

Section 1.0: Aggregate Waste Transfer Operation

Darlow Lloyd & Sons Ltd (DLS) will operate a mobile materials recycling operation at the Llanwern South Side Queensway Location (SSQ). The operation will process wastes from the steelmaking process present at SSQ and also soil from off-site external parties in line with waste regulations and permit controls. Having been processed, the material will either be used on-site by Tata, (typically as aggregate) or sold on the open market as aggregate. Soil will be transferred to ongoing landfill capping projects. This document focusses on the Factory Production Control (FPC) that will be adopted at each of the treatment areas. .

1.1: Objective of Document

For operators to benefit from end of waste controls, provided by compliance with the QPs, the operators must:

- use only the correct waste as feedstocks
- make only the permitted products
- comply with the relevant European standard, specification and quality controls for the product being manufactured with all required tests being met and the aggregate needing no further treatment, weathering (in the case or size reduction before use
- have a manual of Factory Production Control (FPC)
- have marked the product to the CE requirements of the Construction Products Regulations
- transport, store, handle and process the wastes and the final product following good practice guidelines
- supply the customer with delivery documents confirming the product meets the quality protocol

BS EN 13242:2013 *Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction* specifies an FPC system to ensure that aggregates for unbound applications conform to the relevant requirements of the standard. PD6682-6 provides further guidance for UK users of BS EN 13242.

In the UK, the required level of attestation of conformity to European Standards for aggregates is 4 (with the exception of aggregates for use in skid-resistant surfacing's). This means that the aggregate producer (DLS) must operate a "first party" system of FPC following initial type testing. Certification and surveillance by notified accreditation bodies ("third parties") is not required.

This FPC provides a record of all policies and methods for managing the waste material - from waste arriving at the facility, through to storage, processing, transport, and delivery of quality protocol approved products. The FPC is essentially a management system focussed on the production process which aims to ensure that product quality is consistently maintained to the required specifications. Evidence of its adoption and implementation is achieved through scheduled controls and tests on measuring equipment, raw materials and constituents, processes, machines and manufacturing equipment and finished products, including material properties in products. Most importantly, the system provides for conformity assessment and for the management of non-conforming products.

This Factory Production Control (FPC) will be used to control and monitor recycled aggregate production to ensure that the required product characteristics are achieved and maintained consistently.

1.2: Company Policies

DLS operates under an integrated Business Management and Safety System certified to ISO 9001, ISO 14001 and ISO 45001.

Section 2.0: Site Management

The effective running and management of the site is paramount to its success and requires structure, adequate training, safety and delegation of responsibilities to the correct personnel. This section outlines how,

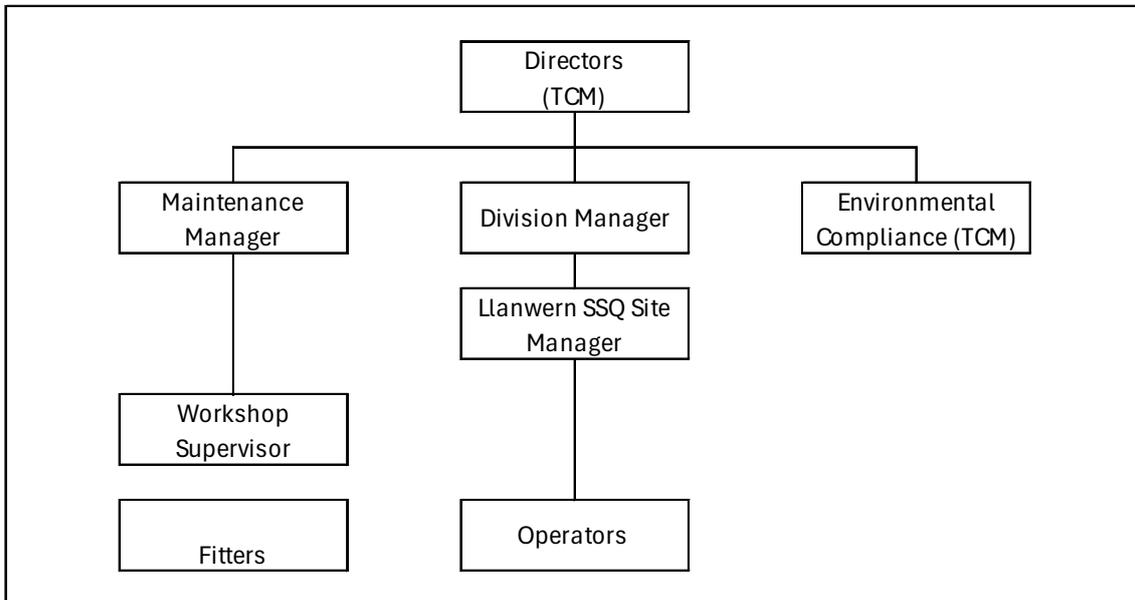
- the site is managed
- tasks are assigned
- the day to day operation of the facility is carried out
- required training for all personnel working on site

This is the framework for the expectation for all personnel working on site and of the company’s responsibility to train and safely carry out operations onsite.

2.1: Personnel Structure

The responsibility and authority for the implementation of the FPC ultimately lies with the Chief Operating Officer (COO) of DLS. The COO will appoint a Management Representative for the FPC and ensure that all relevant members of the management team are aware of their responsibilities. This will include details of the controls and actions required to prevent product non-conformity and the identification of procedures to follow for managing quality deviations. The current management structure is summarised in Figure 1.

Figure 01: Personnel Structure of the Operation



2.2: Operational Staff

A number of operational staff are required to follow procedures as part of the FPC and it is important that they are made aware of the documented procedure as part of their day to day operations. The roles identified are:

- Management
- Machine Operators
- Vehicle Drivers
- Weighbridge Operator

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All operational staff will be adequately informed by the identified managers and trained with regards to the relevance and importance of their activities and how they contribute to the achievement of the FPC implementation.

2.3: Roles & Responsibilities on Site

All personnel have specific roles and responsibilities to perform on site in order to ensure that all tasks are carried out correctly, safely and efficiently. With an operation of this size it is crucial that tasks are effectively delegated to the appropriate person so all parties involved can work without incident. To ensure this, specific roles are assigned within the personnel structure so that all tasks are completed effectively reducing any potential impact on other people working on site. With managerial approval, some of the tasks can be delegated providing the individual asked has been correctly trained to do the task. However, major responsibilities cannot be re assigned. DLS-MP-40-D01 details the roles and responsibilities of the following key members of personnel:

- DLS Compliance / TCM
- Site Manager
- Site Supervisor
- Site Administrator / Weighbridge Operator
- Materials Technician (samples / testing / Results)
- Plant / Machine Operators
- Material Hauler Drivers
- Banksman
- Labourer
- Maintenance Manager
- Fitter / Welder

2.4: Recruitment

The recruitment of personnel will be undertaken by the Site Manager and depending on the nature of the role to be filled, the Operation Manager.

2.5: Training Requirements

Training is undertaken by the Management Team. It will be their responsibility to identify training needs and organise the required training in accordance with the DLS Business Management Systems. All training records will be kept and maintained within the DLS SHEQ department.

All personnel intending to work on site must have adequate training and attended the appropriate courses before being allowed to work on site. Depending on what role and the tasks appointed to them the level of training will vary, however there are certain training requirements which all personnel must undertake in addition to the task specific training.

All staff working at the mobile operation have individual working records which are held at the DLS offices in accordance with the company Business Management System. Training will involve informal “tool box” talks and also proprietary external training when required. Specific to the FPC, staff will be trained in the appropriate procedures as required

- Acceptance criteria for the operation
- Procedures for non-compliant input wastes and output products
- Sampling and testing of products
- Product storage and inspection.

Other Training required for onsite include:

- Company Inductions
- Site Inductions

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- Machine Licences - CPCS / NPORS Licence or House Licences
- Wamitab Training (TCM)
- Risk Assessment & Safe Working Procedure
- PICWP Training

2.6: Onsite Equipment

The following equipment will be required to be utilised as a minimum to achieve waste treatment, however as operational requirements change more

- Weighbridge – Weigh materials in and out of site
- Wheel Wash – Ensure no waste / mud is taken onto the public roads
- Power Screen with over band magnets – screen and size material as required while removing Fe products
- Excavator – Load screen, manage stockpiles, use magnetic attachment to separate ferrous materials.
- Front Loading Shovel - Remove materials from screens to stock piles. Weigh production materials, stockpile management, load out vehicles with product.
- Wash plant (temporary use in Area 2-10)
- Mobile fuel bowser – supply equipment with fuel
- Dump trucks – Internal haulage of materials around site
- Water bowser – Dust suppression for site (small quantities of water taken from on-site ditches)
- Office & welfare facilities

In accordance with existing Business Management Systems, each item of plant will have details relating to:

- Operating Procedures
- Planned Preventative Maintenance Schedules and records of their implementation
- Register of operational staff trained in the use of each item of plant
- Register of operational staff holding the appropriate CPCS / NPORS standard

2.7: Document and Data Control

This FPC manual, waste permit, and all relevant DLS procedures will be made available to all staff. Copies of waste permits will be put on display in the site office. Records will be maintained during the following stages:

- a) FPC: Initial Enquiry and Waste Characterisation
- b) FPC: Waste Acceptance and Delivery
- c) FPC: Waste Treatment and Product Manufacturing
- d) FPC: Product Enquiry and Distribution

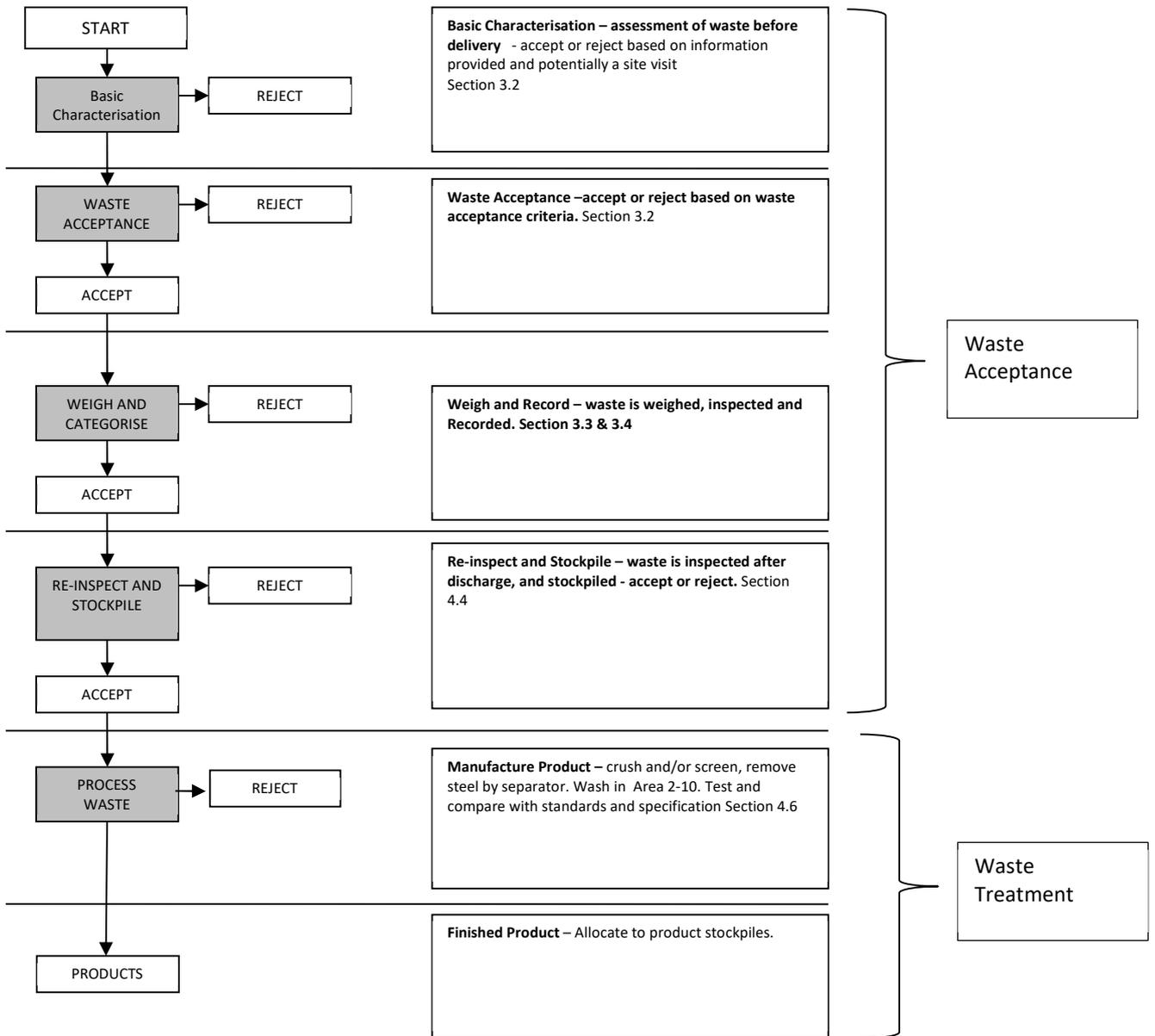
2.8: Surveillance & Management Review

This FPC system will be audited and reviewed on a 6-monthly basis by the management team, led by the Director, to assess its suitability and effectiveness. The records of these reviews will be recorded by the office manager and kept at the office.

3.0 Waste Acceptance

All waste received at the operation is subject to regulatory waste controls. This section covers how DLS manage the reception of waste and the controls in place to satisfy regulatory compliance. Figure 02 below provides an overview of the waste controls and transition from waste to product.

Figure 02: Waste Acceptance and Treatment Overview.



3.1: Material permitted for Waste Acceptance

Figure 03 summarises the acceptable wastes and their EWC codes that can be received at the SSQ. These are to be processed under Factory Production Control (FPC) to produce aggregates. This FPC applies to these wastes and aggregates.

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Figure 03: Permitted Waste Materials for Acceptance

EWC Code	Description of Wastes to be Accepted	EWC Entry Type	Relevant Quality Protocol
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07 may include excavation from mineral workings	MN	WRAP
01 04 09	Waste sand only	AN	WRAP
10 02 01	Waste from the processing of blast furnace slag / steel slag	AN	QP Steel Slag
10 02 02	Unprocessed blast furnace slag / steel slag	AN	QP Steel Slag
10 02 99	Slab yard refuse*	AN	QP Steel Slag
10 11 03	Waste glass-based fibrous materials allowed only if: Wastes without organic binders	AN	Wrap
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)	AN	WRAP
10 13 14	Waste concrete only	AN	WRAP
15 01 07	Glass packaging	AN	WRAP
16 11 04	Refractory	MN	WRAP
17 01 01	Concrete (excluding concrete slurry)	MN	WRAP
17 01 02	Bricks	MN	WRAP
17 01 03	Tiles and ceramics	MN	WRAP
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	MN	WRAP
17 02 02	Glass (Must not include fibreglass or glass fibre)	MN	WRAP
17 03 02	Bituminous mixtures	MN	WRAP
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	WRAP
17 05 06	Dredging spoil other than those mentioned in 17 05 05 allowed only if: Inert aggregate from dredgings. Must not contain contaminated dredgings. Must not contain fines.	MN	WRAP
17 05 08	Track ballast other than those mentioned in 17 05 07	MN	WRAP
17 09 04	Mixed construction and demolition waste comprising granular material	MN	WRAP
19 12 05	Glass Does not include glass from cathode ray tubes.	AN	WRAP
19 12 09	Minerals (for example sand, stones)	AN	WRAP
20 01 02	Glass Must not include fibreglass.	AN	WRAP
20 02 02	Garden and park wastes (including cemetery waste) – soil and stones Must not contain contaminated stones from garden and parks waste.	AN	WRAP
<p>EXCLUSIONS: Wastes having any of the following characteristics shall not be accepted:</p> <ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Hazardous wastes • Slurry Wastes • Wastes in liquid form <p>NOTES: 10 02 99: Slab yard Refuse is a material created from where recycled BOS Slag has been used as hard standing at a Steel Work Slab Yard, and has been worn down to a -25mm material, then scraped up to be repossessed. This material is chemically the same as Steel Slag but has been additionally been used and therefore has additional production steps which differs from 10 02 01 Steel Slag</p>			

3.2: Waste Classification

All wastes require basic classification to be carried out to determine waste type, EWC Code, Hazardous Properties, handling requirements and treatment/disposal requirements. This classification is to be carried out prior to the waste being accepted for treatment.

All wastes are classified from the Guidance on Classification and Assessment of Waste Technical Guidance WM3 document and complaint with The Hazardous Waste Regulations and List of Waste Regulations.

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To use the WM3 guidance, information about the waste must be obtained to correctly classify the waste. These are obtained from desktop survey / material history, Safety Data Sheets (MSDS), online harmonized values for known materials or through laboratory testing

Once the waste has been classified it needs to be written up / submitted via a 'Basic Characterisation'. This document will hold the supporting information that backs up the decision for its classification in addition to the information regarding the waste origin, testing requirements, waste hierarchy decision and destination of the waste.

It is the responsibility of the waste producer to produce the Basic Characterisation. Once the waste is classified and given a EWC code, it is referenced back to the acceptable list in Table 01 and is only accepted if it matches a code and description specified in the list.

3.3: Waste Acceptance and Rejection Procedure

DLS Operate waste acceptance in line with its Waste Acceptance & Rejection Procedure (DLS-MP-28) that details what is required to happen at operator level if a waste is accepted or rejected. For the facility, there is an overall procedure to be followed at managerial level before waste is to be considered for acceptance. This is shown in DLS-MP-28-F02 DLS 'Waste Acceptance Flow Chart'. Once this procedure has been followed and waste can be conditionally accepted. The material is to be visual inspected (where possible) at the weighbridge then a Gross weight is recorded.

Only waste materials arising off-site will require a Waste Transfer Note (WTN) but all waste will require characterisation and to satisfy the acceptance checks.

1. The driver will wait until the Site Manager / Weighbridge Operator can check their delivery information and supplied Waste Transfer Note (WTN), where relevant.
2. The Site Manager / Weighbridge Operator will confirm the waste is acceptable and that all documentation is available for the waste be brought to site.
3. The driver will be given instructions by the site manager (and if required a site map) for where they need to go on site to unloaded.
4. Where relevant, the driver will receive a Gross weight from the weighbridge (which will be recorded on the WTN).
5. The driver will proceed to the designated discharge point.
6. The driver will proceed to the designated tipping point and wait for a site operator to supervise the tipping of waste.
7. Once tipped the site operator will visually inspect the waste for conformity.
8. The driver will return to the weighbridge to receive a Tare and nett weight which will be completed on the WTN, where relevant.
9. The driver will be issued a copy of the completed WTN confirming the delivery of the waste
10. The haulier will leave the site.

Waste Rejection

Rejection of the waste would involve re-loading the waste back onto the delivery lorry. Waste producers and carriers of non-compliant wastes delivered to the site would be immediately contacted. A method of investigation, action and prevention of further non-compliant loads would be discussed and agreed.

This would typically include:

- Causes of inclusion of non-compliant waste
- Action Plan to prevent further non-compliant waste being delivered
- Agree a location / method of disposal of the delivered non-compliant waste

- Assurances that no further non-compliant wastes will be delivered to the

3.4: Quarantine of Non-Conformant Materials

In the event of non-conformant waste, DLS will set up a designated quarantine area to store materials in a sealed skip if reloading of materials is not available and/or the non-conformant materials are not initially discovered. This area will be clearly marked up and only non-conformant waste are to be stored in this area.

3.5: Digital Recording & Reporting

All waste material delivered to the Aggregate Waste Treatment Operation must be weighed and recorded as it is brought onto site. All production activities are to be reported to the Site Manager. It is the responsibility of the Site Manager to ensure that all incoming Tonnages are acceptable, recorded, stored and reported correctly.

All wastes accepted onto site are to be digitally recorded in a clear and appropriate manner, given a breakdown of loads accepted by:

- Date
- Origin
- EWC code
- Description
- Haulier

3.6: Waste Returns

Every 3 Months, inline with permitting regulations, DLS will submit quarterly waste returns to the regulator for all waste accepted to site and removed from site. This will be carried out by the site TCM

Section 4.0: Storage of Waste and Materials on Site

Once materials have been brought into the processing area, processing is required to enable the material to be recovered. For this, one or more processing methods may be required by trained DLS personnel. Organising the materials and the correct placement and use of the equipment will allow for effective processing. This section covers the physical handling of the materials from movements of unprocessed stock through to the different processing methods and storage, and the administrative side of recording, reporting and the cost allocation and charge of processing the materials.

Mobile screens or crushers are tracked to the stockpiles which require processing. A working platform is constructed from the unprocessed material for an excavator to sit in so it can reach the unprocessed stock and feed the processing equipment.

4.1: Movement of Materials on Site

All materials being deposited ready for processing, are moved into place prior to processing and processed stock must be placed in specifically designated bays in which signs are posted to reduce contamination across different materials.

Once a bay has been sign posted with a designated material, only that specific material type, size, or state of process can be held in that bay. All signs are to be mobile to accommodate changing volumes of stock levels, and all machine operators are to consult the site supervisor for any changes to locations of material bays.

If for any reason a material bay is not sign posted, machine operators are not to add to or remove material without permission from the Site Supervisor or Site Manager. It is the responsibility of the machine operators and Site Supervisor to report missing signs to the management in order to have new signs made.

All movements of material on site must be approved by the site Supervisor or Site Manager, or be outlined in the job brief for processing of that specific material. This applies to the mixing/blending of different material types and sizes.

If possible, screens and crushers will be moved to unprocessed material bays to avoid double handling of materials, and the processed material will be moved in to designated stockpile for each size and type of material. The only time materials will be brought to screens or crushers is when unprocessed stockpile is sufficiently large enough for an excavator to reach the whole stockpile.

4.2: Stockpile Management

The accepted waste loads will travel to the designated location for deposition and storage until ready for use. Detailed below are the procedures for further inspection of the waste during the discharge and stockpiling process.

The waste delivery driver will be given instructions by Operational Staff as to where the waste must be discharged. The waste will only be discharged in the correct waste stockpile. Each specific waste stockpile will be clearly signposted.

The operational staff will observe the tipping process to ensure that the waste is compliant, and that no non-compliant wastes are included or hidden and cross-contamination has not or cannot occur. If unacceptable wastes

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are encountered, the driver would be informed and the load put back onto the lorry (by use of the excavator) and returned to the customer. The waste carrier and waste producer would be immediately contacted by telephone of the non-compliant waste being present.

Prior to the material being pushed up into the stockpile any debris or materials identified as being non-compliant will be placed into a designated skip for recovery or disposal. This procedure may involve handpicking of small quantities of wood, plastic and metals etc. This material will be placed into dedicated skips for off-site recovery or disposal.

If the remaining waste is acceptable it will be pushed up into the designated stockpile via the front-loading shovel by the operational staff.

Waste stockpiles will be regularly visually examined and further sorting of non-compliant wastes may take place. The materials removed during subsequent inspections will be placed into designated skips for onward disposal or recovery.

Waste stockpiles will be kept separate and away from any finished products. Every waste and finished product stockpile will be clearly marked with signs identifying the material.

The operational staff will ensure that the stockpiles do not cross contaminate other waste stockpiles or any processed products.

4.6: Fuels, Greases and other Hazardous Substances.

No fuels will be stored at site.

Small quantities of maintenance fluids will be stored appropriately to prevent ground or water contamination. All storage requirements will be in line with DLS-MP-31V2 'DLS Hazardous Materials Storage and Spills' procedure and DLS-MP-59 'COSHH' procedure.

Section 5.0: Processing Of Waste Materials

Several of these wastes, identified as WRAP in Table 02, are listed as inert wastes in the WRAP Quality Protocol (WRAP QP) for the *Production of Aggregates from Inert Waste* (October 2013). Provided these wastes are not contaminated, these wastes can be used as feedstocks to produce aggregates. If the requirements of the WRAP QP are satisfied during their production, the aggregates will have ceased to be waste and no longer subject to waste controls.

More recently (2016), the Environment Agency published a series of Quality Protocols (QPs) which outline when a waste derived material can be regarded as a non-waste product and no longer subject to waste controls. One of these QPs is titled *Aggregate from waste steel slag*. If an operator can demonstrate that their production of aggregates meets the standard set out in this QP, and the rules for all QPs, then the aggregates may be regarded as fully recovered and no longer subject to waste controls. As one of the principal wastes, by tonnage, to be processed is slag from the steel making process, commonly referred to as steel slag or BOS (Basic Oxygen Steel) slag, this more recent QP is also applicable. In this document the term steel slag is used.

The following methods (either solely in conjunction with each other) can be used to achieve the specifications set out in the WRAP / Steel Protocol

- Screening (including over band magnets)
- Magnetic Separation
- Eddy current separation
- Crushing

All equipment is to be checked daily for defect and reported to the management Team. The maintenance team is responsible for plant repairs and service schedules to all equipment. Safe operations for using Screens and crushers it to be detailed in the site Job Method Statement.

5.1: Manufactured products

The manufacture of aggregates at the operation will adapt to market demands and specific client requirements. The main products that can be produced and their associated standards are listed in Figure 04.

Figure 04: Potential Products Produced as Required by Client Specifications

Materials	Product Produced																										
	SHW 500					SHW 600										SHW 800											
	Pipe Bedding - Coarse - Graded	Pipe Bedding - Coarse - Single Size	Pipe Bedding - Fine	Pipe Bedding - All In	Filter / Drain Material	General Granular Fill - Well Graded - 1A	General Granular Fill - Uniformly Graded - 1B	General Granular Fill - Coarse Granular - 1C	General Granular Fill - Wet cohesive material - 2A	General Granular Fill - Dry cohesive material - 2B	General Granular Fill - Stony cohesive material - 2C	General Granular Fill - Silty cohesive material - 2D	Landscaping Fill - Fill for Landscaping - 4	Top Soil - 5A	Top Soil - 5B	Selected Granular Fill - Below Water - 6A	Selected Granular Fill - Starter Layer - 6B	Selected Granular Fill - Starter Layer - 6C	Selected Granular Fill - Capping - Fine - 6F3	Selected Granular Fill - Capping - Fine - 6F4	Selected Granular Fill - Capping - Coarse - 6F5	Sub Base - Type 1	Sub Base - Type 2	Sub Base - Type 3	Sub Base - Category B	Sub Base - Type 4	
BOS Slag	X	X	X	X	X	X	X		X	X	X	X					X	X		X	X	X	X	X	X	X	X
Blast Furnace Slag	X	X	X	X	X	X	X	X	X	X	X	X					X	X		X	X	X	X	X	X	X	X
Recycled Aggregate	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X
Soil														X	X												

As part of the FPC, each aggregate will be tested at regular intervals based on production throughput for compliance with the relevant Standard and Specification

5.2: Aggregate Production

Mobile screens or crushers are tracked to the stockpiles which require processing within each working area. A working platform is constructed from the unprocessed material for an excavator to sit in so it can reach the unprocessed stock and feed the screen. The excavator will then pick up the unprocessed material with the bucket and feed the material through a 'live head' which will initially prevent any material with a greater size of 175mm from passing through. This oversize is removed by loading shovel and placed into stock, waiting further processing, if necessary.

Material passing through the live head will pass underneath a magnetic belt running perpendicular to the feed belt and will remove all scrap metals to the side of the screen where they will be subsequently moved by the front-loading shovel to stock. Once passed the magnetic belt, the material will filter through a series of different sized mesh plates separating the materials to desired size grades. The mesh plates can be changed to give different grade materials.

Once the material passes through the mesh plates to desired size, belts carry the materials in different directions dropping the material to the ground for the front-loading shovel to move into the appropriate product stockpiles.

The stockpiles of finished products will be regularly visually inspected at least once a week to record any stability or deterioration of the stockpile.

5.3: Contamination of Screened Materials

Contamination of materials is declared if **any** stockpile whether it is processed or unprocessed is mixed with any other materials of different type, size or state of process without the intent of the Site Supervisor or Site manager. In the event of contamination of stockpiles the following must be carried out:

- Report the incident to Site Supervisor and Site Manager.
- Record the incident in the Site Non-Conformity Log.
- Isolate the material until treatment can be carried out.
- Investigate to determine the cause of contamination.

Investigation into the contamination must reveal the type of contamination and how the material was contaminated. For contamination resulting from DLS personnel on site the Site Supervisor or Site Manager must inform the personnel on site of the error and correct the situation. For contamination resulting from hauliers the site manager is to be informed and must stop all hauliers and inform them they must see the Site Supervisor to be shown where to tip. Repeat offences of contaminating stockpiles are to be reported to DLS Management for the necessary action to be taken.

5.4: Recording Production

All materials processed must be recorded by the Front Loading Shovel Operator in a manner that can be easily read and interpreted by the Site Manager, Administrators and the regulatory body. It is the Responsibility of the Front Loading Shovel Operator to correctly and accurately account for the materials produced and recorded by them in the correct manner. It is the responsibility of the Machine Operator to raise any queries or issues about the production with the Site Supervisor. It is also the responsibility of the Front Loading Shovel Operator to ensure the following points are covered for both types of Production and for the Site Supervisor to instruct to new Operators to the site:

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- All grades of material which are produced **must be** recorded on a DLS Production Record (See DLS-MP-60-F01).
- Only finished products are to be recorded on the Production sheet. Materials which require further processing within the production method are not to be recorded on the production sheet.
- Only loading shovels with calibrated weigh loaders are to be used for recording production.
- All sections of the production sheets are to be filled out correctly and accurately.
- The total weight for the day for each material grade is to be recorded in the appropriate box. Each product must be recorded separately on the production sheet, clearly indicating the material grade.
- Date of screening/crushing and the Shovel Operator's name are to be recorded on the production sheets.
- All production sheets **must be** handed in to the Site Manager at the end of the day.
- Different Produced materials (I.E Slag based products/ Rubble based Products) materials production must be recorded on separate Production Sheets.
- Any production defects (oversize or undersize materials) observed within the production process are to be recorded on the production sheets next to the relevant product grade.

Review of Production Tonnages

Each morning the Site Manager is to review the previous days data from the Production Logs. Any discrepancies or anomalies that are observed by the Site Manager are to be addressed immediately and the correct or missing information entered / submitted to the site manager before the end of that day.

5.5: Digital Recording & Reporting Production

All processed material must be recorded on a weekly basis. All production activities are to be reported to the Site Manager. All recorded production tonnages must be submitted to the Site Manager. It is the responsibility of the Shovel Operators & Site Supervisor to ensure all Production Tonnages are submitted, and the responsibility of the Site Manager to ensure that all Production Tonnages are recorded, stored and reported correctly.

All materials processed on site are to be digitally recorded in a clear and appropriate manner, given a breakdown of productions by:

- Date
- Material Type
- Process Type
- Material Grade
- Stockpile number (If appropriate)

6.0: Product Storage, Sampling, Testing and Evaluation

In accordance with the quality protocols and current legislation to achieve end of waste, a testing protocol must be established to ensure that the end product is fit for use within the market. This section details the storage, sampling, testing and evaluation procedures for each of the waste/products highlighted in Figure 04.

6.1: Product Storage

All produce stockpiles are to be kept separate with clear distinctions between other stockpiles. Each pile is to be clearly labelled with the source material name and grading.

The stockpiles of finished products will be regularly visually inspected at least once a week to record any stability or deterioration of the stockpile. This will be recorded as part of the Site Supervisor/Managers daily inspection on DLS-MP-60-F02.

6.2: Product Sampling

Proper and careful sampling and sample transport is a prerequisite for an analysis that will give reliable results. Sampling will be undertaken in accordance with BS 932-1.

Sampling variation caused by the heterogeneity of the batch is reduced to an acceptable level by taking an adequate number of sampling increments. If the product is homogenized by production processes, one large increment may be representative of the batch.

Sampling increments will be taken from different heights or depths from the stockpile over the complete stockpile. Typically, 5 increments are to be taken from the base of the stockpile, and 2 from the mid-section. The sample shall be retrieved from inside the stockpile and not from the surface.

The sample increments will be combined at the production week end to form one bulk sample. The sample bag(s) forming the bulk sample should weigh no more than approximately 25kg unless otherwise specified by the laboratory / testing protocol.

This approach will also be used for previously homogenised stockpiles.

The samples or containers shall be clearly and durably marked. Marking shall include:

- a) A unique ID code, or
- b) Identification of the laboratory samples, place of sampling, date of sampling, and designation of the material.

The unique ID code will be given to the sample to trace back to the stockpile.

The laboratory samples shall be packed and transported in such a way that their condition at the time of sampling is preserved e.g. fines cannot be lost during transportation.

The sampler shall prepare a sampling report for each laboratory sample or for each group of laboratory samples from a single source. The sampling report shall refer to this European Standard and state:

- a) the date and place of sampling;
- b) the grading type and size of the batch;
- c) sampling point or identification of the batch sampled;
- d) the name of sampler(s).

6.3: Product Testing and Evaluation

Figure 05 in Appendix 1 details the products produced within the operation and specifies the testing protocols for each type of product.

6.3.1: Aggregate Products

Initial type testing is a suite of tests carried out on the aggregate that are relevant to its intended use, before it is first placed on the market. Additional testing may be required to satisfy specific customer requirements. This needs to be agreed with the customer prior to the processing of the material.

This testing is aimed at characterising the aggregate and will be undertaken before the aggregate is placed on the market and then once every 3 years.

Aggregate testing is a fundamental requirement of the FPC. The schedule of test work summarised in Appendix 1 will form the basis of the sampling programme. The testing procedures, using the reference test methods, have the function of providing assurance that a particular aggregate product complies with each of the selected specified requirements in the product standard.

For aggregates, at least 90 % of grading's, taken on different batches within a maximum period of 6 months, shall fall within the limits specified in the corresponding documents specification documents listed in Appendix 1.

Size designations and grading categories are essentially categories of convenience and different sizes and grading categories may be used by agreement between supplier and purchaser.

5.3.2: Ferrous and Non-Ferrous Products

Metals produced through the metal recovery operations (magnets), will be stockpiled in to size category (aluminium, light scrap, A Skull, C Skull etc) and sold as scrap metals to interested buyers. Size gradings and metallic content will be specified by the buyer and any quality protocols will be determined by the buyer.

5.3.3: Other Wastes

Any other waste generated within or as a result of the process (e.g. small quantities of wood, plastic, etc) will be stored in appropriate containers and sent off-site as a waste product to a licenced facility and controlled under waste regulations.

6.4: Non Conformities

Products that are shown to be non-compliant as a result of failed testing, or due to a complaint received regarding the product will either be;

- a) Reprocessed where possible
- b) Used for another end use for which it is suitable
- c) Rejected and placed in a clearly identified area before being taken off-site to another Permitted facility for either recovery or disposal

Details on the non-conforming products and remedial actions shall be recorded. The product non-conformity will be recorded on the Product Non-conformance log.

6.5: Corrective Actions

Where non-conformance is identified, DLS will investigate to identify and eliminate the cause of further nonconformities.

Corrective actions will include:

- 1) Investigation of the cause of non-conformity including an examination of the testing procedure and making any necessary adjustments;
- 2) Analysis of processes, operations, quality records, service reports and customer complaints to detect and eliminate potential causes of non-conformity;
- 3) Initiating preventive actions to deal with problems to a level corresponding to the risks encountered;
- 4) Applying controls to ensure that effective corrective actions are taken;
- 5) Implementing and recording changes in procedures resulting from corrective action.

7.0: Despatch of Products.

All materials leaving the processing areas must be accounted for, and accurate records must be kept on file. The crucial part of the despatch process is to ascertain the use of the material, so that the correct material can be allocated.

7.1: Material Requests.

There will be two distinct type of despatch requests. Internal for use on site by Tata and external for sale on the open market.

7.1.1: Internal Material Use.

All internal requests will be authorised by the Site Manger and only produced products will be used. The amounts of product used will be recorded and documented for review

7.1.2: External Customer Requests.

All external requests for products must be in a written format and submitted to the DLS Site Manager.

7.2: Product Conformance

The products manufactured at the site will be stored and handled in a controlled manner. Care will be taken to avoid cross contamination with other products and input materials.

There is no mandatory requirement to CE mark aggregate products in the UK. CE marking will be required for aggregates supplied to or within other EU Member States where CE marking is required.

Each batch supplied to a customer will however be issued with a Product Despatch note that details product conformance and as a minimum contains.

- unique serial number
- name and details of the aggregate product, including any customer specification
- producer's name, address and contact details
- European Standard Identified e.g. BS EN 13242:2013 for pipe bedding and BS EN 13285:2018 for unbound mixtures such as general fill capping
- aggregate source code (A1 reclaimed asphalt, A2 for crushed concrete, A3 for crushed bricks, A4 for mix of A1, A2 and A3, D3 for steel slag)
- statement of conformity that the aggregate was produced in accordance with relevant quality protocol for either inert waste or steel slag
- date of product dispatch
- quantity by volume or weight
- any identifying batch or serial number
- results of any product tests

Unless otherwise specified by the customer the products will conform to the specification set out in section 5.1 Any specific request by the customer for product quality must be made in writing and sent to the DLS Management prior to any material being produced for the order, and agreed by all parties (DLS/Customer).

7.3: Despatch of Materials Procedure.

1. The driver will wait until the Site Manger can check their request information.
2. The Site Manager will confirm the material requested and the Order Number for the despatch and issue a material authorisation ticket.
3. The driver will be given instructions by the site manager (and if required a site map) for where they need to go onsite to be loaded.
4. The Driver will receive a tare weight from the weighbridge
5. The driver will proceed to the designated loading point.

6. The driver will wait at the designated point to be called by the loading shovel operator.
7. The driver will hand over the authorising ticket to the loading shovel operator to be escorted to the correct product stock pile and proceed to be loaded.
8. The loading shovel operator will indicate to the hauler that the loading is complete and that it is safe to leave the area.
9. The driver will return to the weighbridge to receive are gross and nett weight.
10. The driver will be issues a dispatch note confirming the product details
11. The hauler will leave the site once the haulage vehicle is sheeted and wheels washed, where necessary.

Section 8.0: Calibrations

To ensure compliance with both client and regulatory requirements, equipment used for measurements essential to the operation are required to be calibrated. This section ensures an effective system exists for ensuring that all inspection, measuring & test equipment (IMTE) is identified and serviced/calibrated on a regular basis, thus ensuring that the equipment is operating to the correct parameters.

Each item of IMTE deemed critical to the customer or DLS will be identified with a unique serial number or DLS asset number. This information must be entered on to a calibration register that lists all similar equipment.

8.1: Weighbridge

Where a site weighbridge is used to record the weights, it must be calibrated for trading use. DLS will check and monitor the calibration date, and arrange for the service and calibrations to be carried. Copies of the Weighbridge calibration are to be kept at the weighbridge for auditing purposes and all frequencies and records of calibrations will be kept at the maintenance department and recorded on the DLS Calibration Register.

8.2: Weigh Loaders

Weigh loaders are utilised to record materials produced by the manufacturing process. The weigh loaders will weigh and record the 'tonnage' produced as the materials is moved from the production pile to the stock pile. All frequencies and records of calibrations will be kept at the maintenance department and recorded on the DLS Calibration Register.

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Appendix 1: Product Specifications

Figure 05: Product Specifications – General Specifications Section 1

Test	Standard	Sieve Size	Qty	Weight / Kg	Frequency 1 Per	Product Produced											
						SHW 500 Pipe Bedding - Coarse - Graded	SHW 500 Pipe Bedding - Coarse - Single Size	SHW 500 Pipe Bedding - Fine	SHW 500 Pipe Bedding - All In	SHW 500 Filter / Drain Material	SHW 600 General Granular Fill - Well Graded - 1A	SHW 600 General Granular Fill - Uniformly Graded - 1B	SHW 600 General Granular Fill - Coarse Granular - 1C	SHW 600 General Granular Fill - Wet cohesive material - 2A	SHW 600 General Granular Fill - Dry cohesive material - 2B	SHW 600 General Granular Fill - Stony cohesive material - 2C	SHW 600 General Granular Fill - Silty cohesive material - 2D
PSD	EN1097-5	Each Grade	1	10	Week	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec
Moisture Content	EN1377-2					User Spec	User Spec		>= -4%PL	<= -4%PL	User Spec	User Spec	User Spec	User Spec	User Spec		
Uniformity Coefficient	EN1377-2					>=10	<=10	>=5									
Maximum fines & Oversie categories	EN1377-2					See Spec	See Spec	See Spec	See Spec	See Spec							
Los Angeles Abrasion	EN 1097-2	14mm - 10mm	1	15	6 Months	<=50	<=50	<=50	<=50	<=50		<=50					
Water Soluble Sulfate Content	EN1744-1 C10	<25mm	1	5	Month	<=0.2%(SS0.2)	<=0.2%(SS0.2)	<=0.2%(SS0.2)	<=0.2%(SS0.2)	<=0.2%(SS0.2)							
Constituents Testing	EN 933-11	Representative	1	10	Monthly	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%
Water Soluble Sulfate Content within 500mm of concrete, cement etc = Top result Within 500mm of metallic structures = bottom result	EN1744-1 C10	<25mm	2	20	Month	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg	<=1,500mg <=300mg
Total Sulfur	EN 1744-1	<25mm			Month	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)	<=2% (BFS) <=1% (Other)
Sulphide within 500mm of concrete, cement etc = Top result Within 500mm of metallic structures = bottom result	EN1744-1 C13	Representative	1	1	Month	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%	<=0.5% <=0.06%
pH	BS 1377-3	Representative	1	1	Month												
Frost Heave (Wet) If material is within 450mm of final surface = top result If material is within 350mm of final surface, Annual Frost Index must be less than bottom result	BS812-P124	35mm	1	60	Year						<=15mm <=50	<=15mm <=50	<=15mm <=50	<=15mm <=50	<=15mm <=50	<=15mm <=50	<=15mm <=50
Moisture Condition Value (MVC)	EN1377-4	<20mm	1	5	Weekly						User Spec	User Spec		User Spec	User Spec	User Spec	User Spec
Undrained Shear Strength	EN1377-7		1	5	Weekly								User Spec	User Spec	User Spec	User Spec	
Magnesium Sulphate Soundness	EN1376-2	14mm - 10mm	1	20	Year												
Volume Stability (BOS Refuse)	EN1744-1	25mm+	1	20	6 Months												
Volume Stability (BFS)	EN 1744-1	25mm+	1		6 Months												
Dicalcium Silicate Disintegration (BFS)	EN 1744-1		1		6 Months												
Plastic index / Limit (PL)	EN1377-2	<10mm	1	5	Weekly								State	State	State		
Dry Density / Particle Density / OMC	EN1377-4	<20mm	1	20	Year												
Resistance to Wear - micro-Deval	EN 1097-1	14mm - 10mm	1	2	Year												
Particle Density & Water Absorption	BS EN 1097-6	<25mm	1	5	Year												

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Figure 06: Product Specifications – General Specifications Section 2

Test	Standard	Sieve Size	Qty	Weight / Kg	Frequency 1 Per	Produced product														
						SHW 600 Top Soil - 5A	SHW 600 Top Soil - 5B	SHW 600 Selected Granular Fill - Below Water - 6A	SHW 600 Selected Granular Fill - Starter Layer - 6B	SHW 600 Selected Granular Fill - Starter Layer - 6C	SHW 600 Selected Granular Fill - Capping - 6F3	SHW 600 Selected Granular Fill - Capping - Fine - 6F4	SHW 600 Selected Granular Fill - Capping - Coarse - 6F5	SHW 800 Sub Base - Type 1	SHW 800 Sub Base - Type 2	SHW 800 Sub Base - Type 3	SHW 800 Sub Base - Category B	SHW 800 Sub Base - Type 4		
PSD	EN1097-5	Each Grade	1	10	Week	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec	See Spec		
Moisture Content	EN1377-2							User Spec	User Spec	<=OMC	<=OMC	<=OMC								
Uniformity Coefficient	EN1377-2					>=10		<=10												
Maximum fines & Oversie categories	EN1377-2										UF15 & OC75	UF15 & OC75	UF9/12 & OC75	UF9 & OC75	UF5 & OC80	UF9 & OC80	UF9 & OC75			
Los Angeles Abrasion	EN 1097-2	14mm - 10mm	1	15	6 Months				<=50	<=50		<=60	<=50	<=50	<=50	<=30	<=30	<=50		
Water Soluble Sulfate Content	EN1744-1 C10	<25mm	1	5	Month															
Constituents Testing	EN 933-11	Representative	1	10	Monthly	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%	X <= 1%		
						Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%	Ra <= 50%
Water Soluble Sulfate Content within 500mm of concrete, cement etc = Top result Within 500mm of metallic structures = bottom result	EN1744-1 C10	<25mm	2	20	Month	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg	<=1,500mg		
Total Sulfur	EN1744-1	<25mm			Month	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)	<=2% (BFS)		
Sulphide within 500mm of concrete, cement etc = Top result Within 500mm of metallic structures = bottom result	EN1744-1 C13	Representative	1	1	Month	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%	<=0.5%		
						<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%	<=0.06%
pH	BS 1377-3	Representative	1	1	Month									State	State	State	State	State		
Frost Heave (Wet) If material is within 450mm of final surface = top result If material is within 350mm of final surface, Annual Frost Index must be less than bottom result	BS812-P124	35mm	1	60	Year	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm	<=15mm		
						<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50	<=50
Moisture Condition Value (MVC)	EN1377-4	<20mm	1	5	Weekly															
Undrained Shear Strength	EN1377-7		1	5	Weekly															
Magnesium Sulphate Soundness	EN1376-2	14mm - 10mm	1	20	Year								MS35	MS35	MS35	MS35	MS35	MS35		
Volume Stability (BOS Refuse)	EN1744-1	25mm+	1	20	6 Months						V5	V5	V5	V5	V5	V5	V5	V5		
Volume Stability (BFS)	EN 1744-1	25mm+	1		6 Months						0	0	0	0	0	0	0	0		
Dicalcium Silicate Disintegration (BFS)	EN 1744-1		1		6 Months						0	0	0	0	0	0	0	0		
Plastic index / Limit (PL)	EN1377-2	<10mm	1	5	Weekly			Non Plastic	Non Plastic	Non Plastic										
Dry Density / Particle Density / OMC	EN1377-4	<20mm	1	20	Year						State	State	State							
Resistance to Wear - micro-Deval	EN 1097-1	14mm - 10mm	1	2	Year								State	State	State	State	State	State		
Particle Density & Water Absorption	BS EN 1097-6	<25mm	1	5	Year								State	State	State	State	State	State		

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Figure 07: Product Specifications – Series 500 Grading Specifications

SHW Series 500 - Pipe Bedding - Particle Size Requirements																									
Bedding Type	Material Type	Pipe Size	Aggregate Size	Top Size	Bottom Size	G _C (D/d)	%<D	%>d	EN 933-1																
									f	500	300	125	80	63	40	31.5	20	16	10	8	6.3	4	2	1	0.5
Coarse	Graded	>400mm Pipe	2/14	14	2	G _C 80-20	80	20	4									80							
Coarse	Graded	>400mm Pipe	4/20	20	4	G _C 80-20	80	20	4								80								
Coarse	Graded	>400mm Pipe	4/40	40	4	G _C 80-20	80	20	4						80										
Coarse	Graded	400mm - 140mm Pipe	2/14	14	2	G _C 80-20	80	20	4								80						20		
Coarse	Graded	400mm - 140mm Pipe	4/20	20	4	G _C 80-20	80	20	4								80						20		
Coarse	Single Size	>400mm Pipe	4/10	10	4	G _C 80-20	80	20	4									80			20				
Coarse	Single Size	>400mm Pipe	6/14	14	6	G _C 80-20	80	20	4								80				20				
Coarse	Single Size	>400mm Pipe	10/20	20	10	G _C 80-20	80	20	4								80			20					
Coarse	Single Size	>400mm Pipe	20/40	40	20	G _C 80-20	80	20	4						80										
Coarse	Single Size	400mm - 140mm Pipe	4/10	10	4	G _C 80-20	80	20	4										80			20			
Coarse	Single Size	400mm - 140mm Pipe	6/10	10	6	G _C 80-20	80	20	4										80			20			
Coarse	Single Size	400mm - 140mm Pipe	10/20	20	10	G _C 80-20	80	20	4								80			20					
Coarse	Single Size	<140mm Pipe	4/10	10	4	G _C 80-20	80	20	4										80			20			
Fine & All In	Fine	All	0/1	1	0	G _C 80-20	80	20	11															80	
Fine & All In	Fine	All	0/2	2	0	G _C 80-20	80	20	11															80	
Fine & All In	Fine	All	0/4	4	0	G _C 80-20	80	20	11															80	
Fine & All In	Fine	All	0/6	6	0	G _C 80-20	80	20	11															80	
Fine & All In	All in	<140mm Pipe	0/10	10	0	G _C 80-20	80	20	11											80					
Fine & All In	All in	400mm - 140mm Pipe	0/10	10	0	G _C 80-20	80	20	11												80				
Fine & All In	All in	400mm - 140mm Pipe	0/20	20	0	G _C 80-20	80	20	11												80				
Fine & All In	All in	>400mm Pipe	0/10	10	0	G _C 80-20	80	20	11													80			
Fine & All In	All in	>400mm Pipe	0/20	20	0	G _C 80-20	80	20	11													80			
Fine & All In	All in	>400mm Pipe	0/40	40	0	G _C 80-20	80	20	11							80									

SHW Series 500 - Filter Drains - Particle Size Requirements																									
Aggregate Size	Top Size	Bottom Size	G _C (D/d)	%<D	%>d	EN 933-1																			
						f	80	63	40	20	10	4	2	0.5	0.125	0.063									
20/40	40	20	G _C 80-20	80	20	NR	Lower	100	99	20	5														
							Upper	100	98	80	0	0													

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Figure 08: Product Specifications – Series 600 Grading Specifications

Type	Code	Description	SHW Series 600 Grading																		
			BS EN 1377 Part 2																		
			500	300	125	90	75	37.5	28	20	14	10	6.3	5	3.35	2	1.18	0.6	0.3	0.15	0.063
General Granular Fill	1A	Well Graded		100	95-100																<15
	1B	Uniformly Graded			100																<15
	1C	Coarse Granular	100		10-95												0-25				15
	2A	Wet Cohesive Material			100										80-100						15-100
	2B	Dry Cohesive Material			100										80-100						15-100
	2C	Stony Cohesive Material			100										15-80						15-80
	2D	Silty Cohesive Material			100																80-100
Top Soil	5B	Imported	BS 3882																		
Selected Granular Fill	6A	Below Water	100								0-100		0-85				0-45				0-5
	6B	Starter Layer	100		0-10																
	6C	Starter Layer			100			0-100				0-100		0-35	0-10		0-2				

Type	Code	Description	SHW Series 600 - Grading																		
			BS EN 933-2 (Imported)																		
			500	300	125	80	63	40	31.5	20	16	10	8	6.3	4	2	1	0.5	0.25	0.125	0.063
Selected Granular Fill	6F3	Below Water			100	75-99		50-90		30-75		15-60				0-35					0-12
	6F4	Starter Layer					100		75-99		50-90		30-75		15-60		0-35				<15
	6F5	Starter Layer			100	75-99		50-90		30-75		15-60				0-35					0-12

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Figure 09: Product Specifications – Series 800 Grading Specifications

SHW Series 800 - Type 1 & Type 4								
	63	31.5	16	8	4	2	1	0.063
Grading	100	75-99	43-81	23-66	12-53	6-42	3-32	0-9
SDVGR			54-72	33-52	21-38	14-27	9-20	
Tolerance + or -			15	15	15	13	10	

Retained Sieve size	Passing sieve size	Min	Max
8	16	7	30
4	8	7	30

SHW Series 800 - Type 2								
	63	31.5	16	8	4	2	1	0.063
Grading	100	75-99	50-90	30-75	15-60		0-35	0-9
SDVGR								
Tolerance + or -								

Retained Sieve size	Passing sieve size	Min	Max
8	16	5	35
4	8	5	35

SHW Series 800 - Type 3									
	80	40	20	10	4	2	1	0.5	0.063
Grading	100	80-99	50-78	31-60	18-46	10-35	6-26	0-20	0-5
SDVGR			58-70	39-51	26-38	17-28	11-21	5-15	
Tolerance + or -			8	8	8	8	8	8	

Retained Sieve size	Passing sieve size	Min	Max
10	20	10	25
4	10	10	25
2	4	7	20
1	2	4	15

SHW Series 800 - Category B									
	63	31.5	16	8	4	2	1	0.5	0.063
Grading	100	80-99	55-85	35-68	22-60	16-47	9-40	5-35	0-9
SDVGR			63-77	43-60	30-52	23-40	14-35	10-30	
Tolerance + or -			8	8	8	7	5	5	

Retained Sieve size	Passing sieve size	Min	Max
8	16	10	25
4	8	10	25
2	4	7	20
1	2	4	15