Environment Agency

Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/MP3936UJ
The Operator is: The Brock Metal Company Limited
The Installation is: The Brock Metal Company Limited
This Variation Notice number is: EPR/MP3936UJ/V008

What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication by the European Commission of updated decisions on BAT Conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the non-ferrous metals industries sector published on 30th June 2016 in the Official Journal of the European Union. Where appropriate, we also considered other relevant BAT Conclusions published prior to this date but not previously included in a permit review for the Installation. In this decision document, we set out the reasoning for the consolidated variation notice that we have issued.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions (BATc) for the non-ferrous metals industries as detailed in the Official Journal of the European Union (L174) following a European Union, implementing decision (EU) 2016/1032 of 13th June 2016. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our proposed decision

2. How we reached our decision

3. The legal framework

4. Annex 1- Review of operating techniques within the Installation against BAT Conclusions

5. Annex 2a - Review and assessment of derogation request(s) made by the operator in relation to BAT Conclusions which include an Associated Emission Level (BAT-AEL) value

6. Annex 2b - Consultation responses

7. Annex 3 - Improvement Conditions

8. Annex 4 - Review and assessment of changes that are not part of the BAT Conclusions derived permit review

9. Annex 5 – Priority Compliance Issues & Detailed assessment of Regulation 60 Notice responses where future action likely

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice that updates the whole permit.

We consider that, in reaching our decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The Consolidated Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of "tailor-made" or installation-specific conditions, or where our Permit template provides two or more options.

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 16th December 2016 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that

- Describes the techniques that will be implemented before 30th June 2020, which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 30th June 2020, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or

- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 60 Notice required that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 60 Notice response from the Operator was received on 28 March 2017.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review but not that it necessarily contained all the information we would need to complete that determination.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 60 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we consider that the operator will be able to comply with the techniques and standards described in the BAT Conclusions. For the majority of the applicable BAT Conclusions the operator has demonstrated that they currently operate in compliance with the requirements of the BAT Conclusions other than for those techniques and requirements described in BAT Conclusion 1. In relation to this BAT Conclusion, we agree with the operator in respect to their current stated capability as recorded in their regulation 60 Notice response and understand that they will be compliant before 30th June 2020 (the "compliance date"). We have therefore included Improvement Condition IC1 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusion are delivered before 30th June 2020.

2.3 Requests for Further Information during determination

Although we were able to consider the Regulation 60 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment. We received additional information and/or clarification from the operator during the determination as follows:

- Response to our email dated 21 December 2017, received 09/01/18, entitled ‘Furnace Temperature Control’ regarding the systems and processes that the operator uses to control the temperature of the molten metal to ensure that it does not give rise to metal emissions.

We made a copy of this information available to the public in the same way as the response(s) to our information request(s).

2.4 Surface Water Pollution Risk Assessment

As part of our delivery of the Water Framework Directive (WFD) requirements, we need to identify and assess the impact of all sources of hazardous pollutants to surface waters from regulated industry. We use the term ‘hazardous pollutants’ to collectively describe substances covered by the EQSD[1] (priority hazardous substances, priority substances and “other pollutants”). It also applies to the specific pollutants listed in the 2015 Directions[2], and substances which have operational (non-statutory) Environmental Quality Standards (EQS).

For all installations with discharges to surface water and/or sewer we required the operator, via our Regulation 60 Notice, to undertake a surface water pollution risk assessment, in two stages, as follows:

a) Provide emissions data for the following hazardous pollutants: silver, arsenic, cadmium, cobalt, chromium (total), chromium (VI), copper, mercury, nickel, lead and zinc. The BAT Conclusions for the Non-Ferrous Metals Industries specify BAT-AELs associated with the direct discharge of these substances to surface water. We therefore considered that these substances potentially posed the highest risk from industry and listed them in our Regulation 60 Notice. In addition, operators were required to identify and assess any other hazardous pollutants that may be present in their effluent. A full list of hazardous pollutants is included in our surface water pollution risk assessment guidance, which we ‘signposted’ operators to via the Regulation 60 Notice.

b) Undertake a risk assessment using the above emissions data to determine whether any hazardous pollutants were liable to cause pollution of the downstream receiving waters. The WFD requires Member States to prior regulate, all substances in a discharge which are “liable to cause pollution”. Previously discharges from the Non-Ferrous Metals Industries were controlled on a “liable to contain” approach set by the Dangerous Substances Directive through either numeric limits, or descriptive conditions. Under the “liable to cause pollution” approach we would only consider applying numeric emission

[1] Environmental Quality Standards Directive (EQSD) (2008/105/EC, as amended by 2013/39/EU)
[2] The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

limits to those pollutants calculated to have the potential to cause pollution.

The risk assessment methodology uses a number of sequential screening steps to determine if a substance warrants detailed modelling and hence any emission limits being required, namely:

- Screen out insignificant emissions that do not warrant further investigation;
- Determine if significant load test is failed (for priority hazardous substances only);
- Decide if detailed modelling is needed;
- Assess emissions against relevant standards and set permit limits where considered necessary.

The methodology provides for undertaking assessments of both direct and indirect discharges to surface water, 'indirect' meaning that the effluent is discharged to foul sewer from the installation and is treated at a sewage treatment works (STW) prior to discharge to surface water. Treatment at the STW will remove a proportion of a discharged substance from the final effluent discharged to the environment. This removal needs to be taken into account when calculating the concentration of a hazardous pollutant which will be discharged to a receiving water via the sewage works. This is achieved by applying STRFs (sewage treatment reduction factors) within the screening steps.

We have used the non-ferrous metals permit review to regulate any discharge of hazardous pollutants to surface waters from this installation using the "liable to cause pollution" approach. Based on the written submissions provided in response to our Regulation 60 Notice the operator has confirmed that they discharge hazardous pollutants to surface water. Details of how we have considered the operator's response is provided in Annex 4.

2.5 Condition of Soil and Groundwater

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 used the non-ferrous metals permit review to regulate against the above IED requirements. Our Regulation 60 Notice required operators, where the activity of the installation involved the use, production or release of a relevant hazardous substance (as defined in Article 3(18) of the Industrial Emissions Directive), to carry out a risk assessment considering the possibility of soil and groundwater contamination at the installation with such substances. Where any risk of such contamination was established we requested that the operator either:

- prepare and submit a baseline report containing information necessary to determine the current state of soil and groundwater contamination; or

- provide a summary report referring to information previously submitted where they were satisfied that such information represented 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 the activity.

Where operators concluded that there were no risks of soil or groundwater contamination (due to there not being any release of hazardous substances), they were required to provide a copy of the risk assessment.

Our intention was to use the non-ferrous metals permit review to regulate any discharge of hazardous substances to soil and groundwater. However the operator has not provided a satisfactory response to question 7 on our Regulation 60 Notice to enable us to undertake this aspect of the review within the agreed project timeline. We have therefore carried over this requirement into the Consolidated Variation Notice.

We have included Improvement Condition IC2 requiring the operator to submit a risk assessment considering the possibility of soil and groundwater contamination where the activity involves the use, production or release of a relevant hazardous substance.

A follow-up Improvement Condition (IC3) has also been included which requires the operator, if having established that there is a risk to soil and groundwater, to submit a baseline report compliant with Article 22 of the IED, containing information necessary to determine the current state of soil and groundwater contamination. This shall enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of activity.

The operator will be required to submit their IC2 response within 3 months of the effective date of our notice, and their IC3 response (if deemed necessary) within 12 months of the effective date.

3 The legal framework

The Consolidated Variation Notice will be issued under Regulations 18 and 20 of the EPR The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that in issuing the Consolidated Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Annex 1

Review of operating techniques within the Installation against BAT Conclusions

BAT Conclusions for the non-ferrous metals industries, were published by the European Commission on 30th June 2016. There are 184 BAT Conclusions. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation.

This annex should be read in conjunction with the Consolidated Variation Notice.

Table 1: Decision checklist for relevant BAT Conclusions		
Summary of BAT Conclusion requirement for Non-Ferrous Metals Industries	**Status** **NA / CC / FC / NC**	**Assessment of the installation capability to demonstrate compliance with the BAT Conclusion requirement** **Type of process: SECONDARY ZINC PRODUCTION**
BAT Conclusions that are not applicable to this installation	**NA**	**General BAT Conclusions for Non-Ferrous Metals Industries: 4-13, 16, 17** BAT Conclusions for copper production: 20-54 inclusive BAT Conclusions for alumina production: 55-57 inclusive BAT Conclusions for anode production: 58-63 inclusive BAT Conclusions for primary aluminium production: 64-73 inclusive BAT Conclusions for secondary aluminium production: 74-86 inclusive BAT Conclusions for salt slag recycling process: 87-89 inclusive BAT Conclusions for lead and/or tin production: 90-107 inclusive BAT Conclusions for primary zinc production: 108-120 inclusive **BAT Conclusions for secondary zinc production: 121-128** BAT Conclusions for cadmium production: 131-133 inclusive BAT Conclusions for precious metals production: 134-149 inclusive BAT Conclusions for ferro-alloys production: 150-162 inclusive BAT Conclusions for nickel and/or cobalt production: 163-176 inclusive BAT Conclusions for carbon and/or graphite production: 177-184 inclusive
BAT Conclusions where we accept the operator's Reg 60 notice response that they are	**CC**	**General BAT Conclusions for Non-Ferrous Metals Industries: 2, 3, 14, 15, 18, 19**

Table 1: Decision checklist for relevant BAT Conclusions		
Summary of BAT Conclusion requirement for Non-Ferrous Metals Industries	**Status** **NA / CC / FC / NC**	**Assessment of the installation capability to demonstrate compliance with the BAT Conclusion requirement** **Type of process: SECONDARY ZINC PRODUCTION**
currently compliant and no further explanation is required.		**BAT Conclusions for secondary zinc production: 129, 130**
BAT Conclusions where improvements will be undertaken on site within the 4 year period in order to achieve compliance with the narrative and/or BATAEL prior to the 4 year deadline	**FC**	**General BAT Conclusions for Non-Ferrous Metals Industries: 1**
BAT Conclusions where the Operator has responded that they are not compliant and have not submitted any plans to become compliant	**NC**	**None**

Key Issues

Emissions to air

There is currently no local exhaust ventilation (LEV's) or abatement plant, stacks, etc, associated with emissions to air from melting operations at the installation. In their Regulation 60 Notice response the operator stated that in relation to both point-source emissions and fugitive emissions to air from melting operations, BAT Conclusions 4, 5, 6, 9, 10, 122, 123, 124, 127 and 128 were 'not applicable'. They stated that only primary grade raw materials are used (i.e. no recycled or uncontrolled scrap input), and as a result there are no dust and metal emissions. These BAT Conclusions are summarised below:

(a) General BATc 1-19:

- No. 4 (channelled dust and metal emissions – use of maintenance management system)
- No. 5 (diffuse emissions to air – collect and treat emissions near to source)
- No. 6 (diffuse emissions to air – set up diffuse dust action plan)
- No. 9 (diffuse emissions from metal production – off-gas treatment)
- No. 10 (monitoring requirements for stack emissions to air)

(b) Secondary zinc BATc 121-130:

- No. 122 (dust and metal emissions from melting operations – use of a bag filter)
- No. 123 (organic compound emissions – control of TVOC and PCDD/F from melting operations)
- No. 124 (acid emissions, control of HCl and HF from melting operations)
- No. 127 (dust emissions from melting, alloying and casting of zinc ingots – use of equipment under negative pressure)
- No. 128 (dust and metal emissions from melting, alloying and casting of zinc ingots and zinc powders – use of a bag filter)

The site was originally permitted for secondary aluminium production as well as zinc production. On the aluminium side of the business raw materials included various types of scrap, while on the zinc side, raw materials included waste zinc sprues and spigots. These raw materials were contaminated with hydrocarbons and were often dusty thereby generating emissions upon processing. Therefore the site had appropriate extraction and abatement equipment in place. However, aluminium production was subsequently shut down, while on the zinc side the operator ceased to accept waste sprues and spigots. This led to various operational changes which were permitted via several variations, culminating in the emission points to air and all ELV's being removed from the permit, with the final such variation being V005 in 2012. All

LEV’s and associated abatement equipment was decommissioned and removed.

The current permit has no emission points to air or ELV’s because the nature of the operations means that there are no emissions from the melting crucibles. The raw materials used for zinc alloy production consists only of SHG (Special High Grade) zinc, which is 99.995% zinc, and other high purity alloying elements, including magnesium, aluminium and copper. Emissions to air from the melting process are currently controlled via two principal methods:

(1) the use of high purity primary aluminium and other alloying elements means that emissions of dust, organic compounds and acid gases are minimised (to the point where we consider them insignificant). Under normal operations there are no visible emissions from the melting crucibles. This was evident from our site visit on 21 November 2017.

(2) the operator maintains a very close control of temperature to ensure that the temperature of the molten metal does not exceed the fume point and lead to metal emissions in the form of zinc oxides. The temperature of the molten metal is constantly monitored using thermocouples which will automatically shut down the gas burner which heats the crucible should the temperature of the melt rise above pre-set levels.

We are satisfied that the aforementioned BAT Conclusions need not apply and as such we are in agreement with the operator.

Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 Notice response and their subsequent email regarding furnace temperature control as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.

Annex 2a

Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.

The IED enables a competent authority to allow derogations from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

‘By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT Conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

(a) the geographical location or the local environmental conditions of the installation concerned; or

(b) the technical characteristics of the installation concerned.

The competent authority shall document in an annex to the permit conditions the reasons for the application of the first subparagraph including the result of the assessment and the justification for the conditions imposed. ‘

A summary of any derogation granted is also recorded in an Annex of the Consolidated Variation Notice in accordance with the requirement of IED Article 15(4) as described above.

The Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 60 Notice response.

Annex 2b

Advertising and Consultation on the draft decision

This section is not applicable as no derogations from BAT-AEL's have been considered, nor is the installation a site of high public interest.

Annex 3

Improvement Conditions

Based on the information in the Operator's Regulation 60 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. This improvement condition (IC1) is set out below; justification for it is provided at the relevant section of the decision document.

We also consider that we need to set improvement conditions relating to changes in the permit not arising from the review of compliance with BAT Conclusions, but from the operator's response to question 7 of our Regulation 60 Notice. These improvement conditions (IC2 and IC3) are set out below and justifications for them is provided at the relevant section of the decision document.

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 30th June 2020. The report shall include, but not be limited to, the following: 1) Methodology for achieving BAT 2) Associated targets / timelines for reaching compliance by 30th June 2020 3) Any alterations to the initial plan. The report shall address the following BAT Conclusion: 1 • BAT 1 (to implement and adhere to an environmental management system (EMS) that incorporates all features listed under BAT 1) Refer to BAT Conclusions for a full description of the BAT requirement.	Progress reports by: 30/06/18 31/12/18 30/06/19 31/12/19
IC2	The operator shall submit to the Environment Agency for approval a risk	Within 3 months of

Reference	Improvement Condition	Completion date
	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.	effective date of notice V008
IC3	Where the risk assessment carried out under IC2 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 V008

Annex 4

Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

Surface Water Pollution Risk Assessment

In response to questions 5 and 6 on our Regulation 60 Notice the operator provided an H1 assessment of their discharge of hazardous pollutants to the local surface water known as the Gains Brook, via emission point W1. The current permit allows for the discharge of (a) process wastewater consisting of cooling water from the standard size ingot casting track; and (b) site drainage, via emission point W1. The permit currently contains the following ELV's in respect to this discharge:

- Suspended solids, 80 mg/l
- pH, 6-9
- Total hydrocarbon oil, 2 mg/l
- Zinc, as soluble, 0.5 mg/l

These ELV's are historic and were principally based on the former operation of the installation when waste zinc sprues and spigots were received and stored in outside bunkers prior to melting. This waste was typically dusty and contaminated with hydrocarbons. The ELV's stem from sector process guidance note under IPC 1990 and were considered to be BAT at that time.

The operator's H1 assessment used monitoring data for the following hazardous pollutants: mercury, chromium VI, arsenic, cadmium, cobalt, copper, nickel, silver, lead and zinc. The operator incorrectly used the receiving water category of 'TR' (Riverine) in their assessment. We have undertaken check calculations using the correct receiving water category of 'R' (River) and are satisfied that all emissions via point W1 'screen out' as insignificant at Test 2 of the assessment procedure, i.e. the Process Contribution (PC) is less than 4% of the relevant long term or short term Environmental Quality Standard (EQS). We are therefore satisfied that the existing discharge from the installation is not liable to cause pollution of the receiving watercourse and no new parameters need be added to the permit.

Following installation of new rotary ingot casting equipment in 2018 (and decommissioning of the old casting track) the only remaining discharge to surface water will be that of site drainage via an interceptor. This is because the new rotary casting equipment utilises closed circuit cooling.

As the new casting equipment is planned to be operational by mid-2018, two years in advance of the BAT Conclusions 'compliance date', we have reviewed whether the existing ELV for zinc needs to be retained on the permit. The BAT-AEL for zinc in the BAT Conclusions will not apply because there will be no discharge of wastewater from metal production. Furthermore as there is no longer any external storage of waste zinc sprues and spigots, the site

drainage should not contain zinc. We have considered monitoring data for zinc over the last 5 years for emission point W1. The data shows that the operator has been compliant with the ELV of 0.5 mg/l for the period 2013-2017. It should also be noted that the existing ELV is considerably more stringent than the BAT-AEL of 1 mg/l. We are therefore satisfied that the continued monitoring of zinc in the discharge is no longer necessary, and consider it appropriate to remove the ELV from the permit.

We have also reviewed the 2013-2017 monitoring data for pH, suspended solids and total hydrocarbon oil. The operator has been compliant with their permit over this period. Our expectation going forward is that the site drainage discharge should not contain any significant contamination given the changes to site operations already described. In such cases we only require an appropriate oil interceptor to be in place, which there is at the site. We are satisfied that the continued monitoring of pH, suspended solids and total hydrocarbon oils is no longer necessary, and consider it appropriate to remove the ELV's from the permit.

We consider that the above measures are risk based and proportionate.

Annex 5

Priority Compliance Issues & detailed assessment of Regulation 60 Notice responses where future action likely

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
	BAT 1-19: General requirements					
1	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the features given	1.1	FC	FC	The operator has confirmed in their response that they are not currently compliant with BAT 1 but will be by the compliance date of 30/06/20. They currently have their own EMS which they say covers techniques 1a, 1b, 1c, 1d, 1e and 1g, as follows: (a) commitment of the management, including senior management; (b) definition of an environmental policy that includes the continuous improvement of the installation by the management; (c) planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; (d) implementation of procedures paying particular attention to: (i) structure and responsibility	Include Improvement Condition to measure progress towards future compliance

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
					(ii) (recruitment, training awareness and competence (iii) communication (iv) employee involvement (v) documentation (vi) effective process control (vii) maintenance programmes (viii) emergency preparedness and response (ix) safeguarding compliance with environmental legislation. (e) checking performance and taking corrective action, paying particular attention to: (i) monitoring and measurement (ii) corrective and preventive action (iii) maintenance of records (iv) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained.	

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
					(f) following the development of cleaner technologies. The operator has stated that an updated EMS which will include all the BAT 1 requirements will be implemented by 30/06/20. During our site visit on 21/11/17 the operator queried whether they needed to have an externally accredited EMS in order to comply with the BAT Conclusions. We confirmed that the EMS did not have to be externally accredited but it must however deliver all the required elements set out in BAT 1. The operator said that they would review the situation, deciding whether to go for external accreditation or not, but would nevertheless ensure that the EMS meets BAT 1. The Environment Agency is satisfied that the operator will meet the requirements of this BAT Conclusion by 30/06/20.	

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
2	In order to use energy efficiently, BAT is to use a combination of the techniques given	1.2	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 2. They have confirmed that they use the following techniques: • the installation of recuperative burners. (BAT 2b) • heat recovery through the utilisation of crucible lids designed to capture waste process heat for re-use in the melting process. (BAT 2c) In addition they state that they will be investing in new technology, which will be implemented by Q2 2018. This will include electric motors with variable-frequency drive. (BAT 2n). The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	None
3	In order to improve overall environmental performance, BAT is to ensure stable process operation by	1.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 3.	None

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
	using a process control system together with a combination of the techniques given				They have confirmed that they use the following techniques: • only primary zinc (Special High Grade – known as SHG) is used, i.e. no recycled or uncontrolled scrap input. (BAT 3a) • melted metals are thoroughly stirred to achieve full dispersion and mixing of feed materials. Efficient dispersion is promoted by the use of finely divided materials. Samples taken from completed melts are analysed spectroscopically to confirm correct composition. (BAT 3b) • all charges for the furnaces are of known weight or are weighed before adding to the furnace. (BAT 3c) • furnaces have temperature measurement, and melting temperature is controlled carefully to ensure efficient melting and mixing without waste of energy, and to prevent the generation of metal and metal oxide fumes through overheating. (BAT 3j) During our site visit on 21/11/17 the operator the operator described and made reference to the operational documentation and processes which	

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
					underpin their EMS, i.e. their process control system. The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	
4	In order to reduce channelled dust and metal emissions to air, BAT is to apply a maintenance management system which especially addresses the performance of dust abatement systems as part of the environmental management system (see BAT 1)	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. There are no channelled dust or metal emissions to air. Refer to Key issues section in Annex 1 for further details. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
5	In order to prevent or, where this is not practicable, to reduce diffuse emissions to air and water, BAT is to collect diffuse emissions as much as possible nearest to the source and treat them	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. There are no diffuse emissions to air under normal operations. Refer to Key issues section in Annex 1 for further details.	None

BATc Number	Compliance Issue Priority BAT indicated in **Bold Text**	Relevant permit condition	Compliance stated by Operator NA / CC / FC / NC	Compliance assessment conclusion NA / CC / FC / NC	Summary of Permitting Officer assessment against BATc techniques	Compliance Action to implement BATc
					There are no diffuse emissions to water / sewer. While there is a discharge of site drainage to surface water, our expectation is that this should only consist of uncontaminated rainwater, and in any case, it is passed through an interceptor prior to discharge. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
6	In order to prevent or, where this is not practicable, to reduce diffuse dust emissions to air, BAT is to set up and implement an action plan on diffuse dust emissions, as part of the environmental management system (see BAT 1), that incorporates both of the following measures: (a) identify the most relevant diffuse dust emission sources (using e.g. EN 15445); (b) define and implement appropriate actions and techniques to prevent or	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. An Action Plan to reduce diffuse dust emissions is not necessary. Refer to Key issues section in Annex 1 for further details. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None

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	reduce diffuse emissions over a given time frame.					
7	In order to prevent diffuse emissions from the storage of raw materials, BAT is to use a combination of the techniques given	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. There is no storage of potentially dusty raw materials. All raw materials are in a clean, solid form. There is no storage of gaseous or liquid raw materials that could give rise to diffuse emissions. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
8	In order to prevent diffuse emissions from the handling and transport of raw materials, BAT is to use a combination of the techniques given	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. There is no handling and transport of potentially dusty raw materials, or of gaseous or liquid raw materials that could give rise to diffuse emissions.	None

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					The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
9	In order to prevent or, where this is not practicable, to reduce diffuse emissions from metal production, BAT is to optimise the efficiency of off-gas collection and treatment by using a combination of the techniques given	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. Off-gas collection and treatment is not necessary as there are no off-gases produced. Refer to Key issues section in Annex 1 for further details. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
10	BAT is to monitor the stack emissions to air with at least the given frequency and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. There are no stack emissions to air from the installation. Refer to Key issues section in Annex 1 for further details.	None

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					The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
11	In order to reduce mercury emissions to air (other than those that are routed to the sulphuric acid plant) from a pyrometallurgical process, BAT is to use one or both of the techniques given. BAT-AEL for Hg	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. They have stated that only primary grade raw materials are used (i.e. no recycled or uncontrolled scrap input) and as a result there are no mercury emissions to air. The Environment Agency has determined that this BAT Conclusion and BAT-AEL are not applicable to this installation. This is because they relate to pyrometallurgical processes. Within zinc production such processes are typically only undertaken during primary metal production, and therefore are not applicable to the production of secondary zinc at this site. The Environment Agency is therefore satisfied that this BAT Conclusion does not apply to the installation.	None

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12	In order to reduce emissions of SO_2 from off-gases with a high SO_2 content and to avoid the generation of waste from the flue-gas cleaning system, BAT is to recover sulphur by producing sulphuric acid or liquid SO_2	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. They have stated that only primary grade raw materials are used (i.e. no recycled or uncontrolled scrap input) and as a result there are no SO_2 emissions to air. The BAT Conclusions state that BAT12 is only applicable to primary zinc production, which does not take place at the site. The Environment Agency is therefore satisfied that this BAT Conclusion does not apply to the installation.	None
13	In order to prevent NOx emissions to air from a pyrometallurgical process, BAT is to use one of the techniques given	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. Having made reference to the NFM BREF and defined the scope of the term 'pyrometallurgical process' we do not believe that the process of melting high grade zinc ingots (with no scrap input) and subsequent alloying is a pyrometallurgical process.	None

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					The Environment Agency is therefore satisfied that this BAT Conclusion does not apply to the installation.	
14	In order to prevent or reduce the generation of waste water, BAT is to use one or a combination of the techniques given	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 14. They have confirmed that they use the following techniques: • water input is measured and reported. (BAT 14a) • closed circuit water cooling is used for casting jumbo (1.4 tonne) ingots. (BAT 14f) In addition, they state that further investment will result in standard size ingots being cooled via a closed circuit cooling system (BAT 14f) by Q2 2018 following the installation of new automatic rotary casting and stacking equipment. This new casting and stacking system was permitted in variation V007 during Q2 2017.	None

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					The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	
15	In order to prevent the contamination of water and to reduce emissions to water, BAT is to segregate uncontaminated waste water streams from waste water streams requiring treatment	NA	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 15. They have stated that process wastewater from closed circuit cooling systems is disposed of separately. This is in relation to wastewater from the closed circuit cooling systems that serves the jumbo block casting equipment. As this water contains antifreeze it is periodically tankered off-site as hazardous waste. The operator has confirmed that in relation to the new automated, rotary casting and stacking equipment for the standard size ingots, the wastewater will be dealt with in the same manner. The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	None
16	BAT is to use ISO 5667 for water sampling and to monitor the emissions to water at the point where the	NA	NA	NA	The operator states that this BAT Conclusion is not applicable.	None

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	emission leaves the installation at least once per month and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The monitoring frequency may be adapted if the data series clearly demonstrate sufficient stability of the emissions				Currently the operator discharges (a) process wastewater consisting of cooling water from the standard ingot moulds; and (b) site drainage, to a local surface water called the Gains Brook. The current permit requires them to monitor this combined discharge for pH, suspended solids zinc and hydrocarbon oils. Following installation of the new automated ingot casting and stacking system in 2018 (and decommissioning of the old equipment) which will utilise closed circuit cooling, the only remaining discharge to surface water will be that of uncontaminated site drainage via an interceptor. We propose to retain the existing monitoring regime on the permit, but no new monitoring requirements will be added after 30/06/20.	
17	In order to reduce emissions to water, BAT is to treat the leakages from the storage of liquids and the waste water from non-ferrous metals production, including from the washing stage in the Waelz kiln process, and to remove metals and sulphates by using a combination of the techniques given	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. The BAT-AELs for BAT 17 relate to direct emissions to receiving waters (as opposed to indirect emissions made via the foul sewer).	None

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					It is our view that the intention of BAT 17 is to ensure that surface waters are appropriately protected, through the prevention of direct discharges which may otherwise have been made without (or with minimal) treatment. However following installation of the new automated ingot casting and stacking system in 2018 (and decommissioning of the old equipment) there will be no process wastewater discharges to surface water from the installation. Therefore by the time the compliance date comes to pass in 2020 there will be no such discharge therefore we consider that adding BAT-AELs and monitoring requirements to the permit is inappropriate. The Environment Agency is therefore satisfied that this BAT Conclusion does not apply to the installation.	
18	In order to reduce noise emissions, BAT is to use one or a combination of the techniques given	3.4	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 18. They have confirmed that they use techniques BAT 18a, and b, as follows:	None

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					• the site has an embankment with trees along one edge of the site. (BAT 18a) • doors to the foundry are closed between 7:00pm and 7:00am retaining sound within the building. (BAT 18b) For the future the operator states that BAT techniques 18c and 18e will result from major investment in new technology, which will reduce noise from ingot ejection by Q2 2018. The requirement to keep doors closed is a current permit condition and will remain in the varied permit to minimise the emission of noise from the foundry. It is however debateable whether closing the foundry doors is an adequate demonstration of BAT 18b being met, and would depend on whether the building was designed and constructed with sound absorbing measures built-in. BAT 18b relates to the enclosure of noisy plant or components in sound absorbing structures. We visited the site on 21/11/17 and were present in the foundry during normal operations, including melting of zinc alloys, casting of jumbo and standard sized ingots, stock movement,	

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					loading of ingots onto lorries, and other vehicular movements in the yard. Our overall impression was that this was not an inherently 'noisy' site, and that the control measures in place are risk based and proportionate. Notwithstanding our comments above regarding the applicability of technique 18b, the operator states that technique 18a is used and as BAT 18 only requires one (or a combination of techniques to be used), the Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	
19	In order to reduce odour emissions, BAT is to use one or a combination of the techniques given	3.3	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 19. They have confirmed that they use techniques BAT 19a, b and c, as follows: • odorous materials are not used in the foundry processes. (BAT 19a and b) • preventive maintenance system ensures equipment and machinery is kept in proper operational condition. (BAT 19c)	None

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					Odour has been an issue in the past when the installation processed scrap aluminium and zinc sprues and spigots. These activities no longer take place. We consider that as no odorous materials are used then the operator cannot claim to be using technique 19a, but we agree that they use techniques 19b (minimise the use of odorous materials) and 19c (careful design, operation and maintenance of any equipment that could generate odour emissions). We visited the site on 21/11/17 and were present in the foundry during normal operations, including melting, casting of jumbo and standard sized ingots. There was no odour apparent from the operations witnessed. The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	
	BAT 121-130: Secondary zinc production					
121	In order to reduce dust and metal emissions to air from pelletising and	NA	NA	NA	The operator states that this BAT Conclusion is not applicable.	None

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	slag processing, BAT is to use a bag filter BAT-AEL for Dust				Pelletising and slag processing do not take place at the installation. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
122	In order to reduce dust and metal emissions to air from the melting of metallic and mixed metallic/oxidic streams, and from the slag fuming furnace and the Waelz kiln, BAT is to use a bag filter BAT-AEL for Dust	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. Refer to Key issues section in Annex 1 for further details. In addition, there is no slag fuming furnace or Waelz kiln at the site. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
123	In order to reduce emissions of organic compounds to air from the melting of metallic and mixed metallic/oxidic streams, and from the slag fuming furnace and the Waelz kiln, BAT is to	NA	NA	NA	The operator states that this BAT Conclusion is not applicable.	None

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	use one or a combination of the techniques given BAT-AELs for TVOC and PCDD/F				Refer to Key issues section in Annex 1 for further details. In addition, there is no slag fuming furnace or Waelz kiln at the site. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
124	In order to reduce emissions of HCl and HF to air from the melting of metallic and mixed metallic/oxidic streams, and from the slag fuming furnace and the Waelz kiln, BAT is to use one of the techniques given BAT-AELs for HCl and HF	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. Refer to Key issues section in Annex 1 for further details. In addition, there is no slag fuming furnace or Waelz kiln at the site. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
125	In order to reduce the consumption of fresh water in the Waelz kiln process, BAT is to use multiple-stage countercurrent washing	NA	NA	NA	The operator states that this BAT Conclusion is not applicable because they do not operate a Waelz kiln process on site.	None

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					The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
126	In order to prevent or reduce halide emissions to water from the washing stage in the Waelz kiln process, BAT is to use crystallisation	NA	NA	NA	The operator states that this BAT Conclusion is not applicable because they do not operate a Waelz kiln process on site. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
127	In order to reduce diffuse dust emissions to air from the melting, alloying and casting of zinc ingots, BAT is to use equipment under negative pressure	NA	NA	NA	The operator states that this BAT Conclusion is not applicable. Refer to Key issues section in Annex 1 for further details. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	None
128	In order to reduce dust and metal emissions to air from the melting, alloying and casting of zinc ingots and	NA	NA	NA	The operator states that this BAT Conclusion is not applicable.	None

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	zinc powder production, BAT is to use a bag filter BAT-AEL for Dust				Refer to Key issues section in Annex 1 for further details. The Environment Agency is satisfied that this BAT Conclusion does not apply to the installation.	
129	In order to prevent the generation of waste water from the melting and casting of zinc ingots, BAT is to reuse the cooling water	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 129. The operator states that a closed circuit cooling system is used on the jumbo blocks casting line, thereby re-using the cooling water. The new automated, rotary casting equipment (permitted in variation V007 in Nov 2017) for producing standard sized ingots will also utilise a closed circuit cooling water system, and will be in place by Q2 2018. The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	Confirm installation of new equipment during routine site inspection in 2018

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130	In order to reduce the quantities of waste sent for disposal from the melting of zinc ingots, BAT is to organise operations on site so as to facilitate process residues reuse or, failing that, process residues recycling, including by using one or both of the techniques given	1.4	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 130. The operator states that all dross materials and other metallic wastes (with >80% metal content) are sent for recycling (off-site), and any non-conforming product is re-used within the process. The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.	None