

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

Landscape Management Plan

MARCH 2018

CONTACTS

SUSANNE FRAEDRICH
Associate Technical Director

dd +44 (0) 2920 926846
m +44 (0) 7736 497912
e susanne.fraedrich@arcadis.com

Arcadis.
1st Floor
2 Glass Wharf
BS2 0FR
Bristol
United Kingdom

CONTENTS

| | | |
|---|--|---|
| 1 | INTRODUCTION | 4 |
| 2 | PLANTING IMPLEMENTATION | 5 |
| 3 | FIVE YEAR MAINTENANCE AND MANAGEMENT | 9 |

FIGURES

FIGURE 16 – PLANTING PLAN

1 Introduction

- 1.1 Arcadis was commissioned by Dŵr Cymru Welsh Water (DCWW) to produce a Landscape Management Plan 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.

2 Planting Implementation

General Planting Notes

- 2.1 All plants to be healthy, hardened-off and with good fibrous root systems and to comply with the requirements of BS3936 Specification for Nursery Stock. All planting to be undertaken in accordance with BS4428 Code of Practice for General Landscape Operations, which outline:
- All plants to be protected from wind exposure at all times. All plants to be soaked in water for several hours prior to planting and to be well watered in;
 - No planting to be carried out during poor weather conditions, i.e. when ground is frozen, waterlogged, or during droughts, hot sunshine or persistent dry or cold winds. All plant material to receive enough water to ensure healthy establishment;
 - The seed origin of all native shrub species for use on the scheme shall be sourced, as far as reasonably practical, from the Forestry Commission Local Seed Zones 302 (Forestry Commission Practice Note 8: Using Local Stock for Planting Native Trees and Shrubs). Written evidence of provenance shall be provided;
 - Time of year for planting: November to March, inclusive; and
 - Watering: Provide as necessary.

Vegetation Clearance

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

Weed Control

- 2.3 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.
- 2.4 In the event of finding particular pernicious weeds on site, steps shall be taken to eradicate them as follows:
- Indian Balsam- for best results cut plants to 50-75mm (below the lowest node) or hand-pull plants in April or early May prior to the plants flowering and setting seed.
 - Japanese Knotweed- Refer to 'The Knotweed Code of Practice-Managing Japanese Knotweed on development sites' Environment Agency; and
 - Giant Hogweed- for best results remove soil up to 4 metres away from plants to a depth of 0.5m. Check for regrowth regularly and spray with herbicide in April or May before the plants flower.

Planting Protection

- 2.5 All individual plants shall be protected with protective tubes to the size of 60cm height x 16cm diameter. The size of the supporting stakes and the fixings shall be in accordance with the protective tube manufacturer's recommendations.

Individual Tree Planting

- 2.6 Individual Tree planting shall be undertaken in the locations shown on Figure 16 - Planting Plan, as follows:

- Refer to Table 1 for individual tree planting schedule;
- All trees to be planted in pits with a depth of 500mm and a 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; and
- 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 free movement of the branches and shall cause no rubbing.

Table 1 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 |

Woodland Belt Planting

- 2.7 Woodland belt planting to consist of translocated stools/stumps taken from the areas of existing woodland being removed (refer to Cog Moors WwTW AAD Arboricultural Report for details of woodland being removed). Translocation should be undertaken as follows;
- Translocation work to be undertaken in September/October
 - Trees identified as suitable for translocation to be coppiced;
 - Stump/stools to be dug out using demountable buckets and placed directly into dumpers for transport to areas identified for new woodland belt planting;
 - Stumps/stools will be placed within excavated pits appropriate to each one's size. Pits to be backfilled with topsoil.
 - Stumps/stools to be placed at 5m centres and arranged in a random pattern.
- 2.8 Areas identified as Woodland Belt Planting that cannot be covered by translocated trees will be planted using new planting material. This planting will be undertaken as follows;
- Refer to Table 2 for individual tree planting schedule;
 - All trees to be planted in pits with a depth of 500mm and a 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; and
- 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 free movement of the branches and shall cause no rubbing.

Table 2 Woodland Belt Planting Schedule

| % | Name | Common Name | Size | Height (cm) | Spacing (m) |
|----|------------------------------|-----------------|--|-------------|-------------|
| 24 | <i>Corylus avellana</i> | Hazel | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 24 | <i>Quercus robur</i> | Pedunculate Oak | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 6 | <i>Carpinus betulus</i> | Hornbeam | 2L Pot; 1.5m spacing. | 30-40 | 1.5 |
| 6 | <i>Crataegus monogyna</i> | Hawthorn | 1+1 Forestry transplant; Bare root; 1.5m spacing. | 40-60 | 1.5 |
| 5 | <i>Prunus avium</i> | Wild Cherry | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 4 | <i>Ligustrum vulgare</i> | Wild Privet | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 4 | <i>Malus sylvestris</i> | Crab Apple | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 4 | <i>Viburnum lantana</i> | Wayfaring-Tree | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 4 | <i>Acer campestre</i> | Field Maple | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 3 | <i>Sorbus aucuparia</i> | Rowan | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 3 | <i>Cornus sanguinea</i> | Dogwood | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 2 | <i>Lonicera periclymenum</i> | Honeysuckle | 2L pot; planted close enough to another tree, shrub or fence to allow use for support. | 40-60 | 1.5 |
| 2 | <i>Frangula alnus</i> | Alder Buckthorn | 1+1 Forestry transplant; Bare root; | 30-40 | 1.5 |
| 2 | <i>Rhamnus cathartica</i> | Buckthorn | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 2 | <i>Euonymus europaea</i> | Spindle | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 2 | <i>Prunus padus</i> | Bird Cherry | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 2 | <i>Sambucus nigra</i> | Elder | 1+1 Forestry transplant; Bare root; | 40-60 | 1.5 |
| 1 | <i>Ilex aquifolium</i> | Holly | 2L Pot; 1.5m spacing. | 40-60 | 1.5 |

| | | | | | |
|---|---------------------|-----|--|-------|-----|
| 1 | <i>Hedera helix</i> | Ivy | 2L pot; planted close enough to another tree, shrub or fence to allow use for support. | 30-40 | 1.5 |
|---|---------------------|-----|--|-------|-----|

Species-rich Grassland

- 2.9 It is proposed that the topsoil (including seedbank) of grassland areas within the footprint of the temporary compound and access route will be stripped prior to compound set-up (estimated September 2018) and stored on site (as mounds or turves) within the footprint of the temporary compound for the duration of the works. On completion of the construction works (estimated April 2020) the area used for the temporary compound and associated access will be reinstated with the stripped topsoil.
- 2.10 Included in the above figures is clearance of a 6 m wide strip through broadleaved plantation woodland, scrub and semi-improved neutral grassland to allow the installation of a High Voltage (HV) cable. On completion of these works (estimated September 2018), the easement will also be reinstated as species-rich grassland to allow maintenance/access (where required). The seed bank will be allowed to regenerate naturally with any remedial measures identified during monitoring undertaken as part of the Habitat Management Plan (Arcadis, 2017b).
- 2.11 Soil stripping/storage/reinstatement will be carried out under an Ecological Method Statement and overseen by an Ecological Clerk of Works (ECoW) with any areas of Cog Moors SINC not directly impacted by the works fenced off to prevent any unintended entry/damage.
- 2.12 Retained, reinstated and created grassland within Cog Moors SINC will be managed for at least ten years post-construction in accordance with the Habitat Management Plan (Arcadis, 2017b) with the aim of maintaining these areas at SINC quality.

Amenity Grassland

- 2.13 Amenity grassland shall be managed as follows:
- Existing and Proposed areas of amenity grassland would be maintained at a relatively short sward;
 - Proposed amenity grass seed is to be sown at a rate of 35g/sqm with seed percentages by weight as follows: 30% Creeping, Red Fescue, 25% Perennial Ryegrass, 20% Hard Fescue, 12.5% Crested Dogstail, 10% Browntop Bent, and 2.5%, Miniature White Clover;
 - Grassland seed shall be sown during the period 1 March to 15 May or 1 September to 31 October unless otherwise agreed;
 - In seeded areas the upper 50mm of topsoil shall be reduced to a fine tilth by use of a chain harrow or other suitable plant, prior to seeding; and
 - Total area of proposed Amenity Grassland 86sqm.

3 Maintenance and Management

- 3.1 This section sets out the maintenance and management regime for the first five years following construction of the proposed development.

Maintenance Operations (General)

- 3.2 Following Completion, the Contractor should visit the site periodically to inspect, carry out and complete the maintenance operations as shown in Table 3 (see below) and described below.

Existing Tree and Woodland Maintenance

- 3.3 Works would be undertaken in accordance with BS3998 and current best horticultural practice.
- 3.4 Management of woodland areas would involve selective removal of limbs and coppicing of shrubs to promote healthy growth, and the control of invasive plants with the aim of eradication
- 3.5 Existing trees to be pruned in accordance with BS3998 and current best horticultural practice.
- 3.6 Shrubs coppiced to encourage bushy growth.
- 3.7 Shrubs cut on rotation to ensure that the woodland maintains a structure with a canopy layer of trees and an understorey of shrubs
- 3.8 The woody material generated by site management to be: disposed of offsite; chipped and placed in a suitable storage area for use as a mulch later; or chipped and placed in a suitable area for composting; or used to form habitat piles in suitable locations on site

Weed Control

- 3.9 Weeds located within shelters, guards or mulch would be hand-pulled and arisings left in situ.
- 3.10 Where deemed necessary, spot treatment of weeds would take place between mid-April and the end of May. The Contractor would be required to carry out further treatments outside this period in the event of new growth or new areas of infestation being found. If this occurs a translocated, non-residual herbicide approved for initial total weed control shall be applied in accordance with the manufacturer's instructions, and arising's removed from site.

Plant Replacement

- 3.11 Where proposed planting has failed to establish, plant replacement shall be undertaken at the beginning of each planting season following initial planting for the duration of the construction period and for the duration of the post certification period. The replacement planting shall be the same as the original stock size when first planted.

Tree Maintenance

- 3.12 Trees would be maintained as follows
- During the establishment phase both watering and weed control (Refer to section 2.3) will be carried out as necessary;
 - Formative pruning to be undertake on planted trees in accordance with BS3998 and current best horticultural practice; and
 - Stakes and their ties shall be inspected each year and adjusted to allow for the growth of each plant; stakes and ties shall be removed from plants where they are no longer required.

Woodland Belt Planting – Translocated

- Annually monitor and prune planting as and when required to maintain;
- Spot treatment of weeds within planting area with herbicides; and

- Dead or diseased plants replaced.

Woodland Belt Planting – Proposed

3.13 Woodland Belt Planting (Proposed) would be maintained as follows:

- 500mm dia. of weed free area to be maintained for establishment around each plant;
- During the establishment phase both watering and weed control (Refer to 2.3) will be carried out as necessary;
- Stakes and their ties shall be inspected each year and adjusted to allow for the growth of each plant; stakes and ties shall be removed from plants where they are no longer required;
- Annually monitor and prune planting as and when required to maintain;
- Dead or diseased plants replaced; and
- After five years, limbs may need to be removed from the trees to promote strong healthy growth and maintain their shape.

Species-rich Grassland Maintenance

3.14 The Species-rich grassland would be maintained as follows:

- In the first year top the growth to 15cm monthly from May – October. Spot spray pernicious weeds. These arising from the soil seed bank would be common, and should be controlled to minimise competition and weed seed production;
- Following this, control of pernicious weeds should be undertaken annually within the wildflower grassland by spot application of herbicide to the quantities advised by the manufacturer. Applications would be undertaken in May during dry, benign weather conditions;
- Following establishment, traditional meadow management with a main summer cut to a height of between 25-40mm should be undertaken. To maintain maximum diversity and flowering interest cutting should take place in sections at different times from mid- July to the end of August in warm, dry weather;
- The grass should be removed from the sward after 7 days of drying. Arisings then set aside and placed in heaps at suitable sacrificial parts of the site;
- Mowing or grazing of regrowth should be undertaken through to later autumn / winter to maintain a 50mm height. Approximately 10% of the meadows edge should be left uncut through the winter to provide refuge for insects; and
- Areas close to hedgerows and areas close to tree and shrub planting, cut once every two years to provide tall grass habitat for overwintering invertebrates

SINC Grassland Maintenance

- 3.15 Cuts in late July/early August when most plant species have set seed to maintain its plant species diversity to a sward height of 40-75mm.
- 3.16 If there is a reduction in plant species diversity due to dense grass growth further cuts in September, and/or March.
- 3.17 Arisings left for 7 days to dry and allow seeds to set. The arisings composted or set aside in piles for wildlife.
- 3.18 Manual removal of perennial weeds. In the case of thistles, mowing conducted before the plants set seed, as seeding would dramatically increase the weed problem in subsequent years. Herbicide use to be avoided

Amenity Grassland Maintenance

3.19 The area beneath the main solar array would be maintained at a relatively short sward.

3.20 Cut three times a year: in March, July and September. Cuttings removed for composting on site.

Invasive Species

3.21 Notes on the treatment of invasive species are as follows;

- 7m buffer zones to be maintained around stands of invasive species;
- Areas of proposed planting to be kept clear of non-native invasive species;
- Areas of existing Indian Balsam that require removal should be pulled or cut from the ground between April and May before seed pods appear in June/July;
- Pulled or cut material should be retained in fenced (contaminated) area;
- Any soil/other material excavated from within the buffer zone will be retained within the buffer zone. No materials or soil from elsewhere are to be stored within the buffer zone;
- Where movement of soil/material from within the fenced area is required this will be confined to designated haulage routes, clearly demarcated with appropriate fencing. Contaminated material will be disposed of in accordance with best practice guidelines by a registered waste carrier at a registered landfill; and
- Monitoring of regrowth and management to prevent the re-establishment of invasive species will continue annually.

Table 3 Summary Maintenance Operations

| OPERATIONS | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|-------------|-------------|---|-------------|-------------|-------------|---|---|
| GENERAL OPERATIONS (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Detailed Programme from Contractor | | X | | | | | | | | | | |
| Contractor to provide written confirmation of all operations undertaken | X | X | X | X | X | X | X | X | X | X | X | X |
| Watering | X | X | X | X | X | X | X | X | X | X | X | X |
| OPERATIONS TO TREES (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Inspect stakes and ties, adjust where necessary and remove if no longer required. | X | X | X | X | X | X | X | X | X | X | X | X |
| Works to existing trees if necessary | X | | | | | | | | | | X | X |
| OPERATIONS TO WOODLAND BELT PLANTING – TRANSLOCATED (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Annually monitor and prune planting to maintain to encourage healthy growth | X | X | X | X | X | X | X | X | X | X | X | X |
| OPERATIONS TO WOODLAND BELT PLANTING – NEW PLANTING (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Firming up of plants, tree/shrub shelters and stakes | | | | | X | | | | X | | | |
| Annually monitor and prune planting to maintain to encourage healthy growth | X | X | X | X | X | X | X | X | X | X | X | X |
| OPERATIONS TO AMENITY (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Cut – height not exceeding 100mm – arisings baled and removed off-site | | | X | | | | X | | X | | | |
| Control & Removal of Pernicious Weeds | | | | | X | | | | X | | | |
| OPERATIONS TO SPECIES-RICH GRASSLAND (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Annual cut, rake off sward and deposit as directed. | | | | | X (Y1 only) | X (Y1 only) | X | X (Y1 only) | X (Y1 only) | X (Y1 only) | | |

| | | | | | | | | | | | | |
|--|--|--|--|--|---|-------------|-------------|-------------|----------------|-------------|--|--|
| Control & Removal of Pernicious Weeds. | | | | | X | X (Y1 only) | X (Y1 only) | X (Y1 only) | X (Y1 only) | X (Y1 only) | | |
| OPERATIONS TO SPECIES-RICH GRASSLAND (ANNUALLY UNLESS STATED) | | | | | | | | | | | | |
| Cut – height not exceeding 100mm – arisings left for 7days to dry and set aside for wildlife | | | | | | | X | | X (if require) | | | |
| INVASIVE SPECIES | | | | | | | | | | | | |
| Control & Removal of non-native invasive species within planting areas | | | | | X | X | | | X | | | |

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 tilth 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 LEMP.

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 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 free movement of the branches and shall cause no rubbing.

WOODLAND BELT PLANTING

Woodland belt planting to consist of translocated stools/stumps from the areas of existing woodland being removed (refer to Cog Moors WwTW AAD Arboricultural Report for details of woodland being removed) and new planting material. Translocation should be undertaken as follows:

- Translocation work to be undertaken in September/October
- Trees identified as suitable for translocation to be coppiced;
- Stumps/stools to be dug out using demountable buckets and placed directly into dumpers for transport to areas identified for new woodland belt planting;
- Stumps/stools will be placed within excavated pits appropriate to each ones' size. Pits to be backfilled with topsoil.
- Stumps/stools to be placed at 5m centres and arranged in a random pattern.
- Areas identified as Woodland Belt Planting that cannot be covered by translocated trees will be planted using new planting material (see TREE PLANTING for details)

PLANTING SCHEDULES

Tree Planting

Woodland Belt Planting

Area of woodland to be under planted -12102m²

INSET PLAN

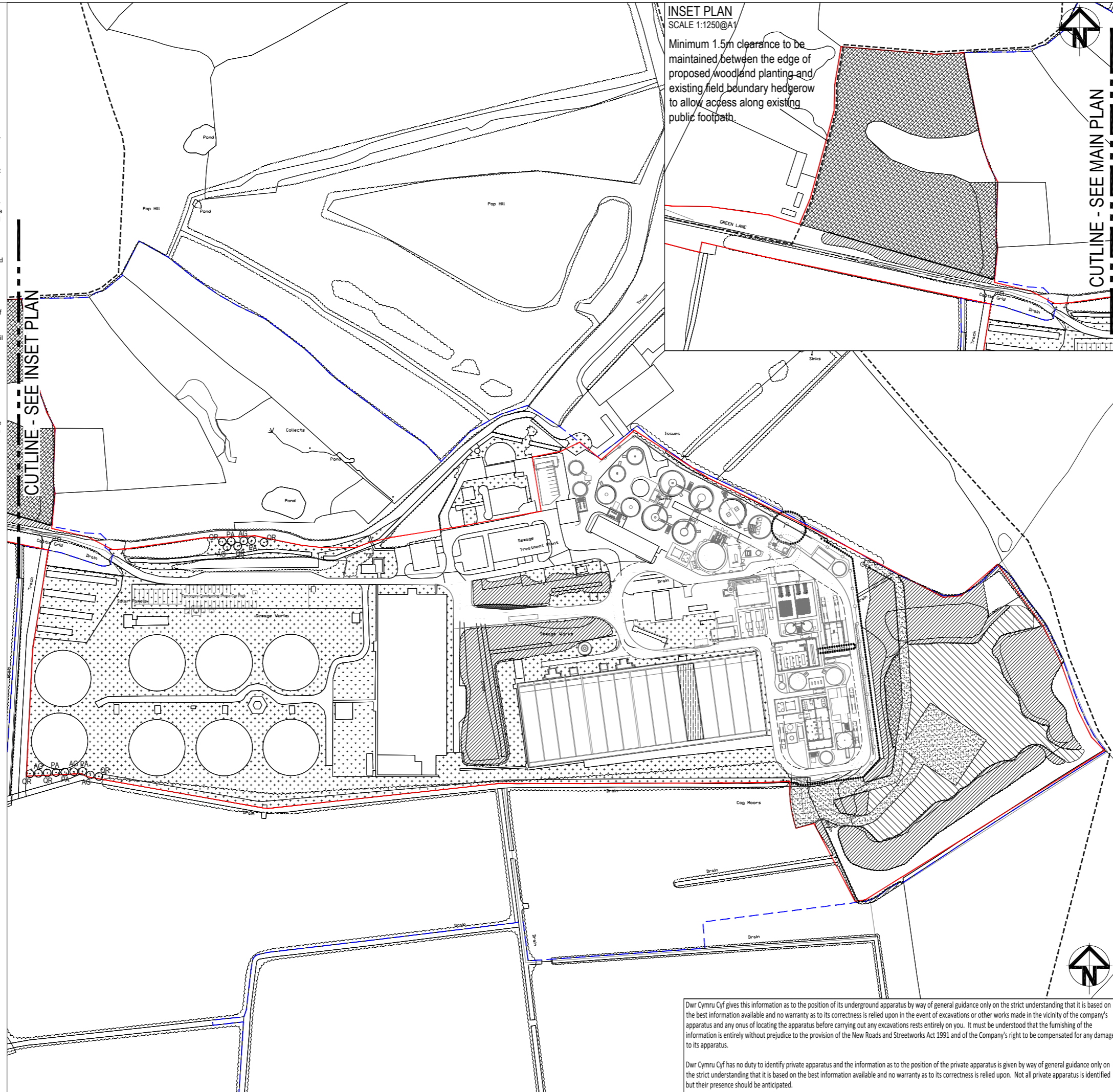
SCALE 1:1250@A1

Minimum 1.5m clearance to be maintained between the edge of proposed woodland planting and existing field boundary hedgerow to allow access along existing public footpath.

LEGEND:

- Planning Application Boundary
- DCWW Land Ownership Boundary
- Public Rights of Way
- 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
- Area to be Managed for Wildlife
- SINC Grassland Management Area
- Proposed Amenity Grassland
- Proposed Species Rich Grassland
- Proposed Woodland Belt Planting
- Proposed Individual Tree Planting

A1



CUTLINE - SEE INSET PLAN

CUTLINE - SEE MAIN PLAN

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.

| | | | | | | |
|------|----------|-------|------------------|------|------|----------|
| P02 | 19.03.18 | RG | UPDATED BOUNDARY | SF | LW | 19.03.18 |
| 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 Awon, Spooner Close, Coed Kernes, Newport, NP108FZ

Project Name: **COG MOORS WwTW AAD**

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

| | | | |
|---|------------------|----------------|-------------------------|
| Sustainability INFORMATION | | | Sustainability Code: S2 |
| Originator: R.G. | Designer: S.F. | Date: 15.12.17 | |
| Internal Project Number: UA007902 | Scale: 1:1250@A1 | Rev: | P02 |
| Drawing Number: 4798-S-202-HYD-XX-DR-NX-06133 | | | |

Arcadis Consulting (UK) Limited

Arcadis Cymru House
St Mellons Business Park, Fortran Road
Cardiff
CF3 0EY
United Kingdom
T: +44 (0)29 2092 6700

arcadis.com