Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

JBR Recovery Limited

West Bromwich Silver Refinery
Argentor House
Oldbury Road
West Bromwich
B70 9BS

Variation application number

EPR/BJ9878IQ/V013

Permit number

EPR/BJ9878IQ

West Bromwich Silver Refinery
Permit number EPR/BJ9878IQ

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, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 18, 19, 90, 92, 93, 94, 96, 97, 98, 99, 100, 107,134, 135, 138, 139, 140, 142, 146, 147, 148 and 149. The operator is already compliant with the BATc with the exception of 10, 100 and 142. We have set improvement conditions in the varied permit to track progress against future compliance.

Articles 16 and 22 of the Industrial Emissions Directive (IED) require that a quantified baseline is established for the level of contamination of soil and groundwater with hazardous substances, in order that a comparison can be made on final cessation of activities. We have therefore included improvement conditions to firstly assess if there is likely to be a risk of soil or groundwater contamination where the activity involves the use, production or release of a relevant hazardous substance; and should a risk be identified to submit a baseline report complaint with Article 22 of the IED.

Completed pre-operational conditions have also been removed from the existing permit.

The annual limit as outlined in tables S1.1 and S2.2 for the amount of Printed Circuit Boards that can be accepted on site has been increased to from 500 Tonnes to 1000 Tonnes. The maximum quantity of permitted waste for the site remains at 13000 Tonnes.

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

JBR Recovery Limited is a processor of silver containing materials to recover the silver content. The process is based on a traditional smelting operation and comprises the following stages:

- Incineration – silver containing materials are incinerated in a 1.3 meter diameter refractory lined rotary kiln. Combustion is sustained by the calorific value of the materials and no fuel is required. Material and ash move along the kiln by a combination of the rotation and inclination of the kiln. Ash is discharged from the end of the kiln, in a suitable form for discharging to the blast furnace. This ash is mixed with other silver bearing materials including sweeps, sludges and residues.
- Smelting – the resultant mix is smelted in a coke fired blast furnace. The blast furnace comprises a vertical, water-cooled shaft, into the top of which the silver bearing mix is charged. Slag, flux, lead

oxide, sludge and coke are also charged with the materials. Lead, in the form of recycled litharge, is used as the metal collector to form a lead-silver alloy. At the base of the furnace is a brick-lined removable crucible in which slag and the lead/silver alloy are continuously separated from the waste slag. The blast furnace produces a lead/silver metal alloy with a silver purity of 25-50%

- Cupellation – the lead/silver alloy is loaded into the cupel furnace where the lead is removed to produce high grade silver. The metal is melted by a gas-fired burner and oxygen is blown through the molten bath of metal. Oxygen combines with the lead to form litharge (PbO), which is then poured off the top of the residual metal. The process of adding more silver/lead bars to the cupel and the lead being converted to litharge continues until the silver is 98% or more purity. The silver is then poured from the cupel into bars.
- Electrolytic refining – this is a chemical process that purifies the silver. Refinery cells contain titanium mesh baskets, into which the bars are placed. The baskets are submersed in an acidified silver nitrate that acts as a conducting solution (electrolyte). An electric current is passed through the cells causing the silver to dissolve from the titanium mesh baskets and deposit as silver crystals on stainless steel sheets. Insoluble impurities fall away from the mesh baskets as solids and are held as residues in surrounding bags. The silver crystals are melted in an electric furnace, cast into bars and given the JBR 99.9% silver "Good delivery" stamp ready for dispatch.

The installation falls into the Precious Metals Production sub-sector, within the Non-Ferrous Metals Sector. The following Schedule 1 activities are undertaken at the installation:

1. Section 2.2A(1)(a) – producing non-ferrous metals from ore, concentrates or secondary raw materials by metallurgical activities, which is this case are:
    - Silver refining (from charging the blast furnace with silver rich secondary raw materials including ash and printed circuit boards (PCBs) to the production of silver crystals. The process includes smelting, producing crude silver "Dore" (98 – 99% silver) via cupellation furnace, and the electrolysis of the crude silver to produce refined silver crystals (99.9% silver).
    - Lead refining (from charging the blast furnace with lead rich secondary raw materials including ash and lead oxide to the production of unrefined lead bullion or refined lead. The process includes smelting and the refining of lead using the Parkes Process (extraction of silver with zinc).
2. Section 2.2A(2)(a) – melting, including making alloys of, non-ferrous metals, including recovered products and operating of non-ferrous metal foundries where the plant has a melting capacity of more than 4 tonnes per day for lead or cadmium or 20 tonnes per day for all other metals, and (i) no furnace (other than a vacuum furnace), bath or other holding vessel used in the plant for the melting has a design holding capacity of 5 or more tonnes, or (ii) the plant uses a vacuum furnace of any design holding capacity
    - Melting crystal silver and casting silver bullion

Emissions

There are potential emissions to air from the furnace processes. These include particulates, oxides of nitrogen, sulphur dioxide, carbon monoxide, VOCs, dioxins and metals compounds. Emissions are collected and abated prior to release. The rotary kiln (incinerator) abates emissions via high temperatures in excess of 850 ^{0}C (which break down toxic organic compounds), followed by an afterburner (to destroy any unburnt/partially burnt carbon in the exhaust gas), followed by rapid quenching and injection of activated lime carbon prior to emission through a bag filter. The smelter (blast furnace) abates emissions via a Regenerative Thermal Oxidiser (RTO) which are very efficient at removing pollutants. The RTO uses a bed of ceramic material to absorb heat from the exhaust gas and uses the captured heat to preheat the incoming process gas stream and destroy air pollutants emitted from process exhaust streams between temperatures of approximately 850 and 950 ^{0}C. The melting furnaces and refining operations have bag plants for abatement.

There are no emissions to surface water or sewer. The entire site has a concrete surface to a minimum depth of 200 mm. Water is prevented from flowing off-site by perimeter walls (bunds) and gates with grids / drainage channels. The surface water run-off is re-circulated by means of interconnecting drainage channels, sumps, holding/settlement tanks and recirculation pumps. Water is recirculated for use in water sprays.

The site operates an accredited Environmental Management System (EMS), ISO 14001.

West Bromwich Silver Refinery (the Installation) is operated by JBR Recovery Limited and is located in West Bromwich, England.

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 BJ9878 (Application EPR/BJ9878IQ/A001)	Received 5/12/01	Dated 30/11/01
Claim for commercial-in-confidence status for certain information with application	Received 5/12/01	
Commercial-in-confidence claim disputed by the Environment Agency	11/12/01	
Revised commercial-in-confidence claim submitted	Received 18/12/01	Agreed by Agency 18/12/01
Statutory advertisement placed in London Gazette	11/01/02	
Statutory advertisement placed in Birmingham Post	12/01/02	
Issue of first Schedule 4 Notice requiring further information	27/03/02	Response due 25/06/02
Issue of second Schedule 4 Notice requiring further information	21/08/02	Response to first and second Notice due 19/11/02
Request by applicant to extend completion date for both Schedule 4 Notices to 19/02/03	Received 12/11/02	Agreed 12/11/02
Response to both Schedule 4 Notices	Received 19/02/03	Dated 19/02/03
Request to extend determination period to 31/05/03	Issued 17/03/03	Agreed by applicant 31/03/03
Permit BJ9878IQ (EPR/BJ9878IQ)	Determined 30/06/03	
Variation application BP3638SG (EPR/BJ9878IQ/V002)	Received 11/01/05	Not duly made
Additional information to support	Received 08/02/05	Duly made 23/03/05

Status log of the permit		
Description	**Date**	**Comments**
application		
Claim for commercial-in-confidence status for certain information with application	Received 08/02/05	
Request for justification for commercial-in-confidence claim	Issued 04/03/05	
Additional information to support claim for commercial-in-confidence status	Received 10/03/05	Claim agreed 05/04/05
Variation BP3638SG (EPR/BJ9878IQ/V002)	Determined 17/05/05	
Variation application JP3639XJ (EPR/BJ9878IQ/V003)	Received 17/12/07	Duly made 21/02/08
Variation JP3639XJ (EPR/BJ9878IQ/V003)	Issued 26/06/08	
Variation application EPR/BJ9878IQ/V004	Received 15/07/09	Duly made 15/07/09
Variation EPR/BJ9878IQ/V004	Determined 04/11/09	
Variation Application EPR/BJ9878IQ/V005	Received 18/10/10	Duly Made 18/10/10
Variation (EPR/BJ9878IQ/V005)	Determined 12/11/10	
Variation Application EPR/BJ9878IQ/V006	Received 28/01/11	Duly made 28/01/11
Variation EPR/BJ9878IQ/V006)	Determined 07/03/11	
Application received EPR/BJ9878IQ/V007	06/01/12	Application to vary and reinstate emission point A10
Variation determined EPR/BJ9878IQ/V007	09/02/12	Variation notice issued.
Application received EPR/BJ9878IQ/V008	27/06/12	Application to remove SR2008No1_75kte (EAWML 102065)
Variation determined EPR/BJ9878IQ/V008	01/08/12	Variation notice issued.
Application received EPR/BJ9878IQ/V009	Duly made 13/07/12	Application to increase cupel furnace throughput and install bag filter unit
Additional information received	01/08/12	Clarification of alarm arrangements that would

Status log of the permit		
Description	**Date**	**Comments**
		indicate bag filter failure
Variation determined EPR/BJ9878IQ/V009	03/08/12	Variation notice issued.
Application received EPR/BJ9878IQ/V010	Duly made 14/11/12	Application to include new good delivery furnace and emission point A11.
Additional information received	10/01/13	Proposal to removed monitoring requirements from emission points A6 and A11.
Variation determined EPR/BJ9878IQ	15/01/13	Variation notice issued
Variation determined EPR/BJ9878IQ/V011	28/05/13	Agency variation to implement the changes introduced by IED
Application EPR/BJ9878IQ/V012 (variation and consolidation	Duly made 14/09/16	Application to add an additional secondary waste material and add a regenerative thermal oxidiser to decrease emissions.
Additional information received	05/12/16	Pre-acceptance, acceptance and storage controls
Additional information received	15/12/16	Confirmation of site boundary.
Additional information received	25/01/17	Revised H1 risk assessment
Variation determined EPR/BJ9878IQ Billing Ref: GP3036DU	22/02/17	Varied permit issued.
Regulation 60 Notice dated 16/12/16 (Notice requiring information for statutory review of permit)	Response received 31/03/17	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.
Regulation 61 Notice dated 11/4/18 (Notice requiring information for statutory review of permit)	Response received 04/05/18	Further information / clarification with regard to BAT conclusions 3, 13, 90-107, 135, 138, 147 and 148
Additional information received	25/06/18	Revised site plan with emission points. Proposed EWC codes to be accepted at site. Updated operating techniques (concerning pre-treating PCBs prior to blast furnace, installing air forced cooling unit prior to rotary furnace bag plant and the briquetting of photographic film prior to use in the blast furnace).
Environment Agency initiated variation EPR/BJ9878IQ/V013 (variation and consolidation) Variation determined	30/07/18	Statutory review of permit – Non-ferrous metals BAT Conclusions published 30/06/16

Status log of the permit		
Description	**Date**	**Comments**
EPR/BJ9878IQ (PAS / Billing Ref: AP3337JZ)		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/BJ9878IQ

Issued to

JBR Recovery Limited ("the operator")

whose registered office is

Argentor House
Oldbury Road
West Bromwich
B70 9BS

company registration number 02623872

to operate an installation at

West Bromwich Silver Refinery
Argentor House
Oldbury Road
West Bromwich
B70 9BS

to the extent set out in the schedules.

The notice shall take effect from 30/07/2018

Name	Date
Tom Swift	**30/07/2018**

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/BJ9878IQ

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BJ9878IQ/V013 authorising,

JBR Recovery Limited ("the operator"),

whose registered office is

Argentor House
Oldbury Road
West Bromwich
B70 9BS

company registration number 02623872

to operate an installation at

West Bromwich Silver Refinery
Argentor House
Oldbury Road
West Bromwich
B70 9BS

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

Name	Date
Tom Swift	**30/07/2018**

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 green 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 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table S2.2.

(b) it conforms to the description in the documentation supplied by the producer and holder.

2.3.5 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.

2.3.6 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

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 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.

3.6 Fire prevention

3.6.1 The operator shall take all appropriate measures to prevent fires on site and minimise the risk of pollution from them including, but not limited to, those specified in any approved fire prevention plan.

3.6.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to a risk of fire, submit to the Environment Agency for approval within the period specified, a fire prevention plan which prevents fires and minimises the risk of pollution from fires;

(b) implement the fire prevention plan, from the date of approval, 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.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

(b) any change in the operator's name(s) or address(es); and

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

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)(a)	Producing non-ferrous metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic activities (silver refining)	From charging the blast furnace with silver rich secondary raw materials including ash and printed circuit boards (PCBs) to the production of silver crystals. Includes smelting, producing crude silver "Dore" (98 – 99% silver) via cupellation furnace, and the electrolysis of the crude silver to produce refined silver crystals (99.9% silver). No mercury of mercury components to be processed. No more than 1000 tonnes of PCBs per year accepted into the site. Waste types as specified in Table S2.2.
Section 2.2 A(1)(a)	Producing non-ferrous metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic activities (lead refining)	From charging the blast furnace with lead rich secondary raw materials including ash and lead oxide to the production of unrefined lead bullion or refined lead. Includes smelting and the refining of lead using the Parkes Process (extraction of silver with zinc). Waste types as specified in Table S2.2.
Section 2.2 A(2)(a)	Melting, including making alloys of, non-ferrous metals, including recovered products and operating of non-ferrous metal foundries where the plant has a melting capacity of more than 4 tonnes per day for lead or cadmium or 20 tonnes per day for all other metals, and- (i) no furnace (other than a vacuum furnace), bath or other holding vessel used in the plant for the melting has a design holding capacity of 5 or more tonnes, or (ii) the plant uses a vacuum furnace of any design holding capacity	From charging the melting furnace with silver crystals to the casting of silver bullion.

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**
	(Melting silver crystals and casting of silver bullion)	
Directly Associated Activity		
Incineration of non-hazardous waste	Incineration of photographic paper, film and other wastes to form a metal rich ash	From receipt of prepared wastes into rotary kiln incinerator, Hoval 1, 2 or 3 incinerator to collection of ash. Waste types as specified in Table S2.2.
Handling and preparation of waste for processing in rotary kiln and blast furnace	Preparation of photographic film waste by briquetting	From receipt of photographic film waste until processing in rotary kiln or blast furnace.
Handling and preparation of printed circuit boards prior to processing in blast furnace	Handling and preparation of printed boards by dismantling and separation into constituent components	From receipt of PCBs until charging of blast furnace
Off-gas collection and abatement	Collection via ducting to abatement plant (bag filters and regenerative thermal oxidiser (RTO))	From localised extraction to stack exit.
Storage and handling of wastes	Storage and handling of slag, bag filter dust and other wastes	From waste production by the specified activities to waste leaving the site. Except wastes from finished products packaging and storage.
Effluent Treatment Plant	Removal of halides from blast furnace bag filter dust	From receipt of dust in treatment plant to return of solids to the blast furnace and liquor to waste storage.
Storage and handling of secondary raw materials	Receipt and storage of secondary raw materials including silver- and lead-bearing wastes and all process substances. Includes the blending of wastes prior to treatment.	From receipt of raw materials until used in the process.
Sampling and sample preparation	Sampling of secondary raw materials. Includes milling and blending prior to incineration.	From collection of samples to transfer to static kilns.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/BJ9878	The responses to questions 2.1, 2.2, 2.3, 2.4 and 2.2.5 given in sections B2.1, B2.2, B2.3, B2.4 and B2.5 in the application form	05/12/01

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Response to Schedule 4 Notice	The response to questions 9 to 13, 36 to 50 inclusive	19/02/03
Response to Schedule 4 Notice	Amendments to sections B2.1/D3, B2.2/D4, B2.3/D5, B2.4/D6 and B2.5/D7 of the application	19/02/03
Application for Variation BP3638SG (EPR/BJ9878IQ/V002)	Responses to sections C2.2, C2.3 and C2.5 of the application form	11/01/05
Application for Variation JP3639XJ (EPR/BJ9878IQ/V003)	Responses to sections C2.1, C2.3, C2.4 and C2.5 of the application form	17/12/07
Application for Variation EPR/BJ9878IQ/V004	Response to questions C1b, C2a and C2c, Appendix 6 1 and 2 of the application	15/07/09
Further information	Further information provided identifying the EWC code of the waste that will be accepted and changes to surface water management	13/10/09
Application for Variation EPR/BJ9878IQ/V006	Responses to sections C3.3a and C3.3c of the application form	28/01/11
Application for Variation EPR/BJ9878IQ/V009	The responses to application form section C2 questions 2b, 5c and 6	13/07/12
Application for Variation EPR/BJ9878IQ/V010	The responses to questions 1, 2, 2b, 3, 4, 5c and 6 in sections C2 and C3 of application form	14/11/12
Further information	Proposals for removal of monitoring requirements on emission points A6 and A11	10/01/13
Application for Variation EPR/BJ9878IQ/V012	Responses to questions 2b, 3b and 3d in Part C2 of application form	14/09/16
Response to Schedule 5 notice dated 18/11/16	Responses to Questions 1 to 4 to Schedule 5 Request for Further Information	05/12/16
Response to Regulation 60 Notice – request for further information dated 06/12/16	Technical standards detailed in response to BAT Conclusions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 18, 19, 90, 92, 93, 94, 96, 97, 98, 99, 100, 107,134, 135, 138, 139, 140, 142, 146, 147, 148 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	31/03/17
Response to Regulation 61 Notice – request for further information dated 11/04/18	Technical standards detailed in response to BAT Conclusions 3, 13, 90-107, 135, 138, 147 and 148 of the notice. 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	04/05/18
Response to request for further information at site visit of 059/05/18 and e-mail request dated 18/06/18	Revised site plan with emission points (drawing “Emission Points”, ref. JBR 006 C, dated 25/06/18) Proposed EWC permitted onto site Updated operating techniques, concerning briquetting of photographic film prior to processing in blast furnace; employing an air forced cooling plant prior the rotary bag plant; and dismantling of PCBs prior to smelting)	25/06/18

Table S1.3 Improvement programme requirements		
Reference	**Improvement Condition**	**Completion date**
IC 25 (referred to as 9.2.25 in Table 9.1.12 Improvement Programme, EPR/BJ9878 IQ/V012)	The Operator shall submit a written report to the Environment Agency on the commissioning of the RTO. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the RTO against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.	Within 4 months of the completion of commissioning.
IC 26	The operator shall submit, for approval by Environment Agency, a report setting out progress to achieving the BAT conclusion AELs where BAT is currently not achieved, but will be achieved before 30th June 2020. The report shall include, but not be limited to, the following: 1) Current performance against the BATc AEL. 2) Methodology for reaching the AELs 3) Associated targets / timelines for reaching compliance by 30th June 2020 4) Any alterations to the initial plan – for progress reports The report shall address the following BAT Conclusions: **100** and **142** concerning sulphur dioxide emissions. It will include a justification of the BAT technique/s used to achieve the BAT AEL. This will inform the decision making process as to which BAT AEL applies post 30th June 2020. [It is noted that for BAT 100 the BAT AEL range is 50 – 350 mg/Nm3 unless wet scrubbers aren't applicable, in which case the upper end of the range is 500 mg/Nm3].	Progress reports by December 2019. Final report by 31st March 2020.
IC 27	The operator shall undertake a review of periodic monitoring for emissions to air of: • sulphur dioxide at emission point A2 • particulate matter at emission points A1, A2, A3, A4, A5, A7 and A10 • TVOC at emission points A1 and A2 The review will be made with reference to BAT 10 of the BAT Conclusions for the Non-Ferrous Metals Industries (Commission Implementing Decision EU2016/1032) and shall justify, with appropriate evidence, the **frequency of monitoring to be employed at the installation from 30 June 2020.** The evidence required under this condition shall include analysis and interpretation of monitoring results for each substance, and performance against the relevant BAT-AEL. Consideration should be given to *inter alia* the nature of the raw materials, fluxing agents, refining chemicals used; operational stability; and process	Within 12 months of effective date of notice V013

Table S1.3 Improvement programme requirements		
Reference	**Improvement Condition**	**Completion date**
	monitoring associated with operation of abatement plant. 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. 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.	
IC 28	The operator shall submit to the Environment Agency for approval a risk assessment considering the possibility of soil and groundwater contamination at the installation where the activity involves the use, production or release of a relevant hazardous substance (as defined in Article 3(18) of the Industrial Emissions Directive). The risk assessment shall clearly establish with appropriate evidence whether or not there is a risk of contamination of soil and groundwater.	Within 3 months of effective date of notice V013
IC 29	Where the risk assessment carried out under IC 28 above establishes a risk to soil and groundwater the operator shall: a) prepare and submit a baseline report compliant with Article 22 of the Industrial Emissions Directive (IED) containing information necessary to determine the current state of soil and groundwater contamination; or b) provide a summary report referring to information previously submitted where the operator is satisfied that such information represents the current state of soil and groundwater contamination, so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of activity.	Within 12 months of effective date of notice V013

Schedule 2 – Waste types, raw materials and fuels

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

Table S2.2 Permitted waste types and quantity for producing non ferrous metals (silver and lead)	
Maximum quantity	**13,000 tonnes per annum (maximum 1000 tonnes per annum printed circuit boards)**
Waste Code	**Description**
08	**Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks**
08 03	**wastes from MFSU of printing inks**
08 03 13	waste ink other than those mentioned in 08 03 12
09	**Wastes from the photographic industry**
09 01	**wastes from the photographic industry**
09 01 06*	wastes containing silver from on-site treatment of photographic wastes
09 01 07	photographic film and paper containing silver or silver compounds
09 01 99	wastes not otherwise specified
10	**Wastes from thermal processes**
10 02	**wastes from the iron and steel industry**
10 02 07*	solid wastes from gas treatment containing hazardous substances
10 04	**wastes from lead thermal metallurgy**
10 04 02*	dross and skimmings from primary and secondary production
10 07	**wastes from silver, gold and platinum thermal metallurgy**
0 07 99	wastes not otherwise specified
11	**Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydro-metallurgy**
11 01	**wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising)**
11 01 11*	aqueous rinsing liquids containing hazardous substances
12	**Wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01	**wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 03	non-ferrous metal filings and turnings
12 01 21	spent grinding bodies and grinding materials other than those mentioned in 12 01 20
15	**Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified**
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 10*	packaging containing residues of or contaminated by hazardous substances
16	**Wastes not otherwise specified in the list**
16 02	**wastes from electrical and electronic equipment**
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 06	**batteries and accumulators**
16 06 04	alkaline batteries (except 16 06 03)
16 08	**spent catalysts**
16 08 01	spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum (except 16 08 07)
19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05

20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions
20 01	**separately collected fractions (except 15 01)**
20 01 40	metals

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**	**Monitoring standard or method**
A1 [A1 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Rotary kiln exhaust via bag filter	Particulate matter	10 mg/Nm^3	Daily average	Continuous	Principles of BS EN 14181 Note 5
		Particulate matter	10 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 1	Annual	BS EN 13284-1 and MID
		Oxides of nitrogen	400 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 2	Twice a year	BS EN 14792
		Sulphur dioxide	50 mg/Nm^3	Monthly average or extractive sample Note 2	Twice a year	BS EN 14791
		Hydrogen chloride	10 mg/Nm^3	Monthly average or extractive sample Note 2	Twice a year	BS EN 1911
		Carbon monoxide	-	-	Twice a year Note 2	As agreed with Environment Agency
		Volatile organic compounds (as TVOC)	50 mg/Nm^3	Daily average	Twice a year Note 2	BS EN 12619
		Dioxins (ITEQ)	0.1 ng/Nm^3	-	Twice a year Note 3	BS EN 1948 parts 1, 2 and 3 and MID
		Silver and its compounds taken together (as metal)	2 mg/Nm^3	-	Annual Note 4	BS EN 14385 and MID
		Lead and its compounds taken together (as metal)	2 mg/Nm^3	-	Twice a year Note 3	BS EN 14385 and MID

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**	**Monitoring standard or method**
		Hydrogen bromide	5 mg/Nm^3	-	Annual Note 4	As agreed with Environment Agency
		Hydrogen sulphide	5 mg/Nm^3	-	Annual Note 4	As agreed with Environment Agency
A2 [A2 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Blast furnace, Hoval 1, 2 and 3 via Regenerative Thermal Oxidiser	Particulate matter	5 mg/Nm^3	Daily average	Annual	BS EN 13284-1 and MID
		Particulate matter	5 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 1	Annual	BS EN 13284-1 and MID
		Oxides of nitrogen	75 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 2	Twice a year	BS EN 14792
		Sulphur dioxide	-	-	Twice a year Note 2	BS EN 14791
		Hydrogen chloride	10 mg/Nm^3	Monthly average or extractive sample Note 2	Twice a year	BS EN 1911
		Carbon monoxide	-	-	Twice a year Note 2	As agreed with Environment Agency
		Volatile organic compounds (as TOC)	11 mg/Nm^3	Daily average	Twice a year Note 2	BS EN 12619
		Dioxins (ITEQ)	0.1 ng/Nm^3	-	Twice a year Note 3	BS EN 1948 parts 1, 2 and 3 and MID
		Silver and its compounds taken together (as metal)	1.1 mg/Nm^3	-	Annual Note 4	BS EN 14385 and MID
		Lead and its compounds taken together (as metal)	1.1 mg/Nm^3	-	Twice a year Note 3	BS EN 14385 and MID

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**	**Monitoring standard or method**
		Hydrogen bromide	5 mg/Nm^3	-	Annual Note 4	As agreed with Environment Agency
		Hydrogen sulphide	5 mg/Nm^3	-	Annual Note 4	As agreed with Environment Agency
A3 [A3 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Cupel furnace, induction furnace and lead refining kettle	Particulate matter	10 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 2	Twice per year	BS EN 13284-1 and MID
		Silver and its compounds taken together (as metal)	2 mg/Nm^3	-	Annual Note 4	BS EN 14385 and MID
		Lead and its compounds taken together (as metal)	2 mg/Nm^3	-	Twice per year Note 3	BS EN 14385 and MID
		Zinc and its compounds taken together (as metal)	2 mg/Nm^3	-	Twice per year Note 3	BS EN 14385 and MID
A4 [A4 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Sampling department LEV system	Particulate matter	10 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 1	Annual Note 1	BS EN 13284-1 and MID
A5 [A5 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Refinery LEV system (currently not in use)	Particulate matter	10 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 1	Annual Note 1	BS EN 13284-1 and MID
A6 [A6 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Refinery melting exhaust (goods delivery furnace)	No parameters set	No limit set	-	-	-
A7 [A7 on	Blast furnace	Particulate	10 mg/Nm^3	Monthly	Annual Note 1	BS EN

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**	**Monitoring standard or method**
drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	feed mixer (currently not in use)	matter		average or extractive sample (min 4 hours) Note 1		13284-1 and MID
A10 [A10 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Extra refinery LEV system	Particulate matter	10 mg/Nm^3	Monthly average or extractive sample (min 4 hour) Note 1	Annual Note 1	BS EN 13284-1 and MID
Note 1 – 10 months minimum interval between extractive monitoring Note 2 – 4 months minimum interval between extractive monitoring Note 3 – 4 months minimum interval between monitoring Note 4 – 10 months minimum interval between monitoring Note 5 - Continuous Emission Monitoring systems shall be quality assured using the following general principles in BS EN 14181: functionality testing with full linearity, and verification with parallel tests using a standard reference method.						

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 Note 6**	**Monitoring frequency Note 6**	**Monitoring standard or method Note 6**
A1 [A1 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Rotary kiln exhaust via bag filter	Particulate matter	5 mg/Nm^3	Daily average	Continuous	Principles of BS EN 14181Note 5
		Oxides of nitrogen NOx, expressed as NO2	No limit set	Average over sampling period	Once per year	BS EN 14792
		Sulphur dioxide	50 mg/Nm^3	Average over the sampling period	Annual	BS EN 14791
		Hydrogen chloride	10 mg/Nm^3	Monthly average or extractive sampleNote 2	Twice per year	BS EN 1911
		Carbon monoxide	No limit set	Extractive Sample	Twice per year Note 2	As agreed with Environment Agency

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** Note 6	**Monitoring frequency** Note 6	**Monitoring standard or method** Note 6
		Volatile organic compounds TVOC	40 mg/Nm^3	Daily average	Annual	BS EN 12619
		Dioxins and furans (PCDD/F)	0.1ng I-TEQ/Nm^3	Average over a sampling period of at least 6 hours	Annual	EN 1948 Parts 1, 2 and 3 and MID
		Silver and its compounds taken together (as metal)	2 mg/m3	Average over sampling period	Annual Note 4	BS EN 14385 and MID
		Lead and its compounds expressed as Pb	2 mg/Nm3	Average over the sampling period	Annual	BS EN 14385 and MID
		Cadmium or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Hydrogen bromide	5 mg/Nm^3	Extractive Sample	Annual Note 4	As agreed with Environment Agency
		Hydrogen sulphide	5 mg/Nm^3	Extractive Sample	Annual Note 4	As agreed with Environment Agency
A2 [A2 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Blast furnace, Hoval 1, 2 and 3 via Regenerative Thermal Oxidiser	Particulate matter	4 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID
		Oxides of nitrogen NO_x, expressed as NO_2	No limit set	Average over sampling period	Annual	BS EN 14792
		Sulphur dioxide	350 mg/Nm^3 Note 7	Average over the sampling period	Once per year	BS EN 14791
		Sulphur dioxide	480 mg/Nm^3 Note 8	Average over the sampling period	Once per year	BS EN 14791
		Hydrogen chloride	10 mg/Nm^3	Monthly average or extractive sample Note 2	Twice per year	BS EN 1911

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** Note 6	**Monitoring frequency** Note 6	**Monitoring standard or method** Note 6
		Carbon monoxide	No limit set	Extractive Sample	Twice per year Note2	As agreed with Environment Agency
		Volatile organic compounds TVOC	11 mg/Nm^3	Average over the sampling period	Annual	BS EN 12619
		Dioxins and furans (PCDD/F)	0.1ng I-TEQ/Nm^3	Average over a sampling period of at least 6 hours	Annual	BS EN 1948 Parts 1, 2 and 3 and MID
		Silver and its compounds taken together (as metal)	2 mg/Nm^3	Average over sampling period	Annual Note 4	BS EN 14385 and MID
		Lead and its compounds taken together (as metal)	1 mg/Nm^3	Average over the sampling period	Annual	BS EN 14385 and MID
		Antinomy or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Arsenic or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Cadmium or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Copper or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Hydrogen bromide	5 mg/Nm^3	Extractive Sample	Annual Note 4	As agreed with Environment Agency
		Hydrogen sulphide	5 mg/Nm^3	Extractive Sample	Annual Note 4	As agreed with Environment Agency
A3 [A3 on drawing Emission Points, ref.	Cupel furnace, induction furnace and lead refining	Particulate matter	4 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID
		Silver and	2 mg/m3	Average over	Annual Note 4	BS EN 14385

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** Note 6	**Monitoring frequency** Note 6	**Monitoring standard or method** Note 6
JBR 006 C, dated 25/06/18]	kettle	its compounds taken together (as metal)		sampling period		and MID
		Lead and its compounds taken together (as metal)	1 mg/Nm^3	Average over the sampling period	Annual	BS EN 14385 and MID
		Antinomy or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Arsenic or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Cadmium or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Copper or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Zinc and its compounds taken together (as metal)	2 mg/m3	Average over sampling period	Twice per year Note 3	BS EN 14385 and MID
A4 [A4 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Sampling department LEV system	Particulate matter	5 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID
A5 [A5 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Refinery LEV system (currently not in use)	Particulate matter	5 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID
A6 [A6 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Refinery melting exhaust (goods delivery furnace)	No parameters set	No limit set	-	-	-

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 Note 6	Monitoring frequency Note 6	Monitoring standard or method Note 6
A7 [A1 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Blast furnace feed mixer (currently not in use)	Particulate matter	5 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID
		Cadmium or its compounds	No limit set	Average over sampling period	Annual	EN 14385 and MID
		Lead and its compounds taken together (as metal)	No limit set	Average over the sampling period	Annual	BS EN 14385 and MID
A10 [A10 on drawing Emission Points, ref. JBR 006 C, dated 25/06/18]	Extra refinery LEV system	Particulate matter	5 mg/Nm^3	Average over the sampling period	Annual	BS EN 13284-1 and MID

Note 1 – 10 months minimum interval between extractive monitoring

Note 2 – 4 months minimum interval between extractive monitoring

Note 3 – 4 months minimum interval between monitoring

Note 4 – 10 months minimum interval between monitoring

Note 5 - Continuous Emission Monitoring systems shall be quality assured using the following general principles in BS EN 14181: functionality testing with full linearity, and verification with parallel tests using a standard reference method.

Note 6 - Monitoring to be undertaken in accordance with stated requirements in Table S3.1b pending completion of Improvement Condition IC 27 in Table S1.3

Note 7 - Emission limit of 350mg/Nm^3 shall apply when a wet scrubber is used

Note 8 - Emission limit of 480 mg/Nm^3 shall apply when a wet scrubber is not used

Schedule 4 – Reporting

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

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3, A4, A5, A7, A10	Every 12 months	1 July

Table S4.2: Annual production/treatment	
Parameter	**Units**
-	-

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Energy usage	Annually	MWh

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air1 (for extractive sampling) or other form as agreed in writing by the Environment Agency For continuous monitoring, reporting format as agreed with the Environment Agency	30/07/18
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	30/07/18

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	
Measures taken, or intended to be	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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.

“emissions to land” includes emissions to groundwater.

“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 lll 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

“List of Wastes” means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time.

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

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes and in relation to hazardous waste, includes the asterisk.

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.

For the determination of the toxic equivalence (I-TEQ) value stated as a release limit the mass concentrations of the following dioxins and furans have to be multiplied with their equivalence factors before summing.

Equivalence factor:

Dioxins

2,3,7,8 Tetrachlordibenzodioxin (TCDD)	1
1,2,3,7,8 Pentachlordibenzodioxin (PeCDD)	0.5
1,2,3,4,7,8 Hexachlordibenzodioxin (HxCDD)	0.1
1,2,3,7,8,9 Hexachlordibenzodioxin (HxCDD)	0.1
1,2,3,6,7,8 Hexachlordibenzodioxin (HxCDD)	0.1
1,2,3,4,6,7,8 Heptachlordibenzodioxin (HpCDD)	0.01
Octachlordibenzodioxin (OCDD)	0.001

Furans

2,3,7,8 Tetrachlorodibenzofuran (TCDF)	0.1
2,3,4,7,8 Pentachlorodibenzofuran (PeCDF)	0.5
1,2,3,7,8 Pentachlorodibenzofuran (PeCDF)	0.05
1,2,3,4,7,8 Hexachlordibenzofuran (HxCDF)	0.1
1,2,3,7,8,9 Hexachlordibenzofuran (HxCDF)	0.1
1,2,3,6,7,8 Hexachlordibenzofuran (HxCDF)	0.1
2,3,4,6,7,8 Hexachlordibenzofuran (HxCDF)	0.1
1,2,3,4,6,7,8 Heptachlordibenzofuran (HpCDF)	0.01
1,2,3,4,7,8,9 Heptachlordibenzofuran (HpCDF)	0.01
Octachlordibenzofuran (OCDF)	0.001

“year” means calendar year ending 31 December.

When the following terms appear in the waste code list in Schedule 2, table 2.2 (or if more than one table state the table references), for that table/those tables (delete as applicable), they have the meaning given below:

‘hazardous substance’ means a substance classified as hazardous as a consequence of fulfilling the criteria laid down in parts 2 to 5 of Annex I to Regulation (EC) No 1272/2008.

‘heavy metal’ means any compound of antimony, arsenic, cadmium, chromium (VI), copper, lead, mercury, nickel, selenium, tellurium, thallium and tin, as well as these materials in metallic form, as far as these are classified as hazardous substances.

‘PCBs’ means

- polychlorinated biphenyls
- polychlorinated terphenyls
- monomethyl-tetrachlorodiphenyl methane, Monomethyl-dichloro-diphenyl methane, Monomethyldibromo-diphenyl methane
- any mixture containing any of the above mentioned substances in a total of more than 0,005 %by weight.

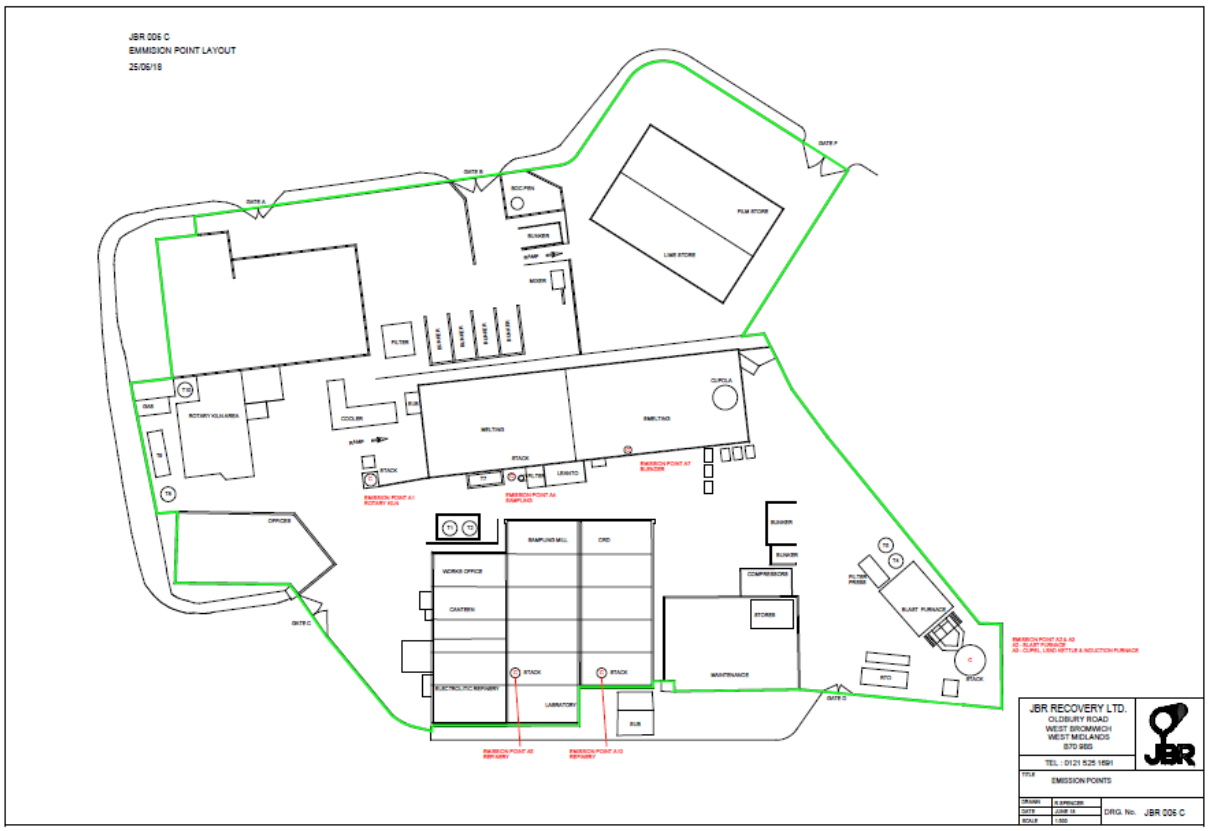
‘transition metals’ means any of the following metals: any compound of scandium, vanadium, manganese, cobalt, copper, yttrium, niobium, hafnium, tungsten, titanium, chromium, iron, nickel, zinc, zirconium, molybdenum and tantalum, as well as these materials in metallic form, as far as these are classified as hazardous substances.

‘stabilisation’ means processes which change the hazardousness of the constituents in the waste and transform hazardous waste into non-hazardous waste.

‘solidification’ means processes which only change the physical state of the waste by using additives without changing the chemical properties of the waste.

‘partly stabilised wastes’ means wastes containing, after the stabilisation process, hazardous constituents which have not been changed completely into non-hazardous constituents and could be released into the environment in the short, middle or long term.

Schedule 7 – Site plan



END OF PERMIT