

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

**COG MOORS WASTEWATER TREATMENT WORKS,
CARDIFF ROAD, DINAS POWYS**

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

DESIGN AND ACCESS STATEMENT

Prepared by:

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Client: Dwr Cymru Welsh Water

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TABLE OF CONTENTS

- 1 INTRODUCTION**
- 2 DESIGN**
- 3 ACCESS**

1. INTRODUCTION

- 1.1 Caulmert Ltd has been appointed by Skanska Ltd, 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 change of use of land as an extension to the existing wastewater treatment works site and the construction of an Advanced Anaerobic Digestion (AAD) Plant, together with associated landscaping and mitigation measures and the formation of a temporary construction compound at Cog Moors Wastewater Treatment Works (WwTW), Cardiff Road, Dinas Powys.
- 1.3 At Cog Moors WwTW, the sewage sludge that results from the treatment of wastewaters is currently treated by anaerobic digestion. The digestion process releases biogas, which is used to generate electricity on site, whilst the sewage sludge, following digestion, (referred to as “sludge cake”) is then disposed of to farmland as a soil improver and fertiliser. The residual liquors, following digestion, are returned to the WwTW inlet works for treatment.
- 1.4 Over recent years, advanced anaerobic digestion (AAD) technologies, involving thermal hydrolysis, have become well established and enable the overall digestion process to operate more efficiently, producing both increased volumes of biogas and an improved fertiliser.
- 1.5 It is now proposed to install an AAD plant at Cogs Moors 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 facility, partly within the existing operational area of the WwTW and with the balance extending onto the adjacent land to the east.
- 2.2 This location was selected in view of the mutual interdependence of the existing and proposed processes, the focus of sludge treatment facilities on this part of the WwTW site and the limited extension beyond the existing operational area that would be required.

ii) Movement to, from and within the Development

- 2.1 Vehicular and pedestrian access to the site is gained via a private road (Green Lane), which runs in a south easterly direction from its priority junction with Cardiff Road (the A4055).
- 2.2 A public footpath (Ref: SI/15/1) runs south eastwards, from Cardiff Road, along Green Lane, and then, before reaching the WwTW security gate, heads in a northerly direction towards Pop Hill
- 2.3 Within the existing WwTW site, a series of internal access roads and paths provide vehicular and pedestrian access to the existing buildings and structures.

iii) Character

- 2.4 Cog Moors WwTW is situated to the east of the A4055 Cardiff Road, approximately 2km east of Barry and 1km south of Dinas Powys.
- 2.5 The WwTW site is enclosed within a security fence and contains both concrete and steel process tanks, together with a series of process and control buildings and associated items of plant and equipment, some of which are up to approximately 9.0m high.
- 2.6 The WwTW site is located within a gently undulating landscape, characterized by small fields separated by ditches and enclosed by hedgerows and trees. The land rises more steeply to the north of the WwTW site (Pop Hill) and is intermittently wooded.
- 2.7 The nearest residential properties to the WwTW site are located, at Downs Farm, approximately 230m to the east and Brook Cottage on Sully Road, approximately 290m to the south east. Other residential properties are located, at distances of more than 0.5km, on Ashby Road to the south, along Cross Common Road to the north east and along Sully Road and Cog Road to the east and south, respectively.
- 2.8 Downs Farm is a Grade II listed building.
- 2.9 The WwTW is well screened in the surrounding landscape, and from most of the surrounding roads and properties, by the localised topography and by existing hedgerows and trees. Views of the WwTW are available from nearby public footpaths.

2.9 The site of the proposed AAD Plant is located at the eastern fringe of the WwTW.

iv) Community Safety

2.10 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

2.11 The proposed development will enable continued use to be made of much of the existing sewage sludge treatment facilities at Cog Moors WwTW.

2.12 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.

2.13 Potentially contaminated surface water run-off associated with the proposed development will be collected and passed through the existing WwTW.

2.14 The proposed development will require the removal of a number of trees and areas of woodland. Replacement planting is proposed by way of mitigation.

2.15 The existing Cog Moors SSSI will be unaffected by the proposed development.

2.16 The proposed development will extend onto part of the locally designated Cog Moors Site of Interest for Nature Conservation (SINC). Following the completion of the proposed development re-instatement works will be carried out and a management plan will be implemented to ensure appropriate mitigation.

2.17 Mitigation measures will be adopted to offset any potential adverse impact upon protected species.

2.18 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.

2.19 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

2.20 Vehicular and pedestrian access to the proposed development will continue to be gained from Cardiff Road, via Green Lane.

2.21 Within the application site, a series of roadways and footpaths will be constructed to provide access to the component parts of the proposed development.

2.22 A temporary access will be constructed within the application site to serve the temporary construction compound that is to be located to the south east.

- 2.23 An AAD plant produces a significantly reduced volume of sludge cake from a similar volume of sewage sludge than a standard anaerobic digester. Consequently, once operational, the proposed development would result in a minor numerical increase only in HGV movements.
- 2.24 The proposed development will not directly affect any public footpaths or bridleways, although there will be a noticeable increase in vehicle movements along the Green Lane public footpath during the construction period.

iii) Character

- 2.25 The character of the proposed development will be broadly similar to the existing buildings, tanks and other structures on the WwTW site.
- 2.26 Whilst the design of the proposed AAD plant has progressed, consultations have taken place with Natural Resource Wales regarding the height of the proposed combined CHP/boiler stack. Further modelling of the emissions from the stack has been undertaken and, as a consequence, the height of the proposed stack has been reduced significantly, from 30m to 18m, whilst still ensuring that predicted emissions are well below UK Government and EU Regulation objectives which are set to protect human health.
- 2.27 The colours of proposed buildings and structures have been carefully selected in response to the semi-rural landscape context of the proposed Development and the appearance of the existing structures and colours, with the use of muted green and grey colours for building/structure exteriors.
- 2.28 The dimensions of the proposed development are indicated in the tables below:

Proposed Building Structure	Dimensions (m)
Indigenous Dewatering Building	23.0(l) x 14.5(w) x 12.7(h)
Boiler House	19.5(l) x 13.7(w) x 8.0(h)
Final Dewatering Building	30.5(l) x 14.5(w) x 12.7(h)
Disinfected FE Building	15.0(l) x 10.0(w) x 5.0(h)
MCC1 Kiosk	15.0(l) x 5.0(w) x 4.5(h)
HV Switchgear Building	10.0(l) x 4.0(w) x 6.6(h)
LVDB and MCC3 Building	20.0(l) x 6.0(w) x 6.6(h)
Natural Gas Meter Kiosk	3.0(l) x 2.0(w) x 2.4(h)
Wash Water Booster Kiosk	3.2(l) x 3.2(w) x 2.8(h)
Wheel Wash Control Kiosk	4.0(l) x 4.0(w) x 2.9(h)

Proposed Plant and Machinery	Dimensions (m)
SAS Tanks A and B	2No – 12.5(d) x 11.3(h)
Primary Strainpress	8.5(l) x 6.0(w) x 12.6(h)
SAS Strainpress	9.0(l) x 6.5(w) x 12.1(h)
Centrifuge Feed Pumps	11.5(l) x 6.0(w) x 1.5(h)
Centrifuge Feed Tanks	2No – 10.0(d) x 13.2(h)
Cake Imports Facility	20.0(l) x 13(w) x 5.2(h)
THP Feed Silos A and B	2No – 7.0(d) x 15.4(h)
THP Plant	24.0(l) x 14.0(w) x 8.8(h)

Cooling Plant	19.0(l) x 9.0(w) x 3.1(h)
Secondary Digester Tanks C and D	2No – 15.0(d) x 12.5(h)
Gas Holder	18.0(d) x 14.0(h)
Flare Stack	6.5(l) x 4.0(w) x 8.6(h)
Siloxane Plant	10.0(l) x 8.0(w) x 3.2(h)
CHP Plant	17.0(l) x 12.5(w) x 2.8(h)
Post Digestion Tank	16.5(d) x 5.7(h)
Wash Water Tank	5.0(d) x 8.3(h)
Final Effluent Holding Tank	8.5(d) x 12.2(h)
Disinfected FE Storage Tank	8.5(d) x 12.5(h)
Liquor Balance Pumping Station	4.0(d) x 0.3(h)
Transformers	10.0(l) x 5.0(w) x 2.9(h)
Export Silos A and B	2No – 10(d) x 14.9(h)
Odour Control Unit A	15.0(l) x 10.0(w) x 5.0(h)
Odour Control Unit C	19.5(l) x 14.0(w) x 4.8(h)
Stack	3.5(d) x 18.0(h)
Polymer Silos	15.0(l) x 10.0(w) x 6.5(h)
Weighbridge	18.0(l) x 2.5(w) x 0.1(h)
FE Feed Pumping Station	5.0(l) x 3.0(w) x 0.3(h)

iv) Context

Physical

- 2.29 Existing vegetation cover and built form in the local landscape are such that the proposed development is anticipated to be primarily visible from properties, Public Rights of Way, and roads within 0.5km.
- 2.30 Due to the presence of existing woodland and hedgerows, the majority of the proposed infrastructure would be apparent from limited vantage points within the locality. This results in there being minor visual impacts from the majority of viewpoints, with moderate/major impact occurring from the viewpoints closest to the proposed development.
- 2.31 Existing vegetation and proposed planting would serve to strengthen existing landscape characteristics, and help to integrate the proposals within the surrounding landscape.

Social

- 2.32 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

- 2.33 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

- 2.34 The statutory Development Plan for the area within which the application site is located comprises the Vale of Glamorgan Local Development Plan 2011 – 2026 (“the LDP”), which was adopted on 28th June 2017.

- 2.35 The application site is unallocated on the LDP Proposals Map and is situated in an area of open countryside outside of the settlement boundaries of both Dinas Powys and Sully.
- 2.36 A Site of Importance for Nature Conservation (SINC 299) extends around the eastern and southern boundaries of the WwTW and includes part of the application site.
- 2.37 A second Site of Importance for Nature Conservation (SINC 154) is situated at Pop Hill, immediately to the north of the WwTW site.
- 2.38 The Cog Moors Site of Special Scientific Interest (SSSI), is located immediately to the south and west of the application site.
- 2.39 The application site is located within a wider area which comprises Sand and Gravel Category 2 area. In addition, the rising ground to the east of the WwTW is situated within a Limestone Category 2 area.
- 2.40 LDP Strategic Policy SP9 acknowledges the local and regional need for the provision of a continuous supply of minerals and seeks to safeguard existing resources. However, the quantity of mineral resource that would be sterilised as a result of the proposed development is relatively small and is far outweighed by the sustainability, renewable energy and climate change benefits that would flow from the proposed development. Consequently the proposed development is considered to be acceptable under Strategic LDP Policy SP9.
- 2.41 Strategic Policy SP10 deals with the protection of the Built and Natural Environment. The proposed development will safeguard the built and natural environment and heritage of the Vale of Glamorgan, including listed buildings, sites of local and national importance for nature conservation and will not have any impact upon any conservation areas, historic landscapes, parks and gardens, Special Landscape Areas, the Glamorgan Heritage Coast or important archaeological and geological features. Consequently, the proposed development is considered to be compliant with LDP Strategic Policy SP10.
- 2.42 Managing Growth Policy MG20 relates to nationally protected sites and species. The Ecological Assessments that have been submitted as part of the planning application demonstrate that, subject to appropriate mitigation and management, the proposed development is unlikely to have a significant adverse long term impact on designated sites of nature conservation importance or on protected species. Consequently, the proposed development accords with the provisions of LDP Policy MG20.
- 2.43 Managing Development Policy MD7 addresses Environmental Protection. The proposed development will not result in an unacceptable impact on people, residential amenity, property and/or the natural environment from surface water, the air, hazardous substances, noise, odour, light pollution or flood risk and is, therefore, compliant with the requirements of LDP Policy MD7.
- 2.44 Downs Farm is a Grade II listed building and is situated approximately 230m to the east of the proposed development. At this distance, it is considered that the proposed development is unlikely to materially affect the setting of Downs Farm and is, therefore compliant with LDP Policy MD8 which seeks to safeguard the historic environment.

- 2.45 Policy MD19 relates to low carbon and renewable energy generation. The proposed development will have no unacceptable impact on interests of acknowledged importance and will provide for a low carbon and renewable energy scheme. Consequently, the proposed development is considered to be compliant with LDP Policy MD19.
- 2.46 The proposed development provides for the recycling of waste through the production of a high quality fertilizer and soil improver, and the recovery of renewable energy from waste. Thus, the proposed development accords with the waste hierarchy and is supportive of LDP Policy MD20.

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 along Green Lane from Cardiff Road.

- 3.3 Within the application site, new sections of roadways and footpaths 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 available 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 would not prejudice the implementation of any of the transport proposals identified in LDP Policy MG16.

- 3.7 An AAD plant produces a significantly reduced volume of sludge cake from a similar volume of sewage sludge than a standard anaerobic digester. Consequently, once operational, the proposed development would result in a minor numerical increase only in HGV movements.

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

- 3.8 Vehicular access to the proposed AAD Plant will continue to be gained from Cardiff Road via Green Lane, 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 Public transport services operate along Cardiff Road 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.

