

Project Reference: 09044 AFSRC WREXHAM

Project Title: Welsh Ambulance Service Trust [WAST]

Document Title: AR-ARC-XX-SP-000-051-C SOFT LANDSCAPING SPECIFICATION

Rev A: 28th July 2014

- Q30/312 A added : WFG20 Eco Lawn Wildflower seed mix
- Q35/105 added : Maintenance objectives clause noting maintenance period
- Q31/400 A & B : plant densities amended
- Q31/405 : amended to Q31/405 A
- Q31/405 B : added
- Q31/505 : Silva Cell omitted from clause
- Q31/505 A : clause omitted
- Q31/586 : amended to Q31/586 A
- Q31/615 : added
- Minor amendments made to dwg refs, clause descriptions through NBS

Rev B: 19th Sep 2014

Rev C: 26th Sept 2014

- NBS up-dated to suit amendments made following comment from the LPA
- Clauses up-dated to cross reference, Management and maintenance plans

WREXHAM FIRE & AMBULANCE STATION - LANDSCAPE [SOFTWARES SPECIFICATION]

Status:

This Document should be read in conjunction with the following:

Drawings – PROVIDED BY IBI Taylor Young for IBI Nightingale

AR-ARC-00-PL-100-024
AR-ARC-00-PL-100-025
AR-ARC-00-PL-721-010
AR-ARC-00-PL-721-011
AR-ARC-00-PL-721-013
AR-ARC-00-PL-721-014

NBS Specification to be read with;

Ecological Assessment [AMEC]
Habitat Management Plan [AMEC]
Landscape Maintenance Plan [IBI Taylor Young]

Where alternative products are proposed to those specified they must be equal in all respect with regards to performance and physical properties. Where colour and finish are identified in this document any alternative products proposed must provide the same colour and finish options as those specified. Alternative products must carry the same or equivalent test certification such as those set out in the relevant British Standards, Eurocodes and BREEAM requirements.

The Authority is to inform the bidder of any contradictions noted within this documentation.

DOCUMENT:
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D

Groundwork

D20

Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

150 EXISTING SERVICES, FEATURES AND STRUCTURES

- Services: See section A12 for locations.
- Site features to be retained: See section A12 for details.
- Structures: See section A34 for details of protection.

EXISTING TREES AND VEGETATION

160A PROTECTION

- All existing trees proposed for retention shall be protected in accordance with BS: 5837 "Guide for Trees in Relation to Construction 2005".
- No existing trees, shrubs or other plants shall be removed or cut without specific instructions.
- The Contractor shall take all precautions to protect, in the course of his work, all existing plant materials from malicious or accidental damage and shall ensure that no branches shall be lopped and no roots over 50mm diameter shall be severed from growing trees, without express prior permission.
- No soil, spoil, constructional materials or rubbish shall be stored or tipped within the spread of existing trees, shrubs or hedges. The Landscape Contractor must cover up and/or protect from injury from any cause, all new work, materials and plants.
- He must also supply any other requisite protection for the whole of the works executed, whether by himself or special tradesmen or sub-Contractors, and any damage caused must be made good by the Contractor at his own expense.
- Should any tree which is intended to be preserved be uprooted, destroyed, or in the opinion of the Contract Administrator, be damaged beyond reasonable chance of survival in its original shape owing to the Contractor's negligence, the Contractor shall without charge to the Employer provide and plant suitable replacement trees or shrubs of a similar type and age. If any such replacement trees or shrubs are not obtainable, other trees or shrubs, selected by the Contract Administrator shall be provided and planted.
- The Contractor's liability shall continue until the replacement trees and shrubs have survived the winter following the planting and have completed satisfactorily the following summer's growth.

WORK TO EXISTING TREES AND VEGETATION GENERALLY

- All tree surgery, pruning, felling, stump treatment and removal shall be carried out strictly in accordance with BS:3998 1989 and BS:5837 1991.
- Attention shall at all times be paid to legislation in respect of the health and safety of people and property in the vicinity of the works. The Contractor shall ensure that the public and traffic are excluded from the working area.
- Tree work shall not be carried out in unsuitable weather conditions, ie during high winds, storms, extreme cold or wet. The Contractor shall ensure that all persons working on the contract are suitably trained, qualified, clothed and equipped for the tasks they have to perform.

160B OPERATIONS NEAR TO HIGHWAYS

Operations near to highways shall not endanger highway users and shall be signed to comply with the requirements of Traffic Safety Measures for Roadwork as specified in DoE Traffic Signs Manual Chapter 8 and BS:873.

160C TREE FELLING

- Felling shall be the complete removal of a tree, including the removal of the stump to a specified depth below ground by hand or machine hacking, grubbing out or (in exceptional circumstances and with prior permission) burning. It shall include the
- chemical killing of any stump or roots remaining. It shall include the careful taking down in sections of any large trees in confined spaces, or near to buildings or to other trees which are to be retained.
- Felling cuts shall be made to prevent splitting of the timber.

160D TREATMENT OF TREE STUMPS

- Tree stumps shall be removed by grubbing. Grubbing shall include the complete removal of tree stumps & roots over 100mm diameter by hand or machine excavation, winching or other means. It shall include chemical killing of any stump or roots which require such treatment.
- The resulting void shall be back-filled & thoroughly compacted. Back-filling shall be done with subsoil from site excavations, the top 300mm shall be site won where possible or imported topsoil. All holes must not be left unattended or without clearly visible & adequate protection before being back-filled to surface levels.
- All felled timber, branchwood, Chippings and other arising from the tree works and site clearance must be removed from the site.
- Burning of wood will not be permitted on site. The Contractor shall inform the Contract Administrator where the timber and branchwood is to be taken for storage or burning prior to removal from the site.

160E VEGETATION CLEARANCE

- Vegetation clearance shall be the removal of scrub, shrubs bushes, undergrowth, saplings and seedlings from a specified area of the site by hand or mechanical means. It shall include the grubbing up of all stumps and root runs, which can be taken out without undue removal of topsoil. It shall be taken to include also the partial clearance of an area in which selected saplings, bushes, shrubs are to be retained.
- In such cases the selected plants to be preserved shall have been clearly marked or otherwise indicated on site.
- The Contractor is to give the Landscape Architect 24 hours notice prior to the removal of any existing shrubs.

160F PRUNING CUTS

Pruning cuts shall be made parallel to and close to the outside of the branch collar. The branch collar and branch bark ridge, shall not be damaged by cutting or tearing of bark. Branch stubs must not be left. Wound sealants shall not be used. The final surface shall be smooth and in one plane.

160G HEAVY BRANCHES

Heavy branches and stems shall be removed by sections and lowered by slings to avoid damage to the tree and its surroundings.

160H EPICORMIC SHOOTS AND SUCKERS

Removal of epicormic shoots and suckers shall be flush with the trunk surface but without damaging the bark of the trunk. The buds of all incipient epicormic shoots shall be removed from the trunk.

160I GROWTH REGULATOR

Growth regulator shall be the application of a Maleic Hydrazide formulation for sucker inhibition in amenity trees, sprayed to thoroughly wet the trunk and especially pruned and basal bud areas.

160J CROWN THINNING

- The Contractor shall remove the stated percentage of primary and/or secondary and subsidiary branches as specified to leave a well-spaced and balanced branch structure.
- Thinning shall include the removal of weak, thin, crossing and dangerous branches throughout the crown.
- Following thinning the tree must be able to develop a full crown that can be subsequently reduced if necessary.

160K CROWN LIFTING

The Contractor shall remove primary and/or secondary and subsidiary branches to give the vertical clearance specified. Where vertical clearances, which must be achieved by lifting, are not specified, branches shall be removed to give a clearance of 3m over footpaths and 6m over roads when the tree is in full leaf.

160L CROWN REDUCTION

- The Contractor shall reduce the overall extent of the tree by the stated percentage.
- Branches shall be cut back to a suitable sub-branch to leave a safe balanced structure, without any projecting stubs.
- The tree shall be left in a state from which it can develop into a natural looking open crown. When a final shape is not specified the Contractor shall prune to a natural shape close to the species' natural form.

160M REMOVAL OF MAJOR DEAD WOOD

- The Contractor shall remove all dead, diseased and dying branches and broken stumps 75mm and over in diameter.
- Lifting, thinning and reduction shall always include the removal of major dead wood.

160N INSPECTION AND DEFECTS

- Inspection shall include a complete and thorough inspection carried out by a tree climber. A written report giving detailed descriptions of all defects found on each tree shall be submitted as part of this operation.
- All defects which could cause damage to the public found during any work on any tree not scheduled for inspection shall be reported immediately to the Contract Administrator.

160O CAVITIES

- Trees shall be carefully inspected to find all cavities. Cavities which are large enough to weaken the structure of the tree making it dangerous shall be reported immediately to the Contract Administrator.
- All loose and decayed material and accumulated debris shall be removed to determine the extent of the cavity.
- Accurate measurements of breadth, width and depth shall be included in a written report to allow future monitoring of further decay.
- The cavity shall not be enlarged by cutting back into sound wood. Fungicidal sealant or filler shall not be used.

160P BARK WOUNDS

Loose and frayed bark shall be removed by cutting back to undamaged live tissue. The wound shall not be enlarged unnecessarily. Wound sealant shall not be used.

160Q SEASON OF WORK

Trees shall be pruned at the optimum time of year within the contract periods to avoid 'bleeding' or susceptibility to disease in any species.

All works to any tree, shrub, shall be executed outside of the bird nesting season between March-August.

CLEARANCE/EXCAVATING

164 TREE ROOTS

- Protected area: Do not cut roots within precautionary protection area.
 - Size of area: Circle around each tree with radius of half the tree's height, measured from the trunk.
- Excavation in protected area:
 - Method: By hand.
 - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
- Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
- Cutting:
 - Make clean smooth cuts with no ragged edges.
 - Pare cut surfaces smooth with a sharp knife.
 - Treatment of cut roots: Not required.
- Backfill: As dug material, enriched with phosphate fertilizer .

168 SITE CLEARANCE

- Timing: Before topsoil stripping, if any.
- General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.
- Treatment: Apply a suitable non-residual herbicide to areas to receive planting .

170 REMOVING SMALL TREES, SHRUBS, HEDGES AND ROOTS

- Identification: Clearly mark trees to be removed.
- Small trees, shrubs and hedges: Cut down
- Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

171 REMOVING STUMPS AND ROOTS

- Carry out work in accordance with clause D20 160D.
- Identification: Clearly mark stumps to be removed.
- Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas; walls, structures etc.
- Reinststate adjacent disturbed ground and make good any damage to walls, fencing etc.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

175 FELLING LARGE TREES

- Definition: Girth over 600 mm.
- Identification: Clearly mark trees to be removed.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.
- Felling: As close to the ground as possible.
- Stumps: Remove mechanically to a minimum depth of 300 mm below ground level.
- Work near retained trees: Take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained, where tree canopies overlap and in confined spaces generally.

180 CHIPPING AND SHREDDING

- General: Permitted, remove arisings from site.

220 STRIPPING TOPSOIL

- General: Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings/ roads and other areas shown on drawings.
- Depth:
 - Remove to an average depth of 150 mm.
 - Give notice where the depth of topsoil is difficult to determine.
- Handling: Handle topsoil for reuse or sale in accordance with clause 225.
- Around trees: Do not remove topsoil from below the spread of trees to be retained.
- Site storage: Keep separate from excavated sub-soil.

221 TREATING TOPSOIL

- Treatment: Apply a suitable translocated nonresidual herbicide.
- Timing: Not less than two weeks before excavating topsoil.

225 HANDLING TOPSOIL

- Standard: To BS 3882.
- Aggressive weeds:
 - Species: Included in the Weeds Act, section 2 or the Wildlife and Countryside Act, Schedule 9, part II.
 - Give notice: Obtain instructions before moving topsoil.
- Contamination: Do not mix topsoil with:
 - Subsoil, stone, hardcore, rubbish or material from demolition work.
 - Other soil or material containing aggressive weeds, sharps, plastics and non soil forming materials and notifiable animal or plant diseases.
 - Oil, fuel, cement or other substances harmful to plant growth.
 - Other classifications of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

240 ADJACENT EXCAVATIONS

- Requirement: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, must be completed before the higher excavation is made.
- Angle of line below horizontal: 45°.
- Backfill material: Hardcore filling as clause 710.

242 EXCAVATIONS ADJACENT TO EXISTING BACKFILLED TRENCHES

- Proximity: When width of undisturbed ground between the two excavations will be less than 900 mm.
- Action: Assume that the ground between the trenches is unstable and provide side support accordingly.

244 EXCAVATIONS ADJACENT TO EXISTING FOUNDATIONS

- Prior to commencing excavation:
 - Excavate trial pits adjacent to existing foundations to determine extent and formation levels.
 - Allow for inspection of trial pits.
 - Allow time for amendment of details if required.
- Time period: 5 working days .
- Backfill material to new excavation: As clause 248 .

- 248 BACKFILL TO EXCAVATIONS LOWER THAN FOUNDATION FORMATION LEVEL
- Critical level:
 - Distance between near faces of foundation and lower excavation less than 1 m: 150 mm above foundation formation level.
 - Otherwise: 150 mm above level at which line defined in clause 240 cuts near face of lower excavation.
 - Backfill material:
 - Below critical level: Lean mix concrete.
 - Above critical level: Hardcore filling as clause 710.
- 250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS
- Beneath mass concrete foundations: ± 25 mm.
 - Beneath ground bearing slabs and r.c. foundations: ± 15 mm.
 - Embankments and cuttings: ± 50 mm.
 - Ground abutting external walls: ± 50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.
- 255 ACCURACY - LINEAR DIMENSIONS
- Permissible deviations from linear dimensions generally: 10 mm over 10 m .
- 260 INSPECTING FORMATIONS
- Give notice: Make advance arrangements for inspection of formations for foundations and filling formations.
 - Notice (minimum): 5 days.
 - Preparation: Just before inspection remove the last 150 mm of excavation.
 - Trim to required profiles and levels.
 - Loose material: Minor compaction permitted.
 - Seal: Within 4 hours of inspection, seal formations with n/a.
- 265 INSPECTING FORMATIONS IN SAND AND GRAVEL
- Notice for inspection (minimum): 4 days.
 - Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels and mechanically compact formation.
 - Seal: Within 4 hours of inspection, seal formations with first layer of fill.
- 267 INSPECTION OF FORMATIONS IN SHRINKABLE SOILS
- Inspect formation: For signs of conducting and fine moisture absorbing roots.
 - Give notice: If significant quantities of roots are visible in the formation or in the bottom 75 mm of the walls of the excavation.
- 270 FOUNDATIONS GENERALLY
- Give notice if:
 - A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
 - The formation contains soft or hard spots or highly variable material.
- 290 FOUNDATIONS IN MADE UP GROUND
- Depth: Excavate down to a natural formation of undisturbed subsoil.
 - Discrepancy: Give notice if this is greater or less than depth given.

310 UNSTABLE GROUND

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

320 RECORDED FEATURES

- Recorded foundations, beds, drains, manholes, etc: Break out and seal drain ends.
- Contaminated earth: Remove and disinfect as required by local authority.

330 UNRECORDED FEATURES

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

335 NEW FOUNDATIONS CROSSING OLD FOUNDATIONS OR WALLS

- Break out: The old foundation/ wall where it crosses the new foundation/ wall:
 - Length of breaking out: Width of the new foundation/ wall plus 50 mm on either side of new foundation.
 - Depth of breaking out: As necessary to permit the construction of the new foundation to its design cross section.
- Disturbed/ softened soil: When the formation for the old foundation/ wall is deeper than the formation of the new foundation.
 - Excavate: Soil that has been disturbed and/ or softened on either side of the old wall/ foundation, and for 100 mm into undisturbed ground on either side.
- Step up: The formation for the new foundation as necessary on either side of the old foundation/ wall until the formation is at its design level.
 - Size of steps: Minimum distance between steps 1000mm and maximum height of step 200 mm.
- Backfilling beneath design formation level: Lean mix concrete.

337 OLD FOUNDATIONS OR WALLS BENEATH NEW GROUND SUPPORTED SLAB

- Break out: The old foundation/ wall to a depth below the slab formation level of at least 300 mm.
 - Excavate: Soil that has softened on either side of the old wall/ foundation.
- Backfill: Obtain instructions if depth of fill will be greater than 600 mm, otherwise backfill with compacted hardcore.

350 EXISTING WATERCOURSES

- Diverted watercourses which are to be filled: Before filling, remove vegetable growths and soft deposits.

360 EXCESS EXCAVATION

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

370 UNDERGROUND STRUCTURES IN LANDSCAPE AREAS

- Generally: Remove walls, roads, foundations, disused services, drains, manholes and the like to minimum depth.
- Minimum depth below finished levels:
 - Grass, ground cover and perennial planting: 500 mm.
 - Shrub planting: 750 mm.
 - Within 2 m of tree planting: 1000 mm.
- Walls and slabs remaining: In every 10 m² of wall or slab, make a drainage hole at least 600 mm diameter.

DISPOSAL OF MATERIALS

410 EXCAVATED TOPSOIL STORAGE

- Storage: Stockpile in temporary storage heaps on site .

415 EXCAVATED TOPSOIL REMOVAL

- General: Remove from site.

420 TOPSOIL STORAGE HEAPS

- Location: Contractor's choice.
- Standard: To BS 3882.
- Height (maximum): 1 m.
- Protection:
 - Do not place any other material on top of storage heaps.
 - Do not allow construction plant to pass over storage heaps.
 - Prevent compaction and contamination.

421 TOPSOIL STORAGE HEAP TREATMENT

- Treatment: Apply a suitable herbicide at appropriate times to prevent seeding of weeds .

450 WATER

- Generally: Keep all excavations free from water until:
 - Formations are covered.
 - Below ground constructions are completed.
 - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

454 GROUND WATER LEVEL, SPRING OR RUNNING WATER

- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

FILLING

500 PROPOSED FILL MATERIALS

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

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

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

512 LIMITATION OF SULFATE CONTENT IN FILL MATERIALS

- Test specification: To BS 1377-3.
- Sulfate content: Expressed as SO₄.
 - Water soluble sulfate (maximum): 1500 mg/L in 2:1 water/ soil extract.
 - Total potential sulfate (maximum): 0.6%.
 - Oxidizable sulfides (maximum): No requirement.
- Certificates of test result: Submit.

520 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
 - Fine grained soil with a plasticity index less than 20%.
 - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
 - Crushed chalk.
 - Crushed limestone fill with average saturation moisture content in excess of 3%.
 - Burnt colliery shale.
- Frost-susceptible fill: May only be used:
 - At depths below the finished ground surface greater than: 450 mm.
 - Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
 - Where frost heave will not affect structural elements.

525 TESTING OF SUITABILITY OF FILL MATERIALS BEFORE START OF FILLING

- Laboratory: UKAS/ NAMAS accredited laboratory .
- Submit report to: Structural engineer (two copies).
 - Timing: 21 days before starting filling .
- Samples: Deliver to laboratory as required.
 - Additional requirements: Also deliver 25 kg samples to offices of structural engineer. On request, collect and dispose.
- Tests: As directed.
- Frequency: Submit with tender proposed rate and frequency of testing to demonstrate continuing compliance of imported or reprocessed fill with specified properties .

530A PLACING FILL

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

535 COMPACTION GENERALLY

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

540 BENCHING IN FILL

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

610 COMPACTED FILLING FOR LANDSCAPE AREAS

- Fill: Material capable of compaction by light earthmoving plant.
- Filling: Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.

640 STARTER LAYER OF COMPACTED FILLING

- Fill: Suitable hard granular material. Compact thoroughly.
- Thickness: as Tender drawings and to Engineer's Specification .

650 PROTECTION OF COMPACTED FILLING

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

700 BACKFILLING AROUND FOUNDATIONS

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

710 **HARDCORE FILLING**

- Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111, and in any one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - Crushed non-expansive slag.
 - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Well-burned non-plastic colliery shale.
 - Natural gravel.
 - Natural sand.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

730 **BLINDING**

- Surfaces to receive sheet overlays or concrete:
Blind with:
 - Concrete where shown on drawings; or
 - Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- Sand for blinding: To BS EN 12620, grade 0/4 or 0/2 (MP).
- Permissible deviations on surface level: +0 -25 mm.

E

In situ concrete/Large precast concrete

E10

Mixing/casting/curing in situ concrete

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

CONCRETE MIXES

- 101 SPECIFICATION
 - Concrete generally: To BS 8500-2.
 - Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.
- 110A BASIC DESIGNATED CONCRETE TO FOUNDATIONS AND HAUNCHING
 - Designation: GEN1.
 - Coarse recycled aggregates: RCA permitted.
 - Consistence class: S3.
 - Additional requirements: Submit proposals.
 - **All below ground detail to Engineers Specification.**

MATERIALS, BATCHING AND MIXING

- 215 READY-MIXED CONCRETE
 - Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready-mixed concrete.
 - Source of ready-mixed concrete: Obtain from one source if possible. Otherwise, submit proposals.
 - Name and address of depot: Submit before any concrete is delivered.
 - Delivery notes: Retain for inspection.
 - Declarations of nonconformity from concrete producer: Notify immediately.
- 218 SITE MIXED CONCRETE
 - Batching by mass:
 - Restrictions: None.
 - Accuracy of measuring devices: To BS EN 206-1, clause 9.6.2.2
 - Tolerances for quantity of constituent material: To BS EN 206-1, table 21.
 - Batching by volume:
 - Restrictions: None.
 - Mixing: To BS 8000-2.1, subsections 2, 3 and 4.
- 415 ADMIXTURES
 - Calcium chloride and admixtures containing calcium chloride: Do not use.

PLACING/ COMPACTION/ CURING AND PROTECTION

- 630 PREMATURE WATER LOSS
 - Requirement: Prevent water loss from concrete laid on absorbent substrates.
 - Underlay: Select from:
 - Polyethylene sheet: 250 micrometres thick.
 - Building paper: To BS 1521, grade B1F.
 - Installation: Lap edges 150 mm.
- 650 SURFACES TO RECEIVE CONCRETE
 - Cleanliness of surfaces immediately before placing concrete: Clean with no debris, tying wire clippings, fastenings or free water.

680 PLACING

- Records: Maintain for time, date and location of all pours.
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum), unless otherwise specified. Do not place against frozen or frost covered surfaces.
- Continuity of pours: Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
- Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction.
- Poker vibrators: Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints.

690 COMPACTING

- General: Fully compact concrete to full depth to remove entrapped air. Continue until air bubbles cease to appear on the top surface.
 - Areas for particular attention: Around reinforcement, under void formers, cast-in accessories, into corners of formwork and at joints.
- Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.
- Methods of compaction: To suit consistence class and use of concrete.

810 CURING GENERALLY

- Evaporation from surfaces of concrete: Prevent, including from perimeters and abutments, throughout curing period.
 - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
 - Top surfaces: Cover immediately after placing and compacting. If covering is removed for finishing operations, replace it immediately afterwards.
- Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
- Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep records on site, available for inspection.

811 COVERINGS FOR CURING

- Sheet coverings: Suitable impervious material.
- Curing compounds: Selection criteria:
 - Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90%.
 - Colouring: Fugitive dye.
 - Application to concrete exposed in the finished work: Readily removable without disfiguring the surface.
 - Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding.
- Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with impervious sheeting held clear of the surface and sealed against draughts at perimeters and junctions.

818 CURING PERIODS GENERALLY

- Minimum periods: When not otherwise indicated, to BS EN 13670, Annex F.8.5.

820 CURING PERIODS FOR EXTERNAL CONCRETE

- General: Curing periods are in days (minimum).
 - Definition of 't': The average surface temperature of concrete in degrees Celsius during the curing period.
- Curing periods for concrete made using CEM1 strength class 42.5 or 52.5, or SRPC class 42.5:
 - Drying winds or dry, sunny weather (relative humidity < 50%): $80/(t+10)$ when surface temperature is between 10°C and 25°C.
 - Intermediate conditions (relative humidity between 50 and 80%): $60/(t+10)$ when surface temperature is between 10°C and 25°C.
 - Damp weather, protected from sun and wind (relative humidity >80%): No special requirements.
- Curing periods: For concrete made using cements listed in BS 8500-1, table A.6 except for those listed above and for supersulfated cement:
 - Drying winds or dry, sunny weather (relative humidity < 50%): $140/(t+10)$ when surface temperature is between 10°C and 25°C.
 - Intermediate conditions (relative humidity between 50 and 80%): $80/(t+10)$ when surface temperature is between 10°C and 25°C.
 - Damp weather, protected from sun and wind (relative humidity > 80%): No special requirements.
- Curing periods: For concretes using admixtures or other types of cements/ combinations: Submit proposals.
- Other requirements: None.

840 PROTECTION

- Prevent damage to concrete, including:
 - Surfaces generally: From rain, indentation and other physical damage.
 - Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration.
 - Immature concrete: From thermal shock, physical shock, overloading, movement and vibration
 - In cold weather: From entrapment and freezing expansion of water in pockets, etc.

Q

Paving/Planting/Fencing/Site furniture

Q05

Biodiversity and environmental conservation

Q05 Biodiversity and environmental conservation

To be read with Preliminaries/General condition.

SYSTEM OUTLINE

- 110 HABITAT CREATION ECOLOGICAL CORRIDOR.
- Habitat type: Lowland scrub.
 - Location: As drawing AR-ARC-00-PL-100-025 .
 - Surveys required:
 - Prior to work commencing: Not required.
 - Scope of work:
 - Turfing, as section Q30;
 - Wildflower and grass seeding, as section Q30;
 - Tree/ shrub planting, as section Q31 ;
 - Wildflower plugs, as section Q31;
 - Control of invasive species, as section Q35; and
 - Protective fencing, as section Q40.
 - Source data provided for reference/ verification: Baseline Ecological Assessment report refer to Habitat Management Plan, AMEC, June 2014 .

Q10

Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

113 PRECAST CONCRETE EDGINGS

Standard: To BS EN 1340.

- Recycled content: 20% (minimum) to BS EN ISO 14021.
- Designations: EF Edging, flat top.
- Size (width x height x length): 50 x 200 x 915 mm.
- Special shapes: None.
- Finish: As cast.
- Colour: Natural.
- Bending strength: Class 2.
- Weathering resistance: Class 3.
- Abrasion resistance: Class 3.
- Slip/ skid resistance: PTV to BS EN 1340 40-74.
- Bedding: Cement mortar.
- Joints generally: Dry, 2-3 mm gap.
- Sealant movement joints: Not required.
- Accessories: None.

LAYING

510A LAYING KERBS, EDGINGS AND CHANNELS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
 - Long units (450 mm and over) minimum length after cutting: 300 mm.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

520 ADVERSE WEATHER

- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

530B CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

- To engineers specification
- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
 - Workability: Very low.
- Refer to E10/160A abd 218

540A CEMENT MORTAR BEDDING

- Refer to X21/160 and engineers specification

620 ACCURACY

- Deviations (maximum):
 - Level: ± 6 mm.
 - Horizontal and vertical alignment: 3 mm in 3 m.

Q20

Granular sub-bases to roads/pavings

Q20 Granular sub-bases to roads/pavings

To be read with Preliminaries/ General conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS

- Thicknesses: See sections:
 - Q21 In situ concrete roads/pavings/bases;
 - Q22 Coated macadam/asphalt roads/pavings;
 - Q24 Interlocking brick/block roads/pavings; and
 - Q25 Slab/brick/sett/cobble pavings.

120 CHECKING OF SUBGRADES

- Anticipated subgrade conditions:
 - Soil type: Varies.
 - Plasticity index: Varies.
 - CBR (minimum): Varies.
 - Depth below formation level to groundwater table: Varies.
- Subgrade variation: If material appears to vary from anticipated conditions, or if there are extensive soft spots, test subgrade CBR to BS 1377-4.
- Submit: Results and obtain instructions before proceeding.

130 HERBICIDES

- Type: Residual.
- Application: To subgrade of all areas prior to filling.

140 EXCAVATION OF SUBGRADES

- Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Give notice.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

140A EXCAVATION OF SUBGRADES

- Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade. Care to be taken excavating in the vicinity of services - hand dig only.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Give notice.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES

- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300 mm (maximum) thick.
- Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

- 150 SUBGRADES FOR VEHICULAR AREAS
- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.
- 180 NOTICE
- Give notice: After preparation and compaction of subgrades and on completion of compaction of sub-base.
 - Period of notice: 2 working days.
- 210 HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE FOR SUB-BASE
- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 803.
 - Recycled aggregate: Permitted.
- 211 GRANULAR MATERIAL
- Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Natural gravel.
 - Natural sand.
 - Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.
- 215 COARSE GRADED AGGREGATE FOR PERMEABLE PAVING **HOGGIN**.
- Material: Hard crushed rock.
 - Standard: To BS EN 13242 .
 - Aggregate size: 4/20.
 - Grading: Category Gc 85-15 + GTc 20/17.5.
 - Other properties: none.
 - Testing:
 - Materials: Provide suppliers' certificates for grading and specified properties.
 - Sub-base: Not required.
 - Laying: Lay in 100-150 mm thick layers and lightly compact to ensure maximum density and aggregate interlock without crushing individual particles or unacceptably reducing the void ratio.
 - Protection: Prevent damage by traffic and contamination by mud and soil.
- 220 FROST SUSCEPTIBLE GRANULAR MATERIAL
- Definition (non frost susceptible material): To Highways Agency 'Specification for highway works' clause 801.8.
 - Depth of frost susceptible material below final surface of paving (minimum): 450 mm.
 - Testing: Test materials used if required and supply certificates.
- 225 PLACING OF MATERIAL WITH HIGH SULFATE CONTENT
- Standard: To Highways Agency 'Specification for highway works', clauses 801.2 and 801.3.
 - Separation distance (minimum): 500 mm.

- 230 PLACING GRANULAR MATERIAL GENERALLY
- Preparation: Loose soil, rubbish and standing water removed.
 - Structures, membranes and buried services: Ensure stability and avoid damage.
- 240 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS
- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
 - Standard: To Highways Agency 'Specification for highway works' clause 802.
 - At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.
- 250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS
- General: Spread and levelled.
 - Compaction:
 - Timing: As soon as possible after laying.
 - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.
- 310 ACCURACY
- Permissible deviation from required levels, falls and cambers (maximum):
 - Subgrades:
 - Roads and parking areas: +20 -30 mm.
 - Footways and recreation areas: ± 20 mm.
 - Sub-bases:
 - Roads and parking areas: ± 20 mm.
 - Footways and recreation areas: ± 12 mm .
- 320 SURFACES TO RECEIVE SAND BEDDING FOR PAVING TO SECTIONS Q24 and Q25.
- Blind surface: As necessary before compaction to ensure that surface is tight and dense enough to prevent laying course sand being lost into it during construction or use.
 - Material: PFA or Sand.
- 330 COLD WEATHER WORKING
- Frozen materials: Do not use.
 - Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- 340 PROTECTION
- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
 - Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

Q21

In situ concrete roads/ pavings/ bases

Q21 In situ concrete roads/ pavings/ bases

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

Q22

Asphalt roads/ pavings

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

ALL TARMAC SURFACING DETAILING TO BE CONFIRMED BY QUALIFIED ENGINEER

Q23

**Gravel/ Hoggins/ Woodchip/ Resin bound roads/ paving/
overlays**

Q23 Gravel/ Hoggin/ Woodchip/ Resin bound roads/ paving/ overlays

To be read with Preliminaries/ General conditions.

TYPES OF SURFACING

225A PROPRIETARY RESIN BOUND SURFACING TO CAR PARK TREE PITS

As shown on drawing AR_ARC_00_DT_721_010

- Subgrade improvement layer: Not required.
 - Compacted thickness: To Engineers Detail.
- Granular sub-base: Submit proposals.
 - Compacted thickness: Submit proposals.
- Base course: To Engineers Detail.
- Surface course: 20mm
 - Manufacturer: Submit proposals.
Product reference: Rhine Gold.
 - Slip/ skid resistance: PTV to BS 7976 of 40 (water) wet.
 - Binder: To manufacturers specification.
 - Chippings: As manufactured/specied.
Colour: As manufactured.
 - Application: Submit proposals
Binder: Uniformly at a rate of To manufacturers recommendation.
Clean chippings: Cover at a rate of To manufacturers recommendation.
 - Completion: Before trafficking, remove excess chippings.
 - Accessories: protective tree collar infilled with PU Addastone TP Flex-UV Resin or similar approved as drawing AR_ARC_00_DT_721_010

LAYING

310C PIN KERB EDGING

- For edge restraints refer to Q10/113

315 MATERIALS

- Compatibility: Chippings suitable for use with respective binders/ emulsions/ resin/ epoxy.

320 SAMPLES

- Submit: Representative samples of resin bound subscape surfacing.

340 LAYING GENERALLY

- Channels, gullies, etc: Keep clear.
- Finished surfaces:
 - Lines and levels: To prevent ponding.
 - Overall texture: Even.
 - State at completion: Clean.

350 COLD WEATHER WORKING

- Frozen materials: Do not use.
- Freezing conditions: Do not lay pavings.
- Cold bituminous surface dressings: Do not apply when ambient temperature is below 10°C.
- Other dressings or overlays: As manufacturers' recommendations.

360 DRAINAGE FALLS

- Sealed surfaces:
 - Falls and cross falls (minimum): 1:40.
 - Camber (minimum): 1:50.
- Unsealed surfaces (minimum): 1:30.

390 PROTECTION FROM TRAFFIC AND PLANT

- Paved areas: Restrict access to prevent damage.

Q25

Slab/brick/sett/cobble pavings

Q25 Slab/brick/sett/cobble pavings

Q28

Topsoil and soil ameliorants

Q28 Topsoil and soil ameliorants

To be read with Preliminaries/ General conditions.

110 NATURALLY OCCURRING TOPSOIL SYSTEM FOR TREE AND SHRUB PLANTING

- Topsoil: Imported topsoil to BS 3882.
- Ameliorants: Sanitised and stabilized compost .
- Accessories: None.

PRODUCTS

300A PREPARATION MATERIALS GENERALLY

- Purity: Free of pests and disease.
- Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, in particular Himalayan Balsam, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
- Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
 - Corrosive, explosive or flammable.
 - Hazardous to human or animal life.
 - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
- Objectionable odour: None.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

305 PERMITTED MATERIALS

- Materials: Composted green/ food waste certified to PAS 100.
- Give notice: before ordering or using.
- Declaration of compliance: Required.

310 MATERIALS NOT PERMITTED

- Materials: Products containing peat and River and canal dredging .

315 IMPORTED TOPSOIL TO BS 3882

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Standard: To BS 3882.
- Classification: Multipurpose.
 - Grade: Within the parameters of 'sandy loam' textural class.
- Source: Submit proposals.
 - Product reference: Submit proposals.

360 SANITIZED AND STABILIZED COMPOSTED MATERIALS CERTIFIED TO PAS 100 FOR TREE AND ORNAMENTAL SHRUB PLANTING

- Standard: In accordance with PAS 100.
- Source: Submit proposals.
 - Product reference: Submit proposals.
- Horticultural parameters:
 - pH (1:5 water extract): 7.0-8.7.
 - Electrical conductivity (maximum, 1:5 water extract): 200 mS/m.
 - Moisture content (m/m of fresh weight): 35-55%.
 - Organic matter content (minimum): 25%.
 - Grading (air dried samples): 99% passing 25 mm screen, and 90% passing 10 mm screen mesh aperture.
 - Carbon:Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.

EXECUTION

610 TOPSOIL ANALYSIS

- Soil to be analysed: Imported topsoil.
- Soil analyst: Submit proposals.
- Samples: Collect in accordance with BS 3882.
- Submit:
 - Declaration of analysis:
 - Chemical analysis and contaminants;
 - Nutrient content, pH value and textural classification; and
 - Maximum stone content.
 - Report detailing soil analyst's recommendations.

620 IMPORTING TOPSOIL

- Give notice: Before stripping topsoil for transfer to site.
 - Notice period: 5 days.

625 SAMPLE LOADS FOR IMPORTED TOPSOIL

- Deliver to site a sample load: of 5 kg.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
 - Notice period: 5 days.

630A DOCUMENTATION FOR IMPORTED TOPSOIL FOR LANDSCAPE LAWNS, TREE AND SHRUB PLANTING

- Timing: Submit prior to ordering and at handover.
- Contents:
 - Full description of all soil components.
 - Record of source for all soil components.
 - Record drawings showing the location and depth of all soils by type and grade.
 - Declaration of analysis: in accordance with BS 3882, Annex E.
- Number of copies: 2.

635A DOCUMENTATION FOR COMPOST AND COMPOSTED MATERIALS FOR IMPORTED SOIL IMPROVERS

- Timing: Submit prior to ordering and at handover.
- Contents:
 - Full description of all compost components.
 - Record of source for all compost components.
 - Analyst's report for each test carried out.
 - Declaration of compliance: in accordance with PAS 100 and BSI PD CR 13456.
 - Quality Compost Protocol certification: Required.
- Number of copies: 2.

650 NOTICE

- Give notice before:
 - Setting out.
 - Spreading topsoil.
 - Applying herbicide.
 - Applying fertilizer.
 - Visiting site during maintenance period.
- Period of notice: Three working days.

660 GRADING SUBSOIL

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Loosening:
 - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
 - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
 - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Areas of thicker topsoil: Excavate locally.
- Avoid over compaction.

670 INSPECTING FORMATIONS

- Give notice: Before spreading topsoil for lawn areas and planting beds.
- Notice period: 7 days.

675 PREPARATION OF UNDISTURBED TOPSOIL

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

680A SURPLUS TOPSOIL TO BE RETAINED

- Generally: Spread and level on site:
 - Locations: Any areas where topsoil is required for new planting.
 - Protected areas: Do not raise soil level within root spread / RPAs of trees that are to be retained. Refer to approved arboricultural drawings.

690 TOPSOIL STORAGE HEAPS

- Location: Submit proposals.
- Height (maximum): 1.0 m.
- Width (maximum): 3.0 m.
 - Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
- Protection:
 - Do not place any other material on top of storage heaps.
 - Do not allow construction plant to pass over storage heaps.
 - Prevent compaction and contamination, by fencing and covering as appropriate.

695A CULTIVATION

- Compacted topsoil: Break up to full depth.
- Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
 - Depth: 350 mm.
 - Particle size (maximum): 15 mm.
 - Timing: Within a few days before planting.
 - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 25 mm above adjoining paving or kerbs and minimum 150 mm below dpc of adjoining buildings.
- Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 50 mm.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate within retained trees RPA. Refer to approved arboricultural drawings.

700 GRADING OF TOPSOIL

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
 - Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Give notice: If required levels cannot be achieved by movement of existing soil.

705A HANDLING TOPSOIL

- Aggressive weeds: Give notice [re Himalayan Balsam] and obtain instructions from ecologist before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
 - Subsoil, stone, hardcore, rubbish or material from demolition work.
 - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.

710 SPREADING TOPSOIL

- Temporary roads/ surfacing: Remove before spreading topsoil.
- Layers:
 - Depth (maximum): 150 mm.
 - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum): 450 mm to planting areas, 150 mm to grassed areas.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 LOOSE TIPPING OF TOPSOIL

- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

720 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Above adjoining paving or kerbs: 25 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 25 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

810 APPLYING COMPOST TO AREAS OF EXISTING TOPSOIL

- Locations: Areas of existing retained/reused topsoil.
- Other requirements: None.
- Application rate for trees and shrubs: 50 mm thick.
 - Timing: Apply prior to cultivation.
- Application rate for grass: 25 mm thick layer.
 - Timing: Apply prior to cultivation.

COMPLETION

920A DOCUMENTATION

- Timing: Submit at handover.
- Contents:
 - Full description of all soil components.
 - Record of source for all soil components.
 - Analyst's report for each test carried out.
 - - Supplier's declaration of compliance with BS 3882.
- Number of copies: 2.

Q30

Seeding/turfing

Q30 Seeding/turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

115A SEEDED AND TURFED AREAS IF REQUIRED

- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 WATER RESTRICTIONS

- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE

- Give notice before:
 - Setting out.
 - Applying herbicide.
 - Applying fertilizer.
 - Preparing seed bed.
 - Seeding or turfing.
 - Visiting site during maintenance period.
- Period of notice: 3 working days.

170 SETTING OUT

- Boundaries: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

PREPARATION

210 HERBICIDE FOR ALL GRASSED AREAS IF REQUIRED

- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
 - Duration: As manufacturer's recommendation.

212 SEED BED CLEANING BEFORE SOWING WILD FLOWER MEADOWS

- Operations: As seed supplier's recommendations..

280 FINAL CULTIVATION

- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
 - Depth: 25 mm.
 - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
 - Remove surface stones/earth clods exceeding:
General areas: 20 mm.
Fine lawn areas: 10 mm.
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

SEEDING

311 GRASS SEED FOR ALL GRASSED AREAS IF REQUIRED

- Supplier: Germinal Seed Amenity or similar approved.
 - Mixture reference: A24 Wear and Tear.
- Application rate: 50 g/m².

312 SEED MIXTURE FOR WILD FLOWER MIX TO ENTRANCE SPACE

- Supplier: Germinal Seed Amenity.
 - Mixture reference: WFG18 Butterfly and Honey Bee Mix.
- Origin (as defined in the National Plant Specification): Native UK.
- Application rate: 5-10 g/m².

312A SEED MIXTURE FOR WILD FLOWER MIX TO ECOLOGICAL CORRIDOR

- Supplier: Germinal Seed Amenity.
 - Mixture reference: WFG20 Eco Lawn Mix.
- Origin (as defined in the National Plant Specification): Native UK.
- Application rate: 5-10 g/m².

319 QUALITY OF SEED FOR ALL GRASSED AREAS IF REQUIRED

- 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.

320 QUALITY OF SEED FOR WILD FLOWER MEADOWS

- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties.
 - Standard: EC purity and germination regulations and Department for Environment, Food and Rural Affairs Higher Voluntary Standard.
 - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
- Samples of mixtures: Submit when requested.

330 SOWING

- General: Establish good seed contact with the root zone.
- Method: To suit soil type, proposed usage, location and weather conditions during and after sowing.
 - Distribution: As manufacturers recommendations.

- 335 GRASS SOWING SEASON
- Grass seed generally: April to June or August to October.

- 336 WILDFLOWER SOWING SEASON
- Wildflower seed generally: March to May or August to October.

PROTECTING/CUTTING

- 530 FIRST CUT OF GRASSED AREAS
- Timing: When grass is reasonably dry.
 - Height of initial growth: as manufacturers recommendations.
 - Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
 - Height of first cut: 50 mm.
 - Mower type: Contractor's choice to be confirmed with client.
 - Arisings: Remove from site.

- 540 FIRST CUT OF WILD FLOWER MEADOWS
- Height of initial growth: 75 mm.
 - Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
 - Height of first cut: 50 mm.
 - Mower type: Contractor's choice to be confirmed with client.
 - Arisings: Remove from site.

- 590 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
 - General: Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

MAINTENANCE

- 610 FAILURES OF SEEDING/TURFING
- Duration: Carry out the following operations from completion of seeding/ turfing until: practical completion.
 - Defective materials or workmanship: Areas that have failed to thrive.
 - Exclusions: Theft or malicious damage.
 - Method of making good: Recultivation and reseeded/ returfing.
 - Timing of making good: The next suitable planting season.

620 MAINTAINING ALL GRASSED AREAS IF REQUIRED

- Duration: Carry out the following operations from completion of seeding/ turfing until: practical completion.
- Maximum height of growth at any time: 50 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 25 mm.
 - Arisings: Spread evenly over cut areas.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
 - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
 - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
 - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: As required in periods of drought.

650 MAINTAINING GRASSED AREAS WITH PERENNIAL WILD FLOWERS

- Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
- Preparation: Before each cut remove all litter and debris.
- Height and frequency of cut in first growing season:
 - Time of first cut: June/ July.
 - Height of first cut: as manufacturers recommendations.
 - Frequency of subsequent cutting (minimum): Every 6-8 weeks until autumn.
 - Height of growth permitted (maximum): as manufacturers recommendations.
- Height and frequency of cut in second growing season:
 - Time of cut: as manufacturers recommendations and guidance in Landscape Maintenance plan, IBI Taylor Young, Sept 2014 .
 - Height of cut: as manufacturers recommendations and guidance in Landscape Maintenance plan, IBI Taylor Young, Sept 2014 .
- Trimming: All edges.
 - Arisings: Remove.
- Watering: See Landscape Maintenance plan, IBI Taylor Young, Sept 2014 .

680 MAINTENANCE FERTILIZER ALL GRASSED AREAS IF REQUIRED

- Duration: Carry out the following operations from completion of seeding/ turfing until: practical completion.
- March application: 15:10:10 Spring turf fertilizer at 35 g/m².
- September application: 5:10:10 Autumn turf fertilizer at 50 g/m².

Q31

External planting

Q31 External planting

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/ REQUIREMENTS

112 SITE CLEARANCE GENERALLY

- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with any dimension exceeding 50 mm.
- Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Vegetation: Clear surface vegetation in areas shown on drawings using suitable nonresidual herbicide.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Additional requirements: Where there is any evidence of Himalayan Balsam and Japanese Knotweed on site, please contact the contract administrator for advice from ecologist and Wrexham AFSRC: Habitat Management Plan, AMEC, June 2014 .

118 SOIL CONDITIONS

- Soil for cultivating and planting: Moist, friable and (excepting aquatic/ marginal planting) not waterlogged.
- Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.
 - Strong winds: Do not plant.

125 TIMES OF YEAR FOR PLANTING

- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May.
- Herbaceous plants (including marginal): September/ October or March/ April.
- Container grown plants: At any time if ground and weather conditions are favourable.
 - Watering and weed control: Provide as necessary.
- Dried bulbs, corms and tubers: September/ October.
- Colchicum (crocus): July/ August.
- Green bulbs: After flowering in spring.
- Wildflower plugs: Late August to mid November or March/ April.
- Aquatic plants: May/ June or September/ October.

145A WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting see guidance given in Landscape Maintenance plan, IBI Taylor Young, Spet 2014.

150 WATER RESTRICTIONS

- General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 NOTICE

- Give notice before:
 - Setting out.
 - Applying herbicide.
 - Applying fertilizer.
 - Delivery of plants/ trees.
 - Planting shrubs.
 - Planting trees into previously dug pits.
 - Watering.
 - Visiting site during maintenance period.
- Period of notice: One week.

165 PREPARATION, PLANTING AND MULCHING MATERIALS

- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Certification of source, analysis, suitability for purpose and absence of harmful substances: Submit.
 - Certified materials: Sanitized and stabilized compost.
 - Give notice before ordering or using.

200 PLANTS/ TREES - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: Balanced with branch system.
 - Standard: The relevant parts of BS 3936.
- Species: True to name.
- Origin/ Provenance: Grown in the United Kingdom for at least one growing season, unless otherwise approved.
Definition: Origin and Provenance have the meaning given in the National Plant Specification.

216 PLANTS/ TREES - SPECIFICATION CRITERIA

- Name, forms, dimensions and other criteria: To the relevant part of BS 3936.

225 BULBS/ CORMS/ TUBERS

- Condition: Firm, entire, not dried out or shrivelled.
- Health: Free from pests, diseases and fungus.
- Handling: Remove from packaging immediately.
- Storage: Permitted only when necessary.
 - Location: Well ventilated, dark, covered, rodent proof container, away from exhausts and fruit.
 - Duration: Minimum period.
 - Temperature: 18-21°C.

235 CONTAINER GROWN PLANTS/ TREES

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

246 LABELLING AND INFORMATION

- Standard: To BS 3936.

255 PLANTS/ TREES RESERVED AT SUPPLIER'S PREMISES

- Types/ Species: As plant schedule.
- Predelivery inspection: Give notice.
- Labelling: Identify inspected plants/ trees as reserved for use on this project.

260 PLANT/ TREE SUBSTITUTION

- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
 - Price.
 - Difference from specified plants/ trees.
- Approval: Obtain before making any substitution.

265 PLANT HANDLING, STORAGE TRANSPORT AND PLANTING

- Standard: To HTA 'Handling and establishing landscape plants'.
- Frost: Protect plants from frost.
- Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Plant packaging: Coextruded polyethylene bags with black interior and white exterior .
- Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped .
- Planting: Upright or well balanced with best side to front.

280 TREATMENT OF TREE WOUNDS

- Cutting: Keep wounds as small as possible.
 - Cut cleanly back to sound wood using sharp, clean tools.
 - Leave branch collars. Do not cut flush with stem or trunk.
 - Set cuts so that water will not collect on cut area.
- Fungicide/ Sealant: Do not apply unless instructed.

285 PROTECTION OF EXISTING GRASS

- General: Protect areas affected by planting operations using boards/ tarpaulins.
 - Excavated or imported material: Do not place directly on grass.
 - Duration: Minimum period.

290 SURPLUS MATERIAL

- Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

300 HERBICIDE TO CLEAR OVERGROWN BEDS

- Locations: As drawing AR-ARC-00-PL-100-024.
- Type: Suitable for supressing perennial weeds.
- Timing: Allow fallow period before cultivation.
 - Duration (minimum): As manufacturer's recommendation.

305 WEED CONTROL FOR INVASIVE NON-NATIVE WEEDS

- Locations: As drawing AR-ARC-00-PL-100-024.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by contractor's choice of herbicide.

375 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
 - Depth: 350 mm.
 - Timing: Within a few days before planting.
 - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 25 mm above adjoining paving or kerbs and Minimum 150 mm below dpc of adjoining buildings.
- Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 50 mm.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.

PLANTING SHRUBS/ HERBACEOUS PLANTS/ BULBS

400A RANDOM PLANT LAYOUT TO SHRUB PLANTING

as drawing AR-ARC-00-PL-100-024

- Spacing: Random groups of 5-7 plants of the same species..
- Density: At 3 plants per m².

400B RANDOM PLANT LAYOUT TO ECOLOGICAL CORRIDOR PLANTING

as drawing AR-ARC-00-PL-100-025

- Spacing: Random groups of 5-11 plants of the same species..
- Density: At 3 plants per m².

405A SHRUB PLANTING PITS TO PLANTING BED AT ENTRANCE SPACE

- Timing: Excavate 1-2 days (maximum) before planting.
- Sizes: 150 mm wider than roots when fully spread and 300 mm deep.
- Pit bottom improvement Not required.
- Backfilling material: Shrub planting backfilling material.

405B SHRUB PLANTING PITS TO SHRUB PLANTING IN ECOLOGICAL CORRIDOR

- Timing: Excavate 1-2 days (maximum) before planting.
- Sizes: 150 mm wider than roots when fully spread and 300 mm deep.
- Pit bottom improvement Not required.
- Backfilling material: Reuse excavated material..

417 MYCORRHIZAL INOCULANT

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Application: Apply to roots of bare root plants before planting and backfilling.

445 PLANTING BULBS/ CORMS/ TUBERS

- Depth: Top of bulb/ corm/ tuber at a depth of approximately twice its height, base in contact with bottom of hole.
- Backfilling: Finely broken soil. Lightly firm to existing ground level.
- Naturalized planting in existing grassed areas:
 - Scattering: Random. Plant bulbs/ corms/ tubers where they fall.
 - Planting: Neatly remove a plug of turf and replace after planting.

480 AFTER PLANTING

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
- Top dressing: Not required.
 - Depth: 25 mm.

485 MULCHING PLANTING BEDS

- Material: Ornamental bark mulch.
 - Purity: Free of pests, disease, fungus and weeds.
 - Recycled content: Submit proposals.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 75 mm depth.
- Finished level of mulch: 30 mm below adjacent grassed or paved areas.

PLANTING TREES

500 ANTIDESICCANT FOR CONIFERS/ EVERGREENS

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Application: Dip in or thoroughly spray before delivering to site. Spray again soon after planting.
 - Do not apply in wet or frosty weather.
 - Ensure full coverage of underside of foliage.

505 TREE PITS

- Sizes: As drawing AR ARC 00 DT 721 010 and AR ARC 00 DT 721 013 .
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 200 mm.
 - Treatment: Soil ameliorant worked into pit bottoms .
- Pit sides: Scarify.
- Backfilling material: Good quality topsoil .
- Accessories:
 - Perforated plastics irrigation/ ventilation pipe;
 - Root barrier; and
 - Underground guying to BS 4043 .

505B TREE PITS FOR NEW TREES IN ECOLOGICAL CORRIDOR

- Sizes: As drawing AR ARC 00 DT 721 011 and AR ARC 00 DT 721 014 .
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 200 mm.
 - Treatment: Backfill to 150 mm depth with no fines broken stone or clean gravel drainage layer, with Terram 1000 membrane layer over .
- Pit sides: Scarify.
- Backfilling material: Reuse excavated material.
- Accessories: staking as drawing AR ARC 00 DT 721 011 and AR ARC 00 721 014 .

510 TREE PIT ROOT BARRIERS

- Locations: Wherever the installed rootball will be within 3.0 m of an existing underground service route.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Depth of top of root barrier below finished soil level: to manufacturers recommendations.
- Installation: With sides vertical.

515A TREE PIT DRAINAGE

- Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
- Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20 mm.
 - Depth: 150 / 200 mm to suit tree pit details.
- Geotextile filter:
 - Manufacturer: Terram.
 - Product reference: Terram 1000.
 - Position: Lay over aggregate before installing tree or backfill.
- Completed pits: Test for free drainage before planting.

525A SEMIMATURE TREES

- Standard: Prepare roots and transplant to BS 4043.
- Backfilling material: As clause 586A.
- Support: As drawing AR ARC 00 DT 721 010 & 014.
- Protection: Not required.

535A STAKING GENERALLY

- Stakes: Untreated softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
 - Preservative treatment: To provide a 20 year service life.
- Nails: To BS 1202-1, galvanized, minimum 25 mm long and with 10 mm diameter heads.
- Stake size (minimum): 100 mm diameter.

555A SHORT SINGLE STAKING FOR FEATHERED TREES

- Staking: Position stake close to tree on windward side and drive vertically at least 300 mm into bottom of pit before planting.
 - Backfilling: Consolidate material around stake
- Height of stakes: Cut to approximately 600 mm above ground level or no more than a third the height of the tree being staked.
- Ties: Hessain tree tie, Naturetie as supplied by GreenBlue Urban or similar approved .
- Tying: Secure tree firmly but not rigidly to stake with one tie within 25 mm of top of stake.

575A SHORT DOUBLE STAKING FOR FEATHERED TREES - ALNUS

- Staking: Drive stakes vertically at least 300 mm into bottom of pit on either side of tree position before planting.
 - Backfilling: Consolidate material around stakes.
- Height of stakes: Cut to approximately 600 mm above ground level or no more than a third the height of the tree being staked.
- Cross bar: Wood, as stake.
 - Firmly fix on windward side of tree and as close as possible to stem.
- Ties: Hessain tree tie, Naturetie as supplied by GreenBlue Urban or similar approved .
- Tying: Secure tree firmly but not rigidly to cross bar.

586A TREE BACKFILLING MATERIAL TO CAR PARK AREA TREES

- Composition: Previously prepared mixture of topsoil. 85% Approved Topsoil and 15% Peat Free compost
- Ameliorant/ Conditioner: Submit proposals.
 - Application rate: To manufacturer's/ supplier's recommendations.
- Fertilizer: Submit proposals.
 - Application rate: To manufacturer's/ supplier's recommendations.

586B TREE BACKFILLING MATERIAL TO ECOLOGICAL CORRIDOR

- Composition: Reuse excavated material
- Ameliorant/ Conditioner: Not required.
 - Application rate: n/a.
- Fertilizer: Not required.
 - Application rate: n/a.

617 REMOVING TREES AND HEDGES

- Identification: Clearly mark trees and hedges to be removed.
- Work near retained trees: Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Arisings: Remove.
- Tree stumps: Remove mechanically to a minimum depth of 300 mm below ground level.

625 CULTIVATION

- General: Rotary cultivate to full depth of topsoil.
- Consolidation: Leave for one month.
- Soil within root spread of trees to be retained: Do not plough or cultivate.

635 NOTCH PLANTING IN UNCULTIVATED GROUND

- Notching: Make a vertical 'I', 'L', 'T' or 'H' notch.
 - Depth: To accommodate full depth of roots.
- Planting: Plant tree, close notch with root collar at ground level and firm the soil.

PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS

710 MAINTENANCE

- Duration: Carry out the operations in the following clauses from completion of planting until the end of the rectification period.
- Frequency of maintenance visits: In accordance with Landscape Maintenance plan, IBI Taylor Young, Spet 2014.

720 FAILURES OF PLANTING

- Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
 - Exclusions: Theft or malicious damage after completion.
 - Rectification: Replace with equivalent plants/ trees/ shrubs.
- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: During the next suitable planting season.

740 CLEANLINESS

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

750 PLANTING MAINTENANCE GENERALLY

- Weed control: Maintain weed free area around each tree and shrub.
 - Diameter (minimum): The larger of 1 m or the surface of original planting pit.
 - Keep planting beds clear of weeds: By use of suitable herbicides.
- Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards.
 - Broken or missing items: Replace.
 - Rubbing: Prevent.
 - Ties: Adjust to accommodate growth.
 - Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
 - Frequency of checks: At each scheduled maintenance visit.
- Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
- Trees: Spray crown when in leaf during warm weather.
 - Timing: After dusk.
- Watering: When instructed.

755A PLANTING MAINTENANCE - FERTILIZER

- Time of year: March or April and guidance in Landscape Maintenance plan, IBI Taylor Young, Spet 2014
- Fertilizer: Slow release.
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Application rate: 50 g/m².

760 PLANTING MAINTENANCE - PRUNING

- General: Prune to promote healthy growth and natural shape.
 - Dead, dying, diseased wood and suckers: Remove.
 - Timing: In accordance with Landscape Maintenance plan, IBI Taylor Young, Spet 2014 .
 - Trees: Favour a single central leading shoot.
- Arisings: Remove.

780A MAINTENANCE INSTRUCTIONS

- General: Before end of the maintenance period, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year based on guidance in Landscape Maintenance plan, IBI Taylor Young, Sept 2014: provide details of any special procedures to be carried out.

790 FINAL MULCHING

- Timing: At end of the maintenance period.
- Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
- Planting beds: Remulch.
 - Depth (minimum): 75 mm.
- Trees: Remulch.
 - Depth (minimum): 75 mm.

Q35

Landscape maintenance

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY

105 MAINTENANCE OBJECTIVES

- Location: All new tree, shrub, perennial and wildflower planting .
 - Duration: Two years.
- Aims:
 - Enhanced landscape quality;
 - Improved landscape visual amenity;
 - Provide wildlife habitat and increase biodiversity; and
 - To encourage natural woodland regeneration .
- Restrictions: As detailed in Management Plan .
- Results: As detailed in Habitat Management Plan, Amec, June 2014 .

110A NOTICE

- Give notice before:
 - Application of fertilizer.
 - Watering.
 - Each site maintenance visit.
- Period of notice: 7 days.

130 REINSTATEMENT

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

152 PERFORMANCE CRITERIA FOR CONTROL OF INVASIVE PLANT SPECIES

- Specialist firms: Submit proposals.
- Species: any plant listed in Schedule 9 of the Wildlife and Countryside Act 1981 and in the Weeds Act 1959.
- Location: Whole site.
- Requirement: As detailed in Habitat Management Plan, Amec, June 2014 .
 - Timing: As detailed in Habitat Management Plan, Amec, June 2014 .

155A WATERING

- Supply: No site supply available, contractor to submit proposals for approval .
- Quantity: Wet full depth of topsoil .
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As necessary for the continued thriving of all planting, see Landscape Maintenance Plan, IBI Taylor Young, September 2014.

160 WATER RESTRICTIONS

- General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

170 DISPOSAL OF ARISING

- General: Unless specified otherwise, dispose of arisings as follows:
 - Biodegradable arisings: Remove to recycling facility.
 - Grass cuttings: Remove to recycling facility.
 - Tree roots and stumps: Remove from site to recycling facility.
 - Shrub and tree prunings: Remove to recycling facility.
 - Litter and nonbiodegradable arisings: Remove from site to licensed tip.

180 CHIPPING OR SHREDDING

- General: Not permitted on site.

190 LITTER

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

197 CLEANLINESS

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

GRASSED AREAS

210A MAINTENANCE OF GRASSED AREAS

- General: Maintain turf in a manner appropriate to the intended use, see Landscape Maintenance Plan, IBI Taylor Young, September 2014.
- Soil and grass:
 - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
 - Waterlogging and compaction: Retain watching brief and seek advice for client if appropriate.
 - Damage: Repair trampling, abrasion or scalping.
- Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
 - Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

220A GRASS CUTTING GENERALLY

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

235 BULBS AND CORMS IN GRASSED AREAS

- Before flowering: Do not cut.
- Interval between end of flowering and start of grass cutting (minimum): see Landscape Maintenance Plan, IBI Taylor Young, September 2014 .

250 LEAF REMOVAL

- Operations: Collect fallen leaves.
- Special requirements: Remove by hand raking.
- Disposal: Remove from site for recycling.

255 FIRST CUT OF ALL GRASSED AREAS

- Height of initial growth: 75 mm.
- Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 50 mm.
- Mower type: Contractor's choice to be approved by client.
- Arisings: Spread evenly over cut areas.

255A FIRST CUT OF WILD FLOWER MEADOWS

- Height of initial growth: 75 mm.
- Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 50 mm.
- Mower type: Contractor's choice to be approved by client.
- Arisings: Remove.

265 MOWING GENERAL AREAS

- Grass height: Maintain between 25 and 50 mm.
- Arisings: Remove.

272 MAINTAINING GRASSED AREAS WITH PERENNIAL WILD FLOWERS

- Preparation: Before each cut remove litter and debris.
- Height and frequency of cut in first growing season:
 - Time of first cut: June/ July.
 - Height of first cut: 100 mm .
 - Frequency of subsequent cutting (minimum): Every six to eight weeks until autumn.
 - Height of growth permitted (maximum): 100 mm.
- Height and frequency of cut in second growing season:
 - Time of cut: October, March and August.
 - Height of cut: 75 mm.
- Trimming: All edges.
 - Arisings: Remove.
- Watering: see Landscape Maintenance Plan, IBI Taylor Young, September 2014 .

275 CUTTING SUMMER FLOWERING WILD FLOWER MEADOWS

- Times of year/ Frequency of cutting: as manufacturers recommendations.
- Height of cut: as manufacturers recommendations.
- Arisings: Remove.

FLOWER BEDS/ SEASONAL BEDDINGS

460A BEDS OF PERENNIALS OR PERENNIALS AND ANNUALS

- Length: To suit plant height.
- Maintain throughout the growing season as Landscape Maintenance Plan, IBI Taylor Young, September 2014.
- Gaps in planting: Refill by replanting.
- Watering:
 - New plants: Before and after planting out.
 - Ongoing: As necessary for the continued thriving of all planting, see Landscape Maintenance Plan, IBI Taylor Young, September 2014.
- Operations at end of growing season:
 - Trim: Older flowering stems of herbaceous perennials.
 - Remove: Redundant plant supports, litter, debris and arisings.
 - Cultivate: Fork over the soil, taking care not to cause undue disturbance to plants.
 - Top dress: Apply sanitized and stabilized compost top dressing, see Landscape Maintenance Plan, IBI Taylor Young, September 2014 .

470A FLOWER BEDS GENERALLY

- Operations: Generally see Landscape Maintenance Plan, IBI Taylor Young, September 2014
 - Remove: Dead flower heads, fallen leaves, litter and debris.
 - Weeds: Thoroughly hand weed.
 - Cultivate: Lightly hoe.
 - Trim: Clip grass edges.
- Fungicide: Not required.
- Insecticide: Apply once during summer as instructed.

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING

- Duration: Two years.
- Weed control:
 - Method: Keep planting beds clear of weeds by maintaining full thickness of mulch.
 - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Watering: As appropriate to determine good establishment.

502A ESTABLISHMENT OF NEW PLANTING - FERTILIZER

- Time of year: March or April. See Landscape Maintenance Plan, IBI Taylor Young, September 2014
- Type: Organic.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
 - Application rate: As manufacturer's recommendations.

510 TREE STAKES AND TIES

- Inspection/ Maintenance times: As instructed in Landscape Maintenance Plan, IBI Taylor Young, September 2014 and immediately after strong winds.
- Stakes:
 - Replace loose, broken or decayed stakes to original specification.
 - If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
- Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
 - Where chafing has occurred, reposition or replace ties to prevent further chafing.
- Removal of stakes and ties: At end of maintenance period.
 - Fill stake holes with lightly compacted soil.

515 TREE GUY WIRES

- Inspection/ Maintenance times: As schedule and immediately after strong winds.
- Operations:
 - Replace or resecure loose or missing guy wires.
 - Adjust to suit stem growth and to provide correct and uniform tension.
- Removal: Not required.

520 REFIRMING OF TREES AND SHRUBS

- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

540 PRUNING GENERALLY

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

555A PRUNING TREES AND SHRUBS

- Standard: To BS 3008:2010.
- Special requirements: Growth retardants not permitted.

570 FORMATIVE PRUNING OF YOUNG TREES

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
 - Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well balanced head and ensure the development of a single strong leader.
 - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Member of the Arboricultural Association.

575 PRUNING ORNAMENTAL SHRUBS

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

580A PRUNING FLOWERING SPECIES OF SHRUBS AND ROSES

- Time of year:
 - Winter flowering shrubs: Spring.
 - Shrubs flowering between March and July: Immediately after the flowering period.
 - Shrubs flowering between July and October: Back to old wood in winter.
 - Rose bushes: Early spring to encourage basal growths and a balanced, compact habit.
 - **See Landscape Maintenance Plan, IBI Taylor Young, September 2014**

620 REMOVAL OF DEAD PLANT MATERIAL

- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

630 DEAD AND DISEASED PLANTS

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

635 REINSTATEMENT OF SHRUB/ HERBACEOUS AREAS

- Dead and damaged plants: Remove.
- Mulch/ matting materials:
 - Carefully move to one side and dig over the soil, leaving it fit for replanting.
 - Do not disturb roots of adjacent plants.
- Replacement plants:
 - Use pits and plants: To original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
 - Additional requirements: Submit schedule, details and cost of plants before ordering.
- Dressing: Slow release fertilizer:
 - Type: Refer to Q28 clause 360.
 - Application rate: As manufacturer's recommendations - Refer to Q28 clause 360.

645 WEED CONTROL GENERALLY

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

650 HAND WEEDING

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

655 WEED CUTTING BY HAND OR MACHINE

- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 25 mm.
- Herbicides: Do not use.

675 DIGGING OVER

- General: Dig over beds. Do not damage existing plants, bulbs and roots.
 - Depth of dig (minimum): 100 mm.

680 SOIL AERATION

- Compacted soil surfaces:
 - Prick up: To aerate the soil of root areas and break surface crust.
 - Size of lumps: Reduce to crumb and level off.
 - Damage: Do not damage plants and their roots.

685 SOIL LEVEL ADJUSTMENT

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

690 MAINTENANCE OF LOOSE MULCH

- Thickness (minimum): 50 mm.
 - Top up: Every three months.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

705 WINTER LEAF REMOVAL

- Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
- Arisings: Remove to recycling facility.

TREE WORK

810 TREE WORK GENERALLY

- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

815 ADDITIONAL WORK

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

820 PREVENTION OF WOUND BLEEDING

- Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION

- Standard: To BS 3998, clause 9 and Appendix B.

830 CLEANING OUT AND DEADWOODING

- Remove:
 - Dead, dying, or diseased wood, broken branches and stubs.
 - Fungal growths and fruiting bodies.
 - Rubbish, wind blown or accumulated in branch forks.
 - Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
 - Other unwanted objects, e.g. tree houses, swings.
 - Climbing plants n/a.

835 CUTTING AND PRUNING GENERALLY

- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
 - Chainsaws: Do not use on branches of less than 50 mm diameter.
 - Hand saws: Form a smooth cut surface.
 - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
Large branches: Remove only with prior approval .
 - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

840 CROWN REDUCTION/ SHAPING

- General: Cut back selectively to lateral or sublateral buds or branches to retain flowing branch lines without leaving stumps.
- Operations: with prior approval from client in line with Habitat Management Plan, Amec, June 2014.

845 CROWN LIFTING

- Clearances: Remove branch systems to give clearance.
 - Height: As recommended by BS 7370-4, clause 3.7.2.3.
- Removing branches: Remove whole branches back to the stem, or cut lower portions of branches back to lateral or sublateral buds or branches. Do not leave stumps.

850 CROWN THINNING

- Removing branches: Remove inward growing, crossing, rubbing, dead and damaged branches.
- Thinning: Selectively remove secondary and small live branch growth evenly throughout the crown.
 - Quantity: as instructed.
- Cutting: Make no cuts of more than 50 mm diameter.
 - Branches: Cut back to lateral or sublateral buds or branches without leaving stumps.
- Appearance: Leave a uniform and well balanced structure of branches and foliage.

855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
 - The branch spread of the tree.
 - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
 - Cutting: Make clean smooth cuts with a hand saw.
 - Wounds: Minimize. Avoid ragged edges.
 - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
 - Protection: Cover cut roots with clean sharp sand.
 - Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
 - Removal: Remove mechanically to a minimum depth of 300 mm below ground level.
 - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
 - Material: Use as-dug material and/ or imported soil as required.
 - Finishing: Consolidate and grade to marry in with surrounding ground level.

865A BARK DAMAGE

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

870 CAVITIES IN TREES

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

895 CLEARANCE OF WATERCOURSES

- Clearance: Remove litter, debris, accumulated silt and excessive vegetation causing an obstruction.
- Frequency: As approved management plan.
- Time of year: Submit proposals.
- Method: Submit proposals.
 - Access: From one bank only.
 - Position: At least 1 m from the top of the bank.
- Phasing: As approved in Habitat Management Plan, Amec, June 2014.

900 SNOW CLEARANCE

- Clearance: When instructed.
- Deicing: To roads and car park.
 - Material: Rock salt to BS 3247.
 - Timing: When instructed.
 - Application rate: Spread evenly at a rate of As manufacturer's recommendations.

920 FENCING

- Fences: Inspect and repair to maintain protection against intruders.

Q50

Site/street furniture/equipment

Q50 Site/street furniture/equipment

To be read with Preliminaries/ General conditions.

GATES, BARRIERS AND PARKING CONTROLS

190 BOLLARDS HARDWOOD TIMBER BOLLARD TO CAR PARK TREE PIT

- Manufacturer: Logic Street Furniture or similar approved.
 - Product reference: 150x150x1350mm Ulswater bollard.
- Material: Opepe Hardwood : FSC Grade.
 - Finish as delivered: As manufactured.
 - Colour: As manufactured.
- Height above ground: 900 mm.
- Special features: none.
- Method of fixing: Root, 300 mm below ground, set in concrete base.

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Concrete: As section E10.
- Admixtures: Do not use.
- Foundation holes: Neat vertical sides.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

Z

Building fabric reference specification

Z21
Mortars

Z21 Mortars