

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Baird & Co. Limited

Gemini Business Park Precious Metal Refinery
Units 20 & 21
Gemini Business Park
Hornet Way
London
E6 7FF

Variation application number

EPR/CP3633KN/V003

Permit number

EPR/CP3633KN

Gemini Business Park Precious Metal Refinery

Permit number EPR/CP3633KN

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, 14, 15, 18, 19, 134, 135, 136, 137, 139, 140, 141, 143, 144, 147, 148 and 149. The operator is already compliant with the BATc with the exception of 1, 6 and 10. We have set an improvement condition in the varied permit to track progress against future compliance.

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

The installation refines gold and silver. The Miller Process and Chemical (Aqua Regia) Process are employed to refine unrefined or scrap gold (i.e. second hand jewellery). An electrolytic process is used for refining unrefined or scrap silver (i.e. second hand jewellery).

The opportunity has been taken in this variation to update the Schedule 1 listed activities in the permit to reflect the changes made by the Environmental Permitting (England and Wales) Regulations 2016. The activities undertaken at the site are now listed as:

- Section 2.2A(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. This activity relates to the melting of batches of raw materials in melt shop furnaces, for sampling and preparation for refining.
- Section 4.2A(1)(b) - unless falling within any other Section, any manufacturing activity which is likely to result in the release into the air of any hydrogen halide (other than the manufacture of glass or the coating, plating or surface treatment of metal) or which is likely to result in the release into the air or water of any halogen or any of the compounds mentioned in paragraph (a)(vi) (other than the treatment of water). This activity relates to the refining of gold by the Miller process.
- Section 4.2A(1)(f) - unless falling within any other Section, any 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. This activity relates to the chemical refining of gold.
- Section 4.2A(1)(f) - unless falling within any other Section, any 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. This activity relates to the electrolytic refining of silver.

The entire refinery is fully enclosed within a high security building, and includes the following:

- the Melt Shop, which contains 4 furnaces, where initial scrap/unrefined melts takes place.
- The Miller Process room, containing 1 electric induction furnace
- The Aqua Regia Process room, containing 5 reaction vessels, each capable of processing 10kg of high grade gold
- The electrolytic room for refining silver, capable of processing 500kg of silver at any one time.

Firstly, batches of raw material are sampled in the Melt Shop to check their constituents, including checking that the concentration of cadmium is less than 3% by weight; mercury is less than 0.1ppm by weight and beryllium is below the level of detection. Any non-conforming material is rejected. This process includes melting in an electric induction furnace to homogenise the sample.

During the Miller Process a batch of impure gold (up to a maximum of 24kg) is melted in an electric induction furnace and a borax flux added. Chlorine gas is then bubbled through the molten mixture. The impurities form chlorides, which rise to the surface and are skimmed off. The melted gold is then cast into bars.

The gold bars can then be further purified by dissolution in Aqua Regia (a mixture of nitric and hydrochloric acids). The dissolution is an exothermic process. Once dissolved the solution is cooled and filtered, before sulphur dioxide is bubbled through it, reacting with any remaining impurities and the pure gold is precipitated. The Aqua Regia is collected for reuse.

The silver process begins with impure silver being formed into anodes. These are placed in polyester bags to filter insoluble impurities. The anodes are placed in a nitric acid solution and an electric current is passed through the solution causing the anodes to dissolve and pure silver to be deposited on the stainless steel cathodes to be collected.

Emissions to air and water

The processes produce emissions to air that may contain particulates, oxides of sulphur, oxides of nitrogen, hydrogen chloride, chlorine and cadmium. All process air is extracted via a range of scrubbing/filtration systems before release to atmosphere. It has been demonstrated that the resulting emissions will not have a significant impact on air quality.

There are no emissions to surface water or groundwater. All process waste water is treated in an effluent treatment line within the high security refinery building. The waste water is held in a water holding tank treated to adjust pH and remove any residual metals, and then tested prior to discharge to the foul sewer, under a trade effluent consent. Water is released to foul sewer on a batch basis with a maximum of 1m³ being released at any one time.

Gemini Business Park Precious Metal Refinery (the Installation) is operated by Baird & Co. Limited and is located in London, 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 received EPR/CP3633KN/A001	Duly made 15/07/09	Application for non-ferrous metals processing facility
Additional information received	09/11/09	
Additional information received	11/01/10	
Permit EPR/CP3633KN determined	30/03/10	
Agency variation determined EPR/CP3633KN/V002	28/05/13	Agency variation to implement the changes introduced by IED.
Regulation 60 Notice dated 16/12/16	Response Received 04/04/17	Technical standards detailed in response to the information notice.

Status log of the permit		
Description	Date	Comments
(Notice requiring information for statutory review of permit)		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 23/03/18 (Notice requiring information for statutory review of permit)	Response Received 06/04/18	Further information / clarification with regard to BAT conclusions 3, 7, 12, 18 and 19.
Additional information received	15/06/18	Updated site layout plan with air emission points clarified (ref: Baird & Co. Ducting Plan)
Environment Agency initiated variation EPR/CP3633KN/V003 (variation and consolidation) Variation determined EPR/CP3633KN/V003 (PAS / Billing Ref: PP3637JH)	18/06/18	Statutory review of permit – Non-ferrous metals BAT Conclusions published 30/06/16 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/CP3633KN

Issued to

Baird & Co. Limited ("the operator")

whose registered office is

48 Hatton Garden

London

England

EC1N 8EX

company registration number 02269558

to operate an installation at

Gemini Business Park Precious Metal Refinery

Units 20 & 21

Gemini Business Park

Hornet Way

London

E6 7FF

to the extent set out in the schedules.

The notice shall take effect from 18/06/2018

Name	Date
Tom Swift	18/06/2018

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/CP3633KN

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/CP3633KN/V003 authorising,

Baird & Co. Limited (“the operator”),

whose registered office is

48 Hatton Garden

London

England

EC1N 8EX

company registration number 02269558

to operate an installation at

Gemini Business Park Precious Metal Refinery

Units 20 & 21

Gemini Business Park

Hornet Way

London

E6 7FF

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

Name	Date
Tom Swift	18/06/2018

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 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 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.
- 2.3.5 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, S3.1b and S3.2.
- 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, S3.1b and S3.2;
 - (b) process monitoring specified in table S3.3;
- 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, S3.1b and S3.2 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.

4.3 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 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.

4.3.4 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.

4.3.5 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 2.2A(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 for homogenisation and sampling where raw materials contain >0.05% cadmium)	Melting of batches in melt shop furnaces, for sampling and preparation for refining.
Section 4.2A(1)(b)	Unless falling within any other Section, any manufacturing activity which is likely to result in the release into the air of any hydrogen halide (other than the manufacture of glass or the coating, plating or surface treatment of metal) or which is likely to result in the release into the air or water of any halogen or any of the compounds mentioned in paragraph (a)(vi) (other than the treatment of water). (refining of gold by Miller process)	From receipt of unrefined metal and scrap in the Miller Process room to storage and dispatch of final product.
Section 4.2A(1)(f)	Unless falling within any other Section, any 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. (chemical refining of gold)	From receipt of unrefined metal and scrap in the Aqua Regia Process room to storage and dispatch of final product.
Section 4.2A(1)(f)	Unless falling within any other Section, any 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. (electrolytic refining of silver)	From receipt of unrefined metal and scrap in the electrolytic room to storage and dispatch of final product.

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
Directly Associated Activity		
Assessment of raw materials and melting where raw materials contain <0.05% cadmium.		Assessment of raw material by melting, sampling and analysis of samples.
Treatment of spent scrubber liquors and process liquors and discharge to sewer.		Treatment by neutralisation, to adjust pH, and by addition of zinc salts, to precipitate metals, followed by discharge to foul sewer.
Storage of waste products		Storage of waste generated by production processes prior to collection for recycling or disposal elsewhere.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application EPR/CP3633KN/A001	Section A1, A3, B2, B3, B4, B6, B7	15/04/09
Response to Schedule 5 Notice dated 19/10/09	Response to question 2, 3, 4, 5, 6, 8 and 12	12/11/09
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, 14, 15, 18, 19, 134, 135, 136, 137, 139, 140, 141, 143, 144, 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	Received 04/04/17
Additional information	Response to email dated 04/06/18 concerning updated site layout plan with air emission points	15/06/18
Response to Regulation 61 Notice – request for further information dated 23/03/18	Further information and/or clarification on BAT Conclusions Technical standards detailed in response to BAT Conclusions 3, 7, 12, 18 and 19 of the notice.	Received 06/04/18

Table S1.3 Improvement programme requirements		
Reference	Improvement Condition	Completion date
IC1	The operator shall submit, for approval by Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is currently not achieved, but will be achieved before 30/06/20. The report shall include, but not be limited to, the following: 1) Methodology for achieving BAT. 2) Associated targets / timelines for reaching compliance by 30/06/20. 3) Any alterations to the initial plan	Progress reports by 1 st December 2019

Table S1.3 Improvement programme requirements		
Reference	Improvement Condition	Completion date
	<p>The report shall address the following BAT Conclusions: 1, 6 and 10:</p> <ul style="list-style-type: none"> • BAT 1 (to implement an environmental management system (EMS) incorporating all the features listed) • BAT 6 (to set up an implement an action plan on diffuse dust emissions, as part of the EMS) • BAT 10 (monitoring of stack emissions to air) 	
IC2	<p>The operator shall undertake a review of periodic monitoring for emissions to air of particulate matter (dust), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂) from emission points A1, A2 and A3 as appropriate. 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.</p> <p>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 <i>inter alia</i> the nature of the raw materials, fluxing agents, refining chemicals used; operational stability; and process 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.</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>	Within 24 months of effective date of notice V003

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
Impure silver	<0.3% cadmium by weight, <0.1ppm mercury by weight, no beryllium detected
Impure gold	<0.3% cadmium by weight, <0.1ppm mercury by weight, no beryllium detected

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 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Miller Process	Cadmium	0.1 mg/m ³	-	Twice a year	BS EN 14385
A2 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Chemical refining of gold (Aqua Regia process) and electrolytic silver refining	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	100 mg/m ³	-	Twice a year	BS EN 14792
		Cadmium	0.1 mg/m ³	-	Twice a year	BS EN 14385
A3 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Melt shop	Cadmium	0.1 mg/m ³	-	Twice a year	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	Monitoring frequency	Monitoring standard or method
A1 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Miller Process	Particulate matter	5 mg/m ³	Average over the sampling period ^[1]	Twice per year ^[1]	BS EN 13284-1 and MID ^[1]
		Gaseous chlorides (expressed as HCl)	10 mg/m ³	Average over the sampling period	Once per year	BS EN 1911
		Chlorine (Cl ₂)	2 mg/m ³	Average over the sampling period	Once per year	No EN standard available

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
		Cadmium	0.1 mg/m ³	Average over the sampling period	Twice per year	BS EN 14385
A2 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Chemical refining of gold (Aqua Regia process) and electrolytic silver refining	Sulphur dioxide	100 mg/m ³	Average over the sampling period ^[1]	Twice per year ^[1]	BS EN 14791 ^[1]
		Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	100 mg/m ³	Average over the sampling period ^[1]	Twice per year ^[1]	BS EN 14792 ^[1]
		Cadmium	0.1 mg/m ³	Average over the sampling period	Twice per year	BS EN 14385
A3 [Final exit from stack to roof outlet, as shown on drawing ref: Baird & Co. Ducting plan, 15/06/18]	Melt shop	Particulate matter	5 mg/m ³	Average over the sampling period ^[1]	Twice per year ^[1]	BS EN 13284-1 and MID ^[1]
		Cadmium	0.1 mg/m ³	Average over the sampling period	Twice per year	BS EN 14385
Note [1] Monitoring to be undertaken in accordance with stated requirements in Table S3.1b pending completion of Improvement Condition IC2 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
Discharge to sewer	Water treatment holding tank	No parameter set	No unit set	-	-	-

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Process scrubbers	pH	Weekly	pH meter	

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	Every 12 months	1 January

Table S4.2: Annual production/treatment	
Parameter	Units
Gold	Kg
Silver	kg

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Water usage	Annually	Cubic metres
Energy usage	Annually	MWh

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	18/06/18
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	18/06/18
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	18/06/18

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	

(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.

“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.

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.

Schedule 7 – Site plan



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END OF PERMIT