



Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Johnson Matthey PLC
Manufacturing Science Centre
PO Box 1
Belasis Avenue
Billingham
Cleveland
TS23 1LB

Variation application number

EPR/KP3536UC/V004

Permit number

EPR/KP3536UC

Manufacturing Science Centre

Permit number EPR/KP3536UC

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.

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. Only the variations specified in schedule 1 are subject to a right of appeal.

This variation introduces a third manufacturing line (AR4) that has the same listed activity as the existing AR2 line, S4.2 A1 (a) (v) - "Producing metal oxides for other uses". The production capacity is up to 10 tonnes per year. The raw materials, based on metals and their salts, will be mixed as aqueous chemicals. Their reaction will take place at temperatures of up to 95°C on a batch or continuous basis using volumes of up to 1 m³. Solid particles will be separated from liquors using unit operations such as centrifugation and filtration before being dried.

Ammonia emissions are generated in the process and removed via a wet chemical scrubber, prior to venting to atmosphere via an external stack. The new process will result in the generation of liquid effluents during normal operations. These will be collected in a dedicated effluent tank and removed from site by road tanker.

The variation also includes the addition of aluminium as raw material for activities AR1 and AR2, and the addition of a new wet scrubber with the associated emission point, an effluent storage tank, new demineralised water system, a road tanker loading bay and an additional material storage area. In order to accommodate these changes, the installation boundary is extended.

The Manufacturing Science Centre (MSC) installation (formerly referred as Belasis Avenue Manufacturing Science Centre Catalyst Production) is located on the 'Chilton' site in Billingham, Cleveland. Within the Manufacturing Science Centre, the operator undertakes research and development activities, as well as the manufacture of a small range of speciality and high performance materials in processes that involve batch (non-continuous) and short-campaign continuous production. The research activities, aimed to enable the scale up of new products and new manufacturing processes, are beyond the remit of the Environmental Permitting Regulations.

The installation operates two existing separate process lines with the same listed activity, S4.2 A1 (a) (v).

AR1 is listed as "Producing metal oxide catalysts" either by precipitation in an acid-base reaction medium or by impregnation of the metal salt onto a support material, to produce an intermediate which is then heated to produce the required catalyst.

The principal processing activities covered are weighing, blending of solutions, precipitation, impregnation, intermediate storage / ageing, solid-liquid separation, drying, calcining / high temperature heating, sizing - milling or granulation, sieving, formation of tablets, blending and paste formation and packing of metal oxide catalysts.

AR2 is listed as "Producing metal oxides for other uses". The production capacity is up to 10 tonnes per year, based upon similar process chemistry as AR1. This process line extends the range of inorganic chemical products that can be commercially produced within the installation. These chemical products are based on salts of alkali metals, alkaline earth metals and transition metals.

Emissions to air from the installation consist of nitrogen oxides and dust associated with the drying operations, ovens, kilns, calcination process and handling of powder raw materials. Dust emissions are

minimised at the source or abated through high efficiency filtration equipment (HEPA filters) which we consider to be BAT for the sector.

The existing emissions to the private drainage system operated by Fujifilm (emission point W1) are associated with surface water run-off from external areas and uncontaminated cooling water. The Fujifilm drainage system is connected downstream to the C F Fertilisers effluent handling system, from where a combined effluent is ultimately discharged to the River Tees under an environmental permit held by C F Fertilisers UK Limited. All liquid effluents associated with processing within MSC are collected in IBC's and removed from the site by a licenced waste disposal contractor for off-site disposal.

The installation lies within relevant screening distance of 10 km from the Teesmouth and Cleveland Coast Special Protection Area and Ramsar sites that are protected under Conservation of Habitats and Species Regulations 2017. We have also identified non-statutory ecological sites protected under the Environment Act, within the relevant screening distance of 2 km.

The site operates according to an environmental management system accredited to ISO14001:2015 standard and has procedures relating to environmental management and sustainability under the Johnson Matthey's group corporate sustainability programme.

The schedules specify the changes made to the permit.

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 KP3536UC	Duly made 01/02/08	
Additional information received	01/09/08	
Permit determined KP3536UC	08/05/09	Permit issued to Johnson Matthey PLC
Application EPR/KP3536UC/V002 (variation)	Duly made 18/09/14	Application to vary the permit to include a new pilot scale pan coater.
Variation determined EPR/KP3536UC/V002	13/10/14	Varied permit issued.
Application EPR/KP3536UC/V003 (variation and consolidation)	Duly made 20/04/18	Application to vary the permit to include a new process line for production of other metal oxide inorganic compounds for use other than as catalysts.
Schedule 5 Notice issued 19/06/2018	16/08/18	Additional information received.
Schedule 5 Notice issued 30/08/2018	07/09/18	Additional information received.
Variation determined EPR/KP3536UC/V003 PAS / Billing reference: FP3333QW	16/10/18	Varied and consolidated permit issued.
Application EPR/KP3536UC/V004 (variation and consolidation)	Duly made 27/11/18	Application to vary the permit to include a new process line for production of other metal oxide inorganic compounds for use other than as catalysts and site boundary extension.
Schedule 5 Notice issued 08/03/2019	08/03/2019	Additional information received.

Status log of the permit		
Description	Date	Comments
Variation determined EPR/KP3536UC	01/05/19	Varied permit issued.

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/KP3536UC

Issued to

Johnson Matthey PLC (“the operator”)

whose registered office is

**5th Floor
25 Farringdon Street
London
EC4A 4AB**

company registration number **00033774**

to operate a regulated facility at

**Manufacturing Science Centre
PO Box 1
Belasis Avenue
Billingham
Cleveland
TS23 1LB**

to the extent set out in the schedules.

The notice shall take effect from 01/05/2019

Name	Date
Philip Lamb	01/05/2019

Authorised on behalf of the Environment Agency

Schedule 1

The following conditions were varied as a result of the application made by the operator:

Table S1.1, as referenced by condition 2.1.1, has been varied to include the additional S4.2 activity (AR4).

Table S1.2, as referenced by condition 2.3.1 and 2.3.2, has been varied to include the operating techniques associated with the variation.

Table S2.1, as referenced by condition 2.3.3, has been varied to include the agreed raw materials.

Table S3.1, as referenced by condition 3.1.1, 3.5.1 and 3.5.4 has been varied to include the additional point source emission to air.

Table S3.2, as referenced by condition 3.1.1, 3.5.1 and 3.5.4 has been varied to include operator's change in effluent management.

Table S4.1, as referenced by condition 4.2.3 has been varied to include the reporting for the additional point source emission to air.

Table S4.2, as referenced by condition 4.2.2 has been varied to include the production reporting of activity AR4.

Table S4.3, as referenced by condition 4.2.2 has been varied to include the need to report the raw materials used in activity AR4.

The site plan and emission point plan, as referenced by condition 2.2.1 have been varied.

Table S1.3, as referenced by condition 2.4.1 has been varied to include a new improvement condition

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/KP3536UC

This is the consolidated permit referred to in the variation and consolidation notice for application **EPR/KP3536UC/V004** authorising,

Johnson Matthey PLC (“the operator”),

whose registered office is

**5th Floor
25 Farringdon Street
London
EC4A 4AB**

company registration number **00033774**

to operate an installation at

**Manufacturing Science Centre
PO Box 1
Belasis Avenue
Billingham
Cleveland
TS23 1LB**

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

Name	Date
Philip Lamb	01/05/2019

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 green 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 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 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.
- 2.3.5 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.

2.4 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 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 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 and S3.2;
 - (b) process monitoring specified in table 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 and S3.2 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 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, 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.

4.4 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	S4.2 A1 (a) (v)	Producing metal oxide catalysts.	From receipt and handling of raw materials to dispatch of final products, including handling of wastes. Metal salts raw materials are specified in Table S2.1.
AR2	S4.2 A1 (a) (v)	Producing metal oxides for other uses.	
AR4	S4.2 A1 (a) (v)	Producing metal oxides for other uses.	
Directly Associated Activity			
AR3	Effluent handling, storage and discharge to Fujifilm drainage system.	Sampling, analysis, settling, filtration, decanting and discharge of effluent from production of metal oxide catalysts (activity AR1) and uncontaminated surface runoff.	From collection of the effluent to its discharge to drainage system or disposal off-site as a waste, based on assessment of its physico-chemical properties.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	Sections 3.2, 4, 6, 7, 10, 11, 12, 13, 14, 15 and 16 of the application document titled 'Application to Vary an Environmental Permit' provided in response to section 3 – 'Operating Techniques', Part C3 of the application form for variation EPR/KP3536/V003, as amended by subsequent responses to Schedule 5 Notices listed below.	13/04/18
Response to Schedule 5 Notice dated 19/06/18	Section 2, 4, 5, 6, 7, 8, 9, 10, Appendix A, B, C of 'Response to Schedule V Notification' document, dated 14/08/18, providing additional information on the operating techniques of the installation.	16/08/18
Response to Schedule 5 Notice dated 30/08/18	Document titled 'Response to Schedule V Notification – Addendum 1', dated 06/09/2018, providing additional information on air emissions of speciated metals (Beryllium and Vanadium) in particulate matter.	07/09/18
Application	Sections 3.2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, and appendix D of the application document titled 'Application to Vary an Environmental Permit – Variation 04' provided in response to section 3 – 'Operating Techniques', Part C3 of the application.	Duly Made 27/11/18
Response to Schedule 5 Notice dated 08/03/19	Additional details provided via email regarding the proposed activity and process flow diagram.	08/03/19
Review email	Additional details provided via email regarding the proposed effluent discharge point W1 - email point 2.	11/04/19

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC 1	<p>The operator shall develop a detailed monitoring programme that includes either MCERTS certification or MCERTS accreditation (as appropriate), for the monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring requirements specified in condition 3.5.1.</p> <p>A report confirming successful completion of this improvement condition and detailing the monitoring programme shall be submitted to the Environment Agency for review and approval.</p>	Within 6 months of effective date of variation notice V003
IC2	<p>During commissioning of the activities permitted under variation V004, the Operator shall carry out a monitoring exercise to validate the predicted ammonia emission rate from emission point A12 used in the H1 assessment submitted with the variation application (dated 27/11/18).</p> <p>Following completion of the monitoring exercise, the Operator shall submit a report to the Environment Agency for approval, detailing the findings of the monitoring exercise and if appropriate any improvements to the proposed abatement technology.</p>	31/10/19
IC3	<p>During commissioning of the activities permitted under variation V004, the Operator shall carry out a noise monitoring exercise paying specific focus to the new commission scrubber.</p> <p>Following completion of the monitoring exercise, the Operator shall submit the results to the Environment Agency, detailing the findings of the monitoring exercise and if appropriate any improvements to the proposed abatement technology.</p>	31/07/19

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials	
Raw materials description	Specification
Metal salts raw materials for metal oxide catalysts production (activity AR1)	Permitted metal salts raw materials are: Aluminium, alkali metals (Lithium, Sodium, Potassium, Caesium), alkaline earth metals (Beryllium, Magnesium, Calcium, Barium), transition metals (Titanium, Vanadium, Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Yttrium, Zirconium, Molybdenum, Tungsten), platinum group metals (Ruthenium, Rhodium, Palladium, Rhenium, Platinum), noble metals (Gold, Silver), rare earth metals (Lanthanum, Cerium) as a nitrate, chloride, phosphate, hydroxide, oxide, carbonate or as a salt of an organic acid (acetate, citrate, oxalate).
	Use of raw materials containing Beryllium shall be limited to manufacturing of maximum 100 kilograms per year of metal oxides catalysts containing Beryllium with a maximum concentration of 1% weight of oxide catalyst products, equating to a maximum annual usage of less than 1 kg/year of Beryllium within this activity.
	Use of raw materials containing Vanadium shall be limited to manufacturing of maximum 100 kilograms per year of metal oxides catalysts containing Vanadium with a maximum concentration of 35% weight of oxide catalyst products, equating to a maximum annual usage of less than 35 kg/year of Vanadium within this activity.
Metal salts raw materials for production of metal oxides for other uses (activity AR2)	Permitted metal salts raw materials are: Aluminium, alkali metals (Lithium, Sodium, Potassium, Caesium), alkaline earth metals (Magnesium, Calcium), transition metals (Titanium, Vanadium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Zirconium, Tungsten), as a nitrate, chloride, phosphate, hydroxide, oxide, carbonate or as a salt of an organic acid (acetate, citrate, oxalate).
	Use of raw materials containing Vanadium shall be limited to manufacturing of maximum 10,000 kilograms per year of metal oxides containing Vanadium with a maximum concentration of 5% weight of the oxide catalyst products, equating to a maximum annual usage of less than 500 kg/year of Vanadium within this activity.
Metal salts raw materials for producing metal oxides for other uses (activity AR4)	Permitted metal salts raw materials are: Aluminium, alkali metals (lithium, sodium, potassium and caesium), alkaline earth metals (magnesium and calcium), transition metals (titanium, vanadium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, and tungsten), as a sulphate, nitrate, chloride, phosphate, hydroxide, oxide, carbonate or as a salt of an organic acid (such as acetate, citrate, oxalate). The total maximum amount of product will not exceed 10tonnes/year.

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method [Note 3]
A1 [Point A1 on emission point plan in Schedule 7]	Common vent header from continuous drier and main ovens (activity AR1) [Note 4]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	120 mg/m ³ [Note 1]	Hourly	Every six months [Note 2]	BS EN 14792
A2 [Point A2 on emission point plan in Schedule 7]						
A3 [Point A3 on emission point plan in Schedule 7]		Particulates	1 mg/m ³ [Note 1]	Hourly	Every six months [Note 2]	BS EN 13284-1 and MID or BS EN ISO 23210
A5 [Point A5 on emission point plan in Schedule 7]	Spray dryer (activity AR1)	Traces of particulates	No limit set	--	--	--
A6 [Point A6 on emission point plan in Schedule 7]	Forming machine (activity AR1)	Traces of particulates	No limit set	--	--	--
A8 [Point A8 on emission sources plan in Schedule 7]	Pan coater (drying oven) (activity AR1)	Traces of particulates	No limit set	--	--	--
		Traces of ammonia, acetic acid	No limit set	--	--	--
A9 [Point A9 on emission point plan in Schedule 7]	Common vent header from Local Exhaust Ventilation (LEV) system and thermal treatment process (activity AR2) [Note 5]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	200 mg/m ³ [Note 1]	Hourly	Every six months [Note 2]	BS EN 14792
A10 [Point A10 on emission point plan in Schedule 7]						
A11 [Point A11 on emission point plan in Schedule 7]		Particulates	1 mg/m ³ [Note 1]	Hourly	Every six months [Note 2]	BS EN 13284-1 and MID or BS EN ISO 23210
A12 [Point A12 on emission point plan in Schedule 7]	Wet chemical scrubber (activity AR3)	Ammonia	10 mg/Nm ³	Hourly	Every six months [Note 6]	BS EN 14791 Or TGN M22
Note 1: reference conditions are those applicable to non-combustion emission sources in Schedule 6, with no correction for oxygen content.						

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method [Note 3]
<p>Note 2: representative sampling shall be arranged during the operations of the process responsible for the emissions of the relevant pollutant. An alternative sampling and testing frequency may be agreed in writing with the Environment Agency if deemed necessary as the relevant process has not been / will not be operated commercially within the reference period.</p> <p>Note 3: other suitable monitoring standard or method may be used if agreed in writing by the Environment Agency, as part of completion of improvement condition IC 1.</p> <p>Note 4: monitoring requirements for this emission source apply to one common sampling point representative of the common vent header emitting through emission points A1/A2/A3. Exact location of sampling point to be defined as part of completion of improvement condition IC 1.</p> <p>Note 5: monitoring requirements for this emission source apply to one common sampling point representative of the common vent header emitting through emission points A9/A10/A11. Exact location of sampling point to be defined as part of completion of improvement condition IC 1.</p> <p>Note 6: other suitable monitoring standard or method may be used if agreed in writing by the Environment Agency, as part of completion of improvement condition IC 2.</p>						

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	Monitoring frequency	Monitoring standard or method
W1 on emission point plan in schedule 7, emission to the Fujifilm private drainage system, connected to the CF Fertiliser effluent handling system, which discharges to River Tees ('RTO1' located at NGR NZ 4805 2188).	Uncontaminated surface water runoff and uncontaminated cooling water	No parameter	No limit set	–	–	--

W1 is actually missing from Schedule 7 and should be reinstated.

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
HEPA filters installed in down-flow booths for handling of powder materials and thermal processing equipment potentially generating dust	Differential pressure across the HEPA filters	Continuous, when in operation	Not applicable	--
A1/A2/A3 A9/A10/A11	Theoretical emission profiling of Oxides of	Prior to introducing/ changing	Thermo-gravimetric	Applicable to the planning of new batch or continuous thermal

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	Nitrogen (NO and NO ₂ expressed as NO ₂)	formulation for metal salt raw materials listed in Table S2.1	analysis (TGA)	processing campaigns associated with listed activities AR1, AR2.

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.	A1 / A2 / A3, A9 / A10 / A11 / A12	Every 12 months	1 January

Table S4.2: Annual production	
Parameter	Units
Produced metal oxides for use as catalysts (activity AR1)	Tonnes
Produced metal oxides for other uses (activity AR2)	Tonnes
Produced metal oxides for use as catalysts (activity AR4)	Tonnes

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Water usage	Annually	tonnes
Energy usage	Annually	MWh
Total raw material used	Annually	Tonnes
Total metal raw materials listed within Table S2.1, used for activity AR1	Annually	kg as metal
Total metal raw materials listed within Table S2.1, used for activity AR2	Annually	kg as metal
Total metal raw materials listed within Table S2.1, used for activity AR4	Annually	kg as metal
Total process effluent sent offsite for disposal	Annually	m ³

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	11/10/18
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	11/10/18
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	11/10/18
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	11/10/18

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 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.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

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

“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.

“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. “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

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

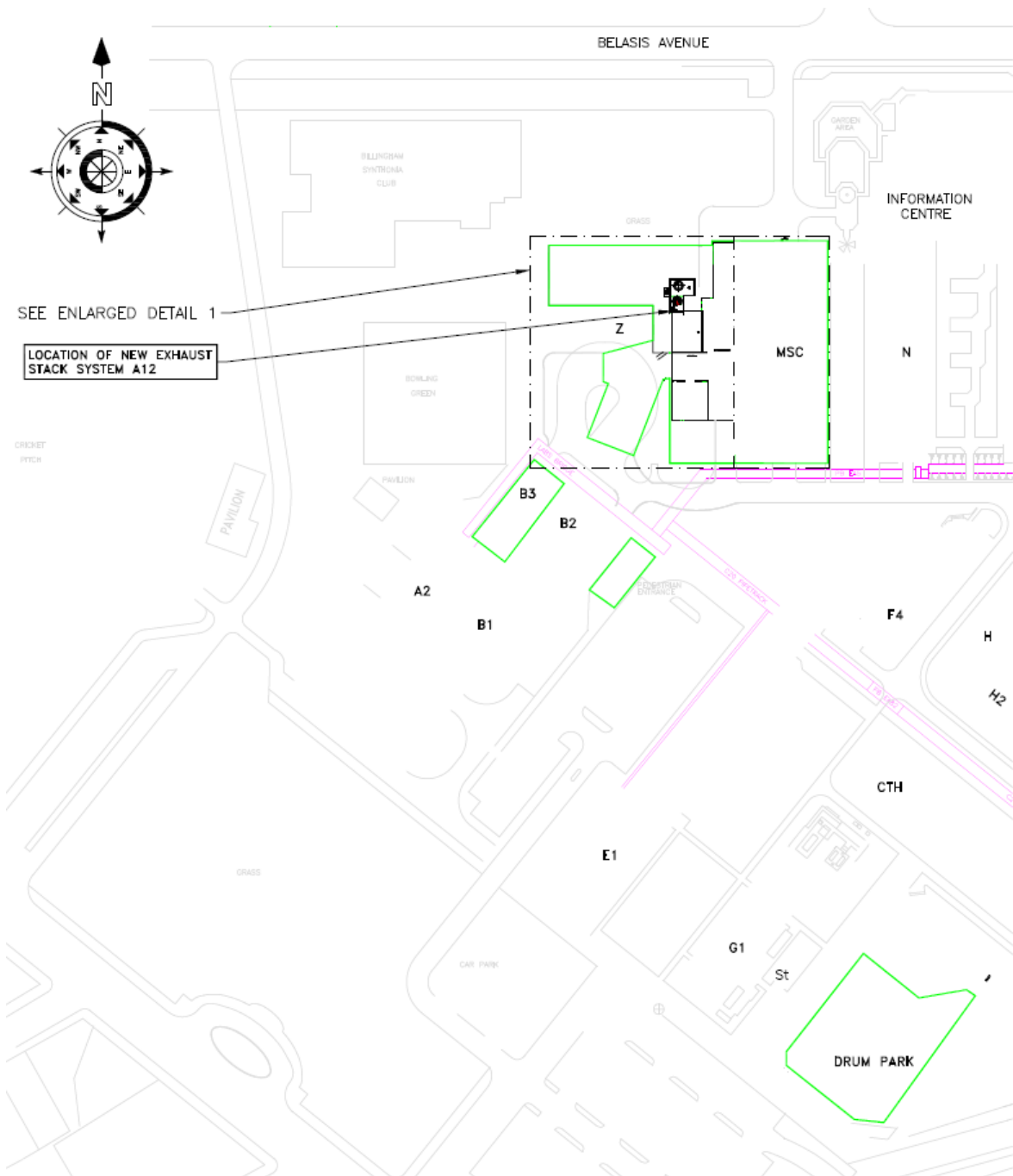
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

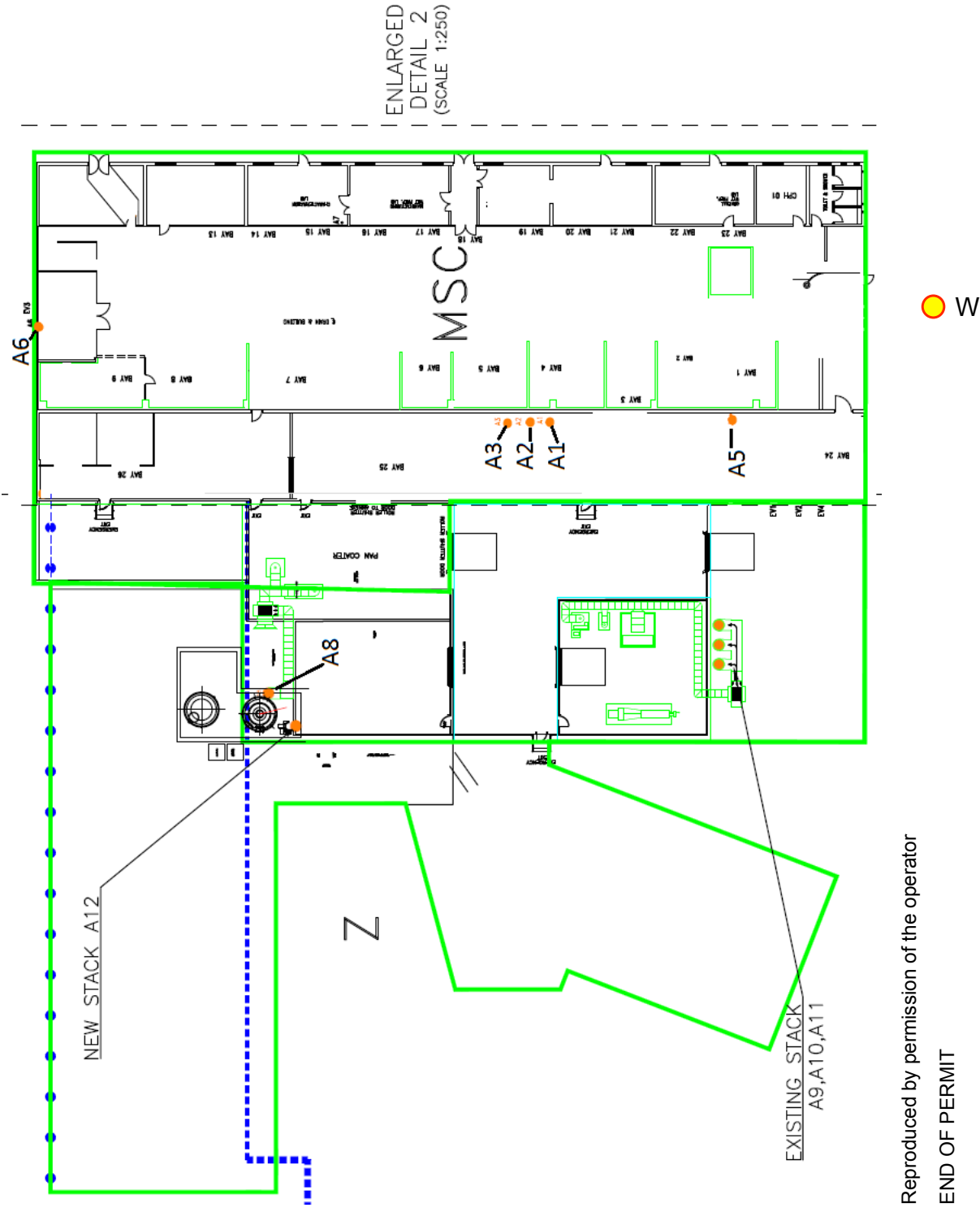
- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from non-combustion sources, the concentration 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.

Schedule 7 – Site plan



Emission point plan



ENLARGED
DETAIL 2
(SCALE 1:250)

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END OF PERMIT

Permit number
EPR/KP3536UC