

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Thesco Limited

Royds Mills
Windsor Street
Sheffield
S4 7WB

Variation application number

EPR/BK6769IY/V003

Permit number

EPR/BK6769IY

Royds Mills

Permit number EPR/BK6769IY

Introductory note

This introductory note does not form a part of the notice.

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Changes introduced by this variation notice/statutory review

This variation has been issued to update some of the conditions following a statutory review of the permits in the industry sector for non-ferrous metals. The opportunity has also been taken to consolidate the original permit and subsequent variations.

The Industrial Emissions Directive (IED) came into force on 7th January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. The BAT Conclusions (BATc) for the non-ferrous metals industries were published on 30th June 2016 in the Official Journal of the European Union (L174) following a European Union wide review of BAT, implementing decision (EU) 2016/1032 of 13th June 2016. The BATc for this installation which apply from 30th June 2020 are 1-10, 14, 18, 19, 26, 35, 45, 54, 131, 132, 135, 137, 139-141, and 147-149. The operator is already compliant with the BATc.

The schedules specify the changes made to the permit. Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. All the conditions of the permit have been varied and are subject to the right of appeal.

Brief description of the process

Royds Mills (the Installation) is operated by Thessco Limited and is located in Sheffield, England.

The main purpose of the activities of the installation is the production of precious metal based products, specifically brazing alloys, e.g. silver alloy, silver-copper-phosphorus; copper phosphorus; fluxes; solders; and silver products, e.g. electrical contacts, for use in a wide range of industrial applications.

The operation of the plant is listed in Table S1.1 of the permit under the following activity descriptions:

- Section 2.2 A(1)(c), Producing, melting or recovering (whether by chemical means or by electrolysis or by the use of heat) cadmium or mercury or any alloy containing more than 0.05 per cent by weight of either of those metals or both in aggregate; and
- Section 4.2 A(1)(f), Activity (other than the combustion or incineration of carbonaceous material as defined in the Interpretation of Part A(1) of Section 1.2) which is likely to result in the release into the air of any acid-forming oxide of nitrogen.

The main activities carried out at the Installation comprise the melting of silver and base metals to produce cast, rolled, extruded and sintered products to customer specifications and the recovery of precious metal from certain waste streams. The Installation covers the following production areas:

- Bullion Department for managing the raw material and recovered waste materials
- Melting Shop for smelting metals to the required analysis
- Coinage Mill covering blank production, burnishing and polishing, rolling and heat treatment
- Refinery for recovering precious metals from waste
- Atomising Department producing powder and sintered metal products
- Extrusion Presses

- Sheet and Wire Mill, including the Cleaning Shop, rolling, wire drawing, drawn sections, roll and cut, and the Blue Room
- Factory 2 - Wire Drawing, Rolling and Rod & ring making, including flux coating, and strip and wire cleaning line

The key activities, which may have an impact on the environment, include:

Melting Shop

Silver and base metals are melted in either electric or gas-fired furnaces of various sizes ranging from 0.035 tonne to 1.5 tonne capacity. Molten metal alloys from the melting furnaces are then cast, using continuous casting units or hand casting, into iron moulds. The finished cast material is then transferred out of the Melting Shop to one of the production areas under the control of the Bullion Department.

Fume generated from all furnaces and casting operations is extracted to a bag filter plant before discharge to atmosphere via a 30m stack. A standby bag filter plant is available which discharges via the same stack.

Solids collected from the filtration plant are discharged into a slurry mixer; this waste material is sent to the Refinery for metal recovery. Metal is also recovered from materials used in polishing operations. All other solid waste arising are transported off-site for metal recovery.

There are no direct process releases to controlled waters. Water used for the cooling of the furnaces and casting equipment is passed through a cooling tower from which there is a periodic discharge to foul sewer.

Coinage Mill

Material issued by the Bullion Department is rolled and punched into coin blanks and then polished.

Particulate matter generated by surface cleaning is extracted and discharged to atmosphere via a cyclone. Combustion gases from annealing furnaces are also passed to atmosphere.

There are no direct process releases to controlled waters. Furnace cooling water is passed through a cooling tower from which there is a periodic discharge to foul sewer.

Refinery

This activity (referred to as chemical refining) comprises the dissolution of silver bearing scrap metals in nitric acid to recover silver and also the dissolution of cadmium waste (present in spent filter bag dust) in sulphuric acid to produce cadmium sulphate which is then sent off site for further processing to recover the cadmium.

Chemical refining to recover the silver from scrap materials is performed in dissolving vessels containing nitric acid which give rise to the generation of oxides of nitrogen fumes (NOx). Steam can also be applied to the vessels to promote the reaction when necessary. All dissolving vessels are provided with fume extraction through the vessel lid, which removes acid fume and water vapour generated in the vessels. When all the metal has dissolved, the liquor remaining is pumped from the vessels and filtered.

Residues from the filtration stage are stored and periodically shipped to outside refiners. The filtrate is heated and sodium formate added to precipitate the silver. When a silver free solution is obtained, the solid (silver powder) is removed by filtration and the liquor is pumped to effluent storage tanks. The silver powder is washed and dried prior to being re-used within the production process.

Fume, extracted from the dissolving vessels, is passed through a hydrogen peroxide scrubber before release into air in order to minimise discharges of NOx. Nitric acid recovered from the scrubbing process is re-used in the dissolving process.

Effluent from the process is stored in holding tanks and removed from the site by an approved waste contractor. There are no process releases to controlled waters or sewer.

Atomising Department

This activity covers the production of metal powders and sintered powder billets; cadmium and non-cadmium bearing. Silver and base metals are melted in one of two induction units. Molten metal is then poured into a sealed water atomisation unit to produce metal powders. The powder is dried, sieved and blended, ready for despatch to customers or for further processing.

Cadmium alloys are oxidised in an electrically heated furnace and pressed into billets, which are then sintered. Sintered billets are then passed to the extrusion section of the wire department for further processing.

Fume generated from the induction units and furnace is extracted to bag filters before being vented outside the building. Filtered solids are collected and deposited into sealed containers and transported back to the Refinery for recovery of precious metals.

The Atomising department utilises a closed circuit cooling system so there are no process releases to controlled waters or sewer. The cooling system is periodically topped up to account for evaporative losses.

Extrusion Press

Billets are pre-heated and extruded to form rod and wire products. The products can be pickled using sulphuric acid to remove surface contamination. All acid cleaning waters are contained in IBC's and sent off site for treatment by an approved waste contractor

Water used to cool the press is passed through a cooling tower from which there is a periodic discharge to foul sewer. There are no direct process releases to controlled waters.

Sheet and Wire Mill

Sheet and wire is hot/cold rolled or drawn into wire or sections. The product can be subject to annealing and surface treatment.

Emissions to air arise from product surface cleaning, and solvent degreasing operations using iso-propanol.

There are no process releases to controlled waters or sewer.

Factory 2

Wire Drawing

Rod and wire is passed through dies to form wire of reduced cross-section. The wire is annealed between successive wire drawing stages. Acid pickling can be used to remove scale formed during annealing. Flux coating may be applied depending on the required product specification.

The press is water cooled and shares the cooling tower used by the Extrusion Presses, from which there is a periodic discharge to foul sewer.

Rod & Ring Making

Extruded or drawn rod and wire is processed to produce brazing rods and rings. The process involves product annealing.

Rolling

Phosphorus copper brazing alloys are rolled or bonded for electrical contacts. The process involves product annealing. Acid pickling can be used to remove scale on the product formed during annealing.

Production processes are under continual review to remove acid cleaning requirements. However, where acid pickling is utilised within Factory 2, all spent acid cleaning waters are contained in IBC's and sent off-site for treatment by an approved waste contractor. There are no process releases to foul sewer.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application BK6769	Received 28/03/02	
Request by Agency to extend determination to 31/12/02	Request dated 03/07/02	Response dated 23/07/02
Permit BK6769	Determined 19/09/02	
Variation BP3831SY under Regulation 17 (consolidated)	Received 14/06/05 Determined 01/09/05	Releases to sewer amended Improvement programme amended New specified activities included due to regulation change
Regulation 60 Notice dated 16/12/16 (Notice requiring information for statutory review of permit)	Response Received 24/03/17	Technical standards detailed in response to the information notice. Information to demonstrate that relevant BAT Conclusions are met for the non-ferrous metals industries as detailed in document reference L174.
Additional information requested via email EPR/BK6769IY/V003	10/05/18	Further information / clarification requested with regard to BAT conclusions
Additional information received in response to email dated 10/05/18 EPR/BK6769IY/V003	Received 17/05/18 & 18/05/18	Information / clarification with regard to BAT conclusions 1-4, 6, 9, 11, 12, 14, 36, 135, 147 and 148
Additional information received in response to emails dated 29/05/18, 30/05/18 and 01/06/18 EPR/BK6769IY/V003	Received 30/05/18, 31/05/18, & 05/06/18	Information / clarification regarding installation description, surface water run-off, use of industrial solvents, discharges to foul sewer, emission points to air and sewer
Environment Agency initiated variation EPR/BK6769IY/V003 (variation and consolidation)	27/06/18	Statutory review of permit – Non-ferrous metals BAT Conclusions published 30/06/16
Variation determined EPR/BK6769IY/V003 (PAS / Billing Ref: YP3637JR)		Varied and consolidated permit issued

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates

Permit number

EPR/BK6769IY

Issued to

Thessco Limited (“the operator”)

whose registered office is

**Royds Mills
Windsor Street
Sheffield
S4 7WB**

company registration number 01819860

to operate an installation at

**Royds Mills
Windsor Street
Sheffield
S4 7WB**

to the extent set out in the schedules.

The notice shall take effect from 27/06/2018.

Name	Date
Samantha Haddock	27/06/2018

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/BK6769IY

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BK6769IY/V003 authorising,

Thessco Limited (“the operator”),

whose registered office is

**Royds Mills
Windsor Street
Sheffield
S4 7WB**

company registration number 01819860

to operate an installation at

**Royds Mills
Windsor Street
Sheffield
S4 7WB**

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Samantha Haddock	27/06/2018

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in blue on the site plan at schedule 7 to this permit.

2.3 Operating techniques

- 2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.
- 2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.
- 2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1a and S3.1b.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
 - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:

- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
 - (a) point source emissions specified in tables S3.1a and S3.1b;
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1a and S3.1b unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
 - (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production /treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter, if during that quarter the total amount accepted exceeds 100 tonnes of non-hazardous waste or 10 tonnes of hazardous waste.

4.3 Notifications

- 4.3.1 In the event:
- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
 - (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this

information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

- 4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

- (a) any change in the operator's trading name, registered name or registered office address; and
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

- 4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) the Environment Agency shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

- 4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately" in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 Activities		
Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
Section 2.2 A(1)(c)	Producing, melting or recovering (whether by chemical means or by electrolysis or by the use of heat) cadmium or mercury or any alloy containing more than 0.05 per cent by weight of either of those metals or both in aggregate [Melting of metal alloys containing cadmium in electrically heated and gas fired furnaces within the Melting Shop]	From charging of furnace to casting of billets
Section 2.2 A(1)(c)	Producing, melting or recovering (whether by chemical means or by electrolysis or by the use of heat) cadmium or mercury or any alloy containing more than 0.05 per cent by weight of either of those metals or both in aggregate [Melting of metal alloys containing cadmium in electrically heated furnaces within the Atomising Department]	From charging of furnace to transfer of molten metal to atomisation process
Section 4.2 A(1)(f)	Activity (other than the combustion or incineration of carbonaceous material as defined in the Interpretation of Part A(1) of Section 1.2) which is likely to result in the release into the air of any acid-forming oxide of nitrogen [Dissolution of silver bearing scrap metals with nitric acid in dissolving vessels within the Refinery]	From charging of dissolving vessel to pumping out of liquor for further processing.
Directly Associated Activity		
Raw materials storage and handling	Receipt, handling and storage of raw materials and all process substances	From receipt of raw materials until used in the process
Extrusion plant	Billets from Melting Shop extruded into sheet, rod and wire	From receipt of billets to production of finished product, including pre-heating, extrusion, annealing, cutting, pickling, plant services, and die cleaning Excludes workshops and packaging areas

Table S1.1 Activities		
Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
Silver metal powder production	Production of silver powders in the Refinery using filtrate from dissolving vessels	From receipt of filtrate to production of silver powders, including heating, precipitation, filtration, washing and drying
Atomisation process	Atomisation of molten metal to produce metal powders	From receipt of molten metal to finished product, including atomisation, drying, sieving and blending
Treatment of bag plant dusts	Dissolution of dusts arising from on-site bag filter plant, in the refining vessels, in order to facilitate the recovery of precious metals and cadmium	From charging of dissolving vessels to recovery of precious metals and the production of cadmium sulphate (for further refining off-site)
Effluent discharge to foul sewer	Periodic discharge from cooling towers during bi-annual drain down / maintenance	From production of effluent to discharge to foul sewer
Storage and handling of wastes	Handling, storing and removal of all wastes from site	From waste production by the specified activities to waste leaving the site. Except wastes from finished products packaging and storage.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	The response to questions 2.3 given in section 2.3 of the application [where this remains relevant to current operations]	28/03/02
Response to Regulation 60 Notice – request for further information dated 06/12/16	Technical standards detailed in response to BAT Conclusions 5, 7, 8, 10, 18, 19, 26, 35, 45, 54, 131, 132, 137, 139-141, and 149 of the notice provided under Regulation 60(1) of Environmental Permitting Regulations. Best available techniques as described in BAT Conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for non-ferrous metals industries	Received 24/03/17
Receipt of additional information requested by email dated 10/05/18	Technical standards detailed in response to BAT Conclusions 1-4, 6, 9, 14, 135, 147 and 148 of the information request	Received 17/05/18 & 18/05/18
Receipt of additional information requested by email dated 01/06/18	Emission point plan entitled “Thessco Site Emission Points - Reviewed June 2018”	Received 05/06/18

Table S1.3 Improvement programme requirements		
Reference	Improvement Condition	Completion date
IC1	<p>The operator shall undertake a review of periodic monitoring for emissions to air of oxides of nitrogen (NOx) from emission point A3 in relation to the Refinery scrubber. The review shall justify, with appropriate evidence, the frequency of monitoring to be employed at the installation from 30 June 2020.</p> <p>The evidence required under this condition shall include analysis and interpretation of monitoring results for NOx, and performance against the relevant BAT-AEL. Consideration should be given to the following, as appropriate: the nature of the raw materials and/or wastes; any fluxing agents or refining chemicals used; operational stability; and process monitoring associated with operation of abatement plant.</p> <p>The quantity of monitoring data considered must be justified and be sufficient so as to demonstrate that the results are statistically representative of emissions during normal operations, covering the concentration range and mass emission rate of substances emitted at all stages of the process.</p> <p>A report on the above review shall be submitted to the Environment Agency to facilitate agreement in writing of the appropriate monitoring provision at the installation.</p>	<p>Within 18 months of effective date of notice V003</p>

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
-	-

Schedule 3 – Emissions and monitoring

Table S3.1a Point source emissions to air – emission limits and monitoring requirements						
Effective until 29 June 2020						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency [4, 5]	Monitoring standard or method [1, 2, 3]
A1 [Point A1 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Melting Shop bag filter	Particulate matter	10 mg/m ³	Representative manual spot sample	Annually	BS EN 13284-1 and MID
		Cadmium	0.1 mg/m ³	Representative manual spot sample	Annually	BS EN 14385 and MID
A2 [Point A2 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Water atomising extraction system	Particulate matter	10 mg/m ³	Representative manual spot sample	Annually	BE EN 13284-1 and MID
		Cadmium	0.1 mg/m ³	Representative manual spot sample	Annually	BS EN 14385 and MID
A3 [Point A3 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Refinery scrubber	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Average over the sampling period	3 monthly	BS EN 14792
A4 [Point A4 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Birlec No.2 belt furnace (Coinage Mill)	No parameters set	No limit set	-	-	-
A8 [Point A8 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Clairpol abrasive wheel cleaner (Coinage Mill)	No parameters set	No limit set	-	-	-
A10 [Point A10 on plan "Thessco Site Emission Points – Reviewed June 2018"]	2 Sheet & Wire Mill, Blue Room degreasing tanks	No parameters set	No limit set	-	-	-
<ol style="list-style-type: none"> 1. When reporting monitoring results the operator shall state the limits of accuracy of the method 2. If a monitoring result is below the limit of detection, then the limit of detection (LOD) should be reported 3. Alternative monitoring methods to those stated above may be agreed in writing by the Environment Agency 4. The operator shall confirm with the Environment Agency the date that annual monitoring will take place 5. The operator shall inform the Environment Agency immediately of any change in operation that may impact on the emissions from emission points A1 and A2 including, but not limited to, an increase in cadmium usage 						

**Table S3.1b Point source emissions to air – emission limits and monitoring requirements
Effective from 30 June 2020**

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Point A1 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Melting Shop bag filter & standby filter via stack	Particulate matter	3 mg/m ³	Average over the sampling period	Once per year	BS EN 13284-1 and MID
		Cadmium	0.1 mg/m ³	Average over the sampling period	Once per year	BS EN 14385 and MID
A2 [Point A2 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Atomising Department extraction system	Particulate matter	3 mg/m ³	Average over the sampling period	Once per year	BS EN 13284-1 and MID
		Cadmium	0.1 mg/m ³	Average over the sampling period	Once per year	BS EN 14385 and MID
A3 [Point A3 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Refinery scrubber	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	150 mg/m ³	Average over the sampling period	3 monthly ^[1]	BS EN 14792
A4 [Point A4 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Birlec No.2 belt furnace (Coinage Mill)	No parameters set	No limit set	-	-	-
A8 [Point A8 on plan "Thessco Site Emission Points – Reviewed June 2018"]	Clairpol abrasive wheel cleaner (Coinage Mill)	No parameters set	No limit set	-	-	-
A10 [Point A10 plan "Thessco Site Emission Points – Reviewed June 2018"]	2 Sheet & Wire Mill, Blue Room degreasing tanks	No parameters set	No limit set	-	-	-
1. Monitoring to be undertaken in accordance with stated requirements in Table S3.1b pending completion of Improvement Condition IC1 in Table S1.3						

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site–emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
S1 [Point S1 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Windsor Street]	Melting Shop process cooling water	No parameters set	No limits set	-	-	-
S2 [Point S2 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Royds Lane]	Division A process cooling water	No parameters set	No limits set	-	-	-
S3 [Point S3 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Royds Lane]	Sheet & Wire Mill process cooling water	No parameters set	No limits set	-	-	-
S4 [Point S4 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Princess Street]	Coinage Mill process cooling water	No parameters set	No limits set	-	-	-
S5 [Point S5 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Windsor Street]	Uncontaminated surface water	No parameters set	No limits set	-	-	-
S6 [Point S6 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water	Domestic waste water only	No parameters set	No limits set	-	-	-

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
foul sewer on Royds Lane]						
S7 [Point S7 on plan “Thessco Site Emission Points – Reviewed June 2018”, emission to Yorkshire Water foul sewer on Princess Street]	Uncontaminated surface water and domestic waste water	No parameters set	No limits set	-	-	-

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1.	A1, A2 & A3	Every 12 months	1 January

Parameter	Units
-	-

Parameter	Frequency of assessment	Units
Water usage	Annually	tonnes
Energy usage	Annually	MWh

Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	11/06/18
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	11/06/18
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	11/06/18
Waste subject to conditions 4.2.5	Waste tonnage return from the Environment Agency website or other form as agreed in writing by the Environment Agency	As specified on .GOV.UK website

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“average over the sampling period” means the average value of three consecutive measurements of at least 30 minutes each, unless otherwise stated, as defined in the *General Considerations* section of the Non-Ferrous Metals BAT Conclusions. For batch processes, the average of a representative number of measurements taken over the total batch time or the result of a measurement carried out over the total batch time can be used.

“BAT-AELs” means BAT-associated emission levels, i.e. the emission levels associated with the best available techniques for emissions to air and/or water, as set out in the Non-Ferrous Metals BAT Conclusions.

“daily average” means the average over a period of 24 hours of valid half-hourly or hourly averages obtained by continuous measurements, as defined in the *General Considerations* section of the Non-Ferrous Metals BAT Conclusions. A half-hourly or hourly average shall be considered valid if measurements are available for a minimum of (a) 20 minutes during the half hour, or (b) 40 minutes during the hour. The number of half-hourly or hourly averages so validated shall not exceed 5 per day.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Hazardous property” has the meaning in Annex III of the Waste Framework Directive.

“Hazardous waste” has the meaning given in the Hazardous Waste (England and Wales) Regulations 2005 (as amended).

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“monthly average” means the average over a period of a calendar month of valid daily averages obtained by continuous measurements

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes and not subject to BAT-AELs for air emissions, the concentration in dry air at a temperature of 273.15K, at a pressure of 101.3 kPa, and with an oxygen content of 3% dry for liquid and gaseous fuels and 6% dry for solid fuels; and/or

- in relation to emissions from non-combustion sources and not subject to BAT-AELs for air emissions, the concentration at a temperature of 273.15K and at a pressure of 101.3 kPa, with no correction for water vapour content; and/or
- in relation to emissions from non-combustion sources subject to BAT-AELs for air emissions, the concentration in dry air at a temperature of 273.15K and at a pressure of 101.3 kPa; and/or

in relation to emissions from combustion processes subject to BAT-AELs for air emissions, the concentration in dry air at a temperature of 273.15K and at a pressure of 101.3 kPa, and with an oxygen content of 3% dry for liquid and gaseous fuels and 6% dry for solid fuels.

“year” means calendar year ending 31 December.

