

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 (as amended)

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

The Permit number is: EPR/LP3233DK
The Operator is: Argent Energy (UK) Limited
The Installation is: Argent Biodiesel Stanlow Plant
This Variation Notice number is: EPR/LP3233DK/V004

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 Large Volume Organic Chemicals industry sector published on 07 December 2017 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:

Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector, published 09 June 2016

In this decision document, we set out the reasoning for the consolidated variation notice

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 Production of Large Volume Organic Chemicals, and Common Waste Water And Waste Gas Treatment/Management Systems in the Chemical Sector as detailed in documents reference C(2017) 7469 and C(2016) 3127 respectively. 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 – Decision checklist regarding relevant BAT Conclusions
5. Annex 2 – Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested
6. Annex 3 – Improvement conditions
7. Annex 4 - Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

1 Our decision

We have decided to issue the variation notice to the operator. This will allow them 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 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 16/05/18 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 07/12/21 which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 07/12/21, 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 61 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 61 notice response from the Operator was received on 22/08/18.

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 31/01/19.

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 61 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 have no reason to consider that the operator will not be able to comply with the techniques and standards described in the BAT Conclusions.

For some BAT conclusions the operator has stated they are not currently compliant but will be before the target date and we agree. In relation to some of these BAT Conclusions, we have therefore included Improvement Condition IC10-IC13 in the consolidated variation notice to ensure that the requirements of the BAT Conclusion are delivered before 07/12/21.

2.3 Requests for further information during determination

Although we were able to consider the Regulation 61 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 requests on 04/03/20 and 02/06/20. Copies of the further information request and the responses received on 01/04/20 and 16/06/20 were placed on our public register.

2.4 Condition of soil and groundwater

Articles 16 and 22 of the 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 Large Volume Organic Chemicals permit review to regulate against the above IED requirements. Our Regulation 61 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 IED), 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.

In the Further Request for Information response received on 16/06/20 the operator stated that the site condition report submitted to the Environment Agency in May 2016 as part of the original permit application accurately describes the present-day condition of soil and groundwater and is detailed enough to enable a quantified comparison upon definitive cessation of the activity.

The submitted report includes a comprehensive analytical investigation of soil contamination (Appendix 8) and a plan (Appendix 9) showing adequate sampling coverage of the whole installation. We therefore accept this meets the IED quantified baseline requirement.

2.5 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 61 notice, to provide a summary report of the current hazardous pollutant releases referring to the series of screening tests, which are described in our H1 risk assessment guidance, which would allow us to assess whether the emissions of hazardous pollutants from the installation are significant.

In the further request for information response received on 16/06/20 the operator presented results from an assessment of hazardous pollutant releases (although not the assessment itself).

The site surface water discharges into the lowest part of the River Gowy. The sewer discharge to the neighbouring Essar Installation effluent treatment plant eventually also discharges to an estuary via the United Utilities urban waste water treatment works. The operator therefore compared their releases against the pollutants lists for estuaries and coastal waters.

The only relevant entries from the lists for Priority Hazardous Substances, Priority Substances, Other Pollutants or Specific Pollutants in the discharges are dissolved iron (Annual Average-EQS 1000µg/l), bromine as residual oxidant (Maximum Allowable Concentration-EQS 10µg/l) and pH (6-8.5 95th percentile). Typical pH in the Swales before release to the estuary is 7.5 and is not expected to vary widely.

There may be potential for dissolved iron from corrosion but there are not expected to be significant sources of iron that could enter the site drainage scheme as opposed to the main effluent treatment process. A bromine based additive (unspecified) is used in the cooling towers but only at 1-3ppm level and this water is treated and released through the site effluent system. We are satisfied that , at the expected concentrations, both dissolved iron and bromine screen out at Test 1 of an H1 based risk assessment for TRac water releases as less than 10% of the relevant EQS.

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

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 tables with notes in Schedule 3 – Emissions and Monitoring for

- a) the existing ELVs and monitoring requirements which are effective from the date of issue of the notice; and
- b) amended ELVs where a BAT-AEL is specified in the BAT conclusions, and any associated monitoring requirements which will take effect from 7th December 2021.

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Large Volume Organic Chemicals industry sector were published by the European Commission on 07 December 2017. There are 19 General BAT Conclusions and a further 71 BAT Conclusions in 10 subsector-specific sections. 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; 23 BAT Conclusions for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. 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 LVOC BAT conclusions)
- NC Not Compliant

BAT Conclusion No	Summary of BAT Conclusion requirement for Production of Large Volume Organic Chemicals	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	BAT Conclusions that are not applicable to this installation	NA	BAT Conclusions (BATc) 20-90 for Chemical sub-sectors.
1	Monitor channelled emissions to air from process furnaces/heaters in accordance with the described standards and minimum frequencies	NA	Under the definition of process furnaces/heaters in the BATc the steam raising boilers and thermal oil heaters are not process furnaces/heaters.
2	Monitor channelled emissions to air other than from process furnaces/heaters in accordance with the described standards and minimum frequencies	CC	The current permit Table S3.1 includes emission limits for NO _x and SO ₂ for the site boilers and thermal oil heaters monitored annually. BATc2 includes minimum monthly monitoring frequencies for NO _x and SO ₂ . For NO _x this only applies to Thermal oxidisers but for SO ₂ it is for all processes/sources. However, note 2 to this BATc allows for a relaxation from the 'once every month' frequency to annual where emission levels have been shown to be sufficiently stable. Although we are discussing with the operator the emission limit values for combustion units and measures to meet them we accept the available data is adequate for the monitoring frequency to remain at annually for SO ₂ (and NO _x) in this review.

		FC	The only other relevant emission parameter is Total Volatile Organic Compounds (TVOC). It will be necessary to produce an inventory of possible emission points and implement a monitoring procedure if necessary. (See CWW BATc2)
		CC	All boilers are optimised for fuel and air ration with the oxygen (O ₂) monitored to ensure maximum efficiency. Gaseous fuel (refinery gas from the neighbouring Stanlow refinery) is used with Bio Fuel Oil only as a backup.
3	Ensure optimised combustion from process furnaces/heaters to reduce emissions to air of CO	NA	Under the definition of process furnaces/heaters in the BATc the steam raising boilers and thermal oil heaters are not process furnaces/heaters.
4	Reduce NO _x emissions from process furnace/heaters by using one or a combination of the described techniques	NA	Under the definition of process furnaces/heaters in the BATc the steam raising boilers and thermal oil heaters are not process furnaces/heaters.
5	Prevent or reduce dust emissions from process furnace/heaters by using one or a combination of the described techniques	NA	Under the definition of process furnaces/heaters in the BATc the steam raising boilers and thermal oil heaters are not process furnaces/heaters.
6	Prevent or reduce SO ₂ emissions from process furnace/heaters by using one or a combination of the described techniques	NA	Under the definition of process furnaces/heaters in the BATc the steam raising boilers and thermal oil heaters are not process furnaces/heaters.
7	To reduce emission of ammonia optimise design/operation of SCR/SNCR	NA	No ammonia is present on the plant and it is unlikely to present at significant concentration in emissions to air.
8	Increase resource efficiency/reduce the pollutant load on final waste gas treatment by using one or a combination of the	CC	Only technique b) is relevant. Methanol is recovered by distillation and condensation.

	described techniques on process off-gas streams (8a/b take precedence over 9)		
9	Increase energy efficiency/reduce the pollutant load on final waste gas treatment by sending process off-gas streams of sufficient calorific value to a combustion unit	NA	No off-gas streams have sufficient calorific value to be sent to a combustion unit.
10	Reduce channelled emissions of organic compounds to air by using one or a combination of the described techniques.	CC	Techniques a) Condensation and b) Adsorption are used on the Rotovac vent to abate VOCs and technique c) Wet scrubbing is used on the main plant vent to remove residual methanol.
11	Reduce channelled dust emissions to air, by using one or a combination of the described techniques.	CC	There are no channelled dust emissions from the site processes but atomisation of liquid fuels is used to reduce dust when boilers are running on Biofuel Oil. Bio Fuel Oil is only used as back up when gas is unavailable.
12	Reduce emissions to air of sulphur dioxide and other acid gases (e.g. HCl), by using wet scrubbing.	NA	No significant sulphur dioxide (SO ₂) or acid gases are generated by the production processes. Emissions of SO ₂ from boilers and thermal heaters are limited and monitored at low levels that do not require wet scrubbing.
13	Reduce NO _x , CO and SO ₂ emissions from thermal oxidisers by using a combination of the described techniques	NA	There is no thermal oxidiser on site.
14	Reduce the waste water volume, the pollutant loads discharged to a suitable final treatment (typically biological treatment), and emissions to water, by using appropriate techniques based on the information provided by the inventory of	CC	Effluent is treated onsite by Dissolved Air Flotation (the solids are recycled into the process) then discharged to mix into the adjoining Essar Stanlow effluent treatment system before passing to the United Utilities Urban Waste Water Treatment Plant for biological treatment.

	waste water streams specified in the CWW BAT conclusions.		
15	Increase resource efficiency when using catalysts by using a combination of the described techniques.	NA	No reusable catalyst is employed in the process.
16	Increase resource efficiency by recovery and reuse of organic solvents.	CC	Distillation is used in the High Pressure Unit and the Biodiesel plant to recover methanol and reuse it in the process.
17	Prevent, or where not practicable reduce, waste for disposal by using a combination of the described techniques.	CC	Techniques b) Short pass distillation and e) use of process residue as fuel (BioFuelOil) in the boiler are employed.
18	Prevent or reduce emissions from equipment malfunctions, by using all the described techniques.	FC	The operator is addressing this BAT requirement by developing procedures to address techniques a) Identification, b) Maintenance and c) Backup systems for critical equipment. Improvement Condition 10 has been raised to report progress on the development.
19	Prevent or reduce emissions to air and water occurring during other than normal operating conditions, by implementing measures commensurate with the relevance of potential pollutant releases for: i) Start up and shutdown operations ii) Other circumstances	CC	The production plants and storage are bunded and any releases can be reprocessed (oils back into the process, water to effluent treatment, solids to anaerobic digestion or landfill if that is not possible). This includes drainings and wash-throughs for maintenance. Methanol emissions to air are abated by condensers whose cooling water supply is interlocked to the distillation process and a further condenser and scrubber that always runs including start up and shutdown. Over-pressurisation bursting disc failures lead to water scrubber. Maintenance purging is via the scrubber systems.

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
1	To improve overall environmental performance implement and adhere to an EMS incorporating all the described features.	FC	<p>The operator only stated they have an EMS based on ISO14001. In response to the RFI an overview of the structure, scope and basis for the EMS was submitted but this still did not address some of the BAT Conclusion features.</p> <p>IC13 has been raised to require further detail of how the EMS addresses each feature of the BATc individually.</p>
2	To facilitate reduction of emissions to water and air and water usage, establish and maintain an inventory of waste water and waste gas streams as part of BAT1 EMS incorporating the described features.	FC	<p>The RFI response included process flow diagrams and descriptions of techniques addressing point (i). Waste water stream data (point (ii)) is available for the effluent discharge to the adjoining Essar effluent treatment plant including Flow, chemical oxygen demand (COD), total suspended solids (TSS), pH and ammonia (NH₃).</p> <p>No evidence was supplied of characteristics of the waste gas streams, (other than NO_x and SO₂ from boilers and heaters) only a description of the abatement and discharge routes. There are no monitoring parameters set in the current permit for emissions to air.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			IC12 has been raised to require identification, quantification and submission for assessment of the key characteristics of waste gas streams as part of the environmental management system.
3	For relevant emissions to water monitor key process parameters at key locations.	CC	The RFI response included details of how, for relevant emissions to water as identified under BATc2, key process parameters are monitored at key locations including influents to the waste water treatment system.
4	Monitor emissions to water in accordance with the described standards and minimum frequencies.		Only uncontaminated surface water is discharged direct to a water course. Monitoring is not required. Process streams treated and discharged to the adjoining Essar system are monitored daily for NH ₃ , COD and TSS (as well as continuously for pH and flow). Phosphorus monitoring is not relevant. There are no adsorbable organically bound halogens (AOX) present. Improvement Condition 11 has been raised to determine whether monthly monitoring for metals will be required.
5	Periodically monitor diffuse VOC emissions to air from relevant sources using a	CC	The calculation of emissions of methanol from process vent scrubbers will be verified by measurement every 2 years in keeping with technique III.

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	combination (or for large amounts – all) of the described techniques.		<p>The upstream process areas in both plants are pressure-tested in commissioning and after intrusive maintenance and the ground floors of the plants have alarmed automatic methanol monitors that will detect fugitive emissions. Thermal imaging cameras can also be used to find leaks from the >50degC process lines.</p> <p>Downstream of the reactors the final processing step is under vacuum so any leaks will result in air being drawn into the system.</p>
6	Periodically monitor odour emissions from relevant sources using the described standards.	CC FC	<p>Subjective odour monitoring is currently undertaken.</p> <p>A new odour abatement system is planned for 2021 which will be accompanied by an increased monitoring regime to check its effectiveness.</p>
7	Reduce usage of water and the generation of waste water, by reducing the volume and/or pollutant load of waste water streams, enhancing the reuse of waste water within the production process and recovery and reuse of raw materials.	FC	<p>An enhanced effluent treatment system (Membrane Biological Reactor, Ultrafiltration and Reverse Osmosis) is being commissioned in 2020 that will allow recovery and reuse of water.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
8	Prevent the contamination of uncontaminated water reduce emissions to water, by segregating uncontaminated waste water streams from waste water streams that require treatment.	CC	Segregation is performed. Uncontaminated water streams are discharged to the River Gowy (W1-W4) and process water streams are treated and discharged to Essar (S1).
9	Prevent uncontrolled emissions to water by providing an appropriate buffer storage capacity for waste water incurred during other than normal operating conditions based on a risk assessment, and taking appropriate further measures.	CC	There is 70m ³ of waste water buffer tank capacity in place. Each plant is bunded with a capacity of several hundred m ³ (greater than 110% of the largest tank) with sumps to allow recovery into process or containers for disposal/storage. The remainder of the site has drainage channels fed through oil interceptors that have normally closed Penstock valves. Any contents are tested before release.
10	Reduce emissions to water, by using an integrated waste water management and treatment strategy that includes an appropriate combination of the described techniques (in the priority order given).	CC	Settling to recover oils (technique a), Dissolved Air Flotation to recover and recycle solids (b). Waste water pretreatment (c) and final treatment (d) are currently provided by Essar/United Utilities

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		FC	An enhanced onsite effluent treatment system including MBR is planned for 2020 and is the subject of a permit variation application.
11	Reduce emissions to water, by pre-treating waste water that contains pollutants that cannot be dealt with adequately during final waste water treatment using appropriate techniques as part of an integrated waste water management and treatment strategy.	NA	The current permit only requires monitoring of flow, NH ₃ , COD, TSS and pH, all of which are expected to be adequately treated by downstream processes. Improvement Condition 11 has been raised to establish the nature (including concentration) of any metals emissions to water via the S1 emission point to the neighbouring Essar effluent treatment system. See also key issues below for uncontaminated surface rainwater direct discharge to River Gowy.
12	Reduce emissions to water, by using an appropriate combination of the described final waste water treatment techniques.	CC	No treatment is required for segregated uncontaminated surface water directly discharged to the River Gowy. Final waste water treatment (after settling and DAF on site) is performed by Essar and United Utilities on the indirect process water discharge.
13	Prevent or, where this is not practicable, reduce the quantity of waste being sent for disposal by setting up and implementing a	CC	The RFI response describes the waste management plan addressing prevention, reuse, recycling and recovery of waste generated on site. The site Waste Contract is currently under review. Once this is finalised

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	waste management plan as part of the environmental management system (see BAT 1) that, in order of priority, ensures that waste is prevented, prepared for reuse, recycled or otherwise recovered.		the Waste Management Plan will be updated accordingly IC 13 has been raised to require the submission of details of how a Waste Management Plan, as part of the EMS under CWW BATc1 (x) meets this BAT Conclusion so this will include any changes to the Waste Management Plan.
14	Reduce the volume of waste water sludge requiring further treatment or disposal, and reduce its potential environmental impact, by using one or a combination of the described techniques.	CC	The sludge from the waste water treatment Dissolved Air Flotation Unit is formed using Conditioning and Thickening/Dewatering (techniques a and b). However, this is recycled into the process to be sent for anaerobic digestion to produce biogas (as part of this main process stream). Therefore none of the described volume reduction techniques are required.
15	Facilitate the recovery of compounds and the reduction of emissions to air, by enclosing the emission sources and treating the emissions, where possible.	CC	The process emissions sources are enclosed and collected to allow treatment where relevant (A4 for Phase 1 Esterification Process vent and A8 for Argent North and Biodiesel plant vent).

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
16	Reduce emissions to air, by using an integrated waste gas management and treatment strategy that includes process-integrated and waste gas treatment techniques.	CC	Methanol is recovered from HPU and BDR vents by condensation for reuse and the residual is removed (with other pollutants) by water scrubbing. Rotary vacuum drum filter vacuum pumps feed a common header with disentrainment system before venting via a carbon filter. PTP Main Plant vents through a disentrainment system , water scrubber and biofilter. POP Scrubber vent draws vapour from the reaction system via a caustic and then a water scrubber. The waste gas treatment techniques are integrated with the process.
17	Prevent emissions to air from flares, by using flaring only for safety reasons or non-routine operational conditions (e.g. start-ups, shutdowns) using one or both of the described techniques.	NA	No flares on site

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
18	Reduce emissions to air from flares when flaring is unavoidable, by using one or both of the described techniques.	NA	No flares on site.
19	Prevent or, where that is not practicable, reduce diffuse VOC emissions to air, by using a combination of the described techniques.	CC	The RFI response details how diffuse VOC emissions to air are reduced using techniques related to plant design, construction/commissioning and operation.
20	Prevent or, where that is not practicable, reduce odour emissions, by setting up, implementing and regularly reviewing an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the described elements:	CC	An odour management plan as part of the EMS is in place including identification of odour sources and a plan to improve control and abatement.
21	Prevent or, where that is not practicable, reduce odour emissions from waste water collection and treatment and from sludge	CC	Techniques d) and e) are employed. Waste water collection tanks that make up the collection and treatment system are within the pre-treatment building. Each tank has a vent that

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	treatment, by using one or a combination of the described techniques.		is connected to the main plant vent. This vent system feeds a disenrainment system, water scrubber and biofilter before discharge.
22	Prevent or, where that is not practicable, reduce noise emissions, by setting up and implementing a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the described elements:	NA	The site is located on an industrial complex away from local residential receptors. Baseline reporting has been completed and confirmatory monitoring conducted. No noise nuisance is expected or has been substantiated.
23	Prevent or, where that is not practicable, reduce noise emissions, by using one or a combination of the described techniques.	NA	No noise nuisance is expected or has been substantiated.

Key Issues

The process wastewater streams all discharge after preliminary onsite treatment via discharge point S1 to the neighbouring Essar effluent treatment system and from there to United Utilities Wastewater Treatment Plant before eventual discharge to the environment.

The only direct discharge to surface water is of uncontaminated rainwater from the concreted areas of the site. These are not expected to contain pollutants above the mass thresholds in Tables 1-3 for applying BAT-AELS.

The rainwater is collected in Swales and tested before discharge via the neighbouring Essar Swale system to the River Gowy. For example, for COD, one of the more significant parameters expected if the pollutants come from process stream leakage, analyses show an average 75 mg/m^3 over an approximate 15000 m^3 annual discharge, equal to 1.125 tpa; well below the 10 tpa BAT-AEL threshold.

Annex 2: Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.

The operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 61 notice response.

Annex 3: Improvement Conditions

Based on the information in the operator's Regulation 61 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 improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

Improvement Conditions IC1-IC9 are complete and have been deleted.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC10	<p>The operator shall submit, for approval by Environment Agency, a report setting out progress to achieving compliance with LVOC BAT Conclusion 18 concerning critical equipment before 07/12/21. The report shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Methodology for achieving BAT • Associated targets / timelines for reaching compliance by 07/12/21 • Any alterations to the initial plan (in progress reports).. <p>Refer to LVOC BAT Conclusions for a full description of the BAT requirement.</p>	<p>Progress reports by: 07/04/21 07/12/21 Or otherwise as agreed in writing with the Environment Agency</p>
IC11	<p>The operator shall submit a written proposal to the Environment Agency to undertake monitoring to investigate emissions from emission point S1, in relation to potential discharge of water to Essar's effluent treatment system. The objective of the monitoring is to establish the nature (including concentration) of any metals emissions to water via this emission point. The quantity of monitoring data considered must be justified and be sufficient so as to demonstrate that the results are representative of emissions during normal operation of the installation.</p> <p>On receipt of written approval from the Environment Agency to the proposal, the operator shall carry out the monitoring to the agreed timescales and submit to the Environment Agency an interpretive report including the monitoring results and an interpretation of their significance in relation to impact on the eventual receiving water course.</p> <p>The report shall be submitted within three months of completion of the monitoring.</p>	30/06/21
IC12	<p>The operator shall submit, for approval by the Environment Agency, the relevant part of their environmental management system describing the characteristics of waste gas streams, including quantification, to meet the requirements of each factor in sections (a) to (d) CWW BAT Conclusion 2 part (iii); except where the operator can show evidence of why a factor is not relevant.</p>	30/06/21

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC13	The operator shall submit to the Environment agency for approval a report describing how its Environmental Management System meets each CWW BAT Conclusion 1 features (i) to (xiv) (and linked BAT Conclusions 13, 20 and 22) in line with the Applicability note to the BAT Conclusion.	07/06/21

Pre-operational measures 1 and 2 related to actions to be taken before undertaking any activities on site and are complete. Pre-operational Condition 2.5.1 and Table S1.4 have therefore been deleted.

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

The names of parts of the installation in Table S1.1 activities and Table S3.1 Point source emissions to air – emission limits and monitoring requirements have been updated to reflect current usage.

A new Directly Associated Activity AR18 (and description in the Introduction) has been added to describe the mixing of streams to generate a feedstock optimised for anaerobic digestion plants (known as AD soup).