100318175-006_sampling plan_EIG

Eign STC Effluent Sampling Proposal

Commitment

Dwr Cymru Welsh Water (DCWW) commits to undertaking (using a United Kingdom Accreditation Service (UKAS) accredited laboratory or equivalent - where suitable and available):

a) chemical analysis of the waste water which tests for ALL likely pollutants which DCWW expect to find in the discharge (not just Ammonia, BOD, Solids, flow, pH and data on bio-eliminability) and that DCWW will use an appropriate 'minimum reporting value' (MRV) (usually 10% of the environmental quality standards (EQS) where this is analytically achievable); and

b) the sampling and chemical analysis being undertaken in line with guidance Surface water pollution risk assessment for your environmental permit – GOV.UK (www.gov.uk) for all pollutants expected to be found.

Liquor Monitoring Proposal

DCWW are committed to providing information about the characteristics of the wastewater streams from the Eign STC, entering the adjacent EIGN WwTW and are undertaking a review of our commitment to (under the BREF guidance Best Available Techniques (BAT) conclusion) BAT 3, 6 and 7 further details of which are set out below.

Our review includes, but is not limited to, requesting companies providing national laboratory services to provide information relating to their capacity to analyse return liquor matrix for the determinants listed in the guidance.

Such information is essential in order for DCWW to complete the review of our liquor monitoring proposal and delivery of BAT 3, 6, and 7. DCWW plan to complete this at the earliest opportunity. These enquiries remain open with each of the applicable laboratory services, at the time of writing, with no confirmed date for receipt of a response.

DCWW will provide an updated proposal to the Environment Agency in line with a revised IED programme and in the meantime, we would like to assure the Environment Agency of our commitment to sample liquor returns at Eign, our commitment to BAT 3, 6, and 7 and the following:

a) Summary of the sampling and analysis methodology of the effluent discharged and likely pollutants in the effluent (Guidance Monitoring discharges to water: guidance on selecting a monitoring approach - GOV.UK and Surface water pollution risk assessment for your environmental permit - GOV.UK*).*

Under BAT 3, DCWW will establish and maintain an inventory of wastewater. DCWW will carry out the sampling and analysis methodology of the effluent discharged at defined and recorded locations. All sampling, analysis and reporting will be undertaken by trained personnel, accredited to the Environment Agency's Monitoring Certification Scheme (MCERTS) standards or eqivalent, where this is suitable and available. DCWW will ensure to document sampling procedures with details such as:

- precise location of the discharge sampling point including a grid reference.
- sampling process.
- storage conditions and transport of samples.
- types of bottles or containers and their closures.

A management system will be used to ensure the results are recorded and subject to review to include, but not be limited to, the following procedures:

- sampling programme, including procedures for resampling.

- data review and reporting
- training and audit.

DCWW propose a minimum of 12 sampling runs over a 12-month period (1 full sampling spec per month), initially, to establish a baseline, in accordance with the surface water pollution risk assessment guidance or other applicable guidance.

DCWW will then take an informed viewpoint of the determinands the samples contain demonstrating those that are not in the sample. DCWW will use an appropriate MRV (usually 10% of the environmental quality standards (EQS) where this is analytically achievable). An H1 assessment to screen out any that are not applicable or relevant will be completed.

b) A written statement with a commitment to undertake the sampling and analysis in line with BAT 3.

The purpose of BAT 3 in relation to return liquors is to establish and maintain an inventory of wastewater streams, as part of the environmental management system, to facilitate the reduction of emissions to water. In accordance with BAT 3 the following data will be provided:

i. Simplified process flow sheets that show the origin of the emissions. Flow calculations based on an assessment of throughput may be used.

ii. Descriptions of process-integrated techniques and wastewater treatment at source including their performances. Chemicals used for thickening and dewatering should also be stated.

iii. Thickening and dewatering liquors, which comprise the major component of the returns, will be subject to monitoring for: Ammonia; BOD; solids; flow and pH.

iv. Data on bio-eliminability (e.g. BOD)

DCWW is committed to providing information about the characteristics of the identified liquor return sampling points, namely average values and variability of calculated daily flows. In addition, DCWW is committed to further undertake the sampling and analysis of ammonia, BOD, solids and pH.

Sampling and analysis will be undertaken in line with BAT 3using a UKAS accredited, or equivalent, laboratory, where available.

c) A written statement with a commitment that those undertaking the sampling and analysis will be by accredited to MCERTs or provide evidence of equivalent standards.

DCWW is committed to perform sampling and analysis in accordance with MCERTS, ISO/IEC 17025 or equivalent standards.

The chemical analysis of the effluent and liquor return samples will be analysed in a UKAS accredited laboratory, where available.

d) A plan which identifies the effluent sampling point(s) and emission point for the effluent discharge from the installation and the NGR of the effluent sampling point/s

DCWW has identified process/drainage lines, at Eign STC, which return liquors and wastewater from the sludge treatment area to the head of works. The primary wastewater streams are currently identified, as per drawing Site Layout, Emissions and Drainage Plan, ref 100381175-006-MMD-00-XX-DR-Y-0004, as follows:

- W4 – SBR treated effluent (liquor treatment plant)

Other streams identified are:

- Uncontaminated site surface water run-off.
- Washdown for maintenance and cleaning.
- W5 – Digester bund rainwater (from digester bund return pump station 2)
- W6 - Digester bund rainwater (from digester bund return pump station 1)
- W7 – Inlet works

Sludge Thickening liquors

The Thickening plant, process carried out using either a Simon Hartley Belt Thickener or an Alfa Laval Drum Thickener, receive sludge from the screened sludge tank and is thickened to approx. 7-8% dry solids. A polymer is used in the Thickening Plant dewatering process to aid in binding the solids and predominantly remains in the thickened sludge solids. Approximately 480m3/day of liquor is produced from the processes. This wastewater drains back to the works inlet via SBR treatment tank (aka liquor return tank). The ammonia concentration at this point is low, the same as the urban wastewater stream it has come from.

Digested Sludge Dewatering Liquors

Digested sludge is dewatered, using an Alfa Laval Decanter Centrifuge is designed to raise the percentage of dry solids in the sludge from approximately 3.5-5% to approximately 25%. The Centrifuge, by means of a rapidly rotating centrifuge bowl, removes additional water from the sludge before continuously discharging the processed sludge into an inclined Screw Discharge.

The separated liquors are returned to the head of works currently via the SBR treatment tank, although there is an option to send this direct to the inlet works. A polymer is used in the dewatering process to aid in binding the solids and predominantly remains in the dewatered sludge solids. Approximately 315m^3/day of Digested Sludge dewatering liquors are produced.

After the dewatering process, the centrate discharges into drainage pipes feeding the Centrate Diversion Chamber. This diverts the flow to the Centrate Collection PS, pumped to the SBR Balance Tank. This wastewater drains back to the works inlet via the SBR treatment tank. The ammonia concentration is higher than the other liquor return streams.

Biogas Condensate

A very small volume, approximately 3m^3/d in total, of condensate is produced from gas condensate traps on biogas lines. The result of this is a liquid waste stream made up mostly of condensed water vapour. The condensate trap systems are sealed, with no chemical addition. There is no solids, BOD or ammonia load in the condensate which returns via the Centrate well to the SBR's.

OCU Liquors

The OCU wastewater is returned to head of works via the SBR treatment tank, following the same process as the centrate.

A single Odour Control Unit (OCU) is installed at the site which is designed to extract odours from the 2 No. Screened sludge Holding Tanks and Sludge Thickening Building. The OCU comprises a biofilter as a first treatment stage followed by a polishing carbon filter, and a 4m discharge stack.

Improvements will be implemented in line with the recommendations in the odour impact assessment.

The biofilter is continuously irrigated using final effluent, which is recirculated through the media with a partial bleed off to waste.

Boiler Wastewater

Boiler blowdown contains concentrated hardness which would be damaging to the internal of a boiler but not at all significant in relation to Urban Wastewater Treatment. Volumes are in the order of less than 1 m^3/day. They are returned to the head of the works.

Site Surface Rain Run-off

There are surface water drains in the sludge treatment area of Eign STC which are returned to the head of the works. A new sump and pumping station will be installed inside the secondary

containment area, once constructed, to allow clean, uncontaminated surface water build up inside the bund to be removed.

Washdown for Maintenance and Cleaning

There is maintenance and cleaning within the sludge treatment area onsite at Eign STC. Final effluent from the wash water system will be adequately diluted.

Sample Locations

We propose to sample the wastewater streams described above as set out below in Table 1 which lists the locations identified as provisional sampling points and waste waters present. It is proposed that, as the centrate, filtrate and condensate only all converge into the liquor balance tank for treatment in the SBR that one single sample point will be provided from the SBR. The liquors into, and out of, the SBR are all undiluted. No other process waters or surface water is diverted to the SBR.

Table 1: Sample points

Sample Point	Grid Reference
S1 – STC process liquors	SO 52125 38750

Composite Sampling

The returns from thickening/dewatering equipment identified above combine as from the sludge thickeners and centrifuge into point W4 and flow into the liquor balance tank.

DCWW will sample the location shown in Table 1 in accordance with Environment Agency Guidance. Where individual flow proportional samples are taken at each sample point, each flow proportional composite sample may be combined to provide a single flow proportional 'bulk' composite sample for analysis. Return flow data will be used to ensure the single bulk composite sample is representative of the total flow returned.

Location of Liquor Return.

The wastewater treated emissions and uncontaminated rainwater run off identified in this document enter the inlet before the storm overflow and, therefore, these emissions could bypass the WwTW treatment or be emitted as a direct discharge to water.