

Softworks Specification

Ballymun Plaza

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Quality information

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Introduction: The following specification is based on the standard National Building specification (NBS) format. Work sections Q and D used are relating to work Sections for the Softscape works. Refer to NBS website for further information: <https://www.thenbs.com/our-tools/nbs-landscape/scope-and-contents>

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D Groundwork

D20
Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

150A EXISTING SERVICES/ FEATURES/ STRUCTURES

- Services: Refer to Engineer's Drawings

CLEARANCE/EXCAVATING

164 TREE ROOTS

- 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.
- 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 amelioration as section Q31.

168 SITE CLEARANCE

- Timing: Before topsoil stripping, if any.
- General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.

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 Guides.

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 Guides.
- Felling: As close to the ground as possible.
- Stumps: Remove completely by mechanical means.
- 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.

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 250 mm. as topsoil depth varies, remove such that there is no contamination of subsoil. .
 - 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

- Timing: Not less than two weeks before excavating topsoil.

225 HANDLING TOPSOIL

- 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.
- Earthmoving equipment: Select and use to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
 - Subsoil, stone, hardcore, rubbish or material from demolition work.
 - Oil, fuel, cement or other substances harmful to plant growth.
 - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use 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 as defined by BS 3882, Annex N2.

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.

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: As instructed by architect /engineer.
- Excavation taken deeper than required:
 - Backfill: as instructed by architect/engineer.

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

550 GEOTEXTILE SHEET

- Manufacturer: Submit proposals.
- Product reference: -.
- Jointing: 300 mm overlap.
- Protect from:
 - Exposure to light, except for five hours (maximum) during laying.
 - Contaminants.
 - Materials listed as potentially deleterious by geotextile manufacturer.
 - Damage until fully covered by fill.
 - Wind uplift, by laying not more than 15 m before covering with fill.
- Preparation: Before laying, remove humps and sharp projections. Fill hollows.

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.

615 LOOSE TIP FILLING FOR LANDSCAPE AREAS

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

626 COMPACTED GENERAL FILLING

- Fill: as per architect / engineer.
- Excavated material: Select suitable material and keep separate.
- Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.
- Proposals: Well in advance of starting work submit details of proposed:
 - Materials to be used, including quantities of each type.
 - Type of plant.
 - Maximum depth of each compacted layer.
 - Minimum number of passes per layer.

Q Paving/Planting/Fencing/Site furniture

Q28 Topsoil and growing media

Q28 Topsoil and growing media

To be read with Preliminaries/ General conditions.

200 GRADING SUBSOIL

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.

250 SUBSOIL SURFACE PREPARATION

- General: Excavate and/ or place fill to required profiles and levels, as section D20.
- Loosening:
 - Light and noncohesive 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.
- Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
- Remove Arisings, contaminants and debris.

260 INSPECTING FORMATIONS

- Give notice: Before spreading topsoil for planting beds.
- Notice period: 14 days.

300 TOPSOIL ANALYSIS

- Soil to be analysed: Existing soil in area of the demolished building. as well as any external source of topsoil.
- Soil analyst: as per contractor.
- Samples: Collect in accordance with BS 3882, Annex A.
- Submit:
 - Declaration of analysis: In accordance with BS 3882 figure 3.
 - Report detailing soil analyst's recommendations.

310 PREPARATION OF UNDISTURBED TOPSOIL

- Standard: In accordance with BS 4428
- Grading and cultivation: To suit cultivation operations specified in Q31.
- 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): Two months.

330 SURPLUS TOPSOIL TO BE RETAINED

- Generally: Spread and level on site:
 - Locations: Any areas where topsoil is required for new planting.

335 SURPLUS TOPSOIL TO BE REMOVED

- Generally: Remove from site topsoil remaining after completion of all landscaping work.

340 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.
- Grade: General purpose.
- Source: Contractor's choice.
- Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 3882, clause 6 and table 2.
- Additional analyses: Not required.

341 IMPORTED TOPSOIL FROM A SPECIFIED SOURCE

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Source: contractor's choice.

355 COMPOST

- Standard: In accordance with PAS 100.
- Supplier: Local source.
- Product reference: -.
- Type: Sanitized and stabilized compost.
- 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 (minimum): 25%.
 - Grading (air dried samples): 99% passing 25 mm screen, and 90% a 10 mm screen mesh aperture.
- Carbon: Nitrogen ratio (maximum): 20:1.
- Texture: Friable.
- Objectionable odour: None.
- Composting Association certification: Required.
- Submit: Declaration of analysis.
- Additional analyses: Not required.
- Samples: Supply 5 kg sample before ordering.
- Application rate: 1.2 m³/100 m².
- Timing: Apply prior to cultivation.

650 NOTICE OF IMPORTING TOPSOIL

- Give notice: Before stripping topsoil for transfer to site.
- Notice period: 14 days.

660 SAMPLE LOAD OF IMPORTED TOPSOIL

- General: Deliver to site a sample load of not less than 5 m³.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
 - Notice period: 14 days.

670 CONTAMINATION

- General: 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, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

680 TOPSOIL STORAGE HEAPS

- Location: as per architect's drawings.
- Height (maximum): as required.
- Width (maximum): as required.
- 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.

690 HANDLING TOPSOIL

- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
 - Subsoil, stone, hardcore, rubbish or material from demolition work.
 - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit as defined by BS 3882, Annex N2.

700 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.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710 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.
- Depths after settlement (minimum): 450 mm.

910 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 -.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

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 scrub to ground level by flail mowing and remove arisings.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Additional requirements: none.

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.

130 MECHANICAL TOOLS

- Restrictions: Do not use within 100 mm of tree and plant stems.

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

146 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: when required especially during draught conditions.

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 fertilizer.
 - Delivery of plants/ trees.
 - Planting shrubs.
 - Planting trees into previously dug pits.
 - Watering.
 - Visiting site during maintenance period.
- Period of notice: 2 weeks.

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: Spent mushroom 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 National Plant Specification.
- Species: True to name.
- Origin/ Provenance: Contractor's choice.

Definition: Origin and Provenance have the meaning given in the National Plant Specification.

215 PLANTS/ TREES - SPECIFICATION CRITERIA

- Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification.

216 PLANTS/ TREES - SPECIFICATION CRITERIA

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

- 235 CONTAINER GROWN PLANTS/ TREES
- Growing medium: With adequate nutrients for plants to thrive until permanently planted.
 - Plants: Centred in containers, firmed and well watered.
 - Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
 - Hardiness: Grown in the open for at least two months before being supplied.
 - Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.
- 245 LABELLING AND INFORMATION
- General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
 - Full botanical name.
 - Total number.
 - Number of bundles.
 - Part bundles.
 - Supplier's name.
 - Employer's name and project reference.
 - Plant specification, in accordance with scheduled National Plant Specification categories.
 - Additional information: Submit on request: Date supplied and consignment details or reference.
- 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: Black polyethylene bags.
 - Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped.
 - Planting: Upright or well balanced with best side to front.
- 275 PERMANENT IDENTIFICATION OF PLANTS
- Location: As plant schedule.
 - Labels: Black plastics 75 mm x 100 mm with white weatherproof lettering attached to tree trunks at 1.5 m from ground level.
 - Wording: As plant schedule.

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.

290 SURPLUS MATERIAL

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

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

305 WEED CONTROL FOR INVASIVE NON-NATIVE WEEDS

- Locations: All planting areas.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by maintaining suitable cover of mulch

315 LIME FOR CLAY SOILS

- Locations: if required to All planting areas.
- Composition: Fine ground limestone containing not less than 50% of CaO equivalent.
- Application: Spread evenly.
- Timing: Immediately before cultivation.
- Rate: 50 g/m².

335 GENERAL FERTILIZER- SLOW RELEASE

- Locations: All planting areas.
- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Application: Spread evenly.
- Timing: Immediately before cultivation.
- Rate: 25 g/m².

341 PEAT

- Peat or products containing peat: Do not use.

357 SOIL AMELIORANT/ CONDITIONER TO AMELIORATE NITROGEN DEFICIENCY

- Locations: where required All planting areas.
- Type: Mushroom compost.
- Reference/ Description/ Grading: -.
- Application: Spread evenly.
- Timing: Apply prior to cultivation.
- Rate: 2.5 m³/100 m².

361 COMPOST TO AMELIORATE NITROGEN DEFICIENCY

- Locations: All planting areas.
- Type: Sanitized and stabilized compost.
- Manufacturer/ Supplier: Contractor's choice.
- Product reference: Contractor's choice.
- Standard: To PAS 100.
- Horticulture 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.
- Composting Association certification: Required.
- Application: Spread evenly.
- Timing: Apply prior to cultivation.
- Rate: 50 mm thick layer.
- Other requirements: Submit 5kg sample before ordering.

375 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
- Depth: 450 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.
- 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.

385 MULCH MATTING/ GEOTEXTILE FABRIC TO SHRUB AND PERENNIAL PLANTING

- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Type: Biodegradable flax.
- Timing: Lay before planting.
- Watering: Water soil thoroughly before laying.
- Laying: In close contact with soil surface. Lap or butt joints as recommended by manufacturer, with no gaps.
- Planting: Cut neat slits or flaps. Refit closely around plant stems.
- Overlay: Mulching planting beds.

PLANTING SHRUBS/ PERENNIAL PLANTS

400 RANDOM PLANT LAYOUT TO SHRUB PLANTING

- Spacing: As Landscape Architect drawing.
- Density: 6 plants/m².

405 SHRUB PLANTING PITS

- Timing: Excavate 1-2 days (maximum) before planting.
- Sizes: Wide enough to accommodate roots when fully spread and 75 mm deeper than root system.
- Pit bottom improvement Break up to a depth of 150 mm, incorporating soil ameliorant/ conditioner at 50 g/m².
- Backfilling material: Shrub planting backfilling material.

417 MYCORRHIZAL INOCULANT

- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Application: Apply to roots of bare root plants before planting and backfilling.

476 SHRUB AND PERENNIAL BACKFILLING MATERIAL

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required:
- Ameliorant/ Conditioner: Mushroom compost.
- Application rate: 25 kg per m³ of topsoil.
- Fertilizer: Organic.
- Application rate: 25 g/m².

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: Sanitized and stabilized compost.
Depth: 50 mm.

485 MULCHING PLANTING BEDS

- Material: Coarse grade bark mulch.
- Purity: Free of pests, disease, fungus and weeds.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 1 m³ per 10 m².
- Finished level of mulch: 30 mm below adjacent grassed or paved areas.

486 SHRUB PROTECTION

- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Type: Polygonal.
- Material: Polypropylene.
- Size: Submit proposals.
- Colour: Submit proposals.
- Support: Single timber stake.
- General: Ensure that protection methods do not impede natural movement of shrubs or restrict growth.

PLANTING TREES

505 TREE PITS

- Sizes: 1200x1200x1000mm deep.
- 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 150 mm.
- Treatment: Soil ameliorant worked into pit bottoms.
- Pit sides: Scarify.
- Backfilling material: Tree backfilling material.
- Accessories: Root barrier in paved areas.

510 TREE PIT ROOT BARRIERS

- Locations: Wherever the installed rootball will be within 2.0 m of a building foundation and trees in paved areas.
- Manufacturer: Submit proposals.
- Product reference: Submit proposals.
- Depth of top of root barrier below finished soil level: 25 mm.
- Installation: With sides vertical.

515 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: 200 mm.
- Drainage pipes:
 - Type: Perforated plastics.
 - Diameter: 60 mm.
 - Position: Lay around perimeter of pit within aggregate layer.
 - Discharge: to engineer's recommendation.
- Geotextile filter:
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Position: Lay over aggregate before installing tree or backfill.
- Completed pits: Test for free drainage before planting.

525 SEMI-MATURE TREES

- Standard: Prepare roots and transplant to BS 4043.
- Backfilling material: As clause 585.
- Support: Long single staking.
- Protection: Wrap trunks and lower branches with hessian strips and leave on for at least two summers.

535 STAKING GENERALLY

- Stakes: 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): 50 mm diameter.

575 SHORT DOUBLE STAKING FOR Semi-Mature Trees

- Staking: Drive stakes vertically at least 300 mm into bottom of pit on either side of tree position before planting. Consolidate material around stakes during backfilling.
- Height of stakes: Cut to approximately 600 mm above ground level.
- Cross bar: Wood, as stake.
- Firmly fix on windward side of tree and as close as possible to stem.
- Ties: Adjustable ties.
- Tying: Secure tree firmly but not rigidly to cross bar.

575A PLATIPUS TREE ANCHORING SYSTEMS

- Type RF2R Anchoring system
- 3no M8concrete expanding bolts with eyelets, 1no. Ratchet tensioner with 7m of galvanised cable.

586 TREE BACKFILLING MATERIAL

- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required.
- Ameliorant/ Conditioner: Mushroom compost.
- Application rate: 25 kg per m³ of topsoil.
- Fertilizer: Organic.
- Application rate: 25 g/m².

590 MULCHING TREES

- Material: Coarse grade bark mulch.
- Purity: Free of pests, disease, fungus and weeds.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: In a circular area of 500 mm radius measured from the tree stem.
- Finished level of mulch: 30 mm below adjacent grassed or paved areas.

595 TREE PROTECTION

- Manufacturer: Submit proposals.
- Product reference: Submit proposals.
- Type: Polygonal.
- Material: Polypropylene.
- Size: Contractor's choice.
- Colour: Submit proposals.
- Support: Single timber stake.
- General: Ensure that protection methods do not impede natural movement of trees or restrict growth.

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 defects liability period.
- Frequency of maintenance visits: In accordance with the agreed maintenance schedule.

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.

730 PROTECTIVE FENCING

- Fencing type: Contractor's choice.
- Height: 900 mm.
- Erection: On completion of planting.
- Removal: After planting is well established.

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 maintaining suitable cover of mulch
- 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 especially during draught conditions.

755 PLANTING MAINTENANCE - FERTILIZER

- Time of year: March or April.
- Fertilizer: Organic.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Application rate: 25 g/m².

760 PLANTING MAINTENANCE - PRUNING

- General: Prune to promote healthy growth and natural shape.
 - Dead, dying, diseased wood and suckers: Remove.

- Timing: As appropriate to the species.
- Trees: Favour a single central leading shoot.
- Arisings: Remove.

780 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: 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): 50 mm.
- Trees: Remulch.
Depth (minimum): 50 mm.

Q35 Landscape maintenance

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY

105 MAINTENANCE OBJECTIVES

- Location: Existing plantation.
- Duration: 2 year.
- Aims: Enhanced landscape quality.
- Restrictions: -.
- Results: As scheduled.

110 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.

140 CONTROL OF MAMMALIAN PESTS

- Specialist firms: Submit proposals.
- Method: Submit proposals.

156 WATERING

- Supply: Potable mains water.
- Quantity: Wet full depth of topsoil.
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to root zone.
- Frequency: As schedule and when instructed.

170 DISPOSAL OF ARISING

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

180 CHIPPING OR SHREDDING

- General: Not permitted on site.

181 MECHANICAL EQUIPMENT

- General: Minimize.
- Prohibited equipment: -.
- Timing: Use of mechanical equipment allowed between the hours of 10:00 am and 4:00 pm only.

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.

226 TREE STEMS

- Precautions: Do not allow nylon filament rotary cutters and other mechanical tools closer than 100 mm to the stem of any tree.
Operations close to stems: Complete using hand tools.

250 LEAF REMOVAL

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

350 FERTILIZER - SPRING APPLICATION

- Type: Organic.
- Application rate: 60 g/m².

360 FERTILIZER - AUTUMN APPLICATION

- Type: Organic.
- Application rate: 60 g/m².

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING

- Duration: One year.
- Weed control:
 - Method: Keep planting beds clear of weeds by maintaining suitable cover 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.
- Trees: When in leaf, spray crowns during warm weather.
 - Timing: After dusk.
- Watering: When instructed.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER

- Time of year: March or April.
- 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 scheduled 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: Two years after planting, or when no support required...
 - Fill stake holes with lightly compacted soil.

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.

545 PRUNING OF EXCESSIVE OVERHANG

- Timing: As instructed.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: Ensure ground cover plants only just overlap the path edges and do not obstruct path.

550 PRUNING OF EXCESSIVE HEIGHT

- Timing: As instructed.
- Operations: Remove excessive height As instructed.

555 PRUNING TREES AND SHRUBS

- Standard: To BS 7370-4.
- Special requirements: None.

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: Approved specialist contractor.

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.

580 PRUNING FLOWERING SPECIES OF SHRUBS

- 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.

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 scheduled round of replacement planting.

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 proposals.
- Dressing: Slow release fertilizer:
 - Type: Organic.
 - Application rate: As manufacturer's recommendations.

640 THINNING BY REMOVAL OF SURPLUS PLANTS

- Plants to be thinned: Shrub beds.
- Standard: BS 7370-4.
- Timing: When foliage of adjacent plants has begun to touch.
- Roots:
 - Disturbance to adjacent plants: Minimise.
 - Soil: Refill holes with topsoil to leave an even graded surface.
 - Mulch: Maintain mulch as original specification.
 - Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: 4 plants per m².

642 THINNING BY TRANSPLANTING SURPLUS PLANTS

- Plants to be thinned: Shrub beds.
- Standard: BS 7370-4.
- Timing: When foliage of adjacent plants has begun to touch.
- Roots:
 - Disturbance to adjacent plants: Minimise.
 - Soil: Refill holes with topsoil to leave an even graded surface.
 - Mulch: Maintain mulch as original specification.
 - Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: 4 plants per m².

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.

675 DIGGING OVER

- General: Dig over beds. Do not damage existing plants, bulbs and roots.
- Depth of dig (minimum): 75 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: Twice per year.
- 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.

693 MAINTENANCE OF MULCH MATTING/ SHEET MULCHES

- General: Inspect and reattach or refirm mulch mats and sheet mulches.
- Type: Polythene sheeting.
- Remove: After soil surface is fully covered by foliage.

695 FERTILIZING ESTABLISHED TREES AND SHRUBS

- Time of year: As required...
- Type of fertilizer: Organic.
- Application: Spread evenly.
- Rate: 60 g/m².

705 WINTER LEAF REMOVAL

- Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
- Arisings: Distribute evenly over all planting beds.

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 -.

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 if unavoidable.
- 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: Shape crown - reduce height only from 10.5 m to 9 m.

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: 10 %.
- Cutting: Make no cuts of more than 25 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.

865 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.

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.

HARD LANDSCAPE AREAS/FENCING

910 HARD SURFACES AND GRAVEL AREAS

- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
- Repairs to flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
- Stain removal: In accordance with BS 7370-2, table 4.