

Natural Resources Wales permitting decisions

Variation of a Bespoke Permit

We have decided to issue the variation and consolidation for Cefn Mawr (former Flexys 'Ruabon' Works) operated by Solutia UK Limited.

The variation number is EPR/NP3335GR/V008.

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.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Key issues of the decision

Background

This variation consolidates two permits (Permits A and B) held by Solutia UK Limited, in relation to two installations located at the Cefn Mawr (former Flexys 'Ruabon' Works) site. The variation incorporates some changes to the permit which have arisen from recent changes to the operations at the site. It also incorporates changes to some of the monitoring requirements which have been made due to consistent compliance with emission limit values.

Permit A allows the operation of three carbon filtration units, which treat groundwater abstracted for reasons of slope stability. Groundwater is abstracted from two de-watering boreholes and two collection sumps. The groundwater - which contains dissolved iron and organic compounds – is passed through the carbon units to absorb trace plant-related organic compounds. The carbon filtration units do not act to remove the dissolved iron in the groundwater.

Permit B allows the operation of a Groundwater and Stormwater Storage Facility (GSSF). This facility receives water from two sources: (i) treated groundwater from the carbon filtration units; and (ii) rainwater collected by the site's surface water drainage system. Both sources of water are transferred to the GSSF via pipeline, where they are combined and held in storage tanks before being discharged to the River Dee via pipeline at the normal discharge point W1. A second discharge point – W2 (into the Tref-y-Nant Brook) – is used only when W1 is not available, for example due to maintenance.

Control and operation of the GSSF was recently transferred to Solutia UK Limited from the Air Products Electronics Advanced Materials Europe Limited (AP) permit EPR/BV2689IE via Part Transfer Notices EPR/BV2689IE/T006 and EPR/PP3231WL/T001. The transfer was required because AP have closed their Silica Manufacturing unit at the installation and intend to withdraw from the site. Takeover of operation of the GSSF by Solutia UK Limited was therefore required in order for them to be able to continue discharging groundwater and surface water from the site to the River Dee.

Changes made and assessment undertaken

The changes that have been made through this variation are described below. Where it has been necessary to undertake assessment to determine whether the changes are acceptable we have also included a description of the assessment.

1. We have changed the site name from 'Ruabon Chemical Works' to 'Cefn Mawr (former Flexys 'Ruabon' Works)'.

The site is not located in Ruabon itself and is actually located adjacent to the village of Cefn Mawr. We therefore consider that the new name reflects more accurately the location of the installation.

2. We have changed the name of the 'Ground and Stormwater Storage Facility (GSSF)' from its original name 'Waste Water Treatment Plant.'

The purpose of the facility is to receive treated groundwater from the carbon filtration units and rainwater collected by the site's surface water drainage system. Water is held in storage tanks before being discharged to the River Dee via pipeline at the discharge point W1. Prior to the closure of the AP Silica Manufacturing unit the facility also received effluent from this operation; as the source of the effluent has now been removed we consider that the new name describes the function of the facility more accurately.

3. We have reclassified the GSSF from a listed activity to a Directly Associated Activity.

When the AP Silica Manufacturing unit was in operation several physical and chemical treatment processes took place in the former Waste Water Treatment Plant to neutralise the effluent and to remove granulated silica solids, via the following processes. The nature of this treatment and the volume of effluent treated meant that this process was classed as an activity listed under Schedule 1, Part 2, Section 5.4 A(1)(a)(ii) of the Environmental Permitting (England and Wales) (Amendment) Regulations 2013. The treatment processes comprised of: pH adjustment, removal of solids in a primary clarifier, neutralisation using CO₂ and solids-settling.

Following the closure of the AP unit the effluent source which required physical and chemical treatment is no longer present, and therefore the treatment processes described above are no longer required. We have updated Operating Techniques table in the consolidated permit to reference the parts of the application which describe these changes. The functions of the GSSF are now only to allow combination and storage of treated groundwater and collected rainwater from the site surface water drainage system. We have therefore changed the classification of the GSSF from a listed activity to a directly associated activity as the activity is technically linked to the groundwater treatment activity. We consider that the environmental risk associated with this activity has reduced due to the fact that the silica plant effluent stream has been removed.

4. We have changed some of the requirements for monitoring the water discharged from the GSSF at the W1 and W2 emission points, including:
 - i. Removal of the requirement to monitor pH, biological oxygen demand (BOD), chemical oxygen demand (COD), suspended solids, total zinc, nitrogen and sulphate;

These requirements were included in the original permit due to the presence of the Silica Manufacturing unit effluent in the waters received by the (then) Waste Water Treatment Plant. Since the closure of the Silica Manufacturing unit, the receiving waters will be made up of treated groundwater and site surface water, both of which will be neutral or near-neutral. Prior to the closure, emissions monitoring of these substances in the discharge showed that BOD, COD, zinc and nitrogen were within the benchmark levels outlined in EPR 4.03 The Inorganic Chemicals Sector. Levels of suspended solids were slightly in excess of the benchmark, but within the emission limits set in the permit, due to the presence of silica solids. The emissions monitoring return for quarter two of 2015, which covers the period after the Silica Manufacturing unit stopped operating, shows that levels of these parameters had dropped to below detection levels. We therefore consider that there is no longer a requirement to monitor emissions of these substances at W1 and W2. We also consider that the removal of the Silica Plant effluent stream represents a reduction in the risk to the receiving waters, namely the River Dee and the Tref-y-Nant Brook.

- ii. Reclassification of the total iron emission limit to an objective level of 5 mg/l, which will be measured using in-house testing method for the analysis on a weekly basis, and will also be sampled and analysed following British Standards on a twice-yearly basis.

The removal of the effluent stream from the Silica Manufacturing unit means that the discharge from W1 (and occasionally, W2) is composed solely of surface water drained from the hardstanding areas of the site, and groundwater abstracted from the site's de-watering boreholes and collection sumps, which has been treated in the carbon filtration units to remove organic compounds. The groundwater also contains dissolved iron, which is a legacy effect of historical mining activities in the vicinity. The carbon filtration units do not act to remove the dissolved iron from the groundwater.

Prior to the removal of the Silica Manufacturing unit, the silica solids in the effluent from this activity combined with the groundwater and surface water in the (former) Waste Water Treatment Plant and acted to adsorb iron in the groundwater. Without the Silica Manufacturing unit effluent stream this process cannot occur; however, the applicant has demonstrated that the mixing effect of the groundwater with surface water within the GSSF will mean that final iron concentrations at W1 (and W2) will be within 5mg/l. We have imposed an objective level of 5mg/l for total iron on the W1 and W2 emission points to confirm this, which will be measured on a weekly basis using an in-house testing method. We have also stipulated that two times per year, samples are taken and analysed according to appropriate measuring standards (British Standards and MCERTs) to confirm (i) compliance with the objective level and (ii) the validity of the in-house testing method.

W1 issues into the River Dee, which holds the European habitat designation of Special Area of Conservation (SAC) and the UK habitat designation of Site of Special Scientific Interest (SSSI). W2 (used at times when W1 is not available) issues into the Tref-y-Nant Brook, which is a tributary of the Dee. We consider that the risk from dissolved iron on this habitat is low.

- iii. Reclassification of the monitoring frequencies for total phenol, total tetrachloroethene, total organic carbon and micro-pollutants to once a quarter.

Recent monitoring returns for the W1 monitoring point have shown that the levels of these parameters detected have, over the past few years, been very stable and generally low or not detected. We consider that continued monitoring is required for these parameters at these locations, but we have reduced the monitoring frequency to reflect the relatively good recent results.

5. We have removed the air emission points A8 to A11.

These emission points were associated with the treatment activities carried out in the former Waste Water Treatment Plant to treat the Silica Manufacturing unit effluent. Since the closure of the Silica Plant these activities no longer take place and therefore these emission points are now redundant.

6. We have changed some of the monitoring requirements for the surface and groundwater monitoring programme, including:

- i. Reducing the monitoring frequency to twice per year.

Recent monitoring returns for the surface and groundwater monitoring programme have shown that the majority of parameters specified in the permit were generally not detected at the majority of sampling locations, with the exception of total organic carbon, total phenol and a limited number of micro-pollutants, which were detected in generally low concentrations. We consider that continued monitoring is required for these parameters at these locations, but we have reduced the monitoring frequency to reflect the relatively good recent results.

- ii. Removal of the requirement to conduct sampling and analysis for micro-pollutants at the River Dee Upstream and Downstream sampling points.

Levels of micro-pollutants at these sampling sites have been undetectable for the past five years. We therefore consider that the environmental risk from these substances at these locations is insignificant, and therefore we consider that there monitoring is no longer required.

- iii. We have decreased the frequency of monitoring for total phenol and total organic carbon at the Tref-y-Nant Brook and Pontcysyllte Adit, Middle and South De-watering Boreholes Brook Culvert and Road Culvert Sumps, Rhosymedre Quarry Leachate and Groundwater Borehole (B3) monitoring points to twice per year.

Recent monitoring returns for the surface and groundwater monitoring programme have shown that levels of total phenol and total organic carbon at these locations is generally low. We consider that continued monitoring is required for these parameters at these locations, but we have reduced the monitoring frequency to reflect the relatively good recent results.

7. We have decreased the frequency of monitoring for the groundwater carbon filter outlets to twice per year, and removed the associated emission limits.

Recent monitoring returns for the surface and groundwater monitoring programme have shown that the majority of micro-pollutants were generally not detected at the majority of sampling locations. Levels of iron are also generally low and are within the emission limit value. Levels of phenol are also very low in relation to the emission limit value. We consider that continued monitoring is required for these parameters at these locations, but we have reduced the monitoring frequency to reflect the relatively good recent results.

8. We have rationalised references to phenol monitoring across all tables in Schedule 4 where phenol monitoring is required. All monitoring references are now to 'total phenol' as the parameter, and 'SCA Blue Book 50 ISBN 011751671' as the monitoring standard;

We have made these changes to standardise the requirements for phenol sampling and analysis across the emission points and sampling locations featured in the permit. We have chosen to specify that 'total phenol' is analysed to ensure that all concentrations of all species of phenol are measured in the samples taken. We have specified the use of the monitoring standard 'SCA Blue Book 50 ISBN 01175161' as this is the standard stipulated in TGN M18: Monitoring of discharges to water and sewer for phenols and phenol indexes.

9. We have altered the monitoring standard references for total organic carbon to BS EN 1484 or SCA blue book 157 ISBN 0117529796 across all tables in Schedule 4.

We have specified this monitoring standard to standardise the requirements for total organic carbon sampling and analysis across the emission points and sampling locations featured in the permit. We have specified the use of the monitoring standard in particular this is the standard stipulated in TGN M18: Monitoring of discharges to water and sewer for total organic carbon.

10. We have made minor amendments to the wording of the monitoring standard references for micro-pollutants in the tables in Schedule 4.

We have changed the wording of the monitoring standard to 'Solvent extraction with analysis by GC-MS (VOC and SVOC)' as this describes the analysis required more accurately.

Annex 1: decision checklist

This document should be read in conjunction with the application and supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. An assessment of the application and its potential to affect the habitat has been carried out as part of the permitting process. We consider that the application will not affect the features of the habitat.	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.	✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. The proposed techniques/ emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility.	✓
The permit conditions		
Updating permit conditions during consolidation.	We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s). The operator has agreed that the new conditions are acceptable.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	These descriptions are specified in the Operating Techniques table in the permit.	
Monitoring	We have changed some of the requirements for monitoring and the emission limit values associated with that monitoring due to the operational changes that have occurred at the site.	✓
Reporting	We have changed the reporting requirements in the permit based on the operational changes at the site, and also because for some parameters, levels have been consistently demonstrated to be below emission limit values. We have revised the reporting requirements of the permit to reflect the changes to the monitoring scheme that we have imposed.	✓
Operator Competence		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓