

COG MOORS WWTW – PROPOSED ADVANCED ANAEROBIC DIGESTION (AAD) PLANT

Landscape and Visual Appraisal

DECEMBER 2017

Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY



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CONTENTS

1	NON-TECHNICAL SUMMARY.....	1
2	INTRODUCTION	1
3	LEGISLATION, POLICY AND GUIDANCE.....	1
4	METHODOLOGY	1
5	DESCRIPTION OF BASELINE CONDITIONS	1
6	DESIGN MEASURES	1
7	APPRAISAL	1
8	SUMMARY AND CONCLUSIONS	1
9	REFERENCES	1

FIGURES

- FIGURE 1 – LANDSCAPE DESIGNATIONS
- FIGURE 2 – ZTV AND VIEWPOINT LOCATIONS
- FIGURES 3 to 9 – VIEWPOINT PHOTOGRAPHS
- FIGURE 10 – LANDSCAPE MITIGATION PLAN
- FIGURES 11 to 15 – PHOTOMONTAGES
- FIGURE 16 – LANDSCAPE PLANTING PLAN

Non-Technical Summary

A landscape and visual impact assessment has been undertaken to assess the potential effects of the proposed Development.

The proposed Development site includes the existing WwTW. Surrounding the site is farmland, enclosed by woodland and hedgerows, together with small settlements, individual residential properties and agricultural buildings.

Due to existing vegetation and the rolling landscape, the proposed Development is only expected to be visible from certain properties, Public Rights of Way, and roads within 0.5km of the proposed Development. The majority of the proposed Development would only be visible from limited view points within the local area.

Proposed planting would strengthen existing vegetation, and help integrate the proposals with the surrounding landscape. The colours of the proposed buildings and structures (grey and green colours) have been carefully chosen to fit in with the landscape.

1 Introduction

1.1 Arcadis was commissioned by Dŵr Cymru Welsh Water (DCWW) to produce a Landscape and Visual Appraisal to accompany the planning application for the development of an Advanced Anaerobic Digestion (AAD) Plant at the site of the existing Cog Moors WwTW, south of Dinas Powys, hereafter referred to as ‘the proposed Development’.

1.2 The proposed AAD plant comprises a number of new process and storage tanks and buildings, together with the demolition of and modifications to some existing items of plant and equipment.

The proposed development is shown on the Proposed Site Layout Plan (Drawing Ref: 4798-S-202-HYD-XX-XX-DR-XX-06106 to 06109).

The proposed development would provide for:

- Additional digestion capacity;
- Conditioning of the sludge generated on the site, (dewatering and removal of contaminating rags and plastic);
- Reception facilities for sludge imported to the site from satellite WwTWs;
- Blending of the indigenous sludge and imported sludge;
- A thermal hydrolysis plant (THP), which uses steam to increase the temperature and pressure in a reaction vessel to pre-treat the sludge;
- Boilers to generate the steam for thermal hydrolysis;
- A siloxane plant to remove contaminants from the biogas generated;
- A combined heat and power (CHP) plant to generate useable heat and electricity, which can be used on site, exported to the grid, or both.
- A UV plant to treat some of the final effluent water from the WwTW, to provide better quality process water, for the THP sludge preparation downstream of thermal hydrolysis;
- Tanks to hold sludge and liquor, resulting from the thickening and dewatering processes;
- A cake storage silo;
- Odour control equipment;
- New internal site access roads and drainage;
- Site clearance and earthworks and new fencing;
- New MCC equipment and control kiosks; and
- Appropriate mitigation planting and ecological mitigation measures;

1.3 Temporary construction compounds would be sited on an area of mown grassland, immediately adjacent to the existing final settlement tanks, and on an area of grassland to the east of the proposed AAD plant.

1.4 Vehicular access to the proposed development would continue to be gained from the A4055 via Green Lane.

1.5 This report considers the potential effects of the proposed Development, on landscape and visual amenity. Landscape is defined in the *European Landscape Convention* (Council of Europe, 2000) as ‘...an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’. Visual amenity considerations relate specifically to the views of a landscape afforded to people. These issues are separate but are related and form the basis for landscape and visual impact appraisal.

1.6 This report presents a summary of relevant legislation, policy and guidance, and describes the methodology used to appraise the proposed Development. Details of consultations are also

provided. Baseline conditions are discussed, followed by an appraisal of the landscape and visual implications of the proposed Development. A summary of the appraisal and conclusion is then provided.

2 Legislation, Policy and Guidance

- 2.1 An outline of the legislation, policy and guidance relevant to the proposed Development and landscape and visual amenity, at the national and local levels, is provided below.

Legislation

- 2.2 The Site is not located within any statutorily protected landscapes. The protection of landscapes through the planning policy framework is discussed below.

Policy

National Policy

- 2.3 *Planning Policy Wales (PPW), 9th Edition* (Welsh Government, 2016) advises that landscape should be taken into account in the planning process, by drawing on the information provided as part of *LANDMAP* to inform decision making. As such, *LANDMAP* and the corresponding *Information Guidance Notes* (NRW) have been duly considered and inform the appraisal, where appropriate.

Local Policy

- 2.4 Policies of *Vale of Glamorgan Local Development Plan 2011-2026* (VGLDP 2011-2016) sets out the current local planning policy framework for development in the Vale of Glamorgan. The principal relevant policies in landscape and visual terms are Strategic Policy 10, Policy MD7 (Environmental Protection) and Policy MD8 (Historic Environment). These policies are summarised below.
- 2.5 Strategic Policy 10 advises that ‘*development proposals must preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan*’.
- 2.6 Policy MD7 advises ‘*development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and / or the natural environment*’.
- 2.7 Policy MD8 advises ‘*development proposals must protect the qualities of the built and historic environment of the Vale of Glamorgan, specifically:*
- *within conservation areas, development proposals must preserve or enhance the character or appearance of the area;*
 - *for listed and locally listed buildings, development proposals must preserve or enhance the building, its setting and any features of significance it possesses;*
 - *within designated landscapes, historic parks and gardens, and battlefields, development proposals must respect the special historic character and quality of these areas, their settings or historic views or vistas;*
 - *for sites of archaeological interest, development proposals must preserve or enhance archaeological remains and where appropriate their settings.*’

Guidance

- 2.8 This appraisal has been prepared by a Chartered Landscape Architect, based on *Guidelines for Landscape and Visual Impact Assessment: Third Edition* (Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA)). Photography and photomontages have been undertaken in accordance with *LI Advice Note 01/11*.

3 Methodology

Introduction

- 3.1 The approach outlined below has been followed in preparing this Chapter and includes the consultation undertaken, the study area, temporal scope, the source of baseline data, the methodology, together with the limitations and assumptions of the study. The locations of viewpoints and photomontages have been agreed with Vale of Glamorgan Council, as set out below.

Consultation

- 3.2 Consultation Notes were submitted to Vale of Glamorgan Council on the 16th May 2017.
- 3.3 Table 1 summarises the above consultation and responses received.

Table 1 Summary of Consultation Responses

Consultee	Date of Response	Summary of Response	Project Response
Gareth Phillips, Principal Landscape Architect, Regeneration and Planning, Vale of Glamorgan Council	19 th March 2017	Email correspondence confirming viewpoints for assessment	Assessment carried out accordingly.
Gareth Phillips, Principal Landscape Architect, Regeneration and Planning, Vale of Glamorgan Council	26 th May 2017	Email correspondence accepting proposed methodology and confirming viewpoints for assessment	Assessment carried out accordingly.
Stephen Butler, Principal Planner, Regeneration and Planning, Vale of Glamorgan Council	9 th June 2017	Email correspondence confirming lighting assessment will be included in the LVIA chapter	Assessment carried out accordingly.

Study Area

- 3.4 The overarching Study Area for this appraisal extends to a 2km radius from the proposed Development (refer to Figure 1). Beyond this distance it is anticipated that the proposed Development would not be readily perceptible within the wider landscape. To refine the appraisal, a Zone of Theoretical Visibility (ZTV) has been generated within the Study Area, which represents the theoretical area from which any part of the proposed development may be seen (refer to Figure 2). ZTVs are based on bare ground data, with any ridgelines, plateaux and valleys reflected in the extent of predicted visibility. ZTVs do not take into account local conditions such as subtle variations in landform, built development or vegetation cover, which significantly reduce the extent of actual visibility to approximately 0.5km, which forms the area within which detailed analysis of landscape character, visual receptors and views has been undertaken.
- 3.5 The ZTV was modelled using a Digital Terrain Model (DTM), taking into account the curvature of the earth and assuming a proposed development height of up to 18m and viewer height of approximately two metres above ground level. DTM data was derived from Ordnance Survey (OS) Terrain 50 data (elevation data on a fifty metre grid). ZTV output was overlaid on OS mapping, with an overview reproduced at 1:20,000 scale.

Temporal Scope

3.6 This appraisal considers the construction and operation phases of the proposed Development.

Sources of Baseline Data

3.7 Sources of information include *Vale of Glamorgan Local Development Plan 2011-2026* (VGLDP 2011-2016); *LANDMAP* and *Information Guidance Notes 1-4*, as appropriate, and *Vale of Glamorgan County Borough Council, Designation of Landscape Character Areas, 2008* (VGDLC, 2008).

3.8 Field survey and photography was undertaken during February, March, June and July 2017.

Significance Criteria

3.9 The sensitivity of each resource is assessed using the criteria provided below:

Table 2 Definition of Landscape Sensitivity

Level of Sensitivity	Definition of Sensitivity Examples (Considers value of receptor and susceptibility to change)
High	Value: Typically of high importance and rarity, national scale, and limited potential for substitution (e.g. National Parks or Areas of Outstanding Natural Beauty). *Susceptibility to change: Landscape unlikely to tolerate the change proposed.
Medium	Value: Typically of moderate importance and rarity, regional scale, and limited potential for substitution (e.g. Registered Historic Parks and Gardens, Conservation Areas). *Susceptibility to change: Landscape has the potential to tolerate the change proposed.
Low	Value: Typically of low importance and rarity, local scale, such as undesignated or degraded landscapes. *Susceptibility to change: Landscape likely to tolerate the change proposed.

*The judgement concerning susceptibility to change is made by considering the nature/characteristics of the development and receiving landscape, following evaluation of receptor value and prior to the assessment of effects.

Table 3 Definition of Visual Sensitivity

Level of Sensitivity	Definition of Sensitivity Examples (Considers value of receptor and susceptibility to change)
High	Value: Typically nationally recognised/important (e.g. from landscape of national importance); Susceptibility to change: Typically views from residential properties and recreational routes, including PRoWs; where appreciation of affected views may be the principal activity.
Medium	Value: Typically regionally/locally recognised/important (e.g. from landscape of regional/local importance); Susceptibility to change: Typically views from transport routes; where attention may be focused on an affected view.
Low	Value: Typically views not recognised/of importance; Susceptibility to change: Typically views from places of work or outdoor sporting activity; where attention is unlikely to be focussed on affected views.

*The judgement concerning susceptibility to change is made by considering the nature/characteristics of the development and receiving landscape, following evaluation of receptor value and prior to the assessment of effects.

3.10 The magnitude of each impact is assessed using the criteria provided below:

Table 4 Assigning Nature of Change to Landscape Impact

Level of Nature of Change	Definition of Change
High	Total loss of or major alteration to key landscape characteristics such that landscape character will be fundamentally changed.
Medium	Partial loss of or alteration to key landscape characteristics such that landscape character will be partially changed.
Low	Minor loss of or alteration to key landscape characteristics such that landscape character will be similar to the baseline conditions.
Negligible	Very minor loss or alteration to key landscape characteristics such that change in landscape character will be barely distinguishable from the baseline conditions

Table 5 Assigning Nature of Change to Visual Impact

Level of Nature of Change	Definition of Change
High	Major change in existing view.
Medium	Partial change in existing view.
Low	Minor change in existing view such that view largely unchanged.
Negligible	Very inconspicuous change in existing view

3.11 Effects are determined using the approach described in the table below, effects can be positive (beneficial) or negative (adverse). Effects of ‘Major’ significance are those expected to have a bearing on the decision-making process regarding the application for development consent; those below this level are unlikely to form a material consideration in the decision making process:

Table 6 Approach for Determining Overall Effects

MAGNITUDE	High	Moderate	Moderate/Major	Major
	Medium	Minor/Moderate	Moderate	Moderate/Major
	Low	Minor	Minor/Moderate	Moderate
	Negligible	Negligible	Negligible	Negligible
		Low	Medium	High
		SENSITIVITY		

Limitations of Appraisal and Assumptions

- 3.12 Field survey and photography were initially undertaken during winter (February and March 2017). At this time of year, deciduous trees and shrubs are predominantly without leaves such that there is more visibility within the landscape than in summer (when there is deciduous leaf cover). Further survey and photography was undertaken during summer (June and July 2017). At this time of year, deciduous trees and shrubs are predominantly with leaves such that there is less visibility within the landscape than in winter (when there is no deciduous leaf cover).
- 3.13 It should be noted that extensive sections of the LANDMAP survey records are not grammatically correct or are incomplete while other sections have numerous typographical errors. These have been recorded within the baseline descriptions in italics as unaltered extracts from LANDMAP and have not been corrected by the appraisal author as to do so could alter the context of the information.

4 Description of Baseline Conditions

Existing Conditions

Landscape

- 4.1 The Site does not fall within or near designated landscapes. *LANDMAP* is the national landscape information system in Wales which provides a layered approach to landscape appraisal, to aid decision-making. The characteristics, qualities and influences on the landscape have been mapped as a series of aspect layers, comprising Geological Landscape, Landscape Habitats, Visual and Sensory, the Historic Landscape and Cultural Landscape. The proposed development falls principally within the following LANDMAP areas; LANDMAP evaluation scores are indicated in parenthesis:
- 4.2 The characteristics of the aspect areas in which the Site is located are provided as follows:

Geological Landscape: VLFGL GL108

Former estuary reclaimed to form Barry Docks and associated industrial facilities. Higher part of estuary passes into broad alluvial plain, locally showing indications of former saltmarsh channel systems, and subsequently river-flood plain systems. Drainage ditch systems typical of broad alluvial plain.

Rarity / Uniqueness: Low (Natural character of Aspect Area significantly altered by reclamation of estuary and construction of docks and associated industrial facilities.).

*Overall Evaluation: **Low** (Natural character of Aspect Area significantly altered by reclamation of estuary and construction of docks and associated industrial facilities.).*

Geological Landscape: VLFGL GL238: Penarth

Area of 'normal' mudrock-dominated Triassic (Mercia Mudstone Formation, Penarth Group) and alternating limestone-shale Lower Jurassic (Blue Lias Formation) characterised by low tabular hills capped with latter with steep slopes and low valley areas between underlain by former. Central part of Aspect Area largely covered by urban and industrial Penarth and Dinas Powis W.

Rarity / Uniqueness: Moderate (Underlying geology is significant but no significant surviving exposures reported and adjacent coast shows same succession well exposed and within SSSI.).

*Overall Evaluation: **Moderate** (Underlying geology is significant but no significant surviving exposures reported and adjacent coast shows same succession well exposed and within SSSI.).*

Landscape Habitats: VLFGL LH684: Cogs Moor

Low-lying grazing pasture of poorly-draining character dissected by waterlogged drainage ditches. The poorly-draining conditions have enabled a number of semi-improved neutral grasslands to survive.

Connectivity/Cohesion: Unassessed.

Overall Evaluation: **High** (Semi-improved grassland communities have a restricted distribution within the Vale and the concentration of habitat within Cog Moors is considered significant).

Landscape Habitats: VLFGL LH932: Dinas Powys South

Grasslands on elevated ground immediately south of Dinas Powys. A small field pattern, occasional small woodland copses and semi-improved neutral grassland add wildlife value to the area).

Connectivity/Cohesion: *High* (Well-developed hedgerows and a small field pattern provide particular connectivity within the aspect area).

Overall Evaluation: **High** (A high proportion of semi-natural habitats likely to be of significant wildlife value.

Visual and Sensory: VLFGL VS473: Penarth and Dinas Powys Urban Fringe

AA rolling/undulating lowland landscape rising to approximately 60m AOD in the north from approximately 10m AOD in the south. The area forms a green buffer between Penarth to the east and Dinas Powys in the west. The landcover is predominantly pastoral fields with many overgrown hedgerows containing trees. There are some wooded areas to the south mostly around Pop Hill. Farms are scattered across the area and discontinuous ribbon development has occurred along the narrow lanes over time. Further development is occurring along Sully Road. Development is suburban in character. The area's tranquillity is compromised by the visibility of development and usage of the roads. Many fields appear overgrown whilst others appear overgrazed. Some are used for equestrian uses. The associated poorly built stables are unsightly and common. Change detection 2014: edge of Penarth has expanded into this area, including prominent new Llandough Hospital.

Scenic Quality: Moderate (The aspect area offers several attractive views to pleasing elements in composition. However many views are affected by inappropriate built form and hedgerows are gappy and poorly managed in places).

Character: Moderate (The area is split to an extent by new housing development, equestrian use and horse value and is dominated in some areas by adjacent housing which weakens its sense of place).

Overall Evaluation: **Moderate** (The aspect area offers views of a modest picturesque value, often to pleasant elements of fields, hedgerows and trees which are, however in a declining state of quality. The integrity of the area has been effected by the declining state of farmland plus pressure from housing development, which is often inappropriate. The various areas of housing, mixed in with declining or better maintained farming landscape means the area presents little common character and therefore lacks a sense of place, whilst generally it possesses no unique or strong visual or sensory qualities. The aspect area is therefore evaluated as moderate).

Visual and Sensory: VLFGL VS480: Cog Moors

Cog Moors is a distinctive flat, low lying floodplain crossed by drainage channels. The highest point of the moor is in the north at approximately 10m AOD while the lowest point is to the south at approximately 5m AOD. Cog Moors has a mosaic landcover of rough pastoral fields. Boundaries include overgrown hedgerows which are often discontinuous, often containing trees acting as boundaries, wire fences, and sometimes drainage ditches with occasional vegetation. There is no settlement and the area has a feeling of remoteness and tranquillity away from the roads. There is only one farm in the area, with one through road and rail line providing occasional access. The area is enclosed by landform with views possible to ridges either side and to the Barry industrial area. There are several detractors in the area including the raised existing road, sewer manholes, power lines, and disused or abandoned excavation works.

Scenic Quality: Moderate (The area offers pleasant views in parts but there are occasional detractors within and outside the area).

Character: High (The area is distinctive from its neighbouring areas through topography and land management practices and displays a clear sense of place).

*Overall Evaluation: **Moderate** (The area offers pleasant views in parts but there are occasional detractors within and outside the area. The area is fairly intact with the field pattern surviving although integrity of the area has been eroded by deterioration of hedgerows in parts and various elements such as drainage pipes/manhole covers etc. However, the area displays a distinct sense of place although the type of landscape is not rare in the area. The overall evaluation for the study area is moderate.*

Historic Landscape: VLFGL HL008: Sully and Dinas Powys Moors

Sully and Dinas-Powys Moors represent a considerable tract of reclaimed wetland. The moors are defined as a flat expanse south and west of Pop Hill and north of the settlement of Sully. The moors never exceed 10mOD in height and can be described as an extensive area of small regular fields with ditches and reens for boundaries. Earlier maps show Cog Moor as a dense regimental layout of long but narrow fields south of Pop Hill, and as slightly larger and irregular fields to the west at Dinas-Powys Moor, but still with an ordered character. Much of this latter field system is still extant but the regimental fields of Cog Moor have been amalgamated into larger fields. Cog Moor is now a SSSI (Site of Special Scientific Interest) protecting the rare and diverse plant and animal species on this part of the moor. The aspect area is primarily agricultural in character with little attempt made to build on the moor. The fieldscape visible today is of post-medieval origin and one assumes there may have been some medieval continuity. Earlier evidence is scant but Neolithic flint scatters have been found during the course of ploughing north of Ashby Road. A scheduled medieval moated site (SAMGm378) is located close to Sully but is now much eroded. The site consists of a roughly rectangular platform with traces of a ditch on the north and east sides. A further 800m to the north are the remains of Old Court, a possible medieval manor house and enclosure. Before their destruction in 1963 both the south and west sides, comprising of upstanding masonry, as well as internal building foundations could be seen, but now all that survives is the eastern side of the enclosure, now part of a field boundary.

*Overall Evaluation: **Moderate**.*

Historic Landscape: VLFGL HL011: Cogan and Pop Hill

- 4.2.1 *This aspect area represents the survival of a possible medieval fieldscape of small-elongated rectangular strip fields on Pop Hill and north of Old Cogan Hall Farm. Much of the landscape still exhibits the form of closely regimented fields. However during the last century many of these small strip fields have been amalgamated into larger enclosures. The modern settlement of Dinas-Powys (VOGHL13) has encroached into this medieval landscape, which extended as far north as Eastbrook (VOGHL19), east to the medieval settlement of Cogan and Dinas-Powys Moors to the west. Cross Common is a small unenclosed area on Pop Hill, large irregular fields dominate the landscape on top of the hill and it is possible this represents some enclosure of an earlier common of much greater size. The 12th century medieval settlement at Cogan consisted of several house platforms, two roads, a mill and leat, all centred on St Peter's Church. A castle or fortified manor house is suggested at the site of the 19th century Old Cogan Hall farmhouse. The parish and manor of Cogan were held in the 12th century by the de Cogan family. By the 16th century the manor had passed to the Herbert family where it remained until being purchased by Lord Bute in 1793 (RCAHMW 2000, 472-4). St Peter's Church, which served the deserted medieval village of Cogan, dates to the 12th century but with later 15th and 16th century remodelling. The church fell into disuse by the 18th century but was later restored in 1888-1894 by W Frame, architect to the Bute Estates. The Third Marquess of Bute also provided a bronze reredos in memory of James A Corbett, a kinsman (died 1890) who had instigated the restoration of the church..*

Overall Evaluation: **High**.

Cultural Landscape: VLFGL CL011: Vale of Glamorgan Rural Landscape

This extensive Aspect Area encompasses all other AAs outside, for the most part, the principal urban areas on the eastern side of the Study Area. It is intended to encapsulate the landscape's historic past, and its size - surrounding the proliferation of small settlements and hamlets - helps to demonstrate that the Vale is essentially an evolved agricultural landscape. It contains abundant evidence of man's occupation and exploitation and its economic value (especially in the mediaeval period), evidenced by the large number of stone-built fortifications. Other evidence includes tumuli, earthworks and burial chambers from prehistory, Early Christian places of devotion and learning, monastic granges, a deserted mediaeval village, field systems and farmsteads. More recent attributes typical of a prosperous landscape are the 16 registered parks and gardens and their associated manor houses. The relatively unspoiled nature of the landscape is evidenced by the high number of designated Conservation Areas, testament in themselves to the gradual evolution and acceptable development over time. The rural landscape is served by a bewildering variety of narrow roads between (away from the coast) mostly unkempt hedgerows. Planning policies and the costs of upgrading these ancient communications routes have the culturally beneficial effect of limiting dormitory development in this highly attractive hidden landscape.

Rarity: Commonplace (Wales possesses many rural landscapes that have evolved just as seamlessly, but perhaps without the richness of history evidenced in the Vale).

Group Value: Exceptional (Outstanding because of the variety of landscape features and the richness of its historical past).

Overall Evaluation: **High** (High as a relatively untrammelled and evolved surviving agricultural and historic landscape).'

- 4.3 The Site is located within Landscape Character Area (LCA) 17 ‘Cog Moors’ and LCA 25 ‘Sully Ridge/Cosmeston’ of the *Vale of Glamorgan Designation of Landscape Character Areas* (VGD/LCA, 2008). Key qualities of LCA 17 are identified as follows:

‘Description

An area of flat, lowland farmland range 5 to 10m AOD, surrounded by higher ground at Dinas Powys and Sully. A reclaimed marshland area, it has a poorly managed feel with a number of detractors, together with settlement edge management issues.

Geological Landscapes

A former estuarine area (aspect area GL108) reclaimed as part of the development of Barry Docks in the nineteenth century. Its form reflects its history as a saltmarsh channel system, which gives a manmade feel to the area.

Landscape Habitats

A mixture of lowland agricultural vegetation, hedgerows and hedgerow trees. Few if any areas of the woodland, the drainage ditch system provides an important habitat resource.

Visual and Sensory Landscapes

A flat area of reclaimed marshland given over to agriculture. Enclosed by higher ground (Pop Hill at 40m AOD, Sully Ridge 50m plus AOD) it presents a mosaic of rough pasture within a matrix of drainage ditches and associated hedgerows and hedgerow trees. Many of the hedgerows are gappy and overgrown, and despite its proximity to Barry and Dinas Powys it retains a remote and tranquil feel. However it exhibits a poorly managed picture, compounded on the settlement edges. It has a number of detractors, including overhead power lines and the noise disruption of the railway and A4055 road.

Historic and Cultural Landscapes

A locally important example of a reclaimed marshland landscape (aspect area HL008) given its association with the works of David Davies and the development of Barry Docks which is integral to the cultural development of the South Wales coalfield.

Key Policy and Management Issues

- *Retention of the integrity of the farmed landscape through better management of the field boundary hedgerows.*
- *Addressing settlement edge landscape management such as litter, drainage to landscape features and visual dysfunction.*
- *Recognition of the historical and cultural importance of the landscape to the wider development of the area.’*

Key qualities of LCA 17 are identified as follows:

'Description

An area of higher ground, including Sully, Cosmeston, Pophill and the Downs located between Barry, Dinas Powys and Penarth. To the north it is bounded by Cog Moors (LCA 17) and to the south and west by the coastal edge and foreshore (LCA 6). A generally agricultural area, it includes Cosmeston Lakes Country Park, together with recreational landscapes such as the Golf Course on Downs. The B4267 runs across the area and offers views out across the Vale, at Swanbridge to the east of Sully extensive views across the Bristol Channel are afforded. The stretch of coastline from the northern boundary to the UA boundary is excluded from LCA designation due to its proximity, and resultant character, with adjacent urban development.

Geological Landscapes

An area of Triassic rocks, the majority of the area forms an elongated headland, running out at Lavernock Point generally rising up to 50m AOD (Downs and Pop Hill) the area is underlain by carboniferous limestone.

Landscape Habitats

A mosaic of lowland terrestrial habitats, the area is mainly given over to agriculture. There are important water bodies and woodlands at Cosmeston Lakes, a former quarry site, and small areas of woodland on the side slopes of the ridge.

Visual and Sensory Landscapes

An elevated area offering extensive views out across the Vale and Bristol Channel. It has a sense of exposure and a coastal edge landscape with sparse, windblown vegetation mainly pastoral in use, the field boundaries are formed by well maintained hedges. Important recreational landscapes at Cosmeston Lakes and the adjacent Downs Golf Course. Close to the settlements more disturbance and disruption to the landscape with the visual settlement edge issues of litter, fly tipping, discordant boundaries.

Historic and Cultural Landscapes

Part of the wider Vale cultural aspect area (CL039), Cosmeston Lakes is an important recreational landscape feature within the Vale.

Key Policy and Management Issues

- *Management of agricultural landscape elements.*
- *Degradation of settlement edge landscape.*
- *Pressure to intensify recreational developments.*
- *Longer term management of Cosmeston Lakes Country Park.*
- *Integration of new development into the landscape.'*

4.4 In broad terms the Site is located within gently undulating agricultural land. The Site includes the existing WwTW and ancillary infrastructure. Land cover in the immediate vicinity of the Site

comprises farmland, enclosed by woodland and hedgerows, together with built form, small settlements, individual residential properties and agricultural buildings.

- 4.5 Taking into account the balance of LANDMAP and the LCA evaluations, above, the landscape in which the Site is located is considered to have a medium landscape value overall. The strong landscape structure and general sense of enclosure across the landscape are such that with careful consideration for retention and enhancement of local features (namely retention of existing vegetation, where possible, and proposed planting that softens proposed built form and is in keeping with the local landscape), the proposed change could be accommodated without resulting in significant disruption to the local landscape. As a result, the landscape is considered to have a medium susceptibility to the proposed change. Taking into account these considerations, the landscape in which the Site is located is considered to have a medium sensitivity, overall.

Visual Amenity

- 4.6 The ZVI relating to the proposed Development is shown on Figure 2. This is expected to extend northwards to the edge of Dinas Powys, westwards to Barry, southwards to edge of Sully, and eastwards to the coast. Vegetation cover and built form in the local landscape are such that the proposed Development is anticipated to be primarily visible in the site vicinity, within 0.5km of the proposed Development. Visual receptors include properties, Public Rights of Way (PRoW) / recreational routes, and transport routes within the 2km Study Area. These are represented by viewpoints 1 to 14, below, as the basis for visual appraisal. Viewpoint locations are shown on Figure 2 and viewpoint photographs are shown on Figures 3 to 9.

Viewpoint 1: Dinas Powys Common, looking South East

- 4.7 This view represents residents within Dinas Powys and users of a of Dinas Powys Common, as a result it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by an Dinas Powys Common. Beyond the proposed Development site is obscured from view by Pop Hill. The backdrop is formed by undulating farmland and scatted woodland.

Viewpoint 2: A4055, looking North East

- 4.8 This view represents users of the A4055, as a result it has a low susceptibility to change and visual sensitivity is considered to be **Low**. The foreground is formed by low-lying agricultural fields, framed by mature hedgerows, and a distant backdrop of wooded hills. The proposed Development site falls within the distance and is obscured by intervening vegetation.

Viewpoint 3: Cog Road, east of Sully, looking North

- 4.9 This view represents users of Cog Road and residents of Sully, as a result it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by a low-lying agricultural field, framed by mature hedgerows. In the middle distance the land falls away into a small valley. The backdrop is made up of undulating agricultural land with residential properties and woodlands scattered throughout. The proposed Development site sits within the middle distance and is obscured by the intervening landform and vegetation.

Viewpoint 4: Cross Common Road, adjacent to Residential Properties, looking South West

- 4.10 This view represents users of a local road and residents of nearby residential properties, as a result it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by small agricultural field that slopes southwards, framed by mature trees and hedgerows. Beyond this the proposed Development site can be glimpsed between existing vegetation in the middle distance. The backdrop is made up of undulating agricultural land.

Viewpoint 5: Railway Line, between Barry and Dinas Powys, looking East

- 4.11 This view represents users of the railway line that runs between Barry and Dinas Powys. As a result, it has a low susceptibility to change and visual sensitivity is considered to be **Low**. From the Railway line the foreground is formed by agricultural fields, bordered by trees and hedgerows. The backdrop is formed by agricultural fields and scattered woodlands/copses. Views of the proposed Development site are obscured by intervening landform and vegetation.

Viewpoint 6: Railway Line, between Barry and Dinas Powys, looking East

- 4.12 This view represents users of the railway line that runs between Barry and Dinas Powys. As a result, it has a low susceptibility to change and visual sensitivity is considered to be **Low**. From the Railway line the foreground is formed by dense vegetation with agricultural fields beyond. The backdrop is formed by agricultural fields and scattered woodlands/copses. Views of the proposed Development site are obscured by intervening landform and vegetation.

Viewpoint 7: Railway Line, between Barry and Dinas Powys, looking East

- 4.13 This view represents users of the railway line that runs between Barry and Dinas Powys. As a result, it has a low susceptibility to change and visual sensitivity is considered to be **Low**. From the Railway line the foreground is formed by dense vegetation with agricultural fields beyond. The backdrop is formed by agricultural fields and scattered woodlands/copses. Views of the proposed Development site are obscured by intervening landform and vegetation.

Viewpoint 8: Public Right of Way, looking South East

- 4.14 This view represents users of a local Public Right of Way. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by a small agricultural field that slopes south-eastwards and is bordered by mature trees and hedgerows. Beyond this the Site can be glimpsed between the intervening vegetation. The backdrop is made up of undulating agricultural land.

Viewpoint 9: Public Right of Way, looking South West

- 4.15 This view represents users of a local Public Right of Way. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by scrub and timber post and rail fence that forms the north-eastern boundary of a small agricultural field. Beyond this the proposed Development site can be glimpsed between the intervening vegetation that forms the backdrop of the view.

Viewpoint 10: Public Right of Way within Cosmeston Lakes Country Park, looking West

- 4.16 This view represents users of a local Public Right of Way within Cosmeston Lakes Country park. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is formed by mature vegetation and timber fencing. The middle distance is defined by open common land that is dissected by a mature hedgerow. Beyond this, views of the proposed Development site are obscured by the intervening landform and vegetation.

Viewpoint 11: A4055, looking North East

- 4.17 This view represents users of the A4055, as a result it has a low susceptibility to change and visual sensitivity is considered to be **Low**. The foreground is formed by a low-lying agricultural field, framed by mature hedgerows. The proposed Development site is obscured by the intervening vegetation.

Viewpoint 12: Cog, looking North

- 4.18 This view represents residents within the small settlement of Cog. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is made up of

the junction between Swanbridge Road and Cog Road, mature hedgerow and a residential property within Cog. The backdrop is formed by undulating farmland and scattered woodland. The proposed Development site sits within the distance and is obscured from view by the intervening landform and vegetation.

Viewpoint 13: Ashby Road, looking North East

- 4.19 This view represents residents who live along Ashby Road. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is made up of Ashby Road, mature hedgerow, and residential properties. The backdrop is formed by undulating farmland, scattered woodland and distant views of Dinas Powys. The proposed Development site is obscured from view by the intervening landform, vegetation and residential properties.

Viewpoint 14: Downs Farm, looking North West

- 4.20 This view represents the key cultural heritage asset ‘Downs Farm,’ which is a Grade II listed building. The view has been included to adhere to Policy MD8 of the VGLDP, 2011-2016, which highlights the importance of maintaining the setting of listed buildings within the Vale of Glamorgan. As a result, it has a high susceptibility to change and visual sensitivity is considered to be **High**. The foreground is made up of a sloped agricultural field which is boarded by hedgerows and woodland. Beyond this the proposed Development site can be glimpsed over the top of the intervening vegetation. The backdrop is formed by distant views of open countryside and the distinct sky line formed by the tall stacks at Dow Corning industrial area.

Lighting

- 4.21 The Institution of Lighting Professionals (“ILP”)) has produced ‘Guidance Notes for the Reduction of Obtrusive Light, 2011 (ILPGNROL, 2011), which identifies Environmental Zones that define the broad night-time characteristics of areas in terms of relative brightness or darkness. Environmental Zones identified in the ILP guidance are as follows:
- E0: Intrinsically dark landscapes covered by designation e.g. UNESCO Starlight Reserves. In the UK these include Exmoor National Park (2011) and Northumberland National Park (2013). The latter has also been granted Gold Tier Dark Sky Park status by the International Dark Skies Association (“IDA”);
 - E1: Dark landscapes, e.g. National Parks, Areas of Outstanding Natural Beauty and other rural areas;
 - E2: Low district brightness areas, e.g. rural, small village or relatively dark urban locations;
 - E3: Medium district brightness areas, e.g. small town centres or urban locations; and
 - E4: High district brightness areas, e.g. town/city centres with high levels of night-time activity.
- 4.22 Existing lighting within the proposed Development is located predominantly around the main office, Blower House, Sludge Thickening Building, Digesters and car park facilities. This results in low level of lighting across the existing site. There is some minor light spill into the surrounding landscape from the existing lighting found on site. Taking all this into consideration the existing site and surrounding landscape would be considered an Environmental Zone ‘E2: Low district brightness area’.

Lighting from within the proposed Development site



Lighting round office and Car Park Facilities



5 Design Measures and Mitigation Proposals

- 5.1 Best practice construction methodologies would form part of the Project Environmental Management Plan (PEMP). This describes the procedures for the management of environmental effects during construction. The PEMP would be prepared, managed and monitored by the main contractor. Trees, shrubs and hedgerows to be retained within the Site would be protected during construction, and areas of landscape that are temporarily disturbed during construction would be restored on completion.
- 5.2 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.
- 5.3 An analysis of the key opportunities and constraints for the proposed scheme was undertaken and used to inform the mitigation proposals. The mitigation works including planting, seeding, fencing etc are shown on Figure 10.
- 5.4 Areas of landscape that are temporarily disturbed during construction would be restored on completion. During the design process, there has been due consideration for local landscape and visual amenity. In order to accommodate the proposed scheme within the local landscape, the following mitigation measures have been proposed;
 - New woodland planting in the south east of the proposed Development (see tree replacement strategy below),
 - Small pocket of individual tree planting near site entrance (see tree replacement strategy below), and

- Minimise lighting spill on new structures by;
 - i. There will be no change of lighting features on existing structures;
 - ii. There will not be any permanently lit flood lighting of the stack. An access platform on the stack will be used for routine maintenance and will have the appropriate task lighting installed, but this will usually be once a year activity;
 - iii. Use of latest lighting technology to reduce light spill;
 - iv. Emergency lighting will only be used at night when necessary, and
 - v. The intelligent exterior lighting would normally be switched off between 7pm and 7am subject to routine maintenance/emergency works/operational need and the lighting activation would be linked to motion sensors to maximise efficiency.

5.5 In addition to the proposed landscape mitigation measures set out above, a number of other proposals that relate to the protection of the local landscape have been put forward as part of the Biodiversity Strategy. In summary these are as follows:

- The reinstatement of species-rich grassland along the easement of the HV Cable and the long-term management of the species-rich neutral grassland within Cog Moors SINC;
- Creation and long-term management of broadleaved woodland within Cog Moors SINC;
- Long-term management of existing broadleaved woodland within the proposed Development site and Cog Moors SINC, and
- Creating of areas of Species-rich grassland by altering the management/maintenance strategy of existing areas of amenity grassland.

5.6 For full details on all of the mitigation proposals put forward as part of the bio-diversity strategy please refer to the report Biodiversity Strategy and Habitat Management Plan.

Tree Replacement Strategy

5.7 Proposed development will result in a loss of 4 individual trees, two groups of trees and the partial removal of woodland and one group of trees, resulting in a loss of 1.2ha of trees and woodland. It should be noted that woodland, from which most of the loss results, has been classified as Category C: trees of low quality (BS 5837: 2012). For more information please refer to the Tree Survey Report and Arboricultural Impact Assessment.

5.8 To help compensate for this loss, 0.28ha of woodland and 16 individual trees have been proposed. In addition to this 0.63ha of existing woodland will be managed to enhance its overall condition and strength bio-diversity across the site. Actual planting space is very limited with the proposed Development site and DCWW Land Ownership, so these proposals represent the maximum amount of replacement planting possible.

5.9 For information on planting species and specification see Tables 5 and 6 below.

Table 5 Individual Tree Schedule

Name	Symbol	Common Name	Root	Height	Brks	Age	Girth	Form	No.
<i>Quercus robur</i>	QR	Common Oak	BR	175-200	3	2x	8-10cm	Standard	6
<i>Alnus glutinosa</i>	AG	Alder	BR	175-200	3	2x	8-10cm	Standard	5
<i>Prunus avium</i>	PA	Wild Cherry	BR	175-200	5	2x	8-10cm	Standard	5

Table 6 Woodland Belt Planting Schedule

%	Name	Common Name	Size	Height (cm)	Spacing (m)	No
40	<i>Quercus robur</i>	Pedunculate Oak	1+1 Forestry transplant; Bare root; .	40-60	1.5	492
20	<i>Corylus avellana</i>	Hazel	1+1 Forestry transplant; Bare root; .	40-60	1.5	246
10	<i>Ilex aquifolium</i>	Holly	2L Pot; 1.5m spacing.	30-40	1.5	123
10	<i>Alnus glutinosa</i>	Alder	1+1 Forestry transplant; Bare root; 1.5m spacing.	40-60	1.5	123
10	<i>Prunus avium</i>	Wild Cherry	1+1 Forestry transplant; Bare root; .	40-60	1.5	123
10	<i>Betula pendula</i>	Silver Birch	1+1 Forestry transplant; Bare root; .	40-60	1.5	123

5.10 For details on location of tree replacement and planting specification please refer to Figure 16 and the Landscape Management Plan.

6 Appraisal

Construction

- 6.1 Construction of the works would be undertaken whilst the existing WwTW remains operational. This would be facilitated by use of temporary construction compounds sited on an area of mown grassland, immediately adjacent to the existing final settlement tanks, and on an area of grassland within Cog Moors Site of Importance for Nature Conservation (SINC) to the east of the proposed AAD plant.
- 6.2 The proposed construction process is summarised in the Table 7, below; as indicated in the table, the main works are programmed to occur between Spring 2018 and Summer 2019. Construction plant required for this project would include mobile cranes, piling rigs, excavators, earth movers, delivery HGVs, and bespoke plant for buildings.

Table 7 Summary of Construction Activities

Phase	Activity	Approximate Date of Commencement	Approximate Duration
Phase 1 - Mobilisation and Advance Works	Tree/vegetation clearance Establishment of site enabling, welfare and site compound	Vegetation clearance early 2018 Site establishment – Feb/March 2018	1 month
Phase 2 - Construction	Main Works – excavate, pile, civil construction, mechanical and electrical installation, existing plant improvement works Removal of redundant plant and demolition of selected structures.	April 2018	18 months

Phase	Activity	Approximate Date of Commencement	Approximate Duration
Phase 3 - Commissioning	Commissioning of sludge treatment facility.	July 2019	4 months
Phase 4 - Handover and Completion	Completion – commissioning, demobilisation, landscaping.	December 2019	1 month

6.3 Construction activities associated with the proposed Development, described above, would introduce temporary elements within the local landscape and views. Overall, considering the nature of the construction activities, particularly the transient nature of construction activities, the magnitude of landscape and visual impacts is considered to be **Low**. Taking into account the **Medium** sensitivities described in Section 4, the overall significance of landscape and visual effects during the construction phase is considered to be **Minor/Moderate**.

Operation - Landscape

6.4 Following completion of the construction works, taking into account the nearby residential properties and settlements, existing vegetation, local topography, surrounding agricultural activities, and the fact that the site does not fall within a designated landscape, it is considered that initially the proposed development would result in a partial change to the landscape characteristics of the (LCA) Cog Moors (LCA 17) and Sully Ridge/Cosmeston (LCA 25). This would be due to the loss of mature woodland and its replacement with engineered elements. Over time (5-15 years) the proposed woodland would mature and increase in density, which would soften the proposed scheme and help it integrate into the local landscape.

6.5 The proposed development initially would have a medium nature of change on the local baseline landscape character and over time with the establishment of the proposed mitigation would reduce to a low nature of change.

6.6 Taking into account the appraisal above, the overall significance of landscape effect during operation is considered to be **Minor/Moderate adverse**.

Operation – Visual Amenity

6.7 Viewpoint locations are shown on Figure 1, with photographs shown on Figures 3 to 9 and photomontages shown on Figures 11 to 15.

Viewpoint 1: Dinas Powys Common, looking South East

6.8 The proposed development would not be visible therefore there would be **no visual effects**

Viewpoint 2: A4055, looking North East

6.9 The foreground would continue to be defined by low-lying agricultural fields, framed by mature hedgerows. The proposed Development would be almost entirely obscured from view by the intervening vegetation, with only a distant view of the top section of the Combined Heat and Power (CHP) stack available. As a result, the magnitude of visual impact is considered to be low. Taking into account low visual sensitivity, the overall significance of visual effects is considered to be **Minor**.

Viewpoint 3: Cog Road, east of Sully, looking North

6.10 The foreground would continue to be defined by open agricultural fields, framed by mature hedgerows. The proposed Development with be almost entirely obscured from view by the intervening landform and vegetation, with only a distant view of the top section of the stack available.

As a result, the magnitude of visual impact is considered to be low. Taking into account high visual sensitivity, the overall significance of visual effects is considered to be **Moderate**.

Viewpoint 4: Cross Common Road, adjacent to Residential Properties, looking South West

- 6.11 The foreground would continue to be defined by a small agricultural field that slopes southwards, framed by mature trees and hedgerows. Views of the proposed Development would largely be obscured by vegetation in the middle ground. As a result, the magnitude of visual impact is considered to be low. Taking into account high visual sensitivity, the overall significance of visual effects is considered to be **Moderate**.

Viewpoint 5: Railway Line, between Barry and Dinas Powys, looking East

- 6.12 The foreground would continue to be defined by agricultural land. The proposed Development would be almost entirely obscured from view by the intervening vegetation, with only a distant view of the top section of the stack available. As a result, the magnitude of visual impact is considered to be low. Taking into account low visual sensitivity, the overall significance of visual effects is considered to be **Minor**.

Viewpoint 6: Railway Line, between Barry and Dinas Powys, looking East

- 6.13 The foreground would continue to be defined by mature vegetation and agricultural land, framed by mature hedgerows. The proposed Development would be almost entirely obscured from view by the intervening vegetation, with only a distant view of the top section of the stack available. As a result, the magnitude of visual impact is considered to be low. Taking into account low visual sensitivity, the overall significance of visual effects is considered to be **Minor**.

Viewpoint 7: Railway Line, between Barry and Dinas Powys, looking East

- 6.14 The proposed development would not be visible therefore there would be **no visual effects**.

Viewpoint 8: Public Right of Way, looking South East

- 6.15 The proposed development would not be visible therefore there would be **no visual effects**.

Viewpoint 9: Public Right of Way, looking South West

- 6.16 The foreground would continue to be defined by scrub, timber post and rail fencing, and small agricultural field. Beyond this existing and proposed built elements at Cog Moors WwTW would be seen through hedgerow and trees in the background. The stack would extend a short way above the crowns of the existing trees. As a result, the magnitude of visual impact is considered to be medium. Taking into account high visual sensitivity, the overall significance of visual effects is considered to be **Moderate/Major**.

Viewpoint 10: Public Right of Way within Cosmeston Lakes Country Park, looking West

- 6.17 The proposed development would not be visible therefore there would be **no visual effects**.

Viewpoint 11: A4055, looking North East

- 6.18 The proposed development would not be visible therefore there would be **no visual effects**.

Viewpoint 12: Cog, looking North

- 6.19 The foreground would continue to be defined by the junction between Swanbridge Road and Cog Road, mature hedgerow and a residential property within Cog. The proposed Development would be almost entirely obscured from view by the intervening landform, with only distant view of the top section of the stack available. As a result, the magnitude of visual impact is considered to be low.

Taking into account high visual sensitivity, the overall significance of visual effects is considered to be **Moderate**.

Viewpoint 13: Ashby Road, looking North East

- 6.20 Views from Ashby Road of the proposed Development are obstructed by intervening vegetation, landform and local properties, however limited views of the WwTW and ancillary infrastructure would likely remain from upper floor windows of properties at the north-eastern end of Ashby Road. These upper floor views are not from the principal habitable rooms within the property. As a result, the magnitude of visual impact is considered to be **low**. Taking into account high visual sensitivity, the overall significance of visual effect is considered to be **Moderate**.

Viewpoint 14: Downs Farm, looking North West

- 6.21 The foreground would continue to be defined by a sloped agricultural field which is boarded by hedgerows and woodland. Beyond this existing and proposed built elements at Cog Moors WwTW would be seen over the top of the existing and proposed woodland and trees. The stack would extend a short way above the crowns of the existing and proposed woodland planting and would be set against the backdrop of the existing stacks at Dow Corning. As a result, the magnitude of visual impact, in the medium to long term (approximately 15 years following construction), is considered to be **medium**. Taking into account high visual sensitivity, the overall significance of visual effects is considered to be **Moderate/Major**.
- 6.22 Taking into account the appraisal above, the overall significance of visual effect during operation is considered to be **Moderate adverse**.

Lighting

- 6.23 Once the construction of the proposed Development has been completed there is likely to be a slight increase in ambient lighting. However, with the application of the proposed lighting mitigation (refer to section 5.4) it is anticipated that the Environmental Zone would remain as 'E2: Low district brightness area.' Taking this into consideration the proposed development would have a low impact on the lighting levels of the surrounding landscape.

7 Summary and Conclusions

- 7.1 A landscape and visual impact appraisal has been undertaken in accordance with Guidelines for Landscape and Visual Impact Assessment, produced by the LI and IEMA.
- 7.2 In broad terms the proposed Development site is located within gently undulating agricultural land. The proposed Development site includes the existing WwTW and ancillary infrastructure. Land cover in the immediate vicinity of the Site comprises farmland, enclosed by woodland and hedgerows, together with built form, small settlements, individual residential properties and agricultural buildings. 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 of the proposed Development.
- 7.3 Construction activities associated with the proposed Development, namely the movement of plant/vehicles and the creation of material stockpiles, would constitute temporary elements within the local landscape and views. 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, with only the flue stack being visible from selected viewpoints beyond this. 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. In addition, existing vegetation and proposed planting would serve to strengthen existing landscape characteristics, and help integrate the proposals with the surrounding landscape.

- 7.4 Taking into account that overall significance of landscape effects is considered to be minor/moderate adverse and the overall significance of visual effects is considered to be moderate adverse, the proposed Development is considered to have an overall effect of **Moderate adverse** during construction and operation.

8 References

Council of Europe (2000). European Landscape Convention.

Welsh Government (2016). Planning Policy Wales, 8th Edition.

NRW (continually updated). LANDMAP and Information Guidance Notes 1-4.

LI & IEMA (2013). Guidelines for Landscape and Visual Impact Assessment: Third Edition.

LI (2011). LI Advice Note 01/11: Photography and Photomontage in Landscape and Visual Impact Assessment.

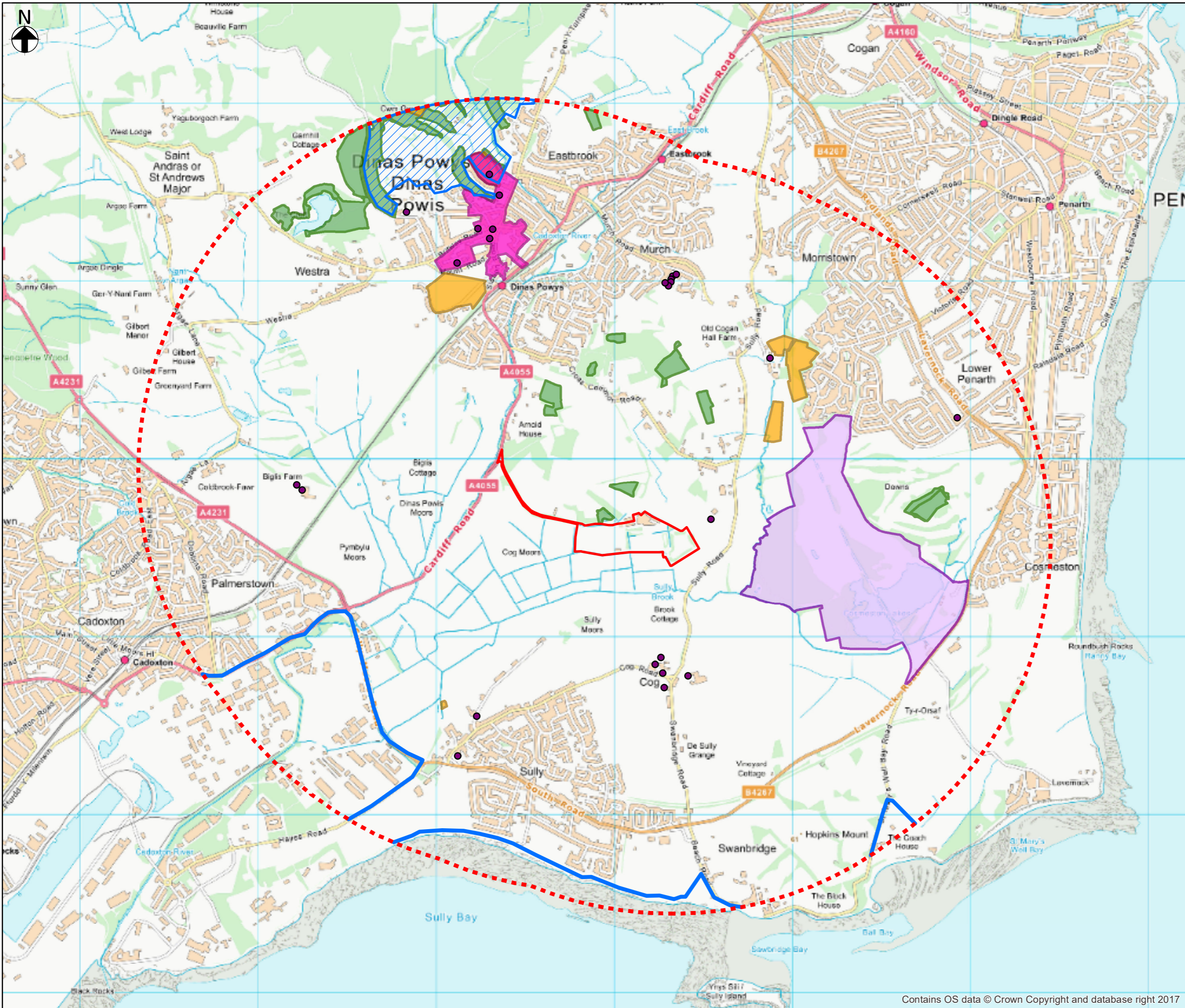
Vale of Glamorgan Council (2011-2026). Local Development Plan.

Vale of Glamorgan Council (2008). Designation of Landscape Character Areas

The Institution of Lighting Professionals (2011). Guidance Notes for the Reduction of Obtrusive Light

FIGURES

Figure 1 – Landscape Designations



- LEGEND**
- Site Boundary
 - - - Study Area - 2km
 - Listed Buildings
 - National Trail
 - Conservation Area
 - ▨ Special Landscape Areas
 - Country Parks
 - Scheduled Ancient Monument
 - Ancient Woodland

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Rev.	Date	Drawn	Description	Chkd.	Appd.	Date
01	01-08-17	R.G.	FIRST ISSUE	S.F.	H.C.	01-08-17

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Karnaw, Newport, NP108FZ

Project Name: SOUTH WALES SLUDGE STRATEGY COG MOORS AAD

Drawing Title: FIGURE 1 LANDSCAPE DESIGNATIONS

Suitability: INFORMATION Suitability Code: S2






Originator: R.G.	Designer: S.F.	Date: 01-08-2017
Internal Project Number: UA007902	Scale: 1:20,000	Rev: 01

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06118

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Figure 2 – ZTV and Viewpoint Locations

- NOTES:**
1. THE ZTV WAS CALCULATED USING WINDFARM COMPUTER SOFTWARE BASED ON ORDNANCE SURVEY (O.S) OPENDATA VECTORMAP RASTER TILES OF 1:50,000 SCALE AND "OS RASTER 50" DTM GRID DATA BASED ON A 50m GRID.
 2. THE ZTV ILLUSTRATES AN AREA OF THEORETICAL VISIBILITY BASED PROPOSED DEVELOPMENT TO A HEIGHT OF 18m.
 3. THE ZTV IS BASED ON LANDFORM DATA ONLY, WITH ANY RIDGE LINES, PLATEAUS AND VALLEYS REFLECTED IN THE EXTENT OF PREDICTED VISIBILITY, BUT DOES NOT TAKE ACCOUNT OF LAND COVER.
 4. THE ZTV REPRESENTS A "WORSE CASE" SCENARIO WITH REGARD TO THE VISIBILITY OF THE PROPOSED DEVELOPMENT. THE ZTV HOWEVER DOES FORM AN APPROPRIATE STARTING POINT FOR UNDERTAKING THE VISUAL IMPACT ASSESSMENT AND SELECTION OF VIEWPOINTS.

- KEY:**
-  SITE AREA
 -  STUDY AREA (2km RADIUS)
 -  AREA FROM WHICH ITEMS UP TO 12m, OR ALL OF, PROPOSED DEVELOPMENT MAY BE VISIBLE
 -  AREA FROM WHICH ITEM OF 18m, OR ALL OF, PROPOSED DEVELOPMENT MAY BE VISIBLE
 -  VIEWPOINT LOCATION

P3	10.11.17	RG	Third Issue	SF	SF	10.11.17
P2	27.03.17	RG	Second Issue	SF	SF	27.03.17
P1	16.02.17	JN	First Issue	SF	SF	16.02.17
Rev:	Date	Drawn	Description	Chkd	Appd	Date



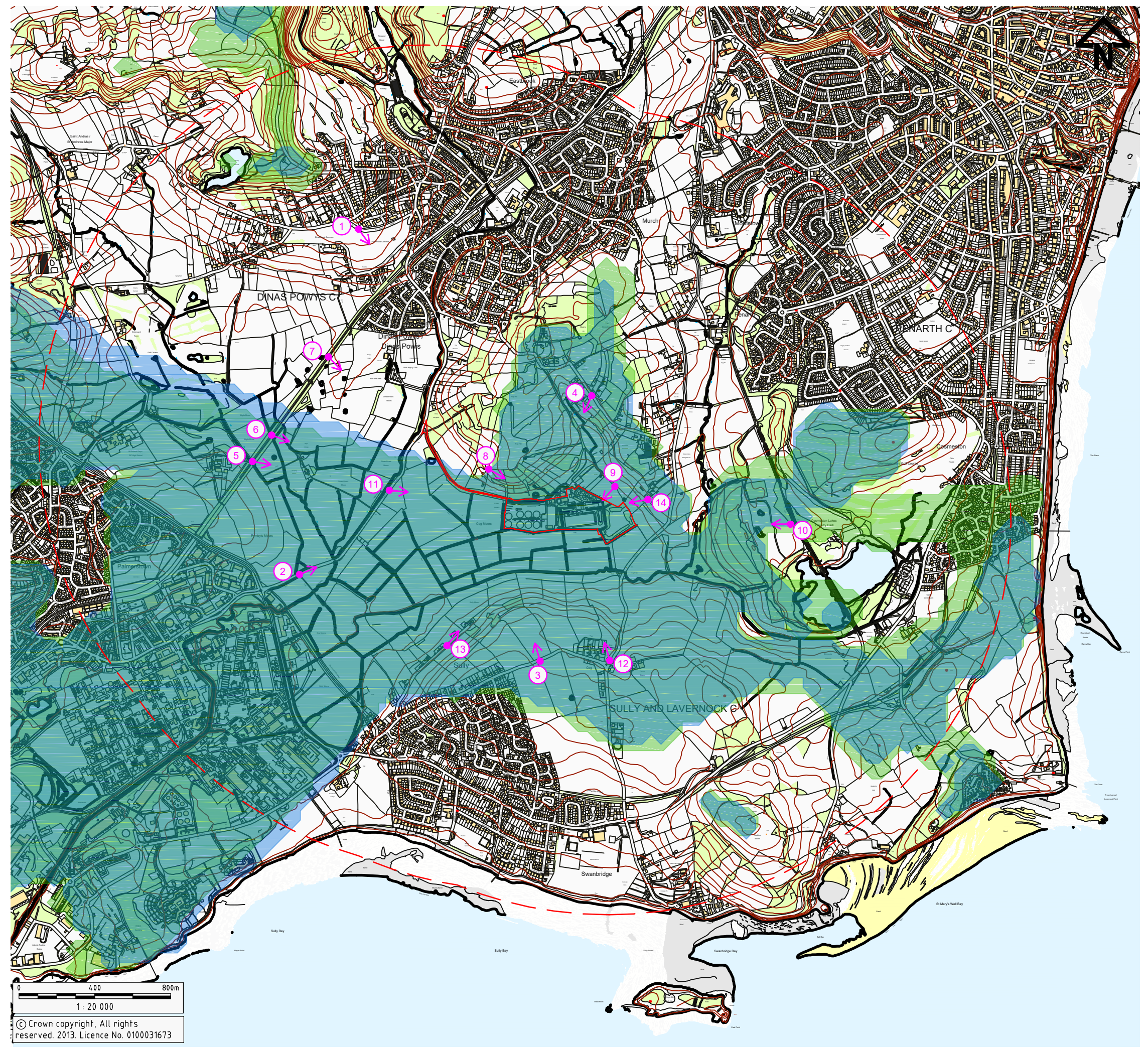
Project Name: **COG MOORS WWTW AAD**

Drawing Title: **FIGURE 2
ZONE OF VISUAL INFLUENCE
AND VIEWPOINT LOCATIONS**

Suitability: **INFORMATION** Suitability Code: **S2**

Originator: J.N	Designer: S.F	Date: 16.02.17
Internal Project Number: UA007902	Scale: 1:20 000	Rev: P3

Drawing Number: **4798-S-202-HYD-XX-XX-DR-NX-06119**



0 400 800m
1:20 000
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Figures 3-9 –Viewpoint Photographs



VIEWPOINT 1: DINAS POWYS COMMON, LOOKING SOUTH EAST



VIEWPOINT 2: A4055, LOOKING NORTH EAST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 3
VIEWPOINTS 1 & 2

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Drawing Number:
4798-S-202-HYD-XX-XX-DR-NX-06120

Revision:
01



VIEWPOINT 3: COG ROAD, EAST OF SULLY, LOOKING NORTH



VIEWPOINT 4: CROSS COMMON ROAD, ADJACENT TO RESIDENTIAL PROPERTIES, LOOKING SOUTH WEST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
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Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 4
VIEWPOINTS 3 & 4

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Drawing Number:
4798-S-202-HYD-XX-XX-DR-NX-06121

Revision:
01



VIEWPOINT 5: RAILWAY LINE, BETWEEN BARRY AND DINAS POWYS, LOOKING EAST



VIEWPOINT 6: RAILWAY LINE, BETWEEN BARRY AND DINAS POWYS, LOOKING EAST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

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Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 5
VIEWPOINTS 5 & 6

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Drawing Number:
4798-S-202-HYD-XX-XX-DR-NX-06122

Revision:
01



VIEWPOINT 7: RAILWAY LINE, BETWEEN BARRY AND DINAS POWYS, LOOKING EAST



VIEWPOINT 8: PUBLIC RIGHT OF WAY, LOOKING SOUTH EAST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 6
VIEWPOINTS 7 & 8

 **Capital Delivery Alliance**
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06123 Revision: 01



VIEWPOINT 9: PUBLIC RIGHT OF WAY, LOOKING SOUTH WEST



VIEWPOINT 10: PUBLIC RIGHT OF WAY WITHIN COSMESTON LAKES COUNTRY PARK, LOOKING WEST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 7
VIEWPOINTS 9 & 10

 **Capital Delivery Alliance**
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Kernow, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06124 Revision: 01



VIEWPOINT 11: A4055, LOOKING NORTH EAST



VIEWPOINT 12: COGS, LOOKING NORTH

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 8
VIEWPOINTS 11 & 12

 **Capital Delivery Alliance**
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Kernow, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06125 Revision: 01



VIEWPOINT 13: ASHBY ROAD, LOOKING NORTH EAST



VIEWPOINT 14: DOWNS FARM, LOOKING NORTH WEST

Rev	Date	Description	Drawn	Check	Approv
01	24MAR17	FIRST ISSUE	RG	SF	GD

NOTES:

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	24MAR17	Signed	
Checked	S.FRAEDRICH	Date	24MAR17	Signed	
Approved	G. DENHAM	Date	24MAR17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:

COG MOORS WwTW AAD

TITLE:

FIGURE 9
VIEWPOINT 13 & 14

 **Capital Delivery Alliance**
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Kermaw, Newport, NP108FZ

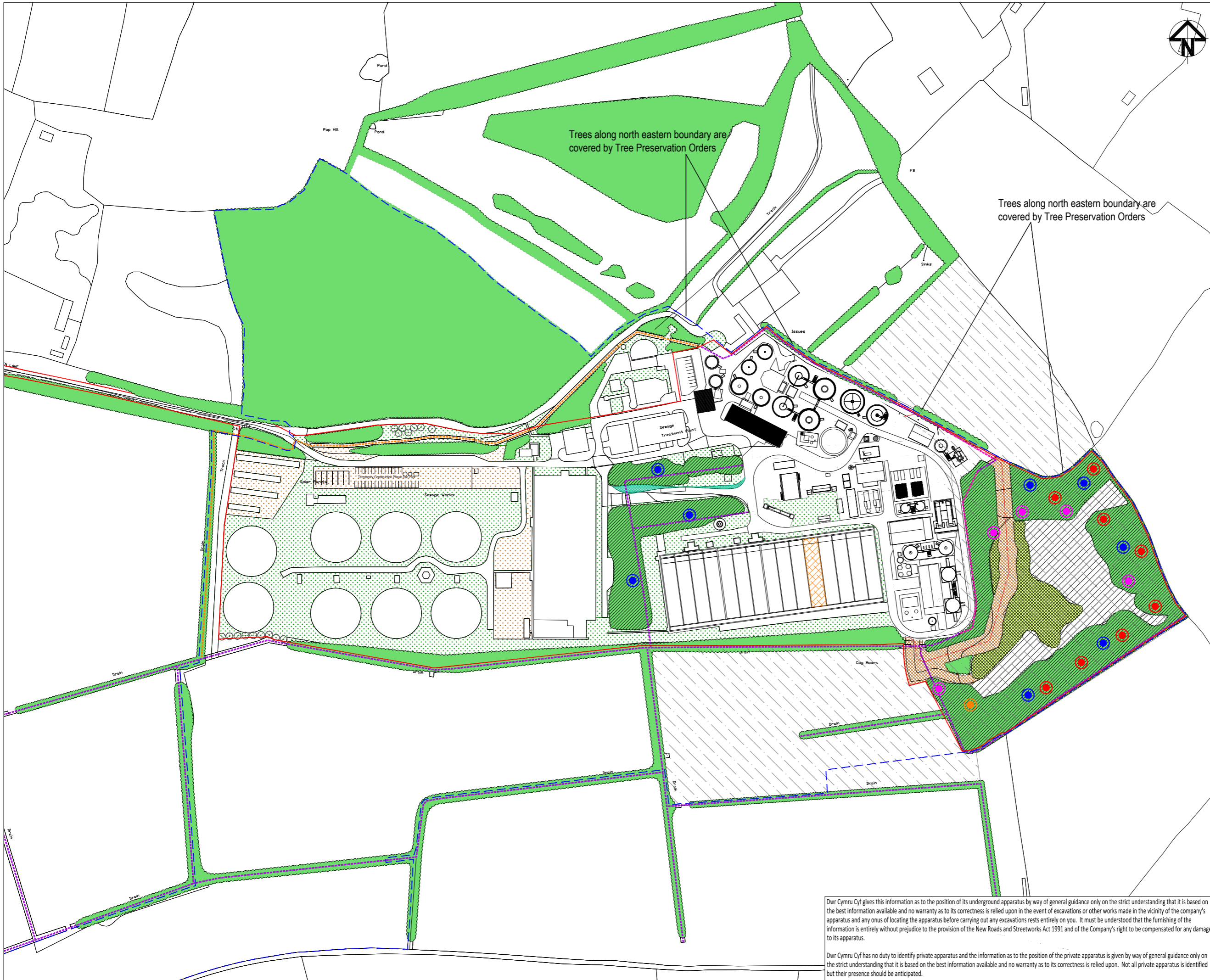
Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06126 Revision: 01

Figure 10 – Landscape Mitigation Plan



LEGEND:

- Planning Application Boundary
- DCWW Land Ownership Boundary
- Site of Importance for Nature Conservation (SINC)
- Existing Amenity Grass
- Existing Tree and Shrub Planting
- Existing Tree planting to be managed for biodiversity
- Existing Grassland to be managed as Species Rich Grassland
- SINC Grassland Management Area
- Proposed Amenity Grassland
- Proposed Species Rich Grassland
- Proposed Woodland Belt Planting
- Proposed Individual Tree Planting
- Area to be Managed for Wildlife
- Bird Nest Box
- Bat Box
- Hibernaculum to be created
- Dormouse Nest Boxes
- Existing Ephemeral Ditch
- Existing Dry Ditch
- Proposed Drainage Ditch



P03	19.12.17	RG	SECOND ISSUE	SF	LW	19.12.17
P02	25.10.17	RG	SECOND ISSUE	SF	LW	25.10.17
P01	27.07.17	RG	FIRST ISSUE	SF	LW	21.06.17
Rev.	Date	Drawn	Description	Chkd	Appd	Date

Capital Delivery Alliance
Cynghair Cyflawni Cyfalaf
 Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Project Name: **COG MOORS WwTW AAD**

Drawing Title: **FIGURE 10 LANDSCAPE MITIGATION PLAN**

Subsidiary: **INFORMATION** Subsidiary Code: **S2**

Originator: R.G.	Designer: S.F.	Date: 21.06.17
Internal Project Number: UA007902	Scale: 1:1250@A1	Rev: P03

Drawing Number: **4798-S-202-HYD-XX-XX-DR-NX-06127**

Dwr Cymru Cyf gives this information as to the position of its underground apparatus by way of general guidance only on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. It must be understood that the furnishing of the information is entirely without prejudice to the provision of the New Roads and Streetworks Act 1991 and of the Company's right to be compensated for any damage to its apparatus.

Dwr Cymru Cyf has no duty to identify private apparatus and the information as to the position of the private apparatus is given by way of general guidance only on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon. Not all private apparatus is identified but their presence should be anticipated.

Figures 11-15 Photomontages

VIEWPOINT 2: A4055, LOOKING NORTH EAST

Description : The foreground is formed by low-lying agricultural fields, framed by mature hedgerows, and a distant backdrop of wooded hills. The proposed Development would be almost entirely obscured from view by the intervening vegetation, with only a distant view of the top section of the Combined Heat and Power (CHP) stack available.



YEAR 1



YEAR 15

Rev	Date	Description	Drawn	Check	Approv
P2	25OCT17	SECOND ISSUE	RG	SF	GD
P1	21JUN17	FIRST ISSUE	RG	SF	GD

NOTES:

Viewpoint Location

Easting	Northing	Ground Level
314702m	169231m	8m A.O.D

Distance to nearest point of Site = 1184m

Suitability Description: FOR INFORMATION			
Designed	NA	Date	NA
Drawn	R.GRUBB	Date	21JUN17
Checked	S.FRAEDRICH	Date	21JUN17
Approved	G. DENHAM	Date	21JUN17
Scale:	NA	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	Sx	Project Number:	UA007902

PROJECT:
COG MOORS WwTW AAD

TITLE:
FIGURE 11
PHOTOMONTAGE A



Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

Ty Awon, Spooner Close, Coed Kernew, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06128 Revision: P2

VIEWPOINT 4: CROSS COMMON ROAD, ADJACENT TO RESIDENTIAL PROPERTIES, LOOKING SOUTH WEST

Description : The foreground is formed by small agricultural field that slopes southwards, framed by mature trees and hedgerows. The proposed Development would largely be obscured by vegetation in the middle distance.



YEAR 1



YEAR 15

Rev	Date	Description	Drawn	Check	Approv
P2	25OCT17	SECOND ISSUE	RG	SF	GD
P1	21JUN17	FIRST ISSUE	RG	SF	GD

NOTES:

Viewpoint Location

Easting	Northing	Ground Level
316240m	170185m	33m A.O.D

Distance to nearest point of Site = 490m

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	21JUN17	Signed	
Checked	S.FRAEDRICH	Date	21JUN17	Signed	
Approved	G. DENHAM	Date	21JUN17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:
COG MOORS WwTW AAD

TITLE:
FIGURE 12
PHOTOMONTAGE B

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06129 Revision: P2

VIEWPOINT 5: RAILWAY LINE, BETWEEN BARRY AND DINAS DOWYS, LOOKING EAST

Description : From the Railway line the foreground is formed by agricultural fields, bordered by trees and hedgerows. The backdrop is formed by agricultural fields and scattered woodlands/copses. The proposed Development would be almost entirely obscured from view by the intervening vegetation, with only a distant view of the top section of the stack available.



YEAR 1



YEAR 15

Rev	Date	Description	Drawn	Check	Approv
P2	25OCT17	SECOND ISSUE	RG	SF	GD
P1	21JUN17	FIRST ISSUE	RG	SF	GD

NOTES:

Viewpoint Location

Easting	Northing	Ground Level
314480m	169877m	13m A.O.D

Distance to nearest point of Site = 1397m

Suitability Description:
FOR INFORMATION

Designed	NA	Date	NA	Signed	
Drawn	R.GRUBB	Date	21JUN17	Signed	
Checked	S.FRAEDRICH	Date	21JUN17	Signed	
Approved	G. DENHAM	Date	21JUN17	Signed	
Scale:	NA	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	Sx	Project Number:	UA007902		

PROJECT:
COG MOORS WwTW AAD

TITLE:
FIGURE 13
PHOTOMONTAGE C

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

Ty Awon, Spooner Close, Coed Kernew, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06130

Revision: P2

VIEWPOINT 11: A4055, LOOKING NORTH EAST

Description : The foreground is formed by a low-lying agricultural field, framed by mature hedgerows. The proposed Development would be obscured from view by the intervening vegetation.



YEAR 1



YEAR 15

Rev	Date	Description	Drawn	Check	Approv
P2	25OCT17	SECOND ISSUE	RG	SF	GD
P1	21JUN17	FIRST ISSUE	RG	SF	GD

NOTES:

Viewpoint Location

Easting	Northing	Ground Level
315171m	169680m	5m A.O.D

Distance to nearest point of Site = 667m

Suitability Description: FOR INFORMATION			
Designed	NA	Date	NA
Drawn	R.GRUBB	Date	21JUN17
Checked	S.FRAEDRICH	Date	21JUN17
Approved	G. DENHAM	Date	21JUN17
Scale:	NA	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	Sx	Project Number:	UA007902

PROJECT:
COG MOORS WwTW AAD

TITLE:
FIGURE 14
PHOTOMONTAGE D



Ty Awon, Spooner Close, Coed Kernew, Newport, NP108FZ

Drawing Number: 4798-S-202-HYD-XX-XX-DR-NX-06131

Revision: P2

VIEWPOINT 14: DOWNS FARM, LOOKING NORTH

Description : The foreground is made up of a sloped agricultural field which is boarded by hedgerows and woodland. Beyond this the proposed Development site can be glimpsed over the top of the intervening vegetation. The backdrop is formed by distant views of open countryside and the distinct sky line formed by the tall stacks at Dow Corning industrial area. The proposed built elements at Cog Moors WwTW would be seen over the top of the existing and proposed woodland and trees.



YEAR 1



YEAR 15


					<p>NOTES:</p> <p><u>Viewpoint Location</u></p> <table border="1"> <tr> <td>Easting</td> <td>Northing</td> <td>Ground Level</td> </tr> <tr> <td>316313m</td> <td>168742m</td> <td>32m A.O.D</td> </tr> </table> <p>Distance to nearest point of Site = 182m</p>			Easting	Northing	Ground Level	316313m	168742m	32m A.O.D	<p>Suitability Description:</p> <p>FOR INFORMATION</p> <table border="1"> <tr> <td>Designed</td> <td>NA</td> <td>Date</td> <td>NA</td> <td>Signed</td> </tr> <tr> <td>Drawn</td> <td>R.GRUBB</td> <td>Date</td> <td>21JUN17</td> <td>Signed</td> </tr> <tr> <td>Checked</td> <td>S.FRAEDRICH</td> <td>Date</td> <td>21JUN17</td> <td>Signed</td> </tr> <tr> <td>Approved</td> <td>G. DENHAM</td> <td>Date</td> <td>21JUN17</td> <td>Signed</td> </tr> <tr> <td>Scale:</td> <td>NA</td> <td>Datum:</td> <td>AOD</td> <td></td> </tr> <tr> <td>Original Size:</td> <td>A3</td> <td>Grid:</td> <td>OS</td> <td></td> </tr> <tr> <td>Suitability Code:</td> <td>Sx</td> <td>Project Number:</td> <td>UA007902</td> <td></td> </tr> </table>			Designed	NA	Date	NA	Signed	Drawn	R.GRUBB	Date	21JUN17	Signed	Checked	S.FRAEDRICH	Date	21JUN17	Signed	Approved	G. DENHAM	Date	21JUN17	Signed	Scale:	NA	Datum:	AOD		Original Size:	A3	Grid:	OS		Suitability Code:	Sx	Project Number:	UA007902		<p>PROJECT:</p> <p>COG MOORS WwTW AAD</p>			 <p>Capital Delivery Alliance Cynghrair Cyflawni Cyfalaf</p> <p><i>Ty Awon, Spooner Close, Coed Kernow, Newport, NP108FZ</i></p>		
Easting	Northing	Ground Level																																																							
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Scale:	NA	Datum:	AOD																																																						
Original Size:	A3	Grid:	OS																																																						
Suitability Code:	Sx	Project Number:	UA007902																																																						
								<p>TITLE:</p> <p>FIGURE 15 PHOTOMONTAGE E</p>																																																	
<table border="1"> <tr> <td>Rev</td> <td>Date</td> <td>Description</td> <td>Drawn</td> <td>Check</td> <td>Approv</td> </tr> <tr> <td>P2</td> <td>25OCT17</td> <td>SECOND ISSUE</td> <td>RG</td> <td>SF</td> <td>GD</td> </tr> <tr> <td>P1</td> <td>21JUN17</td> <td>FIRST ISSUE</td> <td>RG</td> <td>SF</td> <td>GD</td> </tr> </table>					Rev	Date	Description	Drawn	Check	Approv	P2	25OCT17	SECOND ISSUE	RG	SF	GD	P1	21JUN17	FIRST ISSUE	RG	SF	GD				<p>Drawing Number:</p> <p>4798-S-202-HYD-XX-XX-DR-NX-06132</p>			<p>Revision:</p> <p>P2</p>																												
Rev	Date	Description	Drawn	Check	Approv																																																				
P2	25OCT17	SECOND ISSUE	RG	SF	GD																																																				
P1	21JUN17	FIRST ISSUE	RG	SF	GD																																																				

Figure 16 – Landscape Planting Plan

OUTLINE PLANTING SPECIFICATION

To be read in conjunction with: **LANDSCAPE AND VISUAL IMPACT ASSESSMENT AND LANDSCAPE MANAGEMENT PLAN.**

TIMING: All planting is to be carried out during November-March, inclusive

VEGETATION CLEARANCE: In areas to be planted, all grass and other herbaceous vegetation shall be cut to a height of between 50 mm and 75 mm and the arising's removed. Prior to applying herbicide the contractor shall await active vegetative re-growth sufficient for the herbicide to be at its most effective.

WEED CONTROL: The Contractor shall apply a non-residual translocated herbicide to all areas to be planted and seeded between 21 and 25 days prior to planting. The treatment for total herbicide control shall kill all treated growth including their root systems. The Contractor shall not commence any excavation or cultivation of the areas where herbicide has been applied until the vegetation has been effectively controlled.

TOPSOIL AND CULTIVATION: Existing soil to be used, imported topsoil not required. Cultivate the soil of all areas prior to seeding. This should include loosening, aerating and breaking up soil into particles 2-8mm to depths of 150mm. Remove any undesirable material brought to surface to a depth of 100mm including visible weeds, roots and large stones or clay balls with any dimension exceeding 30mm. Final cultivation prior to seeding topsoil shall be brought to a fine till by approved mechanical means or by hand raking, and if necessary re-grading of the surface will be carried out to conform to the prescribed finished levels.

PLANT PROTECTION: Where new planting is taking place in the vicinity of grazing stock all new planting needs to be protected by a temporary post and wire fence during its establishment. All trees and shrubs to be protected against rabbit grazing by using Tubex shelters. For suggested sizes refer to LBMP.

TREE PLANTING:

- All trees to consist of heavy standard trees planted in pits at the base of hedgerows, with depth of 500mm and width of 600mm.
- The base of each pit to be broken up to 150mm with all topsoil thoroughly broken up from the carefully excavated material, and any soil additives and/or ameliorants added in accordance with best practice, prior to backfilling.
- Trees shall be secured in position using round timber stakes (top diameter of 50-75 mm), peeled of bark, straight in length and free of snags, pests and diseases; with adjustable 25mm tree ties, made of black PVC or reinforced rubber
- Stakes for all trees shall be firmly driven and positioned into the tree planting pit before planting to a minimum depth of 300 mm below the bottom of the pit.
- The stake shall be positioned off centre on the prevailing windward side of the tree as near to the tree as possible but shall not interfere with the

PLANTING SCHEDULES

Tree Planting

Woodland Belt Planting

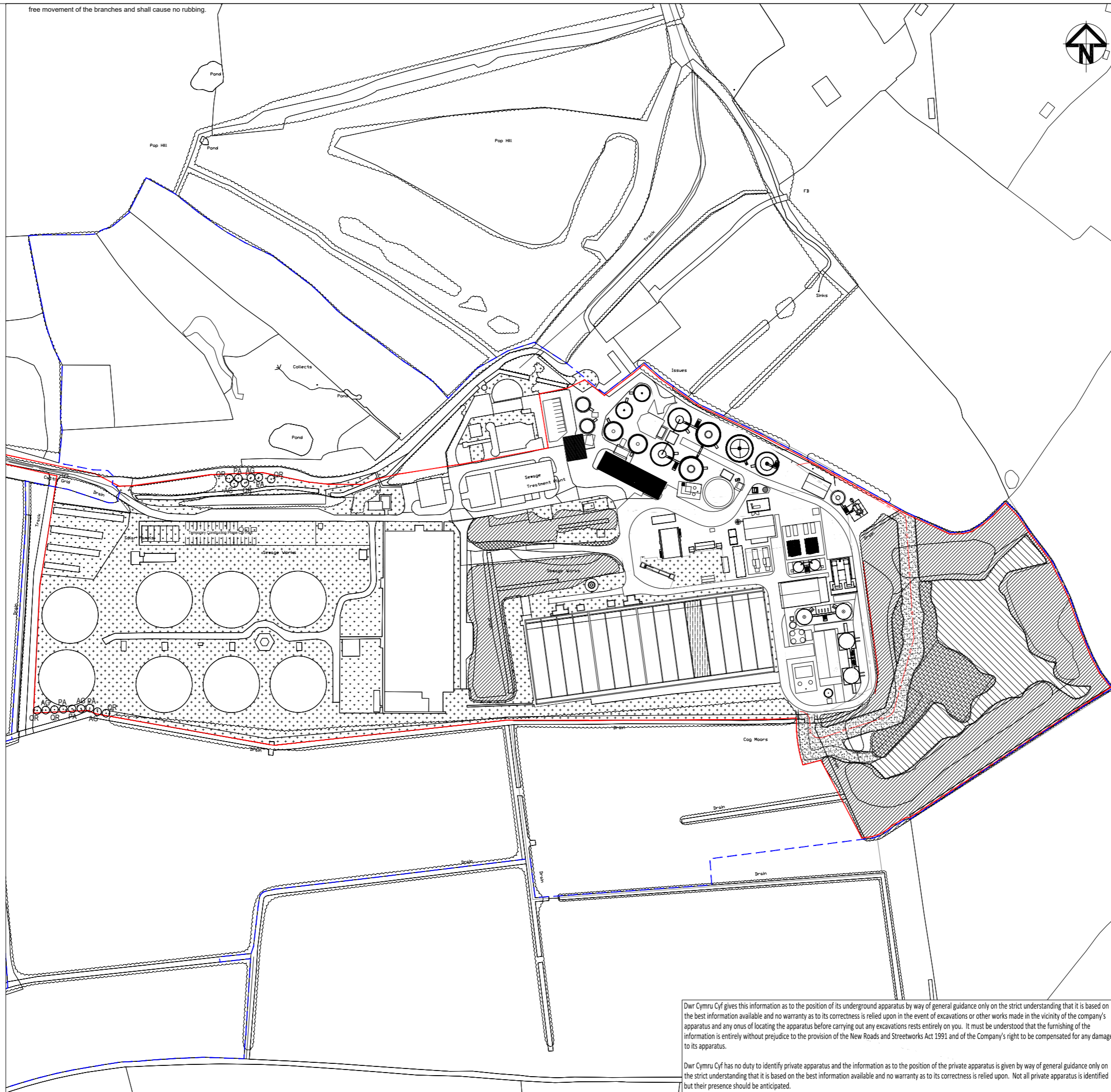
Area of woodland to be under planted - 2796m²

WILDFLOWER GRASSLAND PLANTING SCHEDULE

Area of wildflower seeding: 3136m²

Seed mix to consist of a traditional hay meadow or similar. Indicative species:

free movement of the branches and shall cause no rubbing.



LEGEND:

- Planning Application Boundary
- - - DCWW Land Ownership Boundary
- [Dotted] Existing Amenity Grass
- [Dashed] Existing Tree and Shrub Planting
- [Diagonal Hatching] Existing Tree planting to be managed for biodiversity
- [Horizontal Hatching] Existing Grassland to be managed as Species Rich Grassland
- [Vertical Hatching] Area to be Managed for Wildlife
- [Diagonal Hatching] SINC Grassland Management Area
- [Cross-hatching] Proposed Amenity Grassland
- [Stippled] Proposed Species Rich Grassland
- [Diagonal Hatching] Proposed Woodland Belt Planting
- [Circle] Proposed Individual Tree Planting

A1

P01	15.12.17	RG	FIRST ISSUE	SF	LW	15.12.17
Rev.	Date	Drawn	Description	Chkd	Appd	Date

Capital Delivery Alliance
Cynghair Cyflawni Cyfaloaf
 Ty Awen, Spooner Close, Coed Kernes, Newport, NP108FZ

Project Name: **COG MOORS WwTW AAD**

Drawing Title: **FIGURE 16 LANDSCAPE PLANTING PLAN**

Suitability: **INFORMATION** Suitability Code: **S2**

Originator: **R.G.** Designer: **S.F.** Date: **15.12.17**

Internal Project Number: **UA007902** Scale: **1:1250@A1** Rev: **P01**

Drawing Number: **4798-S-202-HYD-XX-XX-DR-NX-06133**

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