

AFON WYSG BESS

B068690-TTE-ZZ-XX-RP-L-0001

Landscape and Ecological Management Plan

Burroughs Ltd

April 2026

**Document prepared on behalf of Tetra Tech Limited. Registered in England
number: 01959704**



DOCUMENT CONTROL

Document:	Landscape and Ecological Management Plan
Project:	AFON WYSG BESS
Client:	Burroughs Ltd
Project Number:	B068690-TTE-ZZ-XX-RP-L-0001
File Origin:	Tetra Tech, Atlantic House, Greenwood Close, Cardiff Gate Business Park, Cardiff, United Kingdom, CF23 8RD

Revision:	DRAFT	Prepared by:	Donna Vinnels Senior Landscape Architect
Date:	January 2026	Checked by:	Aaron Carpenter Principal Landscape Architect
Status:	DRAFT	Approved By:	Emily Jones Landscape Director
Description of Revision:	Draft Issue		

Revision:	P01	Prepared by:	Donna Vinnels Senior Landscape Architect
Date:	April 2026	Checked by:	Aaron Carpenter Principal Landscape Architect
Status:	Planning Issue	Approved By:	Emily Jones Landscape Director
Description of Revision:	Planning Issue		

CONTENTS

1.0	INTRODUCTION	4
1.1	Introduction	4
1.2	Scope of the Plan	4
1.3	The site	5
2.0	DEVELOPMENT & LANDSCAPE PROPOSALS.....	5
2.1	Key design concepts and constraints.....	5
2.2	Landscape Development Objectives	6
	Planting Species Mixes and Selection.....	6
2.3	landscape and Ecology elements.....	7
	Amenity grassland	7
	Wildflower grassland	7
	New Attenuation Pond	7
	Seeding	7
	Badger	7
	Otters.....	8
	Breeding birds.....	8
	Wintering birds.....	8
	Bats.....	9
	Reptiles	10
	Dormouse.....	10
	Shrill carder bee.....	10
3.0	ECOLOGICAL ENHANCEMENT	10
3.1	Habitats for Shrill Carder bee	10
3.2	Ecological Survey	13
4.0	MANAGEMENT, MAINTENANCE AND MONITORING	13
4.1	Outline objectives	13
4.2	Management objectives.....	13
4.3	Roles and responsibilities.....	14
4.4	Maintenance objectives	14
4.5	Monitoring Objectives.....	15

5.0	DETAILED OBJECTIVES, PROTECTION, MANAGEMENT AND MAINTENANCE	16
5.2	Existing Habitat	16
5.3	Proposed Landscape Features	16
	Native Tree Planting	16
	Detailed objectives	16
	Protection	17
	Management and maintenance	17
	Hedge and Shrub Planting	17
	Detailed objectives	17
	Management and maintenance	17
	Amenity Grass areas	18
	Detailed objectives	18
	Protection	18
	Management and maintenance	19
	Species Rich Grass areas	19
	Detailed objectives	19
	Protection	19
	Management and maintenance.....	19
	Invertebrate Banks	20
	Detailed objectives	20
	Protection	20
	Management and maintenance.....	20
	Attenuation pond.....	21
	Detailed objectives	21
	Management and maintenance	21
6.0	ANNUAL MAINTENANCE PROGRAMME	23
	APPENDICES.....	26
	Appendix A - Maintenance Specification Q35	26
	Q35 Landscape maintenance	26
	Generally	26
	Grassed areas.....	27
	Shrubs/ trees/ hedges	28

Tree work	32
Appendix B: Pruning Techniques.....	34
Appendix C: Pruning Schedules.....	35
Appendix D: Maintenance Schedules	43
Appendix E – Landscape Planting plans.....	51

1.0 INTRODUCTION

1.1 INTRODUCTION

- 1.1.1 This Landscape Management Plan has been prepared on behalf of AW1 Energy Storage Limited and relates to works proposed at land at Uskmouth power station, West Nash Road for the battery energy storage system with associated infrastructure and works. It sets out the management principles for the proposed planting proposals and provides a detailed programme to achieve the effective long-term maintenance of the habitats created.

1.2 SCOPE OF THE PLAN

- 1.2.1 This report will address landscape design concepts, management, maintenance and monitoring objectives for existing and proposed vegetation for a period of 5 years.
- 1.2.2 The scope of this report has been based on the landscape proposals set out within the following documents:
- B068690-TTE-00-ZZ-DR-L-2000 - Landscape General Arrangement Plan
 - B068690-TTE-00-ZZ-DR-L-4001-4003 - Detail Planting Plans - Sheet 1-3
 - B068690-TTE-00-ZZ-DR-L-4004 - Detail Planting Schedule
 - B068690-TTE-00-ZZ-DR-L-4004 - Detail Planting Schedule
 - B068690-TTE-00-ZZ-DR-L- 5000 – Typical Landscape Details
- 1.2.3 Other drawings and information for reference, include:
- B045841 Water Vole Conservation Licence Method Statement (Tetra Tech, Dec 2022)
- 1.2.4 Detailed information is presented in Appendices as follows:

Appendix A	Maintenance specification Q35
Appendix B	Pruning techniques
Appendix C	Maintenance schedules
Appendix D	Ecological mitigation plan
Appendix E	Detailed planting plans

1.3 THE SITE

- 1.3.1 The development proposal is for the installation of a BESS and associated substation. The development will sit on a raised platform in order to mitigate against potential flood risks and banking will be required around the perimeter running down to the current levels. The creation of the raised landform and the subsequent construction of the BESS will be completed over a 12-month period.
- 1.3.2 Landscape and ecology elements include:
- Amenity grass planting;
 - Proposed tree planting;
 - Species rich grass areas;
 - Grassland fringe habitat;
 - Wet Grassland in proposed attenuation feature;
 - Scrub planting;
 - Hedge planting; and
 - Invertebrate banks.

2.0 DEVELOPMENT & LANDSCAPE PROPOSALS

2.1 KEY DESIGN CONCEPTS AND CONSTRAINTS

- 2.1.1 The following list defines the key landscape design concepts and constraints which have guided the preparation of the landscape proposals:
- Retention and habitat enhancement of select areas of existing swale and balancing pond;
 - Provide additional planting to create a natural environment within and around the new balancing pond with the aim of creating a setting which is beneficial to the provision of Water Vole/Otter habitat; and
 - Provide undisturbed, tussocky, low-intensity grassland with sparse vegetation which is beneficial for Shrill Carder Bee habitat.

2.2 LANDSCAPE DEVELOPMENT OBJECTIVES

2.2.1 Design objectives aim to establish planting to:

- Create managed and protected environment that can be utilised as a beneficial asset to the surrounding character and wildlife;

Planting Species Mixes and Selection

2.2.2 Mixes of seeding, tree, hedge and scrub species selection has been carefully considered to maximise biodiversity value whilst also reflecting the existing landscape.

2.3 LANDSCAPE AND ECOLOGY ELEMENTS

Amenity grassland

- 2.3.1 Access track and fenceline areas will be seeded with amenity grass seed mix to ensure access routes and fencing can be easily managed and maintained.

Wildflower grassland

- 2.3.2 Existing peripheral areas of existing amenity grassland will be retained and protected, with a reduced management regime adopted. The grassland will be scarified and overseeded using a suitable wildflower meadow mix.

New Attenuation Pond

- 2.3.3 The north eastern section of the site will include an attenuation basin comprising of a wet grassland habitat pond to accommodate flow and high rainfall events will be created. This will be a permanent pond bounded by species rich grassland habitat.

Seeding

- 2.3.4 A seed mix would be sown in April and would provide cover in the following year. Seeding areas will be 10-20cm above water level and the surface of the ground would be lightly broken up using hand tools immediately before sowing. Seed would be hand sown in a 10-20cm wide strip at the rate of 3g per 5m length, the seeding areas being lightly pressed to maximise the contact between seeds and soil into the ground.

Badger

- 2.3.5 There were no active badger 'Meles meles' setts found within the site or within 30m of the site boundary during the survey in November 2024 (Badger Survey Report, Tetra Tech, 2025). Following the field surveys, badgers have been confirmed to use the wider Uskmouth Power Station site, for foraging and commuting. Based on the Construction Environmental Management Plan (CEMP) and Construction Method Statement (CMS), there are unlikely to be adverse effects on badger through loss of habitat (setts and/or foraging), severance of connectivity, and disturbance during the construction and operational phase (Tetra Tech, 2024).

Given the presence of a partially active badger sett approximately 80 meters east of the site, it is unlikely that construction activities will directly disturb the known sett; however, they may impact the foraging and commuting routes utilized by the badgers.

Due to the suboptimal habitat, characterized by modified grassland within the site and buffer zone, it is highly unlikely that badgers will establish new setts in the area, suggesting that the affected region of proposed development is likely to remain uninhabited.

It is recommended that a preliminary pre-construction walkover of the site be conducted to ensure that no badgers are present in the area, thereby minimizing the risk of disturbing or harming them.

Otters

- 2.3.6 Otters *Lutra lutra* are active in the local area and are associated with the River Usk and ditches within the wider power station. An active breeding otter holt is known to be present on the side of the River Usk but the BESS development located is 490m from the holt).

Localised areas of dense cover with the plantation woodland and Julian's Gout have the potential to be used by otters to lay up during the day, however, the open structure of the woodland lacks cover and there have been no signs of otter using the habitat. The habitats within the planning application boundary therefore have negligible value for otters but the habitats in the surrounding area have district level importance for the otter population using the River Usk (CEMP, Tetra Tech, 2024).

It is anticipated that there will be elevated noise during construction activities, but otters are known to be able to tolerate considerable levels of human disturbance (and otters currently use several areas of the wider power station including the attenuation pond, showing habituation to background noise and the movements of people). In addition, otters have very large territories and individuals will have a number of alternative resting sites. Individuals would be expected to avoid foraging habitats subject to higher levels of noise for the duration of the activity.

The BESS will be located a minimum of 70 m from the boundary of the River Usk (and 490m from the known otter breeding holt) with the plantation woodland providing a buffer between potential foraging areas and BESS development.

Breeding birds

- 2.3.7 A few breeding bird species are associated with built structures in the wider power station and may nest within the site including house martin *Delichon urbicum*, swallow *Hirundo rustica*, and starling *Sturnus vulgaris*. Pied wagtail *Motacilla alba* and herring gull *Larus argentatus* could also occur and there is potential for peregrine *Falco peregrinus* (protected under Schedule 1 of the WCA and listed Annex I of the Birds Directive) to nest on large power station buildings.

No active nests were recorded on the attenuation pond in 2023, however, in previous years the following species have been confirmed as nesting in the pond and adjoining habitat: gadwall *Anas strepera*, mute swan *Cygnus olor*, coot *Fulica atra*, mallard *Anas platyrhynchos*, tufted duck *Aythya fuligula*, whitethroat *Curruca communis*, wren *Troglodytes troglodytes*, reed warbler *Acrocephalus scirpaceus*, blackcap *Sylvia atricapilla* and dunnock *Prunella modularis*. The breeding bird assemblage recorded in the locality of the development is classified as low (local) value. No breeding birds have been recorded in the cooling tower blocks and no ground nesting birds were recorded breeding in the grassland (CEMP, Tetra Tech, 2024).

Wintering birds

- 2.3.8 The wintering bird surveys undertaken in winter 2022 / 2023 recorded bird activity on the intertidal habitats associated with the margins of the River Usk (including Julian's Pill) and the adjoining part of the Severn Estuary. The intertidal habitats where wintering bird activity was recorded lies 80m from the Site at the closest point. Black redstart *Phoenicurus ochruros*, an uncommon passage migrant and winter visitor, was recorded around the cooling tower blocks

within the site and across the wider power station in low numbers. Records of these birds are considered to have regional levels of importance.

Common sandpiper Common sandpiper *Actitis hypoleucos* was an uncommon winter visitor in the intertidal habitats to the north of the station and is of district importance. The following species were present in these areas at numbers of local importance: black-headed gull *Chroicocephalus ridibundus*, lapwing *Vanellus vanellus*, teal *Anas crecca*, wigeon *Mareca penelope*, dunlin *Calidris alpina* and mallard *Anas platyrhynchos* (CEMP, Tetra Tech, 2024).

Bats

2.3.9 The results of the bat activity surveys indicate that the site is used by at least eight of the 18 resident British bat species including:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*;
- Nathusius' pipistrelle *Pipistrellus nathusii*;
- Leisler's bat *Nyctalus leisleri*;
- Noctule *Nyctalus noctule*;
- Serotine *Cnephaeus serotinus*;
- Daubenton's bat *Myotis daubentonii*;
- Brown long-eared bat *Plecotus auritus*.

2.3.10 A small number of calls from bats of the *Myotis* genus were recorded that could not be identified to species level. It is therefore possible that more than one species from this group uses the site. Foraging was focused over offsite scrub to the east of the internal access road. Sporadic and low levels of foraging was recorded around the cooling towers.

The ground inspections of buildings identified a low suitability potential roost feature in the southern cooling tower block which will be demolished. No bats were identified from the subsequent bat emergence survey in June 2023. The ground inspection identified potential bat roost features in the National Grid building, the main power station building and the storm water pumping station. These buildings are outside of the application site and will not be affected either directly or indirectly by the development (CEMP, Tetra Tech, 2024).

2.3.11 Artificial bat boxes are installed on some of the larger ornamental poplar trees beyond the southern boundary. Soprano pipistrelle, brown long-eared bat and pipistrelle droppings were all recorded using these boxes in summer 2019. The flyover bridge supported multiple small common pipistrelle roosts and a low status soprano pipistrelle roost in 2019. The bridge is 175m long with the northern end of the bridge adjoining the poplar tree line 50m from the footprint of the BESS development. The internal access road included within the Site runs parallel to the flyover bridge.

2.3.12 No further bat boxes are included into the current landscape plan due to no trees present within the application boundary.

Reptiles

- 2.3.13 The area of grassland between the cooling tower blocks which will be lost is suitable for reptiles, in particular slow-worm *Anguis fragilis*, and the development is expected to result in displacement of reptiles from into adjoining grassland (CEMP, Tetra Tech, 2024). The grassland and SuDS within the BESS are expected to support invertebrate prey and develop features of potential value for reptiles.

Dormouse

- 2.3.14 Previous surveys for dormouse survey in 2019 found no evidence of dormice in the broadleaved woodland, bramble thicket and dense scrub in the wider power station site. The potential value of the habitat for dormouse has not changed significantly since the 2019 survey and the species is considered to be absent from the Site (CEMP, Tetra Tech, 2024).

Shrill carder bee

- 2.3.15 Shrill carder bee *Bombus sylvarum* is a feature of the Gwent Levels SSSIs, the area of national importance and a stronghold for this species. Shrill carder bee has a preference for flower-rich, unimproved grassland and coastal marshes where a long flowering season supplies continuous forage (notably various vetches, knapweeds, red clovers and yellow composites). Narrow-leaved bird's-foot trefoil *Lotus tenuis* is a key forage plant for shrill carder bee. It appears to favour seasonally-wet conditions, but can cope with reasonably dry summers with water available below the ground surface. In grasslands without disturbance the plant seems to survive for a number of years until it is out-competed by grasses and other vegetation (Bumblebee Conservation, 2024).
- 2.3.16 Shrill carder bee requires undisturbed, tussocky, low-intensity grassland with patches of sparse vegetation and small areas of bare or broken ground. They can nest close to ponds provided the immediate nesting micro-sites are dry, tussocky and remain undisturbed. Shrill carder bee will not use waterlogged soils. A blend of low-intensity cutting regime, late-summer floral abundance and undisturbed nesting microsites are critical for shrill carder bee successful nesting.

3.0 ECOLOGICAL ENHANCEMENT

3.1 HABITATS FOR SHRILL CARDER BEE

General Habitat Management

- 3.1.1 Management recommendations for shrill carder bee tend to focus on ensuring plentiful flower rich habitat with suitable forage is available from April to late September/October (e.g. rotational cutting/grazing, leaving uncut strips, ceasing summer grazing, rotational hedge/bank/ditch cutting, restoration or establishment of new wildflower grasslands and/or pollen & nectar margins).

3.1.2 Because this species emerges late and reaches its peak activity towards the end of the season, it is vulnerable to mid-summer mowing or grazing, which can reduce the availability of forage during late summer and early autumn when colonies are largest and producing reproductives (queens and males). Well-meaning “no cut” policies or a single late autumn cut — sometimes adopted in response to pollinator protection messages — may not always deliver the best outcome. Ideally a staggered, mosaic cutting regime with different areas cut at different times between May and September/October can provide a more continuous supply of flowers for shrill carder bee. Cutting some swards in May, for example, can encourage a second flush of flowering later in the summer and extend the period of available forage. Such mosaic management can also help counteract shifts in phenology associated with a warming climate by removing early flower and seed set and stimulating re-flowering (Bumblebee Conservation, 2024).

3.1.3 In addition to providing foraging habitat for shrill carder bee, nesting habitat is also crucial (e.g. rough/tussocky grass and scrubby areas left undisturbed March-October, south-facing aspect preferably).

Nesting habitat must comprise:

- Tussocky grass and rough field margins: patches (10–20 clusters per ha) of tall, sparser vegetation up to 30–50 cm with drier microsites and some exposed soil/leaf litter at the base;
- Bare ground patches: small (0.5–2 m²) south- or east-facing bare spots, ideally close (<100 m) to flower-rich patches;
- Undisturbed overwintering: designated areas with no soil disturbance between Oct–Apr to be created and marked in site plans so construction/maintenance avoids compaction or scraping; and
- Woody/scrubby edges: small, low scrub patches (gorse, bramble) at low density for shelter is allowed to avoid full shading of flower meadows.

3.1.4 Management of habitats to maintain a mosaic habitat (with open flower areas alongside undisturbed nesting habitat) is recommended (e.g. rotational vegetation clearance and disturbance).

Habitat-specific recommendations

3.1.5 Foraging habitat: Narrow-leaved bird’s-foot trefoil sourcing possibility from Great Traston (Solutia) the Gwent Wildlife Trust reserve to be investigated to enrich wildflower grassland as this plant is main shrill carder bee food source.

Wildflower grassland: (peripheral amenity grassland) to be scarified & overseeded with mix of Emorsgate Seeds EM1 Basic General Purpose Meadow Mixture (10% wildflowers and 90% grasses), species include:

- Betony *Betonica officinalis* / *Stachys officinalis*
- Common knapweed *Centaurea nigra*
- Wild carrot *Daucus carota*
- Oxeye daisy *Leucanthemum vulgare*

- Ribwort plantain *Plantago lanceolata*
- Salad burnet *Poterium sanguisorba* ssp. *Sanguisorba*
- Selfheal *Prunella vulgaris*
- Meadow buttercup *Ranunculus acris*
- Yellow rattle *Rhinanthus minor*
- Red campion *Silene dioica*
- Common bent *Agrostis capillaris*
- Crested dogstail *Cynosurus cristatus*
- Red fescue *Festuca rubra*
- Smaller cat's-tail *Phleum bertolonii*
- Smooth-stalked meadow-grass *Poa pratensis*.

and EG10 Tussock Grass Mixture, species include:

- Common bent *Agrostis capillaris*
- Meadow foxtail *Alopecurus pratensis*
- Grey sedge *Carex divulsa* ssp. *Divulsa*
- Crested dogstail *Cynosurus cristatus*
- Cocksfoot *Dactylis glomerata*
- Sheep's-fescue *Festuca ovina*
- Slender-creeping red fescue *Festuca rubra* ssp. *rubra*
- Smaller cat's-tail *Phleum bertolonii*
- Tall fescue *Schedonorus arundinaceus*

as per Landscape plan PRJ01-TTE-00-ZZ-DR-L-4003 to create high-value foraging strips and buffers for shrill carder bee.

3.1.6 In addition, *invertebrate banks* will be created using rich grassland Emorsgate Seeds EM2 Standard General Purpose Meadow Mixture, species include:

- Yarrow *Achillea millefolius*
- Betony *Betonica officinalis*
- Common knapweed *Centaurea nigra*
- Wild carrot *Daucus carota*
- Hedge bedstraw *Galium album*
- Lady's bedstraw *Galium verum*
- Oxeye daisy *Leucanthemum vulgare*
- Ribwort plantain *Plantago lanceolata*
- Salad burnet *Poterium sanguisorba* ssp. *sanguisorba*
- Cowslip *Primula veris*
- Selfheal *Prunella vulgaris*
- Meadow buttercup *Ranunculus acris*
- Yellow rattle *Rhinanthus minor*
- Red campion *Silene dioica*
- Bladder campion *Silene vulgaris*
- Common bent *Agrostis capillaris*

- Crested dogstail *Cynosurus cristatus*
- Red fescue *Festuca rubra*
- Smaller cat's-tail *Phleum bertolonii*
- Smooth-stalked meadow-grass *Poa pratensis*.

3.1.7 Single annual cut late Sep–mid Oct is required removing arisings.

3.1.8 New balancing pond and nearby area seeded with Emorsgate EM8 Meadow Mixture for Wetlands can also benefit shrill carder bee by creating gently shelving margins with tussocky emergent grasses and sedges to provide tussock nests and shelter. Marginal vegetation to be cut on rotation, leaving some margins uncut each year. Cuttings from margins to be removed away from water to prevent nutrient input. Where cuttings are left, ensure they do not smother emergent plants.

3.1.9 Nesting habitat (critical for shrill carder bee): Undisturbed nesting habitat will be created within the new tussocky grassland by implementing a rotational partial-cutting regime, as well as within grassland fringe, which will be cut once late Sep–mid Oct is required removing arisings.

3.2 ECOLOGICAL SURVEY

3.2.1 Grassland areas – 1/3 rd in May, 2/3 rds in September Years 1–5: Intensive monitoring (annual habitat checks; monthly bumblebee transects Apr–Sep; floral monitoring thrice per season).

Beyond the 5 year period of the LEMP

- Years 6–10: Reduced intensity but still frequent (annual habitat audit; bumblebee transect every other month Apr–Sep; floral monitoring twice per season).
- Years 11–30: Long-term maintenance monitoring (biennial targeted surveys, with annual habitat audit and opportunistic checks after management events).

Habitat Survey Assessment Update	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	To be reviewed following the 5 year LEMP period	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11-30	Year 30 onwards
Existing scrub and grassland													
Grassland areas – Years 1–5: Intensive monitoring (annual habitat checks; monthly bumblebee transects Apr–Sep; floral monitoring thrice per season).	x	x	x	x	x		x	x	x	x	x		x
Years 6–10: Reduced intensity but still frequent (annual habitat audit; bumblebee transect every other month Apr–Sep; floral monitoring twice per season).					x		x	x	x	x	x		
Years 11–30: Long-term maintenance monitoring (biennial targeted surveys, with annual habitat audit and opportunistic checks after management events).												Every second year	x

Table 3 Habitat Survey Assessment Update

4.0 MANAGEMENT, MAINTENANCE AND MONITORING

4.1 OUTLINE OBJECTIVES

- 4.1.1 The management and maintenance objectives have been formulated to achieve and fulfil the overall design concepts. The objectives are set out as: design, management, maintenance, and monitoring.

4.2 MANAGEMENT OBJECTIVES

- 4.2.1 The management objectives set out below are designed to achieve and fulfil the overall design concepts and will extend over a 5 year period.

Years 0-5

- To undertake periodic maintenance **as necessary** including weeding and pruning to ensure successful establishment of planted stock;
- Maintain planting **as necessary** to ensure original intention of landscape design strategy is achieved as the planting establishes and matures;
- Remove weeds and self-seeded tree species **as necessary** from planting areas to eliminate competition for nutrients and ensure original intention of landscape design strategy is achieved;
- Any litter to be removed from site as necessary by the client.
- Replace dead/dying plants **where necessary** to ensure the original intention of the landscape design strategy is achieved;
- Provide enough resources, including **necessary** labour, materials and machinery to ensure maintenance is undertaken;
- To undertake periodic maintenance **as necessary**; and,
- Update habitat assessment to ensure habitats meet target conditions after first year maintenance; habitat assessment to be carried out bi-annually thereafter the next 10 years **as necessary**.

- 4.2.2 Beyond 5 years, the medium- and longer-term management objectives transferred into the wider Uskmouth BESS Site management regime is recommended to include the following:

Medium to long-term management

- Undertake periodic maintenance **as necessary** including initial mowing to ensure planting establishes successfully and landscaping achieves intended original design;

- Update habitat assessment to ensure habitats meet target conditions – to be carried out bi-annually for the first 10 years, then once every 5 years thereafter;
- To re-assess maturing landscape status to review against maintenance programme and schedules and determine if alterations need to be made; and,
- To ensure the longevity of the landscape and ecology within the scheme.

4.3 ROLES AND RESPONSIBILITIES

- 4.3.1 The proposed management operations are to be carried out by a contractor for a period of 5 years after which the management of the landscape resource will be transferred and incorporated into the Afon Wysg BESS Site site-wide management regime **where necessary**.
- 4.3.2 Management principles are set out in Section 5 of this report and a maintenance schedule is included within **Appendix D**.

4.4 MAINTENANCE OBJECTIVES

- 4.4.1 Grasslands, planting and aquatic plantings are important features of the proposed development, both in terms of biodiversity and in creating a natural environment for the Shril Cader Bee. Maintenance and pruning schedules are set out in **Appendix C** and **D** of this LEMP.
- 4.4.2 Maintenance objectives will include regular planting checks and maintenance **as necessary** to ensure that the planting is establishing and is consistent with the original design intentions. The detailed maintenance schedule is to be followed.
- 4.4.3 The maintenance commitment for soft landscape areas is to achieve the design concepts and objectives. The management and maintenance operations are set out as they relate to the different landscape types which are as follows:
- Amenity grass planting
 - Proposed tree planting
 - Flower rich grass areas
 - Grassland fringe habitat
 - Wet Grassland in proposed attenuation feature
 - Scrub planting
 - Hedge planting
 - Invertebrate banks
- 4.4.4 For each category, management practices are defined, and ongoing maintenance requirements identified. Brief maintenance commitments for the different landscape types include the following operations (refer to **Appendix A** for the detailed maintenance specification Q35):
- Watering **if required** during establishment;
 - Pernicious weed control **if required**;
 - Pest and disease control **if required**; and

- General - litter picking to be carried out by the client.

4.5 MONITORING OBJECTIVES

- 4.5.1 Monitoring is an essential element of the plan to ensure that the results of any management work are measured and evaluated. Any lessons learnt from this monitoring can then be reflected in a review of the management plan, which should normally be made every two years and after ten years thereafter every five years. An annual review will be carried out by client to ensure that specific management tasks have been carried out..

5.0 DETAILED OBJECTIVES, PROTECTION, MANAGEMENT AND MAINTENANCE

- 5.1.1 The below details objectives and protection measure any existing retained trees and scrub, and prescriptions for the creation of tree, shrub, hedgerows and herbaceous planting.
- 5.1.2 Trees and shrubs/herbaceous species shall be implemented during the first planting season after the hard landscape has been constructed to prevent damage to the new vegetation and to avoid compaction of soils. Avoid planting if the ground is waterlogged or if the ground is frozen.
- 5.1.3 Climatic conditions need to be observed with no planting/maintenance to be carried out in extremes of temperature $<3^{\circ}\text{C}$ or $> 24^{\circ}\text{C}$ (without suitable provision for irrigation). If the water supply is, or is likely to be, restricted by emergency legislation then planting/maintenance should be suspended.

Times of year for planting:

- Deciduous trees and shrubs: Late October to late March; and
- Container grown plants: At any time of the year subject to weather conditions.

5.2 EXISTING HABITAT

- 5.2.1 The construction of the development will not retain existing vegetation as part of the site development. The development will create a new pond for attenuation purposes with associated areas of grassland, scrub and tree vegetation and a hedgerow between the pond area and the battery storage space.

5.3 PROPOSED LANDSCAPE FEATURES

- 5.3.1 Refer to **Appendix A** for detailed Q35 NBS specification.

Native Tree Planting

Detailed objectives

- 5.3.2 Native tree planting is proposed to assist in integrating the development with the surrounding landscape character whilst providing additional height, balance and scale to the scheme and provide additional habitat for wildlife. All specimen trees are planted and supported as per specification information on drawings **B068690-TTE-00-ZZ-DR-L-4001-4003 - Detail Planting Plans - Sheet 1-3**.
- 5.3.3 Trees will be planted as standards and double staked with half-timber stakes until the second year after planting. Each tree to receive bark mulch to 1m diameter around the tree stem. Native tree species proposed as part of the development include Acer, Alder and Rowan.

Protection

- 5.3.4 New tree planting if sourced from a nursery will need to be protected from becoming damaged during transporting to site and during any subsequent construction activities which may arise following implementation of the landscape scheme. Trees should also be planted and secured with tree stakes and ties which should be monitored and adjusted accordingly during the growing season.

Management and maintenance

- 5.3.5 Management would be more intense within the first 5 years after the trees have been planted to ensure successful establishment. This would involve ensuring that adequate resources, tools, machinery and staff are available for irrigation, weed control, mulching, pruning and replacing failed trees. In the long-term, 5-10+ years, management would be less intense with maintenance operations being undertaken periodically as necessary, including tree thinning and treatment of pest and diseases.
- 5.3.6 Maintenance commitments for the proposed trees will be minimal after the initial establishment period although the following will need to be undertaken **where necessary**:
- Selective pruning to improve health, tree form and longevity;
 - Inspections, including adjusting tree stakes and ties (if utilised) when necessary and after strong winds;
 - Mulching;
 - Additional watering;
 - General litter picking by the client; and
 - Pest and disease control.

Hedge and Shrub Planting

Detailed objectives

- 5.3.7 A Mixed native species hedgerow is proposed to the boundaries of the site acting as landscape buffer between the battery storage area and the adjacent pond area.
- 5.3.8 Native Hedgerow Mix to be planted as 5 plant/ linear metre, double staggered at 0.4m centres.
- 5.3.9 New hedgerow planting will require protection during construction if construction is still being carried out following the planting works and also during establishment. Care must also be taken during any removal of material obtained from pruning and other maintenance activities.

Management and maintenance

- 5.3.10 The first cut to newly planted hedgerows is recommended within years 2 to 3 (dependant on growth) and will consist of 'facing up' either side of the hedge. All hedge cuts must be undertaken using appropriate hand or power tools.
- 5.3.11 If possible, only one side of hedgerows will be cut annually. Cutting every 2 years rather than annually will create a bushier hedge for wildlife nesting/refuge.

- 5.3.12 Hedgerows can be cut between September to February to avoid bird nesting season. The later hedges are cut the greater the advantage they provide to foraging wildlife.
- 5.3.13 All hedgerow management is to be carried out outside of the bird nesting season (between March and August). Should any works be required within the bird nesting season an assessment will be undertaken by a suitably qualified ecologist before any works commence.
- 5.3.14 Additional hedgerow cutting may be required from a health and safety perspective should there be a good growing season (although this is unlikely within the first few years of establishment of new hedgerows, it is to be monitored).
- 5.3.15 Stakes, tubes, guards, rabbit proof fencing (as appropriate) and their ties shall be inspected twice per year in October and March, and adjusted to allow for the growth of each plant. Any damaged items shall be removed off site and replaced with new items.
- 5.3.16 Stakes, tubes, guards and ties shall be removed from plants where they are no longer required and either disposed of off site or returned to the overseeing organisation for re-use.

Amenity Grass areas

Detailed objectives

- 5.3.17 Amenity grass areas will be mown to a short sward which will benefit the fenceline access and will be suitable for the management of the access and the fencing. Other operations will be as follows **where necessary**:
- Any scrub or trees invading the grass areas would be removed by pulling or cutting at the base to leave the soil and surrounding flora undisturbed. This will be undertaken annually;
 - All grassed areas will be kept free of litter;
 - Maintenance period: this shall be in effect until the end of the defects' liability period and the contract management period; and
 - Cuttings will be removed from site.
- 5.3.18 Amenity grass areas shall be cut with all operations be carried out using appropriate machinery and when weather and ground conditions are suitable. The frequency of cuts shall remain flexible in order to accommodate growth rates and weather conditions. As a general guide cutting is likely to be required every two weeks on amenity grass areas. Close mown areas to be kept to a sward height of 50mm. The first cut each year shall be carried out before mid April and grass mowing shall continue to mid October.

Protection

- 5.3.19 Protection of grass areas would be undertaken during the construction phase to ensure that any grass seed which may have been sown prior to completion of the development is not walked on or that any machinery is not laid on the grass or driven over by vehicles.

Management and maintenance

5.3.20 Management and maintenance in the initial period would be to ensure that the grass establishes and to allow for overseeding **if necessary**. Grass cutting should be undertaken during the growing season and arisings should be removed off site to ensure that the grass areas can still receive sunlight. Management and maintenance operations would include:

- Inspections;
- Grass cutting;
- Watering;
- Pest and disease control;
- Litter removal by the client
- Weed control;
- Edge trimming; and
- Raking

Species Rich Grass areas

Detailed objectives

- 5.3.21 Establishment of species-rich grassland will be formed by placement of subsoil to produce a growing base of low nutrient status. The grassland will be sown with a seed mix of Emorsgate EM1 Basic General Purpose Meadow Mixture (90%), sown at a rate of 4g/m² and EG10 Tussock Grass Mixture (10%) or similar sown at a rate of 5g/m² which will enhance the floral species and biodiversity and provide suitable habitat for a range of species including the Shrill Carder Bee.
- 5.3.22 On-going management of the grassland **where necessary** will aim to maintain and promote the establishment of grasses and wildflowers associated with less intensive grassland habitats and the wildlife these support.

Protection

- 5.3.23 Protection of grass areas is to be undertaken during the construction phase to ensure that any grass seed which may have been sown prior to completion of the development is not walked on, that any machinery is not laid on the grass, or it is not driven over by vehicles.

Management and maintenance

- 5.3.24 Following establishment grass areas will be cut after flowering in September to mid-October to c50mm, after plants have shed seed. The cuttings will be removed. Scrub will be removed annually where necessary.
- 5.3.25 Grass areas will be mown infrequently in a rotational partial cutting regime to allow for a mix of lengths with a longer sward and tussocks of grass in places which will create microhabitats and benefit certain species and increase biodiversity for invertebrates.
- 5.3.26 An annual cut is required in mid-May for the part of flower rich ephemeral & wildflower grass (20–30% only) with the rest of wildflower left uncut until late Sep–mid Oct. The rest of the grassland to be cut late Sep–mid Oct. All arisings from each cut will be collected and removed from site to

maintain the low nutrient status of the underlying substrate. Grassland areas to be cut should be rotated each year. There will be no cuts between mid-April and the end of July to maximise flowering and the setting of seed.

- Any scrub or trees invading the grass areas would be removed **where necessary** by pulling or cutting at the base to leave the soil and surrounding flora undisturbed. This will be undertaken annually;
- No fertilisers will be used as this will promote the proliferation of competitive species at the expenses of botanical diversity;
- Maintenance period: this shall be in effect until the end of the defects' liability period (as for planting maintenance); and
- Cuttings will be removed from site;

5.3.27 Management and maintenance in the initial period would be to ensure that the grass establishes and to allow for overseeding if necessary. Management and maintenance operations would include:

- Inspections;
- Watering;
- Pest and disease control;
- Litter removal by the client;
- Weed control;
- Grass cutting; and
- Edge trimming

Invertebrate Banks

Detailed objectives

5.3.28 Invertebrate banks will be created within the site area which will consist of 40cm raised grassy strips to provide additional habitat for invertebrates such as bees, beetles and spiders. These will be seeded with Emorsgate Seeds EM2 Standard General Purpose Meadow Mixture.

Protection

5.3.29 Protection of invertebrate banks is to be undertaken during the construction phase **as necessary** or during mowing operations to ensure that any grass seed which may have been sown prior to completion of the development is not walked on, that any machinery is not laid on the invertebrate banks, or are not driven over by vehicles.

Management and maintenance

5.3.30 Following establishment grass areas will be cut after flowering in September to mid October to c50mm, after plants have shed seed. The cuttings will be removed. Scrub will be removed annually where necessary.

- 5.3.31 Invertebrate banks will only be mown on a 2 to 3 year basis only to encourage tussock grass growth to provide overwintering and nesting habitats.
- 5.3.32 Management and maintenance in the initial period would be to ensure that the grass establishes and to allow for overseeding **if necessary**. Management and maintenance operations would include:
- Inspections;
 - Watering;
 - Pest and disease control;
 - Litter removal by the client; and
 - Weed control

Attenuation pond

Detailed objectives

- 5.3.33 The attenuation basin will be located in the north east of the site. The attenuation basin has been designed for storage capacity and to help to filter run off and trap sediment. The basin will help to create additional habitats and will create wildflower areas with natural depressions which will collate water during storm events.
- 5.3.34 The base of the pond will be seeded with Emorsgate seed mix EM8 – Meadow mixture for wetlands (or similar agreed). The seed mix will also account for the fringing and some marginal plants.

Management and maintenance

- 5.3.35 The attenuation basin will need to be maintained **as necessary** in order to make sure that the storage capacity is retained which will enable the SuDS system to work efficiently.
- 5.3.36 Pond management and maintenance should ensure that the original profile of the pond is maintained.
- 5.3.37 Any excessive vegetation or over dominance of one species within ponds should be removed in late autumn and winter.
- 5.3.38 New planting around the balancing the pond will be managed to ensure that ecological habitats are preserved to ensure existing fauna is not displaced as a result.
- 5.3.39 The main element of the maintenance will be focused on a mowing regime with any marginal vegetation and tussocky grasses cut in rotation allowing for some uncut margins each year. Regularly mowing will only be particularly necessary along access routes for the basin.
- 5.3.40 During establishment the seed mix EM8 should not be mowed until Late July/August after flowering with a late cut in September to mid October and arisings removed. The meadow grassland should be cut back by suitable method of either scythe, strimmer or mower to 50mm.
- 5.3.41 Other maintenance tasks will include the following to enable an active SuDS system **as necessary**.

- Watering - water when necessary and through periods of drought to make sure the grass areas establish and continue to thrive;
- Mowing;
- Sediment removal when this exceeds 25mm depth;
- Inspection for correct operations;
- Inspect all inlets, outlets and overflows for silt accumulation;
- Inspect banksides, structures and pipework for damage; and
- Pest and disease control; and
- Litter removal by the client.

6.0 ANNUAL MAINTENANCE PROGRAMME

6.1.1 The following annual maintenance programme is suggested **as necessary** for the soft landscape areas at the site, to ensure the maintenance work is carried out at the most beneficial time. For all seasons, the following will need to be undertaken:

- Inspections, including adjusting tree stakes and ties when necessary and after strong winds;
- Watering - water when necessary and through periods of drought to ensure the planting / grass areas continue to thrive;
- Pest and disease control; and
- Litter removal by the client.

Tree planting

Action	Details	Timing	Standard
Watering	Water to establish trees and thereafter during periods of drought. Water should be applied slowly to avoid soil erosion.	When necessary	As a general guide to provide an adequate soaking of dry soil, the following are minimum quantities required: • 1.5 - 2.0m high: 10 litres • 3.0 - 5.0m high: 20 litres • 6.0 – 8.0m high: 40 litres • 9.0 – 10.0m high: 100 litres Refer to Appendix A : Q35/ 110; 155; 160
Weed control	Control weeds in planting area by hand weeding or spot application of a translocated herbicide	February; April; May; July	Refer to Appendix A : Q35/ 645; 650
Tree stakes/ties	Tree stakes will be needed for at least three years and should be replaced if broken or decayed	-	Stakes and ties to be inspected at least once a month and after very heavy winds. Adjust ties if necessary, to conform to stem growth or to prevent chafing. Refer to Appendix A : Q35/ 510
Pruning	At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood	Autumn, avoiding the bird nesting season	Refer to Appendix A : Q35/ 540 - 570 and Appendix C for pruning schedule
Pest and disease control	To be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Litter removal	Collect and remove all extraneous rubbish	Through-out the year.	Refer to Appendix A : Q35/ 190

Action	Details	Timing	Standard
Stakes, tubes, guards, rabbit proof fencing and their ties.	Any damaged items shall be removed off site and replaced with new items. Stakes, tubes, guards and ties shall be removed from plants where they are no longer required.	Inspected twice per year in October and March	Refer to Appendix A : Q35/ 530

Hedge and Shrub planting

Action	Details	Timing	Standard
Watering	Watering shall be carried out to maintain vigorous plant growth	When necessary	Water is to soak into the ground, it is not sufficient to dampen the surface. Water must be applied slowly to avoid damage to plants. Refer to Appendix A : Q35/ 110; 155; 160
Weed control	Hand weed a minimum of 4 times per year.	February; April;	Refer to Appendix A : Q35/ 645; 650
Pest and disease control	to be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Pruning	At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood.	February - October	Shrubs : Prune to ensure the plant is kept well balanced and in good shape. (Refer to Appendix B for pruning techniques and Appendix C for pruning schedule). Refer to Appendix A : Q35/ 540 - 570
Litter removal	Collect and remove all extraneous rubbish	Through-out the year.	Refer to Appendix A : Q35/ 190
Stakes, tubes, guards, rabbit proof fencing and their ties.	Any damaged items shall be removed off site and replaced with new items. Stakes, tubes, guards and ties shall be removed from plants where they are no longer required.	Inspected twice per year in October and March	Refer to Appendix A : Q35/ 530

Grass

Action	Details	Timing	Standard
Watering	Watering to be carried out to allow establishment of grassland areas.	When necessary only during extended dry conditions	Refer to Appendix A : Q35/ 110; 155; 160

Action	Details	Timing	Standard
Mowing	The grass area shall be managed to specified heights.	March - October	Refer to Appendix A : Q35/ 170; 210; 220; 225;
Weed control	Hand weed a minimum of 4 times per year.	February - September	Refer to Appendix A : Q35/645; 650
Raking/ Scarifying	Relieve thatched conditions and remove dead grass in the autumn over the whole of the grassed areas.	September	Appendix A
Spiking (Aeration)	Aerate to increase water, nutrient and oxygen movement into the soil	September	Refer to Appendix A
Pest and disease control	To be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
General	If surface is disturbed by overuse, restore by firming or lifting with a fork	When required	-
Litter removal	Collect and remove all extraneous rubbish	Through-out the year.	Refer to Appendix A : Q35/ 190

APPENDICES

APPENDIX A - MAINTENANCE SPECIFICATION Q35

Q35

Landscape maintenance

Generally

105 Maintenance objectives

1. Location: All soft landscaped areas as shown on Detail Design drawings
 - 1.1. Duration: Five years
2. Aims: Enhanced landscape quality and increase biodiversity
3. Restrictions: Restrictions relating to operational use of site. Confirm with barracks senior command prior to programming any maintenance operations
4. Results: Establishment of planting areas to design objectives

110 Notice

1. Give notice before
 - 1.1. Application of herbicide.
 - 1.2. Application of fertilizer.
 - 1.3. Watering.
 - 1.4. Each site maintenance visit.
2. Period of notice: Two weeks

130 Reinstatement

1. Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstatement to original condition.

140 Control of mammalian pests

1. Specialist firms: Submit proposals
 - 1.1. Method: Submit proposals

155 Watering

1. Supply: Potable mains water
2. Quantity: Wet full depth of topsoil
3. Application: Do not damage or loosen plants.
4. Compacted soil: Loosen or scoop out, to direct water to rootzone.
5. Frequency: As necessary for the continued thriving of all planting

160 Water restrictions

1. 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

1. General: Unless specified otherwise, dispose of arisings as follows:
 - 1.1. Biodegradable arisings: Remove to recycling facility
 - 1.2. Grass cuttings: Remove to recycling facility
 - 1.3. Tree roots and stumps: Remove from site
 - 1.4. Shrub and tree prunings: Remove to recycling facility
 - 1.5. Litter and nonbiodegradable arisings: Remove from site

181 Mechanical equipment

1. General: Minimize.
2. Prohibited equipment: To be agreed with site operations manager
3. Timing: Use of mechanical equipment to be agreed with site operations manager

190 Litter

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

195 Protection of existing grass

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

197 Cleanliness

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

Grassed areas

211 Maintenance of grassed areas

1. Standard: To BS 7370-3. Carry out maintenance appropriate to each category of turf, as follows:
 - 1.1. Objectives: To BS 7370-3, Table 6.
 - 1.2. Programme: To BS 7370-3, clause 11.
 - 1.3. Mowing methods: To BS 7370-3, Table 3.

220 Grass cutting generally

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

225 Tree stems

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

250 Leaf removal

1. Operations: Collect fallen leaves.
2. Special requirements: None
3. Disposal: Remove from site for recycling

255 First cut of amenity grass area

1. Description: Grass area to fenceline
2. Height of initial growth: 75 mm
3. Preparation
 - 3.1. Debris and litter: Remove.
 - 3.2. Stones and earth clods larger than 25 mm in any dimension: Remove
4. Height of first cut: 50 mm
5. Mower type: Contractor's choice and by agreement with site operations manager
6. Arisings: Remove

265 Mowing general amenity grass areas

1. Grass height: 75 mm maximum
2. Arisings: Remove

272 Maintaining flowering wildflower meadows

1. Preparation: Before each cut remove litter and debris.
2. Height and frequency of cut in first growing season
 - 2.1. Time of first cut: May
 - 2.2. Height of first cut: 50 mm
 - 2.3. Frequency of subsequent cutting (minimum): After cut in May cut again in October
 - 2.4. Height of growth permitted (maximum): 100 mm
3. Height and frequency of cut in second growing season
 - 3.1. Time of cut: Rotational cut with 20-30% only cut in May and then a single cut in October
 - 3.2. Height of cut: 100 mm
4. Trimming: All edges.
 - 4.1. Arisings: Remove
5. Watering: As schedule and when instructed

Shrubs/ trees/ hedges

500 Establishment of new planting

1. Duration: Five years
2. Weed control
 - 2.1. Method: Keep planting beds clear of weeds by Hoeing and screefing.

- 2.2. 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.
3. Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
4. Watering: As schedule and when instructed

502 Establishment of new planting – Mycorrhizae

1. Time of year: During planting
2. Type: Arbuscular mycorrhizae granules
3. Spreading: Spread evenly into excavated planting space at time of planting
 - 3.1. Application rate: As manufacturer's recommendations

510 Tree stakes and ties

1. Inspection/ maintenance times: As scheduled and immediately after strong winds
2. Stakes
 - 2.1. Replace loose, broken or decayed stakes to original specification.
 - 2.2. If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
3. Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
 - 3.1. Where chafing has occurred, reposition or replace ties to prevent further chafing.
4. Removal of stakes and ties: Two years after planting
 - 4.1. Fill stake holes with lightly compacted soil.

520 Refirming of trees and shrubs

1. Timing: After strong winds, frost heave and other disturbances.
2. Refirming: Tread around the base until firmly bedded.
3. 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.

530 Tree & Shrub Shelters

1. Loose or defective shelters: Adjust, refix or replace to original specification and to prevent chafing.
2. Removal: During spring when no longer required to protect the tree/shrub.

537 Nesting wild birds

1. Survey: Before starting grass cutting, hedge or tree work during the period of February to August (inclusive), carry out a survey by a qualified ecologist and submit report
2. Accidental disturbance: Report immediately.

540 Pruning generally

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

545 Pruning of excessive overhang

1. Timing: Annually
2. Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
3. Special requirements: Allow ground cover plants to partially overlap paths and lawns

555 Pruning trees and shrubs

1. Standard: To BS 7370-4.
2. Special requirements: Growth retardants not permitted

575 Pruning ornamental shrubs

1. General: Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
2. Suckers: Remove by cutting back level with the source stem or root.

580 Pruning flowering species of shrubs

1. Time of year
 - 1.1. Winter flowering shrubs: Spring.
 - 1.2. Shrubs flowering between March and July: Immediately after the flowering period.
 - 1.3. Shrubs flowering between July and October: Back to old wood in winter.
 - 1.4. Rose bushes: Early spring to encourage basal growths and a balanced, compact habit.

605 Trimming establishing hedges

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

620 Removal of dead plant material

1. 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

1. Removal: As soon as possible
2. Replacement: In the next suitable planting season

645 Weed control generally

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

650 Hand-weeding

1. General: Remove weeds entirely, including roots.
2. Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
3. Completion: Rake area to a neat, clean condition.
4. Mulch: Reinststate to original depth.

655 Weed cutting by hand

1. Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 25 mm.

680 Soil aeration

1. Compacted soil surfaces
 - 1.1. Prick up: To aerate the soil of root areas and break surface crust.

- 1.2. Size of lumps: Reduce to crumb and level off.
- 1.3. Damage: Do not damage plants and their roots.

685 Soil level adjustment

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

690 Maintenance of loose mulch

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

700 Snow removal from shrubs/ trees

1. Standard: To BS 7370-4.
2. Plants subject to snow removal: Small trees and vulnerable shrubs
3. Timing: Within 24 hours of heavy snowfall

705 Winter leaf removal

1. Operations: Collect accumulations of drifted leaves from the vicinity and from planting beds.
2. Arisings: Remove

Tree work

810 Tree work generally

1. Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
2. Protection: Avoid damage to neighbouring trees, plants and property
3. Standard: To BS 3998.
4. Removing branches: Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
5. Appearance: Leave trees with a well-balanced natural appearance.
6. Chain saw work: Operatives must hold a certificate of competence.
7. Tree work: To be carried out by an approved member of the Arboricultural Association.

815 Additional work

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

820 Prevention of wound bleeding

1. Standard: To BS 3998.

825 Prevention of disease transmission

1. Standard: To BS 3998.

830 Cleaning out and deadwooding

1. Remove
 - 1.1. Dead, dying or diseased wood, broken branches and stubs.
 - 1.2. Fungal growths and fruiting bodies.
 - 1.3. Rubbish, windblown or accumulated in branch forks.
 - 1.4. Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
 - 1.5. Other unwanted objects, e.g. tree houses, swings.

835 Cutting and pruning generally

1. Tools: Appropriate, well maintained and sharp.
2. Final pruning cuts
 - 2.1. Chainsaws: Do not use on branches of less than 50 mm diameter.
 - 2.2. Hand saws: Form a smooth cut surface.
 - 2.3. Anvil type secateurs: Do not use.
3. Removing branches: Do not damage or tear the stem.
4. 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.
5. Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
6. Large branches: Remove only with prior approval
 - 6.1. Remove in small sections and lower to ground with ropes and slings.
7. Dead branches and stubs: When removing, do not cut into live wood.
8. Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
9. Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

840 Crown reduction/ shaping

1. General: Cut back selectively to lateral or sublateral buds or branches to retain flowing branch lines without leaving stumps.
2. Operations: Reduce crown by 15%

845 Crown lifting

1. Clearances: Remove branch systems to give clearance.
 - 1.1. Height: 2.5 m above footpaths

2. Removing branches: Remove whole branches back to the stem or cut lower portions of branches back to lateral or sublateral buds or branches. Do not leave stumps.

865 Bark damage

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

870 Cavities in trees

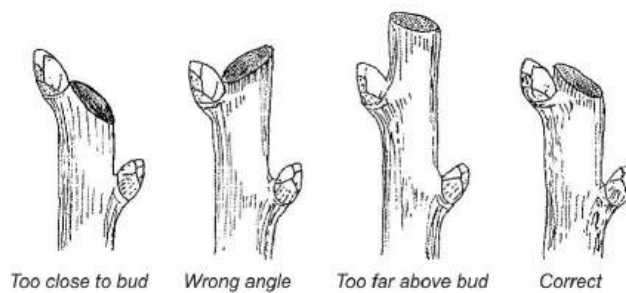
1. Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.
2. Water-filled cavities: Do not drain.
3. Sound wood inside cavities: Do not remove.
4. Cavity openings: Do not cover

APPENDIX B: PRUNING TECHNIQUES

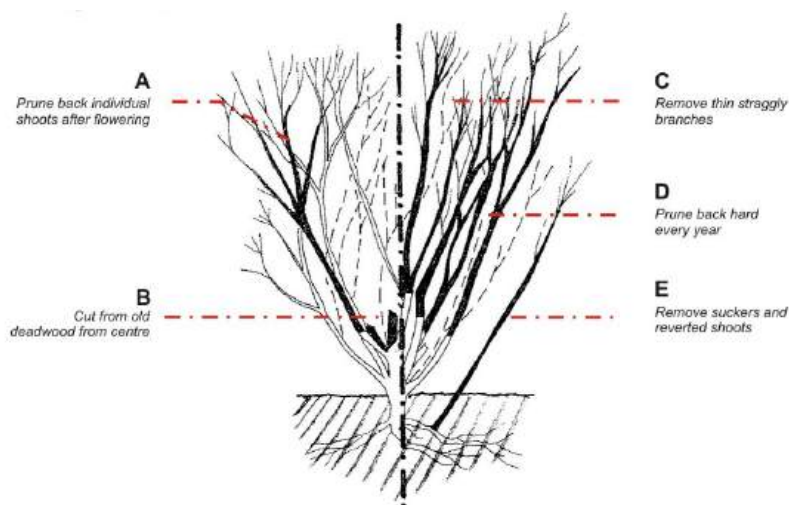
General

- All pruning cuts shall be made in accordance with BS 7370;
- Pruning shall be undertaken to promote flowering and fruiting in accordance with the species and age of the plant;
- Stems shall only be removed to retain the natural appearance of the individual plant species;
- All damage, diseased or deadwood material shall be removed from trees/shrubs;
- Any crossing or rubbing branches are to be removed from trees/shrubs;
- Plants may be permitted to overlap hard areas e.g. paving. If growth restricts the use of the paving, it will be necessary to trim by shortening long growths NOT by cutting indiscriminately along the edge; and
- Ground cover plants should not overhang grass areas because of the difficulty in keeping edges trimmed, prune back encroaching.

Pruning cuts



Pruning techniques



Taken from Landscape Management & Maintenance Handbook, Jones, Hing P (1990)

APPENDIX C: PRUNING SCHEDULES

Table 3 Pruning Schedules

Tree planting

Plant name	Pruning requirements	When to prune
Acer campestre	Pruning Group 1: Prune only from late autumn to midwinter Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Alnus glutinosa	Pruning Group 1 No routine pruning necessary. Remove diseased, damaged, congested or crossing shoots. Shoots that are growing in unwanted directions can also be pruned out. Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late winter or early spring

Plant name	Pruning requirements	When to prune
Sorbus aucuparia	Pruning Group 1 No routine pruning necessary. Remove diseased, damaged, congested or crossing shoots. Shoots that are growing in unwanted directions can also be pruned out. Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.

Native Mix shrub planting

Plant name	Pruning requirements	When to prune
Cornus sanguinea	Pruning Group 7: https://www.rhs.org.uk/plants/types/shrubs/colourful-stems-large-foliage	Cut back stems on a rotational process every 2-3 years
Corylus avellana	Pruning group 7: Late winter (February) or early spring (March) https://www.rhs.org.uk/advice/profile?pid=161	Late March to mid April after two years establishment period
Euonymus europaeus	Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Rosa canina	Pruning Group 21 Roses: Ref: https://www.rhs.org.uk/advice/profile?pid=178	Late summer after flowering
Salix caprea	Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Sambucus nigra	Pruning Group 1: prune only from late autumn to midwinter. Ref: https://www.rhs.org.uk/advice/profile?pid=549	Prune mid summer if silver leaf is an issue
Viburnum opulus	Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.

Hedge mix

Plant name	Pruning requirements	When to prune
Acer campestre	Trim hedge planting to required heights Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Cornus sanguinea	Trim hedge planting to required heights Pruning Group 7: Ref: https://www.rhs.org.uk/plants/types/shrubs/colourful-stems-large-foliage	Cut back stems on a rotational process every 2-3 years

Plant name	Pruning requirements	When to prune
Corylus avellana	Trim hedge planting to required heights Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Crateagus monogyna	Trim hedge planting to required heights Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Euonymous europaeus	Trim hedge planting to required heights Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter.
Prunus spinosa	Trim hedge planting to required heights Pruning Group 1: Ref: https://www.rhs.org.uk/advice/profile?pid=549	Late autumn to midwinter. Prune mid summer if silver leaf is an issue

APPENDIX D: MAINTENANCE SCHEDULES

Maintenance Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
General (site wide)																		
Remove litter/extraneous rubbish from all areas during each maintenance visit.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Water all plants as necessary to ensure establishment and subsequent healthy growth and in times of extreme weather.					x	x	x	x	x				x	x	x	x	x	x
Trees and plants which are missing, have died or have failed to make satisfactory growth extension will be replaced during the next available planting season; plants will be replaced with stock of size to original specification.			x							x	x		x	x	x	x	x	x
Tree planting	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Straighten and re-firm trees during each maintenance visit as necessary, and after strong winds.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Maintain a weed free area to 1m diameter at the base of each tree by hand weeding.										x			x	x	x	x	x	x
Top up mulch at base of tree to 1m diameter to maintain initial depth of 75mm.				x						x			x	x	x	x	x	
Undertake formative pruning to create a well-shaped canopy of branches with a single strong leader.										x			x					
Undertake selective pruning in the longer term to improve health, tree form and longevity.										x			x	x	x	x	x	x
Prune dead, damaged and diseased plant material as required using secateurs and handsaws without leaving a stub and retaining the branch collar. Arisings will be removed off-site and										x			x	x	x	x	x	x

Maintenance Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
diseased material disposed of in accordance with HSE Arboriculture and Forestry Advisory Group (AFAG) Guidance (www.hse.gov.uk/treework/resources/afag).																		
Where used remove guards, stakes and ties 3 years after planting.			x							x					x			
Monitor the health and condition of the trees and undertake remedial works as instructed by a competent arboricultural contractor.	x	x	x	x	x	x	x	x	x	x	x	x						x
Stakes, tubes, guards, rabbit proof fencing and their ties. Any damaged items shall be removed off site and replaced. Stakes, tubes, guards and ties shall be removed from plants where they are no longer required.			x							x								x
Native hedge planting	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Maintain a pernicious weed free area 2m wide along the base the hedge by hand weeding				x	x	x	x	x	x	x								
Top up mulch at base of hedge to maintain initial depth of 75mm.				x						x			x	x	x	x	x	x
Straighten and re-firm hedge plants during each maintenance visit as necessary.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Formative pruning cut to 45-60cm above ground Lateral branches will be trimmed back by fifty percent.				x	x								x					
A minimal trim of the hedge allowing for the hedge to increase in size, only a third of the hedge to be trimmed at any one time										x				x	x	x	x	x
Prune all damaged, diseased or dead wood and remove off site in accordance with local authority guidance.												x	x	x	x	x	x	x
Stakes, tubes, guards, rabbit proof fencing and their ties. Any damaged items shall be removed off site and replaced. Stakes, tubes, guards and ties shall be removed from plants where they are no longer required.			x							x								x

Maintenance Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Amenity grassland	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Mow to height of 50-75mm during approximate fortnightly visits in the growing season. Arisings to be removed off site.				x	x	x	x	x	x	x			x	x	x	x	x	x
Trim and neaten edges where necessary. Reinstate eroded or damaged areas				x	x	x	x	x	x	x			x	x	x	x	x	x
Control unwanted emerging scrub by mechanical means and herbicidal treatment of emerging stems.				x	x	x	x	x	x	x			x	x	x	x	x	x
Species rich grassland – including Emorsgate EM1 Basic General Purpose Meadow Mixture (90%), sown at a rate of 4g/m2 and EG10 Tussock Grass Mixture (10%) or similar sown at a rate of 5g/m2.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
20-30% only to be cut in May, with remaining area to be left until autumn cut in October					x					x			x	x	x	x	x	x
Reinstate eroded or damaged areas to original specification. Occasional over seeding may be required following grass cutting.									x								x	
Control unwanted emerging scrub or weeds by hand or by spot herbicide treatment if necessary.										x			x	x	x	x	x	x
New Balancing Pond	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Water seeded areas during establishment to ensure establishment and subsequent healthy growth.					x	x	x	x	x				x	x	x	x	x	x
Proposed pond – Periodic removal of any invasive growth on side of ponds to be hand cleared and left at side of pond for 2 days for fauna to move back into pond. Do not leave to compost to avoid nutrient run off.										x		x	x	x	x	x	x	x
De-silt pond periodically if required. Only third of pond to be desilted at any one time.										x							x	x

Maintenance Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Monitor vegetation encroachment into the open water habitat annually to maintain important open water habitat		x						x					x	x	x	x	x	x
Grass vegetation on pond edge should only be mown on rotational basis with a third of the area be left uncut (after yr 3).																x		
Invertebrate banking	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6 - onwards
Mowing of invertebrate banks after 3yrs and then in rotation every 2-3 years										x					x			x
Grass that has failed to make satisfactory growth extension will be overseeded during the next available planting season										x								

APPENDIX E – LANDSCAPE PLANTING PLANS
