

Caulmert Limited

**Engineering, Environmental & Planning
Consultancy Services**

DWR CYMRU WELSH WATER

**PROPOSED DEVELOPMENT OF AN ADVANCED ANAEROBIC
DIGESTION PLANT**

FIVE FORDS WASTEWATER TREATMENT WORKS, WREXHAM.

DESIGN AND ACCESS STATEMENT

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1. INTRODUCTION

- 1.1 Caulmert Ltd has been appointed by Mott MacDonald Bentley, capital delivery partner acting on behalf of Dwr Cymru Welsh Water (DCWW), to prepare this Design and Access Statement.
- 1.2 The Statement relates to an application for full planning permission for the proposed development of an Advanced Anaerobic Digestion (AAD) Plant, together with associated internal site access roads and screening bund at Five Fords Wastewater Treatment Works (WwTW), Wrexham.
- 1.3 Planning permission was granted on 8th March 2010 for the development of the sludge treatment digestion and sustainable energy plant on land within the eastern part of the WwTW site (Planning Permission Ref: P/2010/0012).
- 1.4 The sludge treatment digestion and sustainable energy plant became operational in 2012 and treats and digests sewage sludge from Five Fords WwTW and from other WwTW in North Wales.
- 1.5 The treated sludge, following digestion, is then recycled to farmland as a high-value and sustainable fertiliser.
- 1.6 The digestion process produces a biogas which is used to generate electricity on site and/or is injected into the National gas grid.
- 1.7 Since the existing sludge treatment digestion and sustainable energy plant became operational, new advanced anaerobic digestion (AAD) technologies, involving thermal hydrolysis, have become well established and enable the overall digestion process to operate more efficiently producing increased volumes of biogas and an improved fertiliser.
- 1.8 It is now proposed to install an AAD plant at Five Fords WwTW in order to complement the operation and enhance the efficiency of the existing sludge treatment digestion process.

2. DESIGN

Design Principles and Concepts

i) Environmental Sustainability

- 2.1 It is proposed to locate the proposed AAD plant immediately adjacent to the existing sludge treatment digestion and sustainable energy plant, partly within the existing operational area of the WwTW and with the balance extending onto the adjacent former construction compound site.
- 2.2 This location was selected in view of the mutual interdependence of the two processes, the focus of sludge treatment facilities on this part of the WwTW site, the brownfield status of the site and the limited intrusion beyond the existing operational area that would be required.

ii) Movement to, from and within the Development

- 2.3 Vehicular access to the WwTW site is gained from Cefn Road, via an existing L-shaped private access road which is currently in the process of being upgraded.
- 2.4 Within the existing WTW site, a series of internal access roads and paths provide vehicular and pedestrian access to the existing buildings and structures.
- 2.5 To the south of the WwTW, a disused railway line runs on a generally north west-south east alignment, with the village of Marchwiel beyond the disused railway line to the south west.
- 2.6 A public footpath runs along the disused railway line and in a northerly direction from the disused railway line to join the existing WwTW access road, before turning sharply eastwards towards the new Industrial Estate Access Road.

iii) Character

- 2.7 Five Fords WwTW is situated approximately 3.5km to the south east of Wrexham Town Centre and extends to approximately 23ha.
- 2.8 The WwTW site is enclosed within a security fence and contains a series of tanks, some of which are up to 22m in height, together with other substantial buildings and structures.
- 2.9 The site of the proposed AAD Plant ("the application site") is located at the eastern fringe of the WwTW.
- 2.10 The western part of the application site is currently occupied by an existing sludge cake building and liming plant, together with a number of both operational and disused tanks.
- 2.11 The eastern part of the application site has been used, in recent years, as a temporary construction compound in connection with various improvement projects undertaken at the WwTW. This part of the application site is currently vacant and comprises areas of hardstanding which have been re-colonised, in part, by thistles and weeds.

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- 2.12 The land to the east and north of the application site is occupied by a solar array, which was approved in 2014.
- 2.13 Immediately to the east of the solar arrays, the land is in agricultural use. Further to the east, a recently constructed link road runs between Five Fords Bridge and the A525 at Cross Lanes, providing vehicular access to Wrexham Industrial Estate from the south.
- 2.14 To the north of the solar array, the Afon Clywedog follows a meandering course, with Cefn Road beyond. Wrexham Industrial Estate is located approximately 800m to the north of the application site and contains numerous large industrial and commercial buildings.
- 2.15 The application site is bounded on its western side by Marchwiel Covert, an area of ancient woodland, with process tanks and other wastewater treatment plant and equipment situated further to the west and to the north west.
- 2.16 A sewage sludge digestion and sustainable energy generation plant is located immediately to the south of the application site. This plant includes two digestion tanks, which are both more than 22m in height, and a sustainable energy plant.

iv) Community Safety

- 2.17 The AAD plant will enable an enhanced sewage sludge to be produced which will be used as a safe and sustainable fertilizer on agricultural land.

Design Response to the Development Context.

i) Environmental Sustainability

- 2.18 The proposed development will enable full use to be made of the existing sewage sludge digestion and sustainable energy plant at Five Fords WwTW and increasing the yield of sustainable biogas.
- 2.19 The proposed development will utilise robust materials which are likely to have a long operational life. This will help to reduce the need for subsequent maintenance and repair work, resulting in “whole life” sustainability benefits.
- 2.20 Surface water run-off associated with the proposed development will be collected and passed through the existing WwTW.
- 2.21 The proposed new structures will not normally be occupied. Under these circumstances we do not consider that BREEAM compliance is required for the proposed development.
- 2.22 We have previously contacted BREEAM directly on this matter, in respect of a similar development proposal elsewhere, and have been advised by BREEAM Customer Services that “the scope of BREEAM covers only occupied buildings (ie those where people use a space in the building for over 30 minutes at any given time)”.

ii) Movement to, from and within the Development

- 2.23 Vehicular and pedestrian access to the proposed development will continue to be gained via the existing access road from Cefn Road.
- 2.24 It is anticipated that, in operation, the proposed development will generate approximately 8 additional tanker movements each day, together with approximately 13 additional trailer movements, distributing the treated sludge to agricultural land.
- 2.25 The existing site WwTW site access road and its junction with Cefn Road are in the process of being improved, in accordance with current highway standards, and both the improved junction and the surrounding highway network can safely accommodate this small increase in traffic movements
- 2.26 It is anticipated that the majority of visitors to the site will be DCWW employees, who are likely to have to bring with them either tools, spare parts or other equipment. It is likely, therefore, that the majority of operational movements to and from the site will be by light van.
- 2.27 The proposed development will not affect any public footpaths or bridleways.

iii) Character

- 2.28 The tallest structures that are proposed are the THP feed silos (16m) and the pre-centrifuge buffer tank (14.7m). The height of these structures are well below that of the existing digesters (22m).
- 2.29 The proposed development is well screened in public views from the north, west and south by existing vegetation. From the east, public views of the proposed development will be available from the footpath that runs between the former railway line and the WWTW site access road and from the recently completed Wrexham Industrial Estate link road.
- 2.30 In order to limit the visual impact of the proposed development from these viewpoints, the larger structures have, insofar as operationally practicable, been located close to the existing digesters and with the well-established Marchwiell Covert as a backcloth. In addition, tanks have been sited on an east- west alignment and in close proximity to existing structures so that the tank to the rear is partially screened.
- 2.31 A screening bund will also be provided along the eastern boundary of the proposed development.
- 2.32 The colours of the proposed structures have been selected to match existing buildings and also to appear recessive in the landscape, especially when viewed with Marchwiell Covert as a backcloth.

2.32 The dimensions of the proposed development are indicated in the tables below:

Proposed Building Structure	Dimensions (m)
LTP Dosing Plant	13.0(l) x 9.0(w) x 3.0(h)
Cake Import MCC Room	17.0(l) x 7.0(w) x 3.0(jh)
FE/LTP MCC Room	9.0(l) x 7.0(w) x 3.0(h)
THP Transformer	4.0(l) x 4.0(w) x 3.0(h)
Pre- THP Centrifuge	15.0(l) x 12.0(w) x 6.5(h)
Cake Building Extension	50.0(l) x 19.0(w) x 9.7(h)
Cake Building OCU	11.0(l) x 8.0(w) x 3.0(h)
Boiler Room and Feed Treatment	12.0(l) x 10.0(w) x 7.7(h)
Boiler Room Flue	14.8(h)
THP Transformer	4.0(l) x 4.0(w) x 3.0(h)
THP MCC	8.0(l) x 7.0(w) x 3.0(h)
Digester Area MCC Kiosk	10.0(l) x 4.0(w) x 3.0(h)
Grit Removal Plant MCC Kiosk	9.5(l) x 4.0(w) x 3.0(h)

Proposed Plant and Machinery	Dimensions (m)
Liquor Treatment Plant	1 x Tank 15.0(d) x 7.0(h) 2 x Tanks 11.0(d) x 7.0(h)
Filtration, Disinfection and Storage	1 x Tank 9.0(d) x 13.5(h) 1 x Tank 9.0(d) x 8.0(h)
Pre THP Centrifuge Buffer Tank	14.5(d) x 15.0(h)
Cake Preparation OCU	5.0(l) x 5.0(w) x 3.5(h)
Warm FE Tank	7.5(d) x 9.6(h)
THP Feed Silos	2No 7.5(d) x 16.3(h)
THP Plant	2No 9.0(l) x 5.0(w) x 5.2(h)
THP Compressor	3.0(l) x 3.0(w) x 1.8(h)
THP Sludge Cooler	15.0(l) x 10.0(w) x 2.5(h)
Strain Press Gantry Extension	9.5(l) x 4.0(w) x 3.0(h)
Screening Bund	1.0 – 2.0(h)

iv) Context
Physical

- 2.33 Although the proposed development is located in open countryside, it is well screened in views from the north, west and south by existing structures, trees and other vegetation.
- 2.34 Views of the proposed development will be available to users of the public footpath which runs from the disused railway line to the WwTW access road. However, in these views the proposed development will be seen in the context of other large tanks and structures and with the existing solar array in the foreground.
- 2.35 Longer distance glimpsed views from the east will be available from vehicles using the Wrexham Industrial Estate link road. However, from the link road the proposed

development will be seen within its wider landscape context and will form only a small part of the overall view.

Social

- 2.36 The proposed development will have no social impacts on the local community, other than some limited temporary disruption during the construction phase

iv) Community Safety

- 2.37 There is no public access to the application site and the proposed development is unlikely to have any material implications for community safety.

v) Development Plan Policy

- 2.38 The Development Plan for the area within which the proposed development is located comprises the Wrexham Unitary Development Plan 1996 – 2011, which was adopted by the CBC in February 2005.
- 2.39 Strategic Policy PS2 requires that development must not materially detrimentally affect countryside, landscape/townscape character, open space or the quality of the natural environment. The proposed development will not materially prejudice the local environment, will result in significant environmental benefits both locally and regionally.
- 2.40 Strategic Policy PS3 seeks to direct development to previously used brownfield land comprising vacant, derelict or underused land in preference to the use of greenfield land wherever possible. The proposed AAD development is consistent with this policy since it involves development on previously used brownfield land, comprising hardstandings and operational land.
- 2.41 Strategic Policy PS10 indicates that priority in waste management will be given to minimising the volume of waste generated, followed by maximising the re-use and re-cycling as much waste as possible. Energy recovery from waste will be favoured where re-use or recycling is not feasible, and waste will be managed at, or as near as practicable, to the location where it is initially produced. The proposed development involves waste minimisation, recycling and energy recovery, as part of the re-cycling process. In addition, the majority of the waste to be treated by the proposed development will be generated by the operation of the adjacent WwTW.
- 2.42 Strategic Policy PS11 indicates that encouragement will be given to proposals which improve the biodiversity value of sites and to the establishment of local nature reserves where the nature conservation and landscape interest of the land will be protected. The proposed development incorporates proposals aimed at promoting biodiversity and includes proposals for the provision of an area for ecological compensation.
- 2.43 Strategic Policy PS12 confirms that proposals for the generation of energy from renewable sources will be supported, provided that the wider environmental benefits are not outweighed by any detrimental impacts of the proposed development. The development

now proposed involves the generation of renewable energy and will not have significant adverse impacts upon the local environment.

2.44 The proposed development is consistent with the provisions of Minerals and Waste Policy MW12 which confirms that waste management facilities will be located having regard to:

- i. The best practicable environmental option
- ii. The waste hierarchy
- iii. The proximity principle
- iv. Regional self-sufficiency

2.45 Minerals and Waste Policy MW13 deals with waste disposal and indicates that the disposal of waste will take place, inter alia, *“at purpose built treatment and disposal facilities which comply with the principles set out in Policy MW12”*. The proposed development is consistent with the provisions of Policy MW13 and, as indicated above, complies with the principles set out in Policy MW12.

3. ACCESS

Public Access

- 3.1 There will be no public access to the application site and to the proposed development. The access provisions of the proposed development have focused, therefore, on the likely requirements of DCWW employees and other operational visitors to the site.

Vehicular Access

- 3.2 The existing vehicular access to the WTW site will be unaffected by the proposed development and will involve the continued use of the existing access to Five Fords WwTW, which is gained from Cefn Road, to the north, via an L-shaped private access track.
- 3.3 Within the application site, new sections of internal site access road are proposed in order to facilitate the movement of both pedestrians and vehicles between the different component parts of the proposed development.

Vehicle Parking

- 3.4 On-site vehicle parking is proposed in order to meet the operational requirements of DCWW employees and to avoid the need for parking on the public highway.

Public Footpaths.

- 3.5 The proposed development will not affect any public footpaths.

The Development Plan

- 3.6 The proposed development accords with the provisions of Transport Policy T6 of the Wrexham Unitary Development Plan since it will not prejudice the safe and free flow of traffic on the primary and core highway network.
- 3.7 The level and location of proposed vehicle parking on the application site accords with the requirements of Development Plan policy T8, since it satisfies the reasonable operational need of the proposed development and does so in a sympathetic manner.

Maintenance of Features which Ensure People's Access to the Development

- 3.8 Vehicular access to the proposed AAD Plant will be gained by means of the existing L-shaped private access track to Five Fords WwTW from Cefn Road, which will be retained.
- 3.9 The proposed development will not affect any public rights of way and, thus access rights which are presently enjoyed in the general area around the WTW site will be maintained.
- 3.10 There is no public transport access directly to the application site, although public transport services do serve Wrexham Industrial Estate and will not be affected by the proposed development.
- 3.11 The AAD Plant is accessible on foot or by cycle and this will not be affected by the proposed development.

