

SERIES 3000: LANDSCAPE AND ECOLOGY

REVISION LOG

Revision	Details	Date
Initial Issue	For approval	13/11/2018
A	For Approval	29/03/2019

APPENDIX 30/1: GENERAL

Notice and Liaison

30/1.1 [3001.2] The Landscape Contractor is to give 48 hours notice to the overseeing organisation of his intention to commence the following operations;

- (a) Setting out.
- (b) Subsoil treatment
- (c) Topsoil cultivation
- (d) Application of herbicides/pesticides
- (e) Tree felling
- (f) Arboricultural works
- (g) Planting (including grass or wildflower seeding or turfing)
- (h) Mulching
- (i) Commencement of maintenance work during the defects liability period.
- (j) Individual maintenance visits during the defects liability period.
- (k) Defects liability works.
- (l) Works outside the road boundary
- (m) Any works within, adjacent to, or which may affect the sites of nature conservation or archaeological interest stated below;

There are no known sites of nature conservation or archaeological interest within the works boundary. The Wigan Flashes Local Nature Reserve (LNR) forms the southern boundary to the site. Bryn Marsh and Ince Moss Site of Special Scientific Interest (SSSI) lies some 1400m to the south.

The contractor is responsible for liaison with other landowners when carrying out offsite planting, maintenance of offsite planting or maintenance of boundary hedges.

Peat

30/1.2 [3001.3] Peat or peat based products shall not be used except as a constituent of recycled materials eg. mushroom compost.

Pesticide

30/1.3 [3001.13] Pesticide/herbicide record forms, in the format enclosed in this Appendix, are to be submitted to the overseeing organisation on completion of the following activities;

- (a) Cultivation of topsoil prior to planting/seeding
- (b) On completion of each maintenance visit.

Bird Nesting Season

30/1.4 [3001.14] The bird nesting season to apply to this contract is February to August inclusive.

Inspection Report

30/1.5 [3001.15] Landscape Works Inspection Reports, in the format enclosed in this Appendix, are to be retained by the Landscape Contractor and handed over to the Overseeing Organisation at the end of the defects liability period.

LANDSCAPE WORKS – PESTICIDE RECORD

(To be completed by the Contractor)

Contract Reference Number:

Date of visit: ____/____/20____
 (minimum one record / day)

Contract Name:

Western Gateway Infrastructure Scheme

Name of Landscape Contractor:

**Contractor's
Number:**

Phone

Operations carried out	Pesticide used	Location of operations
Total weed control		
Selective herbicide to areas of grass		
Herbicide to cultivated plant beds		
Total herbicide around individual plants in grass		
Other (state purpose)		

Names of operatives on site:

Qualifications of operatives named:

Supervisor

.....

Storeman

.....

Application by

.....

Signed (for Contractor)

Contractor's observations on damage by others or any other incidents:

.....

LANDSCAPE WORKS – INSPECTION REPORT

(To be completed by the Contractor and Overseeing Organisation)

Contract Reference Number:

Date of visit: ____/____/20__

Contract Name:

Western Gateway Infrastructure Scheme

Name of Landscape Contractor:

**Contractor's
Number:**

Phone

Operations carried out	Location of operations

Names of operatives on site:

.....

.....

.....

Contractor's observations

on damage by others, additional work required or general condition of the works:

.....

.....

Observations of Overseeing Organisation

on standard of workmanship, additional work required or general condition of the works:

.....

.....

This maintenance visit has been satisfactorily completed

SIGNED (for Contractor)

NAME: DATE: ____/____/20__

SIGNED (for Overseeing Organisation)

NAME: DATE: ____/____/20__

APPENDIX 30/2: WEED CONTROL

General

30/2.1 [3002.1] Weed control for infestations of injurious weeds should they be encountered during works should be carried out in accordance with advisory publications from the Department for Environment, Food and Rural Affairs (DEFRA) including;

- (a) Common Ragwort
- (b) Spear Thistle
- (c) Creeping Field Thistle
- (d) Broad Leafed Dock
- (e) Curled dock

as listed under the Weeds Act 1959 and also weeds such as;

- (f) Himalayan balsam
- (g) Giant hogweed
- (h) Japanese knotweed

Other specifications or horticultural advice notes may be followed with the approval of the project Ecologist and Contract Administrator.

Weed control shall achieve total die back of weeds and in the case of total weed control shall not allow any significant re-growth (less than 5%) within 6 months of application. In the case of selective weed control, there shall be no more than 5% re-growth during the season.

Total Weed Control

30/2.2 [3002.3] On hard standings, gravel or paved areas and around external furniture, contact, translocated and residual herbicides approved for total weed control shall be applied in accordance with the manufacturers instructions once per year during the establishment period.

30/2.3 [3002.4] For site preparation, on topsoil heaps and in planting beds, a translocated non-residual approved herbicide shall be applied in accordance with the manufacturers instructions prior to cultivation of topsoil.

30/2.4 [3002.5] Prior to commencement of weed control in open ditches, lagoons, watercourses and filter drains, the Landscape Contractor shall submit a method statement for consideration by the project Ecologist, who will advise of a suitable contact or translocated herbicide which has approval for use in or near water. This shall be applied in accordance with the manufacturers instructions at the frequency agreed with the project Ecologist. Where necessary the Landscape Contractor may be instructed to carry out weed control by hand.

Selective Weed Control

30/2.5 [3002.6] Weed control in verges, central reserves, and planted areas (not Wildflower Grassland or Wet Grassland areas) shall be carried out using a selective translocated herbicide. The herbicide shall be applied during a period of active growth in accordance with the manufacturers instructions once per year during the establishment period.

Weed Control by Spot Application of Herbicide

30/2.6 [3002.7] Weed control of target species such as listed in clause 30/2.1, shall be carried out by spot treatment with a translocated herbicide using a method of application that ensures that the herbicide touches the weed species only. Manufacturers recommended timing of operations and instructions shall be followed.

30/2.7 Special attention should be given to the identification and eradication of Japanese Knotweed. Areas of Japanese Knotweed have previously been identified on site and a programme of works for the eradication of these areas started prior to the commencement of the landscape softworks. Drawing WGG-BWB-GEN-XX-DR-D-0001 S2 P02 shows these areas. Control of Japanese Knotweed should

be carried out in accordance with the Japanese Knotweed Method Statement 3096/11 by Richards Moorehead and Laing Ltd.

Weed Control by Pulling/ Handweeding

30/2.8 [3002.8] Hand weeding shall consist of the removal of the entire weed, including roots, by digging, forking, hoeing or pulling. Weeds shall be removed prior to flowering and the arisings removed from site. Hand weeding is to be carried out as required where the use of herbicides is not permitted, as directed by the project Ecologist. Special attention is to be given to weeds **within** tree and shrub shelters.

Weed Control by Cutting

30/2.9 [3002.9] Weed control by method of cutting; refer to clause 30/4.2. Cutting is to be undertaken prior to flowering.

Arisings from Weed Control Operations

30/2.10 [3002.10] All arisings from weed control operations shall be removed from site, except where designated and agreed to form habitat features. Injurious weed arisings are to be removed from site in accordance with the relevant advisory publications from the Department for Environment, Food and Rural Affairs (DEFRA) or horticultural advice notes as appropriate to the species of weed.

APPENDIX 30/3: CONTROL OF RABBITS AND DEER

General

- 30/3.1 [3003.1] Within the contract boundary, for the duration of the construction works the Main Contractor shall carry out rabbit control as necessary to ensure that rabbits do not adversely affect the permanent works, including landscaping.

Control Operations

- 30/3.2 The Landscape Contractor shall erect rabbit guards during the carrying out of the planting works.

- 30/3.3 [3003.5] All site clearance work to be carried out by the Main Contractor, refer to Series 200.

Rabbit Control Within the Road Boundary

- 30/3.4 [3003.8] The area where control is required shall be visited a sufficient number of times during the first month, to keep the rabbits controlled, and substantially eliminated. Thereafter the Contractor shall ensure effective control for the full period of the planting works.
- 30/3.5 [3003.9] The Landscape Contractor is not obliged to attend monthly inspections to assess whether effective rabbit control has been achieved. However he will be obliged to seek advice from the Main Contractor, prior to planting whether effective control has been achieved such that it is appropriate to commence fencing and planting works.

Clearance of Rabbits and Deer in Fenced Areas to be Planted

- 30/3.6 [3003.12] The Landscape Contractor shall maintain the rabbit guards during the 2 year maintenance period.

Replacement of Plants Damaged by Animals

- 30/3.7 [3003.14] The Landscape Contractor shall maintain any replacement planting until the end of the 2 year maintenance period.

APPENDIX 30/4: GROUND PREPARATION

Topsoil Importation

30/4.1 Soils are to be provided by the Main Contractor as follows:

To Amenity Grass verges and Wet Grassland areas: 150mm depth topsoil.

To Native Woodland and Wet Woodland planting: 450mm depth topsoil.

To Specimen and Feathered Tree planting areas: 600mm depth topsoil.

To Wildflower Grassland: 0mm depth topsoil. Seeds to be sown onto cultivated subsoil to minimise competition from grasses.

Imported topsoil to BS 3882:2015 should be provided as necessary to make up any deficiency of topsoil existing on site for general planting areas. Imported topsoil should be multipurpose - for all general planting areas and within the parameters of a 'sandy loam' textural class.

Vegetation Clearance

30/4.2 [3004.1] Prior to planting or seeding, where herbaceous vegetation and grass has established on the topsoil or subsoil in excess of 75mm in height, the vegetation is to be cut to a height of 50-75mm and the arisings removed off site.

30/4.3 [3004.2] To all areas to be planted and seeded (except areas to be excluded as directed by the Project Ecologist) a non-residual translocated herbicide is to be applied between 21 and 25 days prior to final cultivation and planting/seeding operations, in accordance with manufacturer's recommendations.

Subsoil Treatment

30/4.4 [3004.5] To areas of compacted subsoil in areas to be planted or grass seeded, soils are to be ripped to a minimum depth of 450mm.

30/4.5 [3004.6] Ripping shall be carried out using a ripping tine or subsoil plough with tines at centers appropriate to type of subsoiler used and soil conditions to cause the uplifting and fracturing of the soil throughout the profile to the depth stated in clause 30/4.4.

Final Preparation of Soils

30/4.6 [3004.7] To planting or seeding areas (except areas to be excluded as directed by the Project Ecologist) soils are to be ameliorated and cultivated prior to planting and seeding.

30/4.7 [3004.8] Arisings from cultivations are to be removed off site by the Landscape Contractor.

APPENDIX 30/5: GRASS SEEDING

Season

- 30/5.1 [3005.1] Amenity Grass Mix, Wildflower Grass Mix, Wet Wildflower Grass Mix and Engineered Slope Grass Mix seed is to be sown during the period 1st March to 31st May, or 1st September to 31st October.

Final Cultivations

- 30/5.2 [3005.2] Amenity Grass Mix areas to be seeded should be prepared such that the upper 100mm of soil shall be reduced to a fine tilth prior to seeding, raked to a true, even surface, friable and lightly firmed but not over compacted, with surface stones and earth clods exceeding 25mm removed. Extend cultivation into any existing adjacent grassed areas sufficient to ensure full marrying in of levels.

Wildflower Grass Mix areas and Wet Wildflower Grass Mix areas to be seeded should be prepared such that the upper 50mm of soil shall be reduced to a fine tilth prior to seeding, raked to a true, even surface, friable and lightly firmed but not over compacted, with surface stones and earth clods exceeding 25mm removed.

- 30/5.3 [3005.3] Areas to be seeded (not Wildflower Grass or Wet Wildflower Grass areas) should receive a pre-seeding fertiliser in accordance with manufacturers recommendations.

Seed

- 30/5.4 [3005.4]

Amenity Grass Mix areas;

Supplier: Germinal Seeds .

Mixture reference: A18 (Road Verge and Embankments)

Application rate: 50g/m²

Wildflower Grass Mix areas;

Supplier: Naturescape British Wildflowers

Mixture reference: N5 Long Season Meadow Mixture

Application rate: 5g/m²

Wet Wildflower Grass Mix areas;

Supplier: Naturescape British Wildflowers

Mixture reference: N7 Wetland Meadow Mixture

Application rate: 5g/m²

Engineered Slope Grass Mix areas;

Supplier: Germinal Seeds

Mixture reference: A3 (Embankment and Slopes)

Application rate: 60g/m² (to TensarTech recommendation)

Clover Rich Seed Mix area;

Supplier: Naturescape

Mixture reference: Clover mix 50% Red Clover, 50% White Clover

Application rate: 5g/m²

Seed Quality 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.

Conventional Sowing

30/5.5 [3005.8] Minimum sowing rates, for grass seed mixtures, on highway embankments to be not less than 20g/m². Wildflower mixtures are to be sown at manufacturers recommended rates.

Hydraulic Seeding

30/5.6 [3005.10] Hydraulic seeding to take place in locations as directed by CA and spraying to be undertaken ideally during late summer/early autumn. Hydraulic seeding must be undertaken during appropriate weather conditions and not be executed during, before or immediately following rainfall. Avoid application in high winds. Soil Surface prior to Hydraulic Seeding should be uniform with a rough textured surface and stones greater than 50mm removed. Soils that have been exposed for a long time must be trimmed and scaled to remove any oxidised layer prior to Hydraulic seeding. Vertical striations on slopes should be absent and on slopes where surface micro topography varies by 20mm from the formation level, an acceptable treatment is to provide horizontal grooving with a 'v' shaped groove 20mm deep at intervals of 200m downslope. Hydraulic seeding should be carried out by means of an approved specialist contractor who should provide a Method Statement of Hydraulic Seeding to the CA at least 10 working days in advance for approval prior to execution. This Method Statement should contain:

- Type, mix proportions and application rates (litres/hectare) for Hydraulic Seed Mixtures (seed proportion, fertilisers, soil amenders, mulch fibres, binder as stated below or similar approved)
- Mixing procedure
- Spraying equipment type and procedure
- Biodegradable mat (installation procedure, anchor type, size, length and spacing of mat anchor)

Hydraulic Seeding Mixes to be:

Amenity Grass Areas:

1. Amenity Grass Seed Mix @ 30g/m²
2. HSUK or equivalent Blended mulch @ 100g/m² (flat work) or 150g/m² (slopes up to 35 degrees)
3. HSUK equivalent Hydro Fertiliser 8:14:20 + Mn + Zn (50% slow release Nitrogen) @ 15g/m²
4. HSUK equivalent HyTac 'Blue Goo' Tackifier @ 1 unit (90g) (flat work) or 1.5 units (135g) (slopes up to 35 degrees) per 600gallons of hydroseeding slurry

Wildflower Grass and Wet Wildflower Grass Areas:

5. Wildflower Grass and Wet Wildflower Grass Seed Mix @ 30g/m²
6. HSUK equivalent Blended mulch @ 100g/m² (flat work) or 150g/m² (slopes up to 35 degrees)
7. HSUK equivalent HyTac 'Blue Goo' Tackifier @ 1 unit (90g) (flat work) or 1.5 units (135g) (slopes up to 35 degrees) per 600gallons of hydroseeding slurry

HSUK products supplier www.hydroseedingsupplies.co.uk

Operations shall be carefully monitored to ensure even seed dispersal. Careful agitation of the mix must be carried out during preparation of slurry to ensure even application during hydroseeding. The contractor is to ensure full establishment of seeding work. Any dead grass or bare spots larger than 50mm diameter shall be immediately replaced and resprayed or made good through hand casting at contractors own expense.

Turf

30/5.7 [3005.13] The re-use of turf is not applicable within the A49 Goose Green Bypass Scheme.

30/5.8 [3005.14], [3005.25], [3005.26] The use of imported turf is not applicable within the A49 Goose Green Bypass Scheme.

Establishment Cuts

- 30/5.9 [3005.29] Initial establishment cut of newly seeded 'general Amenity Grass Mix areas (not Wildflower Grass Mix or Wet Wildflower Grass Mix areas) to be carried out when grass is 50-75mm high.
Grass to be cut to 25-50mm

Wildflower Grass Mix and Wet Wildflower Grass Mix areas to be cut twice a year. Once in early months of year (Feb – March) and once after flowering in the Autumn.
Remove debris, litter, stones and earth clods larger than 25 mm in any dimension.
Height of first cut: 150mm

- 30/5.10 [3005.29] Plant used for mowing is to be suitable for use adjacent to highways and operated by suitably qualified operatives.

- 30/5.11 [3005.30] All arisings from grass cutting operations to be removed from site, except as directed for habitat purposes.

APPENDIX 30/6: PLANTING

Plants

30/6.1 [3006.3] Plant species included within landscape works area to include the following;

Native Woodland Mix planting;

Generally 40-60 I+I BR transplants (Willow species 0/I) planted on a 2m grid.

Crataegus monogyna

Corylus avellana

Prunus spinosa

Rosa canina

Salix caprea

Salix cinerea

Sambucus nigra

Wet Woodland Mix planting;

Generally 40-60 I+I BR transplants (Willow species 0/I) planted on a 2m grid.

Cornus sanguinea

Salix caprea

Salix cinerea

Salix viminalis

Extra heavy standard trees;

14-16cm stem girth.

Sorbus aucuparia

18-20cm stem girth.

Acer campestre

Betula pendula

Carpinus betulus 'Fastigiata'

Platanus orientalis 'Minaret'

20-25cm stem girth.

Platanus orientalis 'Digitata'

Planted individually as shown on landscape drawings.

Feathered Trees;

175 – 200cm BR

Alnus glutinosa

Betula pubescens

Pinus nigra 'Austriaca'

Pinus sylvestris

Quercus robur

Sorbus aucuparia

Planted individually as shown on landscape drawings. Generally planted within woodland mix areas.

Wetland and Aquatic planting;

Generally 40cc plug plants.

Wetland plants. Planted in species groups as directed, towards edge of wetland areas.

Butomus umbellatus

Carex acutiformis

Carex riparia

Epilobium hirsutum

Lysimachia vulgaris
Lythrum salicaria

Marginal and emergent plants. Planted in species groups as directed, towards wetter areas.

Glyceria fluitans
Iris pseudacorus
Juncus effusus
Juncus inflexus
Phalaris arundinacea
Phragmites communis
Sparganium erectum
Sagittaria sagittifolia
Typha angustifolia
Typha latifolia
Veronica beccabunga

30/6.2 [3006.5] No requirement for mycorrhiza in rooting medium within the A49 Goose Green Bypass Scheme.

30/6.3 [3006.6] Plant provenance requirements; True to name. Origin/Provenance: British stock to be approved (Ref. provenance certificate) by overseeing organisation.
 Origin and Provenance have the meaning given in the National Plant Specification.

30/6.4 [3006.7] Specimen trees and shrubs, shall be obtained from the following nurseries or as otherwise approved: (Trees - Barchams, Shrubs - Coles)

Barcham Trees
 Eye Hill Drove
 Soham
 Ely
 CB7 5XF
 Tel: 01353 720748

James Coles & Sons Nurseries
 624 Uppingham Road
 Leicester
 LE7 9QB
 Tel: 0116 241 2115

Other requirements: The Landscape Contractor is to provide notification of which supplier is to be used for the trees and provide for trees to be individually selected and tagged at the nursery prior to lifting.

30/6.5 [3006.10] Labels to be removed from plants following planting. Canes and ties to be retained on plants after planting, unless restrictive to growth and removed if self supporting on the last visit of the 12 months maintenance period.

Topsoil, Compost, Fertiliser and Anti-dessicants

30/6.6 [3006.12] Backfill material per tree pit shall be:

- extra heavy standard trees topsoil with 60 litres of compost and 200g of (14: 14: 14) slow release fertiliser in accordance with manufacturer's instructions.
- feathered trees topsoil with 40 litres of compost and 100g of (14: 14: 14) slow release fertiliser in accordance with manufacturer's instructions.

Backfilling materials shall be placed in 150mm layers, ensuring contact with the roots or rootball and elimination of air pockets. The soil shall be firmed as backfilling proceed taking care not to damage any roots. Heel in firmly around root collar.

30/6.7 [3006.13/15/16] Compost to be applied to planting areas for incorporation into soils (excluding Wildflower Grassland and Wet Grassland).

30/6.8 [3006.15] Application of slow release fertiliser (16:10:10) in planting areas (excluding Wildflower Grassland and Wet Grassland) at a rate of 100 grams per m² in accordance with manufacturer's instructions .

30/6.9 [3006.16] The roots of bare-rooted trees shall be completely immersed in Broadleaf root dip solution immediately prior to planting.

Conifers shall be dipped in or thoroughly sprayed with anti-dessicant before delivering to site. Another application shall be made soon after planting. Applications shall not be made in rainy or frosty weather. Ensure full coverage of underside of foliage.

Time of Planting

30/6.10 [3006.17] Bare rooted, rootballed or cell grown plants (including trees, shrubs, non-aquatic perennials and wildflowers) to be planted November – March subject to prevailing seasonal conditions. Where planting is required outside of this season, this must first be agreed with the CA and all stock must be container grown and allowance made for sufficient watering to enable establishment.

30/6.11 [3006.19] No requirement for bulb planting.

Planting Depth

30/6.12 [3006.22] No requirement for any plants to be planted deeper than soil nursery mark.

Notch Planting of Trees, Shrubs and Hedges

30/6.13 [3006.23] Native Woodland Mix and Wet Woodland Mix to be notch planted.

Notch planting – make a vertical 'I', 'L', 'T', or 'H' notch to accommodate full depth of roots. Plant tree, close notch with root collar at ground level and firm the soil.

Planting Pits, Beds and Trenches

30/6.14 [3006.24] Tree pits to be dug as detailed in table 30/1: Planting Pits, Beds and Trenches.

30/6.15 [3006.27] Not applicable within the A49 Goose Green Bypass Scheme.

Planting in Cultivated Beds and Hedges

30/6.16 [3006.28] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.17 [3006.29] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.18 [3006.33] Not applicable within the A49 Goose Green Bypass Scheme.

Planting of Whips, Transplants and Shrubs into Pits or Trenches

30/6.19 [3006.34] Soil preparation for whips, transplants and shrubs as for planting beds generally to be carried out in accordance with Native Woodland planting areas.

30/6.20 [3006.35] Backfilling to planting pits for whips, transplants and shrubs;

Prior to backfilling 5L of compost and 30g of slow release fertiliser shall be thoroughly mixed with topsoil to be deposited around the roots of bare rooted material and plant material in containers in accordance with manufacturer's instructions..

Stakes and Ties

30/6.21 [3006.36] Tree staking and tying;

Trees shall be set upright and firmly, with no part of the stem in contact with the stake.

Stakes for bare-rooted trees shall be driven into the pit before the tree is planted.

Stakes shall be pressure impregnated to BS1282, softwood, straight, free of projections and pointed at one end. All bark should be removed from the stake. The stakes shall be 75mm diameter (minimum) round section.

Extra Heavy Standard and Standard Trees shall be staked by the double staking method. The stakes shall be sufficiently long to allow at least 600mm of the stake to be driven into undisturbed soil beneath the tree pit. Stakes shall be vertical and neatly trimmed at the top with a horizontal cut at the specified height.

Feathered trees and Conifers shall be single staked. The stakes shall be driven in at an angle of 60deg and sufficiently long to allow at least 600mm of the stake to be driven into undisturbed soil beneath the tree pit.

The position of the stake relative to the branches on feathered trees shall be such that main stem or side branch contact will not occur. Minor branches may be cleanly cut off from the main stem to facilitate this.

- 30/6.22 [3006.37] Ties for Extra Heavy Standard trees shall be 1 No. Toms tree tie belt L5 37.5mm wide with 2 No. Toms rubber spacer sleeves (RSS/90) between the stakes and tree. The tie is to be secured to the stakes by means of 2 No 25mm large-headed galvanised nails per stake.

Ties for Feathered Trees shall be 1 No. Toms tree tie belt B3 25mm wide with rubber spacer pad 01 between the tree and the stake. Fix ties to stake by means of 2 No. 25mm large headed galvanised nails per tie. Tie to be within 150mm of top of the stake.

Planting of Trees

- 30/6.23 [3006.38] Any trees located closer than 3m to underground utilities or services should not be planted without the use of an appropriate root barrier system, installed to manufacturer's instructions.

Suggested product and supplier: ReRoot (Size as appropriate to utilities/ service depth)
GreenBlue Urban
Compass Park
Junction Road
Bodiam
TN32 5BS

- 30/6.24 [3006.41] Low double tree stakes for Extra Heavy Standard trees to extend 700mm above GL and 600mm into firm ground below the bottom of the pit.

Single stakes for feathered trees to be 500mm in height above GL and extend 700mm below GL.

- 30/6.25 [3006.42] Refer to clause 30/6.22

- 30/6.26 [3006.43] Refer to clause 30/6.21 and 30/6.24.

- 30/6.27 [3006.44] Refer to clause 30/6.22

- 30/6.28 [3006.45] Not applicable within the A49 Goose Green Bypass Scheme.

- 30/6.29 [3006.46] Refer to clause 30/6.7.

- 30/6.30 [3006.49] All trees shall be watered thoroughly immediately after backfilling using sufficient quantity of water to wet the full extent of the tree pit and tree root system.

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.

- 30/6.31 [3006.50] To all Extra Heavy Standard Trees, aeration pipes to be installed. In addition, pipes to be instated within gravel drainage layers and connected to soak away of land drainage system where ground conditions prove to be prone to water logging.

Supplier/ reference: GreenBlue Urban Root Rain Urban 3m length

Tubes, Guards and Ties

- 30/6.32 [3006.52] Rabbit protection;

Ensure that protection methods do not impede the natural movement of trees and transplants or restrict growth.

Feathered trees and transplants shall be protected with rabbit protection as follows: (or similar

approved)

Supplier/ reference: Tubex 12D standard tree shelters as supplied by Tubex Ltd.

Tel: 01621 874201

Size/Colour: 750mm height x 105mm diameter, green. 5yr option.

Support: Secured with plastic cable ties to 32mm square sawn timber stakes 105cm long.

Mulches: Ground Preparation

30/6.33 [3006.53] Refer to clause 30/6.30. All specimen trees to receive 1.5m diameter mulch circle around the base to prevent weed growth and aid establishment.

30/6.34 [3006.54] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.35 [3006.55] Mulch to specimen trees only as clause 30/6.33 above, no mulch to be spread to other areas of planting.

Mulch shall be a 75mm thick layer of ornamental spruce 5-35mm bark mulch. Bark to be thoroughly watered down at spreading, free of pests, disease, fungus and weeds. A certificate to this effect shall be presented to the Contract Administrator.

A sample load of the mulch to be used shall be provided for inspection prior to spreading over planted areas.

Clear all weeds, water soil thoroughly, and mulch the whole surface of planting beds to a 75mm depth. Mulch depth to be reduced as appropriate for areas of low ground cover – foliage of plants must not be covered with mulch.

Mulch shall be thoroughly watered down after spreading.

Individual Mulch Mats

30/6.36 [3006.58] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.37 [3006.60] Not applicable within the A49 Goose Green Bypass Scheme.

Sheet Mulch

30/6.38 [3006.61] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.39 [3006.62] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.40 [3006.63] Not applicable within the A49 Goose Green Bypass Scheme.

Sheet Mulch Collars

30/6.41 [3006.64] Not applicable within the A49 Goose Green Bypass Scheme.

Planting of Bulbs

30/6.42 [3006.66] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.43 [3006.67] Not applicable within the A49 Goose Green Bypass Scheme.

Wildflower Plant Preparation and Planting

30/6.44 [3006.68] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.45 [3006.69] Not applicable within the A49 Goose Green Bypass Scheme.

30/6.46 [3006.71] Not applicable within the A49 Goose Green Bypass Scheme.

Planting of Reeds, Rushes, Marginal, Emergent and Aquatic Plants

30/6.47 [3006.73] Refer to clause 30/6.1

30/6.48 [3006.77] Excavated material from plant clump positions, above the water level, shall be deposited in locations as agreed with the CA.

Marker Posts for Planted Areas

30/6.49 [3006.80] Not applicable within the A49 Goose Green Bypass Scheme.

Replacement of Failed or Defective Plants

30/6.50 [3006.87] For 2 years the Contractor shall replace all plants which are missing, have died, or which in the opinion of the CA are failing to make satisfactory extension growth.

Post Planting Maintenance

30/6.51 [3006.92] For 2 years, running concurrently with the period stated under sub-Clause 3006.87, the Contractor shall carry out maintenance of new planting in accordance with Clauses 3007 and 3009 as appropriate.

PROVENANCE CERTIFICATE

Certificate Number:

(To be completed by the Landscape Contractor)

1. We hereby certify that the origins of the plant stock implemented in the Works are as identified in the Plant Schedule contained in Annex I of this certificate.
2. The words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in the Forestry Commission Practice Note 8: "Using Local Stock for Planting Native Trees and Shrubs"

CONTRACTOR

Firm:

Name:

Position:

Signed:

Date: ____/____/20____

3. Receipt of this certificate is acknowledged by the Overseeing Organisation.

OVERSEEING ORGANISATION

Name:

Position:

Signed:

Date: ____/____/20____

**PROVENANCE CERTIFICATE
 ANNEX I – PLANT SCHEDULE**

(To be completed by the Landscape Contractor)

Certificate Number:

Botanical Name	Quantity	Form / Age	Height (cm)	Zone of Provenance and Location	Forestry Commission Local Provenance Certificate No. (if applicable)	Approx Date Propagation Material Collected	Nursery(s) where the Plants have been grown

APPENDIX 30/7: GRASS, BULBS AND WILDFLOWER MAINTENANCE

General Grass Maintenance

- 30/7.1 [3007.1] For approximate areas of Amenity Grass, Wildflower Grassland and Wet Grassland within the A49 Goose Green Bypass Scheme refer to DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010.
- 30/7.2 [3007.5] Minimum cutting distance from individual trees in grass areas to be no closer than 1.5m from tree stem.
- 30/7.3 [3007.6] Grass clippings, mulch or other debris lying on roads/hard surfaces as a result of mowing operations to be swept up and removed from site immediately. Suggested traffic control method to be a single lane temporarily closed on the carriageway during works. Works to be scheduled outside of peak traffic flow periods.

Grass Cutting: High Frequency

- 30/7.4 [3007.9] Amenity Grass areas to be cut on 'High frequency regime' as clause 30/7.1.

Grass Cutting: Medium Frequency

- 30/7.5 [3007.13] Not applicable within the A49 Goose Green Bypass Scheme.

Grass Cutting: Low Frequency

- 30/7.6 [3007.17] Not applicable within the A49 Goose Green Bypass Scheme.

Grass Cutting: Minimal Frequency

- 30/7.7 [3007.18] Not applicable within the A49 Goose Green Bypass Scheme.
- 30/7.8 [3007.19] The landscape contractor may be required to carry out 1 additional cut on a 1m strip at the edge of the carriageway and visibility splays as instructed by the overseeing organisation.
- 30/7.9 [3007.20] The landscape contractor may be required to carry out 1 additional cut to visibility splays in front of road signs as instructed by the overseeing organisation.

Grass Cutting: Banks and Ditches

- 30/7.10 [3007.22] Not applicable within the A49 Goose Green Bypass Scheme.

Grass Cutting: Areas of Planting

- 30/7.11 [3007.23/25] Not applicable within the A49 Goose Green Bypass Scheme.
- 30/7.12 [3007.24] Not applicable within the A49 Goose Green Bypass Scheme.

Wildflower Areas and Areas of Nature Conservation Value

- 30/7.13 [3007.26/27] Wildflower Grass Mix and Wet Wildflower Grass Mix areas (including areas of seed in Woodland Mix areas) to be cut once a year. Once after flowering in the Autumn following seeding of desirable species.
Height of first cut: 150mm.
Remove debris, litter and stones and earth clods larger than 25 mm in any dimension. Arisings shall be raked off and placed in habitat areas as agreed with the CA, avoiding any pulling, tearing or causing any damage to the soil surface and retained vegetation.
- 30/7.14 [3007.28] Not applicable within the A49 Goose Green Bypass Scheme.
- 30/7.15 [3007.29] Spot herbicide treatment to control weeds at each maintenance visit as appropriate.
- 30/7.16 [3007.30] Not applicable within the A49 Goose Green Bypass Scheme.

Molehills

30/7.17 [3007.31] Molehills in verge and amenity grass areas to be removed prior to cutting and soils spread evenly over the surrounding area.

Bulbs and Perennials

| 30/7.18 [3007.32] Not applicable within the A49 Goose Green Bypass Scheme.

APPENDIX 30/8: WATERING

Establishment Watering

30/8.1 [3008.6] For the establishment period of 12 months and year 2 maintenance period thereafter, the Landscape Contractor will be responsible for watering to ensure establishment and survival of trees, plant material and grass.

Additional Watering

30/8.2 [3008.7] Water will be applied at rates sufficient to saturate the whole volume of the tree pit, or soil depth in planted and seeded areas such that the root zone of plants has an adequate supply of water to sustain healthy growth.

General: If water supply is or is likely to be restricted by emergency legislation, the landscape contractor is to investigate a supply of water from a secondary source and obtain instructions on watering from the Overseeing Organisation.

APPENDIX 30/9: ESTABLISHMENT MAINTENANCE FOR PLANTING

30/9.1 [3009.1] Trees, shrubs and plant material are to be maintained by the Landscape Contractor during 12 months establishment period and year 2 maintenance period thereafter within the A49 Goose Green Bypass Scheme.

Native Woodland areas;
Wet Woodland areas;
Amenity Grass areas;
Wildflower Grass areas;
Wet Wildflower Grass areas;
Extra Heavy Standard trees
Feathered trees;
Aquatics and emergents

For approximate planting areas please refer to DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010.

Stakes, Tubes, Guards and their Ties

30/9.2 [3009.4] Any stakes or ties that are no longer required within establishment period are to be removed from site by the Landscape Contractor.

Pruning

30/9.3 [3009.5,6,7] The contractor may be required to carry out additional pruning works to the edge of carriageways, carriageway visibility splays and visibility splays in front of road signs as instructed by the overseeing organisation.

Weed Control: Young Trees and Shrubs in Cultivated Beds

30/9.3 [3009.10] To areas identified in 30/9.1

For approximate planting areas please refer to DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010.

Mid April-Mid May

Carry out one spot translocated herbicide treatment to planting positions to a radius of 300mm. Hand pull and dig out weeds including root system and remove from site.

Mid May-Mid September

Carry out two spot translocated herbicide treatments to planting positions to a radius of 300mm. Hand pull and dig out weeds including root system and remove from site.

30/9.4 [3009.11] Not applicable within the A49 Goose Green Bypass Scheme.

30/9.5 [3009.12] Only applicable to Extra Heavy Standard and feathered trees.

30/9.6 [3009.13] Not applicable within the A49 Goose Green Bypass Scheme.

30/9.7 [3009.16] Not applicable within the A49 Goose Green Bypass Scheme.

30/9.8 [3009.19] Not applicable within the A49 Goose Green Bypass Scheme.

Weed Control: Hedges

30/9.9 [3009.20] Not applicable within the A49 Goose Green Bypass Scheme.

Individual Trees in Urban Streets

30/9.10 [3009.24] Extra Heavy Standard and Feathered Trees are to be inspected at each maintenance visit and pruned, watered and fed as necessary to maintain healthy growth during the 12 months establishment period.

Stakes, ties and guys are to be checked / adjusted and replaced as necessary at each maintenance visit.

30/9.11 [3009.25] Weed control around individual trees shall consist of hand pulling and removal of arisings off site

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS

- 30/10.1 [3010.1] Trees, shrubs and plant material are to be maintained by the Landscape Contractor during 12 months establishment period and year 2 maintenance period thereafter within the A49 Goose Green Bypass Scheme.

Retained vegetation
Native woodland mix
Wet woodland mix
Extra heavy standard trees
Feathered trees

For approximate planting areas please refer to DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010.

Arisings of Pruning, Cutting or Felling of Woody Plants

- 30/10.2 [3010.4] Healthy arisings shall be dealt with in accordance with option (viii).
'Arisings of greater than 150 mm diameter shall be securely placed on Site in the locations stated in Appendix 30/10 for nature conservation purposes.'
Refer to clause 30/12.8.

Individual Established Trees in Urban Streets

- 30/10.3 [3010.32] Extra Heavy Standard, Standard and Feathered Trees are to be inspected at each maintenance visit and pruned, watered and fed as necessary to maintain healthy growth during the 12 months establishment period and year 2 maintenance period thereafter within the A49 Goose Green Bypass Scheme.

Stakes, ties and guys are to be checked / adjusted and replaced as necessary at each maintenance visit.

- 30/10.4 [3010.33] Weed control around individual trees consists of hand pulling and removal of arisings offsite.

Arboriculture: General

- 30/10.5 [3010.35] No trees on site are currently understood to be covered by a Tree Preservation Order or within a Conservation Area. The Contractor should check with the Local Authority whether any new TPO's or Conservation Areas have been established prior to starting works.

Tree Surgery

- 30/10.6 [3010.45] Tree size categories are to be checked and calculated by the contractor as necessary using tree survey data.
- 30/10.7 [3010.55,55,56] Crown lifting, thinning and reduction should be carried out where identified during arboricultural surveys conducted as part of the Landscape Management Plan (LMP) for the site. Refer to the LMP for details.

Tree Felling

- 30/10.8 [3010.57-63] Tree felling and associated works should be carried out where identified during arboricultural surveys conducted as part of the Landscape Management Plan (LMP) for the site. Refer to the LMP for details.

Thinning and Coppicing

- 30/10.9 [3010.65] Thinning and coppicing works shall be carried out to the areas identified under clause 30/10.1. Works will be identified during arboricultural surveys conducted as part of the Landscape Management Plan (LMP) for the site. Refer to the LMP for details.

Scrub Control in Grass

- 30/10.10 [3010.68, 69] Existing scrub at the margins of the site is to be allowed to regenerate naturally in accordance with the habitat objectives. Such areas are to be managed in accordance with the LMP.

The landscape contractor may be required to carry out additional scrub control works to on a 1m strip at the edge of the carriageway and visibility splays as instructed by the overseeing organisation.

30/10.11 [3010.70] Not applicable within the A49 Goose Green Bypass Scheme.

APPENDIX 30/11: MANAGEMENT OF WATERBODIES

30/11.1 [3011.1] The operations detailed under clause 3011 shall be undertaken in the following areas:
Wetlands

Weed Control

30/11.2 [3011.4] The Typha and Phragmites species should be carefully managed to ensure they do not colonise further than the wetlands in which they are planted. These species are required to clean water from the road before discharge into the local system, but are known to be a vigorous species.

Care shall be taken to ensure Himalayan Balsam does not colonise the wetlands or, more importantly, the local watercourse. If identified on site during inspection it should be reported and removal undertaken before seeding can occur.

Silt

30/11.3 [3011.8] During inspections evidence of siltation should be monitored for and reported to the Overseeing Organisation

Reedbeds and Marginal Plants

30/11.4 [3011.9] The water bodies identified above shall be inspected twice per year in February and October and their condition reported to the Overseeing Organisation.

APPENDIX 30/12: SPECIAL ECOLOGICAL MEASURES

30/12.1 [3012.1] The maintenance works specified under Clause 3012 should be carried out during the 2 year establishment and maintenance period within the A49 Goose Green Bypass Scheme.

Tunnels, Fencing and Underpasses for Wildlife

30/12.2 [3012.5] The footpath under Smithy Brook bridge is to be used as a wildlife ledge as detailed in BWB drawings. This shall be inspected twice per year in February and October, and their condition reported to the Overseeing Organisation. Any obstructions shall be removed from ledges and the arisings moved off site. Any areas of standing water or poorly drained areas at the entrances to ledges shall be reported to the Overseeing Organisation and work carried out if necessary, as instructed by the Overseeing Organisation.

Reflectors

30/12.3 [3012.6] Not applicable within the A49 Goose Green Bypass Scheme.

30/12.4 [3012.7] Not applicable within the A49 Goose Green Bypass Scheme.

Artificial Nests, Boxes, Perches and other Wildlife Shelters

30/12.5 [3012.8] Bird (Willow tit) nesting boxes are to be installed in locations to be agreed with GMEU ecologists. Indicative locations are shown on DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010.

Bird boxes are to be constructed from felled timber retained on site and allowed to rot. Approximately 2m lengths of either felled alder, birch or willow timbers are to be pre drilled with 25mm diameter holes and strapped firmly to the base of clear stem trees to create habitat for willow tits. Holes only need to be drilled if the wood isn't sufficiently rotted.

30/12.6 [3012.9] The bird boxes identified in Clause 30/12.5 shall be inspected, by suitably qualified persons at least once a year and their condition reported to the Overseeing Organisation. The inspection shall include clearing out of and abandoned nests, and the arisings removed off site. Only experienced operatives are to carry out this work.

30/12.7 [3012.10] Bird boxes shall be repaired when necessary following inspection or as instructed by the Overseeing Organisation.

Other Habitat Creation Measures

30/12.8 [3012.11] Habitat stacks are to be securely installed, as instructed, at locations agreed with GMEU Ecologists. Indicative locations have been identified on DSA Environment + Design drawings WGG-DSA-ELS-XX-DR-L-3000 to 3010. These should be inspected annually and their condition reported to the Overseeing Organisation. Generally habitat stacks are to be constructed from felled timbers, of any species, larger than 75mm diameter to be cut into 1m lengths and stacked as shown, and secured together with wire, to create habitat piles. Larger timbers to be placed at the bottom to create larger gaps for mammals, while higher gaps are to be filled with twigs and leaf litter to create habitat for invertebrates.

30/12.9 [3012.12] There are no known locations of protected species on site. Water Voles were previously identified around Smithy Brook, but have not been present recently. Further ecological survey for the presence of Water Voles has been carried out and confirmed no recent activity.

30/12.10 [3012.13] Where protected species are identified on site, the Contractor shall obtain an appropriate licence or use only licensed operatives for works in the vicinity of protected species, where needed.