East Anglia ONE
Offshore Windfarm

East Anglia ONE Offshore Windfarm

Landscape Management Plan
DCO Requirement 12 Work No 38 to 41
Final for Discharge

ID: EA1-CON-F-GBE-008554

Created by / date:	OPEN / 29 Aug 2016
Checked by / date:	RM / 30 Aug 2016
Approved by / date:	PS / 31 Aug 2016

www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES

REVISION CONTROL

Revision and Approvals					
Rev	**Date**	**Reason for Issue**	**Originated by**	**Checked by**	**Approved by**
1	08-01-2015	Interim for comment	S Wheatley	A Sidgwick	G Greene
2	19-07-2016	Final for Approval	S Wheatley	R Morris	P Stearns
3	31-08-2016	Final for Discharge	S Martin	R Morris	P Stearns

Table of contents

Abbreviations **5**

1 Introduction **6**
1.1 Project Overview 6
1.2 Purpose and Scope 6
1.3 Background 7

2 Relevant Standards and Legislation **8**
2.1 Applicable Standards and Good Practice 8
2.1.1 Tree and hedgerow protection during construction 8
2.1.2 Tree work by arboriculturalists 8
2.1.3 Woodland creation 8
2.1.4 Topsoil handling, stripping and storage 8
2.1.5 Quality of Trees and Shrubs 8
2.1.6 Maintenance of gardens/ Landscapes 8
2.1.7 Horticulture 8
2.1.8 Turf (if substituted for grass seeding) 8
2.1.9 Sustainable Drainage 8
2.2 Relevant Legislation 9

3 Design and Management Objectives **10**
3.1 Context 10
3.2 Baseline conditions and landscape character areas 10

4 Landscape Scheme **11**
4.1 General overview 11
4.2 Tree planting and cultivation 12
4.3 Grassland Planting 16
4.4 Ground levels 17
4.5 Hard surface materials 17
4.5.1 Access road 17
4.5.2 Grass-road maintenance track 17
4.5.3 Internal service road 18
4.5.4 Gravel surfaces 18
4.5.5 Self-binding gravel path 18
4.6 Minor structures and services 18
4.7 Tree protection 18
4.8 Top Soil Storage Strategy 19

5 Implementation **20**
5.1 General 20
5.1.1 Seasonal and climatic conditions 20
5.1.2 Machines and tools 20
5.1.3 Underground service 20
5.2 Plant Material 20
5.2.1 Plant quality in general 20
5.2.2 Bare root plants 21

5.2.3	Root-balled plants	21
5.2.4	Seeds	21
5.2.5	Native hedgerow and tree species	21
5.2.6	Marginal and aquatic plants – SuDS detention basins, pond and swales	21
5.2.7	Labelling	21
5.2.8	Substitutes	21
5.3	Preparation for Planting	22
5.3.1	Site Clearance	22
5.3.2	Cultivation	22
5.3.3	Hedgerow and woodland area cultivation	22
5.3.4	Sowing grasses	22
5.4	Planting and Seeding	22
5.4.1	Plant handling, storage and transportation	22
5.4.2	Planting hedgerows and tree transplants	22
5.4.3	Sowing grasses	23
5.4.4	Watering	23
6	**Maintenance**	**24**
6.1	Aims	24
6.1.1	Legal Obligations	24
6.1.2	General Requirements	24
6.2	Woodland Planting (WM1, WM2, WM3)	25
6.3	Hedgerow Planting (H1)	26
6.4	Amenity Grass for Verges and Embankments (G1)	27
6.5	Wet Grassland (G2)	28
6.6	Species Rich Grass Areas (G3)	28
6.7	Topsoil Storage Mix (G4)	29
6.8	Aquatic and Marginal Grass and Planting Mixes (G6, G7)	30
6.9	Programming of maintenance tasks	30

Appendices

Appendix 1	Hard Landscape General Arrangement (OPEN_150796_EA_H001)
Appendix 2	Soft Landscape General Arrangement (OPEN_150796_EA_S001)
Appendix 3	Earthworks General Arrangement (OPEN_150796_EA_E001)
Appendix 4	Typical Construction Details: Surfaces (EA1-GRD-DG-OPEN-796_D001)
Appendix 5	Typical Construction Details: Fencing (EA1-GRD-DG-OPEN-796_D002)
Appendix 6	Typical Construction Details: Planting (EA1-GRD-DG-OPEN-796_D003)
Appendix 7	Typical Construction Details: Plant Schedules (EA1-GRD-DG-OPEN-796_D004 and D005)
Appendix 8	Plant Schedule Illustrative Notes
Appendix 9	NBS Landscape Specification
Appendix 10	Illustrative Sections of Landscaping (OPEN_150796_EA_S002)
Appendix 11	Tree Protection Plan (OPEN_150796_EA_T001)
Appendix 12	Illustrative Plan of Landscape Scheme
Appendix 13	Sustainable Drainage System Detail (EA1-GRD-DG-OPEN-796_D006)

Abbreviations

AC – Alternating Current
AOD – Above Ordnance Datum
BS – British Standard
CfD – Contracts for Difference
CIRIA – Construction Industry Research and Information Association
CPSE – Committee for Plant Supply and Establishment
DC – Direct Current
DCO – Development Consent Order
DECC – Department for Energy and Climate Change
DEFRA – Department for Environment, Farming and Rural Affairs
EA – Environment Agency
ES – Environmental Statement
EAOL – East Anglia One Limited
GA – General Arrangement
ISO – International Organization for Standardization
MW – Megawatts
PAS – Publically Available Specification
RPA – Root Protection Area
SPR – ScottishPower Renewables
SuDS – Sustainable Drainage Systems

1 Introduction

1.1 Project Overview

1. East Anglia ONE Limited (EAOL) was awarded a Development Consent Order (DCO) by the Secretary of State, Department of Energy and Climate Change (DECC) on June 17th 2014 for East Anglia ONE Offshore Wind Farm (EA ONE). The DCO granted consent for the development of a 1200MW offshore windfarm and associated infrastructure.

2. In February 2015 EAOL secured a Contract for Difference (CfD) award to build a 714MW project and ScottishPower Renewables announced its role in leading East Anglia ONE towards construction. In April 2015 EAOL submitted a non-material change application to DECC to amend the consent from direct current (DC) technology to alternating current (AC). In March 2016 DECC authorised the proposed change application and issued an Amendments Order.

3. The onshore construction works associated with East Anglia ONE comprise of the following, which is based on the AC technology with an installed capacity of 714MW and a transmission connection of 680MW:

- A landfall site at Bawdsey, Suffolk.
- Up to six underground cables, approx. 37km in length.
- Up to four cable ducts for future East Anglia THREE project.
- An onshore substation located at Bramford next to existing National Grid infrastructure.

4. The scope of this document relates to the landscape proposals and maintenance around the onshore substation at Bramford, referred to as Work No. 38 to 41 (Stage j) in the DCO.

1.2 Purpose and Scope

5. This landscape management plan describes the landscape proposals and the general maintenance requirements for the landscape proposals for the EA ONE onshore substation, herein referred to as 'the substation'. This document has been produced to fulfil DCO Requirement 12 in respect of Works No 38 to 41 (Stage j). Requirement 12 states:

> ***12*** *– (1) No stage of the connection works shall commence until for that stage a written landscaping management scheme and associated work programme (which accords with the outline landscape and ecological management strategy) has been submitted to and approved in writing by the relevant planning authority in consultation with Natural England.*
>
> *(2) The landscaping management scheme must include details of all proposed hard and soft landscaping works, including—*
>
> *(a) location, number, species, size and planting density of any proposed planting, including any trees;*
>
> *(b) cultivation, importing of materials and other operations to ensure plant establishment;*
>
> *(c) proposed finished ground levels;*
>
> *(d) hard surfacing materials;*
>
> *(e) vehicular and pedestrian access, parking and circulation areas;*
>
> *(f) minor structures, such as furniture, refuse or other storage units, signs and lighting;*
>
> *(g) proposed and existing functional services above and below, ground, including drainage, power and communications cables and pipelines, manholes and supports;*
>
> *(h) details of existing trees to be retained with measures for their protection during the construction period;*
>
> *(i) retained historic landscape features and proposals for restoration, where relevant;*
>
> *(j) implementation timetables for all landscaping works;*
>
> *(k) proposed finished heights, form and gradient of earthworks in relation to Work No. 39 and Work No. 40; and*
>
> *(l) in relation to Work No. 39 and Work No. 40 only, maintenance of the landscaping, including irrigation arrangements.*

(3) The landscaping management scheme must be implemented as approved. Implementation and maintenance of landscaping

1.3 Background

6. The landscape proposals for the substation are designed to meet a key requirement: to provide visual screening of the substation in views from the surrounding area. This requirement formed a large part of the mitigation proposals which were recommended as part of the Environmental Statement for this development. In this respect a significant element of the landscape proposals are the new woodland and hedgerow planting, supplemented with earthwork bunds.

7. The local landscape character, predominately agricultural and rural is influenced by the presence of the existing National Grid substation complex. The landscape proposals for the EA ONE substation therefore need to respond to both the rural character of the site and also the National Grid substation.

8. Likewise, in formulating the landscape proposals, it was required to have due cognisance and consideration of other future energy project proposals that may occur within the local area; although the detail and definition of which are beyond the scope of this document.

9. The key elements and approaches in the landscape proposals, as illustrated in the Soft Landscape General Arrangement (Appendix 2), therefore include:

- Hedgerows and woodland blocks provide required mitigation and visual screening.
- Hedgerows and woodland relate to local landscape context.
- The size and shape of woodland blocks respond to technical constraints (e.g. overhead and underground cable routes).
- Earthworks bunding around the western and southern perimeter will have natural looking, gentle slopes where possible (1:5 to 1:20) when looking towards substation.
- Western bund planted with trees to provide additional visual screening
- Hedgerow planted along top of bund to screen and soften the substation perimeter fence – especially in views from the public bridleway to the south where technical constraints restrict planting opportunities for trees.
- Access road framed by hedges and woodland blocks to create visual separation from the existing wide bridleway and the National Grid substation access road.
- Species rich grassland areas will be established to provide a low maintenance ground cover which also enhances the local biodiversity in areas that are not to be returned to agricultural use or planted as woodland.
- Existing agricultural land use will be retained in other areas with arable fields, such as to the east between Bullenhall Farm and the Bramford NG substation.
- Amenity grasses used immediately next to perimeter foot track and along access track verge.
- Sustainable Drainage System (SuDS) attenuation basin to include a permanent water pond which will have ecological benefits through habitat creation on the site.
- Additional ecological mitigation where deemed appropriate and necessary.

2 Relevant Standards and Legislation

2.1 Applicable Standards and Good Practice

10. The soft landscape works will meet the following British Standards (BS) and guidance:

2.1.1 Tree and hedgerow protection during construction

- BS 5837:2012 - Trees in relation to design, demolition and construction.

2.1.2 Tree work by arboriculturalists

- BS 3988:2012: Tree Work – Recommendations.

2.1.3 Woodland creation

- The UK Forestry Standard, Forestry Commission (2011).

2.1.4 Topsoil handling, stripping and storage

- BS ISO 15799:2003 Soil quality - guidance on eco-toxicological characterisation of soils and soil materials.
- BS 3882:1994 Specification for topsoil.
- BS 6031:1981 Code of practice for earthworks.
- BS 7562-4:1992 Planning, design and installation of irrigation schemes guide to water resources.
- BS 4428:1989 guide of practice for general landscape operations (excluding hard surfaces) AMD 6784.
- BS 3882:1994 specification for topsoil and AMD 9938.

2.1.5 Quality of Trees and Shrubs

- BS 3936-1:1992 Nursery stock specification for trees and shrubs.
- BS 3936-5:1985 Nursery stock specification for poplars and willows.

2.1.6 Maintenance of gardens/ Landscapes

- BS 7370-3:1991 grounds maintenance recommendations for maintenance of amenity and functional turf (other than sports turf).
- BS 3998:1989 recommendations for tree work and AMD 6549.

2.1.7 Horticulture

- BS EN 12579:2013 Soil improvers and growing media – sampling.
- BS EN 13037:2011 Soil improvers and growing media - determination of pH.
- BSI PAS 100 – The Publicly Available Specification 100 (BSI PAS 100) for composted materials.

2.1.8 Turf (if substituted for grass seeding)

- BS 3969:1998 Recommendations for turf for general purposes BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces).

2.1.9 Sustainable Drainage

- CIRIA report C753. The SuDS Manual-v5 Guidance for the design & management of SuDS systems (Ciria, 2015).

2.2 Relevant Legislation

11. The soft landscape works will meet the following Legislation:

- The Hedgerows Regulations 1997.
- Wildlife and Countryside Act 1981 (as amended).
- The Construction (Design and Management) Regulations 2015.
- Natural Environment and Rural Communities Act 2006.
- Countryside and Rights of Way Act 2000.
- Environmental Protection Act 1990.
- Control of Pollution Act 1974.
- The Waste (England and Wales) Regulations 2011.
- Health and Safety at Work Act 1974.

3 Design and Management Objectives

3.1 Context

12. The design and management objectives for the landscape proposals for the substation are:

- To provide appropriate visual screening of the substation building, compound, fencing and other elements of the onshore substation.
- To create a robust and resilient soft landscape proposals.
- To create a landscape that is easily maintained by future landowners and is also sustainable.
- To provide elements of enhanced habitat opportunities in selected and appropriate locations.

3.2 Baseline conditions and landscape character areas

13. The site is well screened with surrounding woodlands and interlocking hedges and hedgerow trees that intervene to provide effective screening from views into the site. The topography in the surrounding area of the site is gently undulating which, in combination with existing mature vegetation, further restricts views into the site.

14. The area surrounding the site is predominantly rural in nature. However, areas adjacent to the site do exhibit some urban characteristics due to the existing National Grid electrical substation, transmission lines and pylons. These industrial energy infrastructure features significantly intrude upon the predominately rural character of the site and surrounding area.

15. Most of the roads and public footpaths in the surrounding area are lined with mature hedgerows. As a result, sweeping views of the landscape from vantage locations are limited and where available provide views of established woods, mature hedgerows and open spaces interspersed with farm houses and residential areas.

16. It is noted that the local woodlands have a high proportion of Ash trees (*Fraxinus excelsior*) which are susceptible to Ash dieback. This is a disease of ash trees caused by a fungus, *Chalara fraxinea*. It causes leaf loss, lesions on the bark and dieback of the crown of the tree. It is anticipated that many of the Ash trees in the area will be prematurely lost in the near future. This would potentially reduce the amount of vegetation available to provide visual screening of the substation.

17. The UK Government introduced legislation on Monday 29 October 2012 that restricts imports of ash plants and seeds to those originating in pest-free areas. Because no country has declared a pest-free area for *Chalara fraxinea*, this effectively means a total ban on imports and movement of ash trees and seed for planting within Britain until a pest-free area is declared. Therefore, at the moment of writing the specifications and schedules, woodland tree mixes do not include Ash trees.

18. Additionally, with *Chalara fraxinea* in mind as well as other potential pests and diseases which may affect trees, the intention is to create a resilient soft landscape by increasing the species numbers used within woodland plant mixes. Therefore, where possible, the specification includes a variety of woodland to achieve, hopefully, a strong ecological resilience for the long term future of the woodlands.

4 Landscape Scheme

4.1 General overview

19. The location, shape and internal arrangement of the substation are defined by strict technical constraints and health and safety requirements. These aspects of the proposal were beyond the scope of the landscape design proposals, which are more concerned with how the substation is contained within the surrounding landscape.

20. During design development, three approaches to the landscape design were considered – 'hidden', 'integrated' and 'exposed'. These options are described as follows:

- **The 'hidden approach'** - focuses on reducing the impact of the substation on the existing space. The hidden approach has extensive landscape screening to hide the substation, which limits the recognisability of the function of the substation while pylons and power lines remain visible, and has a lower change on the rural character. However, the scale of the substation is often hard to completely hide, and power lines and pylons approaching the substation often remain clearly visible. The hidden approach can be achieved with vegetation/woodland planting all around the substation, or on the side of the main observers.
- **The 'integrated approach'** - focuses on reducing the impact of the substation on the existing space, without completely hiding the substation. The strength of this approach is to use the existing landscape structure to embed the substation, and still show the function of the substation as part of the electricity grid. The integrated approach has some landscape screening, but expands existing electrical characteristics, enabling the observer to understand the function of the substation, with a more moderate change to the rural character. The integrated approach can be achieved using woodland clumps/shelterbelts and/or hedgerows.
- **The 'exposed approach'** - focuses less on the spatial impact and more on the recognisability of the function. The functional relationship between substation and grid clearly shows the nature of the electricity grid. The exposed approach has limited/no landscape screening, with high recognisability of the function of the development, but also a high change to the rural character. The 'exposed approach' concentrates on emphasizing the substation e.g. through new architectural elements/installations, combined with specifically coloured elements of the substation, or emphasis through planting and management of vegetation in a specific form.

21. The landscape design approach selected for the substation combines the approaches of hiding and integrating the development into the landscape to meet the agreed mitigation requirements and also as a response to the local landscape character. This approach results in the substation having a relatively low landscape and visual impact (as opposed to an approach where the substation is even more emphasised). Specifically placed woodland blocks/shelterbelts and hedgerows are to hide and integrate the substation, reducing the visual impact in specific views towards the substation experienced by people from residential areas, roads and public rights of way, while allowing the function of the substation to be recognised when in closer proximity.

22. This approach acknowledges the key requirement for visual screening of the substation, which has been a clear preference expressed during public and stakeholder consultations. Due to technical constraints, it would be unrealistic to completely screen the entirety of the substation, therefore some element of integration is required and is considered suitable to allow some recognisability of the function of the grid connection developments, when viewed in the context of the existing National Grid infrastructure nearby.

23. This landscape management plan proposes both screening earthworks and woodland planting to address the main aim of providing visual screening of the substation. New hedgerows are also to be planted to supplement the woodland framework around the substation. The landscape plan also provides areas of species rich grassland and SuDS ponds, providing enhanced habitat benefits in their own right, while also providing further visual contrast with the 'technological' appearance of the substation.

24. This landscape management plan seeks to ensure early establishment of tree and hedgerow planting, in order to deliver mitigation as early as possible.

25. The landscape scheme that will be delivered is illustrated in the Landscape General Arrangement Drawings presented in Appendix 1 to 3 and an illustrative plan of the landscape scheme is presented in Appendix 12. The key proposals illustrated in these drawings are summarised as follows:

- Hedgerows and woodland blocks to provide visual screening which relate to local landscape context.
- In order to integrate the new woodland blocks within the landscape, mixed native species will be used, with some areas defined to be 'core' or 'edge' woodland areas.
- Some areas of woodland will be planted with faster growing native and non-native woodland species (for quicker visual screening and to act as a "nursery" crop).
- The size and location of woodland blocks respond to technical constraints.
- New hedgerows will be planted to supplement the woodland framework around the substation.
- Earthworks bunding around the western and southern perimeter of the substation will have natural looking, gentle slopes where possible (1:5 to 1:20) when looking towards substation.
- Earthworks bund to the west of the substation will be planted with trees to provide additional screening.
- A concrete access road into the substation will be constructed and designed to meet the structural bearing capacity for the intended equipment.
- The access road is framed by hedges and woodland blocks to create visual separation from the existing bridleway and the access road into the National Grid substation.
- Species rich grassland areas will be established to provide a low maintenance ground cover which also enhances the local biodiversity in areas that are not to be returned to agricultural use or planted as woodland.
- Existing agricultural land use will be retained in other areas with arable fields, such as to the east between Bullenhall Farm and the Bramford NG substation.
- A SuDS attenuation basin with permanent pond and associated open swales where technical and visual mitigation constraints allow.
- Amenity grasses will be used immediately next to the access road and perimeter foot track around the substation.
- Additional ecological mitigation where deemed appropriate and necessary.

26. Throughout the following paragraphs please refer to the three Landscape General Arrangement (GA) drawings that illustrate these proposals:

- Appendix 1 Hard Landscape General Arrangement (OPEN_150796_EastAng_H001).
- Appendix 2 Soft Landscape General Arrangement (OPEN_150796_EastAng_S001).
- Appendix 3 Earthworks General Arrangement (OPEN_150796_EastAng_E001).

27. In addition, further details of the proposals are shown in the following Typical Construction Detail plans:

- Appendix 4 Typical Construction Detail: Surfaces (EA1-GRD-DG-OPEN-796_D001).
- Appendix 5 Typical Construction Detail: Fencing (EA1-GRD-DG-OPEN-796_D002).
- Appendix 6 Typical Construction Detail: Planting (EA1-GRD-DG-OPEN-796_D003).
- Appendix 7 Typical Construction Detail: Plant Schedules (EA1-GRD-DG-OPEN-796_D004 and EA1-GRD-DG-OPEN-796_D005).
- Appendix 13 Sustainable Drainage System Detail (EA1-GRD-DG-OPEN-796_D006).

4.2 Tree planting and cultivation

28. A woodland and hedgerow framework will be established around the substation, with the key elements of these landscape proposals summarised as follows:

- Plant species will be mixed native, ideally sourced from local suppliers and nurseries. Limited numbers of non-native tree species will be planted as part of the mix for quicker visual screening.
- Transplant sizes vary in height, being in the range of 60-80cm to 175-200cm, depending on species and typical availability. Some trees are specified at 300-350cm (for example the *Betula pendula* in the WM3 Screening mix to contribute towards earlier visual screening of the development).
- Ground cultivation and preparation of the existing agricultural fields to receive the tree planting; this will include cross-ripping the fields to a depth of at least 600mm.

- As the soil within the receiving site is predominately clay based species have been chosen that thrive or are tolerant of clay soils.
- The tree species are also a mixture to create, where possible, variety of woodland and strong ecological resilience for the long term future of the woodlands.
- Tree guards with stakes will be specified to protect the young trees against pests.
- Deer proof fencing with rabbit proof mesh has also been specified in places as it would be cost effective and less visually intrusive to fence and protect an entire new woodland area instead of using individual tree guards.
- Replacement individual tree planting will be undertaken on a 2 for 1 basis, and where possible with like for like species. This is for distinct standalone trees that felled as part of the construction works (identified in Appendix 11). Individual replacement tree planting stock will be 1.8-2.1m, bare root feathered stock.
- Planting will be carried out while weather and soil conditions are suitable for the relevant operations, avoiding periods of frost, strong winds or heavy rainfall taking place during the periods defined in Section 5.1.1.

29. The woodland and hedgerow species that will be planted are listed in Tables 4-1 to 4-5, showing the species name and the proportion of each species for each type of planting. The Soft Landscape General Arrangement (Appendix 2) shows the locations of all woodland and hedgerow planting. Full schedules including numbers of individual tree and hedge species, are provided in Appendix 7 (Planting Schedules).

30. Substantial areas of woodland will be planted to the immediate west of the substation (Area A) and south-west of the substation (Areas B and C), either side of the high-voltage overhead power line (allowing for a 20m offset from the overhead line). These areas of woodland will provide visual screening of the substation in views from the Burstall / Burstallhill area to the west and south-west, the public right of way to the west and provide a landscape setting to the SuDs basin.

31. Woodland planting will extend the existing Fore Grove and Bushey Grove woodlands to the immediate north of the substation, in order to reinforce (Area D) and extend (Area E) the visual screening provided by these existing woodlands in views from the north, such as Tye Lane and settlements beyond at Somersham and Little Blakenham.

32. Areas of woodland will also be located to the east of the substation, extending Gobert's Grove woodland (Area F) in the area between the existing high-voltage overhead power lines and the Bramford National Grid substation. Woodland planting will be located near the access road junction to Bullen Lane (Areas G and H), to extend woodland that is locally characteristic along Bullen Lane and provide a setting to the access road and its SuDs basin. These areas of woodland will provide visual screening of the substation in views from the east, such as the public right of way, Bullen Lane and Bramford.

33. Further smaller areas of woodland planting will supplement the areas of National Grid mitigation planting to the south-east of the substation (along the northern side of the NG substation) and provide visual separation between the access track to the substation and the existing access track along the northern edge of the NG substation.

34. Planting will be established early in the construction of the substation, where possible, to allow trees and planting additional growth time and allow mitigation to occur at the earliest opportunity.

35. There are four types of woodland planting, as shown in the Soft Landscape General Arrangement (Appendix 2), consisting of a core woodland mix (WM1), woodland edge mix (WM2), screening woodland mix (WM3) and wet woodland mix (WM4). The species mixes for these areas of woodland are shown in Tables 4-1 to 4-4.

Table 4-1 Core Woodland Tree Mix

WM1 Core Woodland Tree Mix				
Abbrev.	**Family Name**	**Botanical Name**	**Common Name**	**Mix %**
A ca	Sapindaceae	*Acer campestre*	Common Maple	10
A ps	Sapindaceae	*Acer pseudoplatanus*	Sycamore	10
A col	Betulaceae	*Alnus cordata*	Italian Alder	5
B pub	Betulaceae	*Betula pubescens*	Downy Birch	15
C be	Betulaceae	*Carpinus betulus*	Common Hornbeam	5
P sy	Pinaceae	*Pinus sylvestris*	Scots Pine	5
P tre	Salicaceae	*Populus tremula*	Aspen	12
P pad	Rosaceae	*Prunus padus*	Bird Cherry	8
Q r	Fagaceae	*Quercus robur*	Common Oak	10
T co	Tiliaceae	*Tilia cordata*	Small-leaved Lime	20
				100%

Table 4-2 Edge Woodland Tree Mix

WM2 Edge Woodland Tree Mix				
Abbrev.	**Family Name**	**Botanical Name**	**Common Name**	**Mix %**
C san	Cornaceae	*Cornus sanguinea*	Common Dogwood	10
C av	Betulaceae	*Corylus avellana*	Common Hazel	10
C mon	Rosaceae	*Crataegus monogyna*	Common Hawthorn	20
E e	Celastraceae	*Euonymus europaeus*	Common Spindle Tree	5
I a	Aquifoliaceae	*Ilex aquifolium*	Common Holly	5
M sy	Rosaceae	*Malus sylvestris*	Common Crab Apple	10
P sp	Rosaceae	*Prunus spinosa*	Blackthorn	10
S c	Salicaceae	*Salix caprea*	Goat Willow	10
S ni	Adoxaceae	*Sambucus nigra*	Common Elder	10
V op	Adoxaceae	*Viburnum opulus*	Guelder Rose	10
				100%

Table 4-3 Screening Woodland Mix

WM3 Screening Woodland Mix				
Abbrev.	**Family Name**	**Botanical Name**	**Common Name**	**Mix %**
B pub	Betulaceae	*Betula pubescens*	Downy Birch	20
L d	Pinaceae	*Larix decidua*	European Larch	10
L x e	Pinaceae	*Larix x eurolepis*	Dunkeld Larch	10
P ni	Pinaceae	*Pinus nigra*	Austrian Pine	6
P tre	Salicaceae	*Populus tremula*	Aspen	18
P pad	Rosaceae	*Prunus padus*	Bird Cherry	10
Q c	Fagaceae	*Quercus cerris*	Turkey Oak	10
R fr	Rhamnaceae	*Rhamnus frangula*	Alder Buckthorn	8
V op	Adoxaceae	*Viburnum opulus*	Guelder Rose	8
				100%

Table 4-4 Wet Woodland Mix

WM4 Wetland Woodland Tree Mix				
Abbrev.	Family Name	Botanical Name	Common Name	Mix %
A ca	Sapindaceae	*Acer campestre*	Common Maple	10
A ps	Sapindaceae	*Acer pseudoplatanus*	Sycamore	10
A col	Betulaceae	*Alnus cordata*	Italian Alder	5
B pub	Betulaceae	*Betula pubescens*	Downy Birch	15
C be	Betulaceae	*Carpinus betulus*	Common Hornbeam	5
S al	Salicaceae	*Salix alba*	White Willow	10
P tre	Salicaceae	*Populus tremula*	Aspen	12
P pad	Rosaceae	*Prunus padus*	Bird Cherry	8
Q r	Fagaceae	*Quercus robur*	Common Oak	10
A gl	Betulaceae	*Alnus glutinosa*	Common Alder	15
				100%

36. The soft landscape general arrangement drawing (Appendix 2) shows the hedgerow planting for the substation. The hedgerows will consist of mixed native species hedge (including hedges of hawthorn, elm with oak, ash and field maple as hedgerow trees), which will combine with the woodland planting areas to integrate the substation into the landscape, both in terms of providing screening of the infrastructure and as an extension of an element that is characteristic in the local landscape. The species mixes for the native hedgerow (H1) planting is shown in Tables 4-5.

Table 4-5 Native Hedgerow Mix

H1 Native Hedgerow Mix				
Abbrev.	**Family Name**	**Botanical Name**	**Common Name**	**Mix %**
A ca	Sapindaceae	*Acer campestre*	Common Maple	20
C be	Betulaceae	*Carpinus betulus*	Common Hornbeam	5
C av	Betulaceae	*Corylus avellana*	Common Hazel	2
C mon	Rosaceae	*Crataegus monogyna*	Common Hawthorn	60
C san	Cornaceae	*Cornus sanguinea*	Common Dogwood	5
L vu	Oleaceae	*Ligustrum vulgare*	Common Privet	2
P sp	Rosaceae	*Prunus spinosa*	Blackthorn	2
R c	Rhamnaceae	*Rhamnus catharticus*	Common Buckthorn	2
R can	Rosaceae	*Rosa canina*	Dog Rose	2
				100%

4.3 Grassland Planting

37. The types of grassland species that will be planted are summarised in Table 4-6. The Soft Landscape General Arrangement (Appendix 2) shows the locations of all grassland areas and full schedules including species mixes are provided in Appendix 7 (Planting Schedules).

Table 4-6 Grass Planting Types

Code	Grass/Plant mix type	Purpose
G1	Amenity Grass Mix	General purpose amenity grass mix, used for verges, embankments, filter strip, swale sides
G2	Wetland Grass mix	Grass mix appropriate for areas that are either wetland (primarily along the Cable route but included here for completeness) as identified by the ecologist or for areas that are expected to be frequently and regularly inundated, such as the SuDS detention basin.
G3	Species rich grass mix	To provide a low maintenance ground cover which also enhances the local biodiversity in areas that are not to be returned to agricultural use or planted as woodland.
G4*	Topsoil Storage	Legume rich grass mix to stabilise long term topsoil storage mounds and fix nitrogen into the soil
G6	Marginal Aquatics	This is for the margins of the permanent pond area, to stabilise the soils against erosion but also to enhance local biodiversity.
G7	Marginal Aquatics	The is for the SuDS detention basin Forebay area and base of the swales, to help stabilise the soils, reduce the velocity of the water coming in from the inlet and to enhance the local biodiversity of the area.

38. The soft landscape proposals that will be undertaken are set out in the drawings in the Appendices to this report as follows:

- Appendix 2 - Soft Landscape General Arrangement (OPEN_150796_EastAng_S001).
- Appendix 6 – Typical Construction Detail: Planting (EA1-GRD-DG-OPEN-796_D003).
- Appendix 7 – Typical Construction Details: Plant Schedules (EA1-GRD-DG-OPEN-796_D004 and D005) (details the species and total numbers for each planting area identified on Soft Landscape General Arrangement).
- Appendix 8 – Plant Schedule Illustrative Notes presenting sample photographs of the tree species and additional descriptive text.
- Appendix 9 - NBS Landscape Specification which includes clauses on both planting and maintenance.

4.4 Ground levels

39. The finished ground level within the substation compound will be 56m AOD. This will require an amount of re-grading and movement of topsoil and subsoil from within the substation area. It is proposed to use and retain this material on-site to create the earthwork bundings to form part of the visual screening strategy.

40. The top of the bund on the western side of the substation will be 4m higher than the internal substation level, at 60m AOD, and the bund on the southern side of the substation will be 2m higher at 58m AOD. The intention is to grade the ground up to these levels from the substation at a grade of 1:3. This grade of slope also allows for safe maintenance access. The bund on the western side of the substation is then shaped so that externally it falls at a gentler grade of 1:20 or a maximum 1:5 away from the substation to have a smoothly graded, natural looking slope facing the viewers looking towards the substation.

41. Additionally, the creation and location of SuDS attenuation basins will also influence the earthwork shaping strategy. There are two permanent basins, one with a permanent pond. Slopes into basins vary at 1:10 to 1:20. The following drawings illustrate these earthworks proposals:

- Appendix 3 - Earthworks General Arrangement (OPEN_150796_EA_E001).
- Appendix 13 – Typical Construction Details: SuDS Details (EA1-GRD-DG-OPEN-796_D006).

4.5 Hard surface materials

42. The hard landscape proposals for the substation consist of a limited number of elements, creating a relatively simple hard landscape scheme. The following drawings illustrates these hard landscape elements, which are described below:

- Appendix 1 - Hard Landscape General Arrangement (OPEN_150796_EA_H001).
- Appendix 4 – Typical Construction Details: Surfaces (EA1-GRD-DG-OPEN-796_D001).
- Appendix 5 – Typical Construction Details: Fencing (EA1-GRD-DG-OPEN-796_D002).
- Appendix 9 - NBS Landscape Specification

4.5.1 Access road

43. A concrete external access road will lead into the substation. The access road will run parallel to Bullen Lane and the bridleway to the north of the Bramford National Grid Substation in an east-west direction. The junction with the new access road and Bullen Lane will be located just west of the private track to Bullen Hall Farm. This will be a 5m access road with two lay-by/waiting areas suitably sized to accommodate the large vehicles used for the construction and maintenance of the substation. The access road will have no kerb edging in order to achieve the appearance of a rural road. The depths and material of the road build-up will be to the engineer's specification using a construction detail that allows for the correct dispersal of loadings throughout the sub-base. The access road will have a lay-by / waiting area, suitably sized (20m x 3m) to accommodate the long vehicles used for the construction and maintenance of the substation. This lay-by is located just past the junction between the access road and Bullen Lane.

4.5.2 Grass-road maintenance track

44. A maintenance track to allow access to the main SuDS attenuation basin will be constructed using a plastic cellular grass-road reinforcement system. A temporary wearing course will be installed during the substation construction phases. This final grass surface will be installed post-construction once the expected traffic flow will be reduced.

4.5.3 Internal service road

45. A concrete internal access and service road and car parking area will be constructed within the substation. This is a 5m wide circulation road designed to meet the load bearing capacity of the vehicles delivering the electrical components.

4.5.4 Gravel surfaces

46. There will be no vegetation within the substation as this would risk cross-over shorting and fouling of the equipment. Likewise, it is best practice to reduce the maintenance required within the substation for Health and Safety reasons. In order to provide a neutral, conductive free ground surface, an inert gravel ground dressing will be used within the substation, consisting of a locally sourced flint gravel where possible.

4.5.5 Self-binding gravel path

47. A 1m wide footpath will be located around the outside of the perimeter fence and will be used for maintenance purposes. This footpath will be a timber edged self-binding gravel path, using a grey, angular gravel, free from clay with sufficient grit to enable compaction.

4.6 Minor structures and services

48. Minor structures within the proposal include:

- 2.4m high perimeter fence, comprising a mesh fence configuration (Hi SEC Super 6 or similar solution) and corresponding double access gates.
- Deer proof fencing with rabbit mesh to delineate boundaries and protect new woodland planting.
- Lighting within substation is to be low-level with occasional task lighting.

49. The following drawings within this landscape management plan illustrate these proposals:

- Appendix 1 - Hard Landscape General Arrangement (OPEN_150796_EA_H001).
- Appendix 5 – Typical Construction Details: Fencing (EA1-GRD-DG-OPEN-796_D002).
- Appendix 10 - NBS Landscape Specification (Section Q40 on fencing).

4.7 Tree protection

50. Trees that are to be retained and are within the construction area will be protected by Heras fencing braced with scaffold poles (as per BS 5837:2012) as shown in the Tree Protection Plan (Appendix 11). Protective fencing to BS 5837:2012 is braced to protect from failure from impacts. The fencing is installed at a specified distance from the tree defined by the Root Protection Area (RPA) as calculated by an Arboricultural Clerk of Works.

51. Trees and hedges outside the construction area, but within the DCO Boundary, will not be protected as it is assumed they will be at a distance far enough not to incur unnecessary or accidental construction damage.

52. The storage of materials, spoil, vehicles, welfare facilities etc. will not be permitted within the protective fencing (i.e. within the RPA).

53. An Arboricultural Clerk of Works will be appointed during construction to oversee the erection of protective fencing, the protection of trees to be retained and to ensure that all tree works are undertaken to the required standards. All tree works during construction, for example felling, to be undertaken by qualified arboriculturalist to BS 3988:2012: Tree Work – Recommendations.

54. Appendix 11 – Tree Protection Plan (OPEN_150796_EA_T001) illustrates the tree and hedgerow removal required, together with tree protection areas.

4.8 Top Soil Storage Strategy

55. Top soil will be stored as per the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, published by DEFRA; the key points of which are listed as follows:

- Maximum storage heights of mounds: 2m for topsoil 3m subsoil.
- Topsoil will be stripped in the driest condition possible.
- Topsoil and subsoils will be stored separately.
- Materials will be stored like upon like i.e. topsoil will be stripped from beneath subsoil bunds,and subsoil from beneath overburden bunds. Where continuous bunds area used, dissimilar soils will be separated by a third material such as geotextile layer.
- All soil bunds will be placed 2.5m from any hedgerows and advance planting areas to protect rootzones and to allow for maintenance access. Tracked equipment will be used wherever possible to reduce compaction.
- Movement of trucks or dumpers will be confined to designated temporary haul routes.
- Vegetation will not be incorporated into topsoil to be stored.
- Soils will not be stripped during or after heavy rainfall or when there are pools if water on the surface.
- Topsoil will not be stripped too deeply so that subsoil becomes incorporated, thereby reducing fertility.
- Topsoil will not be removed from below the spread of trees and hedgerows to be retained.
- Duration of subsoil storage will generally be short term (1-2 weeks) for open cable trenches before backfilling.
- Duration of the topsoil storage will generally be approximately 12-18 months for cable trenches and 24 months for construction compounds and haul road.
- A low maintenance, legume rich grasses as per grass mix G4 will be sown as soon as possible after creation of any soil storage mounds which are intended to remain in situ for more than 6 months or over the winter period. The optimum months for sowing grass seed are April or September to October.

5 Implementation

56. The soft landscape scheme that will be delivered is illustrated in the Soft Landscape General Arrangement (Appendix 2) and an illustrative plan of the landscape scheme is presented in Appendix 12. Details of the implementation can be found in the NBS Landscape Specification presented as Appendix 9. The following is an overview of the soft landscape works implementation.

5.1 General

5.1.1 Seasonal and climatic conditions

57. The work will be carried out while weather and soil conditions are suitable for the relevant operations, avoiding periods of frost, strong winds or heavy rainfall. Planting will only take place during the following periods:

- Late October to late March – planting of bare root deciduous hedgerows and trees.
- March to April or August to September for sowing of wildflower, fine grasses, nectar flower mix and bird seed mix.
- Container grown plants can be planted at any time as long as ground and climatic conditions are appropriate. Ensure adequate watering and weed control is provided.
- Any tree removal or coppicing works will not be undertaken during bird nesting and breeding season or will be approved by a suitably trained ecologist prior to works. Where bats are suspected to be present, advice will be provided from a licensed bat specialist and if appropriate, relevant licences obtained before any major tree works or hedge cutting is undertaken.
- Planting will take place in cultivated and moist friable soils, that that are not waterlogged.
- Planting will not take place into frost or snow covered soil.

5.1.2 Machines and tools

58. Only machines and tools suitable for the site conditions and works will be used for carrying out the works. Hand tools will be used around trees, hedgerows and in confined spaces where it is impractical to use machinery.

5.1.3 Underground service

59. The appointed landscape contractor will be responsible for the following:

- Familiarising themselves with the location of the underground services and taking all precautions to avoid any damage occurring to them.
- Immediately informing the appropriate body should any damage occur.
- Any claims arising from damage occurring to underground services.

5.2 Plant Material

5.2.1 Plant quality in general

60. Plant material will be sourced from local nurseries to ensure suitability to local conditions. The project contract administrator will be notified before substitutions, or should there be difficulty sourcing plant material with local provenance.

- Plant quality will be in compliance with the relevant parts of BS3936 and BS5236 for any advanced nursery stock where applicable.
- Plants will be materially undamaged, sturdy, healthy, vigorous and of good shape and without elongated shoots.
- Plants will have been grown in a suitable environment and hardened off.
- Plants will be free from pests, diseases, discoloration, weeds and physiological disorders.
- Plants will have a balanced root and branch system.
- Plants will be true to the plant names and sizes on the schedule.

5.2.2 Bare root plants

61. The majority of woodland and hedgerow plants will be planted as bare root plants, as specified in the plant schedules in Appendix 7. All bare root plants will have vigorous and fibrous root systems which are reasonably equally developed in all directions and of adequate extents to support the growth of the plants root system. All plants will be protected by tree guards.

5.2.3 Root-balled plants

62. A relatively small proportion of coniferous trees within the defined woodland planting areas will be planted as root balled plants, since conifers (such as Scots Pine, Larch and Holly) are best planted with some soil around their roots. Root balls will be well filled with fibrous roots and consist of reasonably cohesive natural soil which has been carefully lifted at the nursery so that it remains fully attached to the roots of the plant. Plants which have bare roots that have been “bagged up” with soil or containerised are not acceptable. All plants will be protected by tree guards.

5.2.4 Seeds

63. All seed will be supplied to site in bags sealed by the supplier and clearly labelled with the percentage composition by weight mix of the seed mixture contained. Seed will not be dirty or damaged by vermin.

5.2.5 Native hedgerow and tree species

64. All hedgerow and tree species will comply with the following:

- Plant age will be a minimum of 2 years.
- Plants will have been transplanted at least once in the nursery (1+1).
- Bare root species will have a minimum of two substantial stems (breaks) from the lower third of the plant and a well branched form.
- Container grown species will have a minimum of three substantial stems from the lower third of the plant and a well branched form.
- Container sizes are specified in the plant schedule.
- All plants to be protected by tree guards.

5.2.6 Marginal and aquatic plants – SuDS detention basins, pond and swales

65. All plant species will comply with the following:

- Plant stock should be sourced from local approved nurseries that only grow native species of local provenance to ensure suitability to local conditions.
- Topsoil will not to be placed within 300mm of the permanent water level in the wetland area, wetland plants will be directly planted into the subsoil.
- Swale planting along base to use specific swale plant mix, swale edges and edge of forebay area will be seeded with normal amenity grass and/or species rich grass.
- Forebay area and wetland area will be planted with appropriate native plug mix.

5.2.7 Labelling

66. When supplied to the site all plants will be labelled in accordance with the relevant part of BS 3936 in order that they can be easily identified.

5.2.8 Substitutes

67. If specified plants are unobtainable or know likely to be unobtainable then suitable substitutions can be made following approval from the Project contract administrator.

5.3 Preparation for Planting

5.3.1 Site Clearance

68. Prior to cultivation all rubbish will be removed from the site, recycled where possible or taken offsite. All weeds, grass and residual crops will be cleared from planting areas.

5.3.2 Cultivation

69. No digging will take place within the root spread of trees or hedgerows to be retained. Compacted topsoil will be broken up to its full depth.

5.3.3 Hedgerow and woodland area cultivation

70. Cultivation will comply with the following:

- Topsoil will be cultivated to a depth of 600mm using suitable tools or machinery to ensure a firm friable tilth suitable for pit planting.
- Topsoil will be cultivated in two perpendicular directions to 'cross-rip' through any clay pans present.
- Topsoil surface will be left regular and even.
- All weeds, perennial weed roots, turfs of grass, roots and other material will be removed, including stones and clods of earth greater than 50mm in any direction, which have been brought to the surface.

5.3.4 Sowing grasses

71. Sowing grasses will comply with the following:

- Weeds and grass will be cleared from site
- Soil will be cultivated to a depth of 30mm using suitable tools or machinery, burying remaining vegetation.
- Soil will be harrowed and rolled to produce fine tilth and firm surface.
- The sowing area will be free from large ruts and stones to allow for mowing later.

5.4 Planting and Seeding

5.4.1 Plant handling, storage and transportation

72. The following will be undertaken during planting handling, storage and transportation:

- Comply with CPSE 'Handling and establishing landscape plants' (obtainable form the Horticultural Trades Association) Part I, Part II and Part III.
- Protect plants from frost.
- Handle plants with care, protect from mechanical damage and do not subject to shock, e.g. dropping from a vehicle.

5.4.2 Planting hedgerows and tree transplants

73. The following will be undertaken during planting of hedgerows and trees:

- All plants will be pit planted.
- Pits will be excavated to sufficient extents to allow roots of bare roots plants to be spread out or the root ball of container grown plants to be accommodated without distortion to their shape and size.
- Excavated topsoil will be retained and appropriately stored for back-filling.
- Hedgerow plants will be spaced out evenly to create double staggered row following spacings specified on the plant schedule.
- Plants will be placed in the centre of the planting pit with their main stem vertical and at such a depth that after planting firmed down soil is at the same level as the existing ground level.
- Back-fill will be carefully and thoroughly packed around plant roots or root ball and firmed in by heeling around the base of the stem.

5.4.3 Sowing grasses

74. The following will be undertaken during sowing of grasses:

- Sowing will take place into seed bed clear of all weeds or vegetation.
- Seed mixture will be sown evenly onto prepared surface – either through hand broadcast or use of mechanical distribution (seed spreader). If using a seed drill, the spouts will be removed so that seed falls freely from hopper.
- To get even distribution, seed mixture will be split in half and entire area sown twice at half rate. The first half will be sown in one direction and second in other direction.
- Seed will be bulked out with carrier such as sand or sawdust to get more even coverage
- Seed will not be incorporated by drilling/harrowing – just broadcasted onto surface. Wildflower seeds are very fine and will not germinate if they are buried.
- Roll once or twice after sowing to ensure good contact between seed and soil. Very important in dry weather. Do not roll if site is very wet.

5.4.4 Watering

75. Watering of newly planting trees, hedges and seeded grasses will be undertaken as required by the contractor to ensure the successful establishment and growth of trees and hedgerows and germination and growth of seed mixes. The contractor is to provide water bowser to enable watering works.

6 Maintenance

6.1 Aims

76. The design aspirations for the landscape proposals for substation are:

- To create a robust and easily maintained landscape framework.
- To provide elements of visual screening towards the substation.
- To provide enhanced habitat opportunities in selected locations.

77. To achieve the landscape objectives and ensure the success of the landscape setting, an ongoing regime of landscape maintenance and management will be necessary. The overarching management and maintenance objectives are:

- To ensure full woodland and hedgerow establishment to provide visual screening and landscape structure.
- To ensure vegetation is kept healthy and vigorous, promoting good form, stem colour, flowering and structure of vegetation as appropriate.
- To ensure appropriate maintenance operations are undertaken as necessary to ensure public safety.
- To promote the creation of rich and ecologically diverse interconnected habitats where appropriate.
- To ensure planting within the SuDS basins and swales are successfully established.
- To ensure pathways and access roads are kept free and clear of overhanging or nuisance vegetation.
- To allow the introduction of self-seeding of flowering species to encourage insects, which in turn may provide food sources for birds and bats to enhance local biodiversity.

78. Woodland and hedgerow maintenance will be undertaken for a period of 10 years within woodland and hedgerow planted areas (WM1 - WM4 and H1). Any tree or shrub planted as part of the landscaping scheme that, within a period of 10 years after planting, is removed, dies or becomes seriously damaged or diseased, will be replaced in the first available planting season, with a specimen of the same species and size as that originally planted. Grassland maintenance during the establishment period will be undertaken for a period of 5 years within grassland habitat areas (G1 – G7).

6.1.1 Legal Obligations

79. Maintenance will be carried out in accordance with relevant legislation.

6.1.2 General Requirements

80. The following requirements for maintenance will apply to all planted areas within the EA ONE DCO boundary shown in the Soft Landscape General Arrangement (Appendix 2):

- All landscape maintenance tasks to be undertaken by a competent contractor.
- All trimming and pruning of plants to be carried out once plants have flowered, seeded and shown fruit. Any management works related to soft landscape generally to be left until late Autumn.
- No fertiliser or pesticides will be used.
- All arisings from landscape maintenance to be removed from site or stored with approval from relevant authorities.
- Watering to be carried out as required to ensure the successful establishment of the soft landscape proposals as detailed in Tables 6.1 – 6.7.
- All planted areas within the EA ONE DCO boundary shown in the soft landscape general arrangement drawing (Appendix 2) will be kept clear of weed growth for the first 3 growing seasons; after 3 years, a herb layer can be allowed to return.
- Weed control generally throughout all areas of the site to include spot herbicide treatment or manual removal of the following:
  - all broad leaved weeds.
  - docks (*Rumex spp*).
  - injurious weed species listed in the Weeds Act 1959 and Wildlife and Countryside Act 1981.
  - Japanese knotweed (*Fallopia spp*).
  - nettles (*Urtica spp*).
  - ragworts (*Senecio spp*).

  - thistles (*Cirsium spp*).
  - willowherb (*Epilobium spp*).
- Any replacements for those plants that have not established successfully to be replaced with species, size, shape and form to match those of the existing planting scheme.

81. The following section outlines the aims of the landscape management strategy in relation to the soft landscape proposals and includes a description of maintenance tasks that will be undertaken.

6.2 Woodland Planting (WM1, WM2, WM3)

82. There are four types of woodland planting, as shown in the Soft Landscape General Arrangement (Appendix 2), each serving a different purpose:

- WM1 – Core Woodland mix. This contains a diverse mix of native species, typical to the area and is intended to provide long-term screening as well as providing habitat and biodiversity. These are generally slower growing, taller species.
- WM2 – Woodland Edge mix. This is the diverse mix of species generally used around the edges of the woodland; it is intended to provide habitat variety and diversity but also is used where taller growing species would be inappropriate to plant (for example, adjacent to overhead powerlines).
- WM3 – Screening Woodland mix. This is a diverse mix using native and a limited number of non-native species. These are generally faster growing species and the intention is for this mix to provide earlier visual screening and also to act as a "nursery crop" for the WM1 and WM2 woodland species. It is anticipated that these trees will be heavily thinned out or removed in the medium to long term.
- WM4 – Wet Woodland mix. This is a diverse mix suitable for planting within the region of the main SuDS attenuation basin, which may come under frequent or regular inundation. The tree species chosen are able to withstand wet areas or frequent flooding.

83. Details of the maintenance of the woodland planting areas are detailed in Table 6-1:

Table 6-1 Maintenance of Woodland

Woodland Maintenance	
Pruning, Trimming and Thinning	
1	All tree work will be undertaken to standards defined in BS 3998 and Forestry and Arboriculture Training and Safety Council Safety Guidance.
2	During pruning, trimming and thinning, the operator will ensure adjacent structures, plants or trees are not damaged. Prune and thin trees to maintain a well-balanced natural appearance; remove any suckers or basal growth. Prune between leaf fall and mid-winter. All arising's to be used in the creation and maintenance of habitat piles or hibernaculum in un-obtrusive areas.
3	After 3 years full growing seasons, selectively thin, re-space and crown raise feathered trees and whips for all transplants up to 3m high
4	After 5 years it is expected that canopy closure will be achieved. Selectively thin weak or poor specimens to allow better specimens more space to thrive. Particular attention should be applied to the nurse crop (WM3) with a view to remove specimens that are supressing WM1 and WM2
5	After 6-10 years it is possible to consider species that can be coppiced (e.g. Hazel). Additional further thinning should take place, particular attention should be applied to the nurse crop (WM3) with a view to remove specimens that are supressing WM1 and WM2 species. A judgement will need to be made as to the selection of specimens to remove so as not to be detrimental to the visual screening.
Weed Control	
1	All planting areas will be kept clear of weed growth for the first 3 growing seasons; after 3 years, a herb layer can be allowed to return.
2	Keep areas weed-free by a combination of herbicide applications and hand-weeding/hoeing. Ensure that the methods used will cause a minimum of damage to adjacent planted areas. Do not allow nylon filament rotary cutters or other mechanical tools closer than 200mm to the stem of any tree or plant, carry out operations close to stems using hand tools. Maintain a grass &

	weed-free area around the base of each tree, min 1m diameter 1000mm.
3	Herbicide application: A foliar acting translocated or contact herbicide will be applied to emergent weeds.
4	Hand weeding: Hoe and loosen the soil throughout the planting areas, taking care to avoid disturbance of roots of planted material. Remove weeds entirely, including roots. Remove the minimum of soil and minimise disturbance to plants, bulbs and mulched surfaces. On completion, rake areas to a neat condition.
Watering	
Watering is required only at planting, apply a heavy watering to the full rooting depth. If the addition of bark mulch is delayed, then apply mulch only after rain or watering. No other watering is required unless during periods of drought in establishment phase. Take into account published meteorological data on rainfall for any given period, in particular in periods of Spring drought during April, May & June. Therefore, if required, undertake a heavy watering to full rooting depth. The contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.	
Re-firming	
Trees and shrubs will be maintained in a firm position in the ground and all stakes, guards and ties will be checked regularly. Particular timing of inspections: After strong winds, frost heave and other disturbances. Replace missing rabbit guards and report any significant failures.	
Failures	
Towards end of first growing season a survey will be undertaken to assess successful uptake of planting and make recommendations for replacements. Any tree or shrubs planted that, within a period of 10 years after planting, is removed, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased must be replaced in the first available planting season with a specimen of the same species and size as that originally planted.	

6.3 Hedgerow Planting (H1)

84. The H1 native hedgerow planting (as shown in Appendix 2) has a number of aims:

- It will provide additional visual screening along the top of the earth bund that surrounds the perimeter of the substation.
- It will provide visual screening where trees and woodland are not possible to be planted because of technical constraints.
- It contributes towards creating a landscape framework within the area within which to locate the substation.
- It contributes to enhancing the natural environment by providing “green corridors” and additional habitat.

85. Details of the maintenance of the hedgerow planting are detailed in Table 6-2:

Table 6-2 Maintenance of Hedgerows

Hedgerow Maintenance	
Pruning, Trimming and Thinning	
1	If the transplants are well branched, maintenance will avoid cutting them back. Otherwise, for the first two years after planting, maintenance will concentrate on shortening the longer shoots and just tipping back shorter ones to encourage branching and dense growth without much loss in height. This trim will take place during the summer months.
2	From the third year onwards, trim the sides of the hedge, aiming for a flat-topped A-shape (in cross section) to ensure that sunlight reaches the top and bottom equally. Aim for a width of about 1m at the base, tapering upwards to the desired height (approx. 1.1.m). Ideally, not all of the hedge should be pruned in the same year, treat either in alternate sections or alternate sides of the hedge. All arising’s to be removed.
3	After 3 years’ establishment of new hedge planting, maintain hedges in accordance with the following: • Where existing hedge is higher than 3.6m allow for hedge work including coppicing appropriate species, removing old growth to allow regrowth of shoots from the base. • Remove excess leaf mould, deadwood and other material from base of hedges. • Replant gaps with species indicated in schedule.
Weed Control	
1	Hedgerows will be kept clear of weed growth for the first 3 growing seasons; after 3 years, a herb layer can be allowed to

	return.
2	Keep areas weed-free by a combination of herbicide applications and hand-weeding/hoeing. Ensure that the methods used will cause a minimum of damage to adjacent planted areas. Do not allow nylon filament rotary cutters or other mechanical tools closer than 200mm to the stem of any hedge plant, carry out operations close to stems using hand tools. Maintain a minimum of 500 mm either side of the hedge grass & weed-free area around the base of the hedge.
3	Herbicide application: A foliar acting translocated or contact herbicide will be applied to emergent weeds.
4	Hand weeding: Hoe and loosen the soil throughout the planting areas, taking care to avoid disturbance of roots of planted material. Remove weeds entirely, including roots. Remove the minimum of soil and minimise disturbance to plants, bulbs and mulched surfaces. On completion, rake areas to a neat condition.
Watering	
Watering is required only at planting, apply a heavy watering to the full rooting depth. If the addition of bark mulch is delayed, then apply mulch only after rain or watering. No other watering is required unless during periods of drought in establishment phase. Take into account published meteorological data on rainfall for any given period, in particular in periods of Spring drought during April, May & June. Therefore, if required, undertake a heavy watering to full rooting depth. The contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.	
Failures	
Towards end of first growing season a survey will be undertaken to assess successful uptake of planting and make recommendations for replacements. Any hedgerow trees planted that, within a period of ten years after planting, is removed, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased must be replaced in the first available planting season with a specimen of the same species and size as that originally planted.	

6.4 Amenity Grass for Verges and Embankments (G1)

86. The aim is to create a healthy and full lawn turf along the access road verges, the internal face of the earthworks bunding and verge adjacent to perimeter footpath around the substation.

87. Details of the maintenance of the verges and embankments are detailed in Table 6-3:

Table 6-3 Maintenance of Verges and Embankments

Verges and Embankment Maintenance	
Cutting	
1	A low-frequency rural grass mowing regime will be adopted, with some grass verge and embankment areas allowed to grow longer, with two cuts undertaken between May and September. If required, a mowing strip of 1m along the access road verge will be cut more regularly to give the appearance of a deliberately managed and maintained edge, with two cuts per month between March and October. Grass cuttings will be removed.
2	The benefits of cutting less frequently include lower maintenance costs and improved opportunities for bio-diversity. Particularly during prolonged periods of dry weather, leaving the grass longer will shade and protect the root zones of the grasses.
3	During dry spells do not cut grass.
Weed Control	
Regular grass cutting will generally suppress broadleaf weeds therefore weed as necessary using spot herbicide treatment or manual removal of the following: all broad leaved weeds; • docks (Rumex spp); • injurious weed species listed in the Weeds Act 1959 and Wildlife and Countryside Act 1981; • Japanese knotweed (Fallopia spp); • nettles (Urtica spp); • ragworts (Senecio spp); • thistles (Cirsium spp); and • willowherb (Epilobium spp)	
Watering	

As required during dry spells for establishment only the intention is to create a sustainable grass sward not reliant on irrigation systems. If watering is required, due to unseasonably dry weather during the establishment period, then the contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.

6.5 Wet Grassland (G2)

88. The aim is to create a healthy and full sward of wetland grass habitat (G2) within the SuDS Detention Basin. Details of the maintenance of the wetland grass areas are detailed in Table 6-4:

Table 6-4 Maintenance of Wetland Grass

Wetland Grass Maintenance	
Cutting	
1	Wetland habitats are characteristically quite variable in composition, reflecting local drainage and management. Conditions can vary and localized differences may require a targeted approach specific to the area in question.
2	First year management. Most of the sown species are perennial and will be slow to germinate. Avoid cutting in the spring and early summer if the mixture is autumn sown. Allow any annuals to flower, then in mid-summer cut and remove the vegetation.
3	In the second and subsequent years the grassland can be managed in a number of ways which, depending on soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer cut in combination with autumn and possibly spring mowing.
4	Do not cut or graze from spring through to late July/August (to give the sown species an opportunity to flower).
5	After flowering in July or August cut to c 50mm. Leave the arisings to dry and shed seed for 1-7 days then remove from site.
6	Mow or graze the re-growth through to late autumn/winter to c 50mm and again in spring if needed.
Weed Control	
Weed control will be undertaken as necessary to include spot herbicide treatment or manual removal.	
Watering	
Unlikely to be required due to the type of grassland proposed (i.e. wetland grassland). However, should additional watering be required, then the contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.	

6.6 Species Rich Grass Areas (G3)

89. The intention of Species Rich Grassland areas (G3) is to create a healthy and full sward of species rich grassland to reinstate areas of former agricultural land disturbed by the construction and earthworks, or to create new grassland habitats on areas of land around the substation that will no longer be in agricultural use and are unsuitable for woodland planting, such as within the corridors of overhead electrical lines. The G3 seed mix is intended to assist with the introduction of grass species appropriate to the area and site conditions.

90. Details of the maintenance of the species rich grass areas are detailed in Table 6-5:

Table 6-5 Maintenance of Species Rich Grass Areas

Species Rich Grass Maintenance	
Cutting	
1	Similar to wetland grass areas, meadow like habitats are characteristically quite variable in composition, reflecting local drainage and management.
2	First year management. Most of the sown species are perennial and will be slow to germinate. Avoid cutting in the spring and early summer if the mixture is autumn sown. Allow any annuals to flower, then in mid-summer cut and remove the vegetation.
3	In the second and subsequent years the grassland can be managed in a number of ways which, depending on soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer cut in combination with an autumn and possibly spring cut.
4	Do not cut or graze from spring through to late July/August (to give the sown species an opportunity to flower).
5	After flowering in July or August cut to c 50mm. Leave the arisings to dry and shed seed for 1-7 days then remove from site.
6	Mow or graze the re-growth through to late autumn/winter to c 50mm and again in spring if needed.
7	Similar to wetland grass areas, meadow like habitats are characteristically quite variable in composition, reflecting local drainage and management.
Weed Control	
Weed control will be undertaken as necessary to include spot herbicide treatment or manual removal.	
Watering	
Watering is unlikely to be required as the intention is to create a species rich grassland not dependent upon external manual watering or irrigation. However, should additional watering be required due to extremely unseasonal dry conditions, then the contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.	

6.7 Topsoil Storage Mix (G4)

91. A topsoil storage legume rich grass mix (G4) will be used to stabilise long term top soil storage and to ensure valuable nitrogen is fixed within the soil, helping to support growth of other grasses. The sward can also be ploughed back in to improve soil structure.

Table 6-6 Maintenance of Topsoil Storage

Topsoil Storage Maintenance
Cutting
The emergent grass sward will be mown or strimmed initially to a cutting height of 50mm to promote tillering of the grasses. This will in turn both stabilise the soil surface and restrict opportunities for weed species to invade the sward. The sward will subsequently be mown to a height of 50mm once in April/May and again in August/September during the construction period, unless growth rates or climatic conditions indicate otherwise.
Weed Control
At all times during the site working and restoration programme good agricultural practice will be used to contain weed growth and the appropriate herbicide will, if required, be applied in accordance with manufacturers' recommendations. Weed control will be undertaken as necessary to include spot herbicide treatment or manual removal. Any areas of failed grass will be cultivated and reseeded in the next seeding season.
Watering
Unlikely to be required as the intention is to create a temporary grass sward not dependent upon external manual watering or irrigation. However, should additional watering be required due to extremely unseasonal dry conditions, then the contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.

6.8 Aquatic and Marginal Grass and Planting Mixes (G6, G7)

92. The intention of the aquatic and marginal grass and plant mixes is to stabilise SuDS elements: swale base, detention basin and permanent pond with species that a suitable for regular and frequent inundation; whist providing a valuable biodiversity resource to the local area. Details of the maintenance of aquatic and marginal grass areas are detailed in Table 6-7:

Table 6-7 Maintenance of Aquatic and Marginal Grass

Aquatic and Marginal Grass Maintenance
Cutting
Generally, as required, cut grass in swales, access and overflows when it is 75-100mm high, not allowing it to exceed 150mm. Wetland or meadow vegetation cut at 50mm once a year and removed to wildlife areas or compost.
Weed Control
Manual weed treatment only, no chemicals to be used. Any areas of failed grass or vegetation will be cultivated and reseeded and replanted in the next appropriate planting/seeding season.
Watering
Unlikely to be required due to the type of species proposed (i.e. aquatic and marginal aquatic). However, should additional watering be required during the establishment period, then the contractor will need to arrange for a mobile water bowser or tanker to bring the required clean water to site.

6.9 Programming of maintenance tasks

93. The following is an indicative annual schedule of maintenance visits that will be undertaken for the first 10 years of establishment within woodland and hedgerow planted areas (WM1 - WM4 and H1) and for the first five years of establishment within grassland habitat areas (G1 – G7). This provides a reasonable frequency of the more common operations, and a good indication of the required level of intensity of management required but is not intended to be fully comprehensive or restrictive.

94. An appointed contractor will be required to construct a schedule of operations specifying operations and frequency using his own experience and horticultural knowledge.

95. The ongoing programme of maintenance work will include proposed frequency of visits and operations detailed in the specification, i.e. pruning. It will also include scheduled dates for:

- infrequent operations such as re-spacing of plants, pruning, topping up of mulch, replacement of plants / restocking of beds etc.;
- Planting review and refurbishment;
- Monitoring and review; the effectiveness of the management operations is to be closely and continually monitored and reviewed annually against the NBS Specification and this Maintenance Plan, with any resulting changes incorporated into the subsequent years' programme.

Table 6-8 Feathered trees, whips and shrub mixes (WM1, WM2, WM3, WM4) – activities and number of visits

Month	Watering	Weeding	Re-Firming
January			
February			
March			1
April	2		
May	2	1	
June	2		
July	2	1	
August			
September		1	
October			1
November			
December			

Stakes and ties to be removed 3 years after planting.
Watering as necessary during periods of drought

Table 6-9 Hedgerows (H1) – activities and number of visits

Month	Watering	Weeding	Re-Firming
January			
February			
March			1
April	2		
May	2	1	
June	2		
July	2	1	
August			
September		1	
October			1
November			
December			

Watering as necessary during periods of drought in the establishment period.

Table 6-10 Amenity Grass areas (G1) – activities and number of visits

Month	Weeding	Mowing (neat margins along verges)	Mowing (areas of longer grass)
January			
February			
March		2	
April		2	
May	1	2	1
June		2	
July	1	2	
August		2	1
September	1	2	
October		2	
November			
December			

Table 6-11 Wetland and Species Rich Grassland areas (G2, G3) – activities and number of visits

Month	Weeding	Mowing (leave arisings 1 week)
January		
February		
March		1
April		
May	1	
June		
July		
August		
September	1	1
October		
November		
December		

Table 6-12 Swale Maintenance (G1, G2) – activities and general frequency

Maintenance	Action	Frequency
Regular Maintenance	Litter and debris removal from site	Monthly
	Amenity grass cutting at 35-50mm	As required
	Grass cut to swales, access and overflows 75-100mm not to exceed 150mm	Monthly or as required
	Wetland or meadow vegetation cut at 50mm and remove to wildlife or compost piles	Monthly or as required
	Inspect and clear inlets, outlets and overflows	Monthly
Occasional tasks	Remove leaf accumulation	As required
	Cut back overhanging branches to allow dense vegetation growth	As required
Remedial work	Repair erosion, level uneven surfaces or damage by re-turfing or seeding	As required
	Remove silt and spread locally outside design profile and reinstate surface	As required
	Repair inlets, outlets or check dam structures to design detail	As required

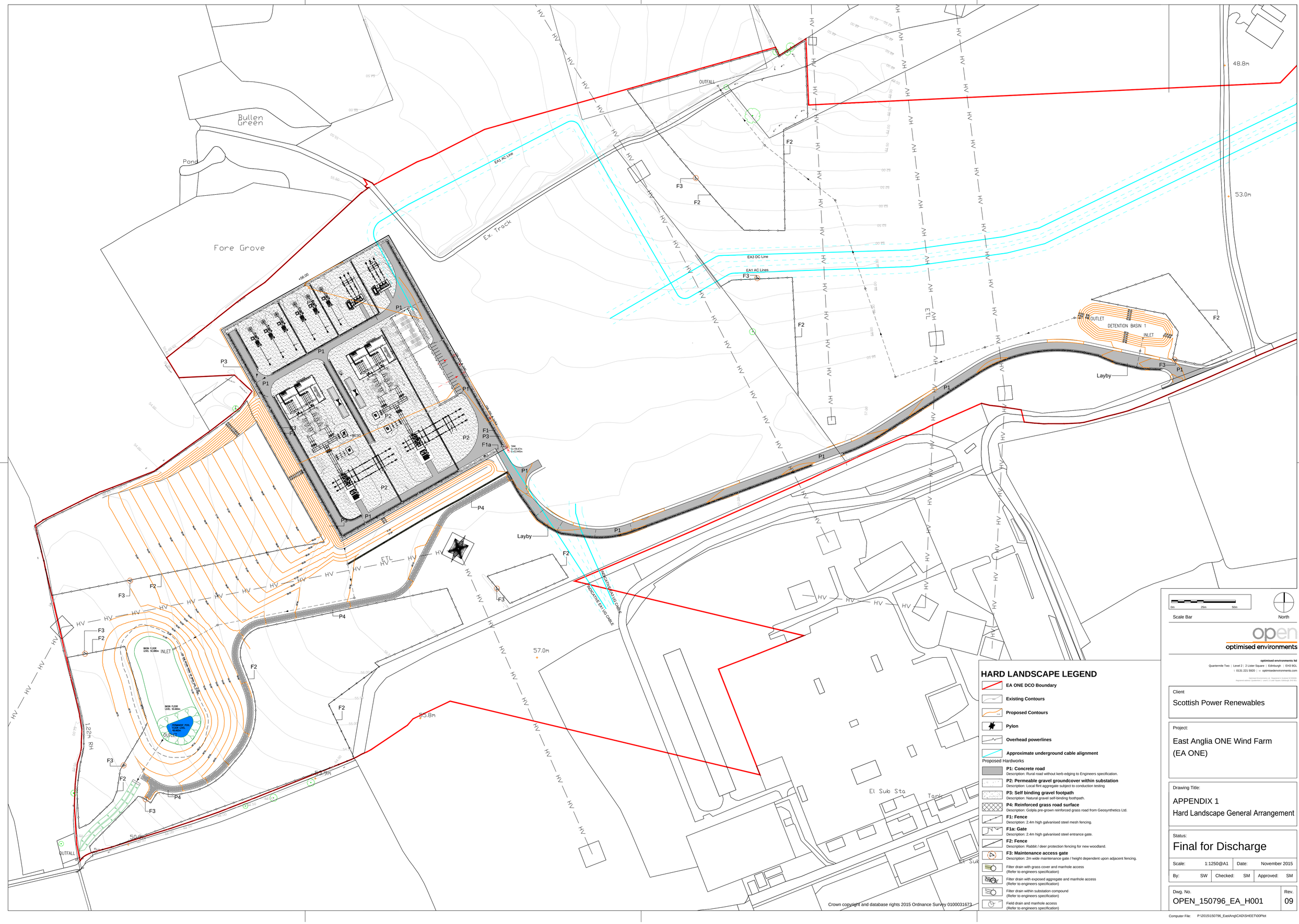
Table 6-13 Detention Basin Maintenance (G1, G2, G7) – activities and general frequency

Maintenance	Action	Frequency
Regular maintenance	Litter and debris removal from site	Monthly
	Amenity grass cutting at 35-50mm	As required
	Grass cutting to access routes, overflows and basin where required at 75-100mm not to exceed 150mm	As required
	Meadow grass, where appropriate, cut at 50mm and remove to wildlife or compost piles	Annually
	Manage wetland planting in micropools by cutting and remove to wildlife or compost piles	As required
	Inspect and clear inlets, outlets, control structures and overflows	Monthly
Occasional tasks	Remove leaf accumulation	As required
	Cut back overhanging branches to allow dense vegetation growth	As required
	Remove sediments from forebay, inlets and pre-treatment structures	As required
Remedial work	Inspect and repair damage to inlets, outlets, banks and overflows	As required

Table 6-14 Permanent Pond Maintenance (G6) – activities and general frequency

Maintenance	Action	Frequency
Regular maintenance	Litter and debris removal from site	Monthly
	Amenity grass 35-50mm for access, paths and visual requirements	As required
	Grass cut to pond edges, access and overflows 75-100mm and not to exceed 150mm	Monthly or as required
	Wetland, meadow or rough grass cut at 50mm and remove to wildlife or compost piles	Annually or as required
	Cut pond vegetation if required and no more than 30% 100mm above pond base and remove to wildlife or compost piles	Annually or as required
	Inspect and clear inlets, outlets and control structures	Monthly
	Remove sediment from Forebay structures if present and site apply subject to agreement with the Environment Agency	Annually
Occasional tasks	Review silt accumulation remove and site apply or take off site if necessary subject to agreement with the Environment Agency	As required
	Removal of tree or shrub growth within 5m of pond edge	As required
Remedial work	Repair or replace inlets, outlets or control structures to design detail	As required

Appendices



HARD LANDSCAPE LEGEND

- **EA ONE DCO Boundary**
- **Existing Contours**
- **Proposed Contours**
- **Pylon**
- **Overhead powerlines**
- **Approximate underground cable alignment**

Proposed Hardworks

- **P1: Concrete road**
  Description: Rural road without kerb edging to Engineers specification.
- **P2: Permeable gravel groundcover within substation**
  Description: Local flint aggregate subject to conduction testing
- **P3: Self binding gravel footpath**
  Description: Natural gravel self-binding footpath.
- **P4: Reinforced grass road surface**
  Description: Golpla pre-grown reinforced grass road from Geosynthetics Ltd.
- **F1: Fence**
  Description: 2.4m high galvanised steel mesh fencing.
- **F1a: Gate**
  Description: 2.4m high galvanised steel entrance gate.
- **F2: Fence**
  Description: Rabbit / deer protection fencing for new woodland.
- **F3: Maintenance access gate**
  Description: 2m wide maintenance gate / height dependent upon adjacent fencing.
- Filter drain with grass cover and manhole access
  (Refer to engineers specification)
- Filter drain with exposed aggregate and manhole access
  (Refer to engineers specification)
- Filter drain within substation compound
  (Refer to engineers specification)
- Field drain and manhole access
  (Refer to engineers specification)

0m 25m 50m

Scale Bar

North

optimised environments

optimised environments ltd
Quartermile Two | Level 2 | 2 Lister Square | Edinburgh | EH3 9GL
t: 0131 221 5920 | w: optimisedenvironments.com

(Optimised Environments Ltd. Registered in Scotland SC358581. Registered address: Quartermile 2, Level 2, 2 Lister Square, Edinburgh, EH3 9GL.

Client

Scottish Power Renewables

Project:

East Anglia ONE Wind Farm
(EA ONE)

Drawing Title:

APPENDIX 1
Hard Landscape General Arrangement

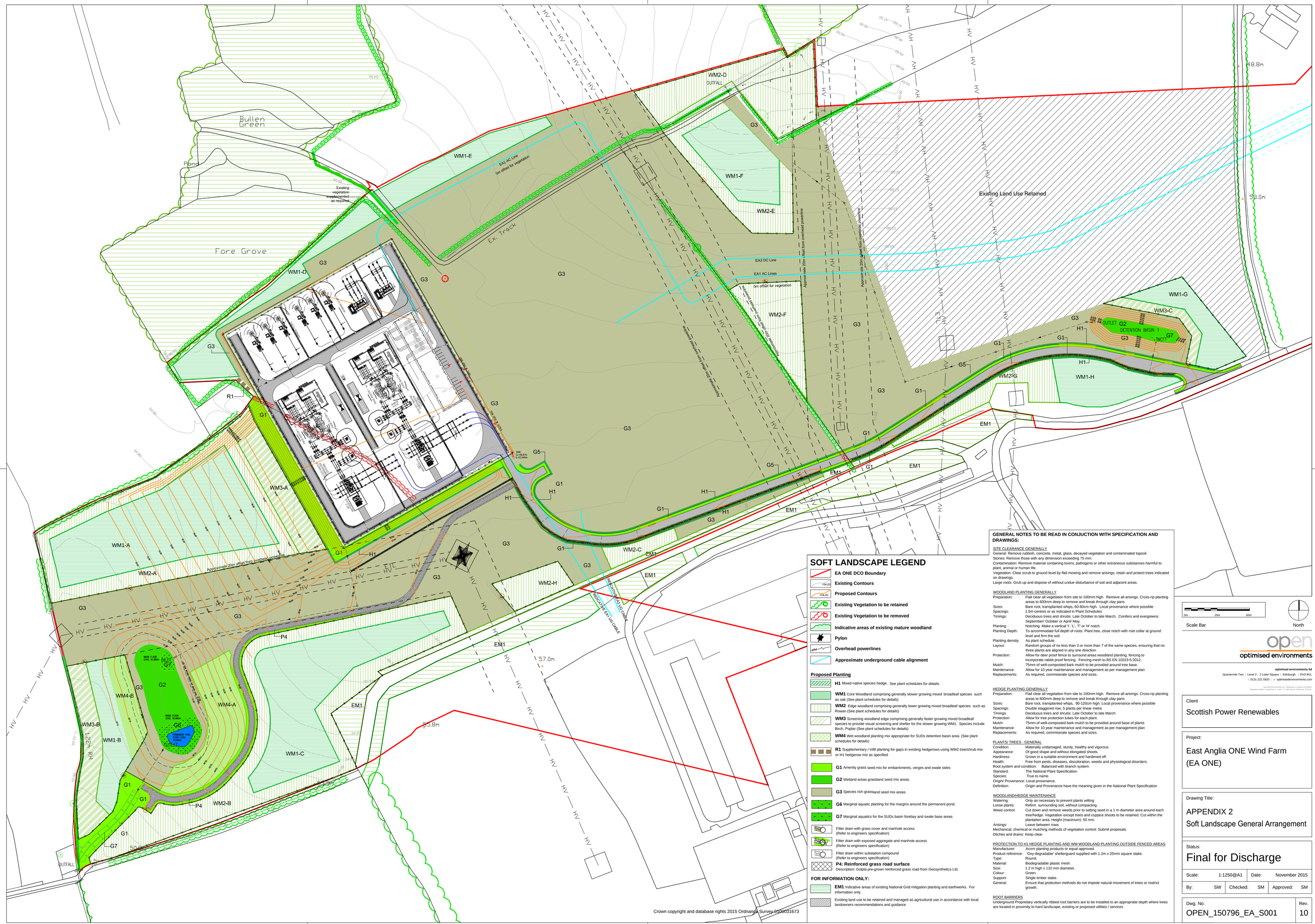
Status:

Final for Discharge

Scale:	1:1250@A1	Date:	November 2015
By:	SW	Checked: SM	Approved: SM

Dwg. No.	Rev.
OPEN_150796_EA_H001	09

Computer File: P:\2015\150796_EastAng\CAD\SHEET\00Plot



Crown copyright and database rights 2015 Ordnance Survey 0100031673

SOFT LANDSCAPE LEGEND

🟥	**EA ONE DCO Boundary**
+54.00	**Existing Contours**
+54.00	**Proposed Contours**
	Existing Vegetation to be retained
	Existing Vegetation to be removed
	Indicative areas of existing mature woodland
	Pylon
HV	**Overhead powerlines**
	Approximate underground cable alignment

Proposed Planting

▨	**H1** Mixed native species hedge. See plant schedules for details.
▤	**WM1** Core Woodland comprising generally slower growing mixed broadleaf species such as oak (See plant schedules for details)
▥	**WM2** Edge woodland comprising generally lower growing mixed broadleaf species such as Rowan (See plant schedules for details)
▨	**WM3** Screening woodland edge comprising generally faster growing mixed broadleaf species to provide visual screening and shelter for the slower growing WM1. Species include Birch, Poplar (See plant schedules for details)
▩	**WM4** Wet woodland planting mix appropriate for SUDs detention basin area. (See plant schedules for details)
■ ■ ■	**R1** Supplementary / infill planting for gaps in existing hedgerows using WM2 tree/shrub mix or H1 hedgerow mix as specified
🟩	**G1** Amenity grass seed mix for embankments, verges and swale sides
🟩	**G2** Wetland areas grassland seed mix areas.
■	**G3** Species rich grassland seed mix areas.
🟩	**G6** Marginal aquatic planting for the margins around the permanent pond.
🟩	**G7** Marginal aquatics for the SUDs basin forebay and swale base areas
	Filter drain with grass cover and manhole access (Refer to engineers specification)
	Filter drain with exposed aggregate and manhole access (Refer to engineers specification)
	Filter drain within substation compound (Refer to engineers specification)
▩	**P4: Reinforced grass road surface** Description: Golpla pre-grown reinforced grass road from Geosynthetics Ltd.

FOR INFORMATION ONLY:

▤	**EM1** Indicative areas of existing National Grid mitigation planting and earthworks. For information only.
▨	Existing land use to be retained and managed as agricultural use in accordance with local landowners recommendations and guidance

GENERAL NOTES TO BE READ IN CONJUCTION WITH SPECIFICATION AND DRAWINGS:

SITE CLEARANCE GENERALLY

General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
Stones: Remove those with any dimension exceeding 75 mm.
Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
Vegetation: Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings.
Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.

WOODLAND PLANTING GENERALLY

Preparation:	Flail clear all vegetation from site to 100mm high. Remove all arisings. Cross-rip planting areas to 600mm deep to remove and break through clay pans
Sizes:	Bare root, transplanted whips, 60-80cm high. Local provenance where possible
Spacings:	1.5m centres or as indicated in Plant Schedules
Timings:	Deciduous trees and shrubs: Late October to late March, Conifers and evergreens: September/ October or April/ May.
Planting:	Notching: Make a vertical 'I', 'L', 'T' or 'H' notch.
Planting Depth:	To accommodate full depth of roots. Plant tree, close notch with root collar at ground level and firm the soil.
Planting density:	As plant schedule.
Layout:	Random groups of no less than 3 or more than 7 of the same species, ensuring that no three plants are aligned in any one direction.
Protection:	Allow for deer proof fence to surround areas woodland planting, fencing to incorporate rabbit proof fencing. Fencing mesh to BS EN 10223-5:2012.
Mulch:	75mm of well-composted bark mulch to be provided around tree base.
Maintenance:	Allow for 10 year maintenance and management as per management plan
Replacements:	As required, commiserate species and sizes.

HEDGE PLANTING GENERALLY

Preparation:	Flail clear all vegetation from site to 100mm high. Remove all arisings. Cross-rip planting areas to 600mm deep to remove and break through clay pans
Sizes:	Bare root, transplanted whips, 90-120cm high. Local provenance where possible
Spacings:	Double staggered row, 5 plants per linear metre
Timings:	Deciduous trees and shrubs: Late October to late March
Protection:	Allow for tree protection tubes for each plant.
Mulch:	75mm of well-composted bark mulch to be provided around base of plants
Maintenance:	Allow for 10 year maintenance and management as per management plan
Replacements:	As required, commiserate species and sizes.

PLANTS/ TREES - GENERAL

Condition:	Materially undamaged, sturdy, healthy and vigorous.
Appearance:	Of good shape and without elongated shoots.
Hardiness:	Grown in a suitable environment and hardened off.
Health:	Free from pests, diseases, discoloration, weeds and physiological disorders.
Root system and condition:	Balanced with branch system.
Standard:	The National Plant Specification.
Species:	True to name.
Origin/ Provenance:	Local provenance.
Definition:	Origin and Provenance have the meaning given in the National Plant Specification

WOODLAND/HEDGE MAINTENANCE

Watering:	Only as necessary to prevent plants wilting
Loose plants:	Refirm surrounding soil, without compacting.
Weed control:	Cut down and remove weeds prior to setting seed in a 1 m diameter area around each tree/hedge. Vegetation except trees and coppice shoots to be retained: Cut within the plantation area. Height (maximum): 50 mm.
Arisings:	Leave between rows.

Mechanical, chemical or mulching methods of vegetation control: Submit proposals.
Ditches and drains: Keep clear.

PROTECTION TO H1 HEDGE PLANTING AND WM WOODLAND PLANTING OUTSIDE FENCED AREAS

Manufacturer:	Acorn planting products or equal approved.
Product reference:	'Oxy-degradable' shelterguard supplied with 1.2m x 25mm square stake.
Type:	Round.
Material:	Biodegradable plastic mesh.
Size:	1.2 m high x 110 mm diameter.
Colour:	Green.
Support:	Single timber stake.
General:	Ensure that protection methods do not impede natural movement of trees or restrict growth.

ROOT BARRIERS

Underground Proprietary vertically ribbed root barriers are to be installed to an appropriate depth where trees are located in proximity to hard landscape, existing or proposed utilities / services

0m 25m 50m
Scale Bar
North

open
optimised environments

optimised environments ltd
Quartermile Two | Level 2 | 2 Lister Square | Edinburgh | EH3 9GL
t 0131 221 5920 | w optimisedenvironments.com

Optimised Environments Ltd. Registered in Scotland SC359690.
Registered address: Quartermile 2, Level 2, 2 Lister Square, Edinburgh, EH3 9GL

Client
Scottish Power Renewables

Project:
East Anglia ONE Wind Farm
(EA ONE)

Drawing Title:
APPENDIX 2
Soft Landscape General Arrangement

Status:
Final for Discharge

Scale:	1:1250@A1	Date:	November 2015		
By:	SW	Checked:	SM	Approved:	SM

Dwg. No.
OPEN_150796_EA_S001
Rev.
10

Computer File: P:\2015\150796_EastAng\CAD\SHEET\00Plot

EARTHWORKS LEGEND

- **EA ONE DCO Boundary**
- **Existing Contours**
- **Proposed Contours**
- **Pylon**
- **Overhead powerlines**
- **Approximate underground cable alignment**
- Filter drain with grass cover and manhole access (Refer to engineers specification)
- Filter drain with exposed aggregate and manhole access (Refer to engineers specification)
- Filter drain within substation compound (Refer to engineers specification)
- Field drain and manhole access (Refer to engineers specification)

Scale Bar: 0m 25m 50m

North

optimised environments

optimised environments ltd
Quartermile Two | Level 2 | 2 Lister Square | Edinburgh | EH3 9GL
t 0131 221 5920 | w optimisedenvironments.com
Optimised Environments Ltd. Registered in Scotland SC359690.
Registered address: Quartermile 2, Level 2, 2 Lister Square, Edinburgh, EH3 9GL

Client
Scottish Power Renewables

Project:
East Anglia ONE Wind Farm
(EA ONE)

Drawing Title:
APPENDIX 3
Earthworks General Arrangement

Status:
Final for Discharge

Scale: 1:1250@A1	Date: November 2015	
By: SW	Checked: SM	Approved: SM

Dwg. No. OPEN_150796_EA_E001 — Rev. 06

Computer File: P:\2015\150796_EastAng\CAD\SHEET\00Plot

E10: 150mm standard concrete flush channel

Product:	CS2 Square flush channel CS2
Material:	Standard natural concrete edging
Supplier:	Marshalls or equal approved Landscape House Premier Way Lowfield Business Park Elland HX5 9HT T: 0845 3020600
Specials:	Radius, angle, quadrant, drop kerb and transition specials to be used where required.
Unit Size:	150 x 150mm
Joints:	To engineer's detail and specification
Build up:	Refer to engineer's specification and details.
Sample:	5m length associated with adjacent paving samples to be approved prior to laying permanent areas.

E10 sheet D01

Standard concrete flush channel

Scale: nts@A1

P1: Standard concrete surfaced road

Material: cement concrete

Refer to engineers detail and specification but typically to be:
- 200mm air entrained C32/C40 concrete reinforced with A252 in bottom (50mm cover) and fibres with brushed finished;
- 1200 guage visqueen slip layer on 50mm sand blinding;
-270mm granular type 1 sub-base;
-N.B. Additional capping may be required in areas with poor ground conditions

P1 sheet D01

Standard concrete surfaced access road

Scale: nts@A1

P2: Inert permeable gravel ground cover

Material:	Locally sourced flint gravel
Colour:	Kennet flint gravel or similar locally sourced stone Contractor to submit proposals. To be approved.
Size:	8-14mm aggregate, or submit proposals
Depth:	100mm

Notes:
1. Use of non-National Grid standard specification of gravel dependent upon proposed alternative passing conductivity tests by engineer.
2. Loose laid and raked to uniform thickness
3. Terram membrane to be laid below gravel layer
4. Samples to be approved

Kennet flint

Image for reference only. Sample to be approved.

P2 sheet D01

Inert permeable gravel ground cover

Scale: nts@A1

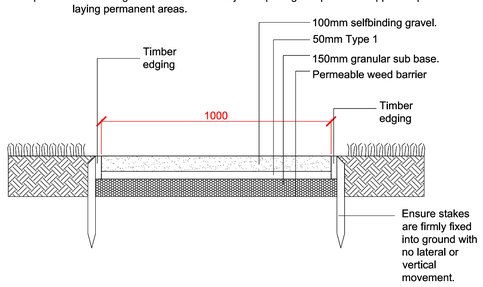
P3: Self binding gravel path with timber edging

Surfacing

Material:	'IMAG Grey Pave' self binding gravel or equal approved, sample to be provided before any alternatives are approved.
Colour:	'Grey Pave'.
Finish:	As supplied.
Depth:	100mm
Build up:	To engineers detail / manufacturers recommendations, Typically to 'Drives and Car Parks' specification, but typically: - 50mm granular type 1 sub-base; - 150mm selected granular material; - Permeable weed barrier - N.B. Additional capping may be required in areas with poor ground conditions

Edging:

Material:	Treated softwood timber and stakes
Unit Size:	50x50x600 treated soft wood pegs at 1200mm centres supporting 38mm x 150mm timber edge.
Treatment:	Pressure impregnated to BS 351-1 with Tanalith E/GFb preservative or equal and approved. Top of peg to be weathered below ground level on grass edges to shed water. Timber edge to be screwed to pegs with galvanised fixings.
Sample:	2 x 5m lengths associated with adjacent paving samples to be approved prior to laying permanent areas.



P3 sheet D01

Self binding gravel with timber edging

Scale: 1:20@A1

P3 - IMAG Grey Pavel self binding gravel

P3 - Installed self binding gravel path with timber edging

P4: Reinforced grass road system with standard concrete square channel

Surfacing

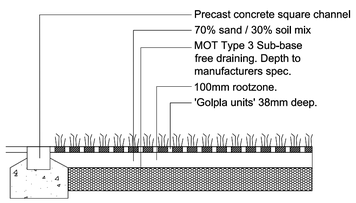
Material:	Golpla pre-grown grass road.
Supplier:	Geosynthetics Ltd. Fleming Road Harrowbrook Industrial Estate Hinckley Leicestershire LE10 3DU Tel: +44 (0)1455 617140
Colour:	Green
Finish:	As supplied
Unit Size:	As supplied.
Growing medium:	Soil to be sandy loam free from stones, debris and weed seeds.
Thickness:	To manufacturers recommendation.
Build up:	Refer to engineer's specification and details.

Laying Notes:

- No trafficking of Grass Road during first grass growing season until full establishment.
- No service covers to be located within P4.

Edging:

Product:	BS Standard Concrete Square Channel
Material:	Precast concrete
Supplier:	Marshalls or equal approved Landscape House Premier Way Lowfield Business Park Elland HX5 9HT 0845 3020600
Unit Size:	150 x 150 x 914mm
Joints:	To engineer's detail and specification
Build up, foundation and haunch:	Refer to engineer's specification and details.
Sample:	5m length associated with adjacent paving samples to be approved prior to laying permanent areas.



P4: Typical section.

P4 - Pregrown grass road units

P4 - Installed grass road units

P4 sheet D01

Reinforced grass road system with standard concrete square channel.

Scale: 1:20@A1

NOTES:

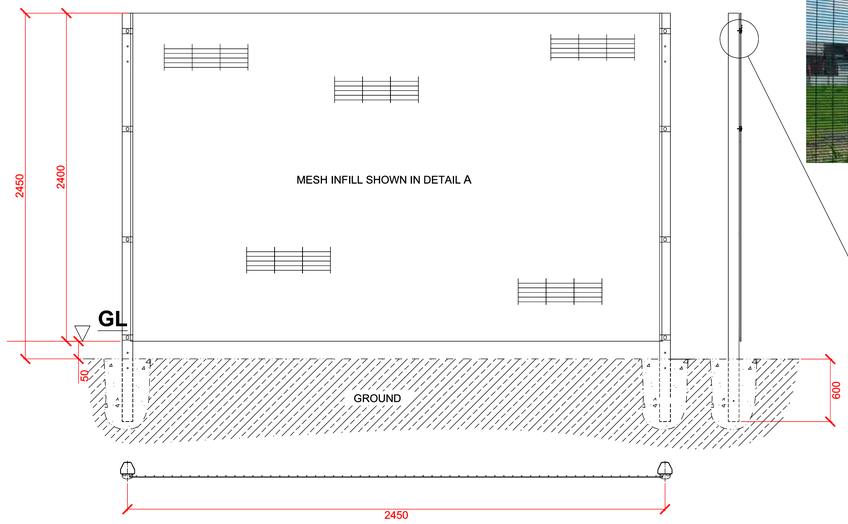
1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

	Status Stamp:			Project: East Anglia ONE Wind Farm (EA ONE)	
				Location: EAST ANGLIA	
Contractor: open	Status Stamp:			Drg. Title: APPENDIX 4 TYPICAL CONSTRUCTION DETAILS: SURFACES Final for Discharge	
Client: SCOTTISHPOWER RENEWABLES	Date of First Issue: 16/12/15			Drg. No.: EA1-GRD-DG-OPEN-796_D001	Sheet: 1 / Next: - / Rev: 05
	Prepared: SW	Reviewed: BS	Approved: MO	Contractors Drg. No. : 150796	Scale: VARIES / Size: A1

F1: Security fence

Manufacturer:	Procter fencing ltd. or similar approved
Product:	Betafence Securifor 358® & Super 6
Height:	2400mm
Panel Width:	2515mm
Material:	6mm wires
Posts:	60 x 60mm
Finish:	Galvanised and polyester coated (Colour to be confirmed)

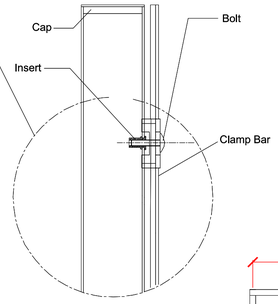
Installed to manufacturers specification.

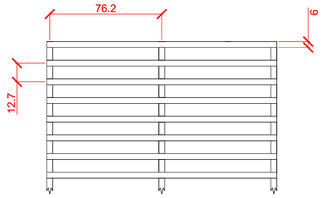


PROCTER FENCING SYSTEMS
358 MESH

F1 sheet D02 **Betafence Super 6 mesh fence**

Scale: 1:20@A1



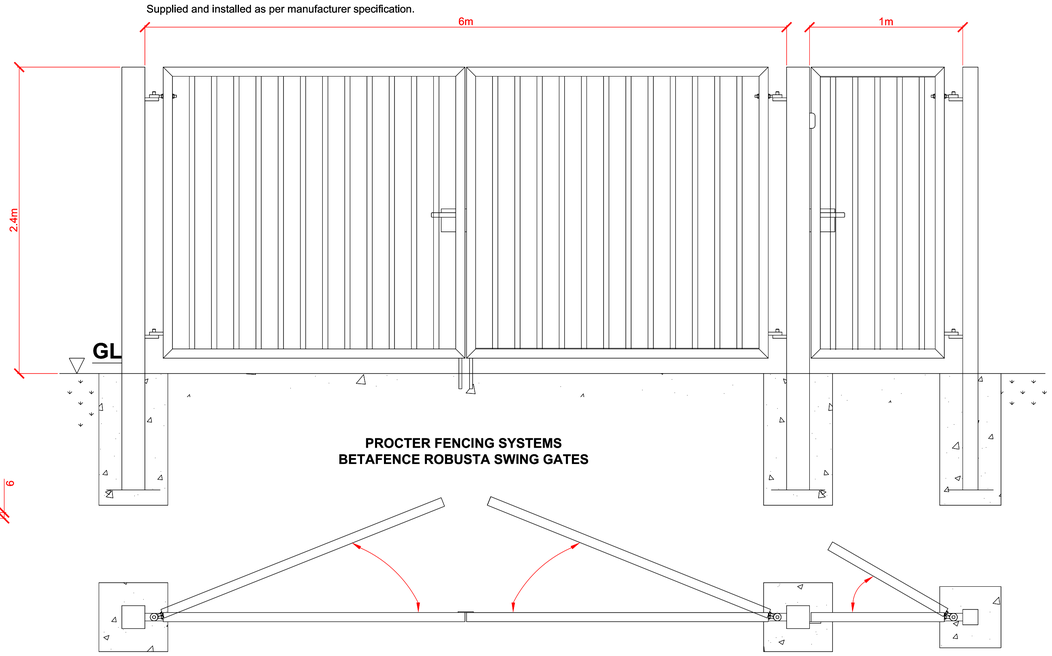


DETAIL A

F1a: Substation gate

Manufacturer:	Procter fencing ltd. or similar approved
Product:	Betafence Robusta Swing Gates
Clear opening:	6m
Height:	2.4m
Material:	Steel
Finish:	Galvanised and polyester coated (Colour to be confirmed)

Supplied and installed as per manufacturer specification.



F1a sheet D02 **Substation entrance gate**

Scale: Not to Scale @A1

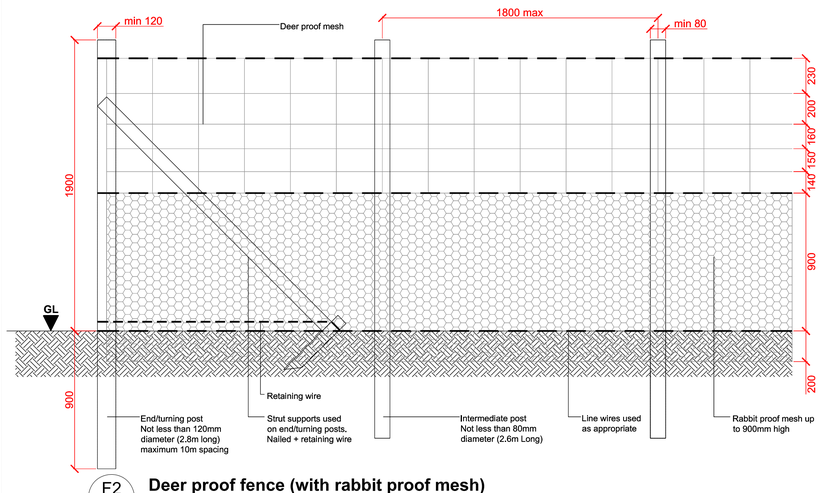
F2: Deer proof fence (with rabbit proof mesh)

Description:	Wooden post fencing with wire mesh netting
Height:	1.9m
Material:	All timber shall be FSC pressure treated larch or other softwood as approved.
End/Turning Posts:	Minimum 120mm diameter 2800mm (1900mm above ground) at intervals no greater than 10m. Posts to be driven to minimium depth 900mm.
Intermediate Posts:	Minimum 80mm diameter 2600mm (1900mm above ground) at intervals no greater than 1.8m. Posts to be driven to minimium depth 700mm.
Rabbit proof mesh:	Ground level to 900mm high (plus 200mm sub ground level) Galvanised wire netting with max 31mm apertures, 18g wire gauge (BS EN 10223–2). Netting to be fixed securely to fence posts. Mesh to extend into trench at bottom of fence line 200mm below ground level. Trench to be backfilled.
Deer proof mesh:	900mm - 1800mm: Double width netting deer fencing 6/90/30, max 200x300mm. High Tensiile steel wire 2.5mm diameter.
Fixings:	All fixings to be appropriately sized and galvanised to BS EN ISO 1461

Assembly:

1. Fencing to follow the ground profile with small adjustments to height as necessary to obtain flowing alignment.
2. Line wires used as appropriate with Lashing rods, retaining wire used for strut retention.
3. BS 1722 Part 7 applies

Refer to: Forestry Commission, Forest Fencing Technical Guide for further information. Contractor to confirm final fence configuration for approval.



F2 sheet D02 **Deer proof fence (with rabbit proof mesh)**

Scale: 1:20@A1

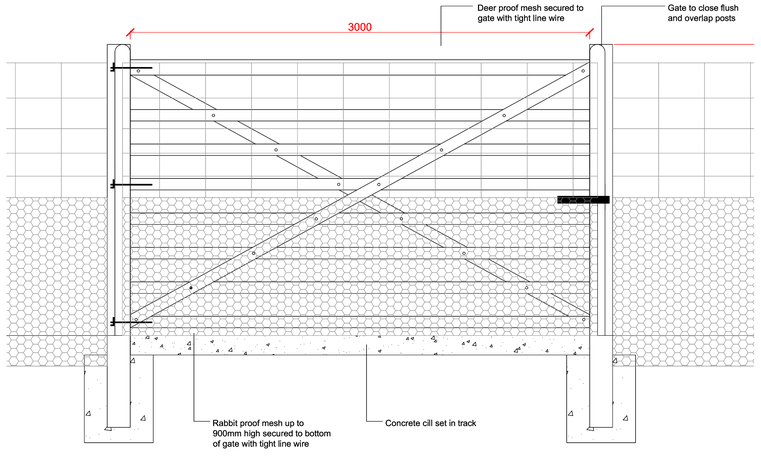
F3: Access gate

Description:	Wide single leaf timber field gate, with heavy toprail and cross bracing
Height:	1.9m
Gate width:	3m
Material:	All timber shall be FSC pressure treated larch or other softwood as approved.
Finish:	New planed finish
Top rail:	100mm x 75mm, edges chamfered
Under rail/ cross braces:	75 x 25mm
Hanging and slam stiles	(rounded top): 100 x 75mm
Fixings:	All joints to be morticed and tenoned, Rail and brace crossings to be bolted with stainless steel bolts.
Gate posts:	150x150mm Slamming post 175 x 175mm Hanging Post
Foundation:	To engineer's detail

Hanging fittings:

- Heavy Galvanized Adjustable Hinge Set,
- 1 Loop Over Catch,
- 1 Anti Lift Device
- Fitting of Irons to Gate

Refer to: Forestry Commission, Forest Fencing Technical Guide for further information. Contractor to confirm final fence configuration for approval.



F3 sheet D02 **Gate**

Scale: 1:20@A1

NOTES:

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

Status Stamp:

Status Stamp:

Project: East Anglia ONE Wind Farm (EA ONE)

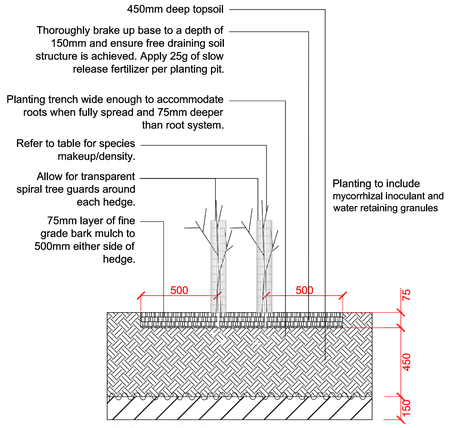
Location: EAST ANGLIA

Contractor: open

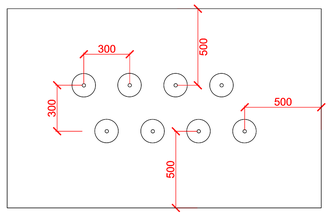
Drg. Title: APPENDIX 5
TYPICAL CONSTRUCTION DETAILS: FENCING
Final for Discharge

Client: SCOTTISHPOWER RENEWABLES

Date of First Issue: 16/12/15			Drg. No.: EA1-GRD-DG-OPEN-796_D002	Sheet: 1	Rev: 04
Prepared	Reviewed	Approved		Next: -	
SW	BS	MO	Contractors Drg. No. : 150796	Scale: VARIES	Size: A1



H1: Mixed Native Hedge double staggered row

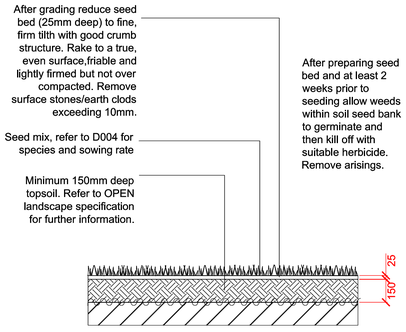


Typical Planting Spacing Arrangement for Mixed Native Hedge.

H1 sheet D03

Hedge

Scale: 1:20@A1

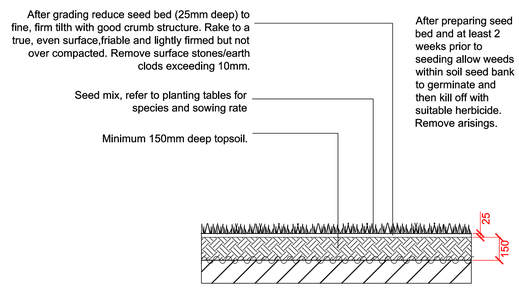


Planting type: G1 Amenity lawn seeding

G1 sheet D03

Amenity lawn

Scale: 1:20@A1

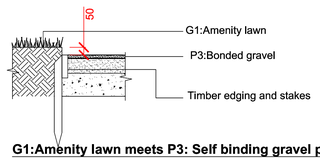


Planting type: G2, G3, G4 seeding

G2-G4 sheet D03

Seed mix areas: (G2 Wetland grass, G3 Species rich grassland, G4 Long term topsoil storage)

Scale: 1:20@A1

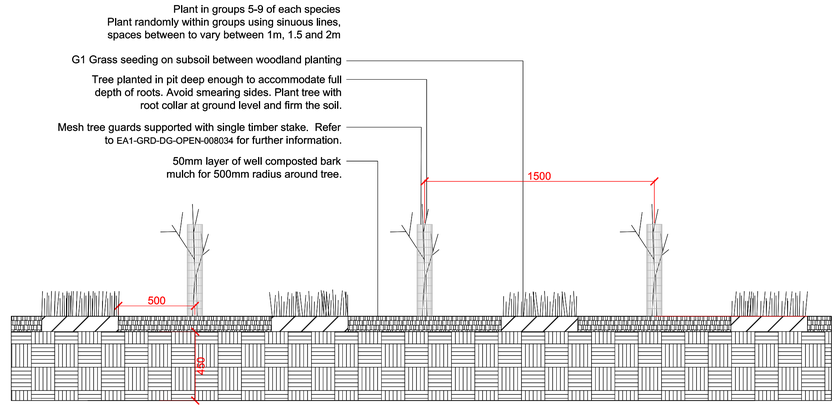


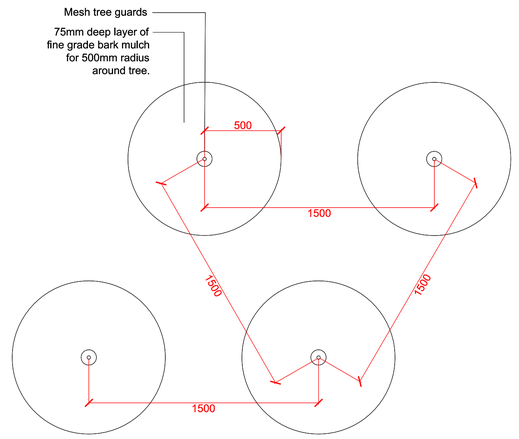
G1:Amenity lawn meets P3: Self binding gravel path

G1 sheet D03

Amenity lawn

Scale: 1:20@A1





WM1-WM4 - Typical Planting Spacing Arrangement for Woodland Planting

WM sheet D03

Woodland mix plantings

Scale: 1:20@A1

R1: Supplement planting
Species: As per WM2 mix
Percentage: As per WM2 mix
Plant sizes: As per WM2 mix
Root condition: As per WM2 mix
Protection: As per WM2 mix
Density: Where there is a gap in planting larger than 5m2 new planting to be included at 1.5 m centres. Locations to be agreed on site.

Treeguards for Trees within Group Planting Areas
Product: Treeguard Mesh Tube
Supplier: Fiberweb Geosynthetics Ltd,
Blackwater Trading Estate,
The Causeway,
MALDON,
CM9 4GG
Tel: +44 (0) 1621 874201
Material: Recycled HDPE Photodegradable
Colour: Olive Green
Height: 1.2m & 1.5m - to correspond to height of tree in mix table
Diameter: 80-110mm
Support: Softwood timber stake 20mm x 20mm square,
1.2m-1.5m length to ensure $\frac{1}{3}$ length underground and 30cm below top of guard,
FSC certified, treated to BS8417:2003
Ties: Two ties required.

Spiral shelter for hedge plants
Product: Sprial Shelter
Supplier: Fiberweb Geosynthetics Ltd,
Blackwater Trading Estate,
The Causeway,
MALDON,
CM9 4GG
Tel: +44 (0) 1621 874201
Material: 100% Recycled Photodegradable PVC
Colour: Transparent
Size: 60cm x 50mm
Support: Bamboo cane
Ties: Two ties required.

NOTES:

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

Contractor: open

Client: SCOTTISHPOWER RENEWABLES

Status Stamp:

Status Stamp:

Project: East Anglia ONE Wind Farm (EA ONE)

Location: EAST ANGLIA

Drg. Title: APPENDIX 6
TYPICAL CONSTRUCTION DETAILS: PLANTING
Final for Discharge

Date of First Issue: 16/12/15			Drg. No.: EA1-GRD-DG-OPEN-796_D003	Sheet: 1	Rev: 04
Prepared	Reviewed	Approved		Next: -	
SW	BS	MO	Contractors Drg. No. : 150796	Scale: VARIES	Size: A1

Abbrev.	Name	Common Name	Height cm	Root Zone	Specification	Mix %	Ctr m	No./m²	Plan Areas m² 9219 WM1-A	2013 WM1-B	7543 WM1-C	2564 WM1-D	2389 WM1-E	3147 WM1-F	1936 WM1-G	2373 WM1-H	Total m² 31184 Total Qty
WM1 Core Woodland Tree Mix																	
A ca	Acer campestre	Common Maple	80-100	B	1+2; Transplant - seed raised	10	1.5	0.44	410	89	335	114	106	140	86	105	1386
A ps	Acer pseudoplatanus	Sycamore	80-100	B	1+1; Transplant - seed raised	10	1.5	0.44	410	89	335	114	106	140	86	105	1386
A col	Alnus cordata	Italian Alder	80-100	B	1+1; Transplant - seed raised	5	1.5	0.44	205	45	168	57	53	70	43	53	693
B pub	Betula pubescens	Downy Birch	80-100	B	1+1; Transplant - seed raised	15	1.5	0.44	615	134	503	171	159	210	129	158	2079
C be	Carpinus betulus	Common Hornbeam	80-100	B	1+1; Transplant - seed raised	5	1.5	0.44	205	45	168	57	53	70	43	53	693
P sy	Pinus sylvestris	Scots Pine	100-125	RB	3x; leader with laterals	5	1.5	0.44	205	45	168	57	53	70	43	53	693
P tre	Populus tremula	Aspen	80-100	B	1+1; Transplant - seed raised	12	1.5	0.44	492	107	402	137	127	168	103	127	1663
P pad	Prunus padus	Bird Cherry	80-100	B	1+1; Transplant - seed raised	8	1.5	0.44	328	72	268	91	85	112	69	84	1109
Q r	Quercus robur	Common Oak	125-150	B	2x; Feathered; 2 brks	10	1.5	0.44	410	89	335	114	106	140	86	105	1386
T co	Tilia cordata	Small-Leaved Lime	80-100	B	1+1; Transplant - seed raised	20	1.5	0.44	819	179	670	228	212	280	172	211	2772
						100%			**4097**	**895**	**3352**	**1140**	**1062**	**1399**	**860**	**1055**	**13860**

WM1 sheet D04

Core woodland tree mix

Scale: nts@A1

Abbrev.	Name	Common Name	Height cm	Root Zone	Specification	Mix %	Ctr m	No./m²	m² 5434 Plant Quantities WM2-A	8428 WM2-B	687 WM2-C	4743 WM2-D	2473 WM2-E	2705 WM2-F	1740 WM2-G	1243 WM2-H	Total m² 26210 Total Qty
WM2 Edge Woodland Tree Mix																	
C san	Cornus sanguinea	Dogwood	60-80	B	1+1; Transplant - seed raised; branched; 3 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
C av	Corylus avellana	Common Hazel	80-100	B	1+2; Transplant - seed raised; branched; 4 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
C mon	Crataegus monogyna	Common Hawthorn	100-125	B	1+2; Transplant - seed raised	20	1.5	0.44	483	749	61	422	220	240	155	110	2330
E e	Euonymus europaeus	Spindle	60-80	B	1+2; Transplant - seed raised; branched; 5 brks	5	1.5	0.44	121	187	15	105	55	60	39	28	582
I a	Ilex aquifolium	Holly	80-100	RB	Leader with laterals	5	1.5	0.44	121	187	15	105	55	60	39	28	582
M sy	Malus sylvestris	Crab Apple	100-125	B	1+2; Transplant - seed raised	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
P sp	Prunus spinosa	Blackthorn	100-125	B	1+2; Transplant - seed raised; branched; 4 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
S c	Salix caprea	Goat Willow	200-250	B	2x; Feathered; 5 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
S ni	Sambucus nigra	Common Elder	80-100	B	1+1; Transplant - seed raised; branched; 3 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
V op	Viburnum opulus	Guelder Rose	80-100	B	1+2; Transplant - seed raised; branched; 3 brks	10	1.5	0.44	242	375	31	211	110	120	77	55	1165
						100%			**2415**	**3746**	**305**	**2108**	**1099**	**1202**	**773**	**552**	**11649**

WM2 sheet D04

Edge woodland tree mix

Scale: nts@A1

Abbrev.	Name	Common Name	Height cm	Root Zone	Specification	Mix %	Ctr m	No./m²	Plan Areas m² 2340 WM3-A	2095 WM3-B	731 WM3-C	Total m² 5166 Total Qty
WM3 Screening Woodland Mix												
B pub	Betula pubescens	Downy Birch	175-200	B	2x; Feathered; 5 brks	20	1.5	0.44	208	186	65	459
L d	Larix decidua	European Larch	175-200	RB	2x; leader with laterals	10	1.5	0.44	104	93	32	230
L x e	Larix x eurolepis	Dunkeld Larch	175-200	RB	2x; leader with laterals	10	1.5	0.44	104	93	32	230
P ni	Pinus nigra	Austrian Pine	100-125	RB	3x; leader with laterals	6	1.5	0.44	62	56	19	138
P tre	Populus tremula	Aspen	200-250	B	2x; Feathered; 5 brks	18	1.5	0.44	187	168	58	413
P pad	Prunus padus	Bird Cherry	200-250	B	2x; Feathered; 5 brks	10	1.5	0.44	104	93	32	230
Q c	Quercus cerris	Turkey Oak	80-100	B	brks	10	1.5	0.44	104	93	32	230
R fr	Rhamnus frangula	Alder Buckthorn	80-100	B	brks	8	1.5	0.44	83	74	26	184
V op	Viburnum opulus	Guelder Rose	60-80	B	1+2; Transplant - seed raised; branched; 3 brks	8	1.5	0.44	83	74	26	184
						100%			**1040**	**931**	**325**	**2296**

WM3 sheet D04

Screening woodland mix

Scale: nts@A1

Abbrev.	Name	Common Name	Height cm	Root Zone	Specification	Mix %	Ctr m	No./m²	m² 3218 WM4-A	1172 WM4-B	Total m² 3218 Total Qty
WM4 Wetland Woodland Tree Mix											
A ca	Acer campestre	Common Maple	80-100	B	1+2; Transplant - seed raised	10	1.5	0.44	143	52	195
A ps	Acer pseudoplatanus	Sycamore	80-100	B	1+1; Transplant - seed raised	10	1.5	0.44	143	52	195
A col	Alnus cordata	Italian Alder	80-100	B	1+1; Transplant - seed raised	5	1.5	0.44	72	26	98
B pub	Betula pubescens	Downy Birch	80-100	B	1+1; Transplant - seed raised	15	1.5	0.44	215	78	293
C be	Carpinus betulus	Common Hornbeam	80-100	B	1+1; Transplant - seed raised	5	1.5	0.44	72	26	98
S al	Salix alba	White Willow	80-100	B	2x; Feathered; 2 brks	10	1.5	0.44	143	52	195
P tre	Populus tremula	Aspen	80-100	B	1+1; Transplant - seed raised	12	1.5	0.44	172	63	234
P pad	Prunus padus	Bird Cherry	80-100	B	1+1; Transplant - seed raised	8	1.5	0.44	114	42	156
Q r	Quercus robur	Common Oak	125-150	B	2x; Feathered; 2 brks	10	1.5	0.44	143	52	195
A gl	Alnus glutinosa	Common Alder	80-100	B	1+1; Transplant - seed raised	15	1.5	0.44	215	78	293
						100%			**1430**	**521**	**1951**

WM4 sheet D04

Wet woodland mix

Scale: nts@A1

WM1-WM4: Tree and Shrub Planting Mixes

Planting specification:

Species and mix: As per tables. Mix to be used for new woodland blocks for mitigation planting around the substation. Derived from SCC comments on Substation mixes and also additional species selected to replace potential losses due to Ash Dieback disease.

Planting: Trees centres to vary between min 1m , maximum 2m centres. Plant numbers calculated using 1.5 plants centres (0.44 per square metre). Plant in sinuous rows - do not plant in a straight line matrix. Plant in species groups of minimum 5, maximum 9 plants, with the species randomly placed. Ensure each group has a minimum of 5 plants. Refer to EA1-GRD-DG-OPEN-796_D003 for typical planting details.

Root Treatment: Provide mycorrhizal inoculant for each plant at planting. Planting must include water retaining granules.

Weed supression: For each plant, provide 50mm deep well composted bark mulch, up to 500mm radius from tree.

Protection: For large groups of trees, protect with deer/rabbit fencing as per F2. Depending on location trees outside fencing can be protected with tree guards (see separate specification note)

Watering: Water at planting to full rooting depth. If addition of bark mulch delayed, only apply bark mulch after rain or watering. During periods of drought in establishment phase undertake heavy watering to full rooting depth.

These tables provide typical numbers of each species for the areas identified on the Soft Landscape Drawing.

General Maintenance:

Weed control by hand weeding/hoeing only in May & September

NO herbicide applications required.

NO fertiliser required.

Review at end of growing season and replace failures as required with appropriately sized plants.

Allow for selective thining after 5 and 10 years.

NOTES:

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

Status Stamp:

Project: East Anglia ONE Wind Farm (EA ONE)

Location: EAST ANGLIA

Contractor: open

Status Stamp:

Drg. Title: APPENDIX 7 TYPICAL CONSTRUCTION DETAILS: PLANT SCHEDULES - TREES Final for Discharge

Client: SCOTTISHPOWER RENEWABLES

Date of First Issue: 16/12/15

Prepared	Reviewed	Approved
SW	BS	MO

Drg. No.: EA1-GRD-DG-OPEN-796_D004 | Sheet: 1 | Next: 2 | Rev: 04

Contractors Drg. No. : 150796 | Scale: VARIES | Size: A1

H1: Native Hedgerow Mix

Planting specification:

Species and mix: As per table below

Planting: Plant 300mm centres, in a double staggered row, 300mm between rows. Cut back hard after planting to encourage base growth. Refer to EA1-GRD-DG-OPEN-796_D003 for typical planting details

Root Treatment: Provide mycorrhizal inoculant for each plant at planting. Planting must include water retaining granules.

Weed supression: For the length of the hedge trench provide 50mm deep well composted bark mulch, 500mm either side of hedge trench.

Protection: For each plant, provide a transparent spiral guard 90cm plus single bamboo cane.

Watering: Water at planting to full rooting depth. If addition of bark mulch delayed, only apply bark mulch after rain or watering. During periods of drought in establishment phase undertake heavy watering to full rooting depth.

General Maintenance:

Mechanical trimming in full A shape. Trim sections of hedge on 3 year rotation in winter.

Weed control by hand weeding/hoeing only in May & September

NO herbicide applications required.

NO fertiliser required.

Review at end of growing season and replace failures as required with appropriately sized plants.

Abbrev.	Name	Common Name	Height cm	Root Zone	Specification	Mix %	Ctr m	No./Lm	Lm	Total Lm
									1500	1500
									Plant Quantities No.	
									H1	Total Qty
H1 Native Hedgerow Mix										
A ca	Acer campestre	Common Maple	45-60	B	1+1; Transplant - seed raised	20	0.3	6.0	1800	1800
C be	Carpinus betulus	Common Hornbeam	45-60	B	1+1; Transplant - seed raised	5	0.3	6.0	450	450
C av	Corylus avellana	Hazel	45-60	B	1+2; Transplant - seed raised; branched; 3 brks	2	0.3	6.0	180	180
C mon	Crataegus monogyna	Common Hawthorn	45-60	B	1+1; Transplant - seed raised	60	0.3	6.0	5400	5400
C San	Cornus sanguinea	Dogwood	45-60	b	1+1; Transplant - seed raised; branched; 3 breaks	5	0.3	6.0	450	450
L vu	Ligustrum vulgare	Common Privet	45-60	B	1+2; Transplant - seed raised; branched; 5 breaks	2	0.3	6.0	180	180
P sp	Prunus spinosa	Blackthorn	45-60	B	1+2; Transplant - seed raised; branched; 2 brks	2	0.3	6.0	180	180
R c	Rhamnus cathartica	Buckthorn	45-60	B	breaks	2	0.3	6.0	180	180
R can	Rosa canina	Dog Rose	45-60	B	1+1; Transplant - seed raised; branched; 3 brks	2	0.3	6.0	180	180
						100%			**9000**	**9000**

Q r	Quercus robur	Common Oak	125-150	B	2x; Feathered; 2 brks

G1: Amenity Grass for Verges, Embankments, SUDs Swale sides

Supplier: Germinal Seeds GB (Formerly British Seed Houses)
Camp Road
Witham St. Hughs
Lincoln
LN6 9QJ
Tel: 01522 868714
Product reference: A3 Embankments & Drought or similar approved.
Sowing rate: 50g/m2. Sow between August to October.
Note: Standard A3 mix is modified to reduce CRF and add legumes at 2.5%

Species	Common Name	% Mix
Festuca rubra var. rubra	Strong Creeping Red Fescue	52.5%
Festuca rubra var. commutata	Chewings Fescue	20.0%
Festuca arundinacea	Tall Fescue	15.0%
Agrostis palustris	Bentgrass	5.0%
Medicago lupulina	Black medick	2.5%
Trifolium repens	Minature White Clover	2.5%
Trifolium pretense	Red Clover	2.5%
Total		100%

G2: Wetland Grass Mix for Wetland Areas and Detention Basin

Supplier: Germinal Seeds GB (Formerly British Seed Houses)
Camp Road
Witham St. Hughs
Lincoln
LN6 9QJ
Tel: 01522 868714
Product reference: RE3 River Floodplain / Water Meadow (MG8 Grassland)
NB. Species mix to be confirmed by ecologist
Sowing rate: 5g/m2.

Species	Common Name	% Mix
Festucs rubra ssp litoralis	Slender Creeping Red Fescue	25%
Cynosurus cristatus	Crested Dogstail	20%
Festuca pratensis	Meadow Fescue	10%
Poa trivialis	Rough–Stalked Meadow Grass	10%
Holcus lanatus	Yorkshire Fog	5%
Pheleum bertonlonii	Small Leaved Timothy	5%
Plantago lanceolata	Ribwort Plantain	3%
Ranunculus acris	Meadow Buttercup	3%
Agrostis stolonifera	Creeping Bent	2.50%
Anthoxanthum odoratum	Sweet Vernal	2.50%
Centaurea nigra	Common Knapweed	2%
Leucanthemum vulgare	Ox–eye Daisy	2%
Ranunculus repens	Creeping Buttercup	2%
Trifolium repens	White Clover	2%
Filpendula ulmaria	Meadow Sweet	1%
Prunella vulgaris	Self Heal	1%
Rumex acetosa	Common Sorrel	1%
Trifolium pratense	Red Clover	1%
Rhinanthus minor	Yellow Rattle	0.80%
Caltha palustris	Marsh Marigold	0.25%
Leontodon autumnale	Autumn Hawkbit	0.25%
Leotondon hispidus	Rough Hawkbit	0.25%
Lychnis flos–cuculi	Ragged Robin	0.25%
Cerastium fontanum	Common Mouse–ear	0.10%
Sanguisorba officinalis	Greater Burnett	0.10%
		100%

G3: Species Rich Grass Mix

Supplier: Germinal Seeds GB (Formerly British Seed Houses)
Camp Road
Witham St. Hughs
Lincoln
LN6 9QJ
Tel: 01522 868714
Product reference: WFG16 Productive Soils
NB. Species mix to be confirmed by ecologist
Sowing rate: 5g/m2. Sow between August to October.

Species	Common Name	% Mix
Festuca rubra ssp litoralis	Slender Creeping Red Fescue	25%
Cynosurus cristatus	Crested Dogstail	23%
Festuca arundinacea	Tall Fescue	20%
Alopecurus pratensis	Meadow Foxtail	5%
Phleum bertolonii	Small Leaved Timothy	5%
Medicago lupulina	Black Medick	3%
Plantago lanceolata	Ribwort Plantain	3%
Achillea millefolium	Yarrow	2%
Anthoxanthum odoratum	Sweet Vernal	2.00%
Galium verum	Lady's Bedstraw	2.00%
Rhinanthus minor	Yellow Rattle	2%
Trifolium repens	White Clover	2%
Centaura nigra	Common Knapweed	2%
Ranunculus acris	Meadow ButterCup	2%
Ranunculus repens	Creeping Buttercup	2%
Leontodon hispidus	Rough Hawksbit	1%
Prunella vulgaris	Self Heal	1%
Rumex acetosa	Common Sorrel	1%
		100%

G4: Grass for Long Term Topsoil Storage

Supplier: Germinal Seeds GB (Formerly British Seed Houses)
Camp Road
Witham St. Hughs
Lincoln
LN6 9QJ
Tel: 01522 868714
Product reference: A17 (Legume and Clover)
Sowing rate: 2.5g/m2.

Species	Common Name	% Mix
Vicia sativa	Common Vetch	25%
Lotus Corniculatus	Birdsfoot Trefoil	15%
Medicago sativa	Lucerne	15%
Trifolium pretense	Red Clover	15%
Onobrychis vicifolia	Sainfoin	15%
Trifolium repens	White Clover	15%
		100%

G6: Marginal Aquatics Mix for SuDs - Permanent Pond Area

Supplier: Contractors choice (to be approved)
Sizes: Plugs > 50ml
Density: 5 plants per m2, planted in blocks as per soft landscape general arrangement drawing

Species	Common Name	Root Zone	Specification	Mix%
Agrostis stolonifera	Creeping Bent	0.3L	Full pot; Sept to April planting; British native-origin	10.00
Apium nodiflorum	Fool's Watercress	0.5L	Full pot; Sept to April planting; British native-origin	10.00
Filipendula ulmaria	Meadowsweet	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	20.00
Glyceria fluitans	Floating Sweet Grass	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Mentha aquatica	Water Mint	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Myosotis scorpioides	Water Forget-me-not	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Nasturtium aquaticum	Watercress	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Persicaria amphibia	Amphibious Bistort	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Veronica beccabunga	Brooklime	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00

G7: Marginal Aquatics Mix for SuDs - Basin Forebay and Swale Base

Supplier: Contractors choice (to be approved)
Sizes: Plugs > 50ml
Density: 5 plants per m2, planted in blocks as per soft landscape general arrangement drawing

Species	Common Name	Root Zone	Specification	Mix%
Carex acutiformis	Lesser Pond Sedge	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Carex nigra	Common Sedge	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Carex riparia	Greater Pond Sedge	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Iris pseudacorus	Yellow Flag Iris	50cc min.	Plug; established root 2-3 months min.; Sept to April planting; British native-origin	10.00
Sparganium erectum	Branched Bur-reed	110-125cc	Root Trainer; well rooted; Sept to April planting; British native-origin	50.00
Lythrum salicaria	Purple Loostrife	50cc min.	Plug; established root 2-3 months min.; British native-origin	10.00

NOTES:

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

Status Stamp:

Status Stamp:

Project: East Anglia ONE Wind Farm (EA ONE)

Location: EAST ANGLIA

Contractor: open

Drg. Title: APPENDIX 7
TYPICAL CONSTRUCTION DETAILS: PLANT SCHEDULES - GRASSES
Final for Discharge

Client: SCOTTISHPOWER RENEWABLES

Date of First Issue: 16/12/15

Prepared	Reviewed	Approved
SW	BS	MO

Drg. No.: EA1-GRD-DG-OPEN-796_D005
Sheet: 2
Next: -
Rev: 04
Contractors Drg. No. : 150796
Scale: VARIES
Size: A1

APPENDIX 8

EAST ANGLIA ONE WIND FARM (EA ONE)

PLANT SCHEDULE ILLUSTRATIVE NOTES

Schedule name: **OPEN_796_East Anglia ONE**
Client: SPR
Project: East Anglia ONE
Location: Bramford, Nr Ispwich
Date: 1st July 2016
Drawing ref.: **OPEN_796_EAONE Plant Schedule Notes.doc**
Revision: FINAL

Trees listed in Alphabetical Order

WM1 Core Woodland Tree Mix

Botanical Name	Common Name	Description	Health & Safety and Care Notes	Health & Safety Note	Risk Rating	Image
Acer campestre	Common Maple	The native Common or Field Maple is a variable tree of medium height thriving in sun or shade. The head is rounded, broad and informal. The lobed deciduous leaves open tinged-red turning bright yellow in autumn. Yellow-green flowers in small loose clusters are produced in April followed by winged fruit called 'keys' which mature from green to brown, possibly red-tinged, August-September. Grows to a height of 8-12m with a 10-12m spread.	Tolerant of pollution, road salt and lime. Young plants respond well to trimming and so makes a good hedge.			
Acer pseudoplatanus	Sycamore	Naturalized in Britain for centuries, the Sycamore is a very variable spreading tree, often rounded though, tolerant of wind, salt, atmospheric pollution and poor soil. Large, usually five-lobed deciduous foliage sometimes shows good yellow shades in autumn. Produces abundant light green seed with wings sometimes tinged pinky-red before aging to brown. Grows to a height of 25-30m with a 20-25m spread.	Self-sown seedlings can prove troublesome weeds. Clonal selections are better behaved. Aphids gather on flower stalks & under-sides of leaves			
Alnus cordata	Italian Alder	The Italian Alder is a large, fast growing, wind tolerant tree, which does well in a wide range of soils, including moist, even wet ground. Its crown has a narrow, conical, almost columnar form that can be somewhat irregular. The glossy heart-shaped foliage appears early in spring and persists until the frosts with some leaves briefly turning yellow though not a distinctive characteristic. Grows to a height of 15-20m with a 6m spread.	Relatively brittle branches are easily damaged in transport. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment. Being susceptible to Phytophthora root rot avoid locations liable to flood, specifically along the banks of slow moving water courses.			

Betula pubescens	Downy Birch	The Downy or White Birch, like *pendula*, is a native but the basal bark on the trunk is white or grey rather than black, the foliage slightly more rounded and the shoots less pendulous giving an upright although shorter form. Usually does better on moist soils. Grows to a height of 15-20m with a 6-8m spread.	Root-ball recommended from 12-14cm girth and upwards. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment.			
Carpinus betulus	Common Hornbeam	The hornbeam is a shade tolerant, relatively slow growing but ultimately tall tree. The trunk has smooth grey bark which often has prominent ribs. The foliage is ovate and toothed with an uneven surface. When used as a hedge, the brown autumn foliage which rustles in the wind, persists all through the winter. Grows to a height of 15-20m with a 12-15m spread. AGM	Best in well drained, fairly rich conditions, but can thrive in chalky, sandy or dry soil. Root-ball recommended from 12-14cm girth and upwards. Not for very windy locations. Responds well to trimming and so makes a good hedge with cost effective instant hedging being achieved by using 200-250 or even 175-200cm high feathered plants immediately cut back upon planting to promote bushiness down to the ground.			
Pinus sylvestris	Scots Pine	Fast growing native, the needles are normally broader & shorter than those of the Austrian Pine. Clusters of yellow male flowers are produced at the base of new shoots in the latter half of May. Reddish-purple female cones appear at the top of new shoots, turning green then ripening to light brown after two or three years. Grows well in most locations	Can be pruned lightly either in early spring before growth begins or after new growth is completed, if necessary to keep its natural shape. Cuts should be made just above a bud or in the axil. Susceptible to damage and/or loss of shape if tied up and handled during the six week period of extension growth in spring.			
Populus tremula	Aspen	A medium sized tree with a fairly broad crown. The rounded, toothed foliage trembles in any breeze and turns to yellow in autumn. Grows to a height of 15m with a spread of 10m.	Excellent on poor soils and in industrial or seaside sites. Although very useful in providing rapid screening and shelter in exposed conditions, this tree is likely to become a liability owing to its proneness to diseases such as canker and rust, relatively short life-span and aggressive, suckering root system which means that it should not be planted near drains or other services, walls or buildings.			
Prunus padus	Bird Cherry	The Bird Cherry is a native small to medium height tree with a rounded head. Fragrant white flowers in racemes at the end of April into May. Small round black fruits in autumn. Grows to a height of 12-15m with a spread to 10m.	Root-ball recommended from 16-18cm girth and upwards. Roots liable to disrupt surrounding surfaces			
Quercus robur	Common Oak	The Common or English Oak is a large, relatively vigorous variable woodland tree, but normally with a broad spreading, heavily branched crown. At its best on deep, fertile soil where it can achieve mighty proportions, hence a tree of the lowlands. It has unstalked or very short stalked lobed leaves and stalked clusters of acorns. Known for sustaining a wide variety of wildlife. Grows to a height of 20-25m although can achieve 30-42m. Spread is 20-25m.	Root-ball recommended from 12-14cm girth and upwards. Water-demanding during first years of establishment period.			

Tilia cordata	Small-leaved Lime	The native Small-leaved Lime is a variable medium-tall tree with an initially conical crown, broadening to become quite rounded with age. Foliage roundly heart-shaped. Shiny dark green above, paler below. Flowers pale yellow-white and slightly fragrant. Grows to a height of 18-20m, occasionally larger, with a 15m spread.	Susceptible to epicormic growth, so ensure nursery stock has a clean trunk with fully healed wounds (from previous branch removal). Aphids do gather on the undersides of leaves to produce a light 'drip' effect in summer although relatively less so compared to some of the worst offending Limes, but still not ideal for use in car parks or similar locations. Requires free-draining planting pits.			

WM2 Edge Woodland Tree Mix

Botanical Name	Common Name	Description	Health & Safety and Care Notes	Health & Safety Note	Risk Rating	Image
Cornus sanguinea	Common Dogwood	Common Dogwood. This native has green stems, flushed red. Green leaves turn an eye-catching reddish-purple in autumn. Black fruits.	Mild stomach upset if fruits are eaten and skin irritation may be caused from leaves. Prefers moist yet free-draining soil. Prune hard back in late winter each year to promote coloured stems.	Mild stomach upset if the fruit is eaten and skin irritation may be caused from leaves.		
Corylus avellana	Common Hazel	The Common Hazel is a native large multi-stemmed shrub or small to medium-sized tree which is not typically grown as a clear-stemmed tree. The yellow catkins make a fine display in early spring. The relatively large, rounded, green serrated foliage often turns to yellow shades in autumn, when the clusters of edible nuts are ripe. Thrives in a wide range of soils and in sun/light shade.				
Crataegus monogyna	Common Hawthorn	The Common Hawthorn is widely used for hedging. This variable native has small, lobed foliage and brown or grey bark. Masses of clusters of scented white flowers in May and small red fruits in autumn. The best growth is produced in good soil, but the plant is very tolerant of cold, occasional water-logging and wind. Grows to a height of 8-10m with a 6-8m spread.	May cause stomach upset if fruit is eaten uncooked. Spiny twigs can cause scratching and possible skin irritation. Hedging plants which are not cut back after planting tend to remain rather bare at the base. Take care to keep roots moist and plant before foliage starts to 'pip' to minimise losses. Root-ball recommended from 12-14cm girth and upwards.	May cause stomach upset if the fruit is eaten uncooked. Spiny twigs can cause scratching and possible skin irritation.		
Euonymus europaeus	Common Spindle Tree	The Native Spindle Tree is a deciduous medium shrub or small tree with dark green, oval, pointed leaves. Grown for its orange-scarlet colourful fruits & autumn foliage display.	All parts particularly the fruits are harmful if eaten.	All parts particularly the fruits are harmful if eaten.		
Ilex aquifolium	Common Holly	The native evergreen Common Holly is a large shrub, which can become a medium-sized tree in time. The glossy green foliage is variably spiny. Persistent red berries are produced on female plants ripening from green. Does well in most soils, in sun or light shade and near the sea. Good evergreen hedging plant. AGM	Berries may be harmful if eaten and very spiny leaves can cause scratching and possible skin irritation. Can be clipped to form an excellent evergreen hedge. For large plants, specify bushy, furnished to the base for instant impact; select one size larger than required & allow for trimming back once in situ. Available root-balled in winter. Although can take on a tree form in time, it is not available as such for supply.	Berries may be harmful if eaten and very spiny leaves can cause scratching and possible skin irritation.		

Malus sylvestris	Common Crab Apple	The Common Crab Apple is generally a small deciduous tree with generally a rounded crown; can be thorny. Foliage is green with flowers pale pink to white appearing in April. Red-flushed green fruit is produced in autumn. Grows to a height of 7-9m with a spread to 7m.	Root-ball recommended from 14-16cm girth and upwards			
Prunus spinosa	Blackthorn	The native Sloe or Blackthorn is a dense twiggy large bush often found and used in hedges. An abundance of white flowers in March-April on dark stems, followed by small pea-sized blue-black fruits. Autumn leaf colour is a dull yellow. Grows to 4-5 metres high with the same for the spread.	Spiny twigs can cause scratching and possible skin irritation. Beware as typically substituted with Prunus domestica, which is much larger in leaf, fruit and form.	Spiny twigs can cause scratching and possible skin irritation.		
Salix caprea	Goat Willow	The Goat Willow is a small tree or large shrub, though more often the latter. Male yellow catkins and green female catkins (on separate plants) appear in March before the leaves. Fruit in the form of white downy seeds are released in May. Young shoots are a shiny red-brown. Grows to a height of 8m occasionally reaching to 12m, with a spread of 8m.	May possibly cause severe discomfort if the leaves are eaten. Aggressive root systems cause disruption and so should not be planted close to buildings, drains or services.	May possibly cause severe discomfort if the leaves are eaten.		

WM3 Screening Woodland Mix

Botanical Name	Common Name	Description	Health & Safety and Care Notes	Health & Safety Note	Risk Rating	Image
Betula pubescens	Downy Birch	The Downy or White Birch, like *pendula*, is a native but the basal bark on the trunk is white or grey rather than black, the foliage slightly more rounded and the shoots less pendulous giving an upright although shorter form. Usually does better on moist soils. Grows to a height of 15-20m with a 6-8m spread.	Root-ball recommended from 12-14cm girth and upwards. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment.			
Larix decidua	Common Larch	The Common Larch is a graceful fast growing deciduous conifer. Fresh green needles in spring turn yellow in autumn. Yellow male flowers are produced in April with the emergence of the first leaves, together with the attractive purple female scaly cones ripening to green then to brown by autumn with straight scales as opposed to being peeled backwards as on *L. x eurolepis* and *L. kaempferi*. Grows to a height of 20-25m with a 6-7m spread.	Ensure free-draining pits. Being a feathered tree, is typically specified by height rather than girth. Be aware that this plant is occasionally susceptible to the pathogen *Phytophthora ramorum* otherwise known as Sudden Oak Death.			
Larix x eurolepis	Dunkeld Larch	This Larch also known as the Hybrid Larch is a fast growing deciduous conifer typically used in commercial forestry plantings. Grey-green needles turn an eye-catching yellow in autumn. Yellow male flowers are produced in April with the emergence of the first leaves, together with the attractive purple-red female scaly cones ripening to green then to brown by autumn. Grows to a height of 20-25m with a 6m spread.	Ensure free-draining pits. Being a feathered tree, is typically specified by height rather than girth. Be aware that this plant is occasionally susceptible to the pathogen *Phytophthora ramorum* otherwise known as Sudden Oak Death.			

Pinus nigra	Austrian Pine	The Austrian Pine is a vigorous tall evergreen conifer with feathered conical outline when young, developing into a rather columnar headed, clear stemmed tree in middle age; has long twisted needles. Clusters of yellow male flowers are produced at the base of new shoots in the latter half of May. Reddish-purple female cones appear at the top of new shoots, turning green then ripening to light brown after two or three years. Thrives in most soils and situations including seaside, exposed and urban areas.	Can be pruned lightly either in early spring before growth begins or after new growth is completed, if necessary to keep its natural shape. Cuts should be made just above a bud or in the axil. Susceptible to damage and/or loss of shape if tied up and handled during the six week period of extension growth in spring.			
Populus tremula	Aspen	A medium sized tree with a fairly broad crown. The rounded, toothed foliage trembles in any breeze and turns to yellow in autumn. Grows to a height of 15m with a spread of 10m.	Excellent on poor soils and in industrial or seaside sites. Although very useful in providing rapid screening and shelter in exposed conditions, this tree is likely to become a liability owing to its proneness to diseases such as canker and rust, relatively short life-span and aggressive, suckering root system which means that it should not be planted near drains or other services, walls or buildings.			
Prunus padus	Bird Cherry	The Bird Cherry is a native small to medium height tree with a rounded head. Fragrant white flowers in racemes at the end of April into May. Small round black fruits in autumn. Grows to a height of 12-15m with a spread to 10m.	Root-ball recommended from 16-18cm girth and upwards. Roots liable to disrupt surrounding surfaces			
Quercus cerris	Turkey Oak	The Turkey Oak is tall and, for an oak, relatively fast growing. The crown is fairly broad, the trunk upright. Does best in well-drained soils, even if they are on the dry side. Quite tolerant of sea wind. Foliage is usually larger with the lobes more toothed than *Quercus robur*. The Turkey Oak is a good avenue tree. Grows to a height of 25-30m with a 15-20m spread.	Root-ball recommended from 12-14cm girth and upwards. Water-demanding during first years of establishment period.			
Rhamnus frangula	Alder Buckthorn	Vigorous thornless shrub preferring damp soils. Foliage glossy green and oval-shaped, usually turns yellow in autumn. Bees are attracted to the very small, singular light green flowers borne in May. Produces red berries which then turn black in early autumn.	Caution - all parts are harmful if eaten.	Caution - all parts are harmful if eaten.		
Viburnum opulus	Guelder Rose	The Guelder Rose is a native large, vigorous, deciduous shrub with a rounded form. Green typically 3-lobed leaves turn red in autumn. White flat flower heads consisting of central white fertile flowers surrounded by infertile white florets are produced in May to June followed by clusters of bright red fruit. Does well in moist ground. Grows to a height of 4-5 metres with a 3-4 metre spread.	Berries may be eaten when cooked but has the potential to cause stomach upset or worse if taken in anything other than a small amount.	Berries may be eaten when cooked but has the potential to cause stomach upset or worse if taken in anything other than a small amount.		

WM4 Wet Woodland Mix

Botanical Name	Common Name	Description	Health & Safety and Care Notes	Health & Safety Note	Risk Rating	Image
Acer campestre	Common Maple	The native Common or Field Maple is a variable tree of medium height thriving in sun or shade. The head is rounded, broad and informal. The lobed deciduous leaves open tinged-red turning bright yellow in autumn. Yellow-green flowers in small loose clusters are produced in April followed by winged fruit called 'keys' which mature from green to brown, possibly red-tinged, August-September. Grows to a height of 8-12m with a 10-12m spread.	Tolerant of pollution, road salt and lime. Young plants respond well to trimming and so makes a good hedge.			
Acer pseudoplatanus	Sycamore	Naturalized in Britain for centuries, the Sycamore is a very variable spreading tree, often rounded though, tolerant of wind, salt, atmospheric pollution and poor soil. Large, usually five-lobed deciduous foliage sometimes shows good yellow shades in autumn. Produces abundant light green seed with wings sometimes tinged pinky-red before aging to brown. Grows to a height of 25-30m with a 20-25m spread.	Self-sown seedlings can prove troublesome weeds. Clonal selections are better behaved. Aphids gather on flower stalks & under-sides of leaves			
Alnus cordata	Italian Alder	The Italian Alder is a large, fast growing, wind tolerant tree, which does well in a wide range of soils, including moist, even wet ground. Its crown has a narrow, conical, almost columnar form that can be somewhat irregular. The glossy heart-shaped foliage appears early in spring and persists until the frosts with some leaves briefly turning yellow though not a distinctive characteristic. Grows to a height of 15-20m with a 6m spread. AGM	Relatively brittle branches are easily damaged in transport. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment. Being susceptible to Phytophthora root rot avoid locations liable to flood, specifically along the banks of slow moving water courses.			
Alnus glutinosa	Common Alder	The Common Alder is a densely branched, medium-sized, occasionally taller tree. Rounded foliage follows the yellow catkins in March. Excellent on moist, even wet sites. Good wind tolerance. Grows to a height of 15-20m with an 8-10m spread.	Relatively brittle branches are easily damaged in transport. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment. Being susceptible to Phytophthora root rot avoid locations liable to flood, specifically along the banks of slow moving water courses.			
Betula pubescens	Downy Birch	The Downy or White Birch, like *pendula*, is a native but the basal bark on the trunk is white or grey rather than black, the foliage slightly more rounded and the shoots less pendulous giving an upright although shorter form. Usually does better on moist soils. Grows to a height of 15-20m with a 6-8m spread.	Root-ball recommended from 12-14cm girth and upwards. Although grows in moist ground conditions, will require adequate drainage on planting in order to enable successful establishment.			
Carpinus betulus	Common Hornbeam	The hornbeam is a shade tolerant, relatively slow growing but ultimately tall tree. The trunk has smooth grey bark which often has prominent ribs. The foliage is ovate and toothed with an uneven surface. When used as a hedge, the brown autumn foliage which rustles in the wind, persists all through the winter. Grows to a height of 15-20m with a 12-15m spread. AGM	Best in well drained, fairly rich conditions, but can thrive in chalky, sandy or dry soil. Root-ball recommended from 12-14cm girth and upwards. Not for very windy locations. Responds well to trimming and so makes a good hedge with cost effective instant hedging being achieved by using 200-250 or even 175-200cm high feathered plants immediately cut back upon planting to promote bushiness down to the ground.			

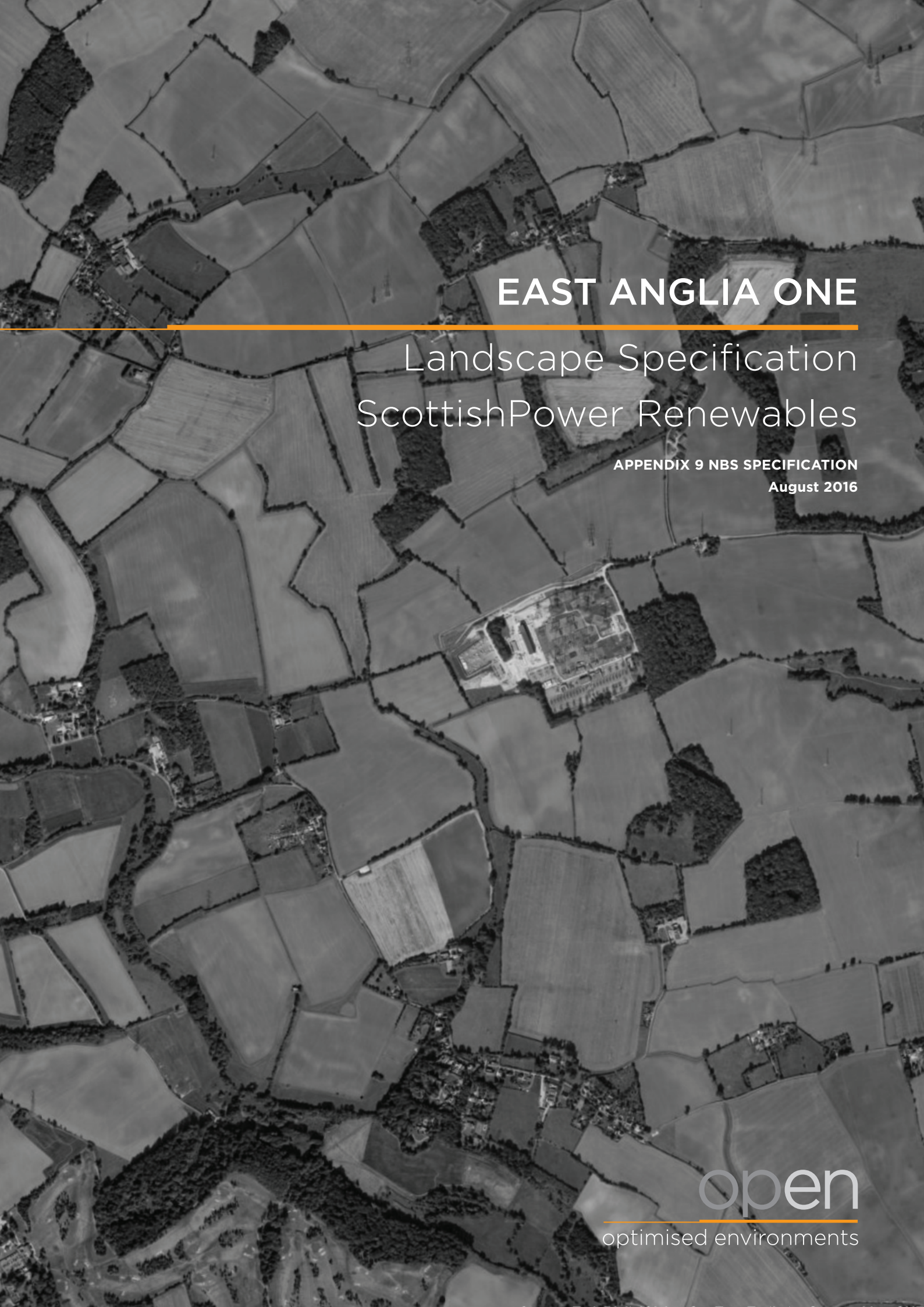
Populus tremula	Aspen	A medium sized tree with a fairly broad crown. The rounded, toothed foliage trembles in any breeze and turns to yellow in autumn. Grows to a height of 15m with a spread of 10m.	Excellent on poor soils and in industrial or seaside sites. Although very useful in providing rapid screening and shelter in exposed conditions, this tree is likely to become a liability owing to its proneness to diseases such as canker and rust, relatively short life-span and aggressive, suckering root system which means that it should not be planted near drains or other services, walls or buildings.			
Prunus padus	Bird Cherry	The Bird Cherry is a native small to medium height tree with a rounded head. Fragrant white flowers in racemes at the end of April into May. Small round black fruits in autumn. Grows to a height of 12-15m with a spread to 10m.	Root-ball recommended from 16-18cm girth and upwards. Roots liable to disrupt surrounding surfaces			
Quercus robur	Common Oak	The Common or English Oak is a large, relatively vigorous variable woodland tree, but normally with a broad spreading, heavily branched crown. At its best on deep, fertile soil where it can achieve mighty proportions, hence a tree of the lowlands. It has unstalked or very short stalked lobed leaves and stalked clusters of acorns. Known for sustaining a wide variety of wildlife. Grows to a height of 20-25m although can achieve 30-42m. Spread is 20-25m.	Root-ball recommended from 12-14cm girth and upwards. Water-demanding during first years of establishment period.			
Salix alba	White Willow	The White Willow is a fast growing, native tree often found near water. The head usually forms a rounded cone, the twiggy branches have drooping tips and the narrow foliage is silvery-green. Male yellow catkins and yellow-green female catkins are produced in April after the first leaves appear. Good in seaside areas provided the soil is not too dry. Grows to a height of 25m with a spread to 15m.	May possibly cause severe discomfort if the leaves are eaten. Aggressive root systems cause disruption and so should not be planted close to buildings, drains or services.	May possibly cause severe discomfort if the leaves are eaten.		

H1 Native Hedgerow Mix

Botanical Name	Common Name	Description	Health & Safety and Care Notes	Health & Safety Note	Risk Rating	Image
Acer campestre	Common Maple	The native Common or Field Maple is a variable tree of medium height thriving in sun or shade. The head is rounded, broad and informal. The lobed deciduous leaves open tinged-red turning bright yellow in autumn. Yellow-green flowers in small loose clusters are produced in April followed by winged fruit called 'keys' which mature from green to brown, possibly red-tinged, August-September. Grows to a height of 8-12m with a 10-12m spread.	Tolerant of pollution, road salt and lime. Young plants respond well to trimming and so makes a good hedge.			
Carpinus betulus	Common Hornbeam	The hornbeam is a shade tolerant, relatively slow growing but ultimately tall tree. The trunk has smooth grey bark which often has prominent ribs. The foliage is ovate and toothed with an uneven surface. When used as a hedge, the brown autumn foliage which rustles in the wind, persists all through the winter. Grows to a height of 15-20m with a 12-15m spread. AGM	Best in well drained, fairly rich conditions, but can thrive in chalky, sandy or dry soil. Root-ball recommended from 12-14cm girth and upwards. Not for very windy locations. Responds well to trimming and so makes a good hedge with cost effective instant hedging being achieved by using 200-250 or even 175-200cm high			

			feathered plants immediately cut back upon planting to promote bushiness down to the ground.			
Cornus sanguinea	Common Dogwood	Common Dogwood. This native has green stems, flushed red. Green leaves turn an eye-catching reddish-purple in autumn. Black fruits.	Mild stomach upset if fruits are eaten and skin irritation may be caused from leaves. Prefers moist yet free-draining soil. Prune hard back in late winter each year to promote coloured stems.	Mild stomach upset if the fruit is eaten and skin irritation may be caused from leaves.		
Corylus avellana	Common Hazel	The Common Hazel is a native large multi-stemmed shrub or small to medium-sized tree which is not typically grown as a clear-stemmed tree. The yellow catkins make a fine display in early spring. The relatively large, rounded, green serrated foliage often turns to yellow shades in autumn, when the clusters of edible nuts are ripe. Thrives in a wide range of soils and in sun/light shade.				
Crataegus monogyna	Common Hawthorn	The Common Hawthorn is widely used for hedging. This variable native has small, lobed foliage and brown or grey bark. Masses of clusters of scented white flowers in May and small red fruits in autumn. The best growth is produced in good soil, but the plant is very tolerant of cold, occasional water-logging and wind. Grows to a height of 8-10m with a 6-8m spread.	May cause stomach upset if fruit is eaten uncooked. Spiny twigs can cause scratching and possible skin irritation. Hedging plants which are not cut back after planting tend to remain rather bare at the base. Take care to keep roots moist and plant before foliage starts to 'pip' to minimise losses. Root-ball recommended from 12-14cm girth and upwards.	May cause stomach upset if the fruit is eaten uncooked. Spiny twigs can cause scratching and possible skin irritation.		
Ligustrum vulgare	Common Privet	Native common Privet is semi-evergreen with scented white flowers in summer followed by black berries. Thrives virtually everywhere, including chalk soils.	Harmful if eaten, in particular the berries. Has ability to regenerate from old wood so may be hard pruned.	Harmful if eaten, in particular the berries.		
Prunus spinosa	Blackthorn	The native Sloe or Blackthorn is a dense twiggy large bush often found and used in hedges. An abundance of white flowers in March-April on dark stems, followed by small pea-sized blue-black fruits. Autumn leaf colour is a dull yellow. Grows to 4-5 metres high with the same for the spread.	Spiny twigs can cause scratching and possible skin irritation. Beware as typically substituted with Prunus domestica, which is much larger in leaf, fruit and form.	Spiny twigs can cause scratching and possible skin irritation.		
Rhamnus cathartica	Common Buckthorn	Also known as Purging Buckthorn, this deciduous shrub forms dense thickets with spines at the end of short shoots. Leaves are glossy green, oval and rounded with toothed margins. Numerous inconspicuous, yellow-green female flowers on separate plants to the males, are produced from late April-May followed by small, round fruit turning from green to red, then black. Found on scrubland, hedges and woodland. Grows to 4-6 metres high with a 4 metre spread.	Berries may cause stomach upset if eaten becoming severe if taken in quantity; spines will cause scratching and possible skin irritation.	Berries may cause stomach upset if eaten becoming severe if taken in quantity; Spines can cause scratching and possible skin irritation.		

Rosa canina	Dog Rose	The Native Dog Rose has white or more usually pink, single scented flowers followed by red hips on vigorous thorny stems.	Thorns can cause scratching and possible skin irritation. If fruit is eaten, seed hairs may cause irritation and possibly choking.	Thorns can cause scratching and possible skin irritation. if the fruit is eaten, seed hairs may cause irritation and possibly choking.		



EAST ANGLIA ONE

Landscape Specification
ScottishPower Renewables

APPENDIX 9 NBS SPECIFICATION
August 2016

open
optimised environments

OPEN_796_EAONE_LANDSCAPE_SPECIFICATION

10 August 2016

Table of Contents

Title		Page
D20	Excavating and filling	4
Q10	Kerbs/ edgings/ channels/ paving accessories	9
Q23	Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays	12
Q25	Slab/brick/sett/cobble pavings	15
Q28	Topsoil and soil ameliorants	18
Q30	Seeding/turfing	27
Q31	External planting	33
Q35	Landscape maintenance	42
Q40	Fencing	51

D20
Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

110 SITE INVESTIGATION
- Report: If available to be provided by Engineer

150A EXISTING SERVICES, FEATURES AND STRUCTURES
- Services: Engineer to provide further details.
- Site features to be retained: Engineer to provide details.
- Structures: Engineer to provide details of protection.

CLEARANCE/EXCAVATING

164 TREE ROOTS
- Protected area: Do not cut roots within precautionary protection area.
  - Size of area: Circle around each tree of radius 12 times trunk diameter, measured 1.5 m above ground level.
- Excavation in protected area:
  - Method: By hand.
  - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
- Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
- Cutting:
  - Make clean smooth cuts with no ragged edges.
  - Pare cut surfaces smooth with a sharp knife.
  - Treatment of cut roots: Not required.
- Backfill: As dug material, enriched with phosphate fertilizer.

168 SITE CLEARANCE
- Timing: Before topsoil stripping, if any.
- General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.
- Treatment: Apply a suitable non-residual herbicide to areas to receive planting.

170 REMOVING SMALL TREES, SHRUBS, HEDGES AND ROOTS
- Identification: Clearly mark trees to be removed.
- Small trees, shrubs and hedges: Cut down
- Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

175 FELLING LARGE TREES

- Definition: Girth over 600 mm.
- Identification: Clearly mark trees to be removed.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.
- Felling: As close to the ground as possible.
- Stumps: Remove by stump grinding.
- Work near retained trees: Take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained, where tree canopies overlap and in confined spaces generally.

180 CHIPPING AND SHREDDING

- General: Permitted, remove arisings from site.

220 STRIPPING TOPSOIL

- General: Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings/ roads and other areas shown on drawings.
- Depth:
  - Remove to an average depth of 250 mm.
  - Give notice where the depth of topsoil is difficult to determine.
- Handling: Handle topsoil for reuse or sale in accordance with clause 225.
- Around trees: Do not remove topsoil from below the spread of trees to be retained.
- Site storage: Keep separate from excavated sub-soil.

221 TREATING TOPSOIL

- Treatment: Apply a suitable translocated nonresidual herbicide.
- Timing: Not less than two weeks before excavating topsoil.

225 HANDLING TOPSOIL

- Standard: To BS 3882.
- Aggressive weeds:
  - Species: Included in the Weeds Act, section 2 or the appropriate Wildlife and Countryside Act for the relevant jurisdiction.
  - Give notice: Obtain instructions before moving topsoil.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other soil or material containing aggressive weeds, sharps, plastics and non soil forming materials and notifiable animal or plant diseases.
  - Oil, fuel, cement or other substances harmful to plant growth.
  - Other classifications of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

350 EXISTING WATERCOURSES

- Diverted watercourses which are to be filled: Before filling, remove vegetable growths and soft deposits.

370 UNDERGROUND STRUCTURES IN LANDSCAPE AREAS

- Generally: Remove walls, roads, foundations, disused services, drains, manholes and the like to minimum depth.
- Minimum depth below finished levels:
  - Grass, ground cover and perennial planting: 500 mm.
  - Shrub planting: 750 mm.
  - Within 2 m of tree planting: 1000 mm.
- Walls and slabs remaining: In every 10 m² of wall or slab, make a drainage hole at least 600 mm diameter.

DISPOSAL OF MATERIALS

410 EXCAVATED TOPSOIL STORAGE

- Storage: Stockpile in temporary storage heaps 2m high, Confirm location of storage with Landscape Architect / Engineer prior to commencing works .

420 TOPSOIL STORAGE HEAPS

- Location: To be confirmed.
- Standard: To BS 3882.
- Height (maximum): 2m.
- Protection:
  - Do not place any other material on top of storage heaps.
  - Do not allow construction plant to pass over storage heaps.
  - Prevent compaction and contamination.

421A TOPSOIL STORAGE HEAP TREATMENT

- Treatment: Sow with legume rich grass mix, sowing rate 2.5g/m2. Refer to G4 Grass for Long Term Topsoil Storage .
  Supplier: Germinal Seeds GB
  Product Refernce: A17

441 SURPLUS SUBSOIL

- Excavated material: Stockpile in temporary storage heaps.
- Retained material: Spread and level surplus subsoil on site.
  - Locations: To be confirmed .
  - Protected areas: Do not raise soil level within root spead of trees that are to be retained.
- Remaining material: Remove from site.

450 WATER

- Generally: Keep all excavations free from water until:
  - Formations are covered.
  - Below ground constructions are completed.
  - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

454 GROUND WATER LEVEL, SPRING OR RUNNING WATER

- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

610 COMPACTED FILLING FOR LANDSCAPE AREAS

- Fill: Material capable of compaction by light earthmoving plant.
- Filling: Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.

615 LOOSE TIP FILLING FOR LANDSCAPE AREAS

- Filling: Do not firm, consolidate or compact when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

Q10
Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

110A PROPRIETARY PRECAST CONCRETE E10 CHANNELS FOR MAINTENANCE ACCESS TRACK TO SUDS BASIN TO RETAIN GRASS ROAD

- Standard: To BS EN 1340.
- Manufacturer: Submit proposals.
- - Product reference: Submit proposals.
- Recycled content: Submit proposals.
- Designations: CS2 Channel, square.
- Size (width x height x length): 150 x 125 x 915 mm.
- Special shapes: None.
- Finish: As cast.
- Colour: Grey.
- Bedding: Cement mortar.
- Joints generally: Dry, 2-3 mm gap.
- Sealant movement joints: Not required.
- Accessories: None.

110B E1 PRECAST CONCRETE KERB FOR INTERNAL SUBSTATION ROADS AND MAIN ACCESS ROAD

- Manufacturer: Marshalls plc.
  - Web: www.marshalls.co.uk.
  - Email: MarshallsWM@web-response.co.uk.
  - Product reference: 45° Splayed Kerb
- Size: 125 x 150 mm.
- Special shapes: As required for internal and external standard radii.

LAYING

510 LAYING KERBS, EDGINGS AND CHANNELS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
  - Long units (450 mm and over) minimum length after cutting: 300 mm.
  - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

520 ADVERSE WEATHER

- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1° C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

540 CEMENT MORTAR BEDDING

- General: To section Z21.
- Mix (Portland cement:sand): 1:3.
  - Portland cement: Class CEM I 42.5 to BS EN 197-1.
  - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
- Bed thickness: 12-40 mm.

570 CHANNELS

- Installation: To an even gradient, without ponding or backfall.
- Lowest points of channels: 6 mm above drainage outlets.

600 RADIUS KERBS/CHANNELS

- Usage: Radii of 15 m or less.

610 ANGLE KERBS

- Usage: Internal and external 90° changes of direction.
- Cutting of mitres: Not permitted.

620 ACCURACY

- Deviations (maximum):
  - Level: ± 6 mm.
  - Horizontal and vertical alignment: 3 mm in 3 m.

625 REGULARITY OF PAVED SURFACES

- Maximum undulation of (non-tactile) paving surface: 3 mm.
  - Method of measurement: Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
- Difference in level between adjacent units (maximum):
  - Joints flush with the surface: Twice the joint width (with 5 mm max difference in level).
  - Recessed, filled joints: 2 mm.
    Recess depth (maximum): 5 mm.
  - Unfilled joints: 2 mm.
- Sudden irregularities: Not permitted.

630 NARROW MORTAR JOINTS

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
  - Joint width: 3 mm.

Q23
Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays

Q23 Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays

To be read with Preliminaries/ General conditions.

TYPES OF SURFACING

110A HARD BINDING GRAVEL P3 PERIMETER MAINTENANCE PATH

- Subgrade improvement layer: Submit proposals.
  - Compacted thickness: Submit proposals.
- Geotextile: Sheet.
  - Manufacturer: Submit proposals.
    Product reference: Submit proposals.
- Granular sub-base: Highways Agency Type 2 unbound mixture, as section Q20.
  - Compacted thickness: 150 mm.
- Blinding to sub-base: Required.
- Surface course: Angular gravel, free from clay, with sufficient grit to enable compaction.
  - Type: IMAG Grey Pave or submit samples for approval.
  - Source: Submit proposal.
  - Colour: Grey Pave.
  - Size: Graded 6-10 mm.
  - Compacted thickness: 100 mm.
- Completion: Compact to produce a firm, regular surface, stable in use.

170A LOOSE GRAVEL OVERLAY P2 INERT PERMEABLE GRAVEL GROUND COVER WITHIN SUBSTATION

- Base: Made up ground formed by excvation works related to substation construction, topped with 100mm rolled MOT Type 3 granular material.
  - Preparation: Ensure made up ground is free draining .
- Gravel: Loose laid and raked to uniform thickness:
  - Type: Kennet Flint or other locally sourced Flint stone - supply samples for approval .
  - Source: Locally sourced.
  - Colour: Grey.
  - Size: Graded 8-14 mm or submit proposals.
  - Thickness: 100 mm.

270 HARD LANDSCAPING MATERIALS SPECIFICATION

- Minimum 'BRE Green Guide to Specification Online' rating: A.

LAYING

310A TIMBER EDGING FOR SELF BINDING GRAVEL PATH (P3)

- Softwood board:
  - Size: 150 x 38 mm.
  - Fixing: Galvanized nails into softwood pegs.
- Softwood pegs:
  - Size: 50 x 50 x 600 mm long.
  - Fixing: Drive into ground.
  - Centres: 1200 mm.
- Preservative treatment: Tanalith E/GFb or submit approvals).

315 MATERIALS
- Compatibility: Chippings suitable for use with respective binders/ emulsions/ resin/ epoxy.

320 SAMPLES
- Submit: Representative samples of all aggregates.

325 BLINDING TO SUB-BASE
- Type: Fine hoggin.
- Laying: Compact. Seal interstices. Provide free drainage.
- Compacted thickness: 25 mm.

340 LAYING GENERALLY
- Channels, gullies, etc: Keep clear.
- Finished surfaces:
  - Lines and levels: To prevent ponding.
  - Overall texture: Even.
  - State at completion: Clean.

350 COLD WEATHER WORKING
- Frozen materials: Do not use.
- Freezing conditions: Do not lay pavings.
- Cold bituminous surface dressings: Do not apply when ambient temperature is below 10°C.
- Other dressings or overlays: As manufacturers' recommendations.

360 DRAINAGE FALLS
- Sealed surfaces:
  - Falls and cross falls (minimum): 1:40.
  - Camber (minimum): 1:50.
- Unsealed surfaces (minimum): 1:30.

380 LAYING GRANULAR SURFACES IN PEDESTRIAN AREAS
- Permissible deviation from required levels, falls and cambers (maximum): ±12 mm.
- General: Spread and level in 100 mm maximum layers. As soon as possible, compact each layer.
- Dry weather: Lightly water layers during compaction.

390 PROTECTION FROM TRAFFIC AND PLANT
- Paved areas: Restrict access to prevent damage.

Q25
Slab/brick/sett/cobble pavings

Q25 Slab/brick/sett/cobble pavings

180A PLASTIC GRASS REINFORCING PAVING SYSTEM FOR MAINTAINANCE TRACK TO SUDS BASIN

- Manufacturer: Geosynthetics Ltd
  Web: www.geosyn.co.uk
  Email:pgent@geosyn.co.uk
  Tel: +44 (0)1455 617139
  Fax: +44 (0)1455 617140
  Address:Geosynthetics Ltd, Fleming Road, Harrowbrook Industrial Estate, Hinckley, Leicestershire, LE10 3DU

- Product reference: Golpla® Pre-Grown
- Colour: Green
- Material: The Golpla shall be UV stable 100 % recycled Polypropylene (80%) and Polyethylene (20%).
- Size: 640mm long x 330mm wide x 38 mm depth modular laid dimension. Each unit shall have a free surface area available for infill of 94%.
  The units shall have 60 hexagonal cells of per unit, measuring 63mm per cell.
  - Note.The General Arrangement drawing shows the lay-by to be 3.5m wide, this should be achievable using 5No whole pavers and 1No. 1/2 paver.
- Subbase [To be confirmed by engineer but manufacturers recommendations are as follows:]. The base construction must have sufficient strength to withstand the maximum bearing load likely to be applied, even if the wettest of conditions. A typical construction may consist of a 150mm - 250mm layer of well-compacted graded stone (note NOT MOT Type 1). MOT Type 3 as described in Specification for Highway Works Clause 805 is suitable, followed by a 100mm minimum consolidated depth of a 70/30 Rootzone under the pavers. The loading capacity shall be 100 kN/m.
- Edging: To be formed using E10 pre-cast standard concrete 150mm wide channels. The Golpla must have fully enclosed cells to ensure there are no exposed edges within the system
- Bedding: Minimum of 100mm Rootzone 70:30 mix. The infill is a clean friable top soil and specified seed mix. Level the Rootzone to plus or minus 10mm. Consolidation is best achieved by the use of the light vibrating plate after laying the Golpla® pavers.
- Laying :Lay the pavers starting in the left hand corner of the lay-by, with the paver locking tabs facing forwards and to the right. Continue laying the pavers
  making sure that each is interlocked into its neighbour. Stand on the laid pavers when laying the next row. Each pallet will be numerical identified in order indicating the installation sequence of the pallets of Golpla® Pregrown. All Golpla® Pregrown units should be installed within a maximum of 48 hours after delivery to ensure a sucessful installation. For fitting around obstructions, the pavers can be easily cut with a hand saw or power cutter. Cut pavers should be nailed down using the Golpla nails. The
  whole area should be consolidated either with a vibrator plate or small roller
- Paving units: ['Golpla' pavers pre-grown with grass as supplied by Geosythentics Ltd].
  - Bond: [In accordance with manufacturer's recommendations].
  - Filling: [Supplied pre-filled and with pre-grown grass].
  - Seed mix specification [Seed mix to be as per L7 in section Q30 Seeding]
  - Accessories: [Golpla nails for securing paving units that are cut and also all paving units at the top, bottom and along the slope].
- Notes: No recessed covers, utilitiy access chambers, Fire Hydrants, valve covers to be

located within the paving units

- Each installation will be different according to the requirements of the individual site, therefore it is important that the correct base construction is specified depending on the sub base strength. Geosynthetics Limited can arrange for testing and construction advice if required. If the installation is on a slope greater than 5%, then additional nailing may be
  required. Please consult Geosynthetics Limited for technical information. Reliable sources of Rootzone can be found on www.brtma.com
- Aftercare: In order for the installation to give good service and to maintain acceptable grass coverage, it is important to ensure that adequate moisture is available whilst the roots are establishing, and subsequently to supply nutrients in the form of a general purpose fertiliser after four weeks, and then twice annually. Apply as per the recommendations on the bag. For best results Golpla® Pregrown requires a 2 to 4 week establishment period, depending on application and seasonality. Until grass sward is fully established the grass road is not to be used. A full seasons grass growth is recommended before all but emergency use. Contractor and sub-contractors are not to use the pavers for temporary haul activities or for storage of materials which will all destroy the grass cover and impair loadbearing capability.

EXECUTION

620 ADVERSE WEATHER

- General:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
  - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
- Paving with mortar joints and/ or bedding:
  - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
- Paving laid and jointed in sand:
  - Stockpiled bedding sand: Protect from saturation.
  - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
  - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
  - Laying dry-sand jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

765 LAYING PLASTICS GRASS REINFORCING PAVERS

- Laying: Tamp down into lightly compacted laying course
  - Consolidate with vibrating plate compactor;
  - Secure with fasteners; and
  - Stand on laid pavers when laying next row.
  - Nominal thickness of laying course after compaction: 30 mm.
- Securing on slopes: Soil nails.
- Filling: Allow to settle and refill level with surface.

Q28
Topsoil and soil ameliorants

Q28 Topsoil and soil ameliorants

To be read with Preliminaries/ General conditions.

SYSTEM OUTLINE

115 SOIL SYSTEM FOR GRASS SWARDS FOR VERGES AND EMBANKMENTS
- Composition:
  - Soil: Site sourced topsoil.
  - Ameliorants: Sanitized and stabilized composted materials.
  - Accessories: None.

115A SOIL SYSTEM FOR GRASS SWARDS FOR SPECIES RICH AREAS
- Composition:
  - Soil: Site sourced topsoil.
  - Ameliorants: None.
  - Accessories: None.

115C SOIL SYSTEM FOR GRASS SWARDS FOR REINFORCED GRASS SYSTEM
- Composition:
  - Soil: Imported topsoil to BS 3882.
  - Ameliorants: Sanitized and stabilized composted materials.
  - Accessories: None.

135 PLANTING BED SOIL SYSTEM FOR WOODLAND AREAS
- Composition:
  - Topsoil: Site sourced topsoil.
  - Ameliorants: Sanitized and stabilized composted materials.
  - Accessories: Mycorrhizal inoculant.

135A PLANTING BED SOIL SYSTEM FOR HEDGEROWS
- Composition:
  - Topsoil: Site sourced topsoil.
  - Ameliorants: Sanitized and stabilized composted materials.
  - Accessories: Mycorrhizal inoculant.

155 MULCHING AND TOP DRESSING SYSTEM FOR WOODLAND AREAS
- Composition:
  - Material: Sanitized and stabilized composted materials.

155A MULCHING AND TOP DRESSING SYSTEM FOR HEDGEROWS
- Composition:
  - Material: Sanitized and stabilized composted materials.

PRODUCTS

300 PREPARATION MATERIALS GENERALLY

- Purity: Free of pests and disease.
- Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
- Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
- Objectionable odour: None.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

305 PERMITTED MATERIALS

- Materials: Composted bark and Composted green/ food waste certified to PAS 100.
- Give notice: before ordering or using.
- Declaration of compliance in accordance with BS EN 13650: Required.

310 MATERIALS NOT PERMITTED

- Materials:
  - Peat;
  - Products containing peat; and
  - River and canal dredgings.

315 IMPORTED TOPSOIL TO BS 3882 FOR GRASS SEEDING AND WOODLAND AREAS AND HEDGEROWS

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Standard: To BS 3882.
- Classification: Multipurpose.
  - Grade: Within the parameters of 'sandy loam' textural class.
- Source: Submit proposals.
  - Product reference: Submit proposals.

335 IMPORTED MANUFACTURED TOPSOIL, CUSTOM MIX FOR GRASS SEEDING AND WOODLAND AREAS AND HEDGEROWS

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Source: Submit proposals.
  - Product reference: Submit proposals.
- Texture: Sandy clay loam.
- Reaction, to BS 1377-3: pH 5.5-8.5.
- Organic matter to BSI PD CR 13456: Minimum 5%.
- Nutrient content: Minimum index values for nitrogen, phosphorus, potassium and magnesium to be as for BS 3882 multipurpose topsoil.
- Crumb structure: Made up of discernible crumbs.
- Stone size in any dimension (maximum): 20 mm.

360 SANITIZED AND STABILIZED COMPOSTED MATERIALS CERTIFIED TO PAS 100 FOR TREE PITS AND HEDGEROWS

- Standard: In accordance with PAS 100.
- Source: Submit proposals.
  - Product reference: Submit proposals.
- Horticultural parameters:
  - pH (1:5 water extract): 7.0-8.7.
  - Electrical conductivity (maximum, 1:5 water extract): 200 mS/m.
  - Moisture content (m/m of fresh weight): 35-55%.
  - Organic matter content (minimum): 25%.
  - Grading (air dried samples): 99% passing 25 mm screen, and 90% passing: 10 mm screen mesh aperture.
  - Carbon:Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.
- Composting Association certification: Required.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Submit details of recent chemical and physical analysis before ordering.

370 TEMPORARY CROPS GROWN ON SITE ON TEMPORARY TOPSOIL STORAGE HEAPS

- Seed mix: Leguminous seed mix as per mix G5.
- Source: Germinal GB Ltd. .
  - Product reference: A17 grade 'A' legume and clover seed mixture.

380 MYCORRHIZAL INOCULANT FOR TRANSPLANTING ALL BARE ROOT PLANTS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.

401 ORGANIC FERTILIZERS FOR TREE PITS

- Manufacturer/ source: Submit proposals.
  - Product reference: Submit proposals.
- Standard: In accordance with the Fertiliser Industry Assurance Scheme (FIAS).
- Purpose: Establishment fertilizer.
- Type: Sanitized and stabilized compost.
- Availability to plants: Slow release.

EXECUTION

605 SITE INVESTIGATION

- Report: See section D20.

610A TOPSOIL ANALYSIS

- Soil to be analysed: Imported topsoil and Topsoil stockpile.
- Soil analyst: Hutton Soils,
  The James Hutton Institute,
  Craigiebuckler
  Aberdeen
  AB15 8QH
  Email: info@huttonsoils.com
  Tel: +44 (0) 1224 395115 (Typically 09:00 – 17:00 hrs, Monday – Friday)
  Tests to undertake:
  pH, Nutrient status (Mg, K and P) and Organic matter (Gardening Report)
- Samples: Collect in accordance with BS 3882.
- Submit:
  - Declaration of analysis:
    - Chemical analysis;
    - Maximum stone content, stone size and pH value; and
    - Nutrient content, pH value and textural classification.
  - Report detailing soil analyst's recommendations.

620 IMPORTING TOPSOIL

- Give notice: Before stripping topsoil for transfer to site.
  - Notice period: 14 days.

625 SAMPLE LOADS FOR IMPORTED TOPSOIL

- Deliver to site a sample load: of 5 kg.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - Notice period: 14 days.

630 DOCUMENTATION FOR IMPORTED TOPSOIL FOR TREE PITS

- Timing: Submit at handover.
- Contents:
  - Full description of all soil components.
  - Record of source for all soil components.
  - Record drawings showing the location and depth of all soils by type and grade.
  - Declaration of analysis: in accordance with BS 3882, Annex E.
- Number of copies: Two.

635 DOCUMENTATION FOR COMPOST AND COMPOSTED MATERIALS FOR COMPOST

- Timing: Submit at handover.
- Contents:
  - Full description of all compost components.
  - Record of source for all compost components.
  - Analyst's report for each test carried out.
  - Declaration of compliance: in accordance with PAS 100 and BSI PD CR 13456.
  - Quality Compost Protocol certification: Required.
- Number of copies: Two.

650 NOTICE
- Give notice before:
  - Setting out.
  - Spreading topsoil.
  - Applying herbicide.
  - Applying fertilizer.
  - Visiting site during maintenance period.
- Period of notice: 1 week.

655 MECHANICAL TOOLS
- Restrictions: Do not use within 100 mm of tree and plant stems.

660 GRADING SUBSOIL
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Loosening:
  - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Areas of thicker topsoil: Excavate locally.
- Avoid over compaction.

665 SUBSOIL SURFACE PREPARATION
- General: Excavate and/ or place fill to required profiles and levels, as section D20.
- Loosening:
  - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Stones: Immediately before spreading topsoil, remove stones larger than 75 mm.
- Remove from site: Arisings, contaminants and debris and Builders rubble.

670 INSPECTING FORMATIONS
- Give notice: Before spreading topsoil for areas to receive forestry planting and lawn areas.
- Notice period: 14 days.

675 PREPARATION OF UNDISTURBED TOPSOIL
- Standard: In accordance with BS 4428.
  - Grading and cultivation: Category A.
- Hard ground: Break up thoroughly.
- Clearing: Remove visible roots and large stones with a diameter greater than 75 mm.
- Areas covered with turf or thick sward: Plough or dig over to full depth of topsoil.
- Fallow period (minimum): Three months.
  - Weed control: At appropriate times seed with an approved leguminous seed mix.

680 SURPLUS TOPSOIL TO BE RETAINED
- Generally: Spread and level on site:
  - Locations: Any areas where topsoil is required for new planting.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.

685 SURPLUS MATERIALS TO BE REMOVED

- Topsoil: Remove from site excess topsoil.
- Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

690 TOPSOIL STORAGE HEAPS

- Location: Throughout the site.
- Height (maximum): 2.0 m.
- Width (maximum): 5.0 m.
  - Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
- Protection:
  - Do not place any other material on top of storage heaps.
  - Do not allow construction plant to pass over storage heaps.
  - Prevent compaction and contamination, by fencing and covering as appropriate.

700 GRADING OF TOPSOIL

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
  - Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Give notice: If required levels cannot be achieved by movement of existing soil.

705 HANDLING TOPSOIL

- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.

710 SPREADING TOPSOIL

- Temporary roads/ surfacing: Remove before spreading topsoil.
- Layers:
  - Depth (maximum): 150 mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum): 450 mm.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 LOOSE TIPPING OF TOPSOIL

- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

718 FINAL CULTIVATION FOR GRASS SEEDING

- Compacted topsoil: Break up to full depth.
- Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
- Depth: 150 mm.
- Particle size (maximum): 10 mm.
- Timing: After grading and fertilizing, and within a few days before seeding.
- Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 25 mm above adjoining paving or kerbs and As section D20.
- Undesirable material brought to the surface:
  - Remove visible weeds.
  - Remove roots and large stones with any dimension exceeding 20 mm.

720 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Above adjoining paving or kerbs: 25 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Planting beds: Higher than adjoining grass areas by 50 mm.
- Seeded areas: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
- Sportsfields: To even levels and within the following permitted deviations:
  - From levels or gradients shown on drawings: ±75 mm.
  - From line between boning rods 30 m apart: ±25 mm.
- Within root spread of existing trees and shrubs to be retained: Do not dig or cultivate.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

805 APPLYING SOIL AMELIORANT TO ALL LANDSCAPED AREAS

- Type: Organic materials.
- Locations: All planting areas.
- Fully incorporate into topsoil to a depth of 150 mm.
- Application: Spread evenly.
  - Timing: Apply prior to cultivation.
  - Rate: To suit soil report recommendations.
- Timing: Prior to cultivation.
- Other requirements: Submit details of recent chemical and physical analysis before ordering.

810 APPLYING COMPOST TO ALL LANDSCAPED AREAS

- Application rate for trees and shrubs: 50 mm thick.
  - Timing: Apply prior to cultivation.
- Application rate for grass: N/A.
  - Timing: Apply prior to cultivation.
- Application rate for planters: N/A.
  - Timing: Apply prior to cultivation.
- Other requirements: None.

825 APPLYING FERTILIZER TO PROPOSED GRASS AREAS TO TURFED AREAS

- Application: Before final cultivation and three to five days before seeding/ turfing.
- Coverage:
- Spread evenly, in transverse directions.
  - Rate: 50 g/m².

840 APPLYING MYCORRHIZAL INOCULANT FOR BARE ROOT PLANTS.

- Depth: To maintain contact with root system.

845 APPLYING LOOSE MULCH FOR TREE PITS

- Timing: Immediately after planting.
- Preparation: Ensure that soil is thoroughly moistened, applying water where necessary.
- Coverage of mulch (minimum):
  - Planting beds (depth): N/A.
  - Trees: In a circular area of 500 mm radius measured from the tree stem.
  - Container planting: N/A.
- Finished level of mulch: 70 mm below adjacent grassed or paved areas.

Q30
Seeding/turfing

Q30 Seeding/turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

115 SEEDED AND TURFED AREAS
- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable.

145 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 WATER RESTRICTIONS
- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Preparing seed bed.
  - Seeding or turfing.
  - Visiting site during maintenance period.
- Period of notice: 1 week.

170 SETTING OUT
- Boundaries: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

PREPARATION

210 HERBICIDE FOR ALL GRASSED AREAS
- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
  - Duration: As manufacturer's recommendation.

212 SEED BED CLEANING BEFORE SOWING ALL GRASSED AREAS
- Operations: Kill pernicious weeds with selective contact herbicide..

250 SOIL REQUIREMENTS

- Type:
  - Seeded areas: Existing topsoil.
  - Turfed areas: N/A.
  - Reinforced grass areas: Soil for grass swards, as section Q28.

SEEDING

311 GRASS SEED FOR VERGES, EMBANKMENTS SUDS SWALE SIDES G1

- Supplier: Geminal GB Ltd.
  - Mixture reference: A3 Embankments & Drought.
- Application rate: 34-50 g/m².

311A GRASS SEED FOR WETLAND AREAS AND DETENTION BASINS G2

- Supplier: Geminal GB Ltd.
  - Mixture reference: RE3 River Floodplain / Water Meadow (MC8 Grassland).
- Application rate: 5-10 g/m².

311B GRASS SEED FOR SPECIES RICH GRASS AREAS G3

- Supplier: Geminal GB Ltd.
  - Mixture reference: WFG16 Productive Soils).
- Application rate: 5-10 g/m².

311C GRASS SEED FOR TOPSOIL STORAGE G4

- Supplier: Geminal GB Ltd.
  - Mixture reference: A17 grade 'A' legume and clover seed mixture.
- Application rate: 2.5 g/m².

311D GRASS SEED FOR ARABLE FIELD MARGINS G5

- Supplier: Geminal GB Ltd.
  - Mixture reference: Bespoke - see schedule G5.
- Application rate: 2.5 g/m².

319 QUALITY OF SEED FOR ALL GRASSED AREAS

- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties.
  - Standard: EC purity and germination regulations.
  - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
- Samples of mixtures: Submit when requested.

330 SOWING

- General: Establish good seed contact with the root zone.
- Method: To suit soil type, proposed usage, location and weather conditions during and after sowing.
  - Distribution: 2 equal sowings at right angles to each other and diagonally to main axis.

335 GRASS SOWING SEASON

- Grass seed generally: April to June or August to October.

340 PRE-EMERGENT HERBICIDE FOR ALL GRASSED AREAS
- Standard: Pesticide Safety Directorate approved.
- Application rate: In accordance with manufacturer's written recommendation.
  - Timing: Immediately after sowing.

352 EDGES TO SEEDED AREAS AROUND TREE PITS
- Timing: After seeded areas are well established.
- Edges: Clean straight lines or smooth curves.
  - Mulch and soil: Draw back to permit edging.
- Arisings: Remove.
- Completion: Respread soil and mulch.

PROTECTING/CUTTING

530 FIRST CUT OF GRASSED AREAS
- Timing: When grass is reasonably dry.
  - Height of initial growth: 75 mm.
- Preparation:
  - Debris and litter: Remove.
  - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 50 mm.
- Mower type: Contractor's choice.
- Arisings: Spread evenly over cut areas.

565 TIMBER/ PLASTICS EDGINGS
- Material: Softwood board.
  - Size: 150 mm x 38 mm.
- Fixings: Nailed.
  - Pegs: 50 mm x 50 mm x 450 mm long.
  - Centres: 1200 mm.
  - Installation height: 30 mm.
- Curved boards: Closely spaced vertical grooves cut in the back to achieve smooth flowing lines.
- Preservative treatment: As section Z12 and Wood Protection Association commodity specification C4.
  - Type: To provide a 30 year service life.

590 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

MAINTENANCE

610 FAILURES OF SEEDING/TURFING
- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Defective materials or workmanship: Areas that have failed to thrive.
  - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeding/ returfing.
- Timing of making good: The next suitable planting season.

620 MAINTAINING ROAD VERGES AND EMBANKMENT AREAS G1 - FREQUENT CUT

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Maximum height of growth at any time: 125 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 35 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

620A MAINTAINING WETLAND AREAS G2 - INFREQUENT CUT

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Maximum height of growth at any time: 250 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 35 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

620B MAINTAINING SPECIES RICH AREAS G3 - INFREQUENT CUT

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Maximum height of growth at any time: 250 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 50 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

620C MAINTAINING TOPSOIL STORAGE AREAS G4 - INFREQUENT CUT

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Maximum height of growth at any time: 250 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 50 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

620D MAINTAINING ARABLE FIELD MARGIN AREAS G5 - INFREQUENT CUT

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Maximum height of growth at any time: 250 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 50 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: When instructed.

Q31
External planting

Q31 External planting

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/ REQUIREMENTS

112 SITE CLEARANCE GENERALLY

- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with any dimension exceeding 50 mm.
- Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Vegetation: Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Additional requirements: Remove remnants of old fence posts and mesh.

115 SITE CLEARANCE FOR AQUATIC/ MARGINAL PLANTING

- Clearance:
  - General: Remove loose debris and rubbish.
  - Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Vegetation/ Algae: Skim surface to remove duckweed.
- Additional requirements: As per landscape managment plan.

118 SOIL CONDITIONS

- Soil for cultivating and planting: Moist, friable and (except in aquatic/ marginal planting) not waterlogged.
- Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.
  - Strong winds: Do not plant.

125 TIMES OF YEAR FOR PLANTING

- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May.
- Herbaceous plants (including marginal): September/ October or March/ April.
- Container grown plants: At any time if ground and weather conditions are favourable.
  - Watering and weed control: Provide as necessary.
- Dried bulbs, corms and tubers: September/ October.
- Colchicum (crocus): July/ August.
- Green bulbs: After flowering in spring.
- Wildflower plugs: Late August to mid November or March/ April.
- Aquatic plants: May/ June or September/ October.

130 MECHANICAL TOOLS

- Restrictions: Do not use within 100 mm of tree and plant stems.

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

150 WATER RESTRICTIONS

- General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 NOTICE

- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Delivery of plants/ trees.
  - Planting shrubs.
  - Planting trees into previously dug pits.
  - Watering.
  - Visiting site during maintenance period.
- Period of notice: One week.

170 SOIL REQUIREMENTS

- Type
  - Planted beds: N/A.
  - Tree pits, shrub pits and other backfilling: Plant pit backfilling soil system, as section Q28.
  - External container planting: N/A.
  - Mulch applied after planting: Mulching and top dressing system, as section Q28.

200 PLANTS/ TREES - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: Balanced with branch system.
  - Standard: The National Plant Specification.
- Species: True to name.
- Origin/ Provenance: Local provenance.
  Definition: Origin and Provenance have the meaning given in the National Plant Specification.

215 PLANTS/ TREES - SPECIFICATION CRITERIA

- Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification.

245 LABELLING AND INFORMATION

- General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
  - Full botanical name.
  - Total number.
  - Number of bundles.
  - Part bundles.
  - Supplier's name.
  - Employer's name and project reference.
  - Plant specification, in accordance with scheduled National Plant Specification categories.
- Additional information: Submit on request: Country of origin and Date supplied and consignment details or reference.

260 PLANT/ TREE SUBSTITUTION

- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
  - Price.
  - Difference from specified plants/ trees.
- Approval: Obtain before making any substitution.

265 PLANT HANDLING, STORAGE TRANSPORT AND PLANTING

- Standard: To CPSE 'Handling and establishing landscape plants'.
- Frost: Protect plants from frost.
- Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Plant packaging: Black polyethylene bags.
- Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped.
- Planting: Upright or well balanced with best side to front.

280 TREATMENT OF TREE WOUNDS

- Cutting: Keep wounds as small as possible.
  - Cut cleanly back to sound wood using sharp, clean tools.
  - Leave branch collars. Do not cut flush with stem or trunk.
  - Set cuts so that water will not collect on cut area.
- Fungicide/ Sealant: Do not apply unless instructed.

285 PROTECTION OF EXISTING GRASS

- General: Protect areas affected by planting operations using boards/ tarpaulins.
  - Excavated or imported material: Do not place directly on grass.
  - Duration: Minimum period.

290 SURPLUS MATERIAL

- Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

PLANTING SHRUBS/ HERBACEOUS PLANTS/ BULBS

400 RANDOM PLANT LAYOUT TO WOODLAND PLANTING
- Spacing: Random groups of 9-23 plants of the same species. Avoid straight lines.
- Density: As plant schedule.

400A RANDOM PLANT LAYOUT TO SUDS BASIN AND SWALE BASE PLANTING G6 G7 G8
- Spacing: Random groups of 9-23 plants of the same species. Avoid straight lines.
- Density: As plant schedule.

457 PLANTING AQUATIC/ MARGINAL PLANT PLUGS
- Handling: Keep plants watered and in shade until planted. Do not allow to dry out.
- Preparation: Remove coarse weeds etc. from planting sites.
- Planting sites: SUDS Forebay areas, SUDS swale base, Pond margin. Refer to drawings.
- Waterproofing membrane below soil: Do not puncture.
- Planting: Into a hole to suit plug size and shape. Create a cleft at bottom of hole to improve rooting. Gently firm plant into hole to ensure good root hold into substrate.

459 NOTCH PLANTING BARE ROOT AQUATIC PLANTS
- Notching: Make a vertical 'I', 'L', 'T' or 'H' notch.
  - Depth: To accommodate full depth of roots.
- Waterproofing membrane below soil: Do not puncture.
- Planting: Insert plant at specified water depth, close notch and firm surrounding soil to ensure good root hold into substrate.

471A HEDGEROWS
- Planting: In trenches large enough to take full spread of roots. Set out plants evenly.

480 AFTER PLANTING
- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
- Top dressing: Mulching and top dressing system, as section Q28.
  - Depth: 50 mm.

PLANTING TREES

500 ANTIDESICCANT FOR CONIFERS/ EVERGREENS
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Application: Dip in or thoroughly spray before delivering to site. Spray again soon after planting.
  - Do not apply in wet or frosty weather.
  - Ensure full coverage of underside of foliage.

505 TREE PITS

- Sizes: 75 mm deeper than root system and wide enough to accommodate roots when fully spread.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 150 mm.
  - Treatment: Soil ameliorant worked into pit bottoms.
- Pit sides: Scarify.
- Backfilling material: Plant pit backfilling soil system, as section Q28.
- Accessories: None.

535 STAKING GENERALLY

- Stakes: Softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
  - Preservative treatment: To provide a 20 year service life.
- Nails: To BS 1202-1, galvanized, minimum 25 mm long and with 10 mm diameter heads.
- Stake size (minimum): 25 x 25 mm.

555 SHORT SINGLE STAKING FOR WHIPS AND FEATHERED TREES

- Staking: Position stake close to tree on windward side and drive vertically at least 300 mm into bottom of pit before planting.
  - Backfiling: Consolidate material around stake
- Height of stakes: Cut to approximately 600 mm above ground level.
- Ties: Adjustable ties.
- Tying: Secure tree firmly but not rigidly to stake with at least two ties within 25 mm of top of stake.

595A TREE PROTECTION FOR TREES NOT ENCLOSED WITHIN DEER / RABBIT PROOF FENCING

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Type: Round.
- Material: Plastics mesh.
- Size: 1.2 m high x 50 mm diameter.
- Colour: Brown.
- Support: Single timber stake.
- General: Ensure that protection methods do not impede natural movement of trees or restrict growth.

WOODLAND PLANTING

600 WOODLAND WORK GENERALLY

- Services: Check for below and above ground services, including land drainage, in the vicinity. Give notice if they may be affected and obtain instructions before proceeding.
- Safety: Comply with Arboriculture and Forestry Advisory Group Safety leaflets.

605 EXISTING VEGETATION/ WEED CLEARANCE

- Surface vegetation clearance: Screef an area one metre diameter around each planting location.
- Arisings: Remove.

617 REMOVING TREES AND HEDGES

- Identification: Clearly mark trees and hedges to be removed.
- Work near retained trees: Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Arisings: Remove.
- Tree stumps: Remove mechanically to a minimum depth of 300 mm below ground level.

625 CULTIVATION

- General: Ripping at 600 mm centres to full depth of topsoil.
- Consolidation: Leave for three months.
- Soil within root spread of trees to be retained: Do not plough or cultivate.

680 SETTING OUT

- Planting density: As plant schedule.
- Layout: Random groups of no less than 3 or more than 7 of the same species, ensuring that no three plants are aligned in any one direction.

PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS

710 MAINTENANCE

- Duration: Carry out the operations in the following clauses from completion of planting until t he end of the rectification period.
- Frequency of maintenance visits: In accordance with the agreed maintenance schedule.

720 FAILURES OF PLANTING

- Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
  - Exclusions: Theft or malicious damage after completion.
  - Rectification: Replace with equivalent plants/ trees/ shrubs.
- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: During the next suitable planting season.

730 PROTECTIVE FENCING

- Fencing type: Wooden Post and Rail fence with Rabbit Proof mesh, as section Q40.
- Erection: On completion of planting.
- Removal: After planting is well established.

740 CLEANLINESS

- Soil and arisings: Remove from hard surfaces and grassed areas.
- General: Leave the works in a clean tidy condition at completion and after any maintenance operations.

750 PLANTING MAINTENANCE GENERALLY

- Weed control: Maintain weed free area around each tree and shrub.
  - Diameter (minimum): The larger of 1 m or the surface of original planting pit.
  - Keep planting beds clear of weeds: By use of approved non-residual herbicides.
- Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards.
  - Broken or missing items: Replace.
  - Rubbing: Prevent.
  - Ties: Adjust to accommodate growth.
  - Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
  - Frequency of checks: At each scheduled maintenance visit.
- Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
- Trees: Spray crown when in leaf during warm weather.
  - Timing: After dusk.
- Watering: When instructed.

760 PLANTING MAINTENANCE - PRUNING

- General: Prune to promote healthy growth and natural shape.
  - Dead, dying, diseased wood and suckers: Remove.
  - Timing: As appropriate to the species.
  - Trees: Favour a single central leading shoot.
- Arisings: Remove.

770 WOODLAND PLANTING MAINTENANCE

- Watering: Only as necessary to prevent plants wilting.
- Loose plants: Refirm surrounding soil, without compacting.
- Weed control: Cut down and remove weeds prior to setting seed in a 1 m diameter area around each tree.
- Vegetation except trees and coppice shoots to be retained: Cut within the plantation area.
  - Height (maximum): 50 mm.
  - Arisings: Leave between rows.
- Mechanical, chemical or mulching methods of vegetation control: Submit proposals.
- Ditches and drains: Keep clear.
- Watering: When instructed.

780 MAINTENANCE INSTRUCTIONS

- General: Before end of the maintenance period, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year: Provide a schedule of any ongoing maintenance problems experienced during the rectification period.

790 FINAL MULCHING

- Timing: At end of the maintenance period.
- Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
- Planting beds: Remulch.
  Depth (minimum): N/A.
- Trees: Remulch.
  Depth (minimum): 75 mm.

Q35
Landscape maintenance

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY

105 MAINTENANCE OBJECTIVES
- Location: Native woodland and hedgerows.
  - Duration: Ten years.
- Aims:
  - Provide visual screening for views looking towards the proposed substation
  - Enhanced landscape quality;
  - Improved landscape visual amenity; and
  - Provide wildlife habitat and increase biodiversity.
- Restrictions: As described in the landscape maintenance manual.
- Results: As scheduled.

110 NOTICE
- Give notice before:
  - Application of herbicide.
  - Application of fertilizer.
  - Watering.
  - Each site maintenance visit.
- Period of notice: 2 weeks.

130 REINSTATEMENT
- Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition.

140 CONTROL OF MAMMALIAN PESTS
- Specialist firms: Submit proposals.
  - Method: Rabbit proof fencing, as section Q40.

145 CONTROL OF INVASIVE ANIMAL SPECIES
- Specialist firms: Submit proposals.
- Species: Deer.
- Location: Whole site.
- Method: Submit proposals.

156 WATERING
- Supply: No site supply available, submit proposals.
- Quantity: Wet full depth of topsoil.
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As schedule and when instructed.

160 WATER RESTRICTIONS
- General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

170 DISPOSAL OF ARISINGS

- General: Unless specified otherwise, dispose of arisings as follows:
  - Biodegradable arisings: Remove to recycling facility.
  - Grass cuttings: Leave for two to three days after cutting then remove.
  - Tree roots and stumps: Remove from site.
  - Shrub and tree prunings: Remove to recycling facility.
  - Litter and nonbiodegradable arisings: Remove from site.

180 CHIPPING OR SHREDDING

- General: Not permitted on site.

190 LITTER

- Extraneous rubbish not arising from the contract work: Collect and remove from site.

195 PROTECTION OF EXISTING GRASS

- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 CLEANLINESS

- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

GRASSED AREAS

210 MAINTENANCE OF GRASSED AREAS

- General: Maintain turf in a manner appropriate to the intended use.
- Soil and grass:
  - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
  - Waterlogging and compaction: Prevent.
  - Damage: Repair trampling, abrasion or scalping.
- Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
  - Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

220 GRASS CUTTING GENERALLY

- Before mowing: Remove litter, rubbish and debris.
- Finish: Neat and even, without surface rutting, compaction or damage to grass.
- Edges: Leave neat and well defined. Neatly trim around obstructions.
- Adjoining hard areas: Sweep clear and remove arisings.
- Drought or wet conditions: Obtain instructions.

225 TREE STEMS

- Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

255 FIRST CUT OF ALL GRASSED AREAS

- Height of initial growth: 75 mm.
- Preparation:
  - Debris and litter: Remove.
  - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 50 mm.
- Mower type: Contractor's choice.
- Arisings: Leave during growing season, remove from first and last cuts of the year.

340 SPOT WEEDKILLING IN ROUGH GRASS AREAS

- Herbicide: Suitable for suppressing perennial weeds.
- Operations: Spot treat
  - all broad leaved weeds;
  - docks (Rumex spp);
  - injurious weed species listed in the Weeds Act 1959 and Wildlife and Countryside Act 1981;
  - Japanese knotweed (Fallopia spp);
  - nettles (Urtica spp);
  - ragworts (Senecio spp);
  - thistles (Cirsium spp); and
  - willowherb (Epilobium spp).

345 CONTROL OF JAPANESE KNOTWEED

- Operations: Spot treat in June and September during suitable weather conditions and when plants are growing vigorously.
- Herbicide: In accordance with the Environment Agency 'Code of Practice for the management, destruction and disposal of Japanese knotweed'.
- Application: In accordance with the Environment Agency 'Code of Practice for the management, destruction and disposal of Japanese knotweed'.
- Arisings: In accordance with the Environment Agency 'Code of Practice for the management, destruction and disposal of Japanese knotweed'.

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING

- Duration: 10 years.
- Weed control:
  - Method: Keep planting beds clear of weeds by use of suitable herbicides.
  - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Watering: Contractor's choice.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER

- Time of year: March or April.
- Type: Organic.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
  - Application rate: 300 g per m².

520 REFIRMING OF TREES AND SHRUBS

- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

525 TREE GUARDS

- Loose or defective guards: Adjust, refix or replace to original specification and to prevent chafing.

530 TREE SHELTERS

- Loose or defective shelters: Adjust, refix or replace to original specification and to prevent chafing.
- Removal: Two years after planting.

540 PRUNING GENERALLY

- Pruning: In accordance with good horticultural and arboricultural practice.
  - Removing branches: Do not damage or tear the stem or bark.
  - Wounds: Keep as small as possible and cut cleanly back to sound wood.
  - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
  - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or infection: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

555 PRUNING TREES AND SHRUBS

- Standard: To BS 7370-4.
- Special requirements: None.

570 FORMATIVE PRUNING OF YOUNG TREES

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
  - Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well balanced head and ensure the development of a single strong leader.
  - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Member of the Arboricultural Association.

605 TRIMMING SLOWLY ESTABLISHING HEDGES

- Operations:
  - Timing: Cut back hard in June and September to encourage bushy growth down to ground level.
  - Form: Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

615 TRIMMING FIELD HEDGES
- Operations: Trim to specified height and profile using suitable mechanical cutters.

620 REMOVAL OF DEAD PLANT MATERIAL
- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

630 DEAD AND DISEASED PLANTS
- Removal: As soon as possible.
- Replacement: In the next suitable planting season.

645 WEED CONTROL GENERALLY
- Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 100 mm high.
- Adjacent plants, trees and grass: Do not damage.

650 HAND WEEDING
- General: Remove weeds entirely, including roots.
- Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Completion: Rake area to a neat, clean condition.
- Mulch: Reinstate to original depth.

655 WEED CUTTING BY HAND OR MACHINE
- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 75 mm.
- Herbicides: Give notice before use.

657 HERBICIDE TO KILL REGROWTH
- Type: Suitable foliar acting herbicide to kill regrowth.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

665 WEED CONTROL WITH WINTER HERBICIDE
- Type: Suitable residual soil acting herbicide.
- Time of year: Unless otherwise agreed, complete before end of March.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

670 WEED CONTROL WITH SUMMER HERBICIDE
- Type: Suitable foliar acting herbicide.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

680 SOIL AERATION
- Compacted soil surfaces:
  - Prick up: To aerate the soil of root areas and break surface crust.
  - Size of lumps: Reduce to crumb and level off.
  - Damage: Do not damage plants and their roots.

685 SOIL LEVEL ADJUSTMENT
- Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
  - Arisings (if any): Spread evenly over the bed.

690 MAINTENANCE OF LOOSE MULCH

- Thickness (minimum): 75 mm.
  - Top up: Annually.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

710 WOODLAND PLANTING MAINTENANCE

- Watering: In exceptional circumstances to prevent plants dying.
- Loose plants: Refirm surrounding soil, without compacting.
- Vegetation: Except trees and coppice shoots to be retained, cut down to 100 mm above ground level within the plantation area.
  - Arisings: Leave between rows.
- Ditches and drains: Keep clear.

715 WOODLAND THINNING

- Mature planting density: 4 plants per m².
- Timing: Thin in stages in accordance with the agreed management plan.

720 COPPICING

- Material to be coppiced Coryllus species.
- Standard: Good forestry practice.
- Cut stems: 200 mm.
  - Finish: Leave sloping upward towards the centre to promote rainwater runoff.
- Brash: Stack around coppice stool to alleviate deer damage.
- Coppiced timber: Extract.

TREE WORK

810 TREE WORK GENERALLY

- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

815 ADDITIONAL WORK

- Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.

820 PREVENTION OF WOUND BLEEDING

- Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION

- Standard: To BS 3998, clause 9 and Appendix B.

830 CLEANING OUT AND DEADWOODING

- Remove:
  - Dead, dying, or diseased wood, broken branches and stubs.
  - Fungal growths and fruiting bodies.
  - Rubbish, wind blown or accumulated in branch forks.
  - Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
  - Other unwanted objects, e.g. tree houses, swings.
  - Climbing plants Remove from young trees.

835 CUTTING AND PRUNING GENERALLY

- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
  - Chainsaws: Do not use on branches of less than 50 mm diameter.
  - Hand saws: Form a smooth cut surface.
  - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
  Large branches: Remove only if unavoidable.
  - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
  - The branch spread of the tree.
  - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
  - Cutting: Make clean smooth cuts with a hand saw.
  - Wounds: Minimize. Avoid ragged edges.
  - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
  - Protection: Cover cut roots with clean sharp sand.
  - Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
  - Removal: Remove mechanically to a minimum depth of 300 mm below ground level.
  - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
  - Material: Use as-dug material and/ or imported soil as required.
  - Finishing: Consolidate and grade to marry in with surrounding ground level.

865 BARK DAMAGE

- Wounds:
  - Do not attempt to stop sap bleeding.
  - Bark: Remove ragged edges using a sharp knife.
  - Wood: Remove splintered wood from deep wounds.
  - Size: Keep wounds as small as possible.
- Liquid or flux oozing from apparently healthy bark: Give notice.

HARD LANDSCAPE AREAS/FENCING

910 HARD SURFACES AND GRAVEL AREAS

- Herbicide: Apply a suitable foliar acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
- Repairs to flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
- Stain removal: In accordance with BS 7370-2, table 4.

920 FENCING

- Fences: Inspect and repair to maintain protection against rabbits.

Q40
Fencing

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

126A OPEN MESH STEEL PANEL SECURITY FENCING F1

- Manufacturer: Betafence Limited or sumbmit proposals
  - Web: www.betafence.co.uk.
  - Email: sales.sheffield@betafence.com.
  - Product reference: Securifor® Super 6 Welded Mesh Panels
    Post:
  - Type: Securifor® or similar approved.
  - Colour: RAL 7016 Antrhacite.
- Panel:
  - Height: 2400 mm.
  - Finish: Bezinal Polyester powder coated.
- Colour: RAL 7016 Anthracite.
- Accessories: Base plate to fencing. Allow for associated gates .

210B WOODEN POST AND RAIL FENCING F2

- Description: Wooden post fencing with wire mesh netting.
  - Product reference: Submit proposals.
- Standard: To BS 1722-7, type SPR 11/4.
- Height: 1900 mm.
- Wood: Larch or other softwood as approved.
  - Treatment: FSC pressure treated to provide a 30 year service life.
  - Finish: None required.
- Maximum centres of posts: 1.8 m.
- Method of setting posts: End/turning posts: driven to a minimum depth of 900 mm
  Intermediate posts: driven to a minimum depth of 700 mm .
- Minimum post diameter: End/turning posts: 120 mm
  Intermediate posts: 80 mm
- Accessories:
  - Additional mesh - rabbit proof mesh fixed from 200mm sub-ground level to 900mm above ground level
  - deer proof mesh fixed from between 900mm above ground level to1800mm above ground level
  - for wire grades and fixing method refer to drawing EA1-GRD-DG-OPEN-796D002 - F 3 Single leaf field gate .
- Fixings: All fixings to be appropriately sized and galvinised to BS EN ISO 1461
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-7.

GATES, POSTS AND STILES

510A DEER / RABBIT PROOF FIELD GATES F3
- Description: Wide single leaf timber field gate, with heavy toprail and cross bracing. To provide maintenance access into newly planted woodland areas protected by deer/rabbit proof fencing.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Size: 1900 mm high x 3000 mm wide.
- Materials: Wood gate and posts.
  - Treatment: To provide a 30 year service life.
  - Finish: None.
- Fittings: Adjustable hook and band top hinge, double swing rocker bottom hinge and loop over catch.
  - Finish: Hot dip galvanized to BS EN ISO 1461.
- Method of setting posts: Concrete foundation, 450 mm square x 600 mm deep.
- Accessories: Additional mesh - wildlife netting.

550 WOOD GATES AND POSTS
- Manufacturer: Submit proposals.
- Standard: To BS 5709.
- Wood: Homegrown hardwoods.
- Treatment: As section Z12 and Wood Protection Association Commodity Specification C3.
  - Type: To provide a 30 year service life.
  - Finish: None.
- Adhesive: Synthetic resin to BS EN 301, type 1.
- Workmanship: As section Z10.
- Fittings: Two tee hinges, return spring and a ring latch.
  - Finish: Hot dip galvanized to BS EN ISO 1461.
- Method of fixing: Concrete foundation, 450 mm square x 600 mm deep.
- Accessories: Additional mesh - wildlife netting and Gate opener.

EXECUTION

710 INSTALLATION GENERALLY
- Set out and erect:
  - Alignment: Straight lines or smoothly flowing curves.
  - Tops of posts: Following profile of the ground.
  - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - Fixings: All components securely fixed.

715 COMPETENCE
- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
  - NHSS Sector Scheme 2A sub categories:
    - (a);
    - (d);
    - (f); and
    - (g).
  - NHSS Sector Scheme 2C sub categories: Not required.

720 SETTING POSTS IN CONCRETE

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
- Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
- Admixtures: Do not use.
- Holes: Excavate neatly and with vertical sides.
- Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

730 EXPOSED CONCRETE FOUNDATIONS

- Filling: Compact until air bubbles cease to appear on the upper surface.
- Finishing: Weathered to shed water and trowelled smooth.

740 SETTING POSTS IN EARTH

- Holes: Excavated neatly, with vertical sides and as small as practicable to allow refilling.
- Filling: Position posts/ struts and replace excavated material, well rammed as filling proceeds.

750 DRIVEN POSTS

- Damage to heads: Minimize.
  - Repair: Neatly finish post tops after installation.

760 NAILED WOOD RAILS

- Length (minimum): Two bays, with joints in adjacent rails staggered.
- Fixing: Nail each length of rail to each post with two 100 mm galvanized nails.
- Rails with split ends: Replace.

770 SITE CUTTING OF WOOD

- General: Kept to a minimum.
- Below or near ground level: Cutting prohibited.
- Treatment of surfaces exposed by minor cutting and drilling: Two flood coats of solution recommended for the purpose by main treatment solution manufacturer.

780 MAKING GOOD GALVANIZED SURFACES

- Treatment of minor damage (including on fasteners and fittings): Low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652.
- Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

790 SITE PAINTING

- Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

COMPLETION

910 CLEANING

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.

920 FIXINGS

- All components: Tighten.
  - Timing: Before handover.

930 GATES

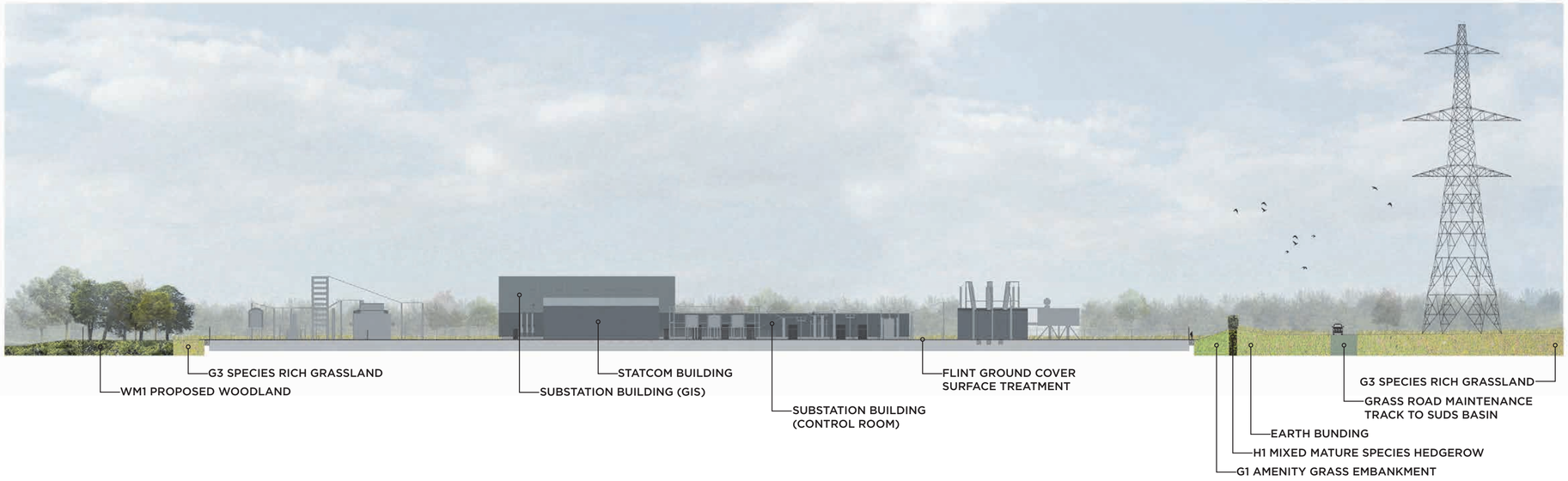
- Hinges, latches and closers: Adjust to provide smooth operation. Lubricate where necessary.
  - Timing: Before handover.

optimised environments ltd
Quartermile Two | 2 Lister Square | Edinburgh | EH3 9GL
t 0131 221 5920 | w optimisedenvironments.com

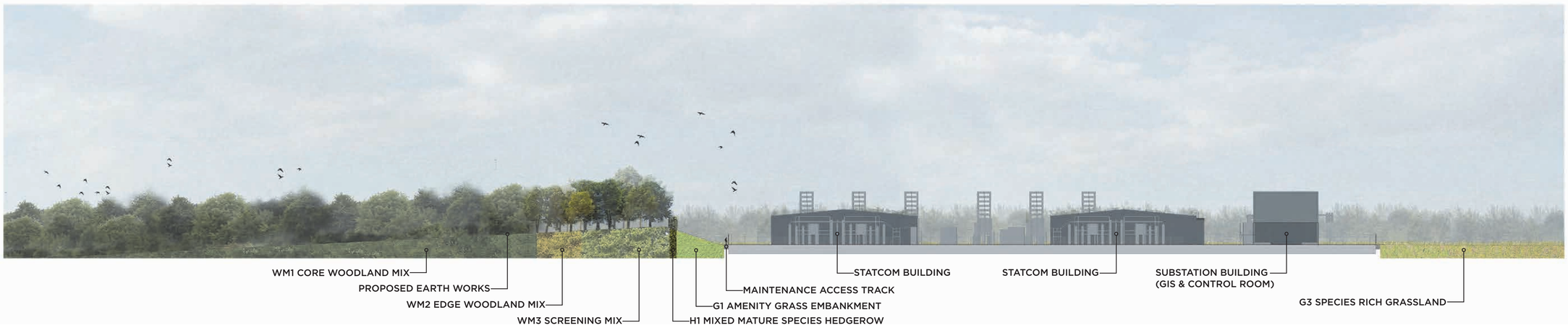
Optimised Environments Ltd. Registered in Scotland SC359690.
Registered address: Quartermile Two, 2 Lister Square, Edinburgh, EH3 9GL

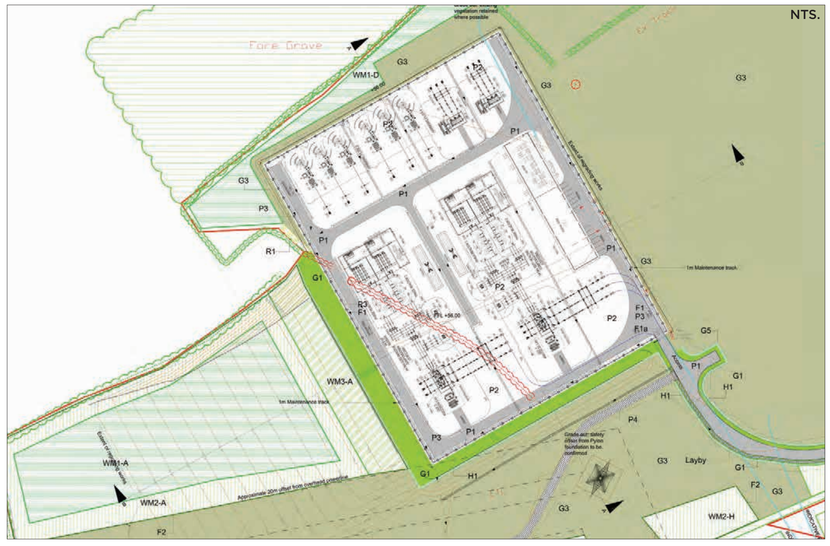
Image Sources: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo and the GIS User Community

SECTION AA



SECTION BB





Scale Bar

North

optimised environments

optimised environments ltd
Quartermile Two | Level 2 | 2 Lister Square | Edinburgh | EH3 9GL
t: 0131 221 5920 | w: optimisedenvironments.com

Client
Scottish Power Renewables

Project:
East Anglia ONE Wind Farm
(EA ONE)

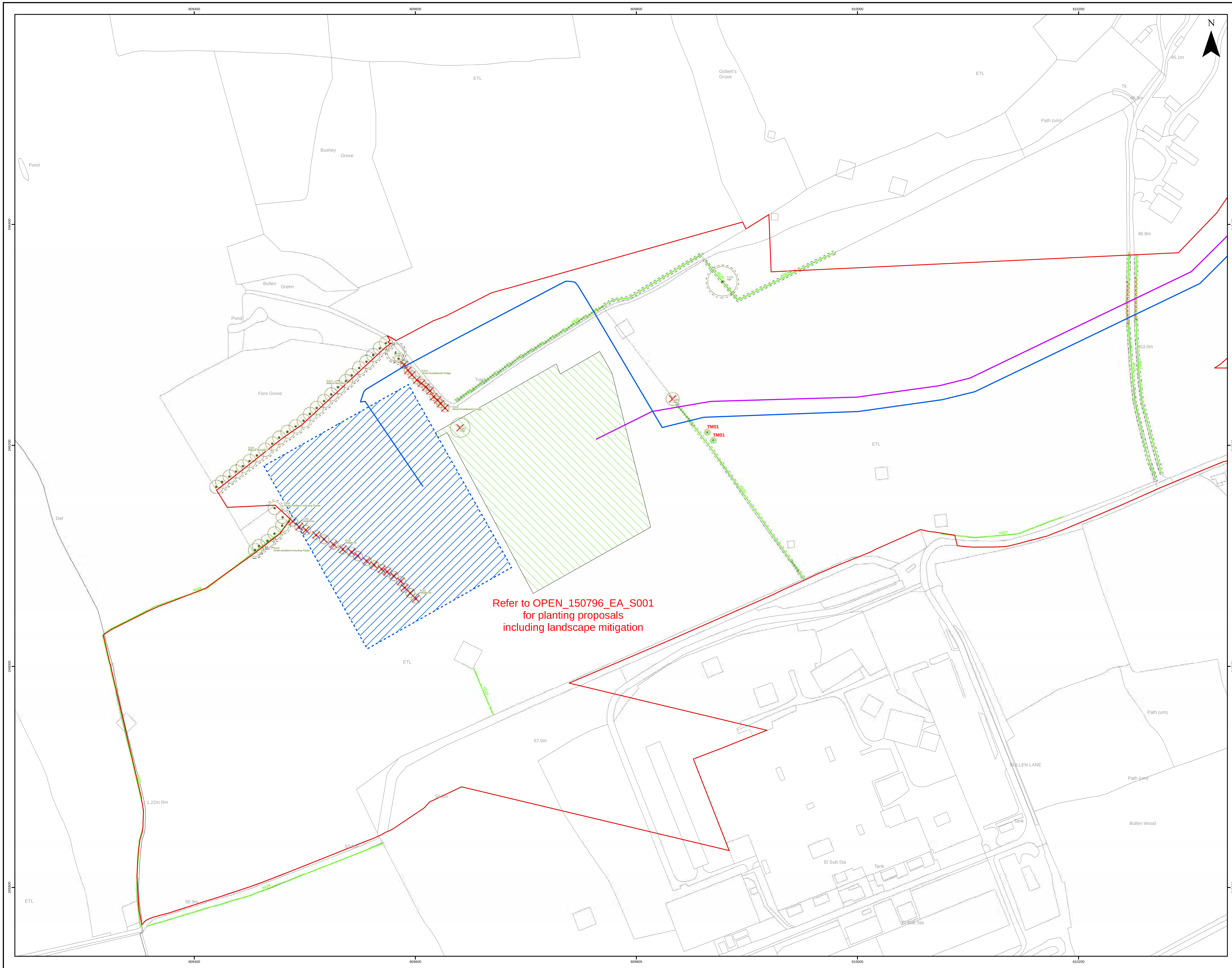
Drawing Title:
APPENDIX 10
Illustrative Sections of Landscaping

Status:
Final for Discharge

Scale:	1:500@A1	Date:	November 2015
By:	SW	Checked: SM	Approved: SM

Dwg. No. OPEN_150796_EA_S002 | Rev. 03

Computer File: P:\2015\150796_EastAng\CAD\SHEET\00Plot



Legend

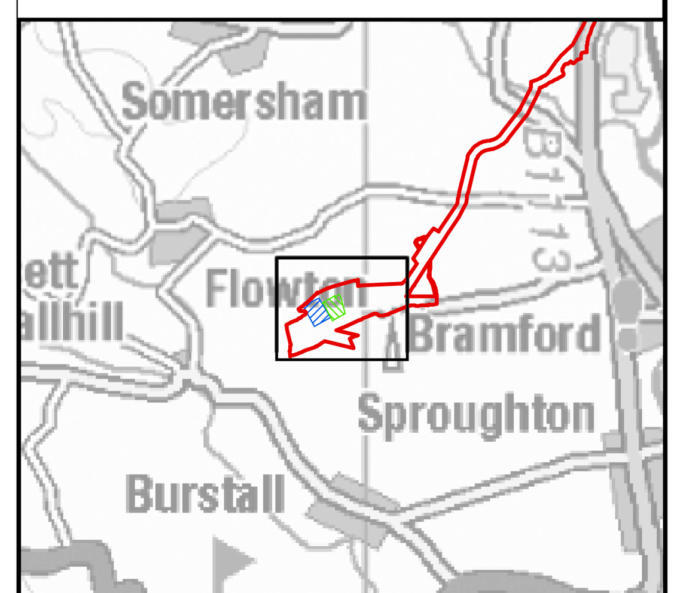
- EA ONE DCO Boundary
- Site of Proposed New Onshore Substation
- Temporary Compound
- Proposed EA1 cable route
- Proposed EA3 cable route
- T1 Oak — Tree root protection area
- H1 — Existing hedgerow

Landscape Mitigation Measures

Refer to figures OPEN_150796_EA_S001 for typical detail information

- Tree protective fencing as per BS 5837:2012 for all trees to be retained/Hedgerows to be protected by steel crowd barriers
- Tree felling
- Hedgerow removal and replacement planting
- TM01 — Tree replanting location (replanting species)

Note:
This map has been produced to the latest known information at the time of issue. Please consult with the GIS team to ensure the content is still current before using the information contained on this map.



DRAWING NUMBER	*OPEN_150796_EA_T001*
COORDINATE SYSTEM	BNG
DATUM	OSGB 1936
PROJECTION	TRANSVERSE MERCATOR
UNITS	METRE
PURPOSE	*FINAL FOR DISCHARGE*
SCALE	1:1,500 (0 15 30 m)
ORIGINAL PLOT SIZE	A1
PROJECT TITLE	*East Anglia ONE Wind Farm (EA ONE)*
DRAWING TITLE	*TREE PROTECTION PLAN*
DRAWING ID	**T001**
DRAWING PREPARED BY:	open optimised environments; IBERDROLA Engineering & Construction

01 sheet ILP01 **Existing Aerial**
Scale: 1:2500@A1

02 sheet ILP01 **EA ONE Illustrative Landscape Plan**
Scale: 1:2500@A1

03 sheet ILP01 **Existing Aerial - Wide Context**
Scale: 1:15000@A1

04 sheet ILP01 **EA ONE Illustrative Landscape Plan - Wide Context**
Scale: 1:15000@A1

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

North

open
optimised environments

optimised environments ltd
Quartermile Two | Level 2 | 2 Lister Square | Edinburgh | EH3 9GL
t 0131 221 5920 | w optimisedenvironments.com

Optimised Environments Ltd. Registered in Scotland SC359690.
Registered address: Quartermile 2, Level 2, 2 Lister Square, Edinburgh, EH3 9GL

Client
Scottish Power Renewables

Project:
East Anglia ONE Wind Farm (EA ONE)

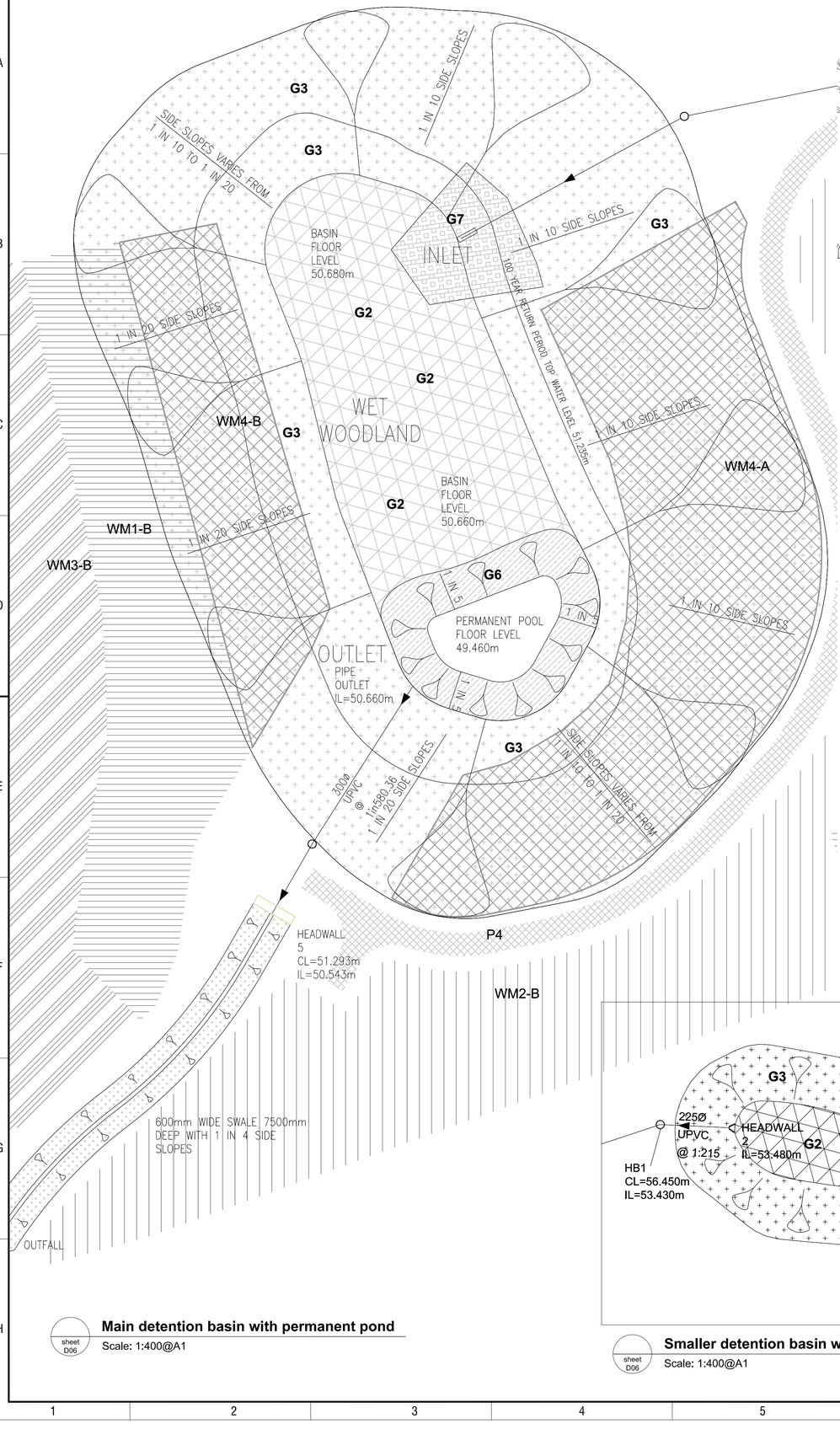
Drawing Title:
Appendix 12
Illustrative Plan of Landscape Scheme

Status:
Final for Discharge

Scale:	As Shown@A1	Date:	December 2015		
By:	SW	Checked:	SM	Approved:	SM

Dwg. No.	Rev.
OPEN_150796_EA_ILP001	02

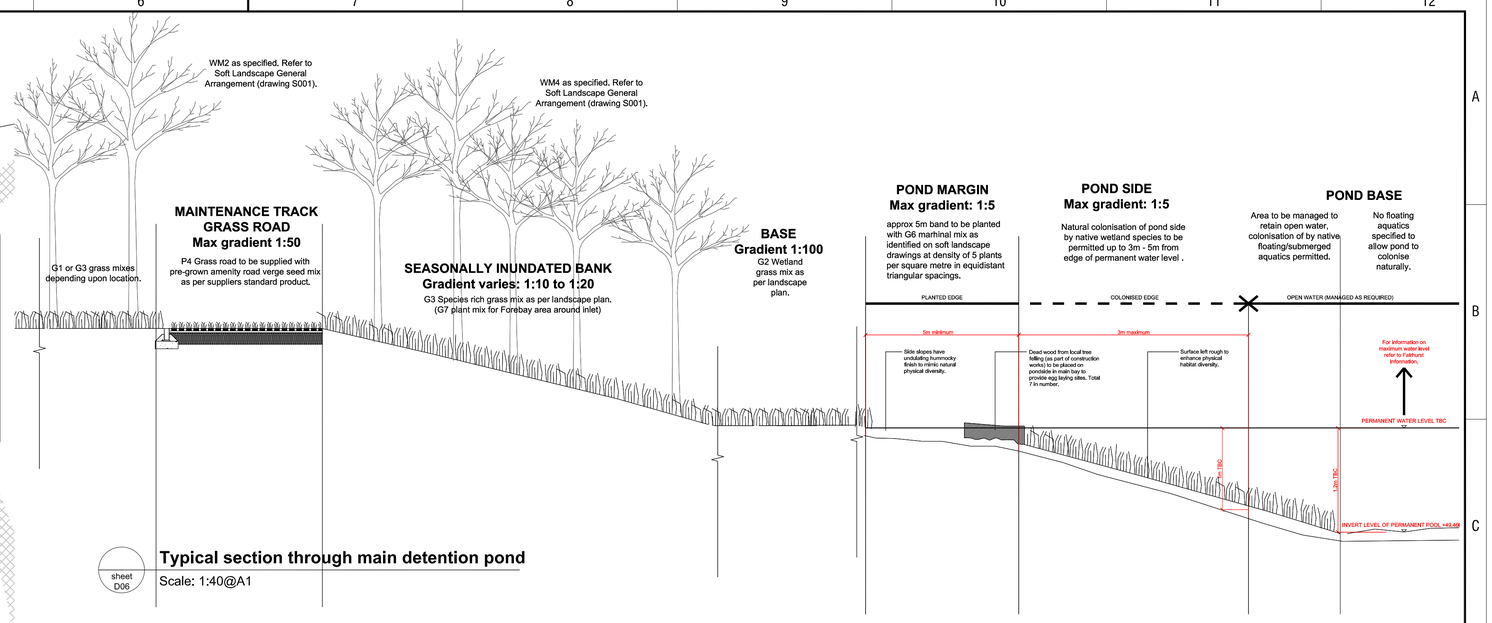
Computer File: P:\2015\150796_EastAng\CAD\SHEET\00Plot



sheet D06

Main detention basin with permanent pond

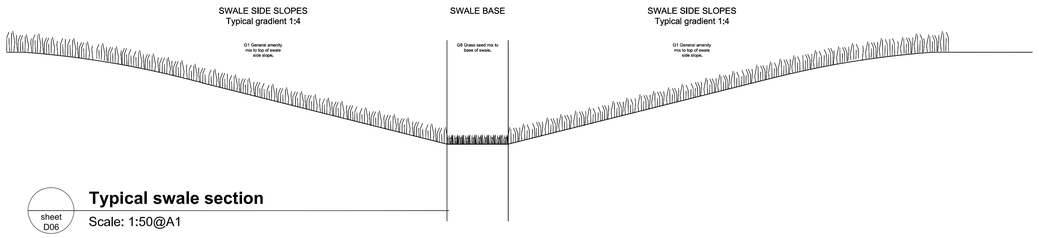
Scale: 1:400@A1



sheet D06

Typical section through main detention pond

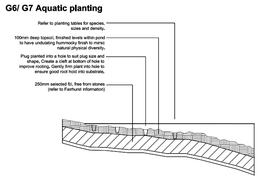
Scale: 1:40@A1



sheet D06

Typical swale section

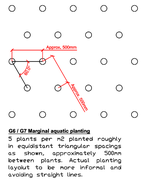
Scale: 1:50@A1



sheet D06

Typical G6/G7 planting section

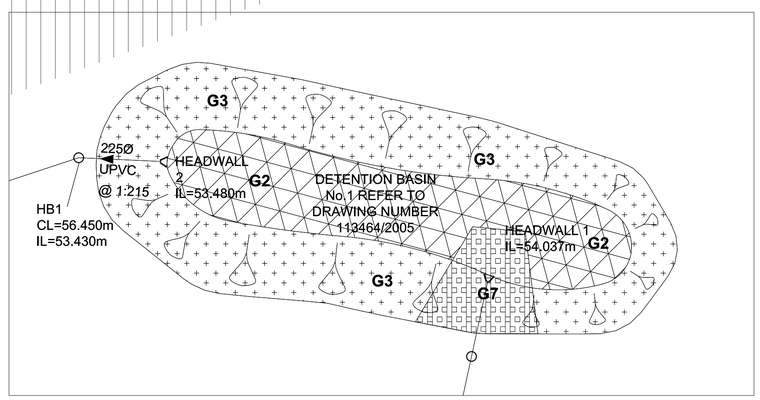
Scale: 1:50@A1



sheet D06

Typical G6/G7 planting plan

Scale: 1:50@A1



sheet D06

Smaller detention basin without permanent pond

Scale: 1:400@A1

NOTES:

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Any discrepancies found between this drawing and other drawings and specifications in construction status documents must be referred to the Landscape Architect prior to work commencing.
3. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.
4. Any survey information shown is based upon surveyors topographical survey.
5. This drawing is for performance only. All structural elements, foundations, build up and fixing to engineer's detail and specification.

Status Stamp:

Project: East Anglia ONE Wind Farm (EA ONE)

Location: EAST ANGLIA

Contractor: open

Status Stamp:

Drg. Title: APPENDIX 13 SUSTAINABLE URBAN DRAINAGE SYSTEM DETAIL Final for Discharge

Client: SCOTTISHPOWER RENEWABLES

Date of First Issue: 16/12/15		
Prepared	Reviewed	Approved
SW	BS	MO

Drg. No.: EA1-GRD-DG-OPEN-796_D006 | Sheet: 1 | Rev: 02

Next: - | Contractors Drg. No. : 150796 | Scale: VARIES | Size: A1