

Application Form C6 – Additional Responses

Question 3b: What is the maximum volume of effluent you will discharge in a day?

1,900m³/day

Question 3c: What is the maximum rate of discharge in litres per second?

22 litres/second

Question 3d: What is the maximum volume of non-rainfall dependent effluent you will discharge in a day?

1,900m³/day

Question 3f: For each answer in question 3, show how you worked out the figure on a separate sheet

Q3b – The main elements of the effluent generated are the filtrate and centrate.

- Maximum daily filtrate return based on a GBT surplus rate of 50m³/hr is approximately 1,200m³/day.
- Maximum daily centrate return based on a production rate of 25m³/hr sludge feed is 700m³/day.
- Condensate is estimated to be very small quantities and therefore no more than 2ltrs/day or 0.002m³/day (based on site knowledge).

Total therefore: 1,200 + 700 + 0.002 = 1,900m³/day

Q3c - (1,900m³)/86,400) x 1,000 = 22 litres/second

Q3d – The main elements of the effluent generated are the filtrate and centrate.

- Maximum daily filtrate return based on a GBT surplus rate of 50m³/hr is approximately 1,200m³/day.
- Maximum daily centrate return based on a production rate of 25m³/hr sludge feed is 700m³/day.
- Condensate is estimated to be very small quantities and therefore no more than 2ltrs/day or 0.002m³/day (based on site knowledge).

Total therefore: 1,200 + 700 + 0.002 = 1,900m³/day

Question 5a: How far away is the nearest foul sewer from the boundary of the premises?

Not applicable – the installation is located within the curtilage of Southport wastewater treatment works (WwTW) and the installation wastewater emissions discharge into the works UWWT inlet via the site's sealed drainage system.

Question 5b2: Discharges from all other premises including trade effluent

Not applicable – the installation is located within the curtilage of Southport WwTWs and the installation wastewater emissions discharge into the works UWWT inlet via the site's sealed drainage system.

Southport WwTW Sludge Treatment Facility

EPR/XP3337QR

Application Form C6 – October 2022

Question 6a: Do you treat your effluent

Wastewaters generated by the sludge treatment process are not subject to pre-treatment. All wastewater emissions are returned to the head of Southport WwTW to undergo full biological treatment comprising primary treatment, secondary and tertiary treatment, in order to achieve the consented discharge limits.

Question 6b

No treatment is undertaken within the installation boundary. Wastewater emissions are returned to the head of Southport WwTW to undergo full biological treatment

Question 6c: No question

Table 1 identifies that Question 6c should be answered – it is noted that this question does not exist on the form.

Question 7b: Are any of the specific substances listed in ‘Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater’ added to or present in the effluent as a result of the activities on the site?

No monitoring has been undertaken for the substances listed. See response to question 7e.

Question 7c: Have any of the specific substances listed in ‘Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater’ been detected in samples of the effluent or in the sewerage catchment upstream of the discharge?

No monitoring has been undertaken for the substances listed. See response to question 7e.

Question 7d: Are there any other harmful or specific substances in your effluent not mentioned in ‘Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater’?

No monitoring has been undertaken for the substances listed. See response to question 7e.

Question 7e: If you have answered ‘No’ to any of questions 7a to 7d provide details on a separate sheet of how you have established that the effluent is not likely to contain specific substances

There are no direct emissions to surface water or groundwater from this installation however, on direction from the EA, we propose to carry out monitoring for all substances listed within the referenced guidance documents for the wastewater returns from the sludge treatment process that are routed into the WwTW. These wastewater emissions are limited to the following:

- W1 – Filtrate from the GBTs (Grid reference SD 36867 20594);
- W2 – Centrate from the centrifuges (Grid reference SD 36818 20587);
- W3 – Condensate from the CHP engine and biogas lines (Grid reference SD 36918 20649); and
- W4 – Surface water drainage (Grid reference SD 36868 20584).

As Southport WwTW final effluent discharges into a tidal channel, testing for the hazardous and priority substances listed for estuarine and coastal waters will be undertaken. There are 56 priority hazardous pollutants and 96 specific pollutants listed in the tables contained in the EA Guidance ‘Surface water pollution risk assessment for your environmental permit’ - [Surface water pollution risk assessment for your](#)

[environmental permit - GOV.UK \(www.gov.uk\)](http://www.gov.uk). The total number of parameters, excluding duplicates between the two lists, is 150.

UUW is committed to undertaking full characterisation of the wastewater streams to meet BAT3, however we will assess whether it is possible to screen out any of these parameters based on the character of the wastewater coming into the works and, if so, provide a justification to the EA during the permit determination period for any reduction in the list of parameters to be analysed.

Monitoring for hazardous and priority substances will be undertaken at location T1 (the point at which the combined effluent streams leave the installation (Grid reference SD 36852 20668)) on 12 occasions and the results will be screened against relevant environmental quality standards detailed in the EA guidance. Laboratory analysis will be undertaken to MCERTS or UKAS ISO17025 standards for determinands where available. However, it should be noted that only around 10% of the 150 hazardous and priority substances can be analysed in-house at UUWs laboratories and initial contact with commercial laboratories has indicated that for some parameters they would not be able to achieve the EQS levels as a limit of detection on a centrate/ filtrate matrix and potentially may not be able to analyse at all.

Monitoring for wastewater returns to the WwTW inlet has also been reviewed against BAT 6 and BAT 7 requirements.

BAT 6 specifies that 'for relevant emissions to water, as identified by the inventory of wastewater streams (see BAT 3), BAT is to monitor key process parameters (e.g. wastewater flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation)'.

BAT 7 states: BAT is to monitor emissions to water with at least the defined frequency, and in accordance with EN standards. The proposed BAT monitoring requirements for all wastewater streams have been compared with those for biological treatment of waste. It is considered that this is most suitable classification as the wastewater streams are derived from sludges that have been produced following a biological treatment process and are returning to further biological treatment.

From the BAT 7 requirements, the following parameters are relevant for biological treatment: total nitrogen; COD; TOC (TOC or COD to be undertaken); total phosphorous; suspended solids; PFOS; and PFOA. However, footnote 6 applies to all parameters (except PFOS/PFOA), whereby monitoring applies only in the case of a direct discharge to a receiving water body.

Therefore, based on the BAT table of requirements for biological treatment of waste and the inventory of wastewater streams returned to the head of the WwTW for treatment, the proposed monitoring at W1 to W4 will be for: total nitrogen; COD; BOD, total phosphorous; suspended solids and ammoniacal nitrogen (see Southport ASD, Section 5.12 for full monitoring proposed).

The monitoring suite proposed for the combined point of discharge (T1) includes PFOS which is on the list of priority hazardous substances.

Southport WwTW Sludge Treatment Facility

EPR/XP3337QR

Application Form C6 – October 2022

Flow meters are installed to record the flow of centrate and filtrate to the head of the works. An MCERTS flow meter is installed at the final effluent outlet from the wider WwTW works at SD 37003 20789. Monitoring of the wastewater returns to the head of the works is summarised below in Table 7.1.

Table 7.1 Monitoring of the Wastewater Returns

Location	Grid Reference	Parameters	Frequency
W1 – Filtrate from the GBTs	SD 36867 20594	Total nitrogen, COD, BOD, total phosphorous, suspended solids, pH and ammoniacal nitrogen	Monthly – 12 samples
W2 – Centrate from the centrifuges	SD 36818 20587	Total nitrogen, COD, BOD, total phosphorous, suspended solids, pH and ammoniacal nitrogen	Monthly – 12 samples
W3 – Condensate from the CHP engine and biogas lines	SD 36918 20649	Total nitrogen, COD, BOD, total phosphorous, suspended solids, pH and ammoniacal nitrogen	Monthly – 12 samples
W4 – Surface water drainage	SD 36868 20583	Total nitrogen, COD, BOD, total phosphorous, suspended solids, pH and ammoniacal nitrogen	Monthly – 12 samples
T1 – combined streams for liquors into UWWT flow – downstream of penstock	SD 36852 20668	Hazardous and priority substances for discharges to estuaries and coastal waters; 150 parameters including PFOS	Monthly – 12 samples

Question 8d: Discharges to groundwater

Not applicable – the installation does not discharge to groundwater.

Question 8e: Discharges to freshwater (non-tidal) rivers from an installation, including discharges via sewer

Not applicable – the installation discharges to a tidal river.

Question 8f: Environmental Impact Assessment

Not applicable – an environmental impact assessment has not been undertaken as this is an existing facility/installation.

Question 9a: What is the national grid reference of the inlet sampling point? (for example, SJ 12345 67890)

Not applicable to this installation.

Question 9b: What is the national grid reference of the effluent sample point?

T1 – SD3684 2066. This location is where the combined effluent (i.e. centrate, filtrate, condensate and surface drainage) emission leaves the installation and joins the wider works for flow to full biological treatment. The new effluent sampling point will be available from permit issue. Only centrate and filtrate monitoring locations are currently available.

Southport WwTW Sludge Treatment Facility

EPR/XP3337QR

Application Form C6 – October 2022

Question 9d: What is the national grid reference of the flow monitoring point?

No flow meter installed at the effluent sampling point. The centrate return has its own dedicated flow meter and there are two flow meters for the combined centrate and filtrate returns. An MCERTS flow meter is installed at the final effluent outlet from the wider WwTW works at SD 37003 20789.

Question 9e: Does the flow monitor have an MCERTS certificate?

No flow meter installed at the effluent sampling point.

Question 9f: Do you have a UV disinfection efficacy monitoring point?

No this is not installed as part of this installation. The wider WwTW undertakes UV treatment of effluent.

Question 9h: You should clearly mark on the plan the locations of any of the above that apply to this effluent

Refer to Southport Application Support Document - Appendix D2

Question 9i: Do you intend to do your own effluent monitoring?

Yes.

Question 10: Where will the effluent discharge to?

Not applicable. There are no direct emissions to water from the sludge treatment activities. The wastewater streams are returned to the head of Southport WwTW for full biological treatment, before being discharged (indirectly) via the WwTW final effluent discharge into Crossens Pool (Environmental Permit/Consent (017030100)). This is a tidally influenced channel that runs through an extensive inter-tidal marshland area before out falling into the Ribble Estuary.