Environment Agency

Review of an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2010 (as amended)

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

The Permit number is: EPR/FP3536ZC
The Operator is: BPB United Kingdom Limited
The Installation: Saint-Gobain Isover, Whitehouse Industrial Estate, Runcorn.
This Variation number is: EPR/EP3536ZC/V003

Consultation: No consultation is required for a standard variation.

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 of updated decisions on BAT conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the Glass industry sector published on 8th March 2014 and other relevant BAT Conclusions published prior to this date. This is our decision document, which explains the reasoning for the consolidated variation notice that we are issuing.

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 ('BAT Conclusions') for manufacture of Glass as detailed in document reference 2012/134/EU. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

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.

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 philosophy and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have disappeared 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 2 – Review and assessment of derogation request(s) made by the operator in relation to BAT Conclusions which include an associated emission level (AEL) value.
6. Annex 3 – Improvement Conditions
7. Annex 4 – Consultation responses

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.

We consider that, in reaching that 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 condition 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 20th December 2013 requiring the Operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the relevant BAT Conclusions document.
The Notice also required that where the revised standards are not currently met, the operator should provide information that

- Describes the techniques that will be implemented before 08/03/2016, which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 08/03/16, 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 requested 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 30th May 2014.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. We therefore issued a further information request to the Operator. Suitable further information was provided by the Operator on 28th November 2014, 18th December 2014 and 12th January 2015.

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 other than for those techniques and requirements described in BAT Conclusion 1.1.4 (11). In relation to this/these BAT Conclusions, we do not fully agree with the operator in respect to their current stated capability as recorded in their Regulation 60 Notice response. We have therefore included Improvement Condition 9.16 in the Consolidated Variation Notice, which requires them to upgrade their operational techniques so that the requirements of the BAT Conclusion are delivered.

2.3 Requests for Further Information

In addition to the response to our further information request, we received additional information during the determination from the operator by e-mail on the 28th November 2014, 18th December 2014 and 12th January 2015. We made a copy of this information available to the public in the same way as the response to our information request.

3 The legal framework

The Consolidated Variation Notice will be issued under Regulation 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: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Manufacturing of Glass, were published by the European Commission on 8th March *2012*. There are 76 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.

All BAT Conclusions arising are listed by number in order below.

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
General BAT			
1	BAT is to implement and adhere to an environmental management system (EMS).	Accredited EMS system in place ISO14001 (EMS 551706)	CC
2	BAT is to reduce the specific energy consumption by using one or a combination of techniques	The response addresses process optimisation, regular maintenance (ISO 14001 – preventative maintenance), optimising furnace design (new furnace every 7 years), combustion control techniques (N/A), increased cullet levels (reuse), waste heat recovery and pre-heating. The operator has an electrically charged furnace and utilise a high level of cullet in their process (>85%).	CC
3	BAT is to prevent, or where that is not practicable, to reduce diffuse dust emissions from the storage and handling of solid materials by using one or a combination techniques:	BPB have adequately addressed the storage of bulk materials (fabric filters), fine particulate material (sealed bags), dusty materials (sealed bags and enclosed silos), and damping down techniques (road sweeper) in their submission. It also details handling techniques including the use of enclosed conveyers, particulate abatement filters(silos), moistening	CC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
		batches(N/A), negative pressure within furnace, decrepitation (raw materials are selected to reduce/eliminate decrepitation), filter for small lot handling, enclosed screw feeds, and enclosed feed pockets(N/A).	
4	BAT is to prevent, or where that is not practicable, to reduce diffuse gaseous emissions from the storage and handling of volatile raw materials by using one or a combination of techniques:	The response addresses the use of low solar absorbency paint (N/A), storage temperature control, tank insulation for storing Volatile Organic Compounds (VOCs), inventory management, floating roof tanks (N/A), vapour return transfer systems, bladder roof tanks (N/A), pressure/vacuum valves to equalise pressure (cartridge filter), application of absorption/adsorption/ condensation to storing materials (N/A) and subsurface filling to reduce foaming (N/A).	CC
5	BAT is to reduce energy consumption and emissions to air by carrying out a constant monitoring of the operational parameters and a programmed maintenance of the melting furnace.	Electric furnace - BAT is achieved by a series of monitoring and maintenance operations used to minimise the ageing effect of the furnace. By sealing the furnace and burner blocks, keeping maximum insulation, and keeping the melting conditions stabilised (SCADA System)	CC
6	BAT is to carry out a careful selection and control of all substances and raw materials entering the melting furnace in order to reduce or prevent emissions to air by using one or a combination of techniques.	Ongoing testing of glass production and raw materials at UKAS laboratory on a weekly basis (batch), cullet suppliers (quarterly) and raw materials (annually). The process uses recycled cullet which will reduce emissions compared with using virgin raw materials.	CC
7	BAT is to carry out monitoring of emissions and/or other relevant process parameters on a regular basis.	Operational parameters are continually monitored for air flow and electrical current and raw material loading rate. Furnace temperature and CEMS data via SCADA linked system.	FC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
		This is in addition to half yearly/continuous MCERTS monitoring as required by the permit. For other release points included in the permit, half yearly or yearly monitoring is undertaken as required by the permit. The site does not use SCR/SNCR to reduce NOx emissions and uses an electrically heated furnace. The site monitors Hydrogen Chloride (HCl), and the operator expects to meet Hydrogen Fluoride (HF) and metals limits by 2016. Carbon Monoxide (CO) monitoring is not required as the furnace is electrically heated. The functioning of the NAIRB is monitored by the SCADA system which measures fan amplitude, temperature, differential pressure and dust collector dust emissions	
8	BAT is to operate the waste gas treatment systems during normal operating conditions at optimal capacity and availability in order to prevent or reduce emissions	NAIRB filter on furnace - other releases are controlled with sprays in ducting. Maintenance procedures and permit conditions are in place to control emissions during by-pass and record results in EMS.	CC
9	BAT is to limit carbon monoxide (CO) emissions from the melting furnace, when applying primary techniques or chemical reduction by fuel, for the reduction of NOX emissions	The site uses an electrically charged furnace and therefore NOx emissions are only from raw material and waste cullet. As no fuel is consumed and therefore a carbon monoxide (CO) limit is not applicable.	CC
10	BAT is to limit ammonia (NH 3) emissions, when applying selective catalytic reduction (SCR) or selective non- catalytic reduction	No SCR/SNCR. Ammonia BAT-AEL for furnace is not applicable.	N/A

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
	(SNCR) techniques for a high efficiency NOX emissions reduction		
11	BAT is to reduce boron emissions from the melting furnace, when boron compounds are used in the batch formulation, by using one or a combination of techniques	Monitoring for Boron in gaseous and solid form to be included in the permit. NAIRB dust abatement system operates between 55-90^{O}C which should remove majority of Boron species (ref BAT conclusion) –we expect the site to comply by 2016 without the need for further abatement such as wet or dry scrubbing. See improvement condition IC16.	FC
12	BAT is to reduce water consumption by using one or a combination of techniques	Closed loop system utilising homogenisers / filter and cooling towers. Closed loop system in operation with up to 45m^3/day sent to sewer. Company has adopted a zero Effluent Policy. Cooling water reprocessed through cooling towers. Minimise spillage and leaks (ISO 14001 procedures) Fibrous waste is sent for landfill.	CC
13	BAT is to reduce the emission load of pollutants in the waste water discharges by using one or a combination of waste water treatment systems	Water is reprocessed by physical process (filtration / homogenisation) on site and re-used in internal waste water system. Settlement pit and surge pond plus surface skimmer to remove oil residues. The site has consent to discharge up to 45m^3 /day. Surface water - process water is discharged to sewer not surface water and therefore BAT-AEL limits do not apply. W1 – surface water emission – no emission to water from	CC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
		permitted installation except in a concentration which is no greater than the background concentration.	
14	BAT is to reduce the production of solid waste to be disposed of by using one or a combination of techniques	Edge trim is ground by hammer mills and then recycled by being fed back into forming oven. Other dry waste is bailed and sold as a raw material for use in ceiling tiles. Silos and screw feeds are enclosed to reduce losses. 11,887 tonnes of internal cullet was recycled in 2013 and dust from NAIRB filtration system is recycled back into the batch composition. Sludge control to landfill or waste disposal. Valorisation has been explored by the operator but not viable due to contamination and unpredicted quality issues.	CC
15	BAT is to reduce noise emissions by using one or a combination of techniques	Assessment undertaken annually as required by the Control of Noise at work regulations 2005. New equipment will not increase noise emissions beyond existing background levels. As a result of a noise survey a new compressor house has been commissioned. Individual pieces of equipment are enclosed such as conveyor motor, forming fans, blowing wool granulator. Planning restrictions have been transposed into Permit conditions that restrict deliveries between 0800 and 1800hrs and residential properties are screened with a line of trees and bushes. Such specifications will not be detailed within the revised noise condition but remain required as “appropriate	CC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
		measures" for the site which is specified within the noise condition.	
BAT Conclusions for container glass manufacturing – not applicable (16-23)			N/A
BAT Conclusions for flat glass manufacturing – not applicable (24 – 31)			N/A
BAT Conclusions for continuous filament glass manufacturing – not applicable (32 – 37)			N/A
BAT Conclusions for domestic glass manufacturing – not applicable (38 – 47)			N/A
BAT Conclusions for special glass manufacturing – not applicable (48 – 55)			N/A
BAT Conclusions for mineral wool manufacturing			
56	BAT is to reduce dust emissions from the waste gases of the melting furnace by applying an electrostatic precipitator or a bag filter system	The site's bag filter has an emission limit value of 15mg/m^3 daily average. Periodic test results (MCERTS) from 2013 were recorded as 1.5 mg/m^3 and 2.6mg/m^3 which demonstrates that they should meet new BAT-AEL of 20mg/m^3	CC
57	BAT is to reduce NOX emissions from the melting furnace by using one or a combination of the following technique	Periodic monitoring demonstrates emissions are significantly under the permit emission limit value 700mg/m^3 (and IED limit of 500 mg/m^3). Monitoring results from 2013 (MCERTS) were recorded as 138mg/m^3 and 167mg/m^3	CC (see below 58)
58	When nitrates are used in the batch formulation for glass wool production, BAT is to reduce NOX emissions by using one or a combination of techniques:	The level of Nitrates added to each batch formulation is based on the quantity of organic impurities present in each batch of external cullet. Each batch is tested prior to processing. As BPB use nitrates in their formulation the BAT-AEL is 700 mg/m^3. This limit is the same as that set in their permit FP3536ZC/V002. Monitoring results from 2013 (MCERTS) were recorded as 138mg/m^3 and 167mg/m^3.	CC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
59	BAT is to reduce SOX emissions from the melting furnace by using one or a combination of techniques	BPB operate within the BAT-AEL of 50 mg/m^3 (lower limit for electric furnaces) and have an emission limit value of 20 mg/m^3 in their permit. Their test result (MCERT) for 2014 was 0.39mg/m^3 BPB operate a control procedure on external cullet which optimises redox (sulphur) balance.	CC
60	BAT is to reduce HCl and HF emissions from the melting furnace by using one or a combination of techniques	Latest monitoring for Hydrogen Chloride (HCl) found a concentration of 0.48mg/m^3 and for hydrogen Fluoride (HF) the content of the cullet has historically been zero. HF stack emissions to be monitored from 2014 onwards.	FC
61	BAT is to reduce H_2S emissions from the melting furnace by applying a waste gas incineration system to oxidise hydrogen sulphide to SO2	Only applies to Cupola Furnaces	NA
62	BAT is to reduce metal emissions from the melting furnace by using one or a combination of the following techniques:	Not monitored at present but will commence monitoring from 2014. Magnets on weight feeders to remove any iron prior to entering the furnace. If necessary changes in raw material selection may reduce metals content.	FC
63	BAT is to reduce emissions from downstream processes by using one or a combination of techniques	VOC emissions from gas fired oven are greater than the AEL and further work is required to confirm this however it is anticipated that they will meet the BAT-AEL limit of 10 mg/m^3 limit by 2016. Part of the anticipated improvement will be due to the introduction of a new binder system. (R225) which will	FC

BAT Conclusion No	Summary of BAT Conclusion requirement	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement	Status NA/ C / FC / NC
		be more environmentally friendly and have lower emissions than the PF resin binder (R232). . Monitoring results from 2013 indicate that site will meet all BAT-AEL. Amine test will be added to protocol post 2014. Ammonia BAT-AEL (oven) reduced to 60 mg/m^3 from 100 mg/m^3 - latest monitoring results (MCERTS 36mg/m^3) show that the site will be compliant. The operator will collect additional monitoring data following introduction of the new binder system. The VOC emissions from the curing oven will be reduced from 30 mg/m3 to 10 mg/m however the last MCERTS periodic monitoring result showed a VOC concentration of 8.1 mg/m3 and therefore the site expect to be complaint with the new limit by 2016.	
BAT Conclusions for high temperature insulation wool (HTIW) manufacturing – not applicable (64 – 70)			N/A
BAT Conclusions for Frits manufacturing – not applicable (71 – 76)			N/A

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

Key Issues

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

2) No testing requirement has been included for Amine emissions from the curing ovens as the site is in the process of moving to a new binder system that does not use a phenol formaldehyde resin / amine binder. The new formulation and trials introduced by variation FP3536ZC/V002 will produce an improved product with a lower environmental impact. The limits already in place for Phenol and Formaldehyde are considered sufficient until the formulation change is complete.

3) BPB use a high level of recycled cullet in their formulation and operate an electric furnace which is BAT for the sector. As their SOx emission limit is lower than BAT-AEL no continuous monitoring requirement has been imposed by this variation.

4) The following conditions have been added to the operating techniques and a definition for "abnormal operations" included in the definitions. These update the conditions 2.3.3 and 2.3.4 in the permit BM0419IK/A001into the modern template style.

> *2.3.4 During a period of "abnormal operation" relating to the bag filter, the furnace shall be operated on the minimum practicable throughput where the "abnormal operation" exceeds 36 hours in any one year or any single by-pass event is longer than 12 hours.*
>
> *2.3.5 During maintenance periods of the bag filter the operator shall notify the Environment Agency at least 48hrs prior to by-pass operation, or in the case of an emergency immediately.*

These conditions have been transposed from the IPC /IPPC permit. Emissions may arise from the emergency stack (when the Bag Filter is on by-pass) but will be infrequent in occurrence and therefore their cumulative effect may be minimal however in order to quantify the environmental impact IC15 has been included.

5) Condition 2.3.2 in the original permit relating to emissions being free from visible smoke will be considered as an "appropriate measure" for this site and therefore will be included as part of the operational techniques in the consolidated permit. This is in line with modern permit style and does not reduce the requirement under this permit condition.

6) The Emission and Monitoring table (table S3.1 in Schedule 3) has been changed to show the new emission limits transposed from the IED BAT conclusions document which will apply from 8/3/2016.

7) BAT Conclusion 2 - Reporting form Air1 was part of the original permit however the form Energy 1 has also been added to the reporting requirements as glass is a

high energy intensive industry and the reporting form is required to demonstrate compliance with the narrative BAT on Energy Efficiency.

8) BAT Conclusion 12 - Reporting form Air1 was part of the original permit however the form Water Usage 1 has also been added to the reporting requirements as glass is a high water intensive industry and the reporting form is required to demonstrate compliance with the narrative BAT on Water consumption.

9) BAT Conclusion 13 - Reporting form Air1 was part of the original permit however the form Sewer 1 has also been added to the reporting requirements as glass is a high water intensive industry and the reporting form is required to demonstrate compliance with the narrative BAT on Water waste treatments.

10) The requirement to undertake both periodic monitoring and continuous monitoring for the same parameters (as check monitoring) will be replaced with continuous monitoring requirements. This is possible because modern certification standards for CEMs include measurement calibration and thus do not need to repeat periodic measurements for calibration. The following notes will be added to the test method:-

- Continuous Emission Monitoring systems shall be quality assured using the following general principles in BS EN 14181: functional tests with traceable gases or surrogates, and verification with parallel tests using a standard reference method.

11) BAT Conclusion 11- In order to comply with this BAT Conclusion an improvement condition (IC16) has been added to measure the concentration of both gaseous and solid forms of Boron in the flue gases with a view to determining effective removal technique for these species. Performance 1 has also been modified to report/record Boron emissions each year.

12) The limit of specified activity “Manufactured products shall not have a binder content of greater than 7% by weight” in table S1.1 has been removed for consistency between glass sector permits, the binder type has changed from R232 to R225 resin and the emissions are addressed in the monitoring part of the permit.

14) BAT Conclusion 58 – As BPB use nitrates in their formulation the NOx BAT-AEL (expressed and Nitrogen Dioxide) has been set at 700mg/m^3.

15) The BREF includes BAT-AELs for a range of metals (ref BAT 53 and 54) however BPB have provided recent analysis to show that their emissions are lower than these limits, the BAT-AELs have been included in the Emission and Monitoring requirements and a 12 monthly monitoring frequency has been set.

16) Several waste codes have been added to schedule 2 table 2.2 in order to allow glass cullet to be accepted on site. However it is anticipated that the glass will pass the “end of waste” test or Quality Protocol before it is processed through the furnace.

The main reason for utilising glass cullett in the formulation is as a replacement for virgin raw materials and it is not used as a fuel, or for waste disposal, or energy generation and therefore under the definition below it cannot be considered as a Co-Incineration plant and therefore the Waste Incineration Directive does not apply for this activity.

Co-Incineration Plant

Industrial emissions Directive EPR Guidance on Part A installations defines a "waste co-incineration plant" as any stationary or mobile technical unit whose main purpose is the generation of energy or production of material products and which uses waste as a regular or additional fuel or in which waste is thermally treated for the purpose of disposal through the incineration by oxidation of waste as well as other thermal treatment processes, such as pyrolysis, gasification or plasma process, if the substances resulting from the treatment are subsequently incinerated.

Annex 2: 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 AEL's 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 Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 60 Notice response.

Annex 3: Improvement Conditions

Based in the information in the Operators 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. These additional improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC12 (9.12)	Nitrates are used as an oxidising agent in batch formulations with high levels of external cullet (in particular bottle cullet) to compensate for the presence of organic material contained in the cullet. When nitrates are used in the batch formulation for glass wool production, BAT (BAT conclusion 58) is to reduce NOX emissions by optimising the nitrate dosage rate in the batch formulation while maintaining the quality requirements of the final product. The operator shall provide the Agency with a written report on optimising nitrate dosing rates in batch formulations containing various levels of organic contamination with a view to reducing NOx emissions.	1st September 2015
IC14 (9.14)	The operator shall update the Site's Environmental Management System (EMS) to include the new binder process, reflecting changes to the curing oven, density scanner and cooling systems and the biocide management system.	30th April 2015
IC15	The operator shall undertake a risk assess identifying the potential impacts of the putting the bag filter on by-pass for a maximum of 36 hours in a year. A copy of the risk assessment must be submitted to the Environment Agency for written approval, together with the justification to continue operating with the filter bag on by-pass for 36hours per year.	8th March 2015

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC16	The operator shall submit a report on the techniques BPB propose to use to reduce Boron emissions from the furnace. As a minimum these should include:- • Reduction of volatile components by raw material selection • Operation of a filter system at a suitable temperature to enhance the separation of boron compounds in the solid state • Use of dry or semi-dry scrubbing • Use of wet scrubbing The report shall identify any improvements required on site, together with a proposed timetable for their implementation**.** The report will be submitted for written approval, by the Environment Agency, before any of the proposed actions are undertaken by the Operator.	27th February 2016

Annex 4: Advertising and Consultation on the draft decision

The permit and decision document will be published on the Agency website for 28 days after they have been issued.