

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Mitsubishi Chemical UK Limited

Cassel Site
New Road
Billingham
Cleveland
TS23 1LE

Variation application number

EPR/BR7992IU/V015

Permit number

EPR/BR7992IU

Cassel Site

Permit number **EPR/BR7992IU**

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Changes introduced by this variation notice/statutory review

This variation has been issued to update some of the conditions following a statutory review of the permits in the industry sector for the production of large volume organic chemicals. The opportunity has also been taken to consolidate the original permit and subsequent variations.

The Industrial Emissions Directive (IED) came into force on 07 January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) conclusions as described in the Commission Implementing Decision. The BAT conclusions for production of large volume organic chemicals were published on 07 December 2017 in the Official Journal of the European Union (L323) following a European Union wide review of BAT, implementing decision 2017/2117/EU of 21 November 2017.

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

The BAT Conclusions for this installation which apply from 07 December 2021 are:

- Production of Large Volume Organic Chemicals:
2, 8-10, 12-15 and 17-19.
- Common waste water and waste gas treatment/management systems in the chemical sector:
1-5, 7, 9, 10, 12, 13, 15-19 and 23.

This variation permits a time-limited delay to 31 March 2025 in meeting the BAT Associated Emission Level (BAT-AEL) for total organic carbon (TOC) in the direct waste water discharge through the introduction of a temporary emission limit (Table S3.2 of this permit), with an improvement condition (Table S1.3, IC48) for reporting progress on the improvement programme to install dry running vacuum engines. A brief explanation of the derogation is included in the Annex to the conditions of this permit.

A second derogation has also been requested for a delay in meeting the BAT-AELs in the direct waste water discharge for Total Phosphorus (W6 and S1), Chromium, Copper, Nickel and Zinc (S1). This request will be considered once further monitoring and modelling of the River Tees receiving water has been completed. Until the monitoring/modelling and the subsequent derogation request assessment is complete temporary emission limits will apply (Table S3.2 of this permit) with an improvement Condition (IC49) to review the derogation submission when requested by the Environment Agency before assessment. If the derogation is granted further temporary emission limits will be agreed at that time for the period of the derogation.

In addition to the permit review this variation also updates the permit to remove redundant items and incorporate alterations already agreed as minor operational changes.

The schedules specify the changes made to the permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. All the conditions of the permit have been varied and are subject to the right of appeal.

Brief Description of the process

Mitsubishi Chemical UK Limited's Cassel Site is a large volume organic chemicals (LVOC) installation, which is permitted for the following listed activities:

- Section 4.1 Part A(1) (a)(ii), producing organic chemical compounds containing oxygen.
- Section 4.1 Part A(1) (a)(iv), producing organic chemical compounds containing nitrogen.
- Section 4.1 Part A(1) (a)(viii), producing organic chemicals - plastic materials.
- Section 4.2 Part A(1) (a)(i), producing inorganic chemicals – gases.
- Section 4.2 Part A(1) (a)(iv), producing inorganic chemicals – salts.
- Section 1.2 Part A(1) (a) Refining gas where this is likely to involve the use of 1,000 or more tonnes of gas in any 12-month period.

And the production of sulphuric acid as a Directly Associated Activity (DAA) for reuse in site processes.

The Cassel Site Installation covers the manufacture of five main chemical products: - Methyl Methacrylate (capacity 227 ktpa), Methacrylic acid (20 ktpa), Ammonium Sulphate (74 ktpa), n-Butyl Methacrylate (18 ktpa) and Impact Modifier (4ktpa). Hydrogen Cyanide (56ktpa), Acetone Cyanohydrin (181 ktpa) and Sulphuric Acid (475ktpa recovery stream) are also produced for use on site. It is located around Ordnance Survey national grid reference NZ 47030 21365 in the outskirts of the town of Billingham, Teesside. The site is bordered by New Road to the north, Haverton Hill Road to the east, Billingham Beck to the south and a housing estate to the west.

The Teesmouth and Cleveland Coast Special Protection Area, Site of Special Scientific Interest and proposed Ramsar are within 1km of the installation.

The Cassel Site has an Environmental Management System (EMS) certified to ISO 14001.

The five different chemical products manufactured on Cassel Site are produced through the operation of twelve process units. Each of the twelve process units are all linked in some way to each other, either taking a raw material from another plant or feeding a product to another process. The hydrogen cyanide, acetone cyanohydrin and sulphuric acid produced on site are used by other plants on the Cassel Site and are not sold as products.

Liquid cyanide waste streams from the HCN8 + ACH8 plants and HCN6 + ACH3 + ACH4 plants are treated in two cyanide treatment plants. All liquid effluent streams, including those from the treatment plants are discharged either direct to Billingham Beck or the River Tees via the Billingham Complex Drainage System operated by CF Fertilisers UK Ltd.

There are no significant solid waste streams from the processes, other than solidified polymers, which have to be removed from plant and equipment periodically.

The standard utilities are supplied on site, power, cooling and process water, compressed and instrument air, nitrogen and refrigeration. The site is mostly self-sufficient in the recovery of steam from on-site processes. Steam may also be exported at high pressure to neighbouring CF Fertilisers UK Limited when in excess and can be imported on start-up or low production rates.

Main storage is offsite for bulk chemicals, but some intermediate storage is provided on site, in bunded areas.

Abatement plant for air streams is provided by various techniques including: glycol condensers; wet scrubbers; candle, carbon and bag filters; vent gas burners; and flaring.

The Sulphuric Acid Recovery (SAR) plant has a double contact absorber followed by candle filters.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application BR7992IU	14/8/03	Duly Made EPR Ref EPR/BR7992IU/A001
Response to request for information on revised installation boundary	FI 1 Request dated 02/02/04	Response dated 19/2/04
Response to request for information on alarms, vents and waste storage	FI 2 Request dated 04/02/04	Responses dated 19, 23, 25 and 27 February 2004
Response to request for information on dispersion modelling	FI 3 Request dated 06/02/04	Response dated 21/2/04 and 1/3/04
Response to request for information on emissions	FI 4 Request dated 11/03/04	Response dated 26/3/04
Response to request for information on liquid effluents	FI 5 Request dated 18/3/04	Response dated 22/3/04
Response to request for information on NH ₃ and cyanide concentrations	FI 6 Request dated 26/3/04	Response dated 31/3/04
Permit determined EPR/BR7992IU/A001	20/8/04	Permit issued to Lucite International UK Limited
Variation TP3235SF determined	Effective 01/04/05	(EPR reference EPR/BR7992IU/V002)
Variation XP3332SF determined	Effective 06/05/05	Modification to BB03, BB06 and D3 consent limits. (EPR reference EPR/BR7992IU/V003)
Variation TP3831SE determined	Effective 26/8/05	NOx shutdown scrubber and weak effluent collection sump. (EPR reference EPR/BR7992IU/V004)
Application for variation RP3734LH		
Variation RP3734LH determined	Effective 12/07/06	Modification to RTO1 consent limits, introduction of an SO ₂ limit on B1, changes to reporting requirements and Improvement Conditions. (EPR reference EPR/BR7992IU/V005)
Application for variation TP3736UB	25/10/07	
E-mail correspondence providing Further Information	Requests 12/12/07 and 17/12/07	Responses 13/12/06 and 21/01/07
Variation TP3736UB determined	Effective 01/05/08	Permit varied to reflect the closure of the Sodium Cyanide Plant and various other changes. (EPR reference EPR/BR7992IU/V006)
Application for variation EPR/BR7992IU/V007	09/03/09	
Variation EPR/BR7992IU/V007 determined	26/06/09	Permit varied to change emission limit values for ammonia and cyanide as a result of improvement programme item IC42.
Application EPR/BR7992IU/V008 (variation and consolidation)	Duly made 09/08/2011	Application for administrative variation
Variation determined EPR/BR7992IU/V008	21/09/11	Varied and consolidated permit issued.
Agency variation determined EPR/BR7992IU/V009	24/05/13	Environment Agency initiated variation to implement the activity reference changes introduced by IED
Variation determined EPR/BR7992IU/V010	29/09/14	Environment Agency initiated variation for permit corrections

Status log of the permit		
Description	Date	Comments
Variation Application EPR/BR7992IU/V011	Duly made 02/02/15	
Request for information response	06/03/15	
Variation determined EPR/BR7992IU/V011	11/03/15	Varied and consolidated permit issued to permit using D4 HCN6 flare stack in continuous operation.
Variation Application EPR/BR7002IU/V012	Duly Made 19/08/15	
Schedule 5 notice for further information	Issued 23/10/15	Response received 06/11/15
Variation determined EPR/BR7992IU/V012	19/11/15	Varied and consolidated permit issued to permit a conditional increase in SO ₂ Emission Limit Value for emission point C1.
Notified of change of company registered office address	27/03/17	Registered office address changed to Cassel Works, New Road, Billingham, TS23 1LE
Variation issued EPR/BR7992IU/V013	03/05/17	Varied permit issued to Lucite International UK Limited.
Regulation 61 Notice dated 04/05/18 (Notice requiring information for statutory review of permit)	Response Received 10/08/18	Technical standards detailed in response to the information notice.
Notified of change of Company Name	01/12/20	Name changed to Mitsubishi Chemical UK Limited
Variation issued EPR/BR7992IU	07/12/20	Varied permit issued to Mitsubishi Chemical UK Limited (issued permit marked V015 as received after permit review started although should be V014 chronologically)
EPR/BR7992IU/V015 (variation and consolidation)	Environment Agency Initiated Variation	Statutory review of permit occasioned by LVOC BAT Conclusions published 07 December 2017
Additional information received	29/09/20	Updated permit review response, TOC derogation request, total phosphorus and metals derogation request.
Additional information received	30/06/21	Details of improvement projects.
Additional information received	25/11/21	Effluent treatment plant report.
Additional information received	21/01/22	Surface water outfalls.
Additional information received	24/01/22	Effluent data on chromium, metals and total phosphorus and river modelling input data.
Additional information received	31/01/22	Corrections to modelling results.
Additional information received	14/04/22	Update to improvement projects.
Additional information received	27/04/22	Total nitrogen data.
Additional information received	01/09/22	Raw material details, Update to improvement projects, minor clarifications and confirmations
Additional information received	13/09/22	Updated Site plan with emission points
Variation determined EPR/BR7992IU/V015 (Billing Ref: CP3038QA)	DD/MM/YY	Varied and consolidated permit issued

Other Part A installation permits relating to this installation		
Operator	Permit number	Date of issue
Exolum Riverside Limited	XP3539LJ	01/12/06
CF Fertilisers UK Limited	LB3694DD	24/08/16

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies

Permit number

EPR/BR7992IU

Issued to

Mitsubishi Chemical UK Limited (“the operator”)

whose registered office is

Cassel Works

New Road

Billingham

TS23 1LE

company registration number **03830161**

to operate a regulated facility at

Cassel Site

New Road

Billingham

Cleveland

TS23 1LE

to the extent set out in the schedules.

The notice shall take effect from **[DD/MM/YYYY]**

Name	Date
[name of authorised person] Type name, signature not needed	[DD/MM/YYYY]

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/BR7992IU

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BR7992IU/V015 authorising,

Mitsubishi Chemical UK Limited (“the operator”),

whose registered office is

Cassel Works

New Road

Billingham

TS23 1LE

company registration number **03830161**

to operate an installation at

Cassel Site

New Road

Billingham

Cleveland

TS23 1LE

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

Name	Date
[name of authorised person]	[DD/MM/YYYY]

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.
- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.3 Relief valves shall only be tested between the hours of 10.00 and 17.00 Monday to Friday and not on any Public Holiday.

2.3.4 Emergency alarms shall only be tested between the hours of 09:00 and 17:00 Monday to Friday and not on any Public Holiday.

2.3.5 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.6 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

- (a) the nature of the process producing the waste;
- (b) the composition of the waste;
- (c) the handling requirements of the waste;
- (d) the hazardous property associated with the waste, if applicable; and
- (e) the waste code of the waste.

2.3.7 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.3.8 The tail gas burner and flare system (emission points A2/A3 and D2/D4) should be adequate to allow combustion of all gases necessarily vented to it under all circumstances. The flares should be managed to ensure smokeless operation under routine operating conditions and smoke should be minimised during non-routine operations.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

- 2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Total annual emissions from the emission points set out in schedule 3 tables S3.1, S3.2 and S3.3 of a substance listed in schedule 3 table S3.4 shall not exceed the relevant limit in table S3.4.
- 3.1.4 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
 - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
 - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) point source emissions specified in tables S3.1, S3.2 and S3.3.
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production /treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

- 4.3.1 In the event:
- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
 - (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency

when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

- (a) any change in the operator's trading name, registered name or registered office address; and
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) the Environment Agency shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

- (a) a decision by the Secretary of State not to re-certify the agreement;
- (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
- (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR1	Section 4.1 Part A(1) (a)(ii), producing organic chemical compounds containing oxygen	Methyl Methacrylate Production-in MM7 and MM8 plants. Methacrylic Acid Production in MAA2 plant. Normal Butyl Methacrylate Production.	Receipt of raw materials to production of products and by-products.
AR2	Section 4.1 Part A(1) (a)(iv), producing organic chemical compounds containing nitrogen	Acetone Cyanohydrin Production-in ACH3, ACH 4 and ACH8 plants	Receipt of raw materials to production of products and by-products.
AR3	Section 4.1 Part A(1) (a)(viii), producing organic chemicals - plastic materials	Impact Modifier Production	Receipt of raw materials to production of products and by-products.
AR4	Section 4.2 Part A(1) (a)(i), producing inorganic chemicals - gases	Hydrogen Cyanide Production-in HCN6 and HCN8 plants	Receipt of raw materials to production of products and by-products.
AR5	Section 4.2 Part A(1) (a)(iv), producing inorganic chemicals - salts	Ammonium Sulphate Production-AMS	Receipt of raw materials to production of products and by-products.
AR6	Section 1.2 Part A(1) (a) Refining gas where this is likely to involve the use of 1,000 or more tonnes of gas in any 12-month period.	Purification of Natural Gas	Receipt of natural gas to refined products and by-products.
Directly Associated Activity			
AR7	Production of Inorganic Chemicals – acids	Sulphuric Acid Recovery (SAR) Plant	Receipt of raw materials (including by-products from other plants) to production of products and by-products.
AR8	The associated activity of storage, handling and despatch of raw materials, intermediates, products, wastes and other materials associated with the above activities.	Unloading and loading of materials, and the storage and movement of materials in tanks, drums, pipes vessels, IBCs and other containers. Waste storage in sumps, drums, containers and their movement and despatch offsite.	From the receipt of materials, or generation of wastes, through to their eventual use, recovery or despatch offsite.
AR9	The associated activity of the operation and control of all abatement and treatment systems for waste materials generated from the above activities	Scrubbers, filters, adsorption plant, tail gas burners, flares, condensers, and other abatement plant for air emissions.	From process vents for abatement up to discharge to air.

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR10	The associated activity of the operation and control of all treatment systems for waste materials generated from the above activities	Cyanide Effluent treatment plant, oil separators, pH control and other treatment plant for effluents.	From receipt of waste material for treatment, up to discharge from the site.
AR11	The associated activity of provision of services, fuels and utilities for the above activities.	Operation of systems for supply of services and utilities such as nitrogen, water, steam (waste heat boilers and import of IPsteam), compressed and instrument air, natural gas, refrigeration and electricity, etc	Operation of services or utilities serving the activities and associated activities specified above.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application BR7992	The response to questions 2.1 and 2.2 is given in section 2.3, 2.3.1 to 2.3.5 and 2.4 of the application	Application dated 11/8/03.
Response to Further Information FI 2	Response to further information request FI 2, dated the 4/02/04.	Responses dated 19/2, 23/2, 25/2 and 27/2/04.
EPR/BR7992IU/V011	Application supplementary information document BR7992IU MTC14 D4 and duly making responses	Duly made 02/02/15
Request for information response	All	06/03/15
Application EPR/BR7992IU/V012	Application Supplementary information document 'BR7992IU V012 Variation Request'	Duly Made 19/08/15
Schedule 5 Notice dated 23/10/15	Response to questions 1 and 3	06/11/15
Variation EPR/BR7992IU/V015 Response to Regulation 61 Notice	Permit Review document: <ul style="list-style-type: none"> Environmental Permit Regulations 2016 – Permit Review and Request for further information (BR7992IU Reg61(1) Response Apr22.docx) provided to address technical standards in relation to Best available techniques as described in BAT conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for Production of Large Volume Organic Chemicals BAT Conclusions Numbers 2, 8-10, 12- 15 and 17-19. Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions 1-5, 7, 9, 10, 12, 13, 15-19 and 23.	Received 14/04/22
Response to Request for Further Information dated 01/09/22	Clarifications and confirmations including plant capacities and raw material specifications	Received 01/09/22

Table S1.2 Operating techniques		
Description	Parts	Date Received
	Updated site plan with emission points	Received 13/09/22

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC 1 to IC 40	-	Complete
IC 41	The operator is to install a centralised effluent treatment plant to at least treat COD and Ammoniacal Nitrogen discharges to BAT levels generally as detailed in his response to IC9, received 30-Oct-06. Prior to commencement of detailed design of this plant, the operator is to seek the advice of the Environment Agency on what discharge concentrations of BOD/COD, Ammoniacal Nitrogen and Cyanide are considered to be BAT.	Superseded by IC50
IC 42 to IC 43	-	Complete
IC 44	The operator is to provide a report with the final details of measures to minimise tail gas flow to D4 flare stack and improve tail gas burner process control to minimise plant trips, as outlined in operator application EPR/BR7992IU/V011. The plan should outline facility and operating procedures changes and the timescales to complete each change. Further the report is to include the commissioning plan measures to be completed to assess the effectiveness of these changes. The report is to be approved in writing by the Environment Agency. The improvement plan is to be actioned after approval in writing by the Environment Agency.	Complete
IC 45	The operator is to provide a report on progress that has been made on identifying the improvements that need to be made to minimise the HCN6 tail gas flow to D4, and to confirm that appropriate expenditure for the work has been approved.	Complete
IC 46	The operator is to submit a report of commissioning within 3 months of replacement of heat exchangers on the SAR plant (as outlined in Schedule 5 notice response dated 06/11/15). The report should include, but not be limited to, typical hourly average sulphur dioxide concentration measurements from discharge point C1 under normal operating conditions during the commissioning period and a comparison to corresponding measurements prior to the plant maintenance shutdown in 2014. This improvement condition is complete on receipt of written confirmation to that effect from the Environment Agency.	Complete
IC 47	Until the completion of Improvement Condition IC 46 the operator is to report to the Environment Agency for each calendar month: i. The hourly average SO ₂ emission concentrations from the SAR plant discharge point C1, in mg/m ³ .	Complete

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>ii. The hourly average SO₂ concentrations, wind direction and wind strength at the installation boundary fence monitoring station in µg/m³ and for each hour whether the MM8 plant to SAR vent is working or not.</p> <p>The reports shall comprise tables of the data and a graphical presentation of the month's results and are to be submitted by the end of the sixth working day following the end of the calendar month</p>	
IC48	<p><u>Derogation for total organic carbon</u></p> <p>The operator shall submit written reports setting out progress to achieving the BAT conclusion AEL, where a derogation has been applied for and granted, to the Environment Agency, for the Environment Agency's approval. The reports shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1) Current performance against the BATc AEL. 2) Methodology for reaching the AELs. 3) Associated targets / timelines for reaching compliance by 31/03/2025 for discharges from the MM7 Plant to emission point W6. 4) Any change in emissions of other pollutants resulting from the actions to reach the AELs. 5) Any alterations to the initial plan. <p>The report shall address the following BAT Conclusion:</p> <ul style="list-style-type: none"> • Common waste water and waste gas treatment/management systems in the chemical sector, section 3.4, Table 1 (compliance with BAT-AEL for TOC, emission point W6) under BAT 12 (waste water treatment). <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p> <p>A final report, summarising the actions taken and the performance achieved, shall be submitted to the Environment Agency, for the Environment Agency's approval.</p> <p>Approval of reports under this Improvement Condition shall include an:</p> <ul style="list-style-type: none"> • Assessment of any temporary increase of emission of other pollutants (including to air) resulting from the actions taken to meet the BAT-AELs to water And • A written local Environment Agency agreement and/or notification of the need to apply for a permit variation operate the developed process. 	<p>Progress report by 31/03/2023 then at six monthly intervals until compliance is reached, which shall be no later than 31/03/2025.</p> <p>Final report 3 months after compliance is achieved.</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC49	<p><u>Review of Derogation request for Total Phosphorus and Metals discharge to water</u></p> <p>The operator shall submit a review of the derogation request for delay in meeting the BAT-AELs in the direct waste water discharge for Total Phosphorus (W6 and S1), Chromium, Copper, Nickel and Zinc (S1) to the Environment Agency for the Environment Agency's approval.</p> <p>The review shall include, but not be limited to, a surface water pollution risk assessment which shall assess the impact of discharges of hazardous chemicals and elements to surface water and/or sewer from the installation. The risk assessment shall include, but not be limited to the following:</p> <ol style="list-style-type: none"> representative emissions data for any relevant hazardous chemicals and elements and any other relevant substances discharged from the installation, including cyanide. Any emissions monitoring required should meet the requirements of, or be carried out using the methods and standards described in, Environment Agency guidance "Monitoring discharges to water" on gov.uk; And a risk assessment should meet the requirements of, or be carried out in accordance with, the screening procedures in Environment Agency guidance "Surface water pollution risk assessment for your environmental permit" on gov.uk, using the representative emissions data obtained in (a) above. <p>The results of the updated assessment shall be used to assess the derogation request and determine the requirement for any additional control measures together with a timetable for implementation of any proposed measures for approval by the Environment Agency.</p>	<p>3 months after request from the Environment Agency or 30/06/24, whichever is sooner.</p>
IC50	<p><u>Effluent treatment</u></p> <p>The operator shall submit reports on progress towards the installation of treatment systems, either by plant or centrally, to meet the emission limit values in the permit (allowing for any granted derogation periods) and any relevant CWW narrative BAT requirements to the Environment Agency for the Environment Agency's approval.</p> <p>This should include, but not be limited to,</p> <ul style="list-style-type: none"> Processes to treat hazardous pollutants and nutrients (N and P) and sanitary determinands. Assessment of the resulting environmental impact both in design and commissioned operation. An assessment against the techniques described in directly relevant BAT Conclusions CWW 10-12 and LVOC 14 but also with regard to potential consequential BAT Conclusions such as CWW 14 (sludge) and 21 (Odour) <p>Approval by the Environment Agency of reports under this Improvement Condition does not preclude the need for the operator to submit permit variation application(s) to operate the developed process.</p>	<p>First progress within 3 months of notification by the Environment Agency but no later than 31/12/24.</p> <p>Then at 6 monthly reports until full compliance with BAT-AELs has been demonstrated.</p>
IC51	<p><u>BAT to reduce emissions to air</u></p> <p>The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is</p>	<p>Progress report by 30/06/2023</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>currently not achieved. 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 • Any alterations to the initial plan (in progress reports), with reference to improvement plans no. 3 & 9 in Appendix 5 of the operator's Permit Review response, updated 14/04/22 • Plans for an enhanced pre-application request and/or submission of a permit variation application. <p>The report shall address the following BAT Conclusions:</p> <ul style="list-style-type: none"> • Production of Large Volume Organic Chemicals BAT 9, 10 & 12 (reduce emissions to air) • Common waste water and waste gas treatment/management systems in the chemical sector BAT 15 & 16 (reduce emissions to air). <p>Refer to BAT Conclusions for a full description of the BAT requirements.</p> <p>Approval of reports under this Improvement Condition does not preclude the need for permit variation application(s) to operate the developed process.</p>	<p>then at six monthly intervals until compliance is reached, which shall be no later than 31/12/2027.</p> <p>Final report 3 months after achieving compliance</p>
IC52	<p><u>BAT to reduce emissions of organic compounds to air</u></p> <p>The operator shall submit, for approval by the Environment Agency, a report confirming achievement of compliance with the 'Narrative' BAT where BAT is currently not achieved. The report shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Methodology for achieving BAT • Date that compliance was reached • Any alterations to the initial plan, with reference to improvement plan no. 7 in Appendix 5 of the operator's Permit Review response, updated 14/04/22. <p>The report shall address the following BAT Conclusions:</p> <ul style="list-style-type: none"> • Production of Large Volume Organic Chemicals BAT 10 (reduce emissions of organic compounds to air). • Common waste water and waste gas treatment/management systems in the chemical sector BAT 15 & 16 (reduce emissions to air). <p>Refer to BAT Conclusions for a full description of the BAT requirements.</p>	31/01/2023
IC53	<p><u>BAT for buffer storage capacity</u></p> <p>The operator shall submit, for approval by the Environment Agency, a report confirming achievement of compliance with the 'Narrative' BAT where BAT is currently not achieved. The report shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Methodology for achieving BAT • Date that compliance was reached • Any alterations to the initial plan, with reference to improvement plan no. 1 in Appendix 5 of the operator's Permit Review response, updated 14/04/22. 	31/01/2023

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>The report shall address the following BAT Conclusion:</p> <ul style="list-style-type: none"> • Common waste water and waste gas treatment/management systems in the chemical sector BAT 9 (buffer storage capacity for W3). <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
-	-

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
A1	HCN8/ACH8 Plant Cubicle	No parameter set	No limit set	-	-	-
A2	HCN8/ACH8 Plant Tail Gas Burner	Oxides of Nitrogen (as NO ₂)	200 mg/m ³		Annual	EN 14792
		Sulphur Dioxide	25 mg/m ³		Annual	EN 14791
		Carbon Monoxide	100 mg/m ³		Monthly	EN 15058
		Hydrogen Cyanide	2 mg/m ³		Quarterly	US EPA OTM29 [8]
A3	HCN8/ACH8 Flare Stack	No parameter set	-	-	-	-
B1	MM8 Stack	Sulphur Dioxide	1.65% v/v.	Half-hourly mean [7]	Continuous	Infrared absorption [8]
		VOCs as Total Carbon	No limit set		Annual	EN21619
		Carbon Monoxide	No limit set		Monthly	EN 15058
C1	SAR Final Stack with double stage absorption and candle filters	Oxides of Nitrogen (as NO ₂)	300 mg/m ³ Excluding periods of start-up, shut-down and overhaul		Annual	EN 14792
		Oxides of Nitrogen (as NO ₂)	800 mg/m ³ Start-up/shut-down/overhaul		Annual	EN 14792
		Sulphur Dioxide	920 mg/m ³	Hourly mean (excluding periods of start-up, shut-down) [1]	Continuous	Infrared absorption [8]
		Sulphur Dioxide	3250 mg/m ³	Hourly mean (start-up and shut-down only) [1]	Continuous	Infrared absorption [8]

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
		Carbon Monoxide	15 mg/m ³		Annual	EN 15058
		Sulphuric Acid	10 mg/m ³		Quarterly	US EPA Method 8 [8]
C2	No 1 Hot BPA Stock Tank Vent with water spray condenser	No parameter set	-	-	-	-
C3	Oleum Tank Vent with spinning mop water scrubber and candle filter.	Oxides of Sulphur	No limit set	-	Monthly	EN14791
C4	No 2 Hot BPA Stock Tank Vent with water spray condenser	VOCs as Total Carbon	No limit set	-	Monthly	EN12619
C5	Product BPA Tank	VOCs as Total Carbon	No limit set	-	Monthly	EN12619
C6	Pre-heater (Start-up) stack using natural gas	No parameter set	-	-	-	-
C7	MM8 Cooling towers	No parameter set	-	-	-	-
D1	HCN 6 Plant Cubicle	No parameter set	-	-	-	-
D2	HCN6 Tail Gas Burner Stack	Oxides of Nitrogen (as NO ₂)	200mg/m ³		Annual	EN 14792
		Sulphur Dioxide	25 mg/m ³		Annual	EN 14791
		Carbon Monoxide	100 mg/m ³		Annual	EN 15058
		Hydrogen Cyanide	2 mg/m ³		Quarterly	US EPA OTM29 [8]
D3	HCN 6 Stock Tank Cubicle with glycol condenser and caustic scrubber.	Hydrogen Cyanide	5 mg/m ³	Daily mean [3]	Continuous	Electrochemical

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
		Hydrogen Cyanide	25 mg/ m ³	Daily mean [3] (maintenance periods only)	Continuous	Electrochemical
D4	HCN6 Flare Stack	No parameter set	-	-	-	-
D5	HCN Cooling towers	No parameter set	-	-	-	-
E1	ACH3 Plant Cubicle with glycol condenser	Sulphur Dioxide	100 mg/m ³		Annual	EN 14791
		Hydrogen Cyanide	30 mg/m ³	Monthly mean [2]	Continuous	Servomex Tunable Diode Laser [8]
		VOCs as Total Carbon	190 mg/m ³		Annual	EN 12619
E2	ACH4 Plant Cubicle with glycol condenser	Sulphur Dioxide	100 mg/m ³		Annual	EN 14791
		Hydrogen Cyanide	40 mg/m ³	Monthly mean [2]	Continuous	Servomex Tunable Diode Laser [8]
		VOCs as Total Carbon	170 mg/m ³		Annual	EN 12619
E3	ACH3 Plant HCN Cubicle	No parameter set	-	-	-	-
E4	ACH4 Plant HCN Cubicle	No parameter set	-	-	-	-
E5	ACH Cooling towers	No parameter set	-	-	-	-
F1	MM7 Plant "A" Amide Mixer	Sulphur Dioxide	75,000 mg/m ³		Monthly	EN 14791
		VOCs as Total Carbon	10,000 mg/m ³		Annual	EN 12619
		Carbon Monoxide	No limit set		Annual	EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
F2	MM7 Plant “B” Amide Mixer	Sulphur Dioxide	65,000 mg/m ³		Monthly	EN 14791
		VOCs as Total Carbon	10,000 mg/m ³		Annual	EN 12619
		Carbon Monoxide	No limit set		Annual	EN 15058
F3	MM7 Plant Amide Reactors	Sulphur Dioxide	175,000 mg/m ³		Monthly	EN 14791
		VOCs as Total Carbon	105,000 mg/m ³		Annual	EN 12619
		Carbon Monoxide	No limit set		Annual	EN 15058
F4	MM7 Primary Cooler with water filled catchpot	VOCs as Total Carbon	10 kg/hr		Annual	EN 12619
F5	MM7 1 st Prestill Vac Pump with glycol condenser and knock-out Pot	VOCs as Total Carbon	40 kg/hr		Annual	EN 12619
		Oxides of Sulphur	12,500 mg/m ³		Monthly	EN14791
F6	MM7 2 nd Prestill Vac Pump with glycol condenser and knock-out Pot	VOCs as Total Carbon	35 kg/hr		Annual	EN 12619
		Oxides of Sulphur	14,500 mg/m ³		Monthly	EN14791
F7	MM7 1 st Main Vac Pump with glycol condenser and knock-out Pot	VOCs as Total Carbon	1.5 kg/hr		Annual	EN 12619
F8	MM7 2 nd Main Vac Pump with glycol condenser and knock-out Pot	VOCs as Total Carbon	1.5 kg/hr		Annual	EN 12619

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
F9	MM7 BPA Collection Tank with water spray condenser	No parameter set	-	-	-	-
F10	AN Cooling Tower	No parameter set	-	-	-	-
G1	Ammonium Sulphate Plant Driers with dry cyclone and wet scrubber	Particulates	20 mg/m ³		Monthly	EN 13284-1
G2	AMS Cooling Tower	No parameter set	-	-	-	-
H1	MAA2 Secondary Vent Stack	VOCs as Total Carbon	1 kg/hr		Annual	EN 12619
H2	MAA2 Diverter Stack with knock-out Pot and water spray	Oxides of Sulphur	50,000 mg/m ³		Quarterly	EN14791
		VOCs as Total Carbon	170,000 mg/m ³		Monthly	EN 12619
		Carbon Monoxide	45%		Quarterly	EN 15058
H4	MAA2 Temporary fuel-rich vent (used when H2 becomes blocked)	No parameter set	-	-	-	-
I1	nBMA Continuous Vacuum Engine Discharge with glycol condensers and knock-out Pot	VOCs as Total Carbon	2 kg/hr		Annual	EN 12619
I2	nBMA Continuous Binary Vent Condenser with glycol condensers and knock-out Pot	VOCs as Total Carbon	0.5 kg/hr		Annual	EN 12619
K1	Impact Modifier Primary Bag Filter stack	Particulates	20 mg/m ³	Hourly mean [4]	Continuous	EN13284-1 [8]

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
K2	Impact Modifier Secondary Bag Filter stack	Particulates	20 mg/m ³	Hourly mean [4]	Continuous	EN13284-1 [8]
K4	No 2 and 4 Autoclave Vents each with two in-series carbon beds	VOCs as Total Carbon	80 mg/m ³		Annual	EN 12619
K5	No. 1, 2 & 4 Preparation Vessel Vent with two in-series carbon beds	VOCs as Total Carbon	80 mg/m ³		Annual	EN 12619
K6	No 1 Autoclave Vent with two in-series carbon beds	VOCs as Total Carbon	80 mg/m ³		Annual	EN 12619
K7	IMP Cooling Towers	No parameter set	-	-	-	-

Notes:

[1] for SO₂ continuous limit, 95% of hourly limits in any calendar day shall be within the limit and no hourly mean shall exceed 150% of the limit.

[2] for HCN monthly continuous limits, 95% of monthly limits (ie 11) in any calendar year shall be within the limit and no monthly mean shall exceed 150% of the limit.

[3] for HCN daily continuous limits, 95% of daily limits in any month shall be within the limit and no daily mean shall exceed 150% of the limit.

[4] for particulate hourly continuous limits, 95% of hourly limits in any day shall be within the limit and no hourly mean shall exceed 150% of the limit.

[5] Where no averaging period is mentioned the limit shall apply to the sampling period required by the sampling method.

[6] See Schedule 6 for reference conditions.

[7] The Continuous Emission Monitors used shall be such that the values of the 95% confidence intervals of a single measured result at the ½ hourly emission limit value shall not exceed 20%. Valid half-hourly average values shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted this value of the confidence interval (20%). Where it is necessary to calibrate or maintain the monitor and this means that data is not available for a complete half-hour period, the half-hourly average shall nonetheless be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. (The number of half-hourly averages so validated shall not exceed 5

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location on site plan in Schedule 7	Source	Parameter	Limit (including unit)	Reference period [5][6]	Monitoring frequency	Monitoring standard or method
per day). No single half hourly value shall exceed a factor of 1.5 times that half hourly limit values after having subtracted this value of the confidence interval (20%).						
[8] Or other method as agreed in writing with the Environment Agency						

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
W2 (Sump BBO2) on emission point plan in Schedule 7, emission to Billingham Beck	Uncontaminated rainwater run-off from land drains south of production areas	Visible oil or grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination
W3 (Sump BBO3) on emission point plan in Schedule 7 emission to Billingham Beck	MC UK Methacrylates labs effluent, rainwater run-off (from MM8, HCN/ACH8, SAR, Electrolytes plant, offices, car park and stores area roadways).	Cyanides, as CN ⁻	2 mg/l	Daily mean (5pma) [5]	Daily composite	BS EN ISO 14403-1 [6]
		Ammoniacal Nitrogen	200 mg/l	Daily mean	Daily composite	BS 6068-2.7 ISO 5664 [6]
		Free Chlorine	4 mg/l	Daily mean (5pma) [5]	Daily composite	BS EN ISO 7393-3 [6]
		Mercury	20 µg/l	Monthly mean	Monthly composite	BS EN ISO 17852 [6]
		pH	6 –13		Daily composite	BS ISO 10523 [6]
		Temperature	30 °C	Daily maximum	Continuous	Thermocouple
		Flow	100 m ³ /hr	Daily mean	Continuous	MCERTS self-monitoring of effluent flow scheme
		Suspended Solids	50 mg/l	Spot sample (5pma)	Daily spot	BS EN 872

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
		Copper	100 µg/l	Monthly mean	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [6]
		Visible oil & grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination
W4 (Sump BBO4) on emission point plan in Schedule 7, emission to Billingham Beck	Uncontaminated rainwater run-off from land drains south of production areas	Visible oil or grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination
W5 (Sump BBO5) on emission point plan in Schedule 7, emission to Billingham Beck	Uncontaminated rainwater run-off from land drains south of production areas	Visible oil or grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination
W6 (Sump BBO6) on emission point plan in Schedule 7, emission to Billingham Beck	Plant effluent from MM7, MAA2, AMS, nBMA, HCN 6, Impact Modifier and ACH3/4, Cyanides Area effluent treatment plant, rainwater and CT purge, roadways around these plant areas.	Ammoniacal Nitrogen	350 mg/l	Daily mean	Daily composite	BS 6068-2.7 ISO 5664 [6]
		Ammoniacal Nitrogen	2 tonne/day	Daily Mean (5pma)		
		Total nitrate	No limit set	Daily mean	Daily composite	BS EN ISO 13395 [6]
		Total nitrite	No limit set	Daily mean	Daily composite	BS EN ISO 13395 [6]
		Cyanides as CN-	2 mg/l	Daily mean	Daily composite	BS EN ISO 14403-1 [6]
		Cyanides as CN-	10 kg/day	Daily Mean (5pma)		
		Acidity (H ₂ SO ₄)	400 mg/l	Daily mean	Daily composite	EFF/01 [9]
		Acidity (H ₂ SO ₄)	2.5 tonne/day	Daily Mean (5pma)		EFF/01 [9]
		Total Organic Carbon (TOC)		250 mg/l	Daily mean	Daily composite
1.5 tonne/day	Daily Mean (5pma)					
80 mg/l [7]	Annual average of daily means					
33 mg/l [8]						

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
		Temperature-maximum	45 °C	Daily maximum	Continuous	Thermocouple
		pH	1.9 – 8.5	Daily mean	Daily composite	BS ISO 10523 [6]
		Flow	760 m ³ /hr	Daily mean	Continuously	MCERTS self-monitoring of effluent flow scheme
		Suspended Solids	60 mg/l	Spot Sample (5pma)	Daily spot	BS EN 872
			35 mg/l	Annual average of daily samples		
		Copper	50 µg/l	Monthly mean	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [6]
		Chromium	25 µg/l	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [6]
		Nickel	50 µg/l	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [6]
		Zinc	300 µg/l	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [6]
		Total phosphorus	21 mg/l [9]	Annual average of Daily Means	Daily composite	BS EN 10304-1 [6]
			3 mg/l [10]			
Visible oil & grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination		
W7 (Sump BBO7) on emission point plan in Schedule 7, emission to Billingham Beck	Uncontaminated rainwater run-off from land drains south of production areas	Visible oil or grease	No significant trace present	Instantaneous	Daily Inspection	Visual examination

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
Notes:						
[1]	for continuous limits, 95% of hourly means in any calendar day shall not exceed the limit and no hourly mean shall exceed 150% of any maximum limit or be below 50% of any lower limit, except for pH, where the maximum shall not be exceeded, and no reading shall be below the minimum.					
[2]	a daily composite sample shall be a 24 hour flow proportional sample that should not exceed the daily mean limit. An equal aliquot of each daily sample shall be combined to make the weekly or monthly composite sample, if required, which shall not exceed the weekly or monthly mean limit.					
[3]	composite samplers shall be capable of collecting 95% of the required data. When they are under repair, spot samples shall be taken daily for analysis and these results shall not exceed the limit.					
[4]	where no reference period is specified, the limit applies based on the sampling method used.					
[5]	No 5 day rolling average result shall exceed the stated limit, and no single result shall exceed 1.5 times the stated limit.					
[6]	Or other method as agreed in writing with the Environment Agency.					
[7]	Limit applicable until 31/03/2025 or completion of IC48 – whichever is sooner. For a part year the limit shall apply as an average to the date of change.					
[8]	Limit applicable from 01/04/2025 or completion of IC48 – whichever is sooner. For a part year the limit shall apply as an average from the date of change.					
[9]	Limit applicable until written notification by the Environment Agency of any change after assessment of derogation application following completion of IC49. For a part year the limit shall apply as an average to the date of change.					
[10]	Limit applicable after end of any derogation period notified by the Environment Agency following completion of IC49 or from end of assessment if notified by the Environment Agency that the derogation application is not granted – whichever is sooner. For a part year the limit shall apply as an average from the date of change.					

Table S3.3 Point source emissions to sewer – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
S1	Effluent from SAR, MM8, HCN/ACH8	Ammoniacal Nitrogen	210 mg/l	Daily mean	Daily composite	BS 6068-2.7 ISO 5664 [7]

Table S3.3 Point source emissions to sewer – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
Effluent sump MM8FE (feeds to the Billingham Complex Drainage System operated by CF Fertilisers UK Limited which has an outfall to the River Tees at RTO1)	processes and Electrolytes plant.	Ammoniacal Nitrogen	0.7 tonne/day	Daily Mean (5pma)		
		Total nitrate	No limit set	Daily mean	Daily composite	SCA Blue book 40 [6]
		Total nitrite	No limit set	Daily mean	Daily composite	SCA Blue book 40 [6]
		Cyanide	1 mg/l	Daily mean (5pma) [5]	Daily composite	BS EN ISO 14403-1 [7]
		Cyanide	1.2 kg/day	Daily Mean (5pma)		
		Mercury	1 µg/l	Monthly mean	Monthly composite	BS EN ISO 17852 [7]
		Acidity(H ₂ SO ₄)	5000 mg/l	Daily mean	Daily composite	EFF/001 (titration) [7]
		Acidity(H ₂ SO ₄)	20 tonne/day	Daily Mean (5pma)		
		Total Organic Carbon (TOC)	250 mg/l	Daily mean	Daily composite	BS EN 1484
			0.5 tonne/day	Daily Mean (5pma)		
			33 mg/l	Annual average of daily means		
		Free Chlorine	2.5 mg/l	Daily mean (5pma) [6]	Daily composite	BS EN ISO 7393-3 [7]
		Temperature	55°C	Daily maximum	Continuous	Thermocouple
		pH	1 – 12		Daily composite	BS ISO 10523 [7]
		Flow	150 m ³ /hr	Daily mean	Continuous	MCERTS self-monitoring of effluent flow scheme
		Suspended Solids	60 mg/l	Spot sample (5pma)	Daily spot	BS EN 872
			35 mg/l	Annual average of daily samples		
Copper	175 µg/l [8]	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [7]		
	50 µg/l [9]					

Table S3.3 Point source emissions to sewer – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
		Chromium	170 µg/l [8]	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [7]
			25 µg/l [9]			
		Nickel	750 µg/l [8]	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [7]
			50 µg/l [9]			
		Zinc	300 µg/l	Annual average of Monthly means	Monthly composite	BS EN ISO 17294-1 BS EN ISO 17294-2 [7]
		Total phosphorus	26 mg/l [8]	Annual average of Daily Means	Daily composite	BS EN 10304-1 [7]
3 mg/l [9]						
Visible oil or grease	No significant trace present	Instantaneous	Daily	Visual examination		

Notes:

- [1] for continuous limits, 95% of hourly means in any calendar day shall not exceed the limit and no hourly mean shall exceed 150% of any maximum limit or be below 50% of any lower limit, except for pH, where the maximum shall not be exceeded, and no reading shall be below the minimum.
- [2] a daily composite sample shall be a 24 hour flow proportional sample that should not exceed the daily mean limit. An equal aliquot of each daily sample shall be combined to make the weekly or monthly composite sample, if required, which shall not exceed the weekly or monthly mean limit.
- [3] composite samplers shall be capable of collecting 95% of the required data. When they are under repair, spot samples shall be taken daily for analysis and these results shall not exceed the limit.
- [4] where no reference period is specified, the limit applies based on the sampling method used.
- [5] The 5 day rolling average of Cyanide concentration shall not exceed the stated limit. No single daily average value shall exceed 300% of the stated limit.
- [6] The 5 day rolling average concentration shall not exceed the stated limit. No single daily average value shall exceed 150% of the stated limit.
- [7] Or other method as agreed in writing with the Environment Agency.
- [8] Limit applicable until written notification by the Environment Agency of any change after assessment of derogation application following completion of IC49. For a part year the limit shall apply as an average to the date of change.

Table S3.3 Point source emissions to sewer – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period [4]	Monitoring frequency [1][2][3]	Monitoring standard or method
[9]	Limit applicable after end of any derogation period notified by the Environment Agency following completion of IC49 or from end of assessment if notified by the Environment Agency that the derogation application is not granted – whichever is sooner. For a part year the limit shall apply as an average from the date of change.					

Table S3.4 Annual limits		
Substance	Medium	Limit (including unit)
Cyanide	Water	10,000 kg in a year [1]
[1] sum of release of cyanide from W3 and W6 release points		

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1.	HCN: A2, D2, D3, E1, E2 SO₂: B1, C1, F1, F2, F3 SO_x: C3, F5, F6, H2 CO: B1, H2 VOC: C4, C5, H2 Particulates: G1, K1, K2 H₂SO₄: C1	Every 3 months	1 January, 1 April, 1 July, 1 October
	SO₂: A2, D2, E1, E2 CO: A2, C1, D2, F1, F2, F3 NO_x: A2, C1, D2 VOC: B1, E1, E2, F1, F2, F3, F4, F5, F6, F7, F8, H1, I1, I2, K4, K5, K6	Every 12 months	1 January
Emissions to water Parameters as required by condition 3.5.1	W2, W3, W4, W5, W6, W7	Every 3 months	1 January, 1 April, 1 July, 1 October
Emissions to Sewer Parameters as required by condition 3.5.1	S1	Every 3 months	1 January, 1 April, 1 July, 1 October

Table S4.2: Annual production/treatment	
Parameter	Units
Production of organics (Individually from MAA, MMA, IMP & BMA plants)	Tonnes
Production of inorganics (from AMS plant)	Tonnes

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Performance indicator
Water usage	Annually	tonnes
Energy usage	Annually	MWh
HCN emitted to air per tonne of HCN produced.	Annual	Kg (HCN) / Te(HCN)
Sulphur Dioxide emitted from SAR to air per tonne of Sulphuric Acid produced.	Annual	Kg (SO ₂) / Te(SA)
Sulphur Dioxide emitted to air from MM7/MM8 per tonne of Methyl Methacrylate produced.	Annual	Kg (SO ₂) / Te(MMA)
Ammoniacal Nitrogen released to water per tonne of Ammonium Sulphate, sulphuric acid and HCN produced	Annual	Kg (N ₂) / Te(AMS+HCN + SA)
Cyanides released to water per tonne of HCN produced.	Annual	Kg (CN)/Tonne (HCN)
IP Steam exported per tonne of final products produced	Annual	Kg (steam)/Tonne
Methane used per tonne of MMA produced	Annual	Kg (CH ₄)/Tonne (MMA)
Waste sent for off-site disposal per tonne of total final products produced	Annual	Kg / te
Potable water used per tonne of total final products produced	Annual	m ³ /t
Non potable water used tonne of total final products produced	Annual	m ³ /t
Use of flares (emission points A3 and D4) other than pilot flame.	Annually	Dates, durations (minutes) and estimated amount of gas burnt.

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Emissions to Air	Form Air1 or other form as agreed in writing by the Environment Agency	30/09/2022
Emissions to Water and Land (other than sewer)	Form Water1 or other form as agreed in writing by the Environment Agency	30/09/2022
Emissions to Sewer	Form Sewer1 or other form as agreed in writing by the Environment Agency	30/09/2022
Water usage	Form WaterUsage1 or other form as agreed in writing by the Environment Agency	30/09/2022
Energy usage and efficiency	Form Energy1 or other form as agreed in writing by the Environment Agency	30/09/2022
Other environmental performance indicators	Form Performance1 or other form as agreed in writing by the Environment Agency	30/09/2022
Waste disposal and recovery	Form Waste1 or other form as agreed in writing by the Environment Agency	30/09/2022

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	

The dates of any unauthorised emissions from the facility in the preceding 24 months.	
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Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“5pma” means 5 point moving average.

“accident” means an accident that may result in pollution.

“annually” means once every year.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“BAT-AELs” means BAT-associated emission levels, i.e. the emission levels associated with the best available techniques for emissions to air and/or water, as set out in

“Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions or CWW” means Commission Implementing Decision (EU) 2016/902 of 30 May 2016 establishing Best Available Techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for Common Waste Water And Waste Gas Treatment/ Management Systems in the Chemical Sector as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016

“diffuse emissions” means non-channelled emissions which can result from ‘area’ sources (e.g. tanks) or ‘point’ sources (e.g. pipe flanges).

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“flaring” means high-temperature oxidation to burn combustible compounds of waste gases from industrial operations with an open flame.

“fugitive emissions” means diffuse VOC emissions from ‘point’ sources.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“Large Volume Organic Chemicals BAT Conclusions or LVOC” means The Commission Implementing Decision (EU) 2017/2117 of 21 November 2017 establishing Best Available Techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the Production of Large Volume Organic Chemicals as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“Sewer” means sewer within the meaning of section 219(1) of the Water Industry Act 1991. Specifically, in this permit, it refers to the Billingham Complex Drainage System operated by CF Fertilisers UK Ltd, holders of the Water Resources Act Consent No. 25/04/1588, which permits the discharge of the Billingham Complex Drainage System to controlled waters.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels;
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

“yearly average” means the average over a period of one year of validated hourly averages obtained by continuous measurements.

Annex to conditions – Derogation under Industrial Emissions Directive

Derogation under Article 15(4) of Industrial Emissions Directive

DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016

Operating techniques

We have considered the operator's proposed techniques and its comparison against other relevant techniques as described in best available techniques (BAT) conclusions (BATc) for

- a) Production of Large Volume Organic Chemicals and notified under document reference 2017/7469EU.
- b) Common waste water and waste gas treatment/management systems in the chemical sector and notified under document reference 2016/3127EU.

Our full reasoning is given in our decision document that accompanies the permit determination.

The operator requested a time-limited derogation until 31/03/2025 (extended from 31/03/2024 in the original request submission) from the BAT Associated Emission Level (BAT-AEL) for total organic carbon (TOC) from a direct emission to water in Table 1 under BAT 12 of the BAT Conclusions for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector (published 09/06/2016), on the basis of the technical characteristics of the installation infrastructure, and the future investment cycle of the business.

The operator's application considered eight options for meeting the BAT-AEL, with five being taken forward for detailed assessment. They propose to implement a phased improvement programme to the chemical plant MM7 and eradicate the main source of TOC to water by replacing existing process vacuum engines, with new dry running vacuum engines. This eliminates the main source of TOC in waste water which is discharged to the Billingham Beck at emission point W6.

The Environment Agency has reviewed the request and concluded that:

- The operator has supplied a valid derogation request against the BAT-AEL for TOC in the direct waste water discharge. The derogation request is based on technical characteristics and the general investment cycle for the business going forward from 2021-2025 (5 year cycle). The operator has described eight relevant options for achieving the BAT-AEL and justified the screening out of three options. Five options were taken forward to conduct a cost benefit analysis (CBA) in addition to continuing with business as usual (BAU). The operator's preferred option involves replacing the vacuum engines on the MM7 plant and upgrading them with dry running vacuum engines, thereby eliminating the main TOC water stream from the process, and from the emission to water. The operator requires further time to complete these changes in a phased programme of improvements, and has proposed a BAT-AEL for TOC at 80mg/l until 31/03/2025.
- The operator has provided a credible argument that the increased costs linked to the technical characteristics are disproportionate for achieving the BAT-AEL. Viable options were taken forward for CBA and were adequately described in the CBA. The CBA using central assumptions shows negative net present values (NPVs) for the BAT-AEL, the centralised biological waste treatment plant, and for treating the waste effluent locally, and therefore the cost of compliance is disproportionate compared to the environmental benefit achieved. The outcome of the CBA supports the choice of the proposed time-limited derogation project to replace the vacuum engines under the phased installation upgrade project.
- We are satisfied that the operator has demonstrated that the proposed derogation option achieves the best overall environmental outcome and we have no concerns regarding the ongoing BAU impact on Billingham Beck or the River Tees for the duration of the time-limited derogation. The BAT-AEL for TOC will be achieved at a later date than required by the BREF, with no significant impact on the environment, as demonstrated by modelling work carried out on the emissions to water. Allowing the proposed derogation would not cause any significant pollution or prevent a high level of protection of the environment as a whole to be achieved.

The Environment Agency is therefore minded to allow this derogation request subject to the following permit requirements:

- An emission limit for TOC at 80mg/l until 31/03/2025, after which it will reduce to the BAT-AEL of 33mg/l.
- An improvement condition (IC48) requiring periodic updates on progress with the phased project improvements to the MM7 Plant upgrade, to ensure that the programme of work is carried out according to the committed timescale.

This improvement condition also requires assessment of any resultant temporary increase of emission of other pollutants (including to air) and seeking a written local Environment Agency agreement and/or permit variation to operate the developed process.

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

- ¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
- ² Give the result as the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, give the result as the 'minimum to maximum' of the measured values.
- ³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
- ⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

- ¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
- ² Give the result as the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, give the result as the 'minimum to maximum' of the measured values.
- ³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
- ⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

- ¹ Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
- ² Give the result as the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, give the result as the 'minimum to maximum' of the measured values.
- ³ For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
- ⁴ Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Water Usage Reporting Form

Permit number: EPR/BR7992IU

Operator: Mitsubishi Chemical UK Limited

Facility name: Cassel Site

Form: WaterUsage1 30/09/2022

Reporting of water usage for the year [YYYY]

Water source	Water usage (m³)	Specific water usage (m³/unit) ²
Mains water	<i>[insert annual usage in m³ where mains water is used]</i>	<i>[insert annual usage in m³/unit where mains water is used]</i>
Site borehole	<i>[insert annual usage in m³ where water is used from a site borehole]</i>	<i>[insert annual usage in m³/unit where water is used from a site borehole]</i>
River abstraction	<i>[insert annual usage in m³ where abstracted river water is used]</i>	<i>[insert annual usage in m³/unit where abstracted river water is used]</i>
Other – <i>[specify other water source where applicable. Add extra rows where needed]</i>	<i>[insert annual usage in m³ where applicable]</i>	<i>[insert annual usage in m³/unit where applicable]</i>
Total water usage	<i>[insert total annual water usage in m³]</i>	<i>[insert total annual water usage in m³/unit]</i>

Operator's comments

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your annual water usage.

Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Add additional rows as necessary.

Energy Usage Reporting Form

Permit number: EPR/BR7992IU

Operator: Mitsubishi Chemical UK Limited

Facility name: Cassel Site

Form: Energy1 30/09/2022

Reporting of energy usage for the year [YYYY]

Energy source	Energy consumption / production (MWh)	Specific energy consumption (MWh/unit) ²
Electricity imported as delivered - source [specify source, e.g. supplied from the national grid]	<i>[insert annual consumption in MWh where electricity is imported]</i>	<i>[insert annual consumption in MWh/unit where electricity is imported]</i>
Electricity imported as primary energy 1 – conversion factor of [specify conversion factor used to convert electricity delivered to primary energy]	<i>[insert annual consumption in MWh where electricity is imported]</i>	<i>[insert annual consumption in MWh/unit where electricity is imported]</i>
Natural gas	<i>[insert annual consumption in MWh where natural gas is used]</i>	<i>[insert annual consumption in MWh/unit where natural gas is used]</i>
Gas oil – conversion factor of [specify conversion factor used to convert tonnes to MWh]	<i>[insert annual consumption in MWh where gas oil is used]</i>	<i>[insert annual consumption in MWh/unit where gas oil is used]</i>
Imported heat	<i>[insert annual consumption in MWh where heat is imported]</i>	<i>[insert annual consumption in MWh/unit where heat is imported]</i>
Other – <i>[specify other energy source and conversion factors where applicable, e.g. renewable fuel. Add extra rows where needed]</i>	<i>[insert annual consumption in MWh where applicable]</i>	<i>[insert annual consumption in MWh/unit where applicable]</i>
Electricity exported	<i>[insert annual production in MWh where electricity is exported]</i>	Not applicable
Heat exported	<i>[insert annual production in MWh where heat is exported]</i>	Not applicable

Other Performance Parameters Reporting Form

Permit number: EPR/BR7992IU

Operator: Mitsubishi Chemical UK Limited

Facility name: Cassel Site

Form: Performance1 30/09/2022

Reporting of other performance parameters for the period from *[DD/MM/YY]* to *[DD/MM/YY]*

Parameter	Units
<i>[e.g. Total raw material usage]</i>	<i>[e.g. tonnes per production unit]</i>

Operator's comments

Signed: *[Name]*

Date: *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report the performance parameters (other than water and energy) required by your permit. Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. The parameters to report and units to be used can be found in the 'Performance parameters' table in schedule 4 of your permit. Add additional rows as necessary.

Waste Disposal and Recovery Parameters Reporting Form

Permit Number: BR7992IU

Operator: Mitsubishi Chemical UK Limited

Facility: Cassel Site

Form Number: Waste1 30/09/22

Reporting of Waste Disposal and Recovery for the year YYYY

Waste Description	Disposal		Recovery		Trends in Waste Disposal and Recovery		
	D code	Tonnes	R code	Tonnes	Year	Total Waste (tonnes))	Waste per unit output
Hazardous Wastes							
Total Hazardous Waste	----		----				
Non-Hazardous Waste							
Total Non-hazardous Waste	----		----				
TOTAL WASTE	----		----				

Operator's comments:

Signed

Date..... (authorised to sign as representative of Operator)