

The North Wales Wind Farms Connection Project

Environmental Statement Chapter 7 - Landscape
and Visual

Technical Appendix 7.6

Outline Landscape Management Plan

Application Reference: EN020014

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Outline Landscape Management Plan**

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APPENDIX 7.6

Outline Landscape Management Plan

1 Introduction

- 1.1 The Proposed Development affects an area of farmed countryside with a prevalence of woodlands, trees and hedgerows.
- 1.2 In response to potential landscape and visual effects on these features, SP Manweb has identified a series of outline mitigation planting proposals which are shown on the Landscaping Plans, sheets 1 to 13 (DCO Document Ref 2.6). These are intended to provide screening in selected locations for significant landscape and visual effects and provide high quality habitat as mitigation for existing vegetation lost as a result of the Proposed Development. Specific mitigation measures are discussed in Chapter 7: Landscape and Visual (Section 7.8: Specific Mitigation Measures), and areas identified for specific mitigation are identified (refer to Table 7.23).
- 1.3 Areas for planting, including access for implementation and maintenance of that planting, have been included within the Order Limits for the Proposed Development and SP Manweb is committed to implementing them should the application receive consent.
- 1.4 All work will be designed and supervised by a planting team including an experienced site ecologist and landscape architect.
- 1.5 Detailed planting plans will be submitted to the relevant local planning authority Council (Denbighshire County Council (Denbighshire CC) and Conwy County Borough Council (Conwy CBC)) prior to implementation.
- 1.6 The remainder of this document provides an outline specification for the implementation of new hedges, hedgerow trees, woodland edge and scrub as illustrated in outline in the Landscaping Plans, sheets 1 to 13 (DCO Document Ref 2.6). The figures illustrate outline locations where planting could occur and include the following typical works:
 - Hedgerow Improvements: Mix 1
 - Hedgerow Improvements: Mix 2
 - Hedgerow Improvements: Mix 3
 - Hedgerow Improvements: Mix 4
 - Hedgerow with Tree Planting: Mix 1
 - Hedgerow with Tree Planting: Mix 2
 - Hedgerow with Tree Planting: Mix 3
 - Hedgerow with Tree Planting: Mix 4
 - Woodland Edge Improvements
 - Woodland Scrub Habitat Natural Regeneration
- 1.7 Typical hedgerow works are to include reinstatement, improvement, pruning, thinning, re-planting, new hedgerow planting, protection, fencing, etc., as appropriate. These works are to address losses (refer to Chapter 6 Ecology, Section 6.7 Assessment of Impacts, for details) during construction, and to reinforce and improve existing hedgerows. Refer to Section 2 of this document for further details.

- 1.8 Where the Proposed Development passes through woodland blocks, some tree clearance will be required (refer to Chapter 6 Ecology, Section 6.7 Assessment of Impacts, for details). To mitigate against these losses, it is proposed that improvements to the woodland edge planting will be undertaken, and the immediate areas flanking the Proposed Development will be allowed to naturally regenerate as woodland scrub. The intention is to both improve the existing habitat and soften the woodland edge where clearance has occurred. Typical woodland works are to include pruning, thinning, tree lopping and crown reduction, re-planting, new woodland edge planting, natural regeneration of woodland scrub habitat, retention of deadwood, protection, fencing, etc., as appropriate. Refer to Section 3 of this document for further details.
- 1.9 Woodland ground flora and soils are to be safeguarded and/or improved/reinstated as appropriate. Refer to Section 3 of this document for further details.
- 1.10 All works are subject to guidance and approval from the relevant bodies, e.g., the Woodland Trust.

2 Hedgerows

Site Preparation

- 2.1 Prior to planting, herbaceous vegetation will be killed by herbicide application for a 450mm width band along the hedgeline, with care being taken to avoid spray damage to adjacent areas. If the ground is compacted it will be ripped/cultivated to a minimum depth of 400 mm as directed by the planting team.

Hedge Planting

- 2.2 Hedge plants will be 450 - 600mm bare root transplants, notch planted with the exception of *Ilex aquifolium* which is to be container grown and pit planted. Hedge plants are to be planted in a double staggered row at 300mm spacing with 300mm between rows. Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) are to comprise 68% of the overall hedge, on a 40%: 28% split respectively and the species in Table 1 are to comprise the remaining 32%. Mixes should complement the local landscape and existing habitats, and the species and mix proportions set out in Table 1 will be adjusted to suit the management objectives for the hedge and the locality.

Hedgerow Tree Planting

2.3 Trees will be planted within new hedges at a density which reflects the immediate locality and using species listed in Table 1. Alder (*Alnus glutinosa*), will occasionally be included in hedgerows that are adjacent to watercourses. Trees will generally be planted at a minimum of 8 per 100 linear metres with irregular spacing. Trees will be planted at a variety of sizes depending on the species, the management prescription of the hedgerow (e.g. screening), and the locality. Trees will normally be planted at sizes ranging from 900 – 1200mm or 1800 – 2100mm. In certain instances larger stock (and larger spacing) may be considered where immediate visual impact (in terms of screening) is preferred. Where tree planting is constrained by wayleaves requirements, the trees planted will be of the following smaller species:

- Holly *Ilex aquifolium*;
- Crab Apple *Malus sylvestris*; and
- Hawthorn *Crataegus monogyna*.

Planting Gaps in Existing Hedgerows

2.4 Gappy hedgerows will have their continuity improved by planting gaps with suitable species shown in Table 1. The ground will be prepared, planted, fenced and maintained in accordance with the specification for plant supply and establishment in Section 4 of this document.

2.5 Where appropriate, existing gaps will incorporate trees into the planting mix. The location of gaps and details of planting mixes will be shown on the detailed planting plans.

2.6 Tree saplings within a hedgerow will be tagged in order to ensure that they are not accidentally cut back and are allowed to develop into trees subject to wayleave requirements.

Management of Hedges and Hedgerow Trees

2.7 The management objective for the newly planted hedges and hedgerow trees is:

- to provide visual screening;
- to create new high quality habitat and reinforce the existing habitat network for animals moving between woods, for example , for feeding bats, breeding small birds, amphibian shelter and cover; and
- to establish them as a contribution to the appearance of an area for visual and amenity purposes.

2.8 A separate Hedgerow Management Plan is provided for those hedgerows removed as part of construction activities. The proposals for replanting will follow the same principles described in this document. The Hedgerow Management Plan can be found as an appendix to the Construction and Environmental Management Plan (CEMP) (DCO Document Ref 6.18).

- 2.9 Figures 1, 2 and 3 (Proposed Management of Existing and New Trees) provide illustrative plans and cross-sections for the planting and management of new hedges, and are included at the end of this Appendix. The management requirements for new hedges will depend on the maintenance regime for other hedgerows in the area (e.g. regularly trimmed, laid hedges which are then trimmed, unmanaged hedgerows). The management proposals for some hedgerows may be constrained in some locations by wayleave requirements.
- 2.10 The management regime for new sections of hedgerow will be included within the detailed planting plans to be submitted at a later stage.

3 Woodland Edge and Scrub

Site Preparation

- 3.1 Prior to planting herbaceous vegetation will be killed by herbicide application with care being taken to avoid spray damage to adjacent areas.

Cultivation of Areas for New Woodland Planting

- 3.2 If the ground is compacted it will be ripped/cultivated to a minimum depth of 400mm as directed by the planting team. This will be carried out when the soil is sufficiently dry so that no damage to the structure of the soil will result. Cultivation will be sufficient to establish a well broken fine tilth of 30mm which crumbles readily. All stones larger than 70mm will be removed from the areas to be planted.

Tree and Shrub Planting

- 3.3 Trees and shrubs will be 450 - 600mm bare root transplants, notch planted with the exception of container grown shrubs which are to be pit planted.
- 3.4 Trees will be planted singly on average 4m apart, no closer than 2m and no further than 10m. Shrubs will be planted singly, except for *Ilex aquifolium* which will be planted in groups of 3 – 5, on average at 2m spacing and no closer than 2m to any tree. Trees and shrubs will be planted in a naturalistic pattern, avoiding straight rows.
- 3.5 The design of the woodland and scrub planting will be prepared in accordance with the appropriate national vegetation classification (NVC) woodland type for the locality and using tree and shrub species listed in Table 2. The detailed planting plans will show the detailed mix for each area of woodland or scrub but will comprise approximately 65% shrubs and 35% trees.

Planting into Existing Woodland Areas

- 3.6 Trees and shrubs to be established in existing woodlands, such as those affected by construction or wayleave requirements, will be pit planted to minimise disturbance to existing ground flora and tree roots. The planting mix will be assessed on an individual basis and adjusted accordingly depending on the wayleave restrictions or other constraints of each location.

Woodland Ground Flora Establishment

- 3.7 New woodlands will be sown with woodland ground flora seed mixes prior to planting. The seed mixes will be suited to the respective NVC woodland types and will be identified on the detailed planting plans. The seed mixes will be sown in the autumn (August to the end of October) prior to planting.
- 3.8 During planting, vehicle movements within a particular plot will be kept to the absolute minimum to reduce damage to areas sown with ground flora. Any damage to seeded areas will be made good by re-grading, cultivation and seeding.
- 3.9 The ground flora will be sown at a rate of 10 kg/ha with the seed well mixed, spread evenly over the surface of the area and rolled with a Cambridge roller or equivalent, to ensure good contact of the seed with the soil.

Management of Woodland Edge and Scrub

- 3.10 The management objective for the newly planted woodland edge and scrub is:
- to provide visual screening;
 - to develop as high a quality habitat as possible commensurate with their role in the local habitat network;
 - to provide feeding areas and habitats for badgers, bats and amphibians; and
 - to create and maintain an attractive wooded appearance to the countryside.
- 3.11 The management required to achieve these aims will be to allow the new woodland and scrub to develop naturally with selective and judicious management where necessary, thus encouraging the regeneration of locally native species.
- 3.12 The objective of the management proposal for new woodland ground flora is for it to develop an even cover, comprising a range of species appropriate to the locality, with different communities matching the variations in soil type.

4 General Plant Supply and Establishment

4.1 The detailed planting plans will provide information on the following:

- existing landscape and ecological features;
- ground preparation;
- planting proposals including;
 - wild flora species
 - number
 - plant size and form
 - plant spacing, grouping and density
 - staking where relevant
- seed mix;
- provision of dead wood habitat;
- temporary and permanent fencing/access details;
- access routes;
- public rights of way;
- adjacent areas to be protected; and
- services and wayleaves including field water supplies and water troughs.

4.2 Plants and seeds will be of a native source, grown in the UK. Wherever possible, plants will have been grown from seed, cutting or root stock of a local provenance. Preference will be given to plants which have been grown in similar climatic conditions to the site.

4.3 Plants will comply with *BS 3936: Nursery Stock*, being healthy, vigorous, bushy plants with a fibrous root system in proportion to the size of the plant. Feathered trees will be branched to within 300 mm of the ground level. Container grown stock will have been established in the container long enough for substantial new root growth to have been produced within the container, without being root bound. Rootballed plants will have their ball protected with hessian wrappings or similar.

4.4 Plant handling, packaging, protection, transportation and on-site storage will be undertaken in accordance with the CPSE document, *Handling and Establishing Landscape Plants* (obtainable from the Horticultural Trades Association).

Planting Preparation

- 4.5 Bare root transplant trees will be notch planted with plants placed upright or well balanced.
- 4.6 Pit planting will be used for root balled and container grown shrubs and trees and for all standard and feathered trees. The preparation of planting pits will comply with *BS 4428: Code of Practice for General Landscape Operations* and *BS 5837: Trees in Relation to Design Demolition and Construction* and will not take place when the ground is frozen or waterlogged. The base and sides of the pits will be forked over to facilitate drainage and root development. Standard and feathered trees will be supported with a low, round stake, fixed to the tree with a proprietary adjustable tree tie, nominally 300mm above ground level.
- 4.7 All planting works shall be carried out during the planting season from 1st November to 15th March.
- 4.8 Where possible dead wood in a variety of forms (e.g. 1 - 5 large logs in piles) will be placed in the sites. These will be positioned to maximise their potential use by animals and fungi of dead wood habitats. Native trees lost due to construction will be used to create dead wood habitat. The creation of dead wood habitat will be supervised by the planting team and care will be taken to ensure that it is placed in a manner which will not pose a safety hazard or be visually intrusive.

Protection

- 4.9 All planting will be protected from rabbits and livestock. The type and location of protective fencing will be shown on the detailed planting plans. This may include the use of individual rabbit guards.
- 4.10 The woodland scrub area to be planted will be checked for rabbits which will be removed before and after fencing is completed. Rabbit holes will then be immediately blocked.
- 4.11 Stiles or gates will be erected to provide access for management and maintenance. The locations of these will be shown on the detailed planting plans.

Maintenance

- 4.12 SP Manweb will manage and maintain newly planted areas for a period of 5 years from the 31st of March following planting. Subsequent maintenance will be the responsibility of the landowner. Inspections of all new planting will be carried out by the planting team twice during each growing season to:
- ensure (12 months after construction) all plants have established adequately and replant new appropriate species where plants have failed;
 - identify the presence of any invasive, undesirable species;
 - determine required remedial actions and maintenance measures; and
 - ensure any remedial action required has been undertaken.

- 4.13 After each twice yearly inspection, a summary report of the inspections will be provided to the relevant local planning authority if requested.
- 4.14 All planting will be maintained in such a way as to exclude aggressively competitive plants from an area within a 600mm diameter around the base of each plant.
- 4.15 New hedge planting will be kept weed free between the rows and for a distance of 250mm to either side.
- 4.16 Any herbicides will be used with care to avoid spray damage.
- 4.17 If significant growth of invasive, vigorous, competitive plants develops in those woodlands where a ground flora has been added, selective cutting and removal of arising will be undertaken in summer and/or autumn of the first year following planting. The planting team will decide whether cutting is needed. Selective use of a herbicide may be considered, applied either with a spot applicator (e.g. weed wiper in accordance with manufacturer's recommendations) or a knapsack sprayer with guard or similar. Herbicide application will be carried out in windless and dry conditions and will avoid damage to the sown flora. Where applicable, written approval will be obtained from NRW for the application of herbicide near to watercourses. Invasive species e.g. Japanese Knotweed and Himalayan Balsam, will be disposed of in accordance with the *Environmental Protection Act 1990, Duty of Care Regulations 1991*.
- 4.18 All trees and shrubs will be maintained in a firm and upright growing position. All dead wood, diseased tissue, suckers and epicormic growth will be removed from all plants at the end of each growing season. Tree ties and stakes will be maintained and trees ties loosened before being removed at the end of the maintenance period if the trees have adequately established.
- 4.19 All bare root transplants will be cut back to one third after planting or in the second or third year following successful establishment as directed by the planting team. This will exclude container grown *Ilex aquifolium*.
- 4.20 Stock and rabbit proof fencing will be maintained in good condition. Plants will be checked for rabbit damage and if any stock or rabbits gain access to the hedges they will be removed as soon as possible and any damage to fences made good.
- 4.21 Signs of disturbance or extraneous materials will be removed every year within the first 5 years following planting and all sites will be kept litter free.
- 4.22 Refer to the Hedgerow Management Plan, Chapter 2, Technical Appendices 2.1 (Part D) for additional details.

Table 1: Species for New Hedges, Tree and Hedgerow Gap Planting

	%	Latin Name	English Name
Hedgerow plants	2	<i>Acer campestre</i>	Field Maple
	40	<i>Crataegus monogyna</i>	Hawthorn
	28	<i>Prunus spinosa</i>	Blackthorn
	5	<i>Corylus avellana</i>	Hazel
	10	<i>Ilex aquifolium</i>	Holly
	3	<i>Ulmus glabra</i>	Wych elm
	5	<i>Rosa arvensis</i>	Field rose
	3	<i>Rosa canina</i>	Dog rose
	2	<i>Salix caprea</i>	Goat willow
	2	<i>Salix cinerea</i>	Grey willow
	%	Latin Name	English Name
Principal hedgerow trees	5	<i>Acer campestre</i>	Field maple
	65	<i>Quercus robur</i>	Oak
	2.5	<i>Alnus glutinosa</i>	Alder
	7.5	<i>Malus sylvestris</i>	Crab apple
	15	<i>Ilex aquifolium</i>	Holly
	5	<i>Prunus avium</i>	Wild cherry
		Latin Name	English Name
Hedgerow trees where wayleave constraints apply	20	<i>Ilex aquifolium</i>	Holly
	10	<i>Malus sylvestris</i>	Crab apple
	70	<i>Crataegus monogyna</i>	Hawthorn

NOTE

1. Species and percentages are indicative only and will be adjusted to suit the particular locality to reflect the management prescription and local conditions/species composition of existing hedgerows.
2. Honeysuckle (*Lonicera periclymenum*) may be introduced into hedgerows at the end of the maintenance period.
3. Alder (*Alnus glutinosa*) will be incorporated occasionally into hedgerows that are adjacent to watercourses.

4. Initial ecological surveys of the locality indicate that a number of additional species could be added to these typical mixes. Four mixes have been identified on the Landscaping Plans:

- Mix 1 to include typical species plus gorse and silver birch
- Mix 2 to include typical species plus elder and gorse
- Mix 3 to include typical species plus elder
- Mix 4 to include typical species plus gorse.

These mixes are subject to final approval prior to completion of detailed planting plans and implementation of planting.

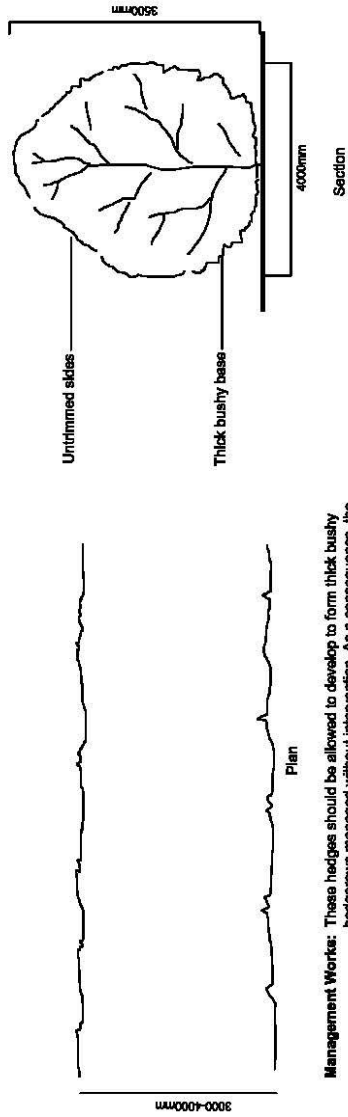
Table 2: Species for New Woodland and Scrub Planting

Shrubs (65%)		Trees (35%)	
Hazel	<i>Corylus avellana</i>	Alder	<i>Alnus glutinosa</i>
Hawthorn	<i>Crataegus monogyna</i>	Silver birch	<i>Betula pendula</i>
Holly	<i>Ilex aquifolium</i>	Downy birch	<i>Betula pubescens</i>
Blackthorn	<i>Prunus spinosa</i>	Larch	<i>Larix decidua</i>
Field rose	<i>Rosa arvensis</i>	Crab apple	<i>Malus sylvestris</i>
Dog rose	<i>Rosa canina</i>	Mountain ash	<i>Sorbus aucuparia</i>
Goat willow	<i>Salix caprea</i>	Scots pine	<i>Pinus sylvestris</i>
Grey willow	<i>Salix cinerea</i>	Wild Cherry	<i>Prunus avium</i>
Wych elm	<i>Ulmus glabra</i>	Bird cherry	<i>Prunus padus</i>
Guelder rose	<i>Viburnum opulus</i>	Oak	<i>Quercus robur</i>
		Crack willow	<i>Salix fragilis</i>

MANAGEMENT OF EXISTING HEDGES

TYPE A

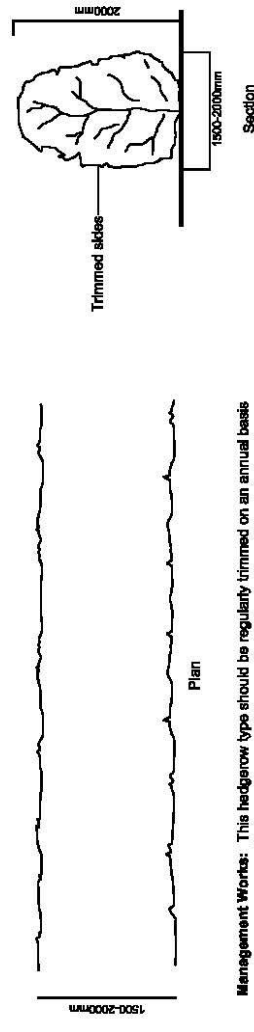
Hedge row to be maintained without intervention



Management Works: These hedges should be allowed to develop to form thick bushy hedgerows managed without intervention. As a consequence, the shrubs that comprise them will be allowed to develop freely into their natural habitat, remaining untrimmed. Generally, these hedgerows are of high value ecologically providing cover, sources of food and a different type of habitat to the more prevalent trimmed hedge type. They can also serve as amphibian corridors.

TYPE B

Trimmed Hedge



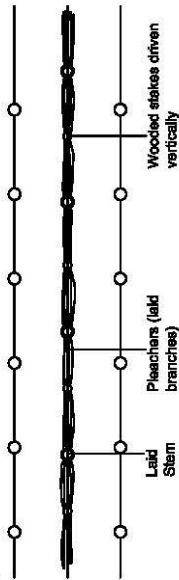
Management Works: This hedgerow type should be regularly trimmed on an annual basis between the end of January to the beginning of March to develop a hedge which is 1.5 to 2.0m wide at the base and 2.0m high. Where the hedge needs to be raised, raising will take place in 150mm annual increments. The objectives are: to maintain a cover of hedgerows which consolidates the existing landscape pattern; and provides a network of habitats which connect woods and other habitats together; provides food for birds and bats; and acts as a corridor for amphibians.

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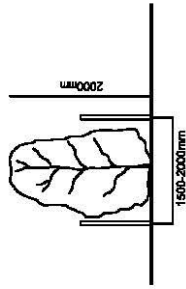
TYPE C

Laid Hedges

Plan (after laying)



Section (after laying)



Section (showing ultimate shape and height)

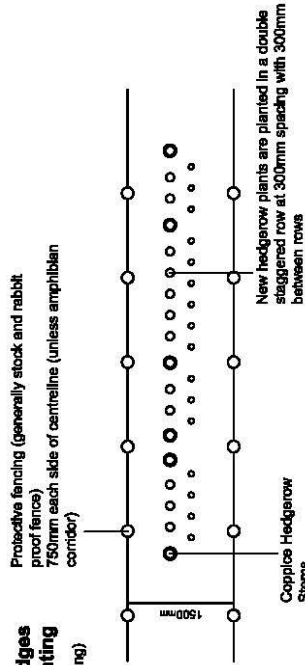
Management Works:

Hedges should be laid to a height of approx 1.2m with vertically driven wooden stakes securing out pleachers land at an angle of c.45. The hedge should be trimmed, starting in the year following laying, in accordance with the measures and objectives for Type B Hedge so that the desired shape (see section above) is achieved.

TYPE D

Coppiced Hedges with new planting

Plan (after coppicing)



Section (showing ultimate shape and height)

Management Works:

Hedgerows to be coppiced should have gaps between cut stems planted in accordance with the method statement. After establishment, the hedge should be trimmed annually raising the hedge gradually in 150mm annual increments until the desired 2.0m height is reached. Management objectives are the same as for trimmed hedges.

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