

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/BJ9843IH
The Operator is: Mueller Europe Limited
The Installation is: Bilston Copper Shaft Furnace
This Variation Notice number is: EPR/BJ9843IH/V007

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 17th 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 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 10. 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, and issued a further information request in the form of a Regulation 61 Notice on 6th February 2018. A copy of the further information request was placed on our public register.

In addition to the response to our further information request, we received additional information and/or clarification from the operator during the determination as follows:

- Response to our email dated 19/02/2018, received 20/02/2018, regarding clarification of techniques used on site.
- Response to our email dated 02/05/2018, received 04/05/2018 regarding details of de-greaser used.
- Response to our email dated 04/05/2018, received 04/05/2018 regarding effluent discharge to surface water.
- Response to our email dated 10/05/2018, received 10/05/2018 regarding a revised site plan including emission points.
- Response to our emails dated 24/05/2018, received 21/05/2018 regarding BAT 48, diffuse dust emissions plan and climate change agreement clarification.

We made a copy of this information available to the public in the same way as the responses to our information requests.

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 EQSD¹ (priority hazardous substances, priority substances and "other pollutants"). It also applies to the specific pollutants listed in the 2015 Directions², 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

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

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 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 directly to surface water and via the foul sewer. 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.

Based on the written submissions provided in response to our Regulation 60 Notice the operator has confirmed that they do not use, produce or release any relevant hazardous substances. We therefore consider that no further action is necessary.

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.

We have set emission limit values (ELV's) in line with the BAT Conclusions, unless a tighter, i.e. more stringent, limit was previously imposed and these limits have been carried forward. For emissions to each relevant environmental receptor (i.e. air, or surface water), the emission limits and

monitoring requirements have been incorporated into the Consolidated Variation Notice via two tables in Schedule 3 – Emissions and monitoring, as follows:

Emissions to air

- Table S3.1a, the requirements of which are effective from the date of issue of the notice, and which contains the existing ELVs and monitoring requirements; and
- Table S3.1b, the requirements of which will take effect from 30th June 2020, and which contains amended ELV's where a BAT-AEL is specified in the BAT Conclusions, and any associated updated monitoring requirements.

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.

The overall status of compliance with the BAT conclusion is indicated in the table as:

- NA Not Applicable
- CC Currently Compliant
- FC Compliant in the future (within 4 years of publication of BAT conclusions)
- NC Not Compliant

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 COPPER PRODUCTION
BAT Conclusions that are not applicable to this installation	NA	<p>General BAT Conclusions for Non-Ferrous Metals Industries: 11, 12, 13, 15, 16, 17</p> <p>BAT Conclusions for copper production: 20, 21, 23, 24, 25, 27-36, 38, 39, 40, 42, 43, 44, 47 and 49-53</p> <p>BAT Conclusions for alumina production: 55-57 inclusive</p> <p>BAT Conclusions for anode production: 58-63 inclusive</p> <p>BAT Conclusions for primary aluminium production: 64-73 inclusive</p> <p>BAT Conclusions for secondary aluminium production: 74-86 inclusive</p> <p>BAT Conclusions for salt slag recycling process: 87-89 inclusive</p> <p>BAT Conclusions for lead and/or tin production: 90-107 inclusive</p> <p>BAT Conclusions for primary zinc production: 108-120 inclusive</p> <p>BAT Conclusions for secondary zinc production, 121-130 inclusive</p> <p>BAT Conclusions for cadmium production: 131-133 inclusive</p> <p>BAT Conclusions for precious metals production: 134-149 inclusive</p> <p>BAT Conclusions for ferro-alloys production: 150-162 inclusive</p> <p>BAT Conclusions for nickel and/or cobalt production: 163-176 inclusive</p> <p>BAT Conclusions for carbon and/or graphite production: 177-184 inclusive</p>
BAT Conclusions where we accept the operator's Reg 60	CC	General BAT Conclusions for Non-Ferrous Metals Industries: 1, 2, 3, 4, 5, 7, 8, 9, 14, 18 and 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 COPPER PRODUCTION
notice response that they are currently compliant and no further explanation is required.		BAT Conclusions for copper production: 22, 26, 37, 41, 45, 46, 48 and 54.
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: 10
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

Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 / 61 Notice responses as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.

Monitoring requirements for emissions to air

BAT Conclusion 10

BAT 10 sets out the minimum monitoring requirements for the NFM sector, stating that BAT is to monitor stack emissions to air with at least the frequency given and in accordance with EN standards. Furthermore, it says that 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.

A potential issue is that BAT 10 specifies that continuous monitoring is BAT for a number of parameters, but this is then qualified by footnote (1) to the monitoring table, which states:

“For sources of high emissions, BAT is continuous measurement or, where continuous measurement is not applicable, more frequent periodic monitoring.”

‘High emissions’ are not defined in the BAT Conclusions / BREF, however the implication is that this term links to higher environmental impacts / risk. Continuous monitoring is typically used for controlling higher environmental risks, when the feedback from such monitoring is required for process controls (e.g. abatement, such as de-NO_x and acid-gas scrubbing) and where the absence of such monitoring could result in a lack of sufficient control and significant impacts; or when periodic monitoring does not give sufficiently representative results.

Our view is that rather than referring to ‘high emissions’, we will consider what levels of emissions can BAT for abatement and process controls achieve, and having determined that, we will consider the following questions:

- Can periodic monitoring provide representative results?
- Can the installation keep within the ELVs under normal conditions without the need for process controls through continuous monitoring?
- Are there surrogate parameters available that can be used to reliably infer the emissions and at an acceptable level of uncertainty, in case there is a breakdown in the abatement equipment, or under abnormal operations?

If the answer is ‘yes’ to all of the above three questions, our view is that periodic monitoring could be deemed to provide a sufficient level of control and demonstration of compliance. However, if the answer is ‘no’ to one or more of the above questions - especially the first and second question, then we would consider continuous monitoring to be more appropriate for the site.

Monitoring requirements can also be influenced by environmental risk, for example, if the risks were very low, we could opt for a combination of surrogate parameters and/or more frequent periodic monitoring, rather than continuous monitoring. We will also take this into consideration when making our judgement.

We have been unable to fully consider the implications for the operator as part of this review and will require the operator to provide further information to enable us to determine with respect to monitoring frequency, what is BAT for the site, and therefore to agree the appropriate monitoring provision to be applied at the site from 30 June 2020. Our pragmatic approach to the monitoring aspects of the permit review is therefore:

1. To ensure that the existing permit has been updated to reflect current monitoring standards, in accordance with our M2 monitoring guidance. These standards are contained within Table S3.1a.
2. The inclusion of an Improvement Condition (IC1) in the permit requiring that the operator provides evidence to justify the level of monitoring to be employed, including where relevant, the frequency of periodic monitoring. That evidence will allow us to address the questions above, and facilitate agreement of the appropriate monitoring provision that will apply from 30 June 2020 onwards.
3. To carry over the existing periodic monitoring requirements in Table S3.1b pending completion of IC1, which must be submitted to the Environment Agency within 6 months of the date of issue of this variation.

BAT 10 also requires the metals copper, lead, zinc, cadmium and nickel and arsenic to be monitored once a year. Historic measurements have indicated insignificant concentrations are emitted to air via stack A2 (typically Cu, Pb and Zn combined at $<0.14\text{mg/m}^3$, Cd, Ni and As $<0.04\text{ mg/m}^3$) therefore the requirement for monitoring has been removed from the permit requirements after 30 June 2020.

BAT-AELs and monitoring requirements for secondary copper production

BAT Conclusion 37

We have amended the ELV for particulate matter to 5 mg/m^3 from 10 mg/m^3 this is in accordance with the BAT-AEL (upper limit). All channelled dust is collected and routed through the bag filter within the abatement system. (Emission point A2, Table S3.1b of the permit).

We have also removed the requirement for continuous monitoring of Particulate Matter. This has been removed to bring the monitoring requirements of the permit in line with the BAT requirements.

BAT Conclusion 45

We have included an ELV for particulate matter of 5 mg/m³ which is in accordance with the BAT requirements and BAT-AEL (upper limit). This replaces the current ELV of 10 mg/m³ for particulate matter arising from the copper melting furnaces (Emission point A2, Table S3.1b of the permit).

We have also removed the requirement for continuous monitoring of Particulate Matter. This has been removed to bring the monitoring requirements of the permit in line with the BAT requirements.

BAT Conclusion 46

We have included an ELV for Total Volatile Organic Carbon (TVOC) of 30 mg/m³ which is in accordance with the BAT requirements and BAT-AEL (upper limit). This replaces the current ELV of 50 mg/m³ for TVOC arising from the melting of secondary raw materials (Emission point A2, Table S3.1 of the permit.)

The terminology in Table S3.1 has been amended to reflect the acronym used for Total Volatile Organic Carbon within the BAT Conclusions.

BAT Conclusion 48

We have retained an ELV for Dioxins and Furans (PCDD/F) of 0.1ng I-TEQ/Nm³ which is in accordance with the BAT requirements and BAT-AEL arising from melting operations in secondary copper production (Emission points A2, Table S3.1b of the permit).

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(s) 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 / 61 Notice responses 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. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document.

Reference	Improvement Condition	Completion date
IC1	<p>The operator shall undertake a review of periodic monitoring for emissions to air of TVOC and PCDD/F from emission point A2. The review will be made with reference to BAT 10 of the BAT Conclusions for the Non-Ferrous Metals Industries (Commission Implementing Decision EU2016/1032) and shall justify, with appropriate evidence, the frequency of monitoring to be employed at the installation from 30 June 2020.</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 inter alia 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</p>	Within 12 months of effective date of notice V004

Reference	Improvement Condition	Completion date
	facilitate agreement in writing of the appropriate monitoring provision at the installation.	

The opportunity has been taken to delete completed improvement conditions in the consolidated permit.

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 our Regulation 60 notice the operator confirmed that they do not produce waste water from copper production. All primary cooling water is in a closed loop recirculating system which is periodically emptied using a registered waste carrier to be discharged at a suitable regulated facility. There are however discharges to public foul sewer from the secondary cooling system, and another discharge to surface water of site drainage. The operator has confirmed that both these discharges/the site drainage contains hazardous pollutants.

The discharge to public foul sewer is monitored and reporting indicates that the secondary cooling effluent contains insignificant quantities of hazardous pollutants.

The operator's assessment of site drainage showed that the all parameters except for copper and its compounds screened out as insignificant at Test 2. To perform tests 3 and 4 background concentrations of the relevant metals are required. The receiving watercourse (Darlaston Brook is a small watercourse with no monitoring data available. When accurate background concentrations are not available our guidance suggests using EQS/2 as an appropriate value. Doing so results in a failure of Test 3, this should result in passing the water quality modelling to stage 2. However the operator has stated that there is only a discharge to surface water when the interceptor fills to capacity when a pump automatically switches on to pump the settled effluent into the Brook. The pump runs for approximately 20 minutes until the tank is emptied. The concentration of copper in the effluent is typically about 50% of the permitted value and this concentration has a downward trend overtime suggesting there is less particulate copper being deposited around the site. Darlaston Brook discharges to the River Tame where the effluent will receive further dilution resulting in an insignificant increase in the copper concentration within the waterbody.

For the Phase 1 Part B test, i.e. the 'significant load test', cadmium and mercury required consideration as they are both Priority Hazardous Substances (PHS). Both Cadmium and mercury pass the significant load test

We have therefore concluded that the discharge of hazardous pollutants directly to surface water or via the foul sewer is not liable to cause pollution of the receiving environment. We therefore consider that the existing discharge is acceptable and no additional controls or emission limits are necessary on the varied permit.

Condition of Soil and Groundwater

We have reviewed the operator's response to the Regulation 60 Notice regarding the adequacy of their existing site report in fulfilling the requirements of a Site Condition Report for the purposes of IED. We have concluded that the existing report has been created and maintained by the operator to a satisfactory standard and providing the operator complies with the additional requirement for periodic monitoring, as contained within condition 3.1.3 of the Consolidated Variation Notice it will comply with the revised requirements under IED.

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	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 1.</p> <p>The operator's response confirms that the operator has an ISO14001 accredited Environmental Management System.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion subject to completion of the improvement plan.</p>	None
2	In order to use energy efficiently, BAT is to use a combination of the techniques given	1.2	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 2.</p> <p>During the site visit on 12 April 2018 the operator confirmed that in order to comply with BAT 2 the techniques currently used are</p> <ul style="list-style-type: none"> BAT 2I suitable insulation for high temperature equipment such as steam and hot water pipes 	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
					<ul style="list-style-type: none"> BAT 2n use high efficiency electric motors equipped with variable efficiency drive, for equipment such as fans. <p>It should be noted that a new real-time monitoring system has been installed on all the shaft furnace burners, this is capable of controlling a feedback response to control the fuel mixture (air and natural gas) to ensure the most efficient burn that maximises CO production to maintain a reducing atmosphere within the furnace. Use of this feedback control system has resulted in a saving of 17% on annual gas consumption.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	
3	In order to improve overall environmental performance, BAT is to ensure stable process operation by using a process control system together with a combination of the techniques given	1.3	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 3.</p> <p>During the site visit on 12 April 2018 the operator confirmed that the techniques currently used are</p> <ul style="list-style-type: none"> BAT 3a Inspect and select input materials according to the process 	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
					<p>and the abatement techniques applied.</p> <ul style="list-style-type: none"> • BAT 3b Good mixing of the feed materials to achieve optimum conversion efficiency and reduce emissions and rejects. • BAT 3c Feed weighing and metering systems. • BAT 3d Processors to control material feed rate, critical process parameters and conditions including the alarm, combustion conditions and gas additions. • BAT 3e On-line monitoring of the furnace temperature, furnace pressure and gas flow. • BAT 3f Monitor the critical process parameters of the air emission abatement plant such as gas temperature, reagent metering, pressure drop, ESP current and voltage, scrubbing liquid flow and pH and gaseous components (e.g. O₂, CO, VOC). • BAT 3h On-line monitoring of vibrations to detect blockages and possible equipment failure. 	

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
					<ul style="list-style-type: none"> BAT 3i On-line monitoring of the current, voltage and electrical contact temperatures in electrolytic processes. <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	
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)	3.1	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 4.</p> <p>The operator confirmed that they operate a maintenance management system which addresses the performance of the dust abatement system is part of their Environmental Management System.</p> <p>The operator confirms there are annual service checks by manufacture. Additionally bag house checks are carried out every 2 hours by cast team for con pressure, differential pressure, cooler temp, cleaner temp, and signed off.</p> <p>The Environment Agency is satisfied that the operator is compliant with the requirements of this BAT Conclusion.</p>	None.
5	In order to prevent or, where this is not practicable, to reduce diffuse	3.2	CC	CC	The operator has confirmed in their response that they are currently compliant	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
	emissions to air and water, BAT is to collect diffuse emissions as much as possible nearest to the source and treat them				<p>with BAT 5, as the raw materials are not dusty</p> <p>The site is compliant as determined by the following:</p> <ul style="list-style-type: none"> • They have an enclosed hood over the shaft furnace which uses negative pressure to draw fumes from the holding furnace, covered launders, tapping point and continuous casting machine. This was confirmed by Environment Agency during a site visit on 12 April 2018. • All emissions to air from site processes are collected and treated via the site bag plant and filter. • From the site visit on 12 April 2018 it was evident that the copper cathode, copper waffle and scrap copper delivered is predominantly dust free and that the housekeeping of the site is kept to a high standard. Other raw materials are delivered in sealed drums or bags and are stored inside the building and therefore 	

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					<p>would not be a source of diffuse emissions.</p> <ul style="list-style-type: none"> • Drosses and filter bag dust are stored under cover in appropriate containers prior to removal and further treatment off site • There are no process water emissions. All rainfall dependant site drainage from the external site areas of hardstanding, rooves and gutters is treated using an on-site interceptor to remove suspended solids oils and greases before it discharge to the Darlaston Brook <p>The Environment Agency is satisfied that the operator will meet the requirements of this BAT Conclusion.</p>	
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:	3.2	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 6</p> <p>The operator has demonstrated compliance with this BAT conclusion and has confirmed that the diffuse emission action plan has been incorporated into the sites EMS. The diffuse emissions action plan meets the following points:</p>	Review EMS document confirming clarification of an appropriate action plan

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	(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 reduce diffuse emissions over a given time frame.				<ul style="list-style-type: none"> • Identify the most relevant diffuse emissions source (using eg. EN15445). • Define and implement appropriate actions and techniques to prevent or reduce diffuse emissions over a given timeframe. To ensure compliance with this BAT conclusion the operator environment agency has incorporated Improvement Condition 2 (IC) to the permit. <p>The Environment Agency is satisfied that pending completion of IC2, the operator will be compliant by 30 June 2020.</p>	
7	In order to prevent diffuse emissions from the storage of raw materials, BAT is to use a combination of the techniques given	3.2	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 7.</p> <p>The operator has confirmed the range of BAT 7 techniques that they use are:</p> <ul style="list-style-type: none"> • BAT 7k Design storage areas so that <ul style="list-style-type: none"> ➢ any leaks from tanks and delivery systems are intercepted and contained in bunds that have a capacity capable of containing at least 	None

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					<p>the volume of the largest storage tank within the bund;</p> <ul style="list-style-type: none"> ➤ delivery points are within the bund to collect any spilled material • BAT 7n Regular cleaning of the storage area • BAT 7r Use oil and solid interceptors for the drainage of open outdoor storage areas. Use of concreted areas that have kerbs or other containment devices for the storage of material that can release oil, such as swarf <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion</p>	
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	3.2	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 8.</p> <p>The operator has confirmed the range of BAT 8 techniques that they use are:</p> <ul style="list-style-type: none"> • BAT 8g Minimise transport distances • BAT 8h Reduce the drop height of conveyor belts, mechanical shovels or grabs 	None

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					<ul style="list-style-type: none"> • BAT 8o Use planned campaigns for road sweeping • BAT 8q Minimise material transfers between processes <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion</p>	
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	CC	<p>The operator has stated that this BAT Conclusion is not applicable to this site as no off-gases are produced when using a shaft furnace, all combustion gasses are used to heat furnace load. All emissions discharged via a single stack</p> <p>The Environment Agency disagrees with this assessment of not applicable as off-gases includes emissions from the melting process as well as combustion gases. However the operator has confirmed the following techniques apply</p> <ul style="list-style-type: none"> • BAT 9c Use a secondary hood for furnace operations such as charging and tapping • BAT 9i Treat the collected emissions in an adequate abatement system. <p>Therefore the Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion</p>	None

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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	3.1 3.5	CC	FC	<p>The operator has stated in their responses that they are currently compliant with BAT 10.</p> <p>However the Environment Agency requires further information from the operator in order to determine the appropriate level of monitoring provision to be employed at the site from 30 June 2020. We have included Improvement Condition IC3 in order to obtain this information and to subsequently agree with the operator the BAT requirements for the site. We describe this aspect of our review in more detail within the Key Issues section of this decision document.</p> <p>The Environment Agency is unable to agree that the operator is currently compliant with the monitoring requirements of BAT 10, but we are satisfied that pending completion of IC3, the operator will be compliant by 30 June 2020.</p>	Confirm future compliance via IC1.

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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 has indicated that this BAT conclusion is not applicable. The operator has confirmed that there is no mercury in the copper scrap that they use as a raw material. Based on the above information provided by the operator the Environment Agency has determined that this BAT Conclusion is not applicable and therefore the operator is not expected to meet the Narrative or BAT-AEL aspects of the BAT conclusion.	None
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 has confirmed in their response that they do not accept raw materials on to site that contain sulphur. As sulphur or sulphur containing raw materials are not being added to the process the Environment Agency has determined that this BAT conclusion is not applicable.	None
13	In order to prevent NO _x emissions to air from a pyrometallurgical process, BAT is to use one of the techniques given	3.1	CC	NA	The Environment Agency has determined that this BAT Conclusion is not applicable to this installation. This is because the site does not use pyrometallurgical processes, which are typically a component of primary metal production. The site produce a secondary copper product using using a	None

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					<p>shaft furnace specifically designed to burn a rich gas to air mix resulting in the incomplete combustion producing carbon monoxide. This maintains a low oxygen atmosphere, essential for the production of low-oxygen copper suitable for extrusion. This reducing atmosphere means that oxides of nitrogen are not produced. Levels of CO are monitored and the burn adjusted to maintain the levels of CO in the flue gases.</p> <p>Therefore this BATc not applicable to the production of secondary copper at this site.</p>	
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	<p>The operator has confirmed in their response that they are currently compliant with BAT 14</p> <p>The casting plant uses the following BAT technique.</p> <ul style="list-style-type: none"> • BAT 14f Use a closed circuit cooling system. <p>This cooling water is the only water used on site as the permitted activity uses no process water. The furnaces detailed under Activity 2.2 A(1)(b) are run dry, any water present would lead to a risk of explosion.</p>	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	N/A	NA	NA	The Environment Agency has determined that this BAT Conclusion is not applicable for the melting process detailed under Activity 2.2 A(1)(b) as there is no process waste water generated to keep segregated from site drainage.	None
16	<p>BAT is to use ISO 5667 for water sampling and to monitor the emissions to water at the point where the 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.</p> <p>The monitoring frequency may be adapted if the data series clearly demonstrate sufficient stability of the emissions</p>	N/A	CC	NA	<p>The operator has stated in their responses that they are currently compliant with BAT 16.</p> <p>The Environment Agency has determined that this BAT Conclusion is not applicable for the melting process detailed under Activity 2.2 A(1)(b) as there is no water used in the process.</p>	None

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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	N/A	CC	NA	<p>The Environment Agency has determined that this BAT Conclusion is not applicable for installations which only discharge wastewater to sewer.</p> <p>The BAT-AELs for BAT 17 relate to direct emissions to receiving waters (as opposed to indirect emissions made via the foul sewer).</p> <p>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. The Environment Agency has determined that this BAT Conclusion is not applicable for the melting process detailed under Activity 2.2 A(1)(b) as there is no generation of waste process water.</p>	None
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 use the following technique to achieve BAT:	None

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					<ul style="list-style-type: none"> BAT 18b Enclose noisy plant or components in sound-absorbing structures <p>All noisy equipment is housed within buildings and roller doors are only opened when necessary.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	
19	In order to reduce odour emissions, BAT is to use one or a combination of the techniques given	3.3	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 19. They use one of the techniques given to achieve BAT:</p> <ul style="list-style-type: none"> BAT 19b: Minimise the use of odorous materials. <p>The operator has confirmed that small quantities of dross are produced and although drosses from copper production are not particularly odorous they are stored undercover.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	None
BAT 20-54: Copper production						
20	In order to increase the secondary materials' recovery yield from scrap,	NA	NA	NA	The Environment agency agrees that this BAT conclusion is NA as all scrap copper is	None

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	BAT is to separate non- metallic constituents and metals other than copper by using one or a combination of the techniques given				pre-sorted by the waste provider and is only accepted if it meets the agreed criteria.	
21	In order to use energy efficiently in primary copper production, BAT is to use one or a combination of the techniques given	NA	NA	NA	BAT 21 is not applicable as it only applies to primary copper production, which does not take place at the site.	None
22	In order to use energy efficiently in secondary copper production, BAT is to use one or a combination of the techniques given	1.2	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 22.</p> <p>The operator meets the requirement of this BAT conclusion by using</p> <ul style="list-style-type: none"> • BAT 22e Preheat the furnace charge using the hot process gases from the melting stages <p>This is achieved by preheating of the furnace charge which is intrinsic to the shaft furnace melting process. The raw material is loaded into the furnace at the top of the shaft. The heat and emissions from the melting process are drawn up through the furnace charge in the shaft to the extractive ventilation and ultimately the abatement system.</p>	None

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					The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion	
23	In order to use energy efficiently in electrorefining and electrowinning operations, BAT is to use a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no electrorefining and electrowinning operations performed at the site.	None
24	In order to reduce secondary emissions to air from furnaces and auxiliary devices in primary copper production and to optimise the performance of the abatement system, BAT is to collect, mix and treat secondary emissions in a centralised off-gas cleaning system	NA	NA	NA	BAT 24 is not applicable as it only applies to primary copper production which does not take place at the site.	None
25	In order to prevent or reduce diffuse emissions from pretreatment (such as blending, drying, mixing, homogenisation, screening and pelletisation) of primary and secondary materials, BAT is to use one or a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no pretreatment secondary materials performed at the site.	None
26	In order to prevent or reduce diffuse emissions from charging, smelting and tapping operations in primary and	3.2	NA	CC	The operator has stated in their response that this BAT conclusion is not applicable.	None

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	secondary copper smelters and from holding and melting furnaces, BAT is to use a combination of the techniques given				<p>The Environment Agency disagrees with this decision as the site operates both holding and melting furnaces with in their process. During the site visit on 12 April 2018 the Environment Agency determined that this BAT does apply as charging and tapping operations take place at the melting and holding furnaces.</p> <p>The site is compliant as it employs the following techniques.</p> <ul style="list-style-type: none"> • BAT 26d capture hood/enclosures at charging and tapping points in combination with an off-gas abatement system • BAT 26g Hold the temperature in the furnace at the lowest required level • BAT 26i enclosed building in combination with other techniques to collect diffuse emissions • BAT 26k Select and feed the raw materials according to the type of furnace and abatement techniques used. <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	

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27	In order to reduce diffuse emissions from Peirce-Smith converter (PS) furnace in primary and secondary copper production, BAT is to use a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not have a Peirce-Smith converter furnace at the site.	None
28	In order to reduce diffuse emissions from a Hoboken converter furnace in primary copper production, BAT is to use a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not have a Hoboken converter furnace at the site.	None
29	In order to reduce diffuse emissions from the matte conversion process, BAT is to use a flash converting furnace	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not perform the matte conversion process at the site.	None
30	In order to reduce diffuse emissions from a top-blown rotary converter (TBRC) furnace in secondary copper production, BAT is to use a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no top-blown rotary converter furnace at the site.	None
31	In order to reduce diffuse emissions from copper recovery with a slag concentrator, BAT is to use the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no copper recovery with a slag concentrator at the site.	None
32	In order to reduce diffuse emissions from copper-rich slag furnace	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not	None

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	treatment, BAT is to use a combination of the techniques given				applicable as there is no copper-rich slag furnace processing at the site.	
33	In order to reduce diffuse emissions from anode casting in primary and secondary copper production, BAT is to use one or a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no anode casting performed at the site.	None
34	In order to reduce diffuse emissions from electrolysis cells, BAT is to use one or a combination of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there are no electrolysis cells at the site.	None
35	In order to reduce diffuse emissions from the casting of copper alloys, BAT is to use one or a combination of the techniques given	NA	NA	NA	The operator has stated in their response that this BAT is not applicable as they do not cast copper alloys. Whilst this is technically correct and the BAT does not apply to the site. It is worth noting that the intent on this BAT conclusion is to reduce the diffuse emissions from the casting process. The operator's process despite not strictly needing to does meet the BAT requirements and achieves this by employing a negative pressure collection system,. The extraction system draws all particulates and fume from the launders, holding furnace and continuous casting	None

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					system up through the main stack and subsequently through a bag filter.	
36	In order to reduce diffuse emissions from non-acid and acid pickling, BAT is to use one of the techniques given	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as there is no non-acid or acid pickling performed at the site.	None
37	In order to reduce dust and metal emissions to air from the reception, storage, handling, transport, metering, mixing, blending, crushing, drying, cutting and screening of raw materials, and the pyrolytic treatment of copper turnings in primary and secondary copper production, BAT is to use a bag filter. BAT-AEL for Dust	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 37. From the Environment Agency site visit on 12 April 2018 it was evident that <ul style="list-style-type: none"> • the scrap copper is delivered and stored outside and was dust free and that the site had been recently swept (confirmed during the site visit on 12 April 2018 as weekly by the operator) • Swarf is not dusty as it is wetted with a water/oil mix from lubrication during cutting of billets. This swarf is stored in in small skips in an enclosed building prior to moving to the furnace. No metering, mixing, blending, crushing, or cutting of raw materials is undertaken on the site.	None

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					<p>Based on the above descriptions the the Environment Agency considers the risk of dust emissions from the; reception, storage, handling, transport, metering, mixing, blending, crushing, drying, cutting and screening of raw materials as inherently low. The Environment Agency considers it unnecessary to have an abatement system and bag filter to collect and channel dust emissions from these sources.</p> <p>Based on the above the Environment Agency has determined that this BAT conclusion is not applicable to the site.</p>	
38	In order to reduce dust and metal emissions to air from concentrate drying in primary copper production, BAT is to use a bag filter	NA	NA	NA	BAT 38 is not applicable as it only applies to primary copper production, which does not take place at the site.	None
39	In order to reduce dust and metal emissions to air (other than those that are routed to the sulphuric acid or liquid SO 2 plant or power plant) from the primary copper smelter and converter, BAT is to use a bag filter and/or a wet scrubber	NA	NA	NA	BAT 39 is not applicable as it only applies to primary copper production, which does not take place at the site.	None

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40	In order to reduce dust and metal emissions to air (other than those that are routed to the sulphuric acid plant) from the secondary copper smelter and converter and from the processing of secondary copper intermediates, BAT is to use a bag filter BAT-AEL for Dust	NA	CC	NA	The operator states that they are currently compliant with BAT 40 however the Environment Agency considers this BAT conclusion to be not applicable as the site does not process secondary copper intermediates in a secondary smelter and converter	
41	In order to reduce dust and metal emissions to air from the secondary copper holding furnace, BAT is to use a bag filter BAT-AEL for Dust	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 41. The holding furnace is served by an extraction unit leading to the abatement system and integral bag filter, as per BAT 26 The current limit for particulates is 10mg/Nm ³ , the revised BAT-AEL is ≤5mg/Nm ³ which will come into force on 30 th June 2020 The Environment Agency is satisfied that the operator will meet the requirements of this BAT Conclusion.	None
42	In order to reduce dust and metal emissions to air from copper-rich slag furnace processing, BAT is to use a	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion and the associated BAT -AEL is not applicable as	None

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	bag filter or a scrubber in combination with an ESP BAT-AEL for Dust				there is no copper-rich slag furnace processing at the site.	
43	In order to reduce dust and metal emissions to air from the anode furnace in primary and secondary copper production, BAT is to use a bag filter or a scrubber in combination with an ESP BAT-AEL for Dust	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion and the associated BAT -AEL is not applicable as they do not have an anode furnace at the site.	None
44	In order to reduce dust and metal emissions to air from anode casting in primary and secondary copper production, BAT is to use a bag filter or, in the case of off-gases with a water content close to the dew point, a wet scrubber or a demister BAT-AEL for Dust	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion and the associated BAT -AEL is not applicable as they do not perform anode casting at the site.	None
45	In order to reduce dust and metal emissions to air from a copper melting furnace, BAT is to select and feed the raw materials according to the furnace type and the abatement system used and to use a bag filter BAT-AEL for Dust	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 45. <ul style="list-style-type: none"> • During the Environment Agency site visit on 12th April 2018 it was observed and the operator confirmed that the shaft furnace is covered by an extraction hood 	None

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					<p>leading to the abatement system and integral bag filter.</p> <p>The sites raw materials are uncontaminated on the most part with the scrap possibly having small organic contamination. Which will be abated through the use of adsorbent injection within the bag filter.</p> <p>The shaft furnace and the abatement (bag plant with lime injection) are appropriate to this kind of raw material. The bag plant being able to prevent emissions of particulate matter and the lime injection being able to help collect the potential organic releases.</p> <p>The current limit for particulates is 10mg/Nm³, the revised BAT-AEL is 5mg/Nm³ which will come into force on 30 June 2020.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	
46	In order to reduce organic compound emissions to air from the pyrolytic treatment of copper turnings, and the drying, smelting and melting of secondary raw materials, BAT is to use one of the techniques given	3.1	NA	CC	<p>The operator states that this BAT conclusion is not applicable to this site as the activity is not conducted at the site.</p> <p>The Environment Agency disagrees as the site undertakes melting of secondary materials. It is also evident that some of</p>	Review emissions data to confirm levels

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	BAT-AEL for TVOC				<p>the scrap copper is contaminated with oil, a potential source of VOCs. Although the shaft furnace operates at a temperature in excess of 1000°C the charge is heated from ambient temperature where volatilisation of organic compounds may occur.</p> <p>From the site visit on 12 April 2018 it was evident that the following technique is employed</p> <ul style="list-style-type: none"> • BAT 46b Injection of adsorbents in combination with a bag filter <p>The Environment Agency is satisfied that the operator will continue meet the requirements of this BAT Conclusion.</p>	
47	In order to reduce organic compound emissions to air from solvent extraction in hydrometallurgical copper production, BAT is to use both of the techniques given and to determine the VOC emissions annually, e.g. through mass balance	NA	NA	NA	The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not carry out solvent extraction at the site.	None
48	In order to reduce PCDD/F emissions to air from the pyrolytic treatment of copper turnings, smelting, melting, fire refining and converting operations in secondary copper production, BAT is	3.1	CC	CC	The operator has confirmed in their response that they are currently compliant with BAT 48	None

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	to use one or a combination of the techniques given BAT-AEL for PCDD/F				<p>During the Environment Agency site visit on 12 April 2018 it was evident that the following technique is employed:</p> <ul style="list-style-type: none"> • BAT 48a select and feed the raw materials according to the furnace and abatement techniques used • BAT 48b Optimise combustion conditions to reduce the emissions of organic compounds • BAT 48h Avoid exhaust systems with a high dust build-up for temperatures >250°C • BAT 48j Injection of absorption agent in combination with an efficient dust collection system <p>The Environment Agency recognises the use of an appropriate abatement system meets the BAT conclusion. Historically dioxin levels have been high (above the previous limit of 0.5ng/Nm³). A new abatement system has been installed and the limit revised down to 0.1ng/Nm³. An additional recirculating activated carbon filter system has also been installed</p>	

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					<p>This BAT conclusion has an associated BAT-AEL of $\leq 0.1 \text{ ng I-TEQ/Nm}^3$ which the site is expected to meet.</p> <p>The Environment Agency are satisfied that the operator meets the requirements of this BAT Conclusion and BAT-AEL.</p>	
49	<p>In order to reduce SO₂ emissions (other than those that are routed to the sulphuric acid or liquid SO₂ plant or power plant) from primary and secondary copper production, BAT is to use one or a combination of the techniques given</p> <p>BAT-AEL for SO₂ (for secondary copper production)</p>	NA	NA	NA	<p>The operator has confirmed in their response to BAT 12 that their raw materials do not contain sulphur.</p> <p>As there is no sulphur added to the process the Environment Agency consider this BAT AEL not applicable to this site's operations.</p>	None
50	<p>In order to reduce acid gas emissions to air from exhaust gases from the electrowinning cells, the electrorefining cells, the washing chamber of the cathode stripping machine and the anode scrap washing machine, BAT is to use a wet scrubber or a demister</p>	NA	NA	NA	<p>The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not have any electrowinning cells or electrorefining cells at the site.</p>	None
51	<p>In order to prevent soil and groundwater contamination from copper recovery in the slag concentrator, BAT is to use a drainage</p>	NA	NA	NA	<p>The operator has confirmed in their response that this BAT Conclusion is not applicable as they do not recover copper in a slag concentrator at the site.</p>	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
	system in cooling areas and a correct design of the final slag storage area to collect overflow water and avoid fluid leakage					
52	In order to prevent soil and groundwater contamination from the electrolysis in primary and secondary copper production, BAT is to use a combination of the techniques given	NA	CC	NA	<p>The operator has stated in their response that they are currently compliant with BAT 52 by using the following technique.</p> <ul style="list-style-type: none"> • BAT 52a Use of a sealed drainage system <p>However the Environment Agency has decided that this BAT conclusion is not applicable as the operator does not carry out electrolysis at the site.</p>	None
53	In order to prevent the generation of waste water from primary and secondary copper production, BAT is to use one or a combination of the techniques given	NA	CC	NA	<p>The operator has stated in their response that they meet the requirements of BAT 53. Discussions during the Environment Agency site visit on 12th April 2018 confirmed that there is no water usage from the sites secondary copper production. The operators confirmed there is no waste water production associated with Activity 2.2 A(1)(b). As no water is used none of the techniques listed under BAT 53 are applicable to the site process.</p>	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
					The Environment Agency is satisfied that this BAT conclusion is not applicable to this activity	
54	In order to reduce the quantities of waste sent for disposal from primary and secondary copper production, BAT is to organise operations so as to facilitate process residues reuse or, failing that, process residues recycling, including by using one or a combination of the techniques given	1.4	CC	CC	<p>The operator has confirmed in their response that they are currently compliant with BAT 54 by operating the site to allow the following technique to be used:</p> <ul style="list-style-type: none"> • BAT 54a Recover metals from the dust coming from the abatement system <p>The operator confirmed during the Environment Agency site visit on 12th April 2018 that this process is carried out by an external contractor.</p> <p>The Environment Agency is satisfied that the operator meets the requirements of this BAT Conclusion.</p>	None