


BRADWELL SITE

NEW OUTLET DESIGN SPECIFICATION FOR THE NON-RADIOACTIVE
CONSTITUENTS (MIXED EFFLUENT A3 OT5)

BRAD/EN/REP/200

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1. Purpose

This document provides the specification for the new outlet design for discharges into the Blackwater Estuary. It is in response to the Environment Agency request to provide an operating technique to meet condition 2.3 "A3 OT5 – A document outlining the specification of the new outlet for the mixed effluents discharge" for the Mixed Effluent permit PR2TS/E10760C¹.

The new outlet design ensures that discharges from the site achieve sufficient dilution and dispersion in the receiving water environment to meet relevant environmental quality standards (EQS) for various substances in the effluent.

The requirement of this new outlet is as a result of the continuing silting up of the existing discharge route which now presents a risk of preventing site's discharges. Furthermore, when the site enters Care and Maintenance, a quiescent period during which no significant activity will be carried out, there will be less human intervention required to continue to make discharges. Accordingly, the new outlet has been designed to require less human intervention whilst achieving sufficient dilution and dispersion.

2. Design Parameters

The new outlet pipelines have been installed in the east outlet culvert and configured to the recommended design specification as shown on drawing R7M-0501366². The effluent discharge lines installed are of 180mm diameter polyethylene; this diameter being the maximum that could be installed through the 90° bend within the east outlet culvert.

The mixed effluent is collected in the Main Drains Pit (MDP) from where it is discharged to the estuary periodically depending upon the volume collected.

As the mixed effluent is less dense than the receiving water and therefore buoyant, it is discharged through the three pipelines at a lower point in the water column than the FED effluent. This is to ensure that the effluent achieves the desired dilution before it rises to the water surface.

A survey of the sea bed was undertaken informing on sea bed silt mobility and this was taken into account when agreeing the optimum design. A nominal outfall height was agreed at 1m above the sea bed. However, to minimise the risk of scouring of the seabed sediments, the three pipeline ports were sited at 1m above the silt sediments accumulated at the outfall.

Any modification to the design and configuration will be controlled via the company's management control procedures and would require agreement by a Suitably Qualified and Experienced Person (SQEP) from the Environment Team.

REFERENCES

- 1 Environment Agency 2016. Mixed Effluent Permit Number PR2TS/E10760C
- 2 R7M-0501366 DWG-014, July 2014. East Outlet Diffuser Arrangement