

Natural Resources Wales permitting decisions

Synthite Limited (Alyn Works) Decision Document

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Minor Technical Variation

The variation number is: EPR/BU2349IL/V008

The Operator is: Synthite Limited

The Installation is located at: Mold Chemicals (Alyn Works), Denbigh Road, Mold, Flintshire, CH7 1BT

We have decided to refuse part of the variation and issue the remaining aspects of the variation as detailed below.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Operator initiated variation

In accordance with regulation 20 of the EPR we have varied the permit as detailed in this document in addition to the variation applied for by the Applicant

Regulation 34 EPR permit review

In accordance with regulation 34 of the Environmental Permitting (England and Wales) Regulations 2016 ('EPR') we have conducted a permit review and concluded a further variation is required.

Purpose of this document

This decision document:

- explains the regulation 20 EPR regulator initiated variation and how the application has been determined
- explains the regulation 37 EPR permit review
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account

Key issues of the decision

The key issues in this decision included:

- Monitoring of emissions to water

- Monitoring of surface water and groundwater

See summary of the proposed changes to the permit in Section 1 below, the outline of our decision in Section 2 and detailed explanation in Section 3.

1. Proposed changes

The Operator applied to vary the following aspects of the permit:

1. Remove 'Schedule 3(a)' and 'Schedule 4(a)'
2. Change the monitoring standard or method in Table S3.1 to measure Dimethylamine at emission point reference 'A1' from 'Self-indicating detector tube' to 'CEN TS 13649'
3. Change the monitoring standard or method in Table S3.2 to measure Ammonia (unionised as nitrogen) at emission point 'W1' from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778'
4. Change the monitoring standard or method in Table S3.2 to measure the volumetric flow rate at emission point 'W1' from 'Flow Meter Method (ISBN 011752364X)' to 'Flow Meter Method (that meets MCerts)'
5. Change the parameter in Table 3.3 from 'Ammonia (unionised as nitrogen)' to 'Total Ammonia (as nitrogen)'
6. Change the limit in Table S3.3 for 'Ammonia (unionised as nitrogen)' at emission point 'S1' from '25 mg/L' to '50 mg/L'
7. Change the limit in Table S3.3 for Temperature at emission point 'S1' from '40 °C' to '43 °C'
8. Change the parameter in Table S3.4 from 'Total Ammonia (as nitrogen) (mg/L)' to be measured for locations B/H1, B/H8, B/H9, B/H10, B/HA, B/HB, SP4 and from the sample culvert and River Alyn to 'Ammonia (unionised as nitrogen)'
9. Change the monitoring standard or method in Table S3.4 for measuring 'Total Ammonia (as nitrogen) (mg/L)' (proposed to be 'Ammonia (unionised as nitrogen)' from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778'

The existing permit was reviewed by NRW to ensure it is consistent with the decision made on the Operator's variation application (see section 2). The review confirmed that additional changes to the permit are needed to ensure appropriate standards are met. See section 2 for more detail on what changes the review initiated and section 3 for our justification for these changes.

2. Outline of the decision

We have decided to refuse certain elements of the Operator's application and issue the remaining aspects of the application. See the summary below which details which aspects we have decided to refuse and which aspects we have decided to issue.

Request number	Proposed change	Decision	Reasons for decision
1	Remove 'Schedule 3(a)' and 'Schedule 4(a)'	Granted	These schedules are no longer effective as expired 7 December 2021 and are removed.
2	Change the monitoring standard or method in Table S3.1 to measure Dimethylamine at emission point reference 'A1' from 'Self-indicating detector tube' to 'CEN TS 13649'	Granted	The new method proposed as a standard method detailed in the relevant current guidance. Please refer to section 3 for more information.
3	Change the monitoring standard or method in Table S3.2 to measure Ammonia (unionised as nitrogen) at emission point 'W1' from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778'	Refused	Please refer to section 3 for more information.
4	Change the monitoring standard or method in Table S3.2 to measure the volumetric flow rate at emission point 'W1' from 'Flow Meter Method (ISBN 011752364X)' to	Granted	The new method proposed as a standard method detailed in the relevant current guidance. Please refer to section 3 for more information.

	'Flow Meter Method (that meets MCerts)		
5	Change the parameter in Table 3.3 from 'Ammonia (unionised as nitrogen)' to 'Total Ammonia (as nitrogen)'	Granted	This request did not form part of the original application but was requested by the Operator during the draft permit review. The change was requested to align the permit with the Operators Trade Effluent Consent. Natural Resources Wales consider this requested change acceptable.
6	Change the limit in Table S3.3 for 'Ammonia (unionised as nitrogen)' at emission point 'S1' from '25mg/L' to '50mg/L'	Granted	This change is to update the limit in line with the Operators Trade Effluent Consent. This change has been previously agreed by Natural Resources Wales in writing on 09/04/2019. Please refer to section 3 for more information.
7	Change the limit in Table S3.3 for Temperature at emission point 'S1' from '40 °C' to '43 °C'	Granted	This change is to update the limit in line with the Operators Trade Effluent Consent. This change has been previously agreed by Natural Resources Wales in writing on 09/04/2019. Please refer to section 3 for more information.
8	Change the parameter in Table S3.4 from 'Total Ammonia (as nitrogen) (mg/L)' to be measured for locations B/H1, B/H8, B/H9, B/H10, B/HA,	Refused	Please refer to section 3 for more information.

	B/HB, SP4 and from the sample culvert and River Alyn to 'Ammonia (unionised as nitrogen)'		
9	Change the monitoring standard or method in Table S3.4 for measuring 'Total Ammonia (as nitrogen) (mg/L)' (proposed to be 'Ammonia (unionised as nitrogen) from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778'	Refused	Please refer to section 3 for more information.

A regulation 37 EPR permit review was conducted leading to a Regulator initiated variation in accordance with regulation 20 of EPR. The review confirmed that the following additional change to the permit was needed to ensure appropriate standards are met:

1. Change the parameter in Table S3.2 from 'Ammonia (unionised as nitrogen)' to 'Total Ammonia (as nitrogen)'

Justification for this change is discussed in section 3.6.

3. How we reached our decision

3.1 Receipt of the Application

The application was submitted on 07/02/2022 and considered duly made upon receipt. The Operator has made no claim for commercial confidentiality nor have we have we received any information in relation to the application that appears to be confidential in relation to any party.

3.2 Requests for information

The applicant was informally requested to provide justification for:

- The proposed changes in parameter from 'Total ammonia (as nitrogen) (mg/L)' to 'Ammonia (unionised as nitrogen)'

- The proposed changes in the permits monitoring method for Ammonia in water (from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778')

This was provided via email on 13/07/2022, a copy of which is placed on our public register.

3.3 Requested changes to emission limit values for emissions to sewer

The Operator requested the following changes to two emission limit values for emission point S1 in Table S3.3 in the permit:

- Change the limit for 'Ammonia (unionised as nitrogen)' from '25 mg/L' to '50 mg/L'
- Change the limit for Temperature from '40 °C' to '43 °C'

We have accepted both of these requested changes because the change is in line with the Operator's Trade Effluent Consent issued by the sewerage undertaker. This change has already been previously agreed by Natural Resources Wales in writing on 09/04/2019. We have ensured the change is in line with any relevant Best Available Technique – Associated Emission Levels (BAT-AELs) included within the following Best Available Techniques Reference (BREF) documents:

- Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment / Management Systems in the Chemical Sector
- Best Available Techniques (BAT) Reference Document for the Production of Large Volume Organic Chemicals

3.4 Requested change to monitoring of emissions to air

The Operator requested the following change to the monitoring for emission point A1 in Table S3.1 in the permit:

- Change the monitoring standard or method of Dimethylamine from 'Self-indicating detector tube' to 'CEN TS 13649'

We have accepted this requested change because the new method proposed is a method as detailed in the following guidance: [Monitoring stack emissions: techniques and standards for periodic monitoring - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/monitoring-stack-emissions-techniques-and-standards-for-periodic-monitoring). We also consider the requested change to a CEN standard will improve data quality of the monitoring.

3.5 Requested changes to monitoring of emissions to water and monitoring of surface water and groundwater

Monitoring of emissions to water

The Operator requested the following changes to the monitoring for emission point W1 in Table S3.2 in the permit:

- Change the monitoring standard or method for Ammonia (unionised as nitrogen) from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778'

We have not accepted the above requested change for reasons explained in the next section below.

- Change the monitoring standard or method for the volumetric flow rate from 'Flow Meter Method (ISBN 011752364X)' to 'Flow Meter Method (that meets MCerts)

We have accepted the above requested change because the new method proposed is in line with the following guidance: [Minimum requirements for self-monitoring of flow: MCERTS performance standard - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/minimum-requirements-for-self-monitoring-of-flow-mcercs-performance-standard). We also consider the use of an MCERTS certified meter will improve data quality of the monitoring.

Monitoring of groundwater and surface water

The Operator requested the following changes to surface water and groundwater monitoring in Table S3.4 in the permit:

- Change the parameter from 'Total ammonia (as nitrogen) (mg/L)' to 'Ammonia (unionised as nitrogen)' for locations B/H1, B/H8, B/H9, B/H10, B/HA, B/HB, SP4 and from the sample culvert and River Alyn
- Change the monitoring standard or method for measuring 'Total Ammonia (as nitrogen) (mg/L)' (proposed to be 'Ammonia (unionised as nitrogen)' from 'BS EN ISO 11732' to 'BS 6068-2.10 ISO 6778' for locations B/H1, B/H8, B/H9, B/H10, B/HA, B/HB, SP4 and from the sample culvert and River Alyn

We have not accepted either of the above requested changes for the reasons set out below. The detail below also explains why we have not accepted the change in monitoring method for emission point W1.

During the recent review of the permit (variation number V007) issued in November 2021 additional monitoring of Ammonia was implemented in Table S3.4 for all existing surface water and groundwater locations. The reasons for this inclusion is detailed

within the accompanying [decision document for variation V007](#) and will not be repeated in detail herein. In summary, the inclusion was to gather information relating to the elevated levels of ammonia within the locality to the installation. The 2018 WFD site level classifications for the sample point upstream of the installation and its discharge point, '715 Rhyd y Goleu', was classified as 'High', whilst the sample point downstream, '717 Leadmill', was classified at 'Bad'. The source of the elevated ammonia was not understood by NRW and additional monitoring was therefore necessary to enable NRW to address our duties under the Water Environment (Water Framework Directive) England and Wales Regulations 2017 (WFD), which requires us to exercise our relevant functions so as to secure compliance with the requirements of the WFD Regulations 2017. Investigations into the elevated ammonia are still ongoing at time of writing this report.

Total ammonia in the environment comprises two principal forms: the ionised ammonium ion (NH_4^+) and un-ionised ammonia (NH_3). The variation proposed will mean the Operator will only be required to measure ammonia (unionised as nitrogen) (only NH_3).

At typical UK groundwater temperatures (11 -12 Celsius) and pH (7) only 0.2% of total ammonia (as nitrogen) will be ammonia (unionised as nitrogen) (NH_3); therefore, if we granted the applicants requested change from total ammonia (as nitrogen) to ammonia (unionised as nitrogen) only a fraction of the total ammoniacal nitrogen in groundwater will be reported.

Furthermore, NRW's long term WFD statutory data set and the statutory ammonia Environmental Quality Standard set within the WFD are as total ammonia (NH_3 and NH_4^+). We consider the requested change to the parameter on the permit will result in data NRW will be unable to use to aid its investigations as the data will not be comparable to these data sets. If granted, the requested variation will mean NRW is unable to address our duties under the Water Environment (Water Framework Directive) England and Wales Regulations 2017. Therefore, this aspect of the variation must be refused.

We recognise that the monitoring method requested 'BS 6068-2.10 ISO 6778' is listed as a recognised monitoring method in the following guidance: [Monitoring discharges to water: CEN and ISO monitoring methods - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/monitoring-discharges-to-water-cen-and-iso-monitoring-methods). However, the proposed method is intended for monitoring of "raw and wastewater and sewage" of which groundwater in particular is not and so use of the applicant's proposed method is not appropriate in this case. Furthermore, the proposed method is not a laboratory based method and therefore may not be as accurate as the existing method in the permit.

We recognise that NRW analytical laboratories (NRWAS) use an alternative method to both that proposed and that listed in the permit to monitor total ammonia (as nitrogen) for the purposes of WFD investigations. NRWAS use 'SCA blue book 48 ISBN 0117516139' method. However, NRWAS has confirmed that this method is directly comparable to ISO 11732 (existing permitted method) because the principles the two methods are based on are the same.

The requested variation to the monitoring method is therefore anticipated to result in monitoring data which is not suitable for the purpose of NRW's WFD investigations. Therefore, this aspects of the variation must be refused.

3.6. Regulation 34 EPR permit review

As discussed, we have refused the Operator's request to change the parameter for from 'Total ammonia (as nitrogen) (mg/L)' to 'Ammonia (unionised as nitrogen) in Table S3.4

In line with this decision, we consider it appropriate to change the parameter in Table S3.2 from 'Ammonia (unionised as nitrogen)' to 'Total Ammonia (as nitrogen)' for point W1. We consider this change necessary to:

- Ensure all monitoring data required to be reported under the permit conditions can be used to aid NRW's WFD investigations into the elevated ammonia levels found in the locality of the installation
- Ensure consistency throughout the permit