Fugitive Dust Impact Assessment
Celsa Manufacturing (UK) Ltd, Tremorfa New Melt Shop, Tremorfa Works, Seawall Road, Cardiff, CF24 5TH

On behalf of:
Celsa Manufacturing (UK) Ltd

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Environment Agency. (2011). *TGN M8 Monitoring Ambient Air, Version 2.* Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/301188/TGN_M8_Monitoring_Ambient_Air.pdf

Environment Agency. (2021). *Treating metal waste in shredders: appropriate measures for permitted facilities.* Retrieved from https://www.gov.uk/guidance/treating-metal-waste-in-shredders-appropriate-measures-for-permitted-facilities

European Commission. (2006). *Integrated Pollution Prevention and Control, Reference Document on Best Available Techniques on Emissions from Storage.* Retrieved from https://eippcb.jrc.ec.europa.eu/sites/default/files/2022-03/efs_bref_0706_0.pdf

European Commission. (2012). *2012/135/EU: Commission Implementing Decision of 28 February 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.* Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012D0135&from=EN

European Environment Agency. (2022). *EMEP/EEA air pollutant emission inventory guidebook*. Retrieved from European Environment Agency: https://www.eea.europa.eu/themes/air/air-pollution-sources-1/emep-eea-air-pollutant-emission-inventory-guidebook#:~:text=The%20joint%20EMEP%2FEEA%20air,compile%20an%20atmospheric%20emissions%20inventory.

Institute of Air Quality Management. (2016). *Guidance on the assessment of dust from demolition and construction (Version 1.1).* IAQM. Retrieved from http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf

Institute of Air Quality Management. (2016). *Guidance on the Assessment of Mineral Dust Impacts for Planning May 2016 (v1.1).* IAQM. Retrieved from https://iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf

Joint Research Centre, Institute for Prospective Technological Studies, Remus, R., Roudier, S., Delgado Sancho, L., et al. (2013). *Best available techniques (BAT) reference document for iron and steel production : industrial emissions Directive 2010/75/EU : integrated pollution prevention and control.* Retrieved from https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/IS_Adopted_03_2012.pdf

Kingsbury, B. &. (1981). Assessment of Nuisance from Deposited Particulates Using a Simple and Inexpensive Measuring System. *Clean Air, 11*(2), 77-81.

NRW. (2014). *TGN M17 Monitoring Particulate Matter in Ambient Air around Waste Facilities, Version 4.* Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_

data/file/301206/TGN_M17_-_Monitoring_of_particulate_matter_in_ambient_air_around_waste_facilities.pdf

US EPA. (2022). *AP-42: Compilation of Air Emissions Factors*. Retrieved from UK EPA - Air Emissions Factors and Quantification: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors

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 permit variation as required under Regulation 20 (variation) of the *Environmental Permitting (England and Wales) Regulations 2016* in relation to proposed activities to be undertaken at Tremorfa New Melt Shop. Tremorfa Works, Seawall Road, Cardiff, CF24 5TH (Permit No. EPR/TP3639BH).

The proposed permit variation has the potential to affect local air quality during the operational phase though the emission of dust and particulate matter. This report provides an assessment of the current baseline conditions (before the proposed variation) and makes a qualitative assessment of the potential operational impacts and the required best available techniques (BAT) required to control emissions to an acceptable level.

This assessment should be read in conjunction with the main installation application report.

1.2 Permit Boundary

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

Figure 1-1: *Permit boundary*

2 Methodology

2.1 Introduction

The methodology applied to this assessment has been aligned to current NRW Guidance as outlined within Technical Guidance Note M17 (Monitoring), Monitoring Particulate Matter in Ambient Air around Waste Facilities (NRW, 2014). Where required, IAQM Guidance on the assessment of dust from demolition and construction, Version 1.1 (Institute of Air Quality Management, 2016) has also been utilised. It is important to note that the IAQM is surrogate guidance (primarily utilised for planning purposes). The processing of scrap metals is similar (in large extent) to a demolition type project setting.

2.1.1 Study Area

The IAQM Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2016) states that the screening threshold for human receptors is 350 metres of the site boundary and for ecological receptors is within 50 metres of the site boundary. This is considered worst case as the majority of the activities *e.g.* shredder, shear, slag processing do not occur at the site boundary *i.e.* they are located within the site. Any external dust emissions associated with road transport outside the permit boundary (*i.e.* on the public road) has been excluded from the permit assessment process. The Rover Way site boundary, surrounding land use classification (receptors) and the associated buffers are outlined within **Figure *3-1***.

2.1.2 Operational Dust Emissions

The assessment examines the sources of dust associated with the operation of the scrap metal processing. The assessment considers the prevailing meteorological conditions at the site; particularly the frequency of wind speeds capable of carrying airborne dust and the frequency of rainfall considered sufficient to effectively suppress wind-blown dust emissions in assessing dust nuisance impacts.

The IAQM method is a qualitative risk-based approach based on the source-pathway-receptor conceptual model. The key steps are:

- **Assess site characteristics and baseline conditions** – This incorporates a review of baseline conditions including PM_{10} background and any existing dust deposition data; a description of site activities and characterisation of the site setting in terms of the location and sensitivity, and meteorological conditions (wind and rainfall).

- **Estimate dust impact risk** – The dust impact risk for each representative receptor is determined (residual dust risk after embedded mitigation) and the pathway is based upon the distance of the receptor from the dust source and the frequency at which it is down-wind from the source.

- **Estimate likely magnitude of effect** – The risk predicted at each representative receptor is considered together with the sensitivity of that receptor, to give the likely magnitude of the effect that will be experienced.

The IAQM Guidance suggests how the potential dust emission magnitude for different activities can be defined. In each case, not all the criteria need to be met, and that other criteria may be used if justified in the assessment. The suggested 'Dust Emission Magnitude' criteria for demolition activities are:

- **Large** – Total building volume >50,000 m^3, potentially dusty construction material (*e.g.* concrete), on-site crushing and screening, demolition activities >20 m above ground level;

- **Medium** – Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level; and

- **Small** – Total building volume <20,000 m^3, construction material with low potential for dust release (*e.g.* metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.

The IAQM Guidance (Institute of Air Quality Management, 2016) outlines sensitivity with regards to dust soiling (**Table *2-1***), health effects of PM_{10} (**Table *2-2***) and ecological effects (**Table *2-3***).

Table 2-1: *IAQM Receptor Sensitivity Criteria – Dust Soiling*

Sensitivity	Suggested Criteria
HIGH	Users can reasonably expect enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.

Sensitivity	Suggested Criteria
MEDIUM	Users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home. The appearance, aesthetics or value of their property could be diminished by soiling The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.
LOW	The enjoyment of amenity would not reasonably be expected. Property would not reasonably be expected to be diminished in appearance, aesthetics, or value by soiling There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.

Table 2-2: *IAQM Receptor Sensitivity Criteria – Health Effects PM_{10}*

Sensitivity	Suggested Criteria
HIGH	Locations where members of the public are exposed over a period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools, and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
MEDIUM	Locations where the people exposed are workers, and exposure is over a period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.

Sensitivity	Suggested Criteria
LOW	Locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets.

Table 2-3: *IAQM Receptor Sensitivity Criteria – Ecological*

Sensitivity	Suggested Criteria
HIGH	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
MEDIUM	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition. Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
LOW	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

The IAQM sensitivity matrices (Institute of Air Quality Management, 2016) for an area with respect to Dust Soiling Effects on People and Property, human health impacts and ecological impacts are outlined within ***Annex C***.

In accordance with the IAQM methodology (Institute of Air Quality Management, 2016) the dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts (with no mitigation applied). **Table *2-4*** provide a method of assigning the level of risk.

Table 2-4: *IAQM Risk of Dust Impacts - Demolition*

Area Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

For internal vehicle movements using the haul roads IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning (Version 1.1) (Institute of Air Quality Management, 2016) has been utilised.

2.1.3 Process Contributions

As outlined within the NRW Guidance (NRW, 2014) not all the airborne or deposited particulate matter around the site will be due to the facility itself; a proportion probably will be, but this process contribution (PC) will be superimposed on top of the underlying, ambient background contribution (BC). The total environmental level (the sum of PC + BC) is what is important from an exposure point of view.

2.1.4 Use of Emission Factors

BAT, as defined within the BAT conclusions iron and steel production (European Commission, 2012) is to determine the order of magnitude of diffuse emissions from relevant sources by defined methods. Whenever possible, direct measurement methods are preferred over indirect methods or evaluations based on calculations with emission factors (*i.e.* either using VDI 3790 Part 3 or US EPA AP42).

Unfortunately, AP-42, *Compilation of Air Pollutant Emission Factors* (US EPA, 2022) does not specify emission factors for either scrap metal shearing, scrap metal shredding or the handling/storage of scrap metal.

Likewise, the European Environment Agency (EEA) air pollutant emission inventory guidebook 2019 (European Environment Agency, 2022) does not included any relevant emission factors.

The Reference Document on Best Available Techniques on Emissions from Storage (July 2006) (European Commission, 2006) states that scrap metal is classified as an S4 dispersion class material (moderately drift sensitive, wettable).

Work undertaken by the European Commission – DG Environment (Framework contract No ENV.G.1/FRA/2004/0081)[1] references TNO Delft Emission Factors in relation to the handling and crushing of materials. Materials are classified according to their susceptibility to be dispersed and the possibility to prevent this dispersion by wetting (for non-reactive materials). Emission factors from storage increase with the ability to drift of the material. Wetting the materials reduces by a factor 10 the emission of dust from storage. Factsheet E11 (Preparation of scrap metal) outlines emission factors associated to the handling and crushing of materials (**Table *2-5***). These emission factors could be used to qualitative assess fugitive dust emissions from the shearing and shredding operations.

Table 2-5: *Emission factors associated to the handling and crushing of materials*

Class of Material	Drift Sensitivity	Wettable	Material Example	Emission Factor of the dry material (g/kg)
S1	High	No	-	1
S2	High	Yes	Shredder dust (fines and fluff)	1 (0.1)
S3	Moderate	No	-	0.1
S4	Moderate	Yes	Ferrous metal, non-ferrous metal, waste	0.1 (0.01)
S5	Slight	No	-	0.01
Note: Figure in parenthesis are the emission factor of the wet material.				

Although the TNO methodology provides an estimate of fugitive dust emissions it should be taken within context. Within the European Commission – DG Environment (Framework contract No ENV.G.1/FRA/2004/0081) report the Confederation of the Belgian Recuperation (COBEREC), who represents recovery and recycling companies in Belgium, stated it considers scrap material to be an S5 material, since scrap does not generate dust. The dust on the scrap comes from crushing, transportation, *etc.* Additionally, COBEREC stated that wetting the material can cause negative effects on product quality (*e.g.* corrosion, separation efficiency). Therefore, the use of reduction measures at source, such as capping of transport systems,

1 Data gathering and impact assessment for a review and possible widening of the scope of the IPPC Directive in relation to waste treatment activities, European Commission – DG Environment, Framework contract No ENV.G.1/FRA/2004/0081, Assignment No 22, Specific agreement for study N° 07010401/2006/445820/FRA/G1, Final Report, 25 September 2007, 2007/IMS/R/

cleaning of roads, *etc.* were the preferred method. No emission reduction efficiency figures are available for these techniques.

2.2 Relevant Objectives and Guidelines

2.2.1 Suspended Particulates

The National air quality objectives with respect to PM_{10} and $PM_{2.5}$ are outline within **Table *2-6***.

Table 2-6: *National air quality objectives*

Pollutant	Objective	Measurement Period	Dates	Notes
PM_{10}	50 µg/m^3	24-hour mean (1)	By 31/12/2004	Not to be exceeded more than 35 times per calendar year
PM_{10}	40 µg/m^3	Annual mean	By 31/12/2004	-
$PM_{2.5}$	25 µg/m^3	Annual mean	From 2020	-

Notes:

(1) Use of 90.4%ile of 24-hour means where measured data capture is less than 85%.

The Institute of Air Quality Management (IAQM) has produced Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2016) that, although not technically related to scrap metal processing, does provide a useful series of indicators and assessment methodologies that could be utilised within an assessment.

2.2.2 Nuisance Dust

No statutory or official air quality criterion for dust annoyance has been set at a UK, European or World Health Organization (WHO) level. However, in England and Wales, a limit of 200 mg/m^2/day is often used for measurements with dust deposition gauges.

Measurement of soiling rate can be carried out by passive sampling of dust onto a horizontally positioned, white, sticky Fablon pad; the soiling of the exposed sticky pad is measured using a reflectance meter and expressed as the percentage Effective Area Coverage (%EAC) per day. Directional results can be compared to the guideline limits (%EAC day) as outlined within **Table *2-7***.

Table 2-7: *%EAC/day Situation and Likely Response (Kingsbury, 1981)*

%EAC/day	Situation	Response (1)
0.01	Rural	-
0.02	Suburban	-
0.2	-	Noticeable
0.3 – 0.4	Urban	
0.5	Rural (Summertime)	Possible complaints
0.7		Objectionable
0.8 – 1.0	Industrial	-
2.0	-	Probable complaints
5.0	-	Serious complaints
Note (1) Depending to some extent on the colour of the dust.		

2.2.3 Ecological Effects

The current NRW guidance (NRW, 2014) states that most relatively insensitive vegetation species will not be significantly affected by smothering at dust deposition levels below about 200 mg/m^2/day. The Highways Agency in its Design Manual for Roads and Bridges (HA 207/07, now withdrawn) suggests that only dust deposition levels above 1000 mg/m^2/day are likely to affect sensitive ecological receptors and states that most species appear to be unaffected until dust deposition rates are at levels.

3 Baseline Conditions

3.1 Introduction

This Section describes the baseline ambient air quality in the region of the installation.

Cardiff Council has designated four Air Quality Management Areas (AQMAs) within their administrative area. The closest AQMAs are Stephenson Court and Cardiff City Centre, located approximately 3-km northeast of the installation. These AQMAs were designated due to exceedences of the annual mean AQS objective for nitrogen dioxide (NO_2) and are therefore not relevant to this assessment.

Consultation with NRW in March 2022 stated that the main concerns were from increased dust from the Rover Way operation which may affect the travelling community to the west, and the industrial unit to the east. The assessment therefore considers both suspended particulate (PM_{10} and $PM_{2.5}$) and nuisance dust that contributes to dust fall.

3.2 Meteorological Conditions

The higher periods of risk for dust generation tend to relate to specific meteorological conditions. Analysis of precipitation, potential evapotranspiration, winds and atmospheric stability can give an indication when dusty materials can dry quickly and dust control measures, such as damping, may be required. The greatest risk of dust generation is when dry conditions prevail although dust generation is not restricted to these periods and can also occur during dry freezing conditions when dust control by damping down is not effective. There is no published data for scrap metal (as a material) with regards to the frequency of wind speeds capable of carrying airborne dust and the frequency of rainfall considered sufficient to effectively suppress wind-blown dust emissions (with respect to nuisance impacts). IAQM Guidance for mineral assessments (Institute of Air Quality Management, 2016) outlines the frequency of wind speeds capable of carrying airborne dust as greater than 5.5 ms^{-1}. Research by Leeds University on dust generation from quarry operations suggests that rainfall of greater than 0.2 mm per day is considered sufficient to effectively suppress windblown dust emissions.

The available wind data shows that the prevailing wind direction is from the west, which will transport emissions to the east. The relationship between the prevailing wind conditions and the surrounding land use is outlined within **Figure *3-1*** . This also includes the IAQM screening distances of 350 metres (human receptor) and 50 metres (ecological receptor).

The Meteoblue climate diagrams, presented below, are based on 30 years of hourly weather model simulations. They give good indications of typical climate patterns and expected

conditions. The results for Cardiff are provided below for precipitation (**Figure *3-2***), wind speed (***Figure 3-3***) and average temperatures and precipitation (**Figure *3-4***).

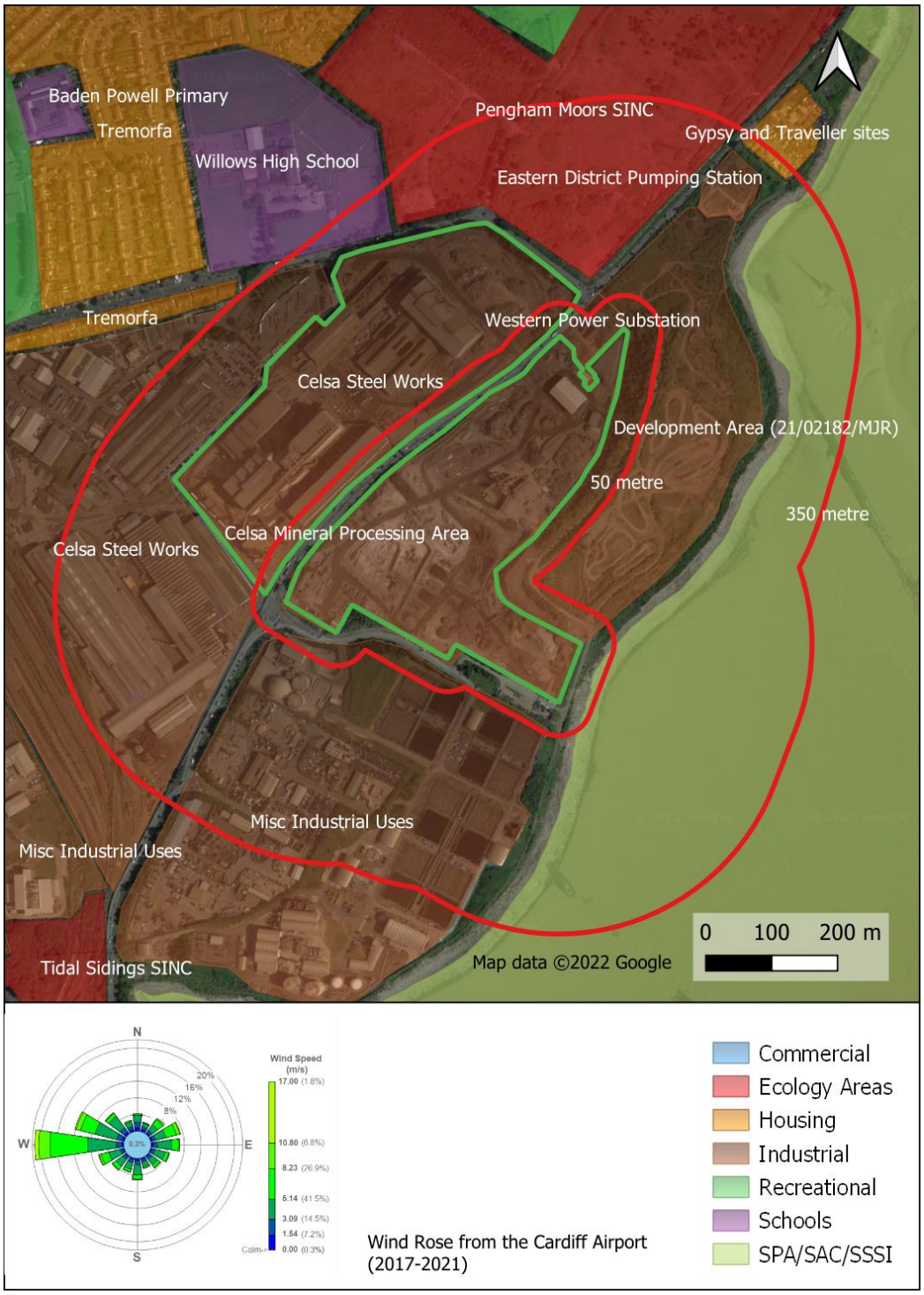

Figure 3-1: *Prevailing wind and Surrounding land use*

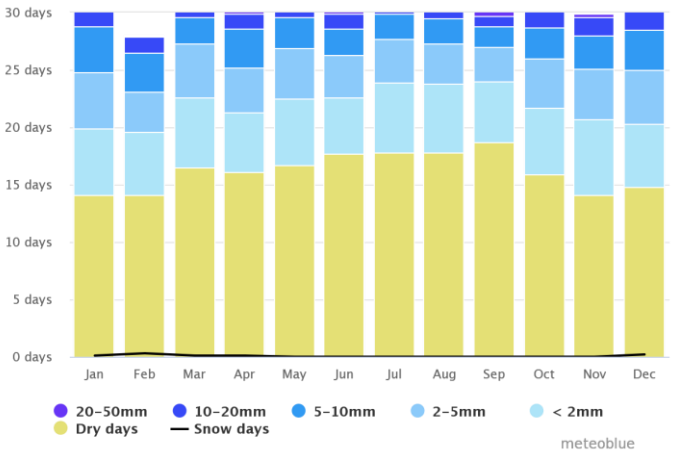

Figure 3-2: *Precipitation, Cardiff*

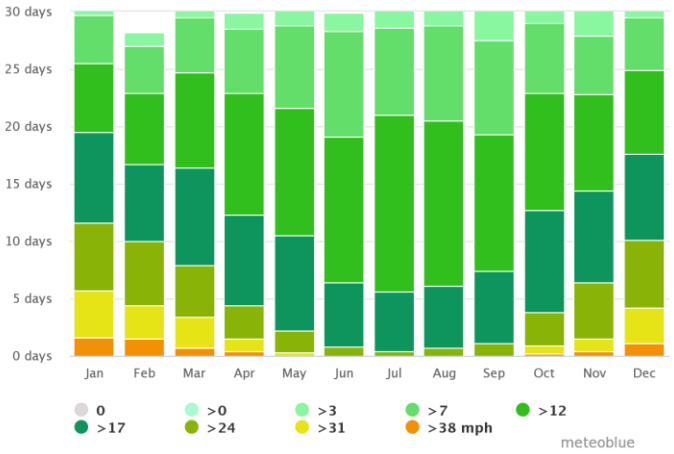

Figure 3-3: *Wind speed, Cardiff*

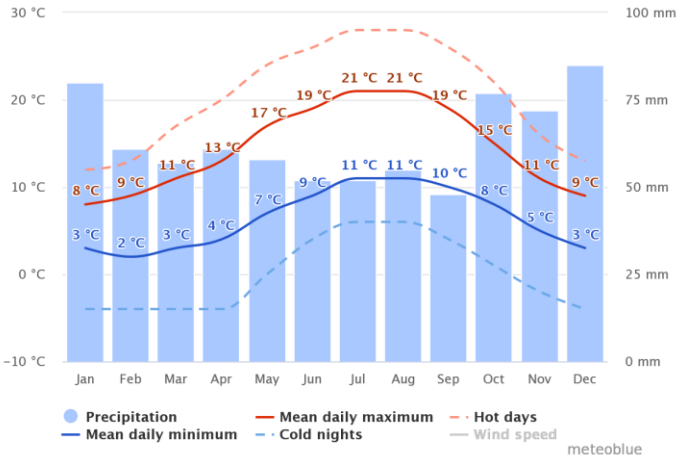

Figure 3-4: *Average temperatures and precipitation (Cardiff)*

3.3 Measured Data (Suspended Particulate)

3.3.1 Local Authority Off-site Ambient Monitoring

Cardiff Council measures ambient PM_{10} concentrations at three locations within 5-km of the installation:

- Cardiff Frederick Street (Urban Background)- AURN 1 - The site monitors on a 24/7 basis measuring levels of NO_2, PM_{10} & $PM_{2.5}$, SO_2, CO and O_3 feeding data directly into Defra's Automatic Urban and Rural Network (AURN). The grid reference of the station is 318416,176525 approximately 3.1 km from the Site.

- Richard's Terrace, Newport Road (Urban Traffic)- AURN 2 - The site monitors on a 24/7 basis measuring levels of NO_2 & PM_{10} at that location, feeding data directly into Defra's Automatic Urban and Rural Network (AURN). The grid reference for the station is 320095,177520 approximately 1.9 km from the Site.

- Cardiff Castle Street (Urban Traffic/ Roadside) - Commissioned in October 2020 with the financial support of Welsh Government. The site monitors on a 24/7 basis measuring levels NO_2, PM_{10} & $PM_{2.5}$ at that location, forming part of the Welsh Air Quality Network. The grid reference for the station is 318055, 176459 approximately 3.5 km from the Site.

The measured annual average concentrations of PM_{10} between 2016 to 2020 are outlined within **Table *3-1***. The data shows that the measured annual average concentration of PM_{10} is in the range of 15 to 22 µg/m^3, significantly below the Air Quality Assessment Level (AQAL) of 40 µg/m^3.

Table 3-1: *Measured annual average concentration of PM10 (µg/m^3)*

Year	Cardiff Centre (AURN-1)	Cardiff Newport Road (AURN-2)	Cardiff Castle Street
2016	15.1	-	-
2017	16	-	-
2018	17	20.3	-
2019	22.1	19	-
2020 (a)	14	17	16

Year	Cardiff Centre (AURN-1)	Cardiff Newport Road (AURN-2)	Cardiff Castle Street
Notes: Exceedences of PM_{10} annual mean objectives (40 µg/m^3) are shown in red. https://www.srs.wales/Documents/Air-Quality/Cardiff/Cardiff-Council-2021-Air-Quality-Progress-Report.pdf (a) Likely COVID 19 pandemic impacts leading to reduced concentrations.			

Figure 3-5: *Ambient air quality monitoring stations (PM_{10} and/or $PM_{2.5}$)*

The Department for Environment, Food and Rural Affairs (Defra) provides estimates of the background concentrations for several pollutants on a 1-km grid resolution for the whole of the UK. The OS grid reference closest at the centre of the permitted installation is 321378, 176187. The annual average background concentrations are outlined within **Table *3-2***.

Table 3-2: *Annual average background concentration PM_{10} and $PM_{2.5}$ (µg/m^3), 2020*

Pollutant	Background Concentration	Relevant AQAL	% of AQAL
PM_{10}	12.94	40	32 %
$PM_{2.5}$	7.4	25	30 %

Pollutant	Background Concentration	Relevant AQAL	% of AQAL
Notes: https://uk-air.defra.gov.uk/data/gis-mapping/			

Both $PM_{2.5}$ and PM_{10} are less than the annual Air Quality Assessment Level.

3.3.2 Off-site Local Monitoring

There are long-term two Turnkey Optical Particle Analysis System (Topas) fixed monitoring stations associated with Willows High School (Celsa permit requirement) and Baden Powell School (Non-permit requirement) (**Figure *3-6***).

Figure 3-6: *Off-site dust monitoring locations*

The units are designed to continuously record environmental Total Suspended Particulate (TSP), PM_{10}, $PM_{2.5}$ and PM_1 particles. The Topas system has been Environment Agency MCERTS certified for the recording of PM_{10} data. Data for the Willows High School has been reviewed for the period January 2021 to December 2021 (**Figure *3-7***).

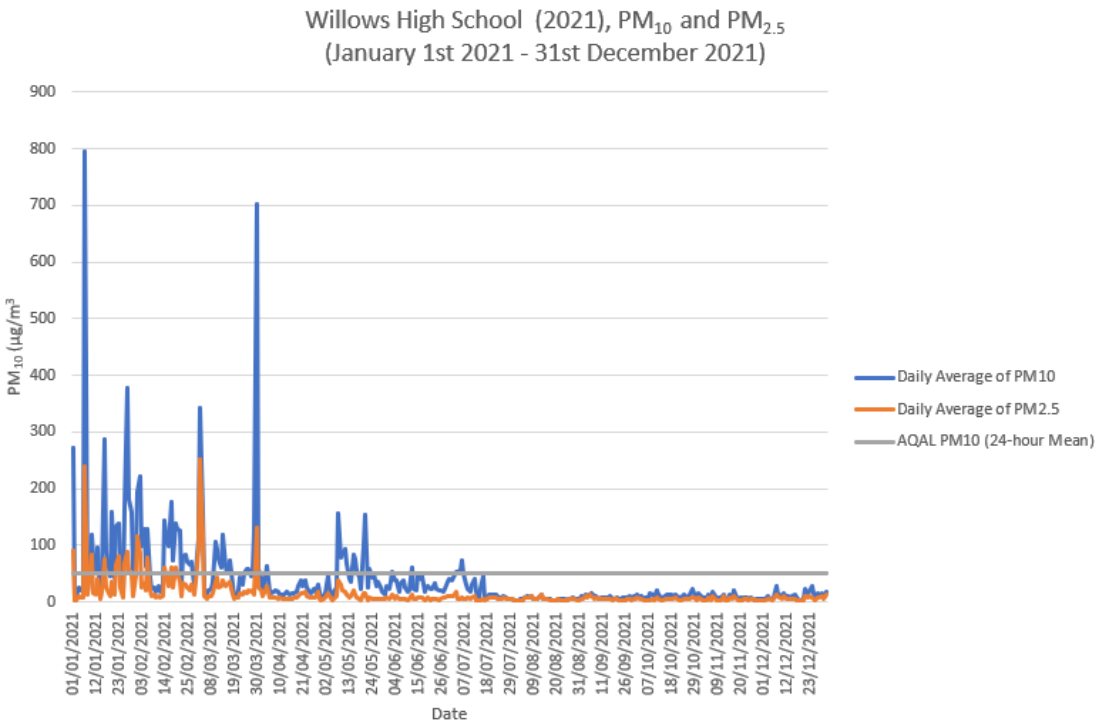

Figure 3-7: *Willows High School PM_{10} and $PM_{2.5}$ Monitoring (2021)*

During 2021 there were several significant exceedences of the 24-hour mean PM_{10} Air Quality Assessment Level (AQAL) between January 2021 and May 2021. In total (across 2021) there were 76 days where the daily average was greater than 50 µg/m^3. The annual PM_{10} average (all data points) was 38.87 µg/m^3.

However, monitored emissions post 1st July 2021 were significantly lower (***Figure 3-8***) with only 4 days where the daily average PM_{10} was greater than 50 µg/m^3. Across the entire year the average $PM_{2.5}$ monitoring was 14.19 µg/m^3 significantly less than the annual mean AQAL of 25 µg/m^3.

It is important to note that between the Rover Way operations and the Willow High School is the main Celsa steel works and Seawall Road.

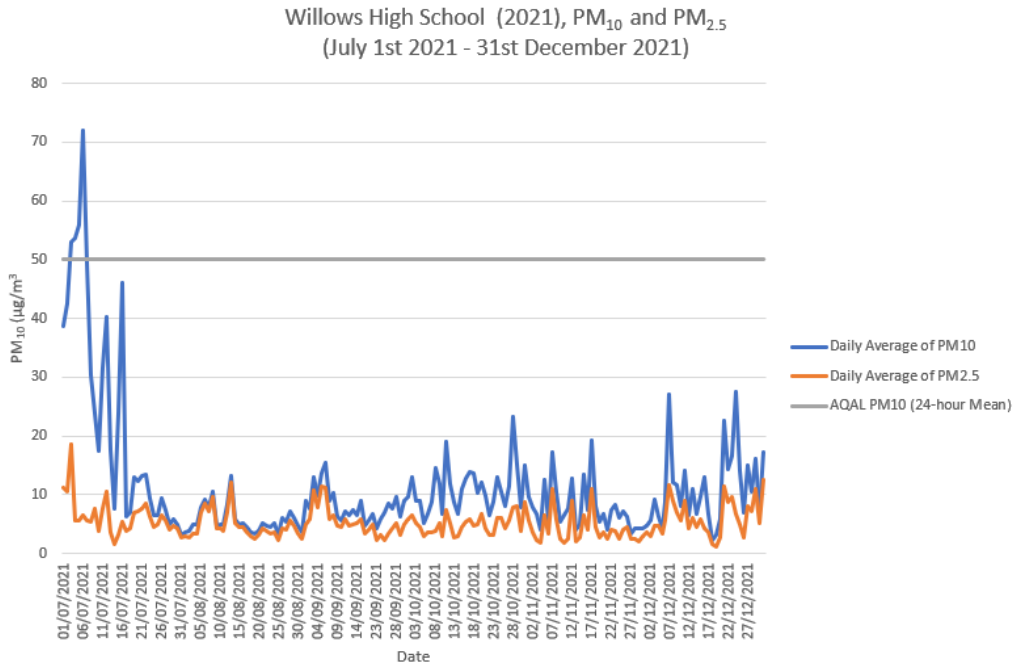

Figure 3-8: *Willows High School PM10 (July - December 2021)*

The nearby Baden Powell school (not part of the current permit) also includes a Topas monitoring system. The results for 2021 are outlined within **Figure *3-9***. During 2021 there were 2 days where the daily average was greater than 50 µg/m^3.

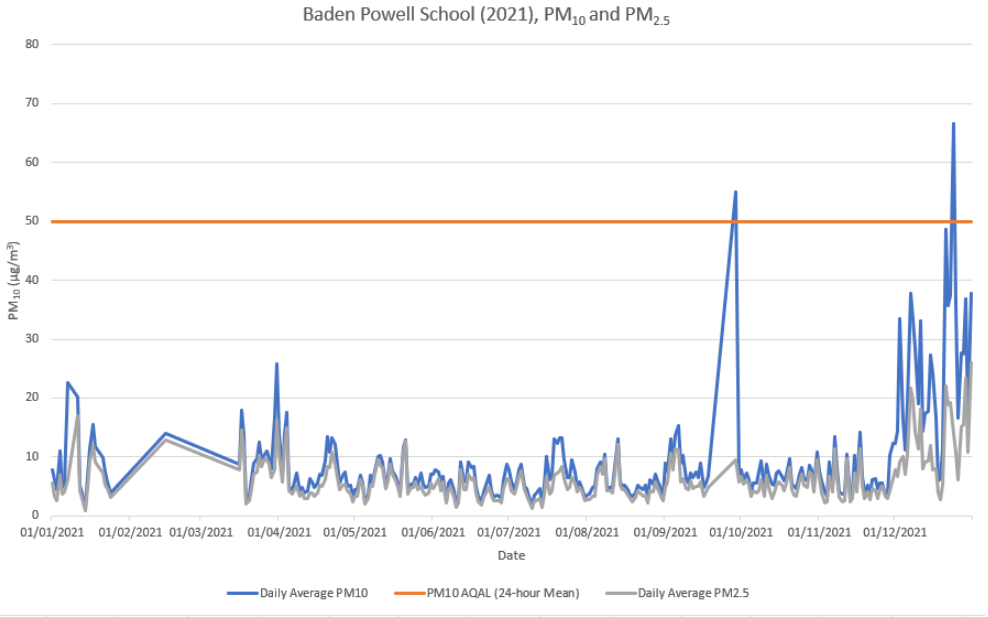

Figure 3-9: *Baden Powell School PM_{10} and $PM_{2.5}$ (January – December 2021)*

3.4 Measured Data (Nuisance dust)

3.4.1 On-site Data

In-light of permit improvement condition IC5 and IC6 (Ref. EPR/TP3639BH/V009) Celsa employed Environmental Compliance Limited (ECL) to undertake a boundary dust monitoring survey using Frisbee Gauges and sticky strips in-line with the requirements of Technical Guidance Note M8 (Environment Agency, 2011) and Technical Guidance Note M17 (NRW, 2014).

Two locations were subject to monitoring (**Figure *3-10***). The full report is provided in *Annex A*.

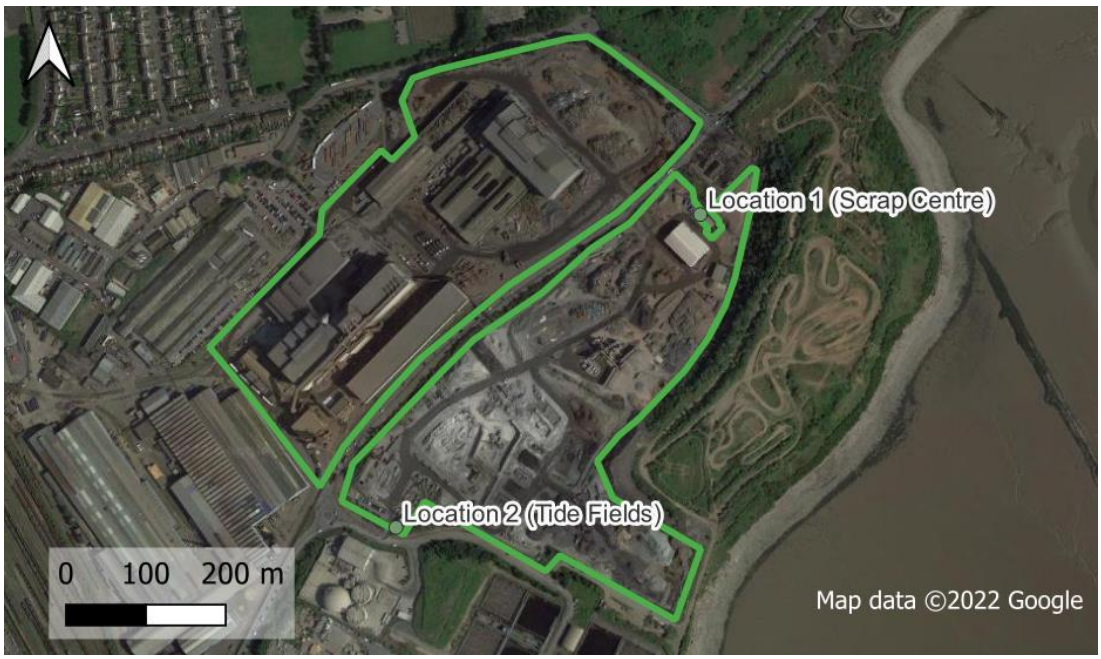

Figure 3-10: *On-site dust monitoring locations*

The objective of the monitoring survey was to ascertain whether dust mitigation and control measures were effective at minimising the fugitive release of dust across the Site boundary.

The Frisbee Gauges were set up on the afternoon of Thursday 15th October 2020. The equipment consisted of a tripod for mounting the Frisbee which would utilise a foam collection pad, a 5-litre water bottle for the collection of rainwater and particulate washed through the foam pad, and the use of sticky strips for directional analysis of wind-blown particulate matter.

Sampling was planned to be undertaken monthly for a period of 6 months to calculate the rate of deposition reported as mg/m^2/day. Reference has been made to TGN M17 (NRW, 2014) which suggests that the rate of deposition of dust should be below 200mg/m^2/day so as not to cause nuisance.

The results from the dust deposition monitoring exercise are outlined within **Figure *3-11***.

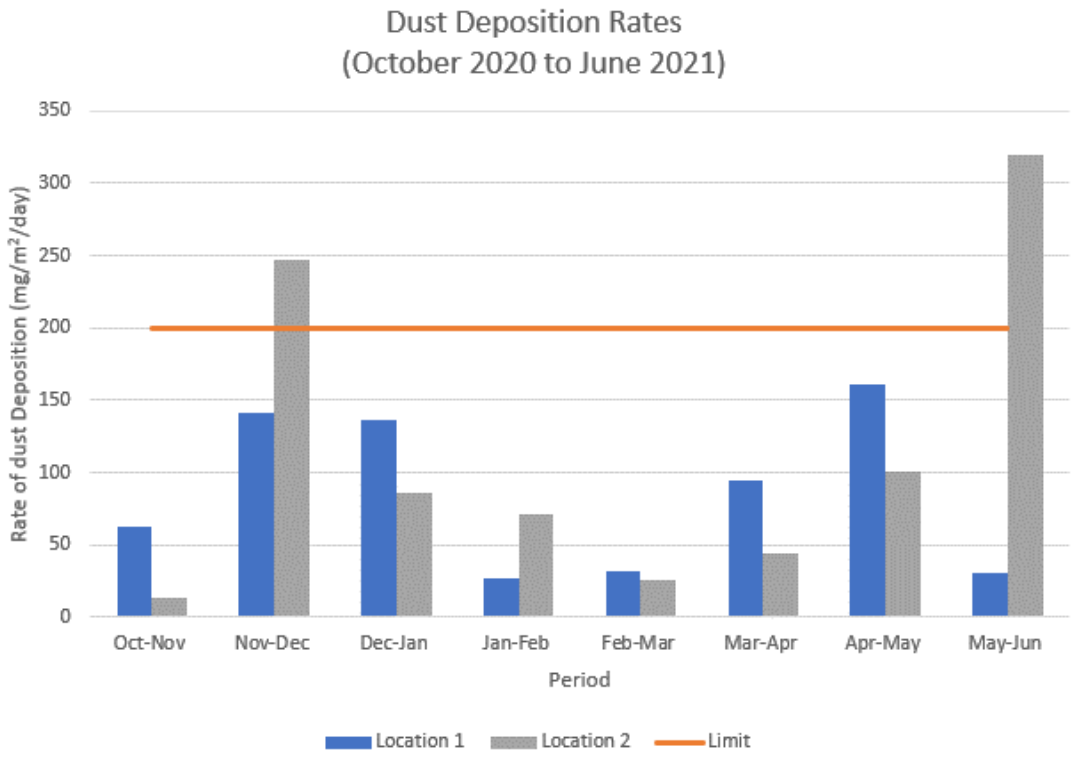

Figure 3-11: *Dust deposition Rates (October 2020 to June 2021)*

Only two periods, both associated with the monitor nearest the weighbridge and Tide Fields entrance exceeded the suggested guidance limit of 200 mg/m^2/day. ECL concluded that, generally, the Haith Plant location appears to be subject to lower dust deposition levels however, the mean for both locations are reasonably close. The average rate of dust deposition over the monitoring periods at each location were 85.6 mg at the Haith Plant (Location 1) and 113.4 mg at the Weighbridge area (Location 2).

Sampling was planned to be undertaken monthly for a period of 6 months to assess the effective area coverage ('EAC') as a percentage per day for each monthly monitoring period. Directional results were compared to the %EAC/day reported by in Assessment of Nuisance from Deposited Particulates Using a Simple and Inexpensive Measuring System (Kingsbury, 1981). With respect to the directional dust analysis:

- **Location 1** – Each of the 'notable' events during the monitoring survey at the Haith Plant location resulted in an EAC of below 1%. The period mid-March to mid-May were all below 0.5%.

- **Location 2** – The EAC results for the Weighbridge location are generally higher than for the Haith Plant location. This is likely associated with the greater level of activity undertaken in closer proximity to the monitoring location. Each monitoring period had results exceeding 0.50% EAC except for the February to March period, which was the second driest period of the survey. Three of the periods exceeded 1.5% EAC, however, no results exceeded the 2.0% EAC guidance limit which would probably be cause for complaints.

The highest deposition rate of 319 mg/m^2/day at the Weighbridge location was one of the lower EAC range of results. The direction also suggests that deposition was back on the Site rather than off-site. According to ECL many of the higher EAC results are associated with wind directions that would result in deposition back on the Site. However, the extreme weather events may have influenced these outcomes.

ECL concluded that, despite five weather events, the results illustrate that over the eight months of the survey period, there were only two results that exceeded to 200 mg/m^2/day guidance limit, one of which was known to be from a direction that would lead to dust deposition back on site, and there were no results that exceeded the 2% EAC guidance limit. The results therefore suggest that the Site is not generating fugitive dust emissions to a level that are likely to be cause for complaint at the sensitive receptor sites identified.

The full baseline assessment report is provided in *Annex B*.

4 Impact Assessment

4.1 Introduction

The existing activities covered by the environmental permit are outlined within Schedule 1 of Permit number EPR/TP3639BH. These activities constitute the baseline for this assessment as was assessed by Environmental Compliance Limited (ECL) in 2021 (*Annex B*). The changed or additional sources subject to this assessment are outlined below.

4.2 Sources

There are three main sources of fugitive dust emissions associated with the application:

- **Process plant (shear and shredder)** – The scrap metal feedstock has already been determined as having an inherent low dust potential. The point source emissions from the shredder plant are subject to abatement (cyclone and bag filters) as described within the main installation report. The impact from the point source emission is formally assessed within the Air Quality Risk Assessment report.

- **Handling and storage of unprocessed and processed materials** – Scrap metal and associated materials will be handled, moved, and stored.

- **Transportation of materials on to, around and off-site** – The site surfacing is to be improved to provide hard standing between the Tide Fields Way entrance and the processing areas.

The proposed changes and the potential implications with respect to fugitive dust emissions are outlined within **Table *4-1***. All changes relate to the Rover Way site rather than the main New Melt Shop area/activities.

Table 4-1: *Scope of assessment*

Activity	Description	Initial Significance Assessment
New End-of-Life Vehicle (ELV) Depollution Station	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.	**NO BASELINE IMPACT** The processing of ELVs is highly unlikely to generate fugitive dust emissions.

Activity	Description	Initial Significance Assessment
New fixed scrap metal shear	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 (which is already permitted) and create a new fixed shear installation (compound) on a new fully engineered surface. Currently this area is occupied by the asphalt plant slag processing equipment. Celsa would also like additional flexibility and thus would like to increase the monthly limit to 7,000 tonnes.	**LOW-ADVERSE** As the shear is already permitted most of the fugitive emissions (up to 5,000 tonnes per annum) are considered part of the baseline. The flexibility for processing an additional 2,000 tonnes per annum is unlikely to be significant.
New scrap metal shredder	The shredder includes an electrically driven rotating drum. There are hammers fitted on the rotating drum with cutting anvils on the entrance to the shredding chamber. Shredded materials then pass-through sizing grids below the rotor. The rapid rotation of the drum shreds the metals. A downstream plant undertakes sorting, cleaning, and separation. The downstream plant is fitted with a cyclone and bag filter prior to point source emission (Emission Ref. A11).	**LOW/MODERATE-ADVERSE** 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. The emissions from the downstream plant are abated using a cyclone/bag filter (which represents BAT). The handling and storage of unprocessed and processed materials is likely to be the most significant source of fugitive dust emissions associated with the shredder.

Activity	Description	Initial Significance Assessment
Movement of slag processing equipment	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.	**LOW-ADVERSE** As the slag processing is already permitted the fugitive dust emissions are considered part of the baseline. The movement of the equipment does need to be considered in relation to the adjacent ecological receptors.
New car park (30 spaces) and amenity block	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 (up to 30 spaces). This will be located near to the current entrance to the site with Rover Way.	**LOW-BENEFICAL** Car parking of employee vehicles already occurs on the site and are thus consisted part of the existing baseline. The proposed variation includes fully hardstanding this area thus reducing lift-off during vehicle movements. This change would be considered BAT.
Improvement of internal roadways (surfacing)	The internal roadways within the Rover Way site are 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 site entrance and proposed shredder compound.	**HIGH-BENEFICIAL** The hard surfacing of processing areas and haul roads is recognised by IAQM as significant way to reduce fugitive emissions. This change would be considered BAT.

The IAQM Guidance (Institute of Air Quality Management, 2016) states that research carried out in the United States, has shown that haul trucks generate most dust emissions from surface mining sites, accounting for an estimated 78%-97% of total dust emissions. Vehicles

using unpaved haul roads in UK construction sites will lead to the release of dust via the same mechanical processes (*i.e.* re-suspension) and are likely to be a dominant source. Emissions will also arise from vehicles travelling over any unpaved ground on a construction site. The proposal to significantly increase hardstanding across the site (*i.e.* haul roads, processing areas) should significantly contribute to a reduction in fugitive dust emissions.

The proposed location and extent of this activity is outlined within ***Annex A*.**

4.3 Pathway

The pathway effectiveness at each receptor has been assigned in accordance with the IAQM minerals dust criteria (Institute of Air Quality Management, 2016) and is based on the distance of the receptor from the site boundary (considered to present a worst-case assessment) and the frequency of potentially dusty winds *i.e.* generally >5ms^{-1} and during dry conditions.

Research (Great Britain. Minerals Division, 1995) indicates that larger dust particles (greater than 30 µm) will largely deposit within 100 metres of sources. Intermediate sized particles (10 – 30 µm) are likely to travel up to 200 – 500 metres and smaller particles (less than 10 µm) are only deposited slowly. Concentrations decrease rapidly on moving away from the source, due to dispersion and dilution. Given the nature of the materials to be used at the Site, it is the larger dust particles that are likely to make up the greatest proportion of the limited dust emissions from the Site and therefore the greatest risk of impacts is within 100 metres. However, to provide a conservative assessment, any receptors within 350 metres of the Site boundary have been considered within the assessment (IAQM threshold).

4.4 Receptors

The permitted Site is surrounded by various receptors deemed sensitive to dust generated from the Site activities. The receptors have been identified and are outlined within **Table *4-2*** and (as indicated) either screened in for further assessment or screened out on the basis of the suggested IAQM distance thresholds (Institute of Air Quality Management, 2016). The location of the primary receptors is outlined within **Figure *4-1***.

Table 4-2: *Receptors (Human and Ecological)*

Ref	Type	Distance from Shear/Shredder	IAQM Screen	Distance from Slag processing	IAQM Screen
R1	Traveller's site	493 metres NNE	OUT	778 metres NNE	OUT

Ref	Type	Distance from Shear/Shredder	IAQM Screen	Distance from Slag processing	IAQM Screen
R2	Willows Avenue (Residential)	440 metres NW	OUT	622 metres NW	OUT
R3	Willows High School	327 metres NNW	IN	603 metres NNW	OUT
R4	Industrial (Celsa New Melt Shop)	70 metres W	IN	290 metres NW	IN
R5	Industrial	510 metres SSW	OUT	240 metres SW	IN
R6	Proposed Industrial (mound)	110 metres E	IN	120 metres N	IN
R7	Severn Estuary (Ramsar/SPA/SSSI)	230 metres E	OUT	113 metres E	OUT
R8	Pengham Moors SINC	200 metres N	OUT	508 metres N	OUT
R9	Tidal Sidings SINC	910 metres SSW	OUT	650 metres SSW	OUT

Notes:

All receptors screened using the suggested IAQM screening criteria of 350 metres (Human Receptor) and 50 metres (Ecological Receptor).

Figure 4-1: *Location of primary receptors*

The receptors not screened out of Stage 1 are outlined within **Table *4-3***.

Table 4-3: *Receptor Sensitivity (Human and Ecological)*

Ref	Type	Receptor Sensitivity – Soiling	Receptor Sensitivity - Health	Receptor Sensitivity - Ecological
R3	Willows High School	High	High	N/A

Ref	Type	Receptor Sensitivity – Soiling	Receptor Sensitivity - Health	Receptor Sensitivity - Ecological
R4	Industrial (Celsa New Melt Shop)	Medium	Medium	N/A
R5	Industrial	Medium	Medium	N/A
R6	Proposed Industrial (mound)	Medium	Medium	N/A
Notes: -				

The IAQM matrices outlined within ***Annex C*** have been utilised to assess the area sensitivity (**Table *4-3***).

Table 4-4: *Receptor Area Sensitivity (Human and Ecological)*

Ref	Type	Area Sensitivity – Dust Soiling	Area Sensitivity - Health	Area Sensitivity - Ecological
R3	Willows High School	Low	Low	N/A
R4	Industrial (Celsa New Melt Shop)	Low	Medium	N/A
R5	Industrial	Low	Low	N/A
R6	Proposed Industrial (mound)	Low	Medium	N/A
Notes: Sensitivity of the Area to Human Health Impacts based on annual average from the Willows High School TOPAS monitor (annual average (2021) of 38.87 µg/m^3). Assessment uses close point to either the shear/shredder or slag processing area.				

The dust emission magnitude determined is then combined with the sensitivity of the area determined to determine the risk of impacts (with no mitigation applied). Using a dust emission magnitude of Medium (*Section 2*), considered worst-case, the estimated risk of dust impacts would be Medium Risk. The suggested dust mitigation measures outlined within the IAQM Guidance (Institute of Air Quality Management, 2016), for a Medium Risk site and Shredder BAT guidance are outlined within *Section 5*.

5 Mitigation and BAT Assessment

5.1 Introduction

The required BAT assessment has been undertaken considering the following:

- UK Government (2021). Treating metal waste in shredders: appropriate measures for permitted facilities (Environment Agency, 2021)
- 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 (European Commission, 2012).
- IAQM Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2016).

The comparison with the shredder guidance and BAT-c for waste treatment are outlined within Ref. 021-1892 Celsa Cardiff Variation - BAT Assessment REV00.

5.2 Mitigation Measures

The principal mechanism to prevent fugitive dust emissions from the shredder is the presence and operation of a high-pressure water injection system used to cool the shredder and to provide suppression of localised fugitive dust surrounding the disc rotor. 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 IAQM Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2016) has been utilised to identify suitable mitigation measures. These are outlined and assessed within **Table *5-1***.

Table 5-1: *IAQM Dust and Air Emissions Mitigation Measures*

Mitigation Measures	Site Relevance and Assessment
Communication	
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N/A
2. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	Yes – Contact details are communicated to the residents and businesses.
3. Display the head or regional office contact information	N/A
Dust management	
4. Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.	Yes – A formal Dust Management Plan has been established and will be maintained as part of the Celsa ISO 14001 EMS.
Site management	
5. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	Yes – All complaints are formally recorded and investigated. This is part of the Celsa ISO14001 EMS.
6. Make the complaints log available to the local authority when asked.	Yes – All complaints would be disclosed to NRW and (where required) Cardiff City Council.
7. Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.	Yes – All unplanned emissions will be recorded and investigated. The requirements are inherent within the Rover Way Management Plans and Celsa's ISO14001 EMS.

Mitigation Measures	Site Relevance and Assessment
8. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	N/A – This is not considered applicable at the current time. If the development occurs on the adjacent mound (Planning Ref. 21/02182/MJR) Celsa would liaise with the principal contractor with regards the development works to minimise associated (cumulative) environmental impacts.
Monitoring	
9. Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	Yes – Daily monitoring will be undertaken
10. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	Yes – Regular (daily) site inspections will be undertaken.
11. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Yes – The requirement to increase inspections (during certain conditions) has been included within the DMP.
12. Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	Yes – The permit already includes one formalised dust monitoring location (Willows High School) and one informal monitoring station at Baden Powell School. There is currently no on-site (permanent) dust monitoring equipment. This has been identified as a potential improvement action (*Section 6.2*).
Preparing and maintaining the site	
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	Yes – The operations are undertaken on the Rover Way site.

Mitigation Measures	Site Relevance and Assessment
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	N/A – Not considered practicable given the nature of the materials being handled and stored.
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.	Yes – The shredder features enclosed conveyors (where possible).
16. Avoid site runoff of water or mud.	Yes – a compliant SUDs drainage system (with treatment) has been designed.
17. Keep site fencing, barriers and scaffolding clean using wet methods.	N/A
18. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	Yes – Subsequent to waste processing residual materials will be removed from site.
19. Cover, seed, or fence stockpiles to prevent wind whipping.	N/A – This is not considered relevant to the storage and processing of scrap metal or the processing of slag.
Operating vehicle/machinery and sustainable travel	
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	N/A
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	Yes – Idling of vehicles for extended periods is not considered best practice and will be minimised.
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Yes – The shredder is electrically powered. However, all mobile equipment is diesel powered.
23. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	Yes – Speed restrictions on site are strictly imposed.

Mitigation Measures	Site Relevance and Assessment
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N/A
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	N/A to be operation of the installation.
Operations	
26. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, *e.g.* suitable local exhaust ventilation systems.	Yes – The cutting of scrap metals is undertaken on the Rover Way site using hand-held oxy-propane 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. 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 – rev1).
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression /mitigation, using non-potable water where possible and appropriate.	Yes – Adequate water is available on-site for dust suppression purposes. The site operates a permitted groundwater abstraction.
28. Use enclosed chutes and conveyors and covered skips.	Yes – Enclosed shuts and conveyors are utilised (where possible).
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Yes – The DMP and standard operating procedures require drop heights to be minimised (where possible).
30. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	Yes – Equipment to enable clean-up and dust suppression are readily available on-site.
Waste management	
31. Avoid bonfires and burning of waste materials.	Yes – Combustion of waste materials is not permitted on-site.

Mitigation Measures	Site Relevance and Assessment
Items 32. to 42. Are not considered applicable.	
Measures specific to trackout	
43. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	Yes – Road sweepers (with water) are available for use on-site and near to the site entrance with Tide Fields Road.
44. Avoid dry sweeping of large areas.	Yes – Dry sweeping will be avoided across large areas of the site. If appropriate dry sweeping shall be undertaken in localised areas (weather conditions permitting).
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport	Yes – Duty of care requirement to prevent the escaped of waste materials entering/leaving site.
46. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Yes – All primary containment surfaces will be subject to inspection and maintenance.
47. Record all inspections of haul routes and any subsequent action in a site logbook.	Yes – Where damaged is identified a NCR will be raised within the Celsa Management System
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Yes – Mobile systems will be deployed to keep sard surfaced areas clean.
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Yes – Hosing of vehicles could be undertaken (if required). However, as the site will now incorporate extensive hardstanding this should negate the need for formal wheel washing.
50. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	Yes – New hard surfacing is planned between the Tide Fields Road entrance and the processing areas.
51. Access gates to be located at least 10 m from receptors where possible.	N/A – The site entrance cannot be moved.

6 Conclusions

6.1 Summary

There are three main sources of fugitive dust emissions associated with the application:

- **Process plant (shear and shredder)** – The point source emissions from the shredder plant are subject to abatement (cyclone and bag filters) as described within the main installation report.
- **Handling and storage of unprocessed and processed materials** – Scrap metal and associated materials will be handled, moved, and stored.
- **Transportation of materials on to, around and off-site** – The site surfacing is to be improved to provide hard standing between the Tide Fields Way entrance and the processing areas.

Although there are fugitive dust emission sources on-site, the nature of the principal material (scrap metal) has generally been recognised as a material that does not generate significant dust unless it is being processed. The design of the shredder is such that fugitive emissions from the shredding process are effectively controlled using a high-pressure water injection system used to cool the shredder and to provide suppression of localised fugitive dust surrounding the disc rotor.

The latest baseline assessment conducted by Environmental Compliance Limited (ECL) in 2020 suggested that the Site was not generating fugitive dust emissions to a level that are likely to be cause for complaint at nearby sensitive receptors.

Given the proximity of both ecological receptors and residential receptors, dust control measures shall be recommended for inclusion within the dust management plan to ensure dust generation within the site is kept to within the site boundary. If the identified mitigation measures are implemented and maintained the likelihood of complaints or off-site impacts should be effectively minimised to an acceptable level. It is important to note that the most significant (positive) change will be the proposed hard surfacing of processing areas and haul roads. It is recognised by IAQM that this is a significant way to reduce fugitive dust emissions.

The successful implementation of the mitigation measures can be monitored and tracked through the network of planned on-site monitoring stations (*Section 6.2*) and current off-site monitoring locations.

A formal dust management plan has been provided within the application.

6.2 Improvement Conditions

The following improvement condition is proposed by Celsa:

- 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, PM_{10} particulate matter and $PM_{2.5}$ 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).

Annex A: Figures and Plans

Annex B: Baseline Dust Monitoring

Annex C: IAQM Sensitivity Guidance

Table C1: *Sensitivity of the Area to Dust Soiling Effects on People and Property*

Modified from IAQM Construction Dust Guidance, Table 2 (Institute of Air Quality Management, 2016)

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table C2: *Sensitivity of the Area to Ecological Impacts*

Modified from IAQM Construction Dust Guidance, Table 4 (Institute of Air Quality Management, 2016)

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table C3: *Sensitivity of the Area to Human Health Impacts*

Modified from IAQM Construction Dust Guidance, Table 3 (Institute of Air Quality Management, 2016)

Receptor Sensitivity	Annual Mean PM10 concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low