

Report 4
Emissions Monitoring

SSQ MATERIALS
RECYCLING FACILITY
LLANWERN

Report Number 2473r4v3d0625

Commissioned by

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1 INTRODUCTION

1.1 Scope of Report

Geotechnology has been commissioned by Darlow Lloyd and Sons Ltd (DLS) to prepare a bespoke Permit application for submission to Natural Resources Wales (NRW) for a proposed waste materials recycling facility located to the East of Newport at Llanwern. The area is referred to as South Side Queensway (SSQ) as it is to the south of the A4810 Queensway. The details of the application are summarised in Table 1-1, the site location is shown on Figure 1-1 and Permit boundaries in Figure 1-2.

Table 1-1 Application Details

Name of the Applicant	Darlow Lloyd and Sons Ltd (DLS)
Activity Address	Queensway, Newport. NP19 4QX
National Grid Reference	Area1_5: E336686 N186114 Area2_10: E336941 N186171 Area3_26: E337863 N185779
Amount of waste to be treated	Up to 300 000t per year
Environmental emissions from treatment process	No point source emissions to air No point source emissions to land No point source emissions to sewer No point source emissions to controlled water.
Site Drainage	Emissions to water from surface run-off and infiltration after filtering through permeable hardstanding
Relevant Receptors	<ul style="list-style-type: none">• Adjacent cut-off surface water ditches under control of Tata that drain to Water Treatment System• Local air quality
Pathway to receptor	<ul style="list-style-type: none">• Run-off / infiltration through hardstanding• Fugitive emissions to air

The proposals would enable DLS to receive and process waste on hardstanding to enable recovery and recycling. As part of the Permit application, DLS is required to describe and assess the environmental risks posed by the proposals. This demonstrated that the proposed activities pose a very low risk to the environment, but that monitoring is required to verify the predictions.

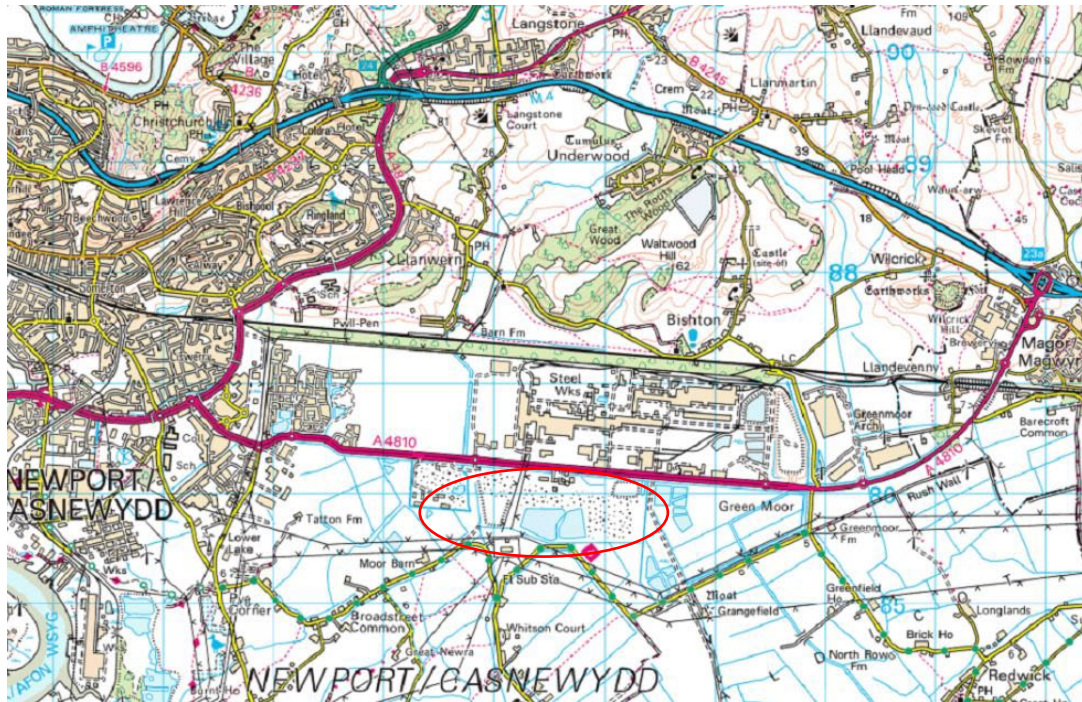


Figure 1-1 Position of SSQ east of Newport



Figure 1-2 Permit Boundaries

As there are no point source emissions to air, land, water, sewer, effluent treatment plant or other transfer off-site this Emissions Monitoring Plan (EMP) is focused on the potential fugitive emissions that may occur.

1.2 Objectives

This EMP is intended to set out measures, which, when followed, will help demonstrate that the emissions to surface water and air quality have been sufficiently managed to prevent pollution by employing pollution prevention measures at the site as far as is practicable.

1.3 Report Limitations

This report is based on the currently proposed operations. If the operations or nature of the wastes received for recovery change, then the underpinning risk assessment and monitoring plan should be reviewed and revised accordingly.

2 WASTE MANAGEMENT ACTIVITIES

2.1 Facilitating Redevelopment

To enable site redevelopment, Tata Steel (UK) Limited (Tata) has undertaken an assessment of remedial requirements. As part of these works, Tata has identified stockpiles of materials, some of which are non-wastes and available for immediate use or sale, and others which require treatment or processing to achieve end of waste before they can be used.

These stockpiles of various products, by-products and wastes from steelmaking have been in place at SSQ for many years. Although assessment and monitoring has proven that the materials pose low risk to both the environment and human health, Tata seeks to remove contaminants and unsuitable materials to reduce this risk further and facilitate recovery of the materials.

The contaminants identified to date include:

- Metals;
- a physically fine fraction (silts and sands) that occupies the matrix in predominantly granular waste. Tata has indicated that this fraction can be strongly alkaline and volumetrically expansive and therefore needs to be removed and separated;
- a wide range of anthropogenic materials co-mingled with the waste. These contraries typically account for <5% by mass and include timber, refractory bricks and plastic. Removal of this fraction will facilitate re-use and enhance product quality.

Such materials are typical of steelworks across the UK and Europe. DLS, is intimately familiar with dealing with such steelmaking wastes at Port Talbot and other UK steelmaking facilities. The range and nature of the contaminants requiring removal are well understood and recovery can be achieved using conventional plant.

2.2 Material to be treated

The waste to be treated comprises various non-hazardous iron and steelmaking wastes. The current list of waste is provided in Table 2-1.

Table 2-1 List of Wastes to be Accepted

EWC Code	Description of Wastes to be Accepted	EWC Entry Type
EXCLUSIONS		
Wastes having any of the following characteristics shall not be accepted: <ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Hazardous wastes • Wastes in liquid form 		
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07 may include excavation from mineral workings	MN
01 04 09	Waste sand only	AN
10 11 03	Waste glass-based fibrous materials allowed only if: Wastes without organic binders	AN
15 01 07	Glass packaging	AN
17 01 01	Concrete (excluding concrete slurry)	MN
17 01 02	Bricks	MN
17 01 03	Tiles and ceramics	MN
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	MN
17 02 02	Glass (Must not include fibreglass or glass fibre)	MN
17 03 02	Bituminous mixtures	MN
17 05 04	Soil and stones other than those mentioned in 17 05 03 Must not contain any contaminated soil or stone from contaminated sites.	MN
17 05 06	Dredging spoil	MN
17 05 08	Track ballast other than those mentioned in 17 05 07	MN
17 09 04	Mixed construction and demolition waste comprising granular material	MN
19 12 05	Glass Does not include glass from cathode ray tubes.	AN
19 12 09	Minerals (for example sand, stones)	AN
20 01 02	Glass Must not include fibreglass.	AN
20 02 02	Garden and park wastes (including cemetery waste) – soil and stones Must not contain contaminated stones from garden and parks waste.	AN
16 11 04	Refractory	MN
10 02 01	Waste from the processing of blast furnace slag / steel slag	AN
10 02 02	Unprocessed blast furnace slag/steel slag	AN
10 02 99	Slab yard refuse	AN
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)	AN
10 13 14	Waste concrete only	

As redevelopment and regeneration at SSQ and other parts of the Tata steelworks requires large quantities of soil for landfill capping and localised landscaping, non-hazardous soil would also be imported for treatment. Naturally occurring soil would only be accepted if its chemistry met the landfill capping specification and treatment only involved screening and sorting. The total quantity of soil accepted would be limited to that required for the capping of the Tata landfill facilities and would be specified in the Permit documentation. Once treated, the soil would be transferred to dedicated storage areas adjacent to the landfills where the soil would be placed as restoration soil.

2.3 Recovery Activities

DLS considers that the following remedial technologies will prove successful and facilitate redevelopment:

- Separation – as the material contains contaminants in the fine fraction and light fraction contaminants, closed-loop washing will allow these contaminants to be separated and removed. During this process, the fine silts and sands will be density separated from the light fraction contaminants such as timber and plastic. Once separated, the fine-grained

alkaline cementitious materials would be used in stabilisation and solidification remedial interventions elsewhere at Llanwern Steelworks. These latter interventions could be undertaken under Mobile Treatment License.

- Screening, crushing and blending – to enhance the success of soil washing and to remove metals and other anthropogenic contaminants

Treatment would result in the separation of contaminants for either off-site recovery or disposal, generation of a fine fraction for re-use and recovery of waste, primarily as aggregate. All aggregate would be produced under Factory Production Control (FPC) to meet Quality Protocols and Specification.

2.4 Treatment Locations

The whole SSQ area is already largely underlain by a hardstanding development platform of granular slag aggregate that was previously placed over the soft natural ground to facilitate the use of the land in accordance with a planning permission. To assist with management of the land holding, the area was historically split into different sub-areas with each given a unique name, as shown in Figure 2-1.

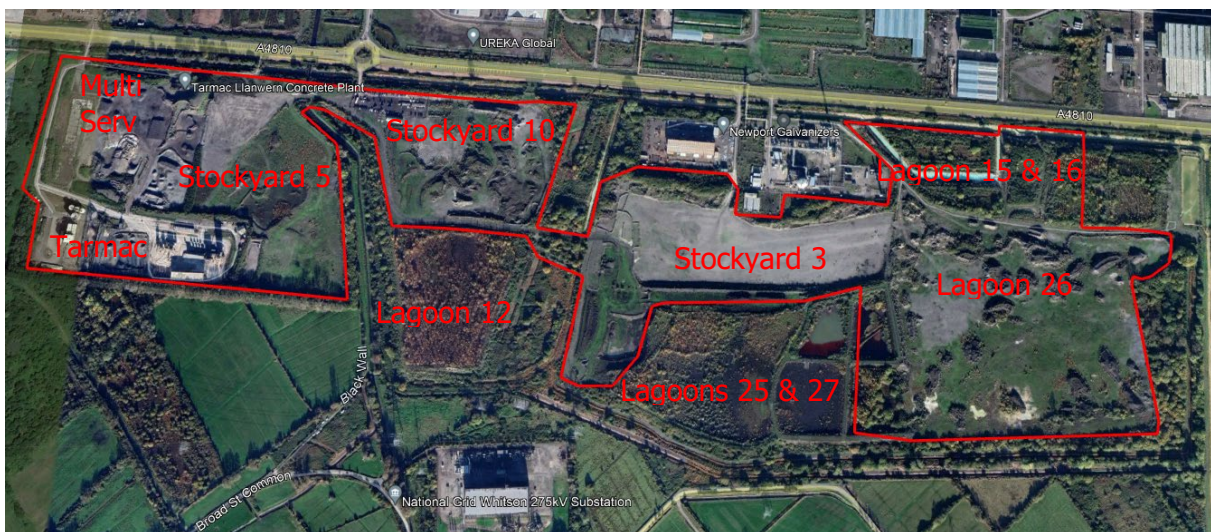


Figure 2-1 Annotated Site Plan of SSQ

Given the size of the landholding and the areal extent of the material to be processed, a phased approach is to be adopted. The current expectation is for works to progress from west to east over a period of about 10 years, commencing in Stockyard 5 and then moving through to Stockyard 10 and then finally to Lagoon 26; incidentally, this latter area currently benefits from a Permit for its use as a non-hazardous landfill although the landfill has never been developed. The fact that it was permitted does, however, reflect the environmental setting of the area.

To enable land to be progressively leased following processing and to minimise haul distances and disturbance, DLS considers that 3 'fixed positions' could be temporarily and sequentially used. These 'treatment areas' are identified on Figure 1-2 as the green numbered POLYGONS with Area 1 being in Stockyard 5, Area 2 in Stockyard 10 and Area 3 in Lagoon 26. Each area would be used for approximately 2-3 years before moving the mobile plant to the next area. In each area, waste would be processed within a defined area with strict pollution control measures in place as would be expected of any fixed position facility or mobile treatment plant.

3 EMISSIONS MONITORING

The ERA demonstrates that the proposed permitted activity will not lead to any significant negative impacts provided the identified control measures are implemented as set out in the ERA. However, this does not mean that the operation will not be monitored and scrutinised.

As the processing areas are located within the boundary of the steelworks land-holding, the proposed activity falls within an area already subject to pollution controls and monitoring. This monitoring data will be used to evaluate the predictions made in the risk assessment. Given the scale of the proposed permit and the pollution control measures integrated, any impact related to the operation of the plant is not likely to be perceptible against the background activity of the steelworks.

3.1 Groundwater

There are no additional direct risks to groundwater and therefore no monitoring is proposed at this stage beyond that already undertaken by Tata. All waste will be stored and processed without the use of chemicals at SSQ. Tata will continue to monitor groundwater across SSQ and report the results to NRW.

3.2 Surface water

Water will be used for washing some of the materials. This water will be abstracted from the on-site Tata surface water drainage systems.

Once used, wash water will be collected by tanker for off-site disposal by GD Environmental so there is no risk to surface water.

3.2.1 Data Review

Tata will continue to monitor groundwater across SSQ and report the results to NRW. No specific water monitoring is considered to be needed but the ditch surrounding SSQ will be visually checked each week.

3.2.2 Actions

If there is suspicion that there will be breach of criteria or monitoring reveals a breach, the operations will cease and the cause will be investigated.

3.3 Soil gases

There is no risk to soil and therefore monitoring of soil gases is not proposed.

3.4 Air emissions - particulates

3.4.1 Equipment and Location

Visual assessment and a photographic record of site conditions prior to commencement will be made. This will be aimed at documenting existing site conditions.

During deployment, no significant particulate emissions are expected due to the controls in place. Each day the site will be visually checked to ensure that all in-built controls are effective and particulate emissions are not occurring.

3.4.2 Data Review

The visual observations will be discussed at daily tool-box tasks and raised to senior management.

3.4.3 Actions

No significant release of particulates are envisaged. If releases do occur, the process will be temporarily halted, the root cause determined and appropriate controls put in place before re-commencing. This will most likely require the use of mists and bowsers to suppress generation of airborne particulates as set out in the ERA.

Two DustScan DS100-D monitors would also be used to assess for particulates that could give rise to annoyance. These devices are combined directional and deposited dust samplers. Two of these devices would be established; one up-wind and one down-wind of the activity. Their precise positions would be determined on site based on prevailing weather conditions, site security and safety. This approach will enable the DS100 sticky pad directional dust gauge and the DustDisc dust settlement gauge to collect dust in horizontal flux from 360° around the sampling head as well as dust depositing out of the air.

The monitoring instrumentation will aid evaluation of baseline conditions and the ongoing performance of the control measures and the pro-active and reactive interventions. As DustScan DS100-D is a combined directional flux and depositional dust gauge an assessment of the potential source direction and mass loading will be feasible based on:

- o AAC% – Absolute Area Coverage (overall dust coverage)
- o EAC% – Effective Area Coverage (dust soiling potential)
- o Particulate deposition

As well as taking into account baseline conditions, the thresholds set out in Table 3-1 and 3-2 will be used to evaluate the monitoring data and inform contingency actions.

Table 3-1 DustScan Evaluation Criteria

Metric	Low	Moderate	High
AAC%	<2%	2–5%	>5%
EAC%	<1.5%	1.5–4%	>4%

Table 3-2 Dust deposition evaluation criteria

Level	Deposition Rate (mg/m²/day)	Interpretation/Contingency Action
Low	< 200	Background levels, no action needed
Moderate	200–300	Monitor and review activities
High	300–400	Enhanced suppression measures recommended
Very High	> 400	Likely nuisance level – consider halting activities

3.5 Air emissions - VOCs

The process will not release VOCs as these are not contaminants within the waste or introduced during processing.

3.6 Noise & Vibration

The deployment is within the planning boundary of the steelworks. A baseline noise survey will be made using a calibrated A weighted noise meter. The survey will be used to assess existing background noise levels and noise levels during full-scale operation. The results of the monitoring will be used to assess the effectiveness of the control measures and help focus any additional efforts that might be required.

3.6.1 Actions

If a noise issue is potentially identified, either by site personnel on site or from a complaint, an investigation into the source will be undertaken. The data will be evaluated to determine if there is a perceptible change in absolute noise level, taking into consideration the site activity at the time – this will need to take into account the wider activity at the steelworks site and not just the permitted activity. A noise management plan would be agreed with NRW if required.

The results of the noise survey and the day-to-day inspection of the operation will inform the need for specific vibration monitoring. None is currently planned.

3.7 Odour

Day-to-day inspection of the operation will inform the need for specific odour monitoring. None is currently planned as the waste and associated processing are not odorous.

4 RECORD KEEPING

Throughout the operation, records will be kept to show that emissions from the activities are not causing pollution or harm to human health.

4.1 Operating

During commission and operations, a large amount of data will be recorded as this is needed for the process to withstand scrutiny. This will be documented and retained by DLS in accordance with management system procedures.

4.2 Maintenance

Records of the maintenance schedules implemented will also be documented as part of the management system.



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