



**GLAN LLYN DEVELOPMENT SITE
LLANWERN
NEWPORT**

**CELTIC ENGLOBE WASTEWATER
TREATMENT SYSTEM**

NON-TECHNICAL SUMMARY

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R1815/21/5129/NTS

CONTENTS

1.0	INTRODUCTION	1
2.0	OVERVIEW OF SCHEME	1
3.0	BACKGROUND TO PERMIT APPLICATION	3
4.0	SPECIFIED ACTIVITIES TO BE CARRIED OUT AT THE SITE	3
5.0	WASTES TO BE TREATED AT THE SITE	4

1.0 INTRODUCTION

This report is to be read in combination with the attached Environmental Permit application.

Celtic Technologies Limited (Celtic) have been commissioned by St Modwen to undertake water treatment works within the former Llanwern steelworks, which is currently undergoing development works. The area which the treatment system occupies is set within an area of largely vacant land near the southern boundary of the development site (as shown on drawing D1815/5129/A1). Residential properties are located approximately 850 m to the west, whereas an Amazon distribution warehouse lies 450m to the east. The Gwent Levels SSSI is located approximately 250 m to the south of the site and the Severn Estuary is located approximately 4 km to the south of the site. A railway line is located to the north of the site.

The development site is drained by a network of surface water ditches which discharge to the adjacent Tata Steel site via the Main East West Ditch (MEWD). An agreement has been reached between St Modwen and Tata Steel to allow this discharge to continue during the Glan Llyn site development works, on the basis that the water is treated to standard acceptable to Tata Steel. Groundwater which arises from remediation of land undertaken by other third parties within the wider St. Modwen development is at times pumped in to the network of surface water ditches. The liquid that is therefore treated by the Celtic Technologies Limited activities is a mixture of groundwater and surface water. No external / off-site waste will be imported or treated at the plant.

This water is subsequently discharged to the Severn Estuary under an Environmental Permit held by Tata Steel.

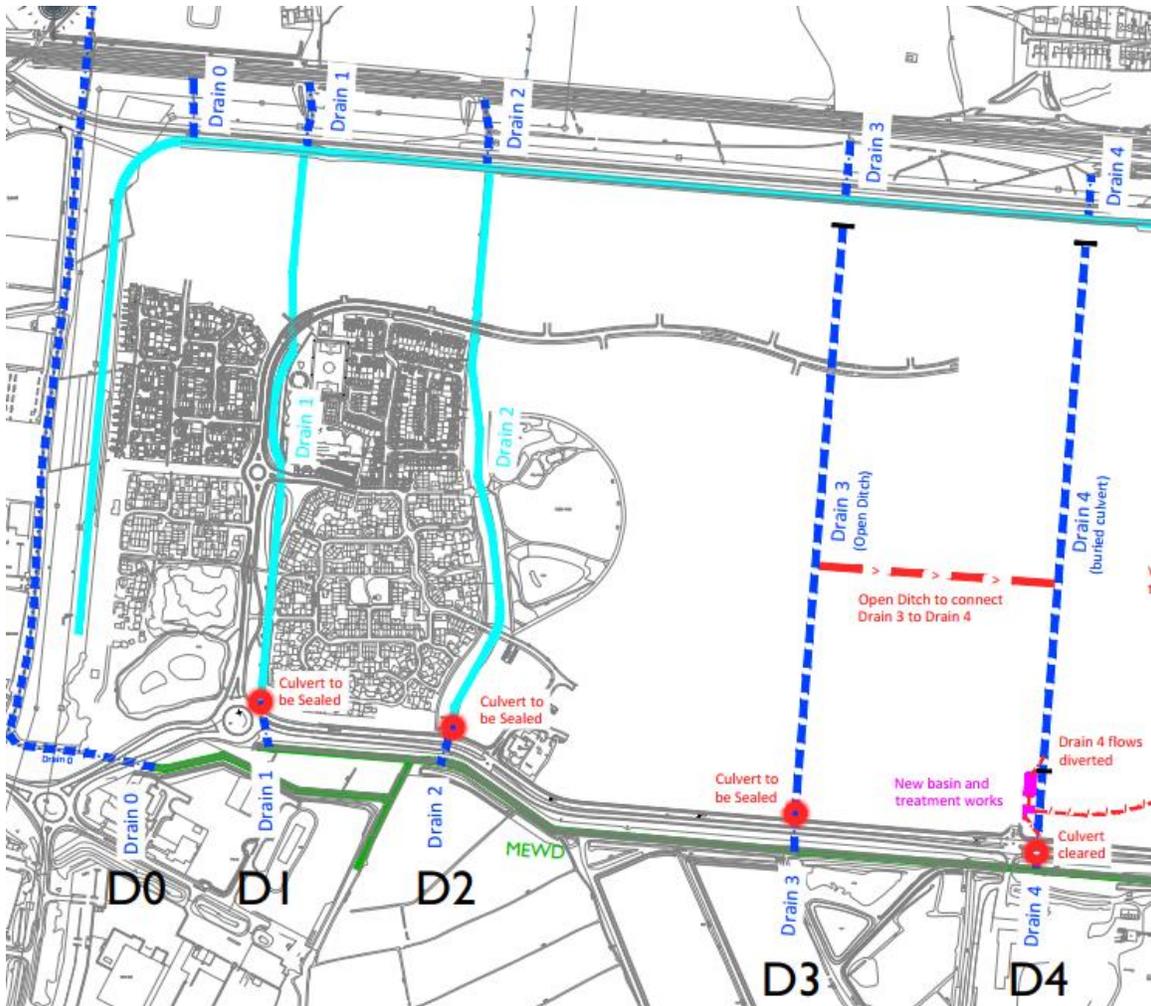
Celtic were commissioned to install, commission and operate a water treatment system to treat surface water exiting the site via Drain 4, which ultimately discharges to the Tata Steel effluent treatment plant. The surface water is pumped from a pre-treatment lagoon, through the treatment system, prior to discharge to the Drain 4 outfall. The treatment works carried out by Celtic will therefore result in improvement in the quality of water exiting the site.

The water treatment system has been fully operational since February 2021. These works are currently permitted under deployment of Celtic's Mobile Plant Licence, under deployment reference PAN-011383.

2.0 OVERVIEW OF SCHEME

The development site, formerly part of the Llanwern Steelworks, has in recent years been drained via a network of man-made ditches, one of which runs along the northern boundary, with bisecting ditches running from north to south, discharging to the MEWD. The network of man-made ditches is illustrated in Figure 1 overleaf. These ditches collect runoff from the site, which is undergoing redevelopment works, as well as potential groundwater. The drainage ditches exiting to the south of the site have all been blocked, with the exception of the Drain 4 outfall. Drain 4 has also been blocked to the north of the outfall location to prevent direct discharge so that only treated effluent from Celtic's wastewater treatment plant enters the outfall, leading to the MEWD. The wastewater treatment system operated by Celtic receives water diverted from the bisecting ditches via a pre-treatment lagoon.

Figure 1 - Glan Llyn Development Site Surface Water Drainage Network



A pre-treatment lagoon has been constructed to provide holding capacity for drainage waters prior to treatment through Celtic's wastewater system. This pre-treatment lagoon has a capacity of approximately 2,000 m³ and provides the source of influent water to Celtic's wastewater treatment system. Water is actively pumped from the pre-treatment lagoon into the wastewater treatment plant. This pre-treatment lagoon does not form part of Celtic's operating area, which is indicated on Drawing D1815/5129/A1.

Celtic has operated the wastewater treatment plant since February 2021, under deployment of Mobile Plant permit.

Figure 2 – Pre Treatment Lagoon

3.0 BACKGROUND TO PERMIT APPLICATION

Celtic were provided with a contract to operate the treatment system for up to 1 year during which the influent concentrations have been assessed against target criteria as stated within the drainage agreement between St Modwen and Tata Steel. Influent concentrations have exceeded target criteria on multiple occasions, indicating the requirement for treatment. Given the requirement for treatment has been established, the client has requested that Celtic apply for an appropriate permit to enable continuation of treatment beyond the initial one-year deployment period.

4.0 SPECIFIED ACTIVITIES TO BE CARRIED OUT AT THE SITE

Celtic propose to continue operating a water treatment system to treat influent water potentially containing suspended solids, organic and inorganic dissolved phase contaminants, to concentrations as agreed with the recipient of the effluent, Tata Steel.

The system will treat the water via the following processes as standard:

- Settlement of suspended solids via a baffled settlement tank;
- Filtration of suspended solids through sand filters and Granular Activated Carbon (GAC) vessels;
- Sorption of dissolved phase hydrocarbons through GAC vessels; and
- Removal of ionic and metals species via zeolite filter media.

Based on Celtic's operating experience at the site to date, the influent contaminant loading is expected to be low; however, Celtic have deployed a system which is flexible and robust, therefore the system also has the following capabilities, should additional treatment processes be required:

- pH adjustment through flow-proportional acid dosing, should influent pH fall outside of the required range;
- Removal of dissolved metals species through ion-exchange resin.

Non-aqueous phase liquids (NAPL) are not expected to enter the system; however, the system also incorporates oil-water separation through gravity separation.

The system will be equipped with in-situ sensors to continuously monitor pH, electrical conductivity and turbidity in effluent, with the ability to automatically react to changes in these parameters indicating potential exceedance of agreed criteria, by ceasing discharge and diverting flows to additional treatment (as described above), as required.

The system, to be housed within a bund of 110% capacity, will be fully automated with multiple safety devices, including tank high levels sensors, bund high level sensors and pressure sensors. All information will be fed to a central Programmable Logic Controller (PLC), which will be programmed to automatically detect and react appropriately to any detected issue. Remote system access and telemetry will enable notification of Celtic personnel in the event of any fault. These features will enable the system to safely operate 24 hours a day, 7 days per week with minimal supervision and maintenance requirements.

The water treatment system process flow diagrams are presented in Drawing D1815/5129/A3-A5.

Figure 3 – Overview of Celtic Wastewater Treatment System



5.0 Wastes to be Treated at the Site

The wastewater being treated by Celtic's wastewater treatment plant is derived from a network of surface water ditches which drain the site into a private sewer network. Groundwater which arises

from remediation of land undertaken by other third parties within the wider St. Modwen development may be pumped into the network of surface water ditches. The liquid that is therefore treated by the Celtic Technologies Limited activities may be a mixture of groundwater and surface water.

No external / off-site waste will be imported or treated at the plant.

The waste types to be treated are detailed in Table 1 below, noting that there is no appropriate description within the European Waste Catalogue for the wastewater being treated at the site, which would be best described as:

Surface water and potential groundwater which is predominantly non-hazardous, but may at times contain dissolved and non-aqueous phase liquids above the hazardous classification threshold.

Table 1 – Types of Waste Accepted (BEST FIT)

Waste Code (EWC)	Description of Waste
16 10 01*	Aqueous liquid wastes containing hazardous substances
16 10 02	Aqueous liquid wastes other than those mentioned in 16 10 01
19 13 07*	Aqueous liquid wastes and aqueous concentrates from groundwater remediation containing hazardous substances
19 13 08	Aqueous liquid wastes and aqueous concentrates from groundwater remediation other than those mentioned in 19 13 07