



CELSA
GROUP



**Site Condition Report
Normal Variation (Asphalt Plant)
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:
018-1666

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Abbreviations

ASR	Application Site Report
BGS	British Geological Survey
EA	Environment Agency
EAME	Earth & Marine Environmental Consultants Ltd
EPR	Environmental Permit
NGR	National Grid Reference
NRW	Natural Resources Wales
NVZ	Nitrate Vulnerable Zone
SCR	Site Condition Report
SPZ	Source Protection Zone
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 normal variation as required under Regulation 20 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). The status log (history) for the permit is outlined in *Table 1-1*.

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.
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.

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Description	Date	Comments
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.

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 current permit boundary is outlined in Schedule 7 of the environmental permit (*Figure 1-1*)



Figure 1-1: Current New Melt Shop permit boundary

In addition to the New Melt Shop permit Celsa also operates a waste process (Permit Ref. PAN-002220, Waste Returns Ref. EPR/DP3699FM) on the Rover Way site which was previously operated by Sims Group Ltd until transfer of the permit was completed on 05/02/2018.

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This document has been prepared in-line with the current NRW Guidance *i.e.* Environmental Permitting Regulations Guidance for applicants H5 Site condition report – guidance and templates Version 5 (October 2014) *i.e.* provision of Sections 1 to 3 as outlined in the SCR Template.

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

1.2 Concurrent Permit Variations

It is important to note that the following variations have been submitted to NRW and are awaiting formal determination:

Table 1-2: Current permit variations (awaiting determination)

Ref.	Scope of Variation
018-1620 March 2019 Minor technical variation	The proposed amendment relates to Table S1.1 (A3) within the current permit which states 'shearing of up to 1000 tonnes of scrap metal per month prior to submission to the scheduled activity'. Celsa wishes to increase this limited to 5,000 tonnes of scrap metal per month to allow more flexible processing.
018-1620 May 2019 Normal variation	<p><u>Variation Section 01</u> – Consolidation of the waste process (Permit Ref. PAN-002220, Waste Returns Ref. EPR/DP3699FM) on the Rover Way site into the New Melt Shop permit (Ref. EPR/TP3639BH).</p> <p><u>Variation Section 02</u> – Variation to include a new integrated scrap metal recycling centre (incorporating oversize material processing, material processing via vibro-flume and material processing via Eddy Current Separation (ECS) on the Rover Way site.</p> <p><u>Variation Section 03</u> – Variation to remove Carbon monoxide limit from New Melt Shop permit (Ref. EPR/TP3639BH) in relation to emission point A1 (100 mg/m³, hourly average, continuous monitoring) in-line with current BAT reference documents (BREF).</p> <p><u>Variation Section 04</u> – Variation of the boundary of the current New Melt Shop permit (Ref. EPR/TP3639BH) to include the existing waste process (Permit Ref. PAN-002220) and the proposed new integrated scrap metal recycling centre.</p>

Note: Variation Section 04 (May 2019) will extend permit boundary to include the asphalt plant and slag crushing activities (in relation to this permit variation).

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1.3 Proposed Variation

The scope of this variation is as follows:

Variation Section 01 – Variation to include new slag crushing and screening equipment combined with an adjacent asphalt plant. All activities are to be located within a compound on the Rover Way site.

The crushing and screening of waste slag by G R Plant Ltd (Company Director: Mr. Gareth Rees) on behalf of Celsa is already permitted within the current permit (Ref. EPR/TP3639BH) as a Section 5.4 A(1)(b)(iii) activity. It is proposed that some new equipment is deployed on site to aid the processing of waste slag in order to feed the adjacent asphalt plant with aggregate. This equipment will be deployed within an area (compound) that is already covered by the current permit boundary.

The treatment process involves the crushing and screening of waste slag to recover high quality aggregates, which is produced according to the quality protocol for aggregate from waste steel slag. The slag once recovered, is used in the production of asphalt while metal will be re-used on-site (New Melt Shop). The purpose-built asphalt plant supplied by Parker Plant will be operated by Harsco Metals. The use of the recovered aggregate in the production of the asphalt is normally covered by a Local Authority issued Part B permit but, in this case, it can be consolidated in to the New Melt Shop permit. After consultation with the NRW it has been agreed that the asphalt activities should be permitted as a Section 3.5 Part B(e) activity *i.e.* coating road stone with tar or bitumen.

As a result, Schedule 1 of the New Melt Shop permit (EPR/TP3639BH) will need to be revised to include this activity.

1.4 Scope of Site Condition Report

The scope and extent of this Site Condition Report (SCR) is outlined within **Figure 1-2**.

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Figure 1-2: Site Condition Report (scope and extent)

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2 Site Details

The site details are outlined within *Table 2-1*.

Table 2-1: *Site details*

Required Information	
Name of Applicant	Celsa Manufacturing (UK) Ltd
Activity Address	Tremorfa New Melt Shop. Tremorfa Works, Seawall Road, Cardiff, CF24 5TH
National Grid Reference (NGR)	Grid Reference (6 figure) – Site south of Rover Way (ST 21444 76235)
Document reference and dates for Site Condition Report at permit application and surrender	018-1620 Celsa Cardiff Asphalt Variation - SCR REV00
Document references for site plans (including location and boundaries)	Annex A: Site Plans Figure A1: Site Location (Ordnance Survey 1:50,000) Figure A2: Existing and proposed installation Boundary (outline in green) Figure A3: Site external layout Figure A4: Site surfacing and drainage plan Figure A5: Environmental receptor plan

3 Condition of Land at Permit Issue

3.1 Environmental Setting

Desk-based research of the local geology, hydrogeology, hydrology and ecology was carried out to establish the potential for migration of contamination onto or away from the site, and to assess the surface water and groundwater sensitivity of the surrounding area. Information was obtained from several sources, namely:

- examination of published geological maps produced by the British Geological Survey (BGS), inspection of the BGS GeoIndex and associated borehole logs;
- review of Envirocheck Landmark report (Ref. 50481054_1_1);
- an examination of the EA's on-line aquifer classification;
- review of Natural Resources Wales (NRW) and Joint Nature Conservation Committee (JNCC) on-line environmental data; and
- a review of other online web and other publicly available information.

3.1.1 Location

The site is located approximately 3-km east of Cardiff City centre at National Grid Reference (NGR) ST 21444 76235. The site is located south of the existing permitted installation that is located on the northern side of Rover Way. The following current activities have been identified surrounding the Site:

- NORTH – Rover Way beyond which is the main Celsa Manufacturing (UK) site and permitted installation. A Western Power 132 kV substation is located adjacent to the northern edge of the site. The closest residential receptors to the site are located approximately 470 metres north (Willow Avenue) across the main steel works site (that forms the main part of the permitted installation). Willows mixed High School is in the same area approximately 450 metres north of the site.
- EAST – Cardiff Motocross Centre MX and Minibike Track (Foreshore MXC track) beyond which is the Severn Estuary(200 metres).
- SOUTH – Tide Fields Road beyond which a welsh Water waste water treatment works, and other light industrial activities associated with Tremorfa Industrial Estate.
- WEST – Rover Way beyond which is the main Celsa Manufacturing (UK) Ltd site.

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3.1.2 Geology

According to the BGS GeoIndex and the BGS 1:50,000 Cardiff solid and drift map (Sheet 263) the site is underlain by the following deposits:

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

A single borehole record is held for the site by the BGS (Reference: ST27NW294). The profile is outlined within *Table 3-1*.

Table 3-1: Borehole log ST27NW294

Depth (m bgl)	Description
0.00 – 3.00 m bgl	Made Ground (brick, stones, silt, clay <i>etc.</i>)
3.00 – 7.50 m bgl	Made Ground (ash, slag, clay <i>etc.</i>)
7.50 – 16.00 m bgl	Soft, firm in parts, grey slightly organic silty clay, weathering to brown colouration.
16.00 – 18.00 m bgl	Gravel with grey sand and nodules of grey silty clay.
18.00 – 19.00 m bgl	Stiff grey friable marl.
19.00 – 25.00 m bgl	Stiff red friable marl with lenses of grey marl and thin bands of hard marl
25.00 – 26.00 m bgl	Hard red marl
Notes: Name: ROVER WAY INDUSTRIAL SITE. NO.1, Length (m): 26.00m, Date: 1973, Easting: 321466, Northing: 176366. Water seepage at 7.00 m bgl, water strike (medium flow) at 16.00 m bgl. Rest water level at 14.00 m bgl. Ground level 9.43 m AOD.	

3.1.3 Hydrogeology

The aquifer classification system was updated on 1st April 2010 which provided new aquifer designations to replace the old system of aquifer classifications, such as Major, Minor and

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Non-Aquifer. This new system is in line with the EA's Groundwater Protection Policy (GP3) and the Water Framework Directive (WFD) and is based on BGS mapping. From a review of the environmental database and the Defra Magic on-line maps, the underlying 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 EA/NRW have defined Groundwater Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones are designated to protect the location from the risk of contamination from any activities that might cause pollution in the area, *i.e.* the closer the activity, the greater the risk. The SPZs show three main zones; an inner, an outer and the total catchment with a fourth zone of special interest, which the EA/NRW occasionally apply, to a groundwater source. The Site is not within an 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 (*Figure 3-1*). The water is used for process cooling and dust suppression as part of a steel works operation.

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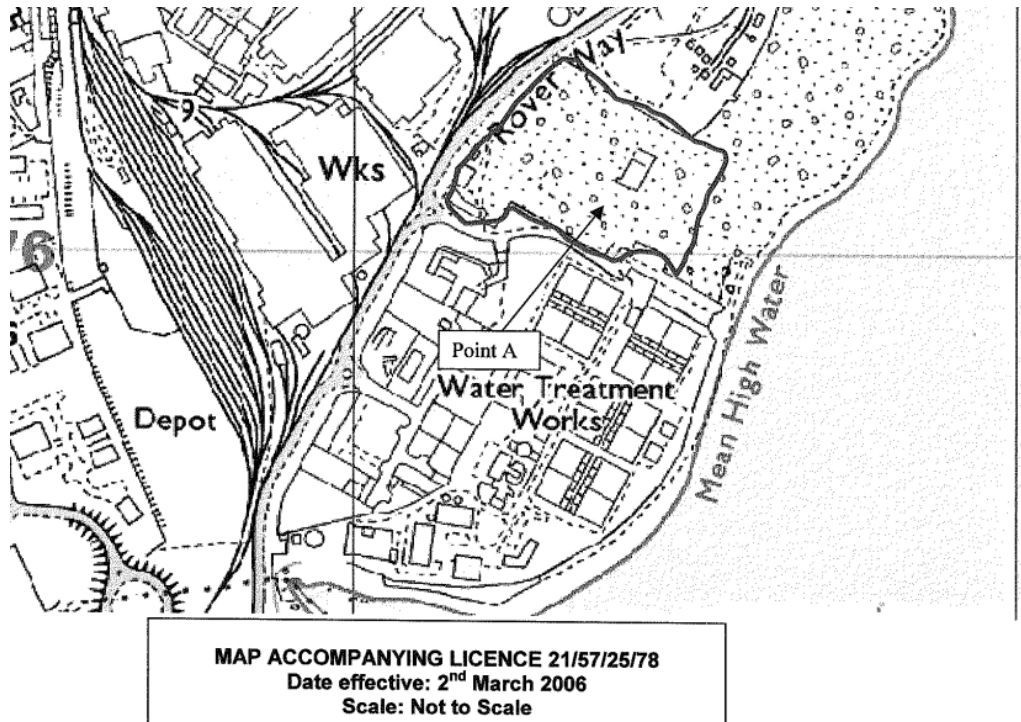


Figure 3-1: Groundwater abstraction point (Ref. 21/57/25/78)

The licence states that water is abstracted from marine alluvium/Electric Arc Furnace (EAF) slag and that the abstraction borehole is 25 metres deep.

There are currently no other groundwater abstractions associated with the site or within a 500 metre radius.

3.1.4 Hydrology

The site is located adjacent to the Cardiff Flats (edge of the Severn Estuary) (*Figure 3-2*).

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Figure 3-2: Surface water features

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There are no surface water abstractions associated with the site or any other site within 1-km.

3.1.5 Flood Risk

According to the NRW flood mapping the northern part of the site is within Flood Zone 3 (*i.e.* the extent of a flood from rivers with a 1% (1 in 100) chance or greater of happening in any given year and/or the extent of a flood from the sea with a 0.5% (1 in 200) chance or greater of happening in any given year) and Flood Zone 2 (*i.e.* the extent of a flood from rivers or from the sea with up to a 0.1% (1 in 1000) chance of happening in any given year, contains areas recorded to have flooded in the past and Flood Zone 2 is important from a planning context as it forms the basis of Zone C in the Welsh Government Development Advice Map).

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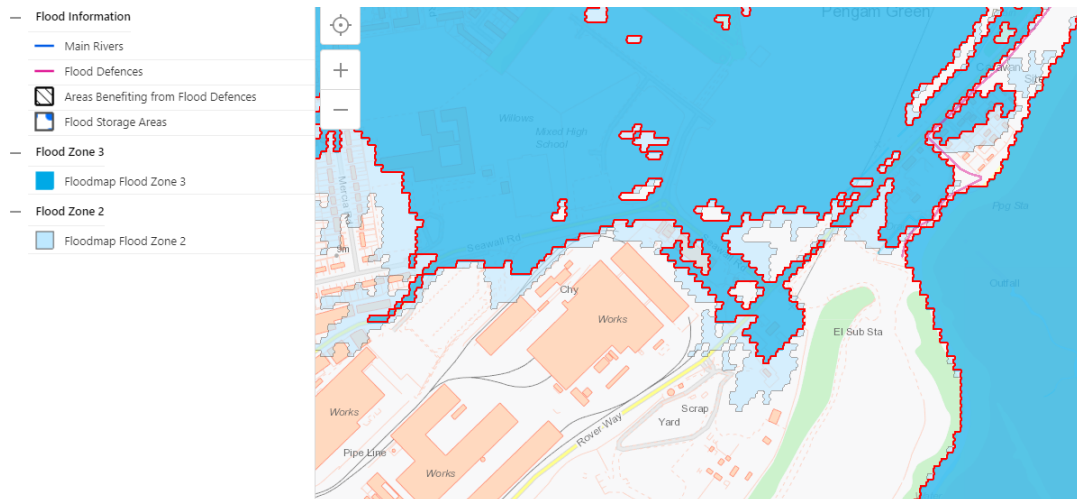


Figure 3-3: Flood zone mapping (NRW)

3.1.6 Ecology

The site is adjacent (within 250 metres) of the Severn Estuary which is designated a Ramsar Site, Special Area of Conservation (SAC), Special Protection Area (SPA) and a Site of Special Scientific Interest (SSSI) (Figure 3-4).



Figure 3-4: Ecology designations surrounding the site (Geoindex Onshore)

The Severn Estuary is important due to its immense tidal range which affects both the physical environment and the biological communities present in the estuary, for its unusual estuarine

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communities, reduced species diversity and high productivity. The high tidal range leads to strong tidal streams and high turbidity, producing community's characteristic of the extreme physical conditions of liquid mud and tide-swept sand and rock.

The estuary is particularly important for the run of migratory fish between the sea and rivers via the estuary. Species using the estuary include salmon (*Salmo solar*), sea trout (*S. trutta*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), allis shad (*A. losa alosa*), twaite shad (*A. fallax*) and eel (*Anguilla Anguilla*). The population of the sea lamprey and twaite shad are larger than in any other UK estuary. The rare and endangered allis shad is now only an occasional visitor although formerly a substantial spawning population was present.

The estuary is particularly important for migratory birds during passage periods in spring and autumn. These large bird populations are supported by the rich food resources available in the tidal flats and nearby freshwater wetlands, and regularly supports in winter over 20,000 waterfowl. The estuary regularly supports, during the same period, internationally important populations of five species of waterfowl, as well as notable nationally important wintering populations of bird species.

The estuary as a SAC designated for its estuary environment, Atlantic salt meadows, intertidal mudflats and sandflats covered by seawater at low tide, for the presence of Sea lamprey and reefs, and for its Sandbanks which are slightly covered by sea water all the time.

Additionally, the Gwent Levels (Rumney and Peterstone) are classified as a SSSI.

3.1.7 Residential Receptors

The closest residential receptors to the site are located approximately 470 metres north (Willow Avenue) across the main steel works site (that forms the main part of the permitted installation). Willows mixed High School is in the same area approximately 450 metres north of the site.

3.1.8 Protected Buildings

According to Historic Wales there are no National Monuments, Cadw Listed buildings or scheduled ancient monuments on-site or within 500 metres.

3.2 Pollution History

3.2.1 Pollution incidents that may have affected land

Reportedly there have been no significant pollution incidents at the site whilst the site has been in Celsa's ownership.

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.

According to the environmental database there are no recorded pollution incidents to controlled waters or substantiated pollution incidents associated with the Site.

The site, and all surrounding land south of Rover Way, is identified as historic landfill (of differing phases and time periods) (*Figure 3-5*).



Figure 3-5: Historic landfills

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The details of the main landfilling activities, both on-site and off-site are outlined within *Table 3-2*.

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Table 3-2: Main landfilling activities on-site and adjacent to the site

Operator	Location	Date	Material
(1) British Steel Corp (Ref. EAHLD31199)	On-site	1940 - Unknown	Inert and industrial waste
(2) GKN Fragmentiser (Ref. EAHLD15211)	Off-site (east)	1977 - 1981	Industrial and household waste
(3) Birds Fragmentiser Tip (Ref. EAHLD15267)	Off-site (east)	1981 - 1991	Industrial, household and special (hazardous) waste
(4) Slag Reduction Limited (Ref. EAHLD15269)	Off-site (south)	1977 - 1990	Insert and industrial waste
(5) Allied Steel and Wire (Ref. EAHLD15241)	Off-site (south)	1991 - 1994	Industrial waste (flue dust)
(6) Allied Steel and Wire (Ref. EAHLD15270)	Off-site (south)	1988 - 1991	Industrial and special waste (flue dust)

In addition to the landfill activities various waste treatment and recycling activities have been undertaken on the site (*Table 3-3*).

Table 3-3: Waste treatment activities

Operator	Location	Date	Material
Slag Reduction Company (Cardiff) Ltd (Ref. 93/2)	On-site	1993	Transfer station
Sims Metal UK Ltd (Cardiff Mill scale Services) (Ref. 30093)	On-site	1993	Mixed metal recycling site
Allied Metals Ltd (Ref. 94/04)	On-site	1994	Scrapyard
Sims Metal UK Ltd (Ref. 30124)	On-site	1996	Mixed metal recycling site
Phillip Metals (Europe) Ltd (Ref. 93/2)	On-site	1998	Transfer station with treatment

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3.2.2 Historical land-uses and associated contaminants

Information on site history was provided by reference to published historical ordnance survey maps. Several historical maps were examined as part of the environmental review.

From the earliest map of 1880 the site comprised of mud flats. By the mid to late 1960s the site had been reclaimed with waste materials (which from anecdotal information the reclamation materials are known to have comprised slag and other steel manufacturing waste materials from the surrounding steel manufacturing works and comprised mainly blast furnace slag); the site, and immediate surrounding area, which had also been reclaimed, is annotated on historical maps as being a 'disused tip'. The site since it was reclaimed has remained undeveloped to the present day.



Figure 3-6: Ordnance survey 1:10,000 (1975)

Landmark Order No. 50481054_1_1

The material used for reclamation was blast furnace slag and associated steel making wastes from the primary steel making process (*i.e.* manufacture of raw steel from iron ore, coke, lime, etc). The slags and residues from this process are quite different from those associated with EAF manufacture which is the electrical melting of sorted and quality-controlled scrap metal.

The blast furnace slag and primary steel making wastes are typically high in concentrations of heavy metals, sulphates and other impurities from the inefficient primary steel making processes. The principal environmental concern with this material is the leaching of heavy metals into water and the generation of inhalable dust containing these heavy metals.

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3.2.3 Any visual/olfactory evidence of existing contamination

No visual and/or olfactory evidence of significant contamination has been identified. The area is characterised by a layer of EAF slag over the surface.

3.2.4 Evidence of damage to pollution prevention measures

The site is used solely for the temporary storage and processing of waste materials (*e.g.* scrap metal) as detailed within the existing environmental permit (Ref. EPR/DP3699FM). The current pollution control measures are identified within the current permit.

Celsa operates an ISO14001 certified Environmental Management System (EMS) within which there are procedures to ensure the control of potentially polluting activities. Additionally, Celsa personnel undergo training in pollution prevention techniques.

3.2.5 Evidence of historic contamination, for example historical site investigation, assessment, remediation and verification reports (where available)

A previous ground investigation (permit baseline) was undertaken on the Mill Services Site during the Application for Permit Variation for an Extension of Licensed Area (R-010-0003) in July 2010. This report updates and extends the area covered by the previous Site Condition Report.

3.2.6 Baseline soil and groundwater reference data

The collection of representative baseline soil and groundwater data is important as it allows an operator to demonstrate soil and groundwater conditions at permit issue and at surrender. In addition, since the introduction of the Industrial Emissions Directive (IED), all permits have been reviewed to include a standard requirement:

Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

As a result, Celsa proposes to selectively collect soil and groundwater data for the areas included within this SCR (**Figure 1-2**). The current proposals are outlined below:

- **Slag crushing and screening area** – As this process involves the crushing and screening of the same type of material the site is made up from (*i.e.* British Steel Corp inert and industrial steelworks waste) there is no obvious benefit from undertaking a soil and groundwater assessment in this area. Celsa would propose the sampling from the adjacent asphalt plant area be used as a representative baseline for this area.

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- **Asphalt plant** – As part of the geotechnical and site preparation works Harsco has collected soil and groundwater data (where available) for the area of the proposed asphalt plant. A combined geotechnical and environmental site investigation was undertaken by Terra Firma (Wales) Limited in April 2019. The baseline soil and groundwater conditions are provided in *Annex E*:

- *Annex E – Table 5.1 Standard suite including asbestos;*
- *Annex E – Table 5.2 Speciated PAHs;*
- *Annex E – Table 5.3 Speciated Petroleum Hydrocarbons; and*
- *Annex E – Table 5.4 Polychlorinated Biphenyls.*
- *Annex E – Table 5.5. Groundwater conditions (maximum recorded values)*

Celsa shall maintain the installed boreholes described within *Annex E* in order to comply with EPR Condition 3.1.3 *i.e.* Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

- **Shred and Shear area** – As part of the geotechnical and site preparation works Celsa will collect soil and groundwater data (where available) for the area of the proposed shred and shear plant. This will be forwarded to NRW upon completion of the works. This permit application has yet to be submitted to NRW.
- **Integrated scrap metal recycling centre** – A combined geotechnical and environmental site investigation was undertaken by Terra Firma (Wales) Limited in January 2019. This was submitted within the 018-1620 variation application that was submitted in May 2019.

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,

Seawall Road, Cardiff, CF24 5TH

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4 Permitted Activities

4.1 Proposed Activity

The activities covered by this SCR are outlined in *Section 1.3*.



Photograph 4-1: *Location on new integrated scrap centre*



Photograph 4-2: *Location of new shred, shear and asphalt plant*



Photograph 4-3: *Location of new slag crushing and screening area*

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
Seawall Road, Cardiff, CF24 5TH

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4.2 Non-permitted activities undertaken

The site has minor maintenance activities, welfare facilities, office facilities and staff car parking. These areas are not to be included within the permitted installation.

4.3 Other requirements

Plans showing activity location and layout are provided in *Annex A*. The environmental risk assessment is outlined within the main technical document.

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
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Annex A: Figures

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
Seawall Road, Cardiff, CF24 5TH

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Annex B: Historical Maps

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
Seawall Road, Cardiff, CF24 5TH

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Celsa Manufacturing (UK) Ltd

Annex C: Environmental Database

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
Seawall Road, Cardiff, CF24 5TH

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Annex D: BGS Borehole Log

Site Condition Report (Normal Variation – Asphalt Plant)

Tremorfa New Melt Shop. Tremorfa Works,
Seawall Road, Cardiff, CF24 5TH

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Annex E: Geotechnical and Geoenvironmental Baseline Report