

**MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS**  
**VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS**

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**SERIES NG 3000 (05/01)**  
**LANDSCAPE AND ECOLOGY**

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**Contents**

Clause	Title	Page
NG 3001	General	2
NG 3002	Weed Control	2
NG 3003	Control of Rabbits and Deer	3
NG 3004	Ground Preparation	3
NG 3005	Grass Seeding, Wildflower Seeding and Turfing	4
NG 3006	Planting	5
NG 3007	Grass, Bulbs and Wildflower Maintenance	7
NG 3008	Watering	7
NG 3009	Establishment Maintenance for Planting	8
NG 3010	Maintenance of Established Trees and Shrubs	8
NG 3011	Management of Waterbodies	10
NG 3012	Special Ecological Measures	10
NG	Sample Appendices	A1

# LANDSCAPE AND ECOLOGY

## NG 3001 General

1 The purpose of Clause 3001 is:

- (i) (05/06) to set out communication requirements between the Contractor and Overseeing Organisation which are particular to the landscape works (sub-Clauses 3001.2, 3001.14 & 3001.15);
- (ii) to state a general prohibition on the use of imported peat. Imported peat may be required under special circumstances, eg, for areas of habitat creation, or may be permitted as a constituent of recycled materials, eg, mushroom compost;
- (iii) (05/06) to state the conditions for the use of pesticides. Sub-Clause 3001.5 ensures that all legislation and codes in force during the currency of the Contract are invoked.

2 (05/08) The compiler should state the location and extent of any nature conservation site which could be affected by the Works, for example, Site of Special Scientific Interest, Special Area for Conservation, Special Protection Area, RAMSAR Site, Site of Interest for Nature Conservation, Local Biodiversity Action Plan, HABAP area or the location of a protected species or its roost or refuge. The compiler should also state the location and extent of any archaeological site which could be affected by the Works, for example, by subsoil treatment or planting.

3 The Contractor should be responsible for liaison with other landowners, as described in Appendix 30/1, when carrying out off Site planting, maintenance of off Site planting or maintenance of boundary hedges.

4 The main bird nesting season is generally considered to be from the end of March until the end of July. Advice on the bird nesting season for the area in which the Contract is located should be sought locally.

## NG 3002 Weed Control

1 This Clause describes the weedkilling regimes which may be applied to areas throughout the duration of both construction and maintenance contracts. It is the responsibility of the occupier to control injurious weeds on his land.

2 Appendix 30/2 should state the areas to which the various methods of weed control described in this Clause are to be applied. Detailed descriptions may not be necessary in all cases, for example, for 'paved areas and hardstandings' (sub-Clause 3002.3). Detailed descriptions are more likely to be required to identify, for example, particular areas of grassland where selective weed control or hand-weeding are required.

3 It may only be possible to specify some weed control requirements for a contract of up to three years duration. Over longer contract periods it is likely that changes in wildflower distribution or the invasion of new nuisance weeds may necessitate the modification of the areas. A note to this effect may be included in Appendix 30/2.

4 Sub-Clause 3002.5 may be invoked if herbicides are to be used:

- (i) to control vegetation on the sides of ditches or margins of watercourses, which may be impeding access or contain injurious species;
- (ii) to control emergent vegetation, eg, reeds and rushes, which have invaded watercourses to such an extent that they are impeding flow or are reducing the capacity of stormwater balancing ponds;
- (iii) to control aquatic vegetation that may be impeding flow, eg, algae or Canadian pondweed.

5 Herbicides should not be applied to newly-sown grass until it is well-established. When sub-Clause 3002.6 is invoked for new grass areas an appropriate delay (which may be 4 to 6 months, depending on season of sowing) should be allowed when completing the timing of application under Appendix 30/2.

6 (05/08) Spot treatments with herbicide or handweeding should be specified for the control of weeds such as Common Ragwort (*Senecio jacobaea*) in areas with dense populations of desirable broad-leaved species where a spray herbicide cannot be applied. To be most effective, spot treatment of Common Ragwort (*Senecio jacobaea*) should be carried out when the plants are actively growing but still at rosette stage, from mid-April to the end of May. Guidance on when it is appropriate to control Common Ragwort is given in 'Code of Practice on how to Prevent the Spread of Ragwort' DEFRA.

7 (11/04) When specifying control measures for weeds which are exceptionally difficult to eradicate, reference should be made to advisory publications from the Department for Environment, Food and Rural Affairs (DEFRA). Other helpful publications include 'Model Specification for Control of Japanese Knotweed' and Arboriculture Research Note 150/00 'Japanese Knotweed in Amenity Areas'. Eradication by a combination of cutting and herbicide may be specified by invoking several sub-Clauses of Clause 3002 together.

8 Attention must be given to the timing of herbicide operations in relation to letting of the Contract. Many herbicides are not effective when plant growth is slow due to cold weather or during the dormant season.

### NG 3003 Control of Rabbits and Deer

1 The control measures for rabbits are intended to be invoked under three circumstances:

- (i) To prevent the establishment of rabbit warrens on road construction sites, as they can threaten the stability of earthworks. The rabbits may also constitute a nuisance to adjoining landowners.
- (ii) To prevent the establishment of rabbit warrens on existing roadsides, for the reasons given above and because rabbits can create a 'driver avoidance' safety hazard.
- (iii) To prevent damage to newly planted trees and shrubs by rabbit colonies established within fenced planting areas.

2 The control of deer as a safety hazard on existing roads is effected by exclusion fencing (see Series 300).

3 There is no provision for rabbit control to be stated as an overall standing requirement in a Contract because the need may arise at any time during the Contract period as a result of migration onto the Site.

4 Clearing and maintaining clear all planting areas enclosed by rabbit or deer fencing of the animals which these fences are intended to exclude (sub-Clauses 3003.11 to 3003.13) is imposed as an invariable obligation on the Contractor erecting such fencing or any subsequent Contractor taking on the fencing maintenance. Series 300 deals with the specification of fences.

5 The clearance of deer within a fenced planting enclosure would be carried out by pursuit of the animals before the fencing is finally closed.

6 The requirement for the replacement of plants damaged by the animals for which exclusion or protection measures are in place under the Contract

(sub-Clause 3003.14) is necessary. However, it should be noted that serious damage to young woody plants can also be caused by other mammals for which there is no satisfactory defence, for example, voles (which may be harboured under sheet mulches) and squirrels. The type of damage (height, teethmarks, etc) is characteristic for each pest and the Overseeing Organisation should seek expert advice on the cause of disputed damage.

7 Marking of badger setts is essential as there is a risk of operatives being unable to distinguish holes made by species other than rabbits. However, in order to avoid a widely used marker system becoming generally recognised by the public (thus divulging the location of setts, in contravention of the Wildlife and Countryside Act and Protection of Badgers Act/the Wildlife (Northern Ireland) Order) a discreet marking arrangement should be privately agreed with each appointed Contractor.

8 It is not possible to carry out effective rabbit control without exposing burrows concealed under bramble and scrub, but the bramble and scrub may have some conservation value. The Specifier should decide whether rabbit control or wildlife conservation is the higher priority in any given location.

### NG 3004 Ground Preparation

1 Appendix 30/4 should state the areas to which the various methods of vegetation clearance described in Clause 3004 are to be applied and any areas where subsoil treatment is required. Appendix 30/4 should also indicate whether the finished surface is to be topsoil or subsoil on all unpaved areas and where subsoil or thinner topsoil seedbeds are intended for wildflowers.

2 Combinations of the options for vegetation clearance should allow the specification of suitable treatment for various heights and types of perennial vegetation. Sub-Clauses 3004.1, 3004.2 and 3004.3 may be invoked for preparing areas of tall, rank vegetation for planting. Such vegetation is most easily cut for removal whilst green, and the subsequent vigorous regrowth (at the correct season) is more vulnerable to herbicides.

3 Areas will normally only be ripped if there is known to be subsoil compaction which may prevent satisfactory root penetration, leading to poor plant growth or later instability of larger trees and/or impede drainage. The spacing of ripping given in sub-Clause 3004.6 may be modified in Appendix 30/4 to take account of soil type and conditions. It is anticipated that areas of heave will be reinstated by surface cultivations of planting beds or would be acceptable in grassed areas to be planted.

4 Sub-Clause 3004.7 offers the option of sowing or hydraulic seeding grass and wildflower mixtures directly onto subsoils. This optimises the opportunities for wildflower establishment. On richer topsoils, many desirable wildflowers die out as a result of competition from grasses which are more vigorous than the wildflower plants. Colonisation by local seeds dispersed from wildflowers can also be facilitated by sowing grass on subsoils. More advice is available from Volume 10 of the Design Manual for Roads and Bridges (DMRB).

5 Consideration should be given to specifying finished levels of soils 30 mm higher than hard surfaces to facilitate mowing of grass areas and to prevent unsightly exposure of haunchings, etc in planted areas.

6 The replacement of soils contaminated during the contract is necessary as the materials listed in sub-Clause 3004.12 can kill or severely restrict the growth of plants.

### **NG 3005 Grass Seeding, Wildflower Seeding and Turfing**

1 Attention must be given to the timing of sowing operations in relation to letting of the Contract.

2 Appendix 30/5 should state, if appropriate, where final cultivations and fertiliser application is required, areas to be sown with grass and/or wildflowers and any areas to be turfed or hydraulically seeded. Examples of areas where final cultivations may not be required are:

- (i) (05/08) Areas to be hydraulically seeded, which may be inaccessible, stony or rocky.
- (ii) Banks too steep for cultivations.

3 Fertiliser should not generally be applied where wildflower seeding is intended, for the reason given in NG 3004 above, but in some soils a low rate of fertiliser application may be helpful to aid initial establishment. Soil samples should be analysed for nutrient content and specialist advice sought where wildflower seeding or planting is intended. Fertiliser is unlikely to be necessary for establishment of grass on topsoil which has been taken from arable land. Fertilisers or organic soil improvers can be used to establish grass on subsoils, in locations where no topsoil is available or is unreasonably costly.

4 There are no certification schemes for wildflower seeds. They can be tested by Seed Testing Stations but germination rates vary widely between species and there are also variations in purity due to seed size and source, so it has not yet been possible to set standards. Some seed houses do test seed for these attributes and humidity, and particularly seek to exclude seeds of injurious or agricultural weed species from their

mixtures, so checking the supplier does offer some safeguard.

5 The minimum sowing rates given in sub-Clause 3005.8 may be increased for sites where establishment may be more difficult. These sowing rates are for grass seed mixes. They may also be suitable for some grass and wildflower mixtures but alternative rates may be stated in Appendix 30/5 for special wildflower seed mixtures. Rates for wildflower seeds will depend on seed sizes and specialist advice should be sought. It may also be necessary to specify alternative methods of sowing for wildflowers.

6 The hydraulic seeding mixture to be stated in Appendix 30/5 should include a seed mix and may also include several of the following: fertiliser, an organic mulch, soil conditioner or alginate to retain moisture during germination, a mulch such as glass fibre or a tackifier gum to act as a retaining agent during the establishment of a sward. The fertiliser requirements will be site specific. The application rate should be stated in litres per hectare. When defining areas to be hydraulically seeded the distance from a bowser access point should be checked, as the normal maximum hose length is 300 m.

7 The thickness of turves stated in BS 3969 (not less than 7 mm nor more than 18 mm thick) is suitable for specially-grown general amenity turf but the thickness may be varied by the compiler in Appendix 30/5, particularly if the turf is to be lifted from elsewhere on site or contains deeper-rooted herbaceous plants.

8 Turf may require securing as described in sub-Clause 3005.25 on banks. Galvanised pins well driven in should be used for any such areas to be maintained by mowing.

9 (05/08) The number of cuts required before sown grass is deemed to be completed and the routine maintenance regime is commenced, to be inserted in Appendix 30/5, will vary according to site and season. It is suggested that two initial cuts may be sufficient but four may be preferable where a higher standard of grass is required. In some circumstances it may be advisable to include the maintenance period for general highway verges to 2 cuts per year for the first 3 years, within the same agreement. This will aid in removing annual and some perennial weeds from disturbed topsoils. It may also prevent conflict between different Contractors maintaining different areas i.e. planted and grassland areas. Cuts should be timed to prevent weeds from seeding ideally May to June and August to September.

10 The requirement to clear cuttings may be considered unnecessary in some verges, where amenity turf standards are not applied.



**11** If the application of a selective herbicide is required for newly established grass, sub-Clauses 3002.6 and/or 3002.7 should be invoked.

## NG 3006 Planting

**1** The plant species, sizes, numbers and locations should be stated in Appendix 30/6. Where container-grown or cell-grown plants are required, the container size (diameter or volume in litres) or cell size (depth and volume in cm<sup>3</sup>) should also be stated. The total plant requirements should be presented in the form of a schedule in Appendix 30/6. Any planting pattern requirements should be shown on the drawings.

**2** (05/08) Mycorrhiza inoculation may be required for cell-grown trees to be planted in inhospitable soils. Where this is carried out appropriate certification should be provided.

**3** The provenance of plants may be important in certain habitat creation areas, particularly near designated wildlife conservation sites, such as Sites of Special Scientific Interest. Ecological advice should be sought on this. Evidence of the provenance of species bulbs and wildflower plants should be required, to ensure that they are obtained from cultivation, not wild populations. In completing Appendix 30/6, the compiler should be satisfied that the stock of local provenance specified is available to Tenderers.

**4** The requirement for topsoil to BS 3882 may be waived and an alternative described in Appendix 30/6 if soil obtained on site is to be used or topsoil of particular provenance is required for nature conservation or special plant establishment purposes.

**5** Planting compost or soil improvers should only be used on soils which are nutrient deficient or have poor structure for plant growth (high sand or clay content or compacted). These areas should be agreed with the Overseeing Organisation prior to the incorporation of planting compost or soil improvers into the Contract.

**6** If compost or slow release fertiliser are required, the tolerances for their nutrient composition (and pH and conductivity for compost), as appropriate for the site and plant material, should be stated in Appendix 30/6. ADAS recommends pH 4.5 - 7, and conductivity up to 900 microsiemens/cm. Spent mushroom compost has a relatively predictable composition (pH of 6 - 7.5; a conductivity of 600-3000 ms/cm; available nitrogen, phosphorous, potassium and magnesium in kg/m<sup>3</sup> amounts of N: 0.7, P<sub>2</sub>O<sub>5</sub>: 0.6, K<sub>2</sub>O: 0.8, Mg: 0.06). Recycled waste compost generally has a wider pH range and lower available N:PK:Mg, so may require the addition of slow-release fertilisers.

**7** Anti-transpirant sprays can increase the survival rate of evergreen plants whatever the planting season. They reduce water loss from the leaves, due to either wind action during winter or summer drought. Root dips and anti-desiccant soil additives are usually globules of water-retentive gel which create a localised reservoir for plants in their first year. Their use is particularly recommended on free-draining soils and in the drier areas of the country.

**8** (05/08) The planting season for bare-rooted, cell-grown or root-balled stock is to be inserted in Appendix 30/6 by the compiler, as this varies according to location. The season for bare-rooted and root-balled stock is generally regarded as being November to March, inclusive.

**9** Attention must be given to the timing of planting operations for all types of planting required in relation to letting of the Contract. Where there is a possibility that planting will be required under the Contract outside the period between November and March, this should be stated in Appendix 30/6. Where an unseasonal planting programme is imposed under the Contract, the plant schedules (see NG 3006.1) should state that plants should be container-grown. When planting is carried out in summer it should be noted that watering additional to that needed for winter-planted stock may be necessary to ensure establishment, even for container-grown plants (see NG 3008).

**10** Some plants, eg, Holly, may establish more successfully if planted deeper than the nursery soil mark.

**11** (05/08) The notch method given in sub-Clause 3006.23 should only be used for planting small bare-root stock, ie, transplants or whips, or cell-grown plants in areas of uncompacted soils.

**12** (05/08) Pits and trenches for hedgerows are not necessary for planting bare-rooted whips, transplants and shrubs if they are to be notch-planted into uncompacted topsoil with a minimum depth of 300 mm. They are normally required for planting in areas where soil is less than 300 mm deep; compacted; nutrient deficient; or a combination of these factors exists.

**13** The injurious weeds referred to in sub-Clause 3006.30 include all weed species that propagate from roots, including Dandelion and Convolvulus, as well as the weeds listed in sub-Clause 3002.1.

**14** (05/08) Where hedgerows and trees or shrub transplants and whips generally are planted on undisturbed farmland, planting pits and backfilling with topsoil/compost mixtures are not necessary (complying with sub-Clause 3006.12) and this should be stated in Appendix 30/6.

**15** (05/08) Alternative staking arrangements to those specified may be more appropriate in areas of high exposure, to deter vandals or for aesthetic reasons. (See BS 4428). The use of slanted stakes for hillsides or exposed situations and the use of cross bars to which trees are strapped, are not methods favoured by the Highways Agency, as unless they are well maintained these methods often lead to chaffing of the bark. Given the nature of highway schemes, where maintenance access can be difficult and should be minimised where possible, methods which keep the stake well away from the trunk are preferred.

**16** The irrigation pipe described in sub-Clause 3006.50 is recommended for extra-heavy standards or larger trees in free-draining soils or urban situations.

**17** (05/08) Protective tubes are not visually pleasing or appropriate in some locations and should be used only where required. They do, however, provide protection from wind in exposed locations; provide protection from damage by animals; protect the tree from spray damage during maintenance and give increased growth rates for some species. Where protection from rabbits is the main concern, cost should be compared with fencing and the most cost effective option used. Mesh guards should not be used because they are difficult to remove when the trees and shrubs have grown through them causing damage to the tree. Spiral guards should only be used for rabbit protection of larger trees (feathered and above). A plastic collar at ground level (buttress protection) may be specified where trees in grass are vulnerable to strimmer damage.

**18** (05/08) The options for specifying an alternative mulch mat are left open in sub-Clause 3006.58 and alternative sheet mulches in sub-Clause 3006.61 because manufacturers introduce sound alternatives in new materials from time to time. Biodegradable sheet mulches are made from a range of materials and the compiler should describe those which are acceptable. Plastic mulches may be specified as 'Tear resistant polythene at least 500 gauge or woven or spun-bonded polypropylene mulch weighing 100 to 110 g/m<sup>2</sup> containing an ultra-violet inhibitor and coloured black, olive green or brown.' The method of fixing mulch mats and sheet mulches will depend on the mulch material used and the ground conditions. Biodegradable mats made from recycled materials should be used in preference.

**19** Mulch mats and sheet mulches can also be unattractive, but are temporary and can enhance plant establishment. The specifier should decide on their use on the basis of the priorities of the location (speed of establishment and lower maintenance activity versus aesthetics).

**20** Collars of mulch fabric stapled around the planting slit prevent weeds emerging. They can be 60 x 60 mm up to 1000 x 1000 mm in size.

**21** The prohibition against bulbs collected from the wild is included in sub-Clause 3006.65 to protect wild populations. The Overseeing Organisation can request details of the source of bulbs by reference to sub-Clause 3006.7. Reputable bulb suppliers give a written undertaking in their literature that their sources are commercial cultivation only.

**22** The following guidelines are given for the number of bulbs per m<sup>2</sup> as required by sub-Clause 3006.66 to be stated in Appendix 30/6:

Bluebell	150/m <sup>2</sup>
Crocus	100/m <sup>2</sup>
Tulips	50/m <sup>2</sup>
Narcissus (large)	40/m <sup>2</sup>
Narcissus (mixed)	60/m <sup>2</sup>
Small Narcissus, eg, Lent Lily, Pseudonarcissus)	100/m <sup>2</sup>

**23** Recommended depths for planting bulbs, as required by sub-Clause 3006.67, to be stated in Appendix 30/6 are:

Bluebell: 100 - 150 mm  
Crocus: 50 - 75 mm generally, but 150 mm where cultivation disturbance possible  
Tulips: 150 mm, but 200 mm where cultivation disturbance possible  
Narcissus (large): 150 mm, but 200 mm where cultivation disturbance possible  
Small Narcissus: 100 mm, but 150 mm where cultivation disturbance possible

**24** Advice on alternative procedures for establishment of particular wildflower species or for specific habitats (for example, heathland) is available from DMRB Volume 10.

**25** When scheduling supply size of perennial wildflower plants (see NG 3006.1 above) 'grown for at least 6 months prior to delivery in P9 size pots' is suggested. The specifier is advised to require details of the source of plants by reference to sub-Clauses 3006.6 and 3006.7, to avoid depletion of wild populations.

**26** The recommended density of plants/m<sup>2</sup> will depend on specialist advice for the species concerned and could range from 1 - 15. An average over each planted area may be stated.

**27** Sub-Clause 3006.74 states that reeds and rushes should be from an approved source, anticipating that they may be available from a local waterbody which

possibly requires clearance. The Overseeing Organisation should check whether any such source is covered by any wildlife conservation designation or is the habitat of a protected species (for example, water vole, native crayfish or great crested newt). English Nature, Scottish Natural Heritage, The Countryside Council for Wales, the Environment and Heritage Service or Local Authority Ecologists, as appropriate, should be consulted before approving such a source. Before approving an off site source, the Overseeing Organisation should obtain from the Contractor written permission from the landowner. Reeds and rushes may also be obtained from a plant nursery.

**28** Sub-Clause 3006.87 requires the duration of the period during which the Contractor is responsible for replacement of defective plants to be stated in Appendix 30/6. This period should be stated as number of months after the date when the planting is certified by the Overseeing Organisation as completed. In any Contract this period should exactly coincide with the period for establishment maintenance stated under sub-Clause 3006.92 and in Appendix 30/9 (as required under sub-Clause 3009.1).

## **NG 3007 Grass, Bulbs and Wildflower Maintenance**

**1** This Clause offers the compiler a full range of grass/herbage maintenance options. All areas of grass to be maintained within the Contract boundary should be identified, with an appropriate level of maintenance, in Appendix 30/7. Any areas of wildflowers or bulbs in grass and areas where protected species are present should be detailed. The total area requirements should be presented in the form of schedules as indicated in Appendix 30/7.

**2** It should be noted that the extent of wildflower areas (and to a lesser extent bulbs) may change over time. For Contracts over three years in duration, provision for re-survey and re-measuring of these areas is advised.

**3** The removal of arisings off Site should be specified in accordance with sub-Clause 3007.24 where the plant stations are 1.2 m or less apart. Otherwise, arisings may be left within the planted area but not closer than 300 mm to individual plants.

**4** Sub-Clause 3007.26 offers maintenance alternatives for wildflower areas, to be stated in Appendix 30/7. The appropriate cutting regime will depend on the seeding season of the species to be conserved. Where these species are known to the compiler, cutting season advice may be available in DMRB Volume 10: Section 4: Part 1. For species not

included in this reference or where the species of interest have not been surveyed, advice should be obtained from an ecologist.

**5** The purpose of the scarifying operation specified in sub-Clause 3007.28 is to create small seedbed areas to facilitate colonisation by self-seeding wildflowers. The flowering and seeding season of the species to be encouraged should be considered when stating the programme requirement for scarifying. The work should not be carried out when it would damage plants in flower.

**6** Spot herbicide treatment should be carried out during a period of active growth, before plants commence seeding, and should not take place at times when rain is forecast during the following 24 hours.

**7** Where required, the retention of plants such as nettles or gorse, which offer food for invertebrates (for example, butterflies, crickets, etc) or nesting habitat for birds, may be specified in Appendix 30/7. A maximum area in m<sup>2</sup> or % cover to be retained may be specified for such plants.

**8** No provision has been made for the application of fertiliser to established grass areas such as verges, as high-quality amenity turf is not required, enhanced growth rates increase cutting maintenance costs and lower soil fertility, with bare soil patches, should facilitate colonisation by wildflowers.

## **NG 3008 Watering**

**1** The following notes are quoted in part from 'Technical Bulletin: Water Restrictions and Watering Specification' published by the Landscape Institute. The specifier should refer to this for further consideration of the merits of specifying performance or operational watering, as described below. The publication also addresses the problems arising when Hose Pipe Bans or Drought Orders are issued.

**2** The default situation in the Specification is that watering is specified by performance, ie, the Contractor is responsible for the loss of plants and for watering, whatever the circumstances. This is suitable for all types of contract but particularly for lower unit cost works, eg, transplants. The only inspection input required by the Overseeing Organisation is an annual count of plants to be replaced. The disadvantage of this strategy is that instead of watering to ensure plant establishment the Contractor may choose to replace failed plants annually, so that plants that are not fully established may be handed over at the end of the maintenance period.

**3** The Specification offers the option in Clause 3008.7 to measure watering as an operation



which is to be instructed on a pro-rata basis when it is deemed to be necessary by the Overseeing Organisation. Such operational watering is likely to be more costly and requires a high commitment to inspection by the Overseeing Organisation but may be considered desirable for high-value planting or prominent areas which are highly visible to the public.

### NG 3009 Establishment Maintenance for Planting

**1** (05/08) Locations of plants and planting areas to be maintained and the time period over which establishment maintenance is to be carried out should be stated in Appendix 30/9. A period of 5 years is generally preferable for a large scheme, or where planting provides essential mitigation for the project. Three years is acceptable where successful establishment is likely and planting does not provide essential visual mitigation.

**2** (05/08) The translocated herbicide specified in sub-Clause 3009.10 is only effective when weed growth is vigorous. In areas where a frost is likely the compiler could consider specifying a residual herbicide which acts on grasses/monocotyledons. This should not, however, be applied in the first year after planting.

**3** (05/08) Application of fertiliser to trees and shrubs may be required during the maintenance period where growth rates are slow and visual mitigation is essential to the scheme.

**4** (05/08) Pruning of sightlines and overgrowth into footpaths and cycle ways may be required during the maintenance period and this should be allowed for where appropriate. Works should be specified in accordance with Clause 3010.

### NG 3010 Maintenance of Established Trees and Shrubs

**1** Locations of plants and planting areas to be maintained should be stated in Appendix 30/10.

**2** Appendix 30/10 should state areas where healthy arisings from pruning or felling may be disposed of on Site. It may be desirable to invoke a number of the options together, for example, chipped arisings should be used as mulch on cultivated beds until all such areas are covered, surplus may then be spread within existing vegetation. Chippings should only be spread on site in locations where they will not affect any desirable ground flora.

**3** (05/08) Specifying the frequency of hedge cutting (sub-Clause 3010.12) can include both the periodicity and season. Trimming hedges every two or three years

prolongs the vigour of the hedge. For wildlife conservation the best times of year for hedge trimming is winter. Spring and summer trimming will disturb nesting birds and autumn trimming destroys berries which provide winter food for birds and animals. Mixed native hedges should not be trimmed in May or June, when growth is most vigorous. Where a maintenance period of 5 years is specified the compiler may wish to allow for a provision to trim the hedgerows prior to completion.

**4** (11/04) Suitable profiles for rural hedges which may be specified under sub-Clause 3010.15 and can be cut mechanically include A-shape or topped-A. The A-shape is recommended by DEFRA as most convenient for mechanical trimming, offering the best windbreak, least vulnerable to snow damage and optimum for wildlife conservation. Where the hedge contains suitable species it may also be appropriate to specify in Appendix 30/10 that tree saplings should be allowed to grow up, stating the average frequency required, for example, two per 50 m hedge run. This can be achieved most easily when trimming if the A-shape is specified.

**5** (05/08) Hedge laying should only be specified under sub-Clause 3010.20 in areas of the country where this is traditional agricultural practice, or where the longevity of a hedgerow is threatened by not carrying out appropriate management action. The local style should always be considered, however certain types are not appropriate to highway verges and the style should be agreed with the overseeing organisation.

**6** The treatments for particular hedge species called for in sub-Clause 3010.22 might include, for example, laying Hazel, coppicing Elder and removal of Bramble.

**7** The alternative to sub-Clause 3010.30 is to specify the removal of arisings in accordance with one or more of the options in sub-Clause 3010.4.

**8** (05/08) Compilers should notify the Local Planning Authority if work on TPO trees or trees in Conservation Areas is specified, in order to preserve good relations with the authorities and the public. The compiler must obtain the consent of the Local Planning Authority before specifying or instructing any arboricultural work to, or felling of, a tree protected by a Tree Preservation Order or located in a Conservation Area on land owned by others.

**9** Sub-Clause 3010.45 requires tree size categories to be stated in Appendix 30/10. Tree size categories (Category A to G) reflect the extent to which tree surgery and felling works will be regarded under the Contract as being affected by the tree size and habit. Trees are categorised by Tree Size Factor, which is calculated from the following formula.



Tree Size Factor = Height x Mean Crown Spread x  
Branch Density Factor

Height and Mean Crown Spread measurements should be taken to the nearest metre, as follows:

- (a) Height of tree measured in metres from ground level to the apex of the crown
- (b) Mean Crown Spread is calculated by adding the measurements in metres of the spread of the tree's crown along the north-south and east-west axes and dividing by two.

The Branch Density Factor is 1.0 or 1.25 depending on species, as listed below:

**Normal species: Branch Density Factor = 1.0**

Maples (*Acer species & cultivars*)  
Horse-chestnut (*Aesculus species & cultivars*)  
Alder (*Alnus species & cultivars*)  
Birch (*Betula species & cultivars*)  
Sweet Chestnut (*Castanea species & cultivars*)  
Beech (*Fagus species & cultivars*)  
Ash (*Fraxinus species & cultivars*)  
Walnut (*Juglans species & cultivars*)  
Pine (*Pinus species & cultivars*)  
Plane (*Platanus species & cultivars*)  
White poplar (*Populus alba*)  
Black Poplar (*Populus nigra*)  
Aspen (*Populus tremula*)  
Balsam Poplar (*Populus balsamifera*)  
Wild Cherry (or Gean) (*Prunus avium & cultivars*)  
Japanese Cherry (*Prunus 'Kanzan'*)  
Pear (*Pyrus species & cultivars*)  
Pedunculate Oak (*Quercus robur*)  
Turkey Oak (*Quercus cerris*)  
Red Oak (*Quercus rubra*)  
False Acacia (*Robinia pseudoacacia*)  
Willow (*Salix species & cultivars*)  
Larch (*Larix species & cultivars*)

**Heavy species: Branch Density Factor = 1.25**

Hornbeam (*Carpinus betulus*)  
Hawthorn (*Crataegus species & cultivars*)  
Cypress (*Chamaecyparis species & cultivars*)  
Crab Apple (*Malus species & cultivars*)  
Columnar poplar (*Populus alba 'Fastigiata'*)  
Italian Poplar (*Populus nigra 'Italica'*)  
Japanese Cherry (*Prunus 'Amanogawa'*)  
Purple Cherry (*Prunus cerasifera 'Nigra'*)  
Bird Cherry (*Prunus padus & cultivars*)  
Holm Oak or Holly Oak (*Quercus ilex*)  
Columnar Pedunculate Oak  
(*Quercus robur 'Fastigiata'*)

Rowan and Whitebeam  
(*Sorbus species & cultivars*)  
Lime (*Tilia species & cultivars*)  
Yew (*Taxus baccata & cultivars*)

The species lists above reflect average circumstances and should be used for all evaluation and other purposes in connection with the Contract.

**Tree Size Factors**

The Tree Size Factors should be classified into the following categories which take into account how proportionate increases in tree size affect tree surgery:

Tree Size Factor	Tree Size Category
34	A
35-70	B
71-125	C
126-200	D
201-340	E
341-450	F
451-650	G

**10** Trees may be identified for arboricultural works by reference to Appendix 30/10 and/or using numbered metal identity tags or paint marks.

**11** Sub-Clause 3010.65 calls for thinning to favour the most vigorous trees. Whilst this is normal practice in production forestry it may be inappropriate for roadside planting. In some places vigorous species, such as Sycamore or Goat Willow, may have been planted as a nurse, a windbreak or to offer an early screen, with the intention of removing them when more desirable slower-growing species have established. In other cases the most suitable species for the local landscape setting may not have been considered at the time of planting. Where available, reference should be made to the planting designer's long-term intentions when specifying species for retention. Otherwise, the most typical species in the local landscape should generally be retained.

**12** Typical subjects for Scrub Control, to be specified under sub-Clause 3010.68 may include:

- (i) Shrubs such as bramble, gorse, broom, hawthorn, rose, goat willow, privet and snowberry.
- (ii) Tree species including sycamore, poplar, willow and ash, and pine and birch in heathland areas.

## NG 3011 Management of Waterbodies

1 The term ‘partially submerged’ is used in sub-Clause 3011.2 to ensure that items that are not actually floating are removed.

## NG 3012 Special Ecological Measures

1 Wildlife fencing for rabbits, deer, otter and badger is specified in Series 300. Other fencing provisions are to be specified in this Series.

2 Tunnels and underpasses for wildlife can be designed using materials specified elsewhere in the Manual of Contract Documents for Highway Works (MCHW). For guidance see DMRB Volume 10. Similarly, ledges, eg for otter routes under bridges, and wildlife grilles, eg for otters, may be formed from a variety of materials, depending on the type of bridge or culvert to which they are installed.

3 The provision of alternative abodes, eg badger setts or otter holts, would also use materials specified elsewhere and needs to be too site-specific to allow for any general specification clauses.

4 Several types of bat box are available, constructed of timber, concrete or clay and sample drawings are given in DMRB Volume 10, which also contains detail drawings showing the creation of bat roost crevices in the mortar of facing structures. The prohibition of timber treatments which can be harmful to bats should be included if timber boxes are specified.

5 Bird boxes and perches vary for different species. Details are available in ‘Bird Boxes’ by Chris de Feu, published by the British Trust for Ornithology or from the Royal Society for the Protection of Birds. A detailed specification for bird boxes should include the prohibition of harmful timber treatments and the orientation of boxes.

### Obligations on Contractors under Wildlife Legislation

6 Wildlife protection is obligatory under EU Directives and UK Law, for example, the Wildlife and Countryside Act 1981 and the Habitat Regulations 1994.

7 DMRB Volume 10 contains references to legislation prohibiting disturbance to protected species. For example, “Contractors should be made aware of the presence of bats and of their obligations under the Wildlife and Countryside Act.” Although MCHW is generally framed so that the Contractor’s compliance with the law is taken as read, recording the known locations in Appendix 30/12 is helpful.

8 An operation-specific licence is required when work is undertaken in the vicinity of residences which may disturb certain animals, eg, dormice, great crested newts, bats, badgers and otters. For example, it is understood that English Nature consider a licence is required in England for the following:

- (i) all work within 10 m of a badger sett entrance;
- (ii) all work with heavy machinery or earthmoving within 10 - 20 m of a badger sett entrance;
- (iii) work which includes pile driving, rock boring etc, in some cases up to 100 m from a badger sett entrance.

However, for each site, the compiler should obtain direction from the local office of the Government body responsible for the implementation of Wildlife Legislation

9 Obtaining a licence for works in the vicinity of protected species will in some circumstances be the responsibility of the compiler or the Overseeing Organisation but in other circumstances this responsibility lies with the Contractor. The requirements for obtaining or holding a licence which permits specific work to be undertaken in connection with Protected Species should be detailed in Appendix 30/12.

## NG SAMPLE APPENDIX 30/1: GENERAL

SHEET 1: Information to be provided by the compiler

*[Note to compiler: This should include:]*

- 1 (05/06) State whether the Contractor is to give the Overseeing Organisation the Notices listed. Any Notice requirements not listed [3001.2]. Any sites of nature conservation or archaeological interest which may be affected by the Works or archaeological sites for which a watching brief is required [3001.2 (x)].
- 2 (05/06) Locations where peat may be used if it is essential for habitat creation works. Source of such peat; imported or excavated on Site. Specification for quality if imported. In Wales, requirements for delivery to the Overseeing Organisation of proof of peat source [3001.3].
- 3 (05/06) Statement of intervals of time at which record forms noting the use of pesticides are to be submitted to the Overseeing Organisation [3001.13]. A sample pro-forma to be used for such records is given in Sheet 2 of this Appendix.
- 4 (05/06) State the bird nesting season to apply for this Contract [3001.14].
- 5 (05/06) State whether the Contractor is to provide Inspection Reports and the intervals of time at which they are required [3001.15]. A sample pro-forma to be used for such records is given in Sheet 3 of this Appendix.

## NG SAMPLE APPENDIX 30/1: GENERAL

SHEET 2: Information to be provided by the Contractor

### LANDSCAPE WORKS - PESTICIDES RECORD

**Contract Reference number:**

**Date of visit:** ../ ../ ..  
(minimum one record / day)

**Contract Name:**

**Name of Contractor:**

**Contractor's telephone no:**

Operations carried out	Pesticide used	Locations of Operations
Total weed control		
Weed control in any waterbody		
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 incidents:

.....  
.....



## NG SAMPLE APPENDIX 30/1: GENERAL

SHEET 3: Information to be provided by the Contractor

### LANDSCAPE WORKS - INSPECTION REPORT

**Contract Reference number:**

**Date of visit:** ../ ../ ..

**Contract Name:**

**Name of Contractor:**

**Contractor's telephone no:**

Operations carried out	Locations 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: ../ ../ ..

**SIGNED** (for Overseeing Organisation) .....

NAME: ..... DATE: ../ ../ ..

## NG SAMPLE APPENDIX 30/2: WEED CONTROL

*[Note to compiler: This should include:]*

- 1 Locations and frequencies for control operations for the injurious weed species listed [3002.1] and names of any other species to be controlled under the same regime.
- 2 Locations and frequencies for total weed control operations on areas of paving and hardstandings and around street furniture. [3002.3].
- 3 Locations and frequencies for total weed control by non-residual herbicide, for site preparation, on topsoil heaps or in planting beds [3002.4].
- 4 Locations and frequencies for total weed control in open ditches, lagoons, watercourses and filter drains [3002.5].
- 5 Locations and frequencies for selective control of broadleaved weeds using herbicides in verges, central reserves, planted areas and other grassed areas [3002.6].
- 6 Locations and frequencies for weeding by spot treatment with herbicide. State species to be removed by this method [3002.7].
- 7 Locations and frequencies for handweeding. State species to be removed by this method. [3002.8].
- 8 Locations and frequencies for weed control by cutting [3002.9]. If this method is only to be applied to certain plants, eg, Japanese Knotweed, state species.
- 9 Locations from which the Contractor is required to remove arisings from weed control operations. Where weed control is by herbicide, state period of time for removal of dead weeds after herbicide application [3002.10].

## NG SAMPLE APPENDIX 30/3: CONTROL OF RABBITS AND DEER

*[Note to compiler: This should include:]*

- 1 Locations and period of time during which rabbit control is to be carried out [3003.1].
- 2 Areas where bramble and herbage are to be cut to facilitate rabbit control. Method of disposal of arisings [3003.5].
- 3 State whether the Contractor is obliged to attend monthly site inspections to agree with the Overseeing Organisation whether effective rabbit control has been achieved. [3003.9].
- 4 Period of time when Contractor is obliged to maintain planting enclosures free of rabbits and deer. [3003.12].
- 5 Period of time during which the Contractor shall maintain any plants which are replaced in accordance with sub-Clause 3003.14.

## NG SAMPLE APPENDIX 30/4: GROUND PREPARATION

*[Note to compiler: This should include:]*

- 1 Locations for cutting down grass and other herbaceous vegetation [3004.1].
- 2 Locations for application of herbicide to areas to be planted [3004.2].
- 3 Locations where planting areas shall be ripped. State any variation from 450 mm minimum depth of treatment [3004.5].
- 4 Spacing required between tine furrows used for ripping [3004.6].
- 5 Locations where cultivations shall be applied to subsoil or topsoil [3004.7].
- 6 State whether any spoil material is to be retained on site and if so, where [3004.8].

## NG SAMPLE APPENDIX 30/5: GRASS SEEDING, WILDFLOWER SEEDING AND TURFING

*[Note to compiler: This should include:]*

- 1 Periods when grass seed and wildflower seed are to be sown [3005.1].
- 2 Locations where the upper 50 mm of soil shall be reduced to a fine tilth [3005.2].
- 3 Locations where granular fertiliser or other soil ameliorants are to be used. State the rate of incorporation in the soil during final cultivation [3005.3].
- 4 Seed mixture(s) to be sown. State any provenance requirements. [3005.4].
- 5 Locations where sowing rates for side slopes are to apply. If other sowing rates are required in any areas state these and the locations they are to apply to [3005.8].
- 6 Locations where hydraulic seeding shall take place. State the contents of the hydraulic seeding mixture, any particular hydraulic seeding process requirements and the rate of application [3005.10].
- 7 Whether turf arising on Site shall be re-used and if so the locations where turf shall be stripped [3005.13].
- 8 Alternative preparation requirements and / or range of thickness of soil for turf to be stripped from Site [3005.13 (iv)].
- 9 Whether imported turf should be used. If so, state grass and/or herb mixture requirements for imported turf [3005.14].
- 10 Locations where the Contractor is required to secure turves in position. State whether pegs or pins are particularly required [3005.25].
- 11 Whether turfed areas shall be watered after laying [3005.26].
- 12 Number of establishment cuts required for newly-sown grass before it is accepted as completed [3005.29].
- 13 Any special requirements for plant used for mowing [3005.29].
- 14 Locations where grass cuttings do not need to be cleared [3005.30].

## NG SAMPLE APPENDIX 30/6: PLANTING

SHEET 1: Information to be provided by the compiler

*[Note to compiler: This should include:]*

- 1 Plant Schedule: species, sizes, whether bare-root, root-balled, cell-grown or container-grown and cell/container requirement. Any variations from BS or the National Plant Specification or additional requirements for the specification of plants [3006.3].
- 2 State if grafted stock is acceptable [3006.4].
- 3 State any requirements for mycorrhiza in rooting medium [3006.5].
- 4 State any special plant provenance requirements [3006.6] and include the Provenance Certificate (Sheet 2 below) to be used in compliance with sub-Clause 3006.6.

*[Note to compiler: For work in Scotland, the compiler shall specify the provenance requirements of all native plant species in accordance with Cost Effective Landscape: Learning from Nature. For work elsewhere in the UK, the compiler shall specify the provenance requirements of all native plant species in accordance with the current requirements of the Overseeing Organisation.]*

- 5 Requirements for the Overseeing Organisation to individually select trees at the nursery and other requirements for evidence of plant sources [3006.7].
- 6 Requirement for removal of labels, canes or ties immediately after planting [3006.10].
- 7 Alternative topsoil requirements for tree pits [3006.12].
- 8 Locations where compost or fertiliser shall be deposited over planting areas for incorporation into the soil [3006.13]. State whether compost [3006.15] or fertiliser is required [3006.16].
- 9 State composition requirements for compost: pH, N: P: K: Mg and electrical conductivity (ms/cm) [3006.14]. Application rates for compost are given under other sub-Clauses where compost is called for.
- 10 Any slow-release fertiliser required: state nutrient status in terms of N:P:K:Mg, whether it is to be applied in granular or tablet form and the rate of application [3006.15].
- 11 Any requirements for anti-transpiration sprays, root dips, anti-desiccant soil additives or other forms of anti-desiccant [3006.16].
- 12 State the planting season for bare-rooted root-balled or cell-grown plants that is to apply for the Contract [3006.17].
- 13 Species and planting season for any bulbs which should not be planted between 15 September and 30 November [3006.19].
- 14 Requirement for any plants to be planted deeper than the nursery soil mark (other than cell-grown plants) [3006.22].
- 15 Locations and / or species to be planted by notch planting and method to be used for notch planting [3006.23].
- 16 Locations where pits are required for planting whips, transplants or shrubs or trenches are required for hedges. Instructions for the disposal of arisings from pits and trenches [3006.24].
- 17 Locations where gravel drainage layer is not required in planting pits [3006.27].
- 18 Locations where trenches for hedges are to be backfilled before planting and composition of backfill [3006.28].
- 19 Locations where cultivations are required for planting beds or along hedgelines [3006.29, 3006.30] and locations of any cultivated beds or hedges to be watered-in after planting including quantity of water to be applied [3006.33].
- 20 Any soil ameliorants to be incorporated in planting beds during final cultivations [3006.29].



- 21 Locations where plants are to be planted into hedge-trenches which are to be backfilled as planting progresses [3006.34. (*Locations for pit-planting are stated under 3006.24 and for backfilling trenches before planting in 3006.29*)]
- 22 Any alternative requirements for backfill mixture used in planting pits for whips, transplants, and shrubs or in trenches for hedges [3006.35].
- 23 Any alternative requirements for stakes [3006.36].
- 24 Any alternative requirements for tree ties [3006.37].
- 25 Any requirements for root barriers: state location, type and method of installation [3006.38].
- 26 Any particular requirements for the overall finished height of tree stakes [3006.41].
- 27 Any alternative requirements for number and position of ties for standard and feathered trees [3006.42].
- 28 Any alternative requirements for staking of extra heavy standard trees and heavy standard trees [3006.43].
- 29 Any alternative requirements for securing extra heavy standard trees and heavy standard trees to stakes [3006.44].
- 30 Where semi-mature trees are to be planted as shown on HCD Drawing No.K5 [3006.45].
- 31 Any alternative requirements for backfill mixture for tree pits [3006.46].
- 32 Location of any trees to be watered-in after planting and quantity of water to be applied (in l/m<sup>2</sup> ) or other method of measuring application [3006.49].
- 33 Details of any trees to be provided with irrigation pipe [3006.50].
- 34 Locations and types of any plant protectors required [3006.52].
- 35 Locations of any planting areas or trees to be watered-in before mulch is applied and quantity of water to be applied [3006.53].
- 36 Locations where compost is required as a surface mulch. If compost other than that specified in sub-Clause 3006.14 is to be used, specify composition [3006.54].
- 37 Location and grade of timber mulch, if required [3006.55].
- 38 Location and materials specification of mulch mats, if required [3006.58].
- 39 Method of fixing edges of mulch mats [3006.60].
- 40 Location of sheet mulch, if required. Any alternative specification for sheet mulch [3006.61].
- 41 Number of sheet mulch strips to be used for hedgelines [3006.62].
- 42 Method of fixing sheet mulch for hedges [3006.63].
- 43 Any requirement for collars to secure planting slits in sheet mulch: state locations, materials and size [3006.64].
- 44 Number of bulbs to be planted per unit area, if required [3006.66].
- 45 Planting depths for bulbs [3006.67].
- 46 Locations of any areas to be planted with wildflowers. Any alternative specification for ground preparation [3006.68].
- 47 Any requirement for planting locations to be approved by the Overseeing Organisation and the requirements for wildflower planting density per m<sup>2</sup> [3006.69].
- 48 Any locations where wildflowers are to be planted through mulch mats [3006.71].
- 49 Any locations where Reeds, Rushes, Marginal, Emergent or Aquatic Plants are to be planted [3006.73].
- 50 Instructions for disposal of excavated material from planting holes [3006.77].
- 51 Locations where the Contractor shall insert marker posts [3006.80].

- 52** Period of time during which the Contractor shall replace defective plants (in months) [3006.87].
- 53** State any variation from the requirement to supply replacement plants in accordance with sub-Clause 3006.89.  
*[Note to compiler: The prior approval of the Overseeing Organisation shall be sought for any variation to the requirements of sub-Clause 3006.89.]*
- 54** Locations where plants are to be watered-in after replacement planting and quantity of water to be applied [3006.91].
- 55** Period of time during which the Contractor shall carry out maintenance of new planting (in months) [3006.92].

## NG SAMPLE APPENDIX 30/6: PLANTING

SHEET 2: Information to be provided by the Contractor

### PROVENANCE CERTIFICATE

Certificate Number: .....

1. We hereby certify that the origins of the plant stock incorporated in the Works are as identified in the Plant Schedule contained in Annex 1 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: ../ ../ ..

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

#### OVERSEEING ORGANISATION

Name: .....

Position: .....

Signed: .....

Date: ../ ../ ..

# NG SAMPLE APPENDIX 30/6: PLANTING

SHEET 2 Contd.: Information to be provided by the Contractor

## PROVENANCE CERTIFICATE

Certificate Number: .....

### ANNEX 1: Plant Schedule

BOTANICAL NAME	QUANTITY	FORM/AGE	HEIGHT (cm)	ZONE OF PROVENANCE AND LOCATION	Forestry Commission LOCAL PROVENANCE CERTIFICATE NO. (if available)	APPROX. DATE PROPAGATION MATERIAL COLLECTED	NURSERY(S) WHERE THE PLANTS HAVE BEEN GROWN



## NG SAMPLE APPENDIX 30/7: GRASS, BULBS AND WILDFLOWER MAINTENANCE

*[Note to compiler: This should include:]*

- 1 Schedule of grass and wildflower areas to be maintained [3007.1].
- 2 Minimum distance of cutting around individual plants [3007.5].
- 3 Any special disposal requirements for grass clippings and arisings [3007.6].
- 4 Locations of grass to be cut on 'high frequency' regime and any alternative requirements for cutting frequency or height for 'high frequency' grass [3007.9].
- 5 Locations of grass to be cut on 'medium frequency' regime and any alternative requirements for cutting frequency or height for 'medium frequency' grass areas [3007.13].
- 6 Locations of grass to be cut on 'low frequency' regime and any alternative requirements for cutting frequency or height for 'low frequency' grass areas [3007.17].
- 7 Locations of 'minimal frequency' regime, e.g. swathe cuts, visibility areas and any other areas where cutting once a year is required. Timing of cut. Any areas where selective additional cuts are or may be required [3007.18].
- 8 Locations where selective additional cuts are or may be required on the one metre strip from the edge of carriageway [3007.19].
- 9 Locations where selective additional cuts are or may be required on the visibility splay in front of road signs [3007.20].
- 10 Locations of banks and ditches to be cut and any alternative requirements for cutting frequency or height requirements for banks and ditches. Whether arisings are to be dispersed on site or removed [3007.22].
- 11 Locations of uncultivated planting areas to be cut and any alternative requirements for cutting frequency or height requirements for grass and herbaceous plants in uncultivated planting areas, if required. Whether bramble and self-seeded trees and shrubs area to be cut [3007.23] and referred to in [3007.25].
- 12 Locations where arisings from cutting uncultivated planting areas are to be retained on Site, if required [3007.24].
- 13 Location of areas where cutting of wildflower areas and areas of nature conservation value is required. Specify which of the operations described in the specification are to be carried out [3007.26] also referred to in [3007.27].
- 14 Location of any areas to be scarified [3007.28].
- 15 Locations and frequency of spot herbicide treatment [3007.29].
- 16 Whether any plants which may be considered undesirable, e.g., nettle or bramble, are to be retained for nature conservation. If so, give locations and areas required [3007.29].
- 17 Locations and frequency of hand-weeding [3007.30].
- 18 Locations where molehills in grass areas are to be removed before cutting [3007.31].
- 19 Location of any areas where bulb foliage shall be cut down [3007.32].

## NG SAMPLE APPENDIX 30/8: WATERING

*[Note to compiler: This should include:]*

- 1 Establishment period (in months) during which the Contractor is responsible for watering to ensure establishment and survival of plants [3008.6].
- 2 Any requirement for measured watering operations, their location and any alternative watering rates required [3008.7].
- 3 The minimum quantity of water for each tree by type of tree [3008.7].

## NG SAMPLE APPENDIX 30/9: ESTABLISHMENT MAINTENANCE FOR PLANTING

*[Note to compiler: This should include:]*

- 1 Locations of plants and planting areas to be maintained. Period(s) of time over which plants and planting areas shall be maintained (in months). Give references to sub-Clauses being invoked [3009.1].
- 2 Instructions for the disposal of used tree stakes, tubes, guards and ties [3009.4].
- 3 Locations and frequency of translocated herbicide applications to plant circles around individual trees and shrubs, if required [3009.10].
- 4 Locations and frequency of residual herbicide applications to plant circles around individual trees and shrubs, if required [3009.11].
- 5 Locations where mulch shall be maintained [3009.12].
- 6 Locations of mulch mats to be maintained [3009.13].
- 7 Locations of planting areas where weed control is required and method to be used [3009.16].
- 8 Location of any areas to be cultivated. State alternative frequency of cultivation, if required [3009.19].
- 9 Locations of hedges where weed control is required and method to be used [3009.20].
- 10 Locations of individual trees to be inspected and maintained annually [3009.24, also referred to in 3009.25].
- 11 Method of weed control to be used around individual trees [3009.25].

## NG SAMPLE APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS

*[Note to compiler: This should include:]*

- 1 Locations of plants and planting areas to be maintained. Period(s) of time over which plants and planting areas shall be maintained (in months). Give references to sub-Clauses being invoked [3010.1].
- 2 Any particular requirements for method of weed removal in cultivated beds and any alternative frequency for removal operations [3010.2].
- 3 Method(s) and locations for disposal of healthy arisings [3010.4].
- 4 Frequency of coppicing species grown for their colour [3010.8 (i)].
- 5 Locations of any overgrown shrubs to be coppiced back [3010.8 (vii)].
- 6 Frequency of hedge cutting [3010.12].
- 7 Extent of cutting back required if hedges have previously been unmanaged (i.e., if hedge is to be cut back more than “to previous cut”. Any alternative shapes required for hedge cutting profiles and the locations where they are required [3010.15].
- 8 Style of hedge laying required and locations where hedges are to be laid [3010.20].
- 9 List of hedge species likely to be encountered in hedges on the Site and the manner in which they shall be treated [3010.22].
- 10 Any alternative materials to be used for staking and/or binding [3010.23].
- 11 The hardwood species to be used for stakes in straight hedges [3010.23 (ii).(a)].
- 12 Any required staking arrangement for an alternative style of hedge laying [3010.27].
- 13 Alternative method of disposing of hedge-laying arisings if they are not to be removed daily from Site (with reference to sub-Clause 3010.4) [3010.30].
- 14 Species and size of plants and planting density/pattern required to fill any significant gaps remaining in a hedge after it has been laid [3010.31].
- 15 Species, size and locations of other ‘individual trees’ to be maintained in accordance with sub-Clause 3010.33 [3010.32].
- 16 Any requirement for tree wounds to be treated with a sealant; if so, state type to be used [3010.34].
- 17 Record of any trees protected by Tree Preservation Order or located in a Conservation Area on which arboricultural works are to be carried out [3010.35]. Details of consultations with the Local Planning Authority and permissions obtained should be given.
- 18 Tree size categories which reflect the extent to which tree surgery and felling works shall be carried out [3010.45].
- 19 State whether cavities are to be covered with a fine mesh wire netting [3010.51].
- 20 Locations and identification of trees which require crown lifting and the height to which the lower branches and branchlets of the tree shall be removed [3010.54].
- 21 Locations and identification of trees which require crown thinning [3010.55].
- 22 Locations and identification of trees which require crown reduction or reshaping [3010.56].
- 23 Locations and/or identification of trees which shall be straight felled [3010.57].
- 24 Locations and/or identification of trees which shall be felled in sections [3010.58].
- 25 Heights at which stumps shall be cut [3010.59].
- 26 Locations and/or identification of trees where stump treatment is required [3010.60].

- 27 Locations and/or identification of trees where stump removal is required: if so, state method (grinding or grubbing) to be used [3010.62].
- 28 Instructions for disposal of arisings from stump removal [3010.63].
- 29 Locations where thinning is required. Any requirements for retention of particular species when thinning [3010.65].
- 30 Locations where control of scrub species is required. List of species to be controlled [3010.68].
- 31 Alternative dimensions of species to be controlled [3010.69].
- 32 Locations where scrub control is required on rock ledges and scree [3010.70].
- 33 Locations in which particular control operation options are to be used. If necessary, different operations may be specified for particular species listed in Appendix 30/10 above, in the same location [3010.71].

## NG SAMPLE APPENDIX 30/11: MANAGEMENT OF WATERBODIES

*[Note to compiler: This should include:]*

- 1 Locations and nature of operations to be carried out [3011.1].
- 2 Locations of inlets and outlets to be inspected [3011.3].
- 3 List of any undesirable species or locations of areas of vegetation to be controlled [3011.4].
- 4 Locations where physical removal of vegetation is require and method to be used [3011.6].
- 5 Locations where the silt is to be removed. State depth of silt to be removed, any deposition areas available for drying-out and access requirements [3011.8].
- 6 Locations where reedbeds shall be inspected and any alternative inspection frequency required [3011.9].

## NG SAMPLE APPENDIX 30/12: SPECIAL ECOLOGICAL MEASURES

*[Note to compiler: This should include:]*

- 1 The period of time (in months) over which special ecological measures are to be maintained *[3012.1]*.
- 2 Any special seasonal requirements for carrying out special ecological measures *[3012.2]*.
- 3 Locations of tunnels, fencing, underpasses or ledges to be provided for the safe passage of wildlife and construction details for these items *[3012.3]*.
- 4 Locations of wildlife grilles and construction details for these *[3012.4]*.
- 5 Locations of tunnels, fencing, underpasses or ledges provided for the safe passage of wildlife which are to be maintained *[3012.5]*.
- 6 Locations of reflectors and construction details *[3012.6]*.
- 7 Locations of reflectors to be maintained and repaired *[3012.7]*.
- 8 Locations of nesting or roosting boxes, roosts and roosting perches and construction details for these items *[3012.8]*.
- 9 Locations of nesting or roosting boxes, roosts and roosting perches to be maintained and repaired *[3012.9 and 3010.10]*.
- 10 Locations of other habitat creation measures to be inspected *[3012.11]*.
- 11 Known locations of Protected Species *[3012.12]*.
- 12 Licences for working with or in the vicinity of Protected Species which have been obtained by the Overseeing Organisation or are to be obtained by the Contractor *[3012.13]*.