

Glanyrafon Brook Woodland

Rhostyllen

Landscape Mitigation Plan

Report Ref: 238/R/500

August 2024

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Landscape Mitigation Plan

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1 Introduction

1.1 Author and qualifications

1.1.1 This Landscape Mitigation Plan (LMP) has been prepared by Marianne Dobson CMLI, BA Hons, FdScArb, MArborA, Lantra certified in Professional Tree Inspection in liaison with the Client, SG Estates Ltd, for the proposed landscape zone to a new footpath and cycleway at Glanyrafon Brook Woodland, Rhostyllen.

1.2 Purpose of the Plan

1.2.1 The LMP has been produced to provide a landscape strategy and a framework for establishment landscape management and maintenance for the proposed footpath and cycleway with bridge over Glanyrafon Brook. A soft landscape zone is to be established either side of the recreational route, through the woodland and through fields to the east, hereby referred to as the "Site".

1.3 Planning and development context

1.3.1 The site is located to the south of Rhostyllen and west of Hafod Road on the Erddig estate. The majority of the land is under the ownership of the National Trust, with a small section to the north at the railway overbridge, under the ownership of Network Rail.

1.3.2 A planning application will be submitted in relation to the proposed footpath and cycleway, bridge and soft landscape zone.

1.3.3 The purpose of this document is to set out the habitat protection, creation and management approaches for the landscape proposals, covering the five year establishment period after installation of the hard landscape and soft landscape implementation and defining management responsibilities from year six onwards.

1.4 Scope of the Plan

1.4.1 The landscape proposals presented in this report and on associated drawings have been prepared to create an amenity provision that reflects its rural surroundings, providing biodiversity benefit and habitat enhancement and complements the character of the existing woodland.

1.4.2 The landscape strategy will result in a strong and coherent landscape character ensuring the footpath and cycleway is a safe, valued and attractive route in keeping with its context.

1.4.3 Information on managing the proposed landscape elements is given to enhance amenity and biodiversity value and strengthen its connectivity to the wider landscape. The Plan describes the Site in terms of landscape elements and management operations, providing recommendations for a duration of five years and responsibilities for year six onwards.

1.4.4 This Plan covers all habitats within the Site and includes the amenity space either side of the footpath and cycleway for a five year establishment period. Until the end of the five year establishment maintenance period, the Resident Owned Management Company (ROMC) for the new housing development will be responsible for maintaining the establishing soft landscape areas as shown on drawing 238/L/107. With the exception of the reinstated fields to the east of the new recreational route, all reinstated planting and grass/meadow areas will be maintained by the ROMC for five years. Thereafter, responsibility for maintenance will be as shown on drawing 238/L/109, with only the defined areas of hard standing and short grass being maintained by the ROMC. The remaining soft landscape features, fencing and gates, will then be maintained by the National Trust as Landowner and the bridge will be managed by Wrexham CBC.

1.4.5 This plan should be read in conjunction with the following arboricultural reports and drawings:

- Tree Constraints Report and Plans 238/R/W102;
- Arboricultural Impact Assessment and Arboricultural Method Statement Report and Plans 238/R/W300; and the following landscape drawings
- Cycleway and Footpath Landscape Zone drawings 238/L/100 to 106 inclusive; and
- Cycleway and Footpath Landscape Zone – Landscape Maintenance and Management Areas 238/L/107 to 109 inclusive.

1.5 Structure of the Plan

1.5.1 Chapters:

- Chapter 2 provides a site appraisal and summary of the factors influencing management;
- Chapter 3 outlines the management considerations, aims and objectives;
- Chapter 4 provides the landscape design elements and principles for implementation;
- Chapter 5 outlines the management intentions and objectives, responsibilities and operations for management;

- Chapter 6 sets out how the success of the Plan will be monitored, reviewed and updated over time.

1.5.2 Appendices:

- Appendix A are the –
  - Cycleway and Footpath Landscape Zone Proposals Plans – sheets 1 to 6 (238/L/105);
  - Planting Schedule and Specification (238/L/106);
  - Cycleway and Footpath Landscape Zone Landscape Maintenance and Management Areas Years 1 to 5 (238/L/107);
  - Cycleway and Footpath Landscape Zone Landscape Maintenance and Management Schedule Years 1 to 5 (238/L/108); and
  - Cycleway and Footpath Landscape Zone Landscape Maintenance and Management Areas Years 6 Onwards (238/L/109)

- Appendix B provides a table of maintenance operations;
- Appendix C summarises relevant legislation;
- Appendix D provides the NBS specification for ground preparation for all planting areas; and
- Appendix E The Hedgerow Management Cycle.

2 Site appraisal

2.1 Site Location

2.1.1 The site is located on land centred on SJ 2921 4822, as shown in Figure 1.0. The site is a woodland either side of the course of Glanyrafon Brook under the ownership of the National Trust, to the north of Hafod Road and south of the Wrexham to Chirk railway line. To the east and south of the woodland edge is existing farmland which is part of the Erddig estate.

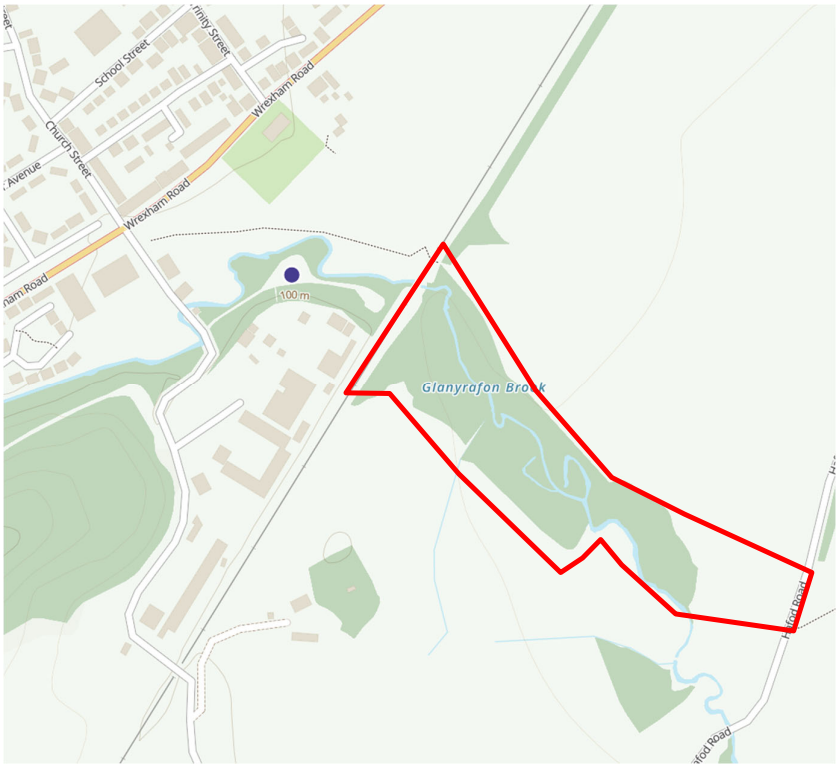


Figure 1.0 Site location - Contains ordnance survey data (OpenStreetMap)

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2.2 Tree and Heritage Status

2.2.1 The Site is not in a conservation area and no trees at the site are the subject of a Tree Preservation Order (TPO), however part of the Site is Ancient Semi Natural Woodland. An examination of the Natural Resources Wales (NRW) Interactive Map Viewer on 4th March 2024 confirms the presence of ASNW to the north east and east of the woodland, with an area of 0.3465 hectares.

2.2.2 There is no comprehensive national register of veteran trees, however, an examination of the Woodland Trust Ancient Tree Inventory confirms the presence of recorded veteran, ancient and notable trees in the immediate area, particularly in relation to the Erddig estate and parkland. Several trees within the woodland and to the woodland edge, display the characteristics of an ancient or veteran tree. These are referenced in the Arboricultural Impact Assessment and Method Statement as follows:

2.2.3 The trees displaying ancient tree characteristics include:

- 616(A) Field maple - stem diameter 1200mm, girth 3.77m
- 893(A) Ash - stem diameter 1600mm, girth 5.03m

2.2.4 Trees displaying veteran tree characteristics include:

- 203(V) Alder - stem diameter 1100mm, girth 3.46m
- 428(V) Alder - stem diameter 1100mm, girth 3.46m, tree is in an advanced state of decline
- 697(V) Ash - stem diameter 1200mm, girth 3.77m

2.2.5 Trees of notable size and located in the woodland to the south side of the railway line include:

- 535 Sycamore - stem diameter 750mm, girth 2.36m
- 936 Oak - stem diameter 730mm, girth 2.29m
- 939 Oak - stem diameter 940mm, girth 2.95m
- 940 standing dead hollow trunk of stem diameter 900mm – included as feature of interest
- 1001 Sycamore - stem diameter 700mm, girth 2.20m

2.2.6 It is anticipated that all of these trees can be satisfactorily protected during the development works.

2.3 Ecological factors

2.4 Trees and hedges are a potential habitat for nesting birds and roosting habitat for bats, both of which are protected under the Wildlife and Countryside Act 1981 (as amended) and certain species under the Conservation of Species and Habitat Regulations 2010. This makes it an offence to intentionally or recklessly, damage or destroy an active birds' nest.

2.5 Several trees within the survey boundary may be suitable habitat for nesting birds and roosting habitat for bats, therefore all trees should be inspected for the absence or presence of nesting bird activity or presence of bats, before removal or major pruning work is carried out. A qualified Ecologist should be appointed to ensure a preliminary ecological assessment is undertaken.

2.6 Social factors

2.6.1 There is an existing Public Right of Way (PRoW) (ESC/10) to the east of the woodland edge that runs to Hafod Road to the south east, the route of which will be retained. The new footpath and cycleway will join the existing PRoW at the exit from the woodland at grid reference SJ317380. A section of the existing PROW is being diverted along part of the newly created footpath / cycleway and bridge.

2.7 Legislation & Policy

2.7.1 All relevant EU and UK nature conservation law will be adhered to in relation to the protection of ecological features and ecological enhancement. Refer to Appendix E.

2.8 Health & Safety

2.8.1 Care will be undertaken throughout the design process and during construction at all stages to consider the health and safety aspects of the proposals and future amenity use. The ROMC will review health and safety as part of its regular inspections of the site. The site will be subject to informal inspections and a formal annual inspection. Whenever the site is visited, any deficiencies in safety provision will be noted and acted upon through appropriate risk management procedures.

2.8.2 The site contains some potentially hazardous features such as steep embankments, watercourses and trees with overhanging branches. In addition, some maintenance works may be potentially hazardous due to the location or type of operations involved, such as tree works, the use of cutting machinery, works adjacent to a highway or railway, works on steep slopes, works near buried services and overhead services and possibly a combination of these operations.

2.8.3 The ROMC or their maintenance operatives, will check for below and above ground services, including land drainage, give notice if they may be affected and obtain instructions before proceeding.

2.8.4 The ROMC will comply with current Forest Industry Safety Accord (FISA) Safety Guides and arboricultural best practice for the instruction of any tree works.

2.8.5 All works should be implemented by competent landscape managers and operatives, who are responsible for the application of best practice standards and all relevant health and safety procedures. Management of the works should include the delivery of tool box talks to site operatives regarding protecting the environment, avoidance of pollution, safeguarding of protected species and habitats and should promote best practice.

2.8.6 Care has been taken during the design process and must be undertaken in the subsequent management of the new landscape zone, to eliminate, reduce or mitigate risk. To this end the ROMC will periodically carry out a Health and Safety Audit for the hard and soft landscape features within their area of responsibility. This audit will review health and safety considerations and make recommendations on works necessary to maintain the amenity space in a safe condition. Consideration in particular should be given to existing mature trees, newly planted trees with a future potential to overhang the access route and hard landscape elements that may require maintenance or remedial works.

2.8.7 The Scheme will be managed to comply with all relevant health and safety legislation, approved codes of practice (ACOP's) and Health and Safety Executive (HSE) guidance. The landowner will be responsible for ensuring that risk assessments are undertaken for the Scheme as required under the Management of Health and Safety at Work Regulations 1999, and for monitoring and reviewing the effectiveness of control measures implemented as a result of the risk assessment to ensure their effectiveness.

2.8.8 They will also be responsible for ensuring that accidents and incidents on the site are reported to the relevant enforcing authority as required by the Reporting of Injuries, Disease and Dangerous Occurrences Regulations (RIDDOR) 2013.

2.8.9 Refer to Appendix C.

2.9 Biosecurity

2.9.1 Procedures should be set in place to ensure any imported landscaping materials and nursery products are free of invasive non-native species. Plant material should be free of pests and diseases and be of local provenance.

2.9.2 It is not anticipated that topsoil will need to be imported as there is sufficient soil on site available for reuse.

3 Management considerations and objectives

3.1 Responsibility for management

3.1.1 The responsibility for delivery of the soft and hard landscape works lies with the landscape contractors appointed to carry out those works at the time of the development. They will be responsible for ensuring that the hard and soft landscape and habitat creation works are carried out to in accordance with this LMP for a five year establishment maintenance period after implementation.

3.1.2 Subsequent management of the soft landscape and habitats on site from Year 6 onwards, will be the responsibility of the National Trust as landowner. They will also be responsible for monitoring the establishment of habitats as well as monitoring them for any changes affecting their quality or function.

3.1.3 The Landscape Management Company (ROMC) for the Client will be responsible for maintaining all of the hard landscape areas and 0.5m amenity grass verge as defined on drawing 238/L/109 from year six onwards after the initial five year establishment maintenance period.

3.1.4 An annual meeting should be held between with ROMC and National Trust to discuss any issues and whether any remedial works are necessary to either the hard or soft landscape areas, potential programme of works and overlaps with their respective management undertakings. This meeting should be held from late summer to winter, so that the habitats can be assessed when in flower (e.g. wildflower verges) and to allow for the required remedial works to be arranged.

3.2 Management objectives

3.2.1 This LMP presents a scheme for enhancing biodiversity and opportunities for wildlife on the site. It is compiled in order to address how the final site landscaping plans will be implemented, maintained and managed, and which organisations are responsible for these requirements. The LMP aims to:

- To ensure new planting establishes to create a high quality landscaping scheme;
- To ensure the landscape scheme is successfully maintained and that retained and created habitats are established and managed appropriately throughout their lifetime;
- To comply with legal obligations and constraints;
- Avoid, mitigate and compensate for any detrimental impacts to any wildlife which may be using the site;
- Ensure that management responsibilities are appropriately delegated and that specific measures are scheduled.

3.3 Objective 1a

Protect and maintain retained habitats and protected species within the site

3.3.1 Tree removal will be required to facilitate the development however the proposed development has been designed to minimise impacts on existing habitats and the Ancient Semi Natural Woodland (ASNW) as much as possible and these will be protected through the enabling and construction phases.

3.3.2 The following outlines the mitigation measures to be undertaken ahead of commencing on site in order to minimise impact from construction works:

- Existing vegetation within the woodland and to the woodland edge to be retained, will be left unmanaged unless there is an identifiable hazard and risk to public safety.
- During construction, trees and hedgerows to be retained, will be protected in accordance with BS5837:2012 and trees will be protected by temporary fencing to the extent of the calculated root protection area (RPA) and as required in the Arboricultural Method Statement (AMS) report reference 238/R/W300.
- No removal of woody vegetation or cutting of grass will take place during the bird nesting season (March to September inclusive) unless a thorough survey by an appropriately experienced ecologist has been conducted 24 hours in advance to first confirm that no active nests are present. Any work will be in accordance with the Wildlife and Countryside Act 1981 (as amended).
- Arisings from any tree works will, where appropriate, be retained on site in piles to create wood habitat piles to benefit biodiversity. Standing dead wood will be left in-situ to provide additional dead wood habitat, where considered safe to retain outside of the target area for public access.

3.3.3 The following outlines the mitigation measures to be undertaken during the construction works:

- Tree protection fencing will be maintained around trees and hedgerows throughout the site until the end of construction and reinstatement. Regular inspections will be undertaken throughout the enabling and construction phase to ensure these are maintained in accordance with the AMS.
- No trees or hedgerows are to be felled or removed other than those identified in the AMS.
- Any tree and hedgerow removal should be checked and overseen by a suitably qualified Ecologist where there are known ecological constraints.
- If any nesting birds are suspected, the nest and a 5m buffer surrounding it must be retained undisturbed until the birds have fledged. If works are undertaken outside of the bird breeding period, such restrictions do not apply.

3.3.4 Further precautionary working methods with regards to the site ecological constraints have been made by the consultant Ecologist and will be followed in accordance with the Preliminary Ecological Assessment (PEA) recommendations.

3.4 Objective 1b

Create a matrix of new complementary habitats with the establishment of native species that are appropriate to the local surroundings

3.4.1 The proposals will create a matrix of new and existing habitats and corridors through the site to encourage the establishment and movement of wildlife.

3.4.2 Shrub, tree and hedgerow planting will be in accordance with the planting plans and schedule as detailed in drawings 238/L/100 to 106 inclusive.

3.4.3 Plants are specified in accordance with the HTA Standard 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association).

3.4.4 Planting has been positioned to avoid conflict with buried services and with respect to existing easements.

3.4.5 All planting, grass and wildflower species have been selected based on the local flora and what is appropriate to the site ground and growing conditions. All new areas are to be maintained to promote healthy establishment and growth.

3.5 Objective 2a

Provide a safe and pleasant landscape setting for the new footpath and cycleway that enhances the appearance and character of the site and woodland edge

3.5.1 A short mown grass strip is to be maintained adjacent to the footpath and cycleway edge of 0.5m to control vegetation encroachment onto the path. Beyond this grass will grow longer for wildlife cover.

3.5.2 Long grass and meadow areas beyond the short grass strip is to be maintained for wildlife benefit and as a landscape feature. Area to be maintained with seasonal mowing as a hay meadow to allow flowering and seeding to occur and proliferation of species.

3.5.3 Hedgerows to be planted with greater proportion of hawthorn on the field side, to reduce likelihood of hedge cuttings and thorns being scattered onto the cycleway during hedgerow cutting.

3.5.4 New planting to be at least 5m away from footpath and cycleway edge to allow clear sightlines for pedestrians and cyclists and to allow space for future growth of vegetation. In future years beyond the initial five year establishment period, selective pruning and removal may be required to maintain sightlines.

3.5.5 The landscape zone will be fenced and gated to aid protection of new planting, maintain the adjacent fields with stockproof boundaries and help maintain a safe area for cyclists, pedestrians and dog walkers.

3.5.6 A system of kissing gates at the south east section of the route near Hafod Road, will slow down cyclists as they approach the access onto Hafod Road and at the crossing points for farm access to fields to the north and south.

3.6 Objective 2b

Create new habitat structures and foraging opportunities for invertebrates, birds, mammals and bats

3.6.1 Refer to landscape drawing 238/L/106 for planting schedule and specification of soft landscape works.

3.6.2 New landscape areas are to be managed to ensure healthy establishment and with regard to ecological constraints. The formation of a scrub edge to the woodland and long grass/meadow area to the west of the recreational route and long grass/meadow and clawdd to the east, will create varied heights of vegetation and provide cover and shelter. The scrub, grassland and hedgerows will provide connecting routes for wildlife that link with existing hedgerows and the woodland to the west.

3.6.3 The new habitat structure to the vegetation will be managed to promote thickening growth of planting and sward to create cover and establish different levels of vegetation as quickly as possible. Hedgerows will be pruned during establishment to promote thickening growth and the areas of wildflowers and grasses will be managed to promote good coverage of the sward.

3.6.4 Physical habitat structures will include log piles and hibernacula to be formed within the existing woodland. These will be created by using tree work arisings from the site works and any larger stones and boulders recovered from the site excavations. Where space permits in the new scrub edge, log piles may also be formed along the original woodland fence boundary at transition points between woodland and scrub edge and woodland and grassland to create refuge areas.

3.7 Objective 3a

Provide a suitable buffer between the new amenity provision and the historic landscape with the inclusion of traditional clawdd boundary treatments.

3.7.1 A new field edge will be created to the east of the footpath and cycleway and this will be defined by a stockproof fence. Surplus soils generated from the excavation of the bank within the woodland and locally along the recreational route will be reused to form a 60cm high bank upon which a native species hedgerow will be planted. The clawdd will not include stone facing as is traditionally found on some hedge banks, but will be seeded with native species wildflowers and grasses. The hedge will be allowed to grow to approximately 1.5-1.8m to form a screen and buffer to partially screen views to and from Erddig house and aid integration of the recreational route into its setting.

3.8 Objective 4a

Monitor the site during establishment to ensure suitable and timely management interventions and plant replacements are undertaken

3.8.1 Annual inspections will take place to check the establishment of all new plants and trees. Any defects will be replaced with the same species and size of plant.

3.8.2 Habitats will be monitored during the initial five year maintenance period to ensure they are establishing with the potential to continue to develop for future biodiversity benefit and continued enhancement beyond initial establishment.

3.8.3 Results of this monitoring will be used to inform changes to the management plan with recommendations at hand over for future management if different to the planned five year management prescriptions.

3.8.4 The management plan will run for a period of five years, with the work programme fully reviewed at the end of the initial five year period by those members of staff involved in site management, and the LMP updated accordingly prior to hand over to the landowner.

3.8.5 Ecological inspection by a qualified ecologist in years 5 and 10 is recommended, to provide baseline data for future surveys to be monitored against.

3.8.6 Regular arboricultural visual inspections, as part of the tree safety risk assessment for the development are recommended in accordance with the AMS. Trees to the woodland edge and within 20m of the footpath and cycleway, will be inspected annually during the five year establishment maintenance period, for signs of stress, disease or damage and recommendations made to the ROMC for remedial action.

4 Landscape design features

4.1 Landscape features

4.1.1 The Site will comprise various landscape features as shown on the Landscape Proposals Plans (238/L/100 to 105). The landscape proposals include the creation of new areas of scrub, hedgerow (clawdd), grass and wild flower meadow, woodland and hedgerow wildflower seeding and short grass.

4.1.2 Details of the existing woodland composition can be found in the Tree Constraints Report 238/R/W102. The areas of woodland of interest and affected by the proposed development works are W1 and W2 to the east of Glanyrafon Brook and W9 to the west.

4.1.3 The species within the woodland include: alder, grey alder, ash, oak, wild cherry, small-leaved lime, wych elm, beech, sycamore, hazel, holly, blackthorn, hornbeam, Norway maple, field maple, yew, crab apple, Scot's pine, larch, willow species and silver birch.

4.1.4 Existing landscape features to be retained are:

- Mature trees and woodland;
- Watercourse (Glanyrafon Brook);
- Sections of woodland and field fencing; and
- Hedgerows.

4.1.5 Proposed soft landscape features to be introduced are:

- Standard tree planting;
- Evergreen and deciduous native species tree, shrub and hedge planting including creation of clawdds;
- Species rich grassland and wildflower;
- Short amenity grass; and
- Reinstatement of pasture.

4.1.6 Proposed hard landscape features to be introduced are:

- Bridge;
- Footpath and cycleway;
- Fences; and
- Gates.

4.2 Principles for Implementation of the Maintenance Works

4.2.1 The scheme shall be carried out in compliance with British Standard (BS) 3936: 'Part 1 - Specification for trees and shrubs', BS3969 - 'Recommendations for turf for general purposes' and BS4428 - 'Code of practice for general landscape operations (excluding hard surfaces)' and be maintained to BS7370-4:1993 Grounds Maintenance as relevant.

4.2.2 Planting shall be maintained by the landscape contractor for five years following planting, with any defective planting replaced each planting season if required.

4.2.3 Maintenance of the landscape areas shall be undertaken by a competent Landscape Contractor, preferably registered with the British Association of Landscape Industries (BALI).

4.2.4 The landscape maintenance of the site is to be carried out to a high standard at all times and in accordance with the schedule and specifications within this management plan.

4.2.5 The contractor shall ensure that the site is left tidy and safe following all maintenance works. All arisings should be removed from site in accordance with the maintenance schedule.

4.2.6 The contractor shall programme their visits to coincide with appropriate weather conditions for carrying out maintenance operations including the mowing of grass. Grass mowing in excessively wet conditions is prohibited.

4.2.7 Land to the east is being managed organically and use of chemicals may only be carried out with the approval of the National Trust. Where chemical application is carried out, this must only be done by trained personnel with the appropriate NPTC certificates and in accordance with the manufacturer's recommendations.

4.2.8 A record of all maintenance visits should be completed by the maintenance contractor and these should be submitted to the Client for review every six months.

4.2.9 The 'Code of Practice for the Safe Use of Pesticides for Non-agricultural Purposes' will be observed where applicable. The use of any chemicals shall be included within the maintenance visit records, however, chemical application should be avoided and unwanted weed growth in areas managed through successive cutting to prevent seeding of undesirable species or by hand pulling.

4.2.10 The Contractor should notify the Client immediately to any significant pest or disease problem affecting plant stock and a suitable strategy for treatment should be discussed and agreed with the Client.

4.2.11 Planting is to remain materially undamaged, sturdy, healthy and vigorous, planted upright or well balanced with best side to front. Trees and shrubs are to be of good shape and without elongated shoots, grown in a suitable environment and hardened off before being delivered to the site. All planting is to be true to name, of UK provenance and free from pests, diseases, discoloration, weeds, fungus and physiological disorders.

4.2.12 All works are to be undertaken with due diligence being sure to leave the works in a clean and tidy condition at completion and after any maintenance operations. Protect areas affected by planting operations using boards/ tarpaulins and do not place excavated or imported material directly on adjacent grassed areas.

4.3 General management intentions and operations

4.3.1 The Site will be inspected regularly and formally assessed annually to confirm the Site is being managed appropriately. Health and safety inspections will ensure any hazards are identified and remedial measures are actioned.

4.3.2 A health and safety inspection will be undertaken annually to identify any health and safety hazards. Any hazards will be made safe as far as is practicable. The results of the inspection and any subsequent actions will be included in an annual report which will be produced by the managing organisation, summarising the management of the Site over the last year and the measures achieved.

4.3.3 Results from the health and safety inspection, as well as any remedial measures, will be compiled and presented within the annual report which will be used in the review of the management plan.

4.3.4 Cleansing will be carried out regularly to retain high amenity value and all litter will be removed from the Site and disposed of in an authorised manner. Fly-tipping may occur from time to time and this will be removed as soon as possible in order to discourage reoccurrences.

4.3.5 Care must be taken during cleansing to check for wildlife, which may be hiding in or under items. Any wildlife found will be returned to suitable cover.

5 Management intentions and operations of the landscape features

All Areas: Site Cleansing

5.1 Management Intentions

5.1.1 Cleansing will be carried out within the fenced extents of the footpath and cycleway zone to ensure high amenity value. Cleansing refers to the removal of general litter, debris, broken glass and animal fouling. Any instances of flytipping must be reported to the ROMC as soon as possible.

5.2 Management Operations

5.2.1 Cleansing of the footpath and cycleway zone will be carried out as required and all arisings from cleansing operations shall be removed from site and disposed of in an authorised manner.

5.2.2 Fly-tipping and graffiti may occur from time to time and this will be removed as soon as possible in order to discourage reoccurrences.

Existing mature woodland and trees

5.3 Management Intentions

5.3.1 Existing woodland and trees will be retained and protected during development in accordance with the scheme set out in the Arboricultural Impact Assessment and Method Statement by MDLandscape which details appropriate temporary tree protection measures to be adopted to avoid accidental damage.

5.3.2 Management of existing woodland and trees will be aimed at providing a structurally diverse habitat for local wildlife and to maintain existing landscape features.

5.4 Management Operations

5.4.1 Management of existing woodland and trees, not affected by the footpath and cycleway works will remain under the care of the National Trust.

5.4.2 A tree hazard inspection will be conducted by trained Arboriculturists and will include checking for damage and disease, and to maintain appropriate height clearances for safe pedestrian and cycle access. The tree hazard inspection will be undertaken at minimum every 3 years..

5.4.3 Any deadwood found on site will be stacked and kept onsite where possible as it is of value to invertebrates.

5.5 Constraints

5.5.1 An Arboriculturist must be consulted prior to undertaking any major tree works within the site. Any works with the potential to disturb bats will be subject to a bat survey prior to works being undertaken. Tree works will also avoid 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.

5.5.2 Any required works to trees at the Site, must be identified in the first instance by the Arboriculturist or ROMC and reviewed with the National Trust. Prior to any tree surgery and/or felling being carried out it may be necessary to apply to the local planning authority to gain consent for the works.

5.5.3 All excavation works within the RPA and crown spread of trees to be retained, including 143 oak at Hafod Road stile, to be carried out under arboricultural supervision and installation of new kissing gate to be carried out by hand.

5.5.4 Proposed tree removals are shown on the drawing in accordance with the Arboricultural Method Statement included in report 238/R/W300. In total 111 trees will be removed and 117 trees will be replanted in the woodland.

5.6 Inspections

5.6.1 A tree hazard inspection will be undertaken by trained arboriculturists of trees within or adjacent to areas of public access. The inspection will include checking for damage and disease, and to maintain appropriate height clearances for safe pedestrian and cycle access. The tree hazard inspection will be undertaken as a minimum every three years and following major storms. Trees that have been recommended for annual inspections are noted in the Tree Constraints Report.

Woodland Tree Planting

5.7 Management Intentions

5.7.1 New native woodland tree planting is proposed to mitigate for trees removed to facilitate construction of the new bridge and footpath and cycleway and to increase species diversity within the woodland. The trees will promote habitat connectivity and eventually create a continuous canopy as the planting matures. The species proposed complement the existing tree planting in the ASNW. In the area adjacent to the new footpath and bridge, the trees will be smaller species that offer seasonal interest, with trees of greater longevity towards the centre of the woodland compartment.

5.8 Management Operations

5.8.1 Where trees are staked, the stakes and ties will be checked monthly and it is anticipated that they will need adjusting at least twice annually. Any broken or damaged stakes will be replaced and ties re-fixed, allowing for growth since planting. New trees should be planted between October and March, avoiding periods of heavy rain or prolonged ground frost. Trees are to be mulched using wood chippings or bark to establish a 1m diameter around the tree stem or use proprietary mulch matting.

5.8.2 Remove stakes as necessary, when the tree is suitably established, approximately in year five.

5.8.3 Newly planted trees will require re-firming as required during the first five years.

5.8.4 To reduce excessive competition, a weed free area will be retained around any trees less than 3m in height and will be maintained to a diameter of 0.5m around the base of the trees using an annual application of medium grade bark mulch.

5.8.5 Young trees may require formative pruning to maintain health and vigour.

5.8.6 Once trees attain a height of 3m, the maintenance of a weed free base and formative pruning can be discontinued.

5.8.7 Any dead or severely damaged trees will be felled and replaced accordingly in the first five years. Deciduous species will be replaced when dormant in early November to late March.

5.9 Inspections:

5.9.1 An assessment of the condition and structure of trees will be carried out annually, to determine the requirements for formative pruning and addressing branch/stem breakages.

Native Scrub Planting to the Woodland Edge

5.10 Management Intentions

5.10.1 The native species scrub planting to the woodland edge to the east will form a transition zone between the grassland and the existing mature woodland. The species mix will favour smaller woody plants. The scrub planting bed in the footpath and cycleway zone will be oversown with a native legume and clover mix to suppress weed growth, support pollinator species and as function as a green manure. The woodland scrub planting will be oversown with a native species woodland wildflower mix to enhance diversity and encourage colonisation of the woodland floor.

5.11 Management Operations

5.11.1 The scrub planting will be oversown after planting, however hand weeding and mechanical cutting of vigorous weed growth will be required to control bramble in particular.

5.11.2 Maintenance of the scrub during the first five years of establishment is expected to be minimal, however some formative pruning may be required.

5.11.3 Planting will be at least 5m from the edge of the cycleway to allow clear sightlines for pedestrians and cyclists and to allow for future growth.

5.11.4 Any dead plants will be replaced in the first five years. Deciduous species will be replaced when dormant in early November to late March.

5.12 Inspections:

5.12.1 An assessment of the condition and structure of the scrub planting will be carried out annually, to determine the requirements for formative pruning and addressing branch/stem breakages.

Native Hedgerow Planting and Clawdd

5.13 Management Intentions

5.13.1 A diverse species native hedgerow will be planted on an earth bund, forming a clawdd as a local boundary feature to the east side of the footpath and cycleway zone, providing structure to the landscape framework. Thorny species will planted towards the field side of the hedge to minimise risk of thorns being present in grass areas after hedge cutting.

5.13.2 Retained hedgerows will be enhanced by filling in gaps with appropriate native species of trees and shrub. Native hedgerows are proposed to provide wildlife corridors across the Site, provide site boundary enclosure and integrate the new footpath and cycleway into the landscape of the Erddig estate. The hedgerow shall be maintained at no more than 1.8m in height.

5.13.3 The hedge and clawdd will not continue across the sewer easement, will be at least 3m from the easement for the public sewer, and will not obstruct the line of the PRoW

5.14 Management Operations

5.14.1 Management operations during the establishment phase (until branches of adjacent plants fully merge together) will comprise of weed control, and formative 'facing up' of the hedgerow to establish dense branch growth. New planting will be re-firmed as required.

5.14.2 During the first five years of establishment, between April and October monthly inspections of hedgerow will be undertaken and vigorous weeds will be removed by hand weeding or mechanical. Any evergreen plant failures will be replaced in September/ October or April/ May, deciduous plants October to February.

5.15 General

5.15.1 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. Mechanical methods of management, where appropriate, will be used in favour of machinery.

5.15.2 The hedge will be cut in an 'A' shape to maintain a wide base for bird nesting and roosting. The 'A' shape profile of the hedge should be maintained annually by cutting the current season's growth.

5.15.3 If possible only one side will be cut annually. Cutting every 2 years rather than annually will create a bushier hedge for wildlife nesting/refuge and allows for berry production in the alternate years.

5.15.4 Hedgerows can be cut between September to February to avoid bird nesting season. The later hedges are cut the bigger the advantage they provide to foraging wildlife from providing berries and fruits.

5.15.5 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, but this will be monitored).

5.15.6 It is recommended that the hedgerow be managed in accordance with The Hedgerow Management Cycle[1] included in Appendix

5.16 Constraints

5.16.1 Any hedgerow management will 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.

Amenity Grassland

5.17 Management Intentions

5.17.1 The short grass sward will form a 0.5m wide verge either side of the footpath and cycleway and will be a low maintenance fescue mix Germinal Amenity A16 Reclamation Country Parks mix or equivalent product, suitable for regular cutting and hard wearing.

5.17.2 The grass will be managed to maintain a tidy appearance as well as facilitating safe public usage.

5.18 Management Operations

5.18.1 During the first three years some areas of amenity grassland may require cultivating and re-seeding.

5.18.2 Grass cutting will be undertaken fortnightly (12-16 cuts a year), during the growing season. The grass will be kept as medium 'walk on' length of 35-50 mm. This length is suitable for most recreational grassland.

5.18.3 Weeds will be suppressed by regular mowing to avoid seeding and avoid use of chemicals.

Species-rich Grassland and Wildflower

5.19 Management Intentions

5.19.1 The general grass and meadow mix for the remainder of the sown area will be Emorsgate Basic General Purpose Meadow Mixture EM1 or equivalent product. EM1 is a complete mix composed of 10% native wild flowers and 90% slow growing grasses (by weight).

5.19.2 The grassland and wildflower mix will be established for the benefit of amphibians, small mammals, invertebrates, dragonflies and butterflies as well as providing seasonal interest in the managed landscape zone.

5.19.3 The grassland will be sown during spring or autumn within the first planting season following the development of the Site.

5.19.4 Species-rich grassland will be managed to maintain and promote structural and botanical diversity.

5.19.5 The species present within this mix are native and highly diverse. If allowed to flower, the foraging resource for invertebrate will be highly valuable. These are to be amenity areas, and as such will require some mowing throughout the year. In order to allow flowering, no mowing should occur between 1st May and 15th June annually.

[1] Hedgelink UK – The Hedgerow Management Cycle HLNK03

5.20 Management Operations

5.20.1 Species-rich grassland will be managed to improve structural and floristic diversity. Grass cutting will be timed to allow the various grass species to flower.

5.20.2 In the first growing season the grass will be cut every 6-8 weeks to 150mm with arisings raked off.

5.20.3 In the second year onwards, it is recommended that the grass is cut to a height of 150mm in late February/early March in order to prevent the grass from becoming too tall and thick to enable breeding during the summer season, and a further cut in autumn (i.e. September) after the breeding season is completed. Arisings will be raked off and used sustainably elsewhere on the Site in order to prevent nutrient enrichment.

5.20.4 Grass cutting will be avoided between mid-March and August to prevent risk of disturbance to nesting birds. Should any works be required within the bird nesting season an assessment will be undertaken by a suitably qualified ecologist before any works commence. Any nests identified by the ecologist or the grass cutting team, should be temporary fenced out with canes and tape and a minimum 2m buffer of uncut grass around the nest retained until the young have fledged.

5.20.5 Grass cuts will be undertaken with flail cutters/mowers set to retain vegetation at a height of 150mm in order to prevent any risk to amphibians that may be present within the grasslands. The cuts must not be carried out by cutting the outer perimeter of the grassland areas and working in towards the centre, as this will trap young chicks, leaving them no opportunity for escape. Instead, grass cuts will work from one side of the area to the other, or from the centre of the grassland, out to the perimeters. Grass cuts will ensure the retention of a 3m buffer of uncut grass alongside hedgerows and woodlands with understorey vegetation.

5.20.6 Grassland areas will not be fertilised in order to conserve the sward diversity and due to the adjacent organic management and floristic diversity of the pasture to the east. Where treatment of noxious weeds such as docks, thistles, nettles, ragwort and willowherb is required, this will be controlled by hand pulling and regular cutting to avoid use of chemicals.

Pasture Reinstatement

5.21 Management Intentions

5.21.1 The pasture to the east of the permanent fence will be reinstated at the earliest opportunity when ground conditions are suitable and within the appropriate season. Field to be reinstated on completion of works with 'Spunhill' multi-species ley mix to match existing field sward.

5.22 Management Operations

5.22.1 During the first three to six months some areas of pasture may require cultivating and re-seeding depending on successful establishment of the sward.

5.22.2 Grass cutting will be undertaken fortnightly (12-16 cuts a year), during the growing season. The grass will be kept as medium ‘walk on’ length of 35-50 mm. This length is suitable for most recreational grassland.

5.22.3 Weeds will be suppressed by regular mowing to avoid seeding and avoid use of chemicals.

Fencing and Gates

5.23 Management Intentions

5.23.1 The fences and gates will be maintained for functionality and aesthetic value. Routine inspections will ensure that any damage is repaired or replaced as quickly as possible to prevent a risk to health and safety and to maintain security and boundary definition.

5.23.2 Biodegradable shelters and canes would be installed if mammal damage is problematic.

5.23.3 All fencing and gates to be wooden, and the kissing gates will either be timber or galvanised powder coated green. Timber to be FSC standard, with minimum 25 year lifespan and untreated.

5.23.4 Clawdd fence to be timber post and sheep proof netting with barbed wire to field side only and plain wire to PRoW side.

5.23.5 A 0.75m wide walking strip between fence and base of clawdd to be provided for maintenance access.

5.23.6 Fence installed to west side of path through woodland to be timber post and three rail with sheep-proof netting and plain wire.

5.24 Management Operations

5.24.1 The fences and gates will be inspected during the monthly site inspection and any repairs required will be carried out promptly.

Drainage and Footpath and Cycleway Surfacing

5.25 Management Intentions

5.25.1 The footpath and cycleway has been designed to ensure shedding of water and prevent ponding. The route follows existing ground profiles to minimise cut and fill and the surface will generally be higher than the adjacent grass level, with surface water being shed to the verge and dissipating into the ground.

5.25.2 Existing land drains exposed during construction are to be made good as work proceeds with pipe of same diameter as existing and pipe bedding as required.

5.25.3 The footpath and cycleway will be maintained for functionality and aesthetic value. Routine inspections will ensure that any damage is repaired or replaced as quickly as possible to prevent a risk to health and safety and to maintain a safe and functional surface.

5.26 Management Operations

5.26.1 The surface of the footpath and cycleway will be inspected on completion of construction and after the first heavy rains to assess drainage and surface condition. Annual inspections of the surface will be carried out and any repairs undertaken in a timely manner to ensure the route remains in a good state of repair.

Bridge

5.27 Management Intentions

5.27.1 The bridge will facilitate access from east to west across Glanyrafon Brook and will be maintained by Wrexham CBC.

5.28 Management Operations

5.28.1 The details of the hard landscape construction are shown on engineering drawings:

NT FOOTPATH LINK PLAN	104-1
NT FOOTPATH LINK SECTIONS	104-2
NT FOOTPATH LINK PLAN	104-3
NT FOOTPATH LINK PLAN	104-4
NT FOOTPATH LINK PLAN	104-5
NT PATH CROSS SECTIONS 1	104-10
NT PATH CROSS SECTIONS 2	104-11
NT PATH CROSS SECTIONS 3	104-12
NT PATH CROSS SECTIONS 4	104-13

6 Monitoring and review

6.1 Monitoring

6.1.1 This chapter describes how the Site will be monitored and reviewed.

6.1.2 Simple monitoring reports against key measures will be produced by the ROMC on a six monthly basis.

6.1.3 The key measures for each element will enable the schemes success to be measured and managed appropriately to meet the long term management objectives. These key measures are:

Table 1: Key measures for landscape elements monitoring

Feature Type	Key Measure
All Areas	
Landscape Establishment	How well is the Scheme establishing and is it attractive to the users of the footpath and cycleway and wildlife overall?
Cleansing	Are the access areas clear of debris and litter?
Health and Safety	Are there any health and safety hazards / deficiencies which require rectification?
Legal Obligations and Constraints	Does the scheme comply with the relevant environmental and health and safety legislation?
Retained Features	
Existing mature trees and woodland	Are the existing trees and woodland in good health and are there any hazards that require rectification?
Hedgerows	Carry out an inspection to note any gaps and re-plant with suitable native species.
Proposed Features	
Woodland Tree Planting	Are newly planted trees establishing well and showing healthy growth? Are there any losses that require replacement of damage that requires rectification?
Native scrub planting to the woodland edge	Are new plants establishing well and showing healthy growth? Are there any losses that require replacement of damage that requires rectification?
Native Hedgerows	Are new plants establishing well and showing healthy growth? Are there any losses that require replacement of damage that requires rectification?
Amenity Grassland	Is the amenity grass establishing with a uniform coverage and weed free appearance? Re-seed as required.
Species-rich Grassland and Wildflower	Is the grassland and wildflower establishing with botanical diversity, weeds kept to a minimum, and no scrub encroachment? Re-seed as required.
Pasture reinstatement	Is the pasture establishing with uniform coverage, weeds kept to a minimum, and healthy growth? Re-seed as required.
Fencing and gates	Are all fences and gates safe and functioning for the purposes of plant protection, boundary marking, access control and segregation and are they intact? Rectify any damage and repair.
Drainage and footpath and cycleway surfacing	Is the footpath and cycleway free of ponding and is the surface intact and free of damage? Rectify any damage and repair.

6.1.4 An annual report will be produced by the ROMC, summarising the management of the Scheme over the last year and the measures achieved including an annual site meeting and review; six monthly formal site inspections; and ad hoc unannounced inspections.

6.1.5 With respect to monitoring establishment, an annual walkover survey by a competent person will be carried out in Years 1 to 5 to ensure that the landscape features are establishing well and still viable for their intended purpose and to inform future management policies.

6.1.6 The Management Plan will be reviewed on an annual basis by the ROMC to ensure that the plan is meeting the original management aims and objectives and responding to the developing needs of the Scheme.

Appendix A – Landscape Proposals Plans

Appendix B - Management table

Management table

The management table (Table 2) lists the key routine operations required during both the defects establishment maintenance period and long term maintenance period for up to five years, with an indication of when they should be undertaken throughout the year. These timings are not rigid and should be used as a guide. Not all operations are listed in the specification but all checking and intermittent maintenance actions should occur during the routine visits. The contractor is responsible for the appearance and condition of the landscape areas and should be prepared to undertake specific maintenance tasks outside the above periods throughout the year to satisfy management or safety objectives. Refer to drawing 238/L/108

Table 2 – Maintenance operations

Works not to be carried out in these months														
Bird breeding and nesting season														
Works to be carried out in these months														
Activity	**Frequency per Annum**	**Years**	**Indicative Timing of Operation**											
			J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Inspections, Surveys and Cleansing														
Health and Safety														
Formal inspection to identify any hazards	1	All years												
Monthly site inspections.	12	All years												
Specialist Surveys														
Annual walkover by suitably qualified person / Landscape Architect or Landscape Clerk of Works	1	Years 1 to 5												
Tree Hazard and Condition Survey to be carried out to mature trees by suitably qualified arboriculturist.	Every 3 years													
Site Cleansing														
Cleanse the footpath and cycleway zone every two weeks (Feb-Oct) and every month in the winter (Nov-Jan)	As required	All years												
Remove fly-tipping and litter from roadside verges and within communal areas	As required	All years												
Soft Landscape Elements														
Existing Trees and Woodland (W)														
Secure permissions from the National Trust before carrying out any works to existing trees or woodland. Existing retained trees will be left unmanaged unless otherwise dictated for reasons of public safety. Tree works will follow best practice procedures as set out in BS 3998:2010.	As required													
Failure of branches of ash, or whole trees within compartment W9 may occur due to extensive infection of the stand with ash dieback. Inspect annually and clear hung up or fallen branches from the woodland management area and section up arisings to form wood piles.	As required													
Arisings from any woodland management activity will, where possible be used to provide opportunities for invertebrates and bryophytes by forming habitat piles of dead wood or logs as	N/A													

Works not to be carried out in these months														
Bird breeding and nesting season														
Works to be carried out in these months														
Activity	**Frequency per Annum**	**Years**	**Indicative Timing of Operation**											
			J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
refugia. Woodpiles will be created at the woodland edge and within the woodland. Where practical, piles will be situated in partial sunlight with some shade.														
Tree Planting (T)														
Check stakes, ties, fencing, guards, canes and mulch monthly, adjust twice annually.	12	1 to 5												
Replace any damaged or missing stakes, ties, fencing, guards, canes and mulch mats.	1	1 to 5												
Re-firm newly planted trees as required.	1	1 to 5												
Weed control - hand weeding (chemical application to be carried out sparingly and only when instructed).	1	1 to 5												
Replace failed or damaged deciduous species.	1	1 to 5												
Replace failed or damaged coniferous/evergreen species.	1	1 to 5												
Remove stakes, ties, fencing and guards.	1	Year 5												
Formative prune to maintain health and vigour.	N/A	Years 5+												
A biodegradable mulch mat and 1m diameter circle of medium grade bark mulch around the tree stem to a minimum depth of 75mm is to be maintained during initial establishment to minimise competition from tall weeds, bramble and ivy. Weeds and grass within 100mm of the trunks will be removed by hand. Replenish mulch annually to maximum 75mm depth during the first 5 years of maintenance.	1	All years												
Assessment of condition and structure of new tree planting and carry out ad-hoc works. Replace failed specimens on a like-for-like basis. Consult with the ROMC if it is considered a particular species is not establishing well.	1	All years												
Native Hedgerow Planting (H)														
Hedgerows will be maintained to encourage thickening growth and to reach the desired height gradually by increasing the cutting height of the hedge by small amounts each year. Incremental height increase is the key to the hedge management cycle, sympathetically allowing a hedgerow to progress slowly through its natural growth cycle without putting it under damaging stress. It also promotes a dense healthy hedgerow. Using this approach a hedgerow may take many tens of years to complete a full cycle of growth, and at all times during this remain dense, healthy and functional. The hedgerow will be maintained in accordance with the Hedgelink - Hedgerow Management Cycle, stages 1-10, with the aim to keep the hedgerow healthy at all times by allowing it to cycle between points 3 and 8. Side trimming of hedgerows in an 'A' profile to a promote healthy hedgerow base should be undertaken in January/February. Hedgerows will be cut along one side (field or footpath) annually, alternating between the two sides of the hedgerow each year. The intention is to maintain the hedgerow according to the hedgerow cycle.	1	Years 5+												

Works not to be carried out in these months														
Bird breeding and nesting season														
Works to be carried out in these months														
Activity	**Frequency per Annum**	**Years**	**Indicative Timing of Operation**											
			J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
The aim should be to keep the hedge in the green part (steps 3/4 to 8), periodically laying or coppicing it, with trimming at appropriate intervals in between. If the hedge is not permitted to go through this cycle, it will either, if cut too often, become short and gappy (steps 1 – 3) or, if neglected, develop into a line of trees (steps 8 to 10). All hedgerow cuttings to be collected and removed and any cuttings swept off the footpath and cycleway.														
Inspect fence at each maintenance visit for any breaches or damage and repair as soon as possible to ensure continued protection from rabbits, sheep and stock.	As required	1 to 5												
Replace failed specimens on a like-for-like basis. Consult with the ROMC if it is considered a particular species is not establishing well.	1													
Native Scrub Planting (S)														
Replace failed specimens on a like-for-like basis. Consult with the ROMC if it is considered a particular species is not establishing well.	1	1 to 5												
Legume and clover sown within planting beds is intended to suppress weed growth and avoid chemical application to treat weeds. Legume and clover will also attract invertebrates. It should not be cut unless growth is smothering establishing scrub and if cut, should only be cut down to 150mm in height and after flowering to maximise wildlife benefit.	1	1 to 5												
Thinning of scrubland is not expected to be required until years 10 to 15, however a coppice cycle of cutting to dogwood and hazel may commence in years 5 to 7 if growth is particularly vigorous. Coppicing of dogwood and hazel may commence in year 5 if growth is particularly vigorous.		5												
Amenity Grassland – verge (AG)														
Cultivate and re-seed as required. During initial establishment of new grassland, it will be mown to a height of 75mm 6-8 weeks after germination or when a satisfactory sward has been established and subsequently to a height of 50-75mm as required, but not more regularly than once every 4 weeks until such a time as a knitted turf is established. Once established, amenity grassland will be cut 15-20 times per year generally between March and October to a height of 25-75mm.	As required	1 to 5												
Cut (35mm) fortnightly during the growing season and remove arisings from the Site. Mowing will be reduced during prolonged dry periods and the mowing height increased to 50mm at such times. Similarly in very wet conditions all grass cutting operations will cease until conditions allow for grass cutting to take place.	16	All years												
Weed control - suppress weed growth by frequent cutting. Avoid use of chemicals. Mowing will be reduced during prolonged dry periods and the mowing height increased to 50mm at such times. Similarly in very wet conditions all grass cutting	1	All years												

Works not to be carried out in these months														
Bird breeding and nesting season														
Works to be carried out in these months														
Activity	**Frequency per Annum**	**Years**	**Indicative Timing of Operation**											
			J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
operations will cease until conditions allow for grass cutting resume.														
Woodland and hedgerow wildflower (WFWH)														
Initial establishment: Most of the sown meadow species are perennial and are slow to establish. A flush of annual weeds, arising from the soil seed bank is anticipated soon after sowing. These weeds can look unsightly, but they will offer shelter to the sown seedlings and provide habitat and will die off by the end of the growing season. Annual weeds should not be cut until mid to late summer, especially if the mixture contains Yellow Rattle. The meadow should then be cut in early August, arisings removed and composted. This will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year. Dig out any residual perennial weeds such as docks.	1 cut and remove in late summer to 150mm high 1 cut August to 50mm high up to 2 further cuts to March in year 2	1 to 5												
Manual hand strimming of persistent pernicious weeds should be undertaken when adjacent short grassland is mown or in early spring.	2	1 to 5												
Species-rich Wildflower Grassland (M)														
Initial establishment: Most of the sown meadow species are perennial and are slow to establish. A flush of annual weeds, arising from the soil seed bank is anticipated soon after sowing. These weeds can look unsightly, but they will offer shelter to the sown seedlings and provide habitat and will die off by the end of the growing season. Annual weeds should not be cut until mid to late summer, especially if the mixture contains Yellow Rattle. The meadow should then be cut in early August, arisings removed and composted. This will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year. Dig out any residual perennial weeds such as docks.	1	1 cut and remove in late summer to 150mm high 1 cut August to 50mm high up to 2 further cuts to March in year 2												
Year two onwards, manage as traditional hay meadow. After flowering in July or August take a 'hay cut': cut back with a scythe, petrol strimmer or tractor mower to around 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site. Mow or graze the re-growth through to late autumn/winter to around 50mm and again in spring if needed.	2	1 cut in March if there has been vigorous growth.1 cut and remove in August/ late summer to 50mm high up to 2 further cuts to end of year												
Cultivate and re-seed as required.	As required	1 to 5												

Works not to be carried out in these months														
Bird breeding and nesting season														
Works to be carried out in these months														
Activity	**Frequency per Annum**	**Years**	**Indicative Timing of Operation**											
			J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Manual hand strimming of persistent pernicious weeds should be undertaken when adjacent short grassland is mown or in early spring.	2	2 to 5												
Pasture (P)														
Area of pasture to be cut to 150mm cutting height after successful establishment of the sward and then managed by the National Trust once handed back for agricultural management.	1 to 2	1 cut and remove in late summer to 150mm high												
Hard Landscape Elements														
Gates and Fences (G) (F)														
Gates and fences will be inspected during monthly inspections and any repairs will be carried out as required.	12	All years												
Re-painting or re-staining/treating gates.	1	All years												
Footpath and Cycleway (FC)														
Gates and fences will be inspected during monthly inspections and any repairs will be carried out as required.	12	All years												

Appendix C - Legal obligations

The following legal obligations, among others must be considered in carrying out any management operations:

Legislation	Obligations
Health and Safety Legislation	
The Health and Safety at Work Act 1974	All operations carried out on the Site must only be undertaken by trained personnel, using methods and equipment approved by the Health and Safety Executive (HSE).
Occupiers Liability Act 1984	Management organisation must ensure that every reasonable care is taken to remove any risks to both legitimate visitors and to any trespassers. In compliance it will be necessary: To make sure that all footpaths, bridge and any other structures are safe; To remove any hazardous objects; and To conduct an annual safety audit in order to identify any further hazards.
Environmental Legislation	
Conservation of Habitats and Species Regulations (as amended) (2017)	The Habitat Regulations assign a greater level of protection to a variety of native species of animals and plants listed, which are known as European Protected Species (EPS).
Wildlife and Countryside Act 1981	There is an obligation to comply with legislation for UK species and those protected (including amphibians, reptiles and bats) under this Act.
Environmental Protection Act 1990	There is an obligation to keep the Site free from litter and refuse.
Countryside and Rights of Way Act 2000	Imposes a new right of access on foot to registered common land and other areas of 'open countryside' which under certain circumstances allows access without being confined to footpaths.
Protection of Badgers Act 1992	This legislation protects badgers from killing, injuring or disturbance.
Wild Mammals (Protection) Act 1996	An Act to make provision for the protection of wild mammals from certain cruel acts.
The Hedgerow Regulations 1997	These Regulations make provision for the protection of important hedgerows in England and Wales.

Appendix D – NBS Specification for landscape implementation and maintenance

D20 Excavating and filling

To be read with Preliminaries/General conditions GENERALLY/THE SITE CLEARANCE/EXCAVATING

164 TREE ROOTS

- Protected area: Do not cut roots within precautionary protection area.
- Size of area: Root Protection Area as detailed on arboricultural surveys or the branch spread of the tree, whichever is greater.
- 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: As per an arborists recommendations.
- 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: Cultivate regularly before planting to prevent establishment of weeds.

170 REMOVING SMALL TREES, SHRUBS, HEDGES AND ROOTS

- Identification: Clearly mark trees to be removed with reference to AIA/MS and tree tag references.
- 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 mechanically to a minimum depth of 300 mm below ground level.
- 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 or disperse outside of working area and spread to no greater than 75mm depth.

220 STRIPPING TOPSOIL

• General: Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, pavings/ roads and other areas shown on drawings.

• Depth:

- Remove to an average depth of 200mm to 250mm.

- 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: Soil to be excavated and stored in accordance with Defra guidance 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'. Topsoil to be kept separate from excavated subsoil.

221 TREATING TOPSOIL

• Treatment: Hand pull Himalayan balsam within working area and compost in an area already infested with Himalayan balsam away from the watercourse.

• Timing: Before the plant flowers and not later than July. Ensure the area is clear of invasive weed species 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 if Japanese knotweed is identifed.

• 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.

240 ADJACENT EXCAVATIONS - GENERALLY

• Requirement: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, must be completed before the higher excavation is made.

• Angle of line below horizontal: 30°.

• Backfill material: Hardcore filling as clause 710.

244 EXCAVATIONS ADJACENT TO EXISTING FOUNDATIONS

• Prior to commencing excavation:

- Excavate trial pits adjacent to existing foundations to determine extent and formation levels.

- Allow for inspection of trial pits.

- Allow time for amendment of details if required.

Time period: 5 working days .

- Backfill material to new excavation: As clause 240 .

250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS

- Beneath mass concrete foundations: ±25 mm.
- Beneath ground bearing slabs and r.c. foundations: ±15 mm.
- Embankments and cuttings: ±50 mm.
- Ground abutting external walls: ±50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.

255 ACCURACY - LINEAR DIMENSIONS

- Permissible deviations from linear dimensions generally: +/- 10mm .

260 INSPECTING FORMATIONS

- Give notice: Make advance arrangements for inspection of formations for foundations and filling formations and roads and pavings.
- Notice (minimum): 5 days.
- Preparation: Just before inspection remove the last 150 mm of excavation.
- Trim to required profiles and levels.
- Loose material: Remove.
- Seal: Within 4 hours of inspection, seal formations with concrete.

270 FOUNDATIONS GENERALLY

- Give notice if:
- A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
- The formation contains soft or hard spots or highly variable material.

310 UNSTABLE GROUND

- Generally: Ensure that the excavation remains stable at all times.
- Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
- Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

330 UNRECORDED FEATURES

- Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.

350 EXISTING WATERCOURSES

- Protect from silt pollution and accidental littering.

360 EXCESS EXCAVATION

- Excavation taken wider than required:
- Backfill: With hardcore as clause 710.
- Excavation taken deeper than required:
- Backfill: With well graded granular material or lean mix concrete.

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 in locations to be agreed with the Project Manager and not within the root spread of trees to be retained. All topsoil at the site is to be retained and re-used for reinstatement and the formation of the clawdd bank for hedge planting.

420A TOPSOIL STORAGE HEAPS

- Location: To be agreed with the Contract Administrator.
- Standard: To BS 3882 and in accordance with Defra guidance 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'.
- 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.

421 TOPSOIL STORAGE HEAP TREATMENT

- Treatment: Sow with perennial ryegrass, sowing rate 20g/m2 if material to be stockpiled for more than 3 months, otherwise cut mechanically to prevent seeding of weeds.

441A SURPLUS SUBSOIL

- Excavated material: Stockpile in temporary storage heaps.
- Retained material: To be used to form clawdd banks for hedge planting as section shown on drawing 238/L/100 75cm WIDE TO TOP, 60cm HIGH AND WITH 1:2.5 TO 1:3 BATTERS.
- Locations: To be agreed with the Contract Administrator .
- Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site surplus subsoil not required for the permanent works.

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.

457 PUMPING

- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.

- Locations: Contractor's choice .

FILLING

500 PROPOSED FILL MATERIALS

- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
- Type and source of imported fill.
- Proposals for processing and reuse of material excavated on site.
- Test reports as required elsewhere.
- Timing: At least 21 days before starting filling.

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
- Frozen or containing ice.
- Organic.
- Contaminated or noxious.
- Susceptible to spontaneous combustion.
- Likely to erode or decay and cause voids.
- With excessive moisture content, slurry, mud or from marshes or bogs.
- Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
- Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

520 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
- Fine grained soil with a plasticity index less than 20%.
- Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.

- Crushed chalk.
- Crushed limestone fill with average saturation moisture content in excess of 3%.
- Burnt colliery shale.
- Frost-susceptible fill: May only be used:
- At depths below the finished ground surface greater than: 450 mm.
- Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
- Where frost heave will not affect structural elements.

530 PLACING FILL

- Surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- Adjacent structures, membranes and buried services:
- Do not overload, destabilise or damage.
- Submit proposals for temporary support necessary to ensure stability during filling.
- Allow 14 days (minimum) before backfilling against in situ concrete structures.
- Layers: Place so that only one type of material occurs in each layer.
- Earthmoving equipment: Vary route to avoid rutting.

535 COMPACTION GENERALLY

- General: Compact fill not specified to be left loose as soon as possible after placing.
- After compaction: Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.
- Defective areas: Remove and recompact to full thickness of layer using new material.

540 BENCHING IN FILL

- Adjacent areas: If, during filling the difference in level between adjacent areas of filling exceeds 600 mm, cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
- New filling: Spread and compact to ensure maximum continuity with previous filling.

550 GEOTEXTILE SHEET

- Manufacturer: Terram (or similar approved).
- Product reference: Terram T1000.
- Type: Nonwoven.
- Polymer type: Polypropylene.
- Recycled content: Submit proposals.
- Jointing: Min. 300 mm overlap.
- Preparation of subgrade: Before laying sheet, remove humps and sharp projections. Fill hollows and compact.
- Protect from:
- Exposure to light.

- Contaminants.
- Materials listed as potentially deleterious by geotextile manufacturer.
- Wind uplift.

550A GEOTEXTILE SHEET

- Manufacturer: ABG Ltd (or similar approved).
- Product reference: Terrex NW9.
- Type: Nonwoven.
- Polymer type: Polypropylene.
- Recycled content: Submit proposals.
- Jointing: Min. 300 mm overlap.
- Preparation of subgrade: Before laying sheet, remove humps and sharp projections. Fill hollows and compact.
- Protect from:
- Exposure to light.
- Contaminants.
- Materials listed as potentially deleterious by geotextile manufacturer.
- Wind uplift.

610A COMPACTED FILLING FOR LANDSCAPE AREAS

- Location: Subsoil in areas under proposed hard surfacings or in soft landscaped areas in excess of 450mm of finished levels
- 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.

615A LOOSE TIP FILLING FOR LANDSCAPE AREAS

- Location: All proposed soft landscaping 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.

650 PROTECTION OF COMPACTED FILLING

- Temporary protective filling: Before allowing construction traffic, raise level of compacted cohesive soil filling at least 150 mm above formation level using properly compacted temporary filling.
- Removal: Remove temporary protective filling from site before permanent construction.

700 BACKFILLING AROUND FOUNDATIONS

- Under oversite concrete and pavings: Hardcore as clause 710.
- Under grassed or soil areas: Material excavated from the trench, laid and compacted in 300 mm maximum layers.

Q28 Topsoil and soil ameliorants

To be read with Preliminaries/ General conditions.

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.

310 MATERIALS NOT PERMITTED

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

315 IMPORTED TOPSOIL TO BS 3882 FOR GRASS SEEDING & PLANTING AREAS

- 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.
- Soil textural class to BS 3882, Figure 1: Any class.
- Source: Submit proposals.
- Product reference: Submit proposals.

EXECUTION

610 TOPSOIL ANALYSIS

- Soil to be analysed: Imported topsoil.
- Soil analyst: Contractor's choice.
- Samples: Collect in accordance with BS 3882.
- Submit:
- Declaration of analysis: In accordance with BS 3882, clause 6 and Table 1.
- Additional analysis:
- Chemical analysis;
- Chemical contaminants; and
- Phytotoxic and CLEA elements.
- Report detailing soil analyst's recommendations.

610A SUBSOIL ANALYSIS

- Soil to be analysed: Imported subsoil.
- Soil analyst: Contractor's choice.
- Samples: Collect in accordance with BS 3882.
- Submit:
- Declaration of analysis: In accordance with BS 3882, clause 6 and Table 1.
- Additional analysis:
- Chemical analysis;
- Chemical contaminants; and
- Phytotoxic and CLEA elements.
- Report detailing soil analyst's recommendations.

625 SAMPLE LOADS FOR IMPORTED TOPSOIL & SUBSOIL

- 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: 7 days.

650 NOTICE

- Give notice before:
- Setting out.
- Forming clawdd.
- 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 FOR GRASS & PLANTING AREAS

- Standard: In accordance with BS 8601.
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.
- Avoid compaction.
- Excess subsoil: Remove.

665 SUBSOIL SURFACE PREPARATION FOR GRASSED & PLANTING AREAS

- Standard: In accordance with BS 3882.
- General: Excavate and/ or place fill to required profiles and levels, as section D20.

- Loosening:
- When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth:

Light and noncohesive subsoils: 300 mm. Stiff clay and cohesive subsoils: 450 mm.

Rock and chalk subgrades: Lightly scarify to promote free drainage.

- Wet conditions: Do not loosen subsoils.
- Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
- Remove from site: Contaminants, wood, concrete, brick, metal, wire, builders rubble and general building debris.

675 PREPARATION OF UNDISTURBED TOPSOIL

- Standard: In accordance with BS 4428.
- Grading and cultivation: Category C.
- Hard ground: Break up thoroughly.
- Clearing: Remove visible roots and large stones with a diameter greater than 50 mm.
- Areas covered with turf or thick sward: Plough or dig over to full depth of topsoil.
- Fallow period (minimum): One month.
- Weed control: At appropriate times treat with a suitable translocated nonresidual herbicide.

685 SURPLUS MATERIALS TO BE REMOVED

- Topsoil removal from site: Topsoil and subsoil remaining after completion of all landscaping work.
- Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

690 TOPSOIL STORAGE HEAPS

- Location: To be agreed with Project Manager.
- 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.
- Give notice: If required levels cannot be achieved by movement of existing soil.

705A HANDLING TOPSOIL

- Standard: In accordance with BS 3882 and in accordance with Defra guidance 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'.

- 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 ON GRASSED AREAS & PLANTING AREAS

- Standard: In accordance with BS 3882.
- Temporary roads/ surfacing: Remove before spreading topsoil.
- Layers:
- Depth (maximum): 150 mm.
- Gently firm each layer before spreading the next.
- Depth after firming and settlement: Refer to drawings.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 LOOSE TIPPING OF TOPSOIL

- Standard: In accordance with BS 3882.
- 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 ALL SEEDING & PLANTING AREAS

- 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): 2-8 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: As drawings and flush with adjoining paving or kerbs.
- Undesirable material brought to the surface:
- Remove visible weeds.
- Remove roots and large stones with any dimension exceeding 40 mm.

720 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- In relation to adjoining paving, kerbs or hard surfaces: Flush.
- In relation to dpc of adjoining buildings: Not less than 150 mm below.
- In relation to adjacent grass areas: 25 mm above.

- 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.

845B APPLYING LOOSE MULCH PLANTING BEDS

- Supplier: Melcourt (or similar approved)
- Product reference: Composted Fine Bark
- Timing: Immediately after planting.
- Preparation: Ensure that soil is thoroughly moistened, applying water where necessary.
- Coverage of mulch (minimum):
- Planting beds (depth): 75 mm depth.
- Trees: In a circular area of 600 mm radius measured from the tree stem.
- Container planting: 75 mm depth.
- Finished level of mulch: Flush with adjacent areas.

905 APPLYING MAINTENANCE FERTILIZER TO SOIL TO PLANTING BEDS

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
- Time of year: March or April.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Rate: To manufacturer's recommendations.

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: 2 weeks.

SEEDING

311A SEEDING AMENITY GRASSLAND

• Manufacturer: Germinal GB Limited (or similar approved).
- Web: www.germinalamenity.com.
- Email: Lincoln@germinal.com.
- Product reference: A16 Reclamation Country Parks mix

• Application rate: 25g/m2

312A GRASS AND WILDFLOWER SEED MIXTURE

• Supplier: Emorsgate (or similar approved).
- Mixture reference: Emorsgate Basic General Purpose Meadow Mixture EM1 (or equivalent)

• Origin of each species (as defined in Flora Locale's Code of practice for collectors, growers and suppliers of native flora): UK origin.

• Application rate: 4 g/m².

313A CLOVER AND LEGUME MIX

- Supplier: Germinal GB Limited (or similar approved).
- Mixture reference: Germinal Amenity A17 Legume and Clover mix or equivalent product
- Application rate: 2.5 g/m².

314A HEDGEROW AND WOODLAND WILDFLOWER SEED MIXTURE

- Supplier: Emorsgate (or similar approved).
- Mixture reference: Emorsgate Hedgerow Mixture EH1 (or equivalent)
- Origin of each species (as defined in Flora Locale's Code of practice for collectors, growers and suppliers of native flora): UK origin.
- Application rate: 4 g/m².

315A PASTURE SEED MIXTURE

- Supplier: Spunhill.
- Mixture reference: Multi-species Ley Mix
- Application rate: to manufacturer's recommendations.

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.

335A GRASS SOWING SEASON AMENITY GRASS

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

540 FIRST CUT OF ALL AMENITY GRASSED AREAS

- Height of initial growth: 40-75 mm.
- Preparation:
- Debris and litter: Remove.
- Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 25 mm.
- Mower type: Contractor's choice.
- Arisings: Remove from site.

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.

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 surface vegetation in areas shown on drawings using suitable nonresidual herbicide.
- 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.

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.

125B 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.

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 and trees : Existing topsoil with compost as Q28 360.
- Tree pits, shrub pits and other backfilling: Plant pit backfilling soil system, as section Q28 360.
- External container planting: Not applicable.
- 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: British grown.

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 (available on CS Design Software Limited's website).

235 CONTAINER GROWN PLANTS/ TREES

- Growing medium: With adequate nutrients for plants to thrive until permanently planted.
- Plants: Centred in containers, firmed and well watered.
- Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
- Hardiness: Grown in the open for at least two months before being supplied.
- Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

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;
- Date supplied and consignment details or reference;
- Name or designation of rootstock of budded or grafted plants;
- Pruning dates; and
- Type of container.

255 PLANTS/ TREES RESERVED AT SUPPLIER'S PREMISES

- Types/ Species: All trees as per the plant schedules.
- Predelivery inspection: Give notice.
- Labelling: Identify inspected plants/ trees as reserved for use on this project.

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: Bareroot stock to be supplied in coextruded polyethylene bags with black interior and white exterior.

- All bare roots plants to be supplied in bags containing and enclosing the whole root system. Transplants should be supplied with shoots and roots fully enclosed in the bag, whereas larger shrubs and trees should have only the root system enclosed.

- All plants shall be adequately packaged and protected during transportation from source to planting on site. To minimise storage of plant stock, operations are to be arranged so that trees and shrubs are planted immediately after each planting pit is prepared.

- Packaging of bulk quantities: Container stock to be supplied in 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

300 HERBICIDE TO CLEAR EXISTING VEGETATION

- Locations: Only to be applied if approved by the National Trust.
- Type: Suitable for supressing perennial weeds.
- Timing: Allow fallow period before cultivation.

- Duration (minimum): Two weeks.

305 WEED CONTROL PLANTING AREAS AND CLEARANCE OF VEGETATION

- Locations: All planting areas.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by cultivating to clear vegetation, allow for at least three visits to work the soils and break existing vegetation.

375A CULTIVATION TO ALL BEDS

- Compacted topsoil: Break up to full depth.

- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
- Depth: 300 mm.
- Timing: Within a few days before planting.
- Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels:
- Flush with adjoining paving or kerbs;
- 25 mm above adjoining lawns; and
- Minimum 150 mm below dpc of adjoining buildings.
- Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 30 mm.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.
- Final cultivation: Depth and finish as Q28.

PLANTING SHRUBS/ HERBACEOUS PLANTS/ BULBS

405 SHRUB PLANTING PITS

- Timing: Excavate 1 days (maximum) before planting.
- Sizes: Wide enough to accommodate roots when fully spread and 75 mm deeper than root system.
- Pit bottom improvement Break up to a depth of 150 mm, incorporating soil ameliorant/ conditioner at 50 g/m².

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 NATURALIZED HEDGES FOR CLAWDD

· Planting: Pit plant evergreen species and notch plant deciduous species to minimise disturbance to upper formation of the clawdd. 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: as section Q28.

- Depth: 75mm.

485 PROTECTION OF ALL PLANTING

- Type: Rabbit fence protection in preference to guards to prevent littering. **Section Q40**

486 SHRUB PROTECTION – subject to instruction

- Manufacturer: Biodegradable.
- Product reference: Contractor's choice.
- Type: Round.
- Material: Biodegradable.
- Size: 0.6 m high x 160 mm diameter.
- Support: Single timber stake.
- General: Ensure that protection methods do not impede natural movement of shrubs or restrict growth.

PLANTING TREES

500 TREE PLANTING

- Standard: Prepare trees and transplant in accordance with BS 8545.

505 TREE PITS

- Sizes: 500 mm wider than the rootball and 600mm deep.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Excavated material: Separate topsoil and subsoil material and stockpile for backfilling.
- Pit bottoms: Excavate with slightly raised centre: Break up base to a depth of 150 mm and slightly raise centre of pit.

- Treatment: Soil ameliorant worked into pit bottoms.

- Pit sides: Scarify.
- Backfilling material: Excavated material from tree pit with subsoil to lower 300mm of pit and topsoil to upper 300mm of pit, installed to proposed soil profiles in accordance with BS 8545. 4nr 15g Sierrablen Flora tablets to be evenly distributed with each tree pit..

535 TREE STAKES

- Stakes: Softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.

- Preservative treatment: not required.

- 75mm dia stakes 150mm into base of pit and cut off 600mm above ground level

566B TREE PROTECTION ALL WHIPS/TRANSPLANTS (TREES AND SHRUBS)

- Manufacturer: Biodegradable.
- Product reference: Subject to instruction - Contractors choice.
- Type: Round.
- Material: biodegradable.
- Size: 0.75 m high x 73mm diameter.
- Colour: Contractors choice.
- Support: Single timber stake.
- General: Ensure that protection methods do not impede natural movement of trees or restrict growth.

576 TREE PIT SURFACING - LOOSE FILL

- Surfacing material: Mulch, as section Q28.
- Area: 1000 mm radius circle.
- Depth: 75 mm.
- Watering: Water soil thoroughly before laying.
- Installation: Ensure the base of the tree stem is kept free from loose filled material.

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: 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.
- Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
- Tree accessories: Check condition of stakes, ties, guys, guards.
- Broken or missing items: Replace.
- Loose stakes: Re-firm in the ground or replace as necessary to provide support to the tree.
- Loose guys: Re-firm anchor points and adjust as necessary to provide support to the tree.
- Ties: Adjust to accommodate growth and prevent constriction or abrasion.
- Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
- Frequency of checks: Every month.
- Watering: As required for healthy establishment, depending on weather conditions.

Q40 Fencing

To be read with Preliminaries/ General conditions.

140 GENERAL PATTERN WIRE MESH FENCING

- Manufacturer: Contractors choice
- Product reference: Rabbit proof fencing
- Standard: To BS 1722-2.
- Height: 1.2m.
- Mesh: Rabbit proof mesh 1.5m fitted with 150mm below ground and 150mm return to form an L shape to outside edge of fence to prevent digging by rabbits.
- Posts and struts: 100mm diameter
- Treatment: none
- Maximum centres of posts:
- Straining posts: 150 m in straight runs and at all ends, corners, changes of direction and acute variations in level.
- Intermediate posts: 3.5 m.
- Method of setting posts and struts:
- Straining posts: Driven into ground

- Struts: _____.
- Intermediate posts: _____.
- Accessories: Single plain wire to top of fence fastened with galvanised steel staples
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-2.

Appendix E - The Hedgerow Management Cycle

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