

1. Introduction

This application relates to a new environmental permit application for a bespoke installation bioresources treatment permit for the Newthorpe Sewage Treatment Works, operated by Severn Trent Water Ltd.

The site has a current T21 waste exemption which allows for the recovery of waste at a waste water treatment works which will be superseded by this permit application, and an MCPD standard rules permit (SR2009 no 4) permit for the operation of a CHP unit at the site.

This new permit application comprises an installation for the biological treatment of waste under the Industrial Emissions Directive, as implemented through the Environmental Permitting Regulations (2016) (as amended). It relates to the non-urban waste water treatment directive (UWWTD) treatment of indigenous UWWTD derived sludge and imported UWWTD sludges from other works and cess and septic tank imported material which is of a similar composition. Note that these operations are currently operated at the Newthorpe Sewage Treatment Works site, under the UWWTD.

The listed activity includes the import point for waste from domestic customers, which is then treated via the UWWTD route which is outside of the scope of this permit. Permitted activities then include operations from the point of the separation of the sludge from the main UWWTD treatment stream, through to its storage on the site cake pad, prior to its recovery to land offsite. The additional aspects of the permit includes the biogas handling and treatment system as a directly associated activity, including a biogas fuelled gas engine and two boilers, covered by the Medium Combustion Plant Directive.

A bespoke installation permit is required for this site due to the inclusion of additional EWC codes on the permit for waste import and the standard rules set not including operation of a biogas engine, which would otherwise require multiple permits at the site. A number of other activities are undertaken at the site, outside of the scope of this permit, relating to the treatment of sewage derived materials through aerobic processes. These activities are covered by the UWWTD.

1.1 Non-Technical Summary

This application is for a new bespoke installation permit under the Environmental Permitting (England and Wales) Regulations 2016 (as amended), following a change of interpretation of the Urban Waste Water Treatment Directive (UWWTD) by the Environment Agency.

The site is located on the outskirts of Newthorpe, Nottinghamshire, in a largely rural area to the west of the city of Nottingham. A railway line runs to the west of the site and the Gilt Brook runs along the eastern and southern boundaries before feeding into the River Erewash to the west. The A610 runs to the north of the site.

The application covers the biological treatment of sewage sludge by anaerobic digestion, with a capacity above the relevant thresholds. The biological treatment of sludge includes treatment of the indigenous sewage sludges from the onsite aerobic treatment process and treatment of imported sewage sludges from other sites, arriving by road. The indigenous sludges are generated from the aerobic treatment of both waste waters from the sewer network arriving into the site at the works inlet, and, from imported waste materials arriving by road transport to a dedicated waste import point at the works inlet. These tanker imports to the works inlet are classified as a waste activity. There are a number of directly associated activities including the operation of a biogas fuelled Combined Heat and Power (CHP) unit and two boilers for the generation of electricity and heat at the site. The boilers are classified as an existing combustion source under the Medium Combustion Plant Directive (MCPD), while the CHP is the subject to a standard rules MCPD permit.

There is a waste activity, covered by the Controlled Waste Regulations 2012, at the site, comprising an offloading coupling for tankers and cess vehicles to discharge through, located at the works inlet. The import is directly into the works inlet, with no holding or blending tanks before the import.

The primary activity of the installation is for the biological treatment of non-hazardous wastes for recovery by means of anaerobic digestion. The installation has two import points for sludge transfers from other waste water works. This material is transferred and blended with the indigenous sludge separated from the main aerobic treatment flow in a one of three pre-digestion blending tanks.

These blending tanks are used to ensure that all imported and indigenous materials are properly mixed to give a more homogeneous mixture, prior to transfer to the primary digesters. All three digesters are above ground concrete tanks which operate on a continuous process basis, that is incoming sludge is added to the process as digested sludge is removed. Removed sludge is transferred to one of two digested sludge storage tanks prior to being dewatered within site centrifuges by the addition of polyelectrolyte based coagulant. Dewatered, digested sludge is then conveyed to the site cake pad for temporary storage. Treated cake is finally removed from the pad by road for landspreading under the Sludge Use in Agriculture Regulations 1989, in accordance with the Biosolids Assurance Scheme (BAS).

Biogas is captured from the primary anaerobic digesters and stored within a telescopic roof biogas storage holder. The above ground biogas transfer pipeline is equipped with condensate pots that capture entrained moisture from the generated biogas and allow it to be drained into the site drainage system for treatment. The biogas storage vessel is fitted with pressure release valves as a safety precaution in the event of over pressurising the system.

The biogas is taken from the storage vessel for combustion in a CHP engine, generating electricity for use both within the site and for export to the grid, and heat to maintain primary digester temperature. The CHP is currently subject to a standard rules permit, SR2009 no 4, under the MCPD. Biogas can also be used in two dual fuelled auxiliary boilers. In the event there is excess biogas, i.e. more than the CHP can utilise, or in the event that the CHP is unavailable, there is a ground mounted emergency flare. This is utilised under 10% of the year.

The cake pad is in excess of 250m from any offsite receptors.

There is also a waste activity covered by the Controlled Waste Regulations 2012, at the site for the import to the works inlet of cess, and septic tank imported materials from third parties.