers shall be stored with lids, caps and valves secured and in place. This approach shall also be applied to nominally emptied containers.

All containers, drums and small packages should be regularly inspected (at least weekly). Procedures shall be in place to deal with damaged or leaking containers.

9.7.8 Management Controls

All on-site vehicles have diesel and hydraulic tanks. The total loss of the fuel/oil within these tanks is rare but there is a potential risk. There is also a potential risk of spillage during refuelling operations, but this will only ever take place on the hard standing. Emergency spillage kits will be available and will be regularly inspected. The emergency spill kit training is provided to employees.

All accidents will be logged, investigated and actions will be undertaken to prevent reoccurrence. The site environmental risk assessment and Emergency Management Plan will be reviewed annually.

9.8 Odour

Based upon the nature of the proposed operations, the wastes being stored, handled, and treated and their location (in relation to sensitive receptors) no significant odour issues are anticipated. Thus, an odour management plan has not been produced.

Although the installation represents a very low risk, olfactory monitoring will be undertaken by Site staff as part of the weekly Site inspections. The presence or otherwise of any offensive odours shall be recorded in the Site Diary. If an odour is recorded, the possible source(s) shall be investigated by Site staff and preventative action taken. All actions taken shall be recorded within the Site Diary.

Celsa Manufacturing (UK) ltd believe that the operations give no reasonable cause for offence or annoyance regarding odour.

9.9 Pests

Based upon the nature of the proposed operations, the wastes being stored, handled, and treated and their location no significant pest issues are anticipated. However, potential issues have been identified with Tin Can Stockpiles. As a result, an operational procedure has been drafted for the Rover Way Site Ref. ECP59 Tin Can Stockpile Management Procedure (Revision 1, July 2022) that incorporates limited (but specific) systems for the identification and management of potentials pests. This procedure is provided as an attachment.

Given the limited nature of the potential pest issues (*i.e.* one small volume specific waste stream) a pest management plan has not been produced.

Although the installation represents a very low risk, pest monitoring will be undertaken by Site staff as part of the weekly Site inspections. The presence or otherwise of any pests shall be recorded in the Site Diary.

10 Noise and Vibration

10.1 Introduction

Within this section noise should be taken to refer to noise and/or vibration as appropriate, detectable beyond the site boundary. Where noise issues are likely to be relevant, the operator is required, in the application, to provide information on the following:

- the main sources of noise and vibration associated with the installation;
- the nearest noise-sensitive sites;
- conditions/limits imposed under other regimes (*e.g.* planning);
- the local noise environment;
- any environmental noise measurement surveys, modelling or any other noise measurements; and
- any specific local issues and proposals for improvements.

The level of detail supplied should be in keeping with the risk of causing noise-related annoyance at sensitive receptors.

10.2 Noise Impact Assessment

An assessment has been undertaken considering the potential sources and associated impacts on the nearest sensitive receptors in the vicinity of the proposed site in accordance with the most relevant national and local standards and guidelines. The assessment is presented within a standalone report Ref. 021-1892 E3195 Celsa Noise Impact Assessment Report_v1-1. As required all modelling files have been submitted with the application.

Based on the information presented within this assessment, the excess of the calculated rating over the background sound level indicates that there is low likelihood of newly introduced adverse impacts due to the proposed new activities.

10.3 Noise and Vibration Management Plan

A noise and vibration management plan has been produced and is provided as an attachment to this application.

11 Emission Limits and Monitoring

11.1 Monitoring of emissions to air

11.1.1 Point source emissions to air – Shredder

As stated within *Section 9.1* the lighter fraction from the shredder metal cleaning process is carried into a cyclone. In the cyclone, the heavier fluff/dirt waste drops down to the waste out conveyor via a rotary valve. The lighter dust is carried upwards back to the fan, where a bleed off is taken to extract the dirty air through a filter bag house for cleaning. The outlet from the bag filter unit discharges to atmosphere through an 18-metre stack **(Emission point Ref: A11)**.

The monitoring location provided on emission point A11 will meet the requirements outlined within Environment Agency's M1 – Guidance on sampling requirements for monitoring stack emissions (Environment Agency, 2017).

The proposed monitoring schedule for A11 is outlined within **Table *11-1*** and has been aligned to BAT (Environment Agency, 2021).

Table 11-1: *Emission Point A11 (Shredder)*

Source	Abatement plant exhaust (filter bag plant) serving the shredder			
Parameter	**Emission Limits**	**Reference Period**	**Frequency**	**Standard**
Particulate (dust) (1)	5 mg/m^3	Hourly average	6 monthly	BS EN 13284-1
Total Volatile Organic Compounds (TVOC)	None set	None set	6 monthly	EN 12619
Brominated flame retardants (BFR) (2)	None set	None set	Annual	None set
Dioxin-like PCBs (2)	None set	None set	Annual	EN 1948-1, -2 and -4
Metalloids As, Cd, Co, Cr, Cu, Mn, Pb, Sb, Se, Ti and V (2)	None set	None set	Annual	EN 14385
PCDD/F (2)	None set	None set	Annual	EN 1948-1, -2 and -3 or CEN/TS 1948-5

Source	Abatement plant exhaust (filter bag plant) serving the shredder			
Parameter	**Emission Limits**	**Reference Period**	**Frequency**	**Standard**
Notes: (1) Average value of 3 consecutive measurements of at least 30 minutes each. The 3 consecutive measurements must be representative of the dust and particulate emissions from the operations at the site. (2) The monitoring would only apply when the substance concerned is identified as relevant in the waste gas stream based on the inventory. The reference conditions are 273.1 K, 101.3 kPa, without correction for water content.				

11.1.2 Fugitive Emissions to Air

As outlined within the fugitive dust impact assessment there are currently two off-site ambient air quality monitoring locations one of which (Willows High School) is listed as a permit requirement (Ref. EPR/TP3639BH - Table S3.4 Ambient air monitoring requirements).

Celsa would propose the following improvement condition once the shear and shredder plant become operational.

Proposed Improvement Programme

Installation of two Turnkey Optical Particle Analysis System (TOPAS) monitors or other agreed method on the Rover Way site near the eastern and western site boundaries at locations agreed with NRW. The monitoring stations shall measure wind direction, wind velocity, PM10 particulate matter and PM2.5 particulate matter on a continuous basis. The results of the monitoring shall be reported to NRW on a quarterly basis (01/01, 01/04, 01/07 and 01/10).

The ambient air quality monitoring locations, post-variation, are outlined within ***Table 11-2*** and within ***Figure 11-1***.

Table 11-2: *Ambient air quality monitoring*

Location	Location	Parameter	Frequency	Standard
Location 1 Haith Plant NGR – TBC	On-site	Wind direction Wind velocity PM_{10} $PM_{2.5}$	Continuous	TOPAS monitor
Location 2 Main Entrance near Tides Fields Way NGR – TBC	On-site	Wind direction Wind velocity PM_{10} $PM_{2.5}$	Continuous	TOPAS monitor
Location 3 Willows High School NGR ST 21118 76755	Off-site	Wind direction Wind velocity PM_{10} $PM_{2.5}$	Continuous	TOPAS monitor
Location 4 (1) Baden Powell School NGR – TBC	Off-site	Wind direction Wind velocity PM_{10} $PM_{2.5}$	Continuous	TOPAS monitor

Note:

(1) Although Location 4 should be able to collect useful background information it is not under the control of Celsa so monitoring data availability cannot be guaranteed. All data for this monitoring station is accessed via the AirQWeb portal (https://www.airqweb.com/). Celsa would not propose that this monitoring station is listed within the permit. Where data is available Celsa will provide it alongside Location 1, Location 2, and Location 3.

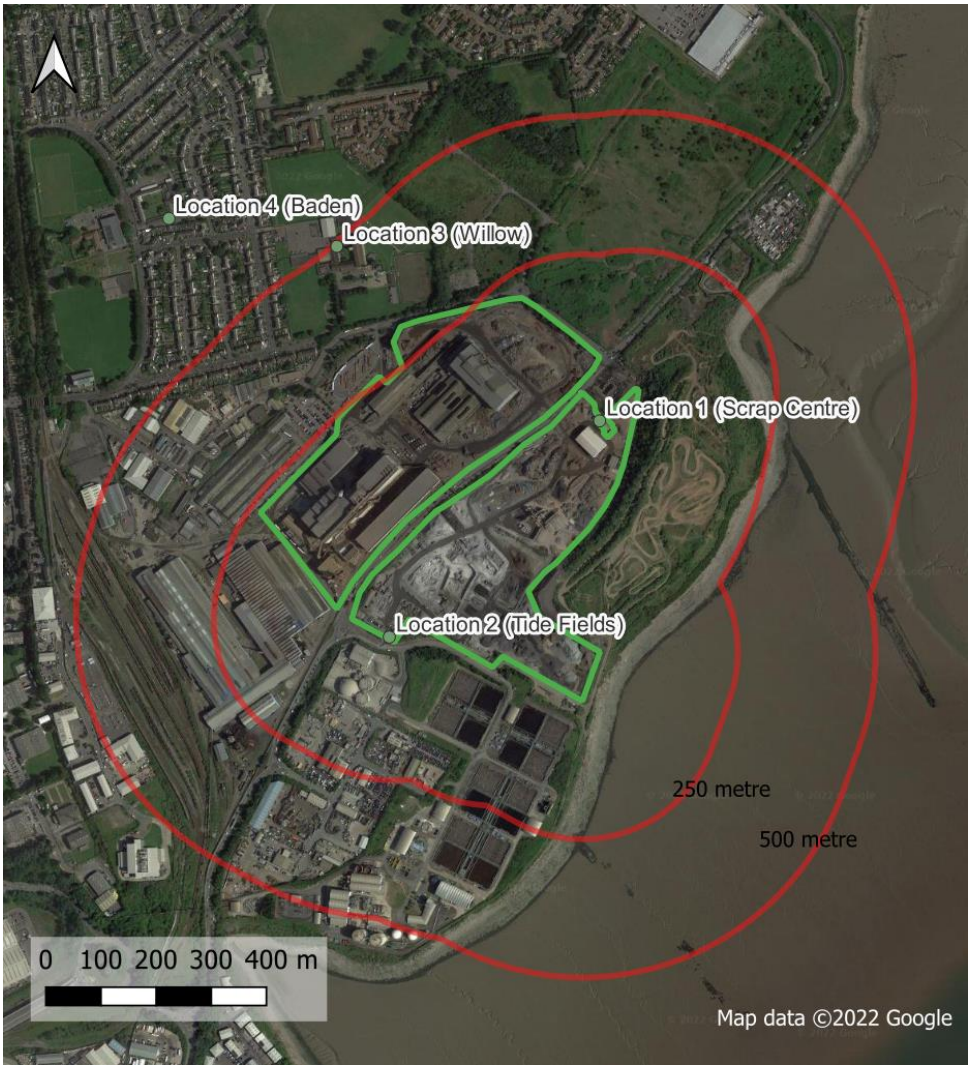

Figure 11-1: *Proposed ambient air quality monitoring stations*

11.2 Monitoring of emissions to surface water

There are no new point source emissions to surface water. No monitoring is required.

11.3 Monitoring of emissions to sewer

There are no new point source emissions to sewer. No monitoring is required.

11.4 Monitoring of emissions to land

There are point source emissions to land from the installation. No monitoring is required.

11.5 Monitoring of emissions to groundwater (via soakaway)

Given the nature of the proposed infiltration strips (*Section 9.5*) monitoring of discharges to ground (via infiltration) is not possible or proposed.

11.6 Monitoring of noise emissions

No formal (on-going/planned) environmental noise surveys are proposed once the installation is operational. This will be subject to review if complaints are received. However, Celsa would propose the following improvement condition once the shear and shredder plant become operational.

Proposed Improvement Programme

Following completion of the shredder and shear plant installation, the Operator shall undertake noise monitoring at the nearest sensitive receptors. This shall include a full noise monitoring survey and assessment meeting the BS4142:2014 standard including details of local conditions *e.g.* meteorological conditions (wind direction) including 1/3rd octave and narrow band (FFT) measurements to identify any tonal elements or low frequency noise.

Upon completion of the work, a written report shall be submitted to Natural Resources Wales. If rating levels likely to cause complaints or disturbance at sensitive receptors are detected as a result of the installation operation, the report shall include an assessment of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.

11.7 Monitoring of odorous emissions to air

Based upon the nature of the proposed operations and their location (in relation to sensitive receptors) no significant odours are anticipated (*i.e.* the installation represents a very low risk).

No formal odour monitoring is therefore proposed.

12 Environmental Risk and Impact Assessment

12.1 Introduction

This section of the technical submission provides a summary of the assessment of the environmental significance of the emissions from the installation by looking at the Site in the context of its environmental setting and UK guidance for such assessments.

12.2 Risk and Impact Assessments

12.2.1 General Risk Assessment

A standard risk assessment has been undertaken for the shear and shredder process in-line with current guidelines. (Ref. 021-1892 Celsa Cardiff Variation - General Risk Assessment REV01).

No actions have been identified.

12.2.2 Air Quality Impact Assessment

A suitable air quality risk assessment of emissions to atmosphere from the shredder has been undertaken using ADMS 5.2 modelling (Ref. 021-1892 Celsa Shredder Air Quality Risk Assessment REV02). The principal emission point to the atmosphere is Stack A11, associated with emissions of particulate matter (PM), including fine particulate matter (PM_{10} and $PM_{2.5}$).

The assessment concludes that emissions to the atmosphere at their emission limits from the proposed installation give rise to predicted ground-level pollutant concentrations (process contributions, PC) that are not of concern to human health or ecosystems. The impacts are predicted to be insignificant.

No actions have been identified.

12.2.3 Emissions to Water Impact Assessment

Ground investigations undertaken across the Rover Way site suggest that the baseline groundwater quality in the superficial and Made Ground deposits are very likely to be contaminated (to some extent) with concentrations of pollutants above adopted guidelines, particularly metals such as arsenic, chromium, copper, magnesium, selenium and hydrocarbons and Polycyclic Aromatic Hydrocarbons (PAHs) because of the past activities (*i.e.* the land reclamation processes). However, gross contamination that affects the overall integrity of the groundwater body is not likely to be occurring under the current conditions.

The proposed (extensive) hardstanding and controlled discharge via a SuDS Approval Body (SAB) approved treatment system should be considered BAT in conjunction with other BAT requirements such as primary and secondary containment systems, accident and emergency management systems and the provision of spill response equipment.

What is left is the residual impact to the groundwater body, which is currently failing, for some parameters, water quality standards (for other reasons). It is fair to conclude that this is a lower risk than the baseline, largely due to the silt and treatment systems proposed, and the presumption that the contamination at the infiltration points is the same as the rest of the site and not significant.

Therefore, the residual impact (post implementation) is minor beneficial.

12.2.4 Fugitive Dust Impact Assessment

An assessment of fugitive dust emissions has been undertaken using available baseline data combined with an assessment of potential impacts assessed using current IAQM Guidance.

Suggested improvements have been identified with respect to on-site monitoring of particulate emissions (*Section 12.4*).

12.2.5 Noise Impact Assessment

An assessment has been undertaken considering the potential sources and associated impacts on the nearest sensitive receptors in the vicinity of the proposed site in accordance with the most relevant national and local standards and guidelines. The assessment is presented within a standalone report Ref. 021-1892 E3195 Celsa Noise Impact Assessment Report_v1-1. As required all modelling files have been submitted with the application.

Based on the information presented within this assessment, the excess of the calculated rating over the background sound level indicates that there is low likelihood of newly introduced adverse impacts due to the proposed new activities.

Suggested improvements have been identified with respect the monitoring of noise emissions post installation of the proposed equipment (*Section 12.4*).

12.3 Best Available Techniques (BAT) Assessment

A BAT assessment has been undertaken against the current relevant standards:

- Environment Agency (2021). Treating metal waste in shredders: appropriate measures for permitted facilities, 20 October 2021, https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities/1-mechanical-treatment-in-shredders

- 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, https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ:L:2018:208:TOC&uri=uriserv:OJ.L_.2018.208.01.0038.01.ENG

A line-by-line assessment has been made including statements outlining how BAT is achieved. The results are summarised within a separate attachment Ref. 021-1892 Celsa Cardiff Variation - BAT Assessment REV01.

12.4 Improvement Programme

The following items have been identified as potential areas for improvement *(***Table 12-1***).*

Table 12-1: *Proposed improvement programme*

Area	Improvement Condition
Noise monitoring	Following completion of the shredder and shear plant installation, the Operator shall undertake noise monitoring at the nearest sensitive receptors. This shall include a full noise monitoring survey and assessment meeting the BS4142:2014 standard including details of local conditions *e.g.* meteorological conditions (wind direction) including 1/3rd octave and narrow band (FFT) measurements to identify any tonal elements or low frequency noise. Upon completion of the work, a written report shall be submitted to Natural Resources Wales. If rating levels likely to cause complaints or disturbance at sensitive receptors are detected as a result of the installation operation, the report shall include an assessment of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.

Area	Improvement Condition
Fugitive dust monitoring	Installation of two Turnkey Optical Particle Analysis System (TOPAS) monitors or other agreed method on the Rover Way site near the eastern and western site boundaries at locations agreed with NRW. The monitoring stations shall measure wind direction, wind velocity, PM10 particulate matter and PM2.5 particulate matter on a continuous basis. The results of the monitoring shall be reported to NRW on a quarterly basis (01/01, 01/04, 01/07 and 01/10).