

CAPITA

CLIENT: SWIP PROPERTY TRUST

**4 ROUNDWOOD AVENUE,
STOCKLEY PARK**

**066267-C7002
REV A**

ISSUED – FEB 2016

STATUS: CONSTRUCTION

**SPECIFICATION
FOR
SOFT LANDSCAPE WORKS**

**TO BE READ IN CONJUNCTION WITH
066267-C7001 HARD LANDSCAPE FINISHES**

This Specification Covers:
Excavating and Filling of tree pits / planting beds
Importation of Topsoil & Substrate
Soil Amelioration
Tree /Shrub/ and Grass Planting
Maintenance

CAPITA

PROPERTY AND INFRASTRUCTURE
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SCHEDULE OF REVISIONS

Revision	Date	Notes
*	19.11.2015	Contract issue
A	24.02.2016	Planning issue

1.0 GENERAL CLAUSES

- a) This specification is to be read in conjunction with the Preliminaries and General Conditions prepared by the architects (ESA)
- b) Where the Specification makes note of 'notification to the Employer' this shall also mean 'notification to the CA'
- c) The materials and workmanship section of this specification have been prepared utilising the National Building Specification framework adapted by Capita.
- d) The design, fabrication and performance requirements specified are intended to establish a minimum performance level and general principles. The Contractor shall be responsible for achieving or surpassing the design criteria for all components.
- e) The Contractor is to make himself fully aware of the location of all existing and proposed service runs.
- f) The Contractor is to make themselves fully aware of the location of all underground obstructions.
- g) The Contractor is to make themselves fully aware of the location of all contamination and capping layers.
- h) All works and materials are to comply with all relevant British Standards (BS)

Contractor shall coordinate with and refer to the Specification contained elsewhere within these Requirements and in particular the following:

- Specifications prepared by ESA
- The Structural Specifications
- The Mechanical and Electrical Engineering Systems

2.0 SCOPE OF WORKS

The scope of works includes, but is not limited to the following items:

GENERALLY

The construction of a prestigious landscape scheme as part of the refurbishment of 4 Roundwood Avenue in Stockley Park. The scheme includes proposed plaza and new planting to enhance the scheme in order to create a legible landscape.

WORK INCLUDES THE FOLLOWING:

- a) Checking and obtaining approval to all areas to be filled, topsoiled and planted to ground.
- b) The supply, carting, placing, ameliorating, spreading and grading of approved imported topsoil to all tree pits and planting areas.
- c) The Contractor should allow for use of craneage and other measures as required to access the site.
- d) Unloading and planting of specified containerised trees, container grown shrubs, hedging plants, groundcover plants, herbaceous plants from approved supply nurseries to site.
- e) Setting out of all areas of shrub and hedge planting in accordance with the contract drawings.
- f) The marking out of tree pits in the positions given on the contract drawings and adjusting as necessary to avoid as-constructed underground services and signage.
- g) The digging of tree pits to the depths and sizes specified subject to their location on site and the various tree sizes to be planted.
- h) The planting and guying of trees in agreed positions, backfilling of all tree pits in hard standing with Urban Tree Soil and installation of specified tree pit accessories ie. flood alert, aeration system etc as detailed on the drawings.
- i) Obtaining approval of final levels before proceeding with the final cultivation, preparation and planting of all areas designated as shrub beds.
- j) The preparation of all areas to receive shrubs, hedging and groundcover plants, and the planting of all the above in the locations and numbers specified to all planted areas.
- k) Mulching of all planting areas as specified.
- l) The Contractor will be required to accommodate lighting installations and paving and make good soiling/shrubs around such fittings installed by others.
- m) The Contractor shall include the installation of automatic irrigation and stand pipes. The contractor to appoint an irrigation specialist and provide for an irrigation tank for watering areas of soft landscape and trees.
- n) Protection of turfing and seeding – possibly with chestnut pale fence and high visibility fencing to be agreed with client.
- o) Tree protection fencing for existing trees.

- p) **The maintenance the ground level landscape for 24 months from the date of practical completion and a guarantee/replacement/Rectification Period to run in parallel with the maintenance period.**

Note: all compost, mulch and soil conditioners brought to site shall be peat free. Any pesticides (herbicides, insecticides, fungicides etc.) shall be kept to the minimum and be non residual.

3.0 SUBMITTALS

- a) Company profile for specialist subcontractors indicating relevant project experiences and qualifications.
- b) A fully detailed and bound maintenance programme as specified for all works up to the end of the Rectification Period, and a revised programme prepared at the end of the Rectification Period for all maintenance works for a period of five years thereafter.
- c) Topsoil samples and analysis for every 500m³
- d) Topsoil certificates of analysis
- e) Washed sand samples for every 200m³ of sand to be used.
- f) Washed sand certificates of analysis
- g) Purchase receipts for compound fertilizer for each delivery confirming quantity
- h) Design and method statement for transporting, lifting, planting and guying of all tree stock.
- i) Any proposed substitutions to specified products or procedures.

4.0 SPECIFICATION CLAUSES

D20 EXCAVATING AND FILLING

To be read with the Preliminaries/ General Conditions.

GENERALLY**151 EXISTING SERVICES**

- Information supplied is to be used for guidance only.
- Check positions and levels of existing services before commencing excavation work.
- Hand dig near existing services.
- Notify statutory authority if services are exposed by excavation and undertake their instructions for reinstatement of marker tapes or protective covers.
- Notify the Employer and statutory authorities of any damage to existing services caused by the works.

195 USE OF CHEMICALS GENERALLY

- The Contractor must use a certified operator, take appropriate safety precautions and comply with the Control of Pesticides Regulations 1986, the conditions of approval for the chemical and any relevant Code of Practice issued by Ministry of Agriculture, Fisheries & Food.
- The Contractor must dispose of empty or unwanted containers and chemicals, including unused diluted tank mixture, in a safe way in accordance with the methods approved by the Control of Pesticides Regulations and relevant Codes of Practice. Disposal will be off site unless prior arrangements have been made.
- The Contractor must notify the Employer of his intention to apply chemicals, the product to be used and the dose rates.
- Any pesticides (herbicides, insecticides, fungicides etc.) shall be kept to the minimum and be non residual.

811 GRADE

- Subsoil to smooth flowing contours and to achieve tolerances specified for the finished level of the topsoil. All stone, wood and other hard materials over 50mm in any dimension shall be removed

840 IMPORTED ENGINEERED TOPSOIL

- Each source of imported topsoil that is to be used shall be independently sampled, analysed and approved prior to delivery. The sampling and testing shall be undertaken by an approved independent soil science consultancy strictly in accordance with the Topsoil Specification, Topsoil Sampling and Topsoil Testing Schedule clauses below.
- Imported Topsoil shall meet the following criteria:
 - Visual Examination: The topsoil shall be free from non-soil material, brick and other building materials and wastes, sharps, hydrocarbons, plant matter, weed seeds or roots, and any other foreign matter or material or substance that would render the topsoil unsuitable for horticultural use.

Parameter	Unit	Lower Limit	Upper Limit
Clay (<0.002mm)	%	5	18
Silt (0.002-0.05mm)	%	5	35

Sand (0.05-2.0mm) Of which at least 45% shall fall into fine to medium sand range	%	60	85
Stones (2-20mm)	%DW	--	15
Stones (>20mm)	%DW	--	0
pH Value	Unit	6.0	7.8
Electrical Conductivity (1:2.5 water extract)	µS/cm	--	1500
Electrical Conductivity (CaSO4 extract)	µS/cm	--	2800
Exchangeable Sodium Percentage	%	--	15
Organic Matter	%	4.0	8.0
Total Nitrogen	%	0.20	--
Extractable Phosphorus	mg/l	26	120
Extractable Potassium	mg/l	240	1200
Extractable Magnesium	mg/l	50	600
Calcium Carbonate	%	--	5

The topsoil shall also comply with all the chemical requirements in relation to contaminated land for this site

- The samples shall be truly representative of the Imported Topsoil to be used. One Composite Sample shall be taken for every 500m³ of topsoil to be used.
- Each composite sample shall be made up of 10 No. sub-samples taken from evenly spaced locations across the stockpile. The sub-samples shall be mixed together and quartered down to form a 10kg composite sample. The composite samples shall be placed in clean plastic bags and labelled with the source reference and date of sampling. The composite topsoil samples shall be tested by a client-approved soil science consultancy prior to written approval. The following parameters shall be requested:
 1. Visual examination to record: Munsell colour, structure, consistency, stone size and shape, presence of any deleterious materials
 2. pH Value
 3. Electrical Conductivity
 4. Particle Size Distribution (clay, silt, 5 sands)
 5. Stone Content (>2mm, >20mm, >50mm)
 6. Total Nitrogen
 7. Extractable Phosphorus, Potassium & Magnesium
 8. Organic Matter
 9. Environmental Parameters
- The Clients representative may ask for additional tests (eg. permeability, porosity), should it be considered necessary.
- The results shall be presented in an interpretive report which shall comment on the suitability of the topsoil for the proposed landscape design. The report shall also provide recommendations to improve the topsoil, where necessary, including compost, fertiliser and lime applications.
- Note: all additional compost, mulch and soil conditioners brought to site shall be peat free.
- Depth (after firming and settlement):
 - 600mm for hedges

- 600mm for trees

842 SPECIAL IMPORTED SOIL FOR TREES IN HARD LANDSCAPE

- Urban Tree Soil
 - Supplier:
Urban Soils Ltd.
High Leigh Estate
Knutsford
Cheshire WA16 0QS
Tel: 01925 757800.
Product reference: Urban Tree Soil.
- Ensure that material is installed in accordance with manufacturer's instructions specifically:
- A minimum of 5 cubic metres of Urban Tree Soil is provided per tree.
- Tree soil is backfilled in layers of 300mm depth and compacted to 1.5-2.0 mega pascels and checked with a penetrometer
- Sample: to be approved by LA
- Depth (after firming and settlement): 600mm

843 IMPORTED SAND MATERIAL FOR TREEPITS

- Lower part of tree pit / planter to be backfilled with washed sand.
- Washed sand shall comply in all respects to the requirements listed below:
 - Visual examination: the sand shall be free from soil materials, brick and other building materials and wastes, sharps, hydrocarbons, plant matter, weed seeds, roots, rhizomes of perennial weeds and any other foreign matter or material or substance that would render the sand unsuitable for the proposed uses.

Parameter	Unit	Lower Limit	Upper Limit
Fines (less than 0.05mm)	%	0	0
Very fine sand (0.05-0.15mm)	%	0	5
Fine sand (0.15-0.25mm)	%	20	30
Medium sand (0.25-0.50mm)	%	45	65
Coarse sand (0.50-1.00mm)	%	0	15
Very coarse sand (1.00-2.00mm)	%	0	0
Stones (2-10mm)	%DW	-	10
Stones (>10mm)	%DW	-	0
Permeability	mm/hr	30	-
pH value	Unit	5.5	7.5
Electrical conductivity (1:2.5 water extract)	µS/cm	-	1000
Calcium carbonate	%	-	2

The sand shall also comply with all the chemical requirements in relation to contaminated land for this site

- The samples shall be truly representative of the sand to be used. One Composite Sample shall be taken for every 200m³ of topsoil to be used.
- Each composite sample shall be made up of 10 No. sub-samples taken from evenly spaced locations across the stockpile. The sub-samples shall be mixed together and quartered down to form a 10kg composite sample. The composite samples shall be placed in clean plastic bags and labelled with the source reference and date of sampling. The composite topsoil samples shall be tested by a client-approved soil science consultancy prior to written approval. The following parameters shall be requested:
 1. Visual examination to record the presence of any deleterious materials
 2. pH Value (1:2.5 soil/water extract)
 3. Electrical Conductivity (1:2.5 soil/water extract)
 4. Particle Size Analysis (clay, silt, 5 sands)
 5. Permeability (falling head method – 2.5kg rammer – standard compaction)
 6. Stone content by % weight (>2mm, >10mm)
 7. Organic Matter (% - RB427 LOI Method)
 8. Calcium carbonate content
 9. Environmental Parameters
- The results of the washed sand testing shall be submitted to the project Landscape Architect for written approval before the sand is imported to site.
- The results shall be presented in an interpretive report which shall comment on the suitability of the washed sand for the proposed landscape design.
- Spread sand evenly over drainage layer to depths as shown on the drawings
- Level and compact
- Finish: must not be laid or compacted in frosty weather. Frozen material must not be used.
- Depth (after firming and settlement):
 - 400mm to tree pits in hard and soft landscape in natural ground

844 IMPORTED GRAVEL FOR TREEPITS IN NATURAL GROUND

- Lower part of tree pit to be backfilled with 5/10 washed gravel
- Spread clean washed gravel (5-10mm) to approved sample, evenly over formation level and compact
- Sample: to be approved by landscape architect
- Depth (after firming and settlement):
 - 200mm to tree pits in hard landscape
- Place suitable Geotextile over installed gravel layer

848 INSPECTION OF IMPORTED TOPSOIL

- The source of material shall be confirmed in writing to the landscape architect prior to delivery to site, and a certificate of analysis from a reputable soil analyst shall be provided for every 500m³ prior to delivery at no extra cost to the Contract. A 5m³ sample of the topsoil shall be submitted to site for landscape architect approval prior to the commencement of bulk deliveries to site.
- Once approval has been given all supplies thereafter shall be derived from the same source and shall conform in every respect to the submitted sample.

849 HANDLING TOPSOIL

- When moving topsoil within the site, and importing to site:
 - If aggressive weeds are present, obtain instructions from the landscape architect before moving topsoil.
 - Select and use plant to minimize disturbance, trafficking and compaction.

- Avoid contamination by subsoil, stone, hardcore, rubbish or material from demolition work.
- Keep different grades of topsoil separate from each other when handling and stockpiling.
- Minimize multiple handling of topsoil. Use topsoil immediately after stripping wherever possible.
- It is essential to provide a structured, uncompacted soil profile for the successful establishment and subsequent growth of trees, shrubs and grass. Adequate soil structure is a key element for healthy plant growth to ensure aeration and drainage within the rootzone. Where heavy machinery and large volumes of soil are transported and stored, soil structure can easily be destroyed by compaction.
- As a general rule, to preserve soil structure and limit compaction, all soils shall only be moved and handled when friable and non-plastic in consistency (i.e. at least 5% below the soil's lower plastic limit), unless authorised by the CA.
- Handle topsoil in the driest condition reasonably possible. Do not handle topsoil during or after heavy rainfall or when it is wetter than the plastic limit of the particular topsoil.

850 IMPORTED SUBSOIL (FOR WILDFLOWER AREAS)

- Subsoil is to be naturally occurring material, excavated from a level immediately below the vegetable topsoil down to a maximum depth of 2.0m from the original ground level.
- The material shall be a friable consistency, free draining, free from extraneous material and pernicious weeds and with a clay content of no greater than 10%. The subsoil must contain no chemical or domestic refuse or pollutants that would be harmful to short term or permanent plant life. The material will have a pH value between 6.5 & 7.5.
- All sources of material shall be stated and a 5m³ minimum sample shall be provided for inspection and approval prior to deliveries to site. All supplies thereafter shall conform to approved samples. A certificate of analysis from a reputable soil analyst shall be provided for every 500m³ prior to delivery at no extra cost to the contract.
- Subsoil shall meet the following permeability requirements:
 - subsoil permeability test
 - in accordance with bs1377: part 6, clause 6:1990
 - range of permeability rate 10⁻⁵ to 10⁻⁷ m/sec.

851 SUBSOIL REQUIREMENTS

- The Contractor will be responsible for checking depths and ripping etc. before proceeding.
- The subsoil shall be broken up or ripped by a suitable machine by the trade Contractor or in the case of small, inaccessible areas by hand fork prior to topsoil spreading.
- The Contractor shall be fully satisfied that all areas designated for planting are free draining after this operation, and will accept full responsibility for any plant losses that may occur due to localised ponding or compaction of subsoil. Under no circumstances must the trade Contractor carry out ripping operations when the soil is in a saturated or "sticky" condition. Any arisings from the works shall be removed from site.
- Any subsoil arising from the landscape operations, such as tree pit excavations, etc, must be removed from site by the Contractor or to other areas on site as directed by the employer's representative.
- Note: The Contractor should make themselves aware of the contamination hotspots and ensure that any excavation does not affect the contamination layer.

860 CONTAMINATION

- Do not use topsoil contaminated with subsoil, rubbish, oil based products, or other materials toxic to plant life. Dispose of contaminated topsoil as instructed by the CA.

861 SPREADING SUB-SOIL

- Over prepared subsoil in layers not exceeding 150 mm and firm each layer with appropriate hand tools before spreading the next. Overall minimum depths after firming and settlement to be as shown in contract drawings.

862 OVER-COMPACTION

- Resulting from spreading operations. Break up soil using suitable machinery or hand operations to the full depth of compaction to the approval of the Landscape Architect.

864 STORAGE HEAPS

- Should the timing of the works necessitate the temporary storage of imported topsoil on or adjacent to the site the following criteria should be observed.
- The storage area shall be in a location agreed with the Construction Manager which is dry, free draining, and free of depressions or hollows in which water could collect, clear of pernicious weeds, and other extraneous matter, and of pollutants.
- It should be protected by temporary fencing from damage by trampling, vehicular access, fly-tipping, pollution by petrol, oil or other toxic substances including cement, hardcore etc. The maximum height of topsoil stacks is 1.5m.
- Topsoil stacks should be evenly graded to 1:2 maximum slopes and should be free from hollows and depressions in which water could collect.
- On no account should stacked soil be compacted or driven on by any machine, or subject to trampling by people.

880 FINISHED LEVELS OF TOPSOIL

- After settlement, unless otherwise stated, to be:
 - 25mm for grass areas above adjoining paving or kerbs.
 - Not less than 150 mm below dpc of adjoining buildings.

890 WEED CONTROL

- Maintain all topsoiled or subsoil areas to be landscaped free from weed growth up to the time of cultivation by the use of a suitable approved herbicide complying strictly with all manufacturer's recommendations.
- Any pesticides (herbicides, insecticides, fungicides etc.) shall be kept to the minimum and be non residual.

911 WATER RETENTION GRANULES

- Manufacturer: Glowcroft Ltd (or similar approved)
- Product: SwellGel
- Depth: to be mixed throughout the growing medium to a depth of 0.5 metre
- Quantity: To manufacturer's recommendations to allow for a 5 year (minimum) capability.
- Details: Williamsport Way, Lion Barn Industrial Estate, Needham Market, Suffolk, IP6 8RW.Tel: 01449 723330

Q30 SEEDING & TURFING

To be read with the Preliminaries/ General Conditions.

GENERALLY

- 100 BS STANDARDS
- The Contractor is to follow the recommendations set down in BS 4428: 1989 Code of Practice for general landscape operations (excluding hard surfaces) unless stated otherwise in this specification.
- 120 CLIMATIC CONDITIONS:
- Carry out the work during appropriate seasons and while soil and weather conditions are suitable for the relevant operations.
- 130 MACHINES AND TOOLS:
- Use only machinery and tools suitable for the site conditions and the work to be carried out. Use hand tools around trees, plants and in confined spaces where it is impracticable to use machinery.
- 140 WATERING
- Water supply will be provided by the Contractor up to Practical Completion of the Contract Works and/or thereafter by the Employer, in each case subject to availability of supply.
 - Ensure the full depth of topsoil is thoroughly wetted.
 - Use a fine sprinkler or oscillating spray
- 150 DROUGHT CONDITIONS:
- If water supply is or is likely to be restricted by emergency legislation:
 - Inform the CA without delay and ascertain availability and additional cost of second class water from a sewage works or other approved source.
 - If turfing has not been carried out, do not do so until instructed.
 - If turfing has been carried out, obtain instructions on supply of water.
- 160 NOTICE TO ARCHITECT:
- Make advance arrangements with the landscape architect to give him/her the opportunity of being present during:
 - Setting out
 - Application of herbicides, particularly where applied adjacent to water bodies
 - Application of fertiliser
 - Seeding or turfing
 - Each site visit during maintenance period.

PREPARATION**205 PREPARATION MATERIALS GENERALLY:**

- Do not use materials containing concentrations of toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Submit to the landscape architect a supplier's certificate for the following materials and obtain approval before ordering or using the materials:
 - all herbicides, soil ameliorants and fertilisers
- The certificate must provide the following information:
 - Source of supply
 - Analysis of content
 - Confirmation of suitability for proposed purpose
 - Confirmation of absence of harmful substances.

231 PEAT:

- Do not use peat or products containing peat.

250 CULTIVATION:

- Break up any compacted topsoil to full depth and ensure soil is free draining
- Reduce top 150 mm of all topsoil to a tilth suitable for blade grading (10 mm down particles).
- Remove undesirable material brought to the surface including stones and clay balls larger than 50mm in any dimension, roots, tufts of grass and foreign matter.

260 GRADING:

- When topsoil is reasonably dry and workable grade to smooth, flowing contours, with falls for adequate drainage, removing all minor hollows and ridges.
- Unless otherwise stated, finished levels to be 25 mm above adjoining paving, kerbs, manholes etc.

261 APPROVAL:

- Obtain approval of landscape architect of all levels and grading before grassing or planting.

273 PRE-TURFING FERTILIZER

- Apply as follows in two equal dressings applied in transverse directions, then work into ground during final cultivations:

Fertilizer for: - Turf areas

Mixture: - Approved pre-turfing fertilizer

Rate: -Manufacturers recommendation based on soil analysis.

280 FINAL CULTIVATION:

- After grading and fertilising carry out further cultivation to reduce top 25 mm to a fine tilth.
- Rake to a true, even, lightly firmed surface, removing all stones and clay balls more than 50 mm in any dimension on general areas and 25 mm on fine lawns.
- Extend cultivation into any adjacent existing grass areas to ensure full marrying in of levels.
- Obtain approval of appearance of prepared soil areas before turfing.

MAKING GOOD DEFECTS/MAINTENANCE (AFTER PRACTICAL COMPLETION)

- 610 **FAILURES OF GRASS:**
- (Before Practical Completion): Bare areas and areas of dead grass which are apparent at Practical Completion will be regarded as defects and must be made good by re-cultivation and re-turfing at times agreed with the landscape architect.
- 611 **FAILURES OF GRASS:**
- (After Practical Completion): Bare areas and areas of dead grass which become apparent within the period stated in the Contract will be regarded as defects due to materials or workmanship not in accordance with the Contract. They must be made good by re-cultivation and re-seeding at times agreed with the landscape architect.
- 620 **GRASS MAINTENANCE:**
- Generally throughout the Rectification Period carry out maintenance of the grass areas. Make visits as necessary to fulfil the requirements of this specification.
 - Carry out provisional/additional works within 14 days of receiving written instruction from the Landscape Architect.
- 621 **MAINTENANCE PROGRAMME:**
- Provide a bound maintenance programme with the Contract Submittals to cover the specification requirements identified in Clauses 623, 640, 660, 670, 675 below.
 - Identify:
 - Number of visits
 - Approximate dates
 - Operations to be undertaken at each visit
 - Chemicals used, location and quantities
 - Machinery and labour.
 - Within the programme provide space for ratification by the landscape architect or Employer's Representative that the work has been completed. Give written notice to the landscape architect or Employers Representative within 7 days to confirm completion of individual maintenance operations. A revised bound maintenance manual is to be prepared by the Contractor at the end of the 24 month defects liability period for the use of the landscape architect or Employer's Representative.
- 623 **GRASS CUTTING**
- Mow with cylinder box mower throughout the maintenance period.
 - Remove and dispose of all arisings off site.
- 640 **TRIM EDGES:**
- Cut edges of grass bordering planted areas, pavings etc.
- 660 **WATERING:**
- Ensure that sufficient water is applied to maintain healthy growth.
- 670 **BRUSHING/SCARIFYING/HARROWING ETC:**
- Brush surface of fine turf areas using whale bone drag to remove worm casts in March during dry weather.
 - Scarify surface by lightly raking using approved fine turf scarifier during dry weather in autumn.
- 675 **CLEANLINESS:**

- Generally: remove arisings from hard surfaces/planting beds, and maintain site in a clean and tidy condition.
- Litter Removal:
 - During the mowing season remove litter/tipped rubbish from grass areas prior to each cut.
 - During dormant season visit the site at weekly intervals and collect and remove all litter/tipped rubbish.
 - Include adjoining fence lines, paving, etc. in litter removal.
 - Collect and remove all litter and tipped rubbish from the whole site at regular intervals during the maintenance period.
- Leaf Collection:
 - Rake and collect fallen leaves from wooded areas during October/November.
 - 4 number visits allowed for, to be scheduled with the Landscape Architect or Employers Representative.

Q31 PLANTING

To be read with the Preliminaries/ General Conditions.

GENERALLY**100 GENERAL**

- The Contractor is to follow the recommendations set down in BS 4428: 1989 Code of Practice for General Landscape Operations (excluding hard surfaces) unless stated otherwise in this specification.
- Remove rubbish, concrete, metal, glass, decayed vegetation, contaminated topsoil, and stones with largest dimensioning exceeding 10mm.
- Contamination includes subsoil, rubble, fuel, lubricants or other substances injurious to plant growth.

100 SOIL CONDITIONS

- Cultivate and plant into moist friable soil that is not waterlogged.
- Do not plant into frozen or snow covered soil without prior approval by the Landscape Architect. Provide adequate additional root protection and prevent planting pit sides and bases and backfill materials from freezing.

120 CLIMATIC CONDITIONS

- Carry out the work while soil and weather conditions are suitable for the relevant operations. Transplant only during the following periods:
 - Deciduous trees, shrubs: 1 November to 31 March.
 - Herbaceous plants: 1st September to 31st October or 31st March to 31st April.
 - Dried bulbs: September/ October
 - Green bulbs: After flowering in spring
- Containerised, pot grown and root balled plants may be planted outside the accepted periods if ground and weather conditions are favourable. Plants moved in warm weather conditions must be sprayed and watered regularly.
- Do not plant when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry. Protect sides of pits from freezing and do not use frozen backfilling material.

130 MACHINES AND TOOLS

- Use only machinery and tools suitable for the site conditions and the work to be carried out. Use hand tools around trees, plants and in confined spaces where it is impracticable to use machinery.

144 WATERING GENERALLY

- Water supply will be provided by the Contractor, up to Practical Completion of the Main Contract Works and thereafter by the Employer, in each case subject to availability of supply.

145 WATERING

- Water as necessary to ensure that establishment and continued thriving of all planting.

150 DROUGHT CONDITIONS

- If water supply is or is likely to be restricted by emergency legislation:
 - Inform the CA, without delay and ascertain availability and additional cost of second class water from a sewage works or other approved source.
 - If planting has not been carried out, do not do so until instructed.
 - If planting has been carried out, obtain instructions on supply of water.

160 NOTICE TO LANDSCAPE ARCHITECT

CAPITA
066267-L7002-CONTRACT

- Make advance arrangements with landscape architect to give him/her the opportunity of being present during:
 - Setting out
 - Application of fertilizer
 - Planting of shrubs
 - Planting of trees into previously dug pits
- 165 PREPARATION, PLANTING AND MULCHING MATERIALS GENERALLY:
- Do not use materials containing concentrations of toxins, pathogens or other extraneous substances harmful to plant, animal or human life, except as specified elsewhere.
- 170 SETTING OUT
- Clearly mark boundaries of planting areas and location of trees and obtain approval before starting work.
- 181 FERTILIZERS AND AMELIORANTS GENERALLY
- Materials for use in the Tree Planting and Preparation of Planting Bed sections are identified in clauses 184-195 below.
 - Quantities of materials are identified in clauses Q31 360 for tree planting and Q31 430 for preparation of planting beds. Amendments to specified quantities due to agreed product substitutes are to be approved by the Architect.
 - Note: all additional compost, mulch and soil conditioners brought to site shall be peat free.
- 184 GENERAL FERTILIZERS
- Compound Fertilizer: Enmag manufactured by:
 - Scottish Agriculture Industries PLC
 - Firth Road
 - Livingston
 - West Lothian
 - Tel: 0506 39281
- 185 GENERAL AMELIORANTS
- Melcourt Land bark soil improver or similar to the landscape architect's approval
- 188 PEAT FREE COMPOST:
- A suitable peat free compost, certified weed free, to the approval of the landscape architect.

SEMI MATURE TREES / SPECIMEN SHRUBS

- 200 ORIGIN OF PLANTS
- The following approved tree nurseries:

Tree stock - Containerised

Deepdale Trees Ltd
 Tithe Farm
 Hatley Road
 Potton
 Sandy Beds SG19 2DX
 Tel: 01767 262 636
 Email: ian@deepdale-trees.co.uk

Mr Matthias Anton

Hillier Nurseries
Ampfield House
Ampfield, Romsey
Hampshire
SO51 9PA
Tel: 01794 368733

Premier Trees
4 Frog Lane
Tunbridge Wells
Kent
TN1 1YT
Tel: 01462 813390

- The following approved nurseries shall be accepted for the supply of the shrubs and climbers :

Shrub and Herbaceous Stock : Container grown

Hilliers Nurseries Ltd.
Ampfield House
Ampfield
Romsey
Hampshire SO51 9PA
Tel: 01794 368733

Mr Steve Johnson

Robin Tacchi Plants
Fen Farm
Fen Lane
Garboldisham
Norfolk IP22 2RL
Tel: 01953-681312

Mr Robin Tacchi

John Woods Nurseries
Woodbridge
Suffolk IP12 4AF
Tel: 01394-383344

Mr Alan Farmer

Johnson Nurseries
Whixley
Yorkshire YO5 8AQ
Tel: 01423-330234

Mr Denis Taylor

Wyevale Nursery
Head Office
Kings Acre
Hereford
HR4 7AY
Tel: 01432 845227

- The Contractor is to name the proposed supply nursery for this stock with the returned tender.

- Adequately and carefully pack and protect against mechanical damage, extremes of temperature and drying out.
- Submit a certificate that plants comply with this specification.

201 CONDITION OF MATERIAL

- All plant material is to be healthy, vigorous and sound transplanted nursery stock, with well formed fibrous roots, well formed heads and to have been grown at, or grown on, the supply nursery for a minimum of one year.
- All plants shall be healthy, vigorous and of normal habit for the species/cultivars and clone specified, and accord fully with the relevant clauses of BS 3936.
- Shrubs shall have a minimum of 4-5 strong, healthy shoots and shall have been pruned back (depending on the species) to produce a sturdy, well balanced & bushy plant.
- Shrubs shall be lined out with sufficient space to encourage unrestricted, sturdy growth and shall not be cramped or overshadowed.
- Sizes indicated by the schedules are the minimum acceptable, measured from soil level in the container to the outer extent of the general crown.
- Shrubs shall be fully hardened and shall have spent at least one growing season and winter period lined out in the external environment. Soft plant material from poly-tunnels or forced under glass will not be acceptable.
- Container sizes listed in the schedule shall be the minimum size acceptable and shall be of rigid plastic or similar. Plants grown in plastic grow bags or similar are not acceptable.
- Plants shall be maintained in prime condition for the duration of the contract growing period and shall be available for inspection by the Architect at all times and on a regular basis to be agreed.
- Plants shall be of the highest quality and free of dead material, fungus, pest & disease.
- At the time of delivery, plants shall be fully established in the containers, so that on removal the entire root ball remains fully intact. However, plants must not, under any circumstances be supplied in a cramped or potbound condition.
- Hedging plants shall be carefully set out at spacings to be agreed with the Landscape Architect and clearly individually numbered and labelled with approved plastic or metal tags.
- Hedge plants will be grown together & clipped at least once in order that on delivery to site the general form & shape of the hedge will be well established. All labels & tags shall be left in place at the time of delivery to site.
- Bulbs: condition to be firm, entire, not dried out or shrivelled, free from pests, diseases and fungus. To be removed from packaging immediately and storage permitted only when necessary in well ventilated, dark, covered, rodent proof container, away from exhausts and fruit, temperature: 18-21°C
- Allow for delivery of all plants to site & provide all necessary protection & shelter during transit/loading in full accordance with the latest relevant British Standard.

210 PREDELIVERY INSPECTION

- All plant stock is to be inspected by the landscape architect before supplying to site, then clearly identified as being reserved for use on this project.
- The Contractor is responsible for monitoring the quality and health of plant material prior to delivery on site.
- The Contractor shall make the arrangements for the Client & Landscape Architect and cover all expenses associated with the inspections, both in the UK and abroad.

220 SUBSTITUTES:

- The tender must be based on plants which are available. If specified plants are unobtainable alternatives may be submitted with tender, stating price and how they differ from the specification. Such substitutions may not be acceptable and submission of further alternatives may be required. Obtain approval before making any substitution.

- If such species as specified in the Plant List cannot be obtained, but species approximating to those described can be obtained give written notice to the landscape architect stating the species which are obtainable. Such notice will be given not later than 3 weeks after the order to commence works, to enable the landscape architect to consider and, if necessary, give effect to any change which may be required and to avoid delay in the performance of the contract.
- As soon as practicable after the receipt of such notice the landscape architect will, if satisfied that the species described in the contract are not obtainable without undue delay, instruct the Contractor either:
 - supply such species as described in the contract at the billed rates, or
 - to supply at the billed rates species of a similar type to be agreed, or
 - to supply species other than those described in his notice at a rate to be negotiated.

230 STORAGE

- Plant material awaiting planting shall not at any time be exposed to drying winds, sun or frost.
- Plant material so stored shall not be subject to any extra cost, and any losses, or damage, or vandalism to the material whilst so stored shall be the sole responsibility of the Contractor.
- Location of stored stock to be agreed with the Landscape Architect.

265 TRANSPORTATION OF PLANTS

- Carefully lift, stack and protect plant material in such a way that breakage or damage by weight of plants above does not occur during loading, transit and unloading. Where open lorries are used to transport plants, each consignment must be completely and firmly covered with opaque sheeting to minimise draughts.
- Carefully prune any roots, branches or shoots which are slightly damaged. If major damage occurs or if plants are found to be inadequately packaged, they will be rejected and replaced at no additional cost

266 TEMPORARY STORAGE ON SITE

- After delivery, if planting cannot be carried out immediately, plants may be stored in their packaging, under cover and away from direct sunlight for a maximum of seven days where daytime air temperatures remain below 10°C.
- For longer periods, or if daytime temperatures are above 10°C, store plants in the following manner at no additional cost:
 - Container grown plants will be stood closely together, upright, on well drained weed free ground.
 - Adequately support trees and other large stock to prevent from blowing over. Water plants as necessary to prevent from drying out.
- Protect plants from theft, damage and adverse weather conditions whilst so stored and make good any losses arising at no additional cost.

267 REMOVAL FROM TEMPORARY STORAGE

- Thoroughly water all plants prior to lifting/ removing from containers. Roots of bare rooted stock must be well moistened before removal from the heeling in medium.
- Do not expose unduly to the atmosphere roots of bare rooted stock. During planting operations the roots should be placed in plastic bags and kept covered until immediately before planting in their final position. If at any time the surface of roots become dry, water immediately.
- Where specified, thoroughly soak roots of bare rooted stock in a container of dip/water solution immediately prior to planting.
- The landscape architect reserves the right to reject any plants not adequately protected in the above manner described.

290 SURPLUS MATERIAL

- Including subsoil, stones, debris, wrapping material and prunings to be removed from site.

PLANTING TREES

309 GENERALLY

- Plant trees upright, unless otherwise instructed, in centre of pit and at original soil depth.
- Pruning: Damage to roots, bark or branches to be removed and wounds over 25mm diameter treated with fungicidal sealant. The landscape architect has the right to reject any tree where pruning has resulted in the loss of the natural form of the tree and where extensive damage may result in the death of the tree.
- Remove non-perishable containers prior to planting.
- Thoroughly water to field capacity immediately after planting using a low-pressure hose.

320 SEMI-MATURE SPECIMEN TREES

- Pits in natural ground:
 - Dimensions: refer to plans
 - **Where services and underground obstructions reduce the tree pits to less than 1.5 metres wide, tree trenches should be allowed for**
 - Break up base of pit to a depth of 400mm
 - Ensure sides of pit are scarified rough and not smeared in clay soil areas.
 - The Contractor shall seek approval of excavated pits prior to planting.
- Backfill material:
 - Where planting in hard landscape, as per clause D20 842, 843, 844
 - Refer to Soiling Plan 066267-L4004
- Support all trees as shown on the drawings with:
 - Concrete deadmen with stainless steel cables.
 - The Contractor is responsible for ensuring that the anchor unit size and site conditions are suitable for the deadmen system
- **The Contractor should note that 20+cm girth trees will require planting by crane and will make full allowance for this item of works, & carry out such works in full accordance with the recommendations of the nominated supplier.**
- The supply of all sundry items such as tree collars etc. will be the responsibility of the Contractor and shall be allowed for.
 - Any damage incurred to existing road surfaces or similar will be made good at the Contractor's expense and to the full approval of the Employer.

322 TREE PIT DRAINAGE LAYER

- As per clause D20 843, 844.

323 TREE PIT IRRIGATION/ AERATION

- Supply and Lay Root Irrigation/aeration system to all tree rootballs.
Manufacturer and reference:
Twin aperture aeration system with fixable caps
Green leaf Ltd,
Croft Road,
Hastings,
TN34 3JU.
Tel: 01424 717 797.
- Leave 50mm projecting above finished soil/mulch level.
- Provide and secure plastic watering end caps (dark brown or dark green) to sit level with finished surface. NB. Caps to be brass where situated in paving

324 TREE PIT ROOT BARRIER

- Supply and Lay Re-Root 2000, cut to depth of treepit. Use re-root joint tape where required.
Manufacturer and reference:
ReR2000, RRJT
Green leaf Ltd,
Croft Road,
Hastings,
TN34 3JU.
Tel: 01424 717 797.

- Ensure that the root barrier is laid to the uppermost soil level to prevent lateral ingress of tree roots.
- In the base of the tree pit ensure that there is a minimum of 15cm overlap between the root barrier membrane and the geotextile filter membrane
- **All treepits near services to be fitted. The Contractor should confirm the treepits where root barrier is required**

325 TREEPIT GEOTEXTILE

- Where root barrier is not installed to the treepit, the Contractor should lay geotextile to all other sides cutting and folding it down to prevent the migration of soil contamination.
- Product: To be confirmed by Contractor

350 TREE PIT FLOOD ALERTS

- Tree pits to have flood alert installed

360 BACKFILLING MATERIAL TO TREEPITS:

- Topsoil: as per clause D20 840.
- Thoroughly mix the following prior to planting the trees:

Semi-mature Trees:

- 70% topsoil
- 20% peat/compost Q31: 188
- 10% sand
- 50g/m² fertilizer Q31: 184
- 20Litre/m³ ameliorants Q31: 185

PREPARATION OF PLANTING BEDS

420 FERTILIZERS AND AMELIORANTS

- For materials specification refer to Q31:181-184.

430 GENERAL FERTILIZER

- Compound fertilizer: SA1 Enmag
- Apply evenly over all planting areas at 55g/m² immediately before cultivation.

450 COMPOST

- Manure: Mushroom compost or other well rotted organic material subject to approval.
- Spread over all planting areas at 1 cubic meter of loosened material per 6m² prior to cultivation.
- **Note: all additional compost, mulch and soil conditioners brought to site shall be peat free.**

460 CULTIVATION

- Break up any compacted topsoil to full depth.
- Within a few days before planting cultivate top 300 mm of all planting beds by rotovating and/or double digging.
- Leave surface regular and even.

- Remove undesirable material brought to the surface including stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass and foreign matter.
- 463 FINAL GRADING
- When topsoil is reasonably dry and workable grade to smooth, flowing contours, with falls for adequate drainage, removing all minor hollows and ridges.
- 465 GENERAL AREAS
- Grade to within +/- 50mm of required levels.
- 466 EDGES
- Unless otherwise stated, finished levels of topsoil, after settlement, to be:
 - 25mm for shrub areas above adjoining paving or kerbs.
 - Not less than 150mm below dpc of adjoining buildings.
- 468 APPROVAL
- Obtain approval from the landscape architect of all levels and grading before planting.

PLANTING SHRUBS / HERBACEOUS PLANTS

- 520 PLANTING GENERALLY
- Before planting remove any non-perishable containers and advise the landscape architect of any damaged roots and obtain instructions.
 - Plant upright or well balanced with best side to front.
 - Carefully backfill packing around evenly spread roots or root ball and heel well in.
 - Water plants thoroughly immediately after planting, using a fine rose.
 - Advise the landscape architect of any damage to shrubs resulting from planting operations and obtain instructions.
 - After planting fork and/or rake soil to a fine tilth with approved cambers and no hollows.
- 522 MULCH
- All shrub planting areas with:
 - Melcourt Industries Ornamental medium grade bark.
 - Bark shall have been rested for 90 days to remove tannin, shall have neutral pH and shall not include sticks, bark strippings, pulp or other timber yard waste.
 - The Contractor will submit 1cubic meter sample for approval.
 - Spread at 1cubic meter of material per 20 m² (50mm depth). Ensure specified thickness is achieved at edges by grading back topsoil before applying mulch.
 - The timing of the above operation shall be such that the ground is moist when the mulch is applied. If necessary apply water to soak ground beforehand.
- 530 SHRUBS / CLIMBERS
- To BS 3936: Part 1.
 - Ground cover to BS 3936 Part 10.
 - Planting holes for shrubs: to be 150mm wider than container/root spread and 400mm deep.
 - Planting holes for Specimen Shrubs: to be at least 300mm wider than root spread and 150mm deeper than root system.
 - Break up bottom of pit to depth of 150mm to podium garden.
 - Finished level to be at original soil mark on shrubs and 25mm above surrounding level to allow for settlement.
 - Planting of climbers: 150 mm clear of supporting structure (e.g. wall) with roots spread outward.
 - Branches: Lightly secured to supports.

540 HEDGES

- Sizes as scheduled.
- Shrubs for hedges: To BS 3936:Part 1, consistent in species, cultivar and clone to ensure a uniform hedge.
- Plant shrubs in trenches large enough to take full spread of roots.
- Break up bottom of pit to depth of 400mm to natural ground.

541 BULBS:

- 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.

560 HERBACEOUS PLANTS

- Well rooted, healthy, hardy and not less than one year of full growth. Sizes as scheduled.
- Plant carefully in generously sized holes with finely broken soil returned around the roots. Lightly firm the soil.
- Break up bottom of pit to depth of 150mm.

580 IDENTIFICATION OF PLANTS

- Attach a plastic label, clearly marked with species and variety, to each/to each group of tree/shrub/plant.

PROTECTION / MAINTAINING / MAKING GOOD DEFECTS

620 WATERING (BEFORE PRACTICAL COMPLETION)

- During establishment of planting ensure that sufficient water is applied to maintain healthy growth.

621 MAINTENANCE BEFORE PRACTICAL COMPLETION

- Maintain plants and planting areas in good condition and in accordance with post completion maintenance requirements, undertaking all necessary operations up to:
 - Practical Completion of this Contract.

630 CLEANLINESS

- Remove soil from all hard surfaces and grassed areas and leave the works in a clean tidy condition at Practical Completion.

640 FAILURES OF PLANTING

- Post Practical Completion maintenance of the planting is to be carried out by the Contractor as specified in this section. Any shrubs/plants/grass which are dead, dying or otherwise defective at the end of the Rectification Period will be regarded as defects due to materials or workmanship not in accordance with the Contract.
- They must be replaced by approved equivalent shrubs/plants/grass at the next suitable planting season unless otherwise instructed. This will not apply if the defects are caused by damage done by another party after Practical Completion.

650 MAINTENANCE OF TREES AND PLANTED AREAS

- Maintain plants and planted areas in good condition up to the end of the Rectification Period
- Maintenance is to include watering, pruning, hedge cutting, weekly dead heading of the seasonal installations & immediate replacement of failed material, application of approved chemicals to combat insect attack, disease and weeds, forking and hoeing of beds, firming plants and stakes, removal of all rubbish. and cleaning of pots.

- Maintenance programme:
 - Make visits as necessary to fulfil the requirements of this specification.
 - Carry out provisional/additional works within 14 days of receiving written instruction from the landscape architect or Employer's Representative.
 - Give written notice to landscape architect or Employer's Representative within 7 days to confirm completion of individual maintenance operations.
- Replacements Inspections:
 - Mid way and at the end of the Rectification Period
- All trees, shrubs and other plants which are dead, have failed to show leaf, or are seen to be seriously retarded in growth to such a degree that they are below the standard originally specified, or which are in an unhealthy condition shall be removed from the site.
- These and others missing due to the Contractor's negligence shall be replaced by the Contractor as soon as planting conditions permit during the normal planting season.
- Replacement:
 - If more than 10% of replacements fail to come into leaf in the following growing season they shall again be replaced at the appropriate season.
- Damage caused by others:
 - The Contractor is to inspect the planting at monthly intervals to ascertain the extent of any losses or damage resulting from vandalism or other causes outside his control.
 - Any such damage shall be immediately brought to the attention of the landscape architect or Employer's Representative, and the Contractor shall carry out such remedial works as instructed.

651 WATERING:

- Ensure that sufficient water is applied to maintain healthy growth of trees/shrubs/plants.
- Spraying: During dry periods thoroughly spray crown of plants with water in early mornings or late evenings, but on no account in bright sunny weather.
- The Contractor should note the positions of the watering point location as noted on the drawings. Access arrangements will need to be made with the Contractor.

652 WEED CONTROL

- Cultivation:
 - Keep all beds clear of weeds by cultivating and use of approved herbicides.
 - Fork over beds as necessary to keep soil loose, with approved cambers and no hollows, and allow for visits as follows:
 March - October: fortnightly (min)
 November - February: monthly (min)

Any pesticides (herbicides, insecticides, fungicides etc.) shall be kept to the minimum and be non residual.

654 MULCHING PLANTING BEDS

- Ensure that ground is moist before mulching, either by timing operation to follow rainfall, or by applying mulch immediately after watering.
- Mulched areas:
 - Top up existing mulched areas with approved bark mulch to maintain depth of 50mm over soil.
- Record materials required, and submit authenticated receipts to the landscape architect or Employer's Representative.
- Allow 1 No. visit annually in April.

655 FERTILIZER

- Top dress with approved compound Fertilizer in accordance with the Manufacturer's recommendations annually in March/April.

656 PRUNING

- Prune plants at appropriate time to remove dead or dying and diseased wood and suckers, to promote healthy growth and natural shape and encourage flowering. Dress cut ends exceeding 25mm diameter with fungicidal sealant.
- Pruning newly planted hedges:
 - Hard prune hedge annually during October - March to shape and/or promote growth.

657 CUTTING HEDGES

- Clip top and sides of established hedge using hand or mechanical shears.

658 PEST CONTROL

- Apply approved pesticides as necessary to control any insect or fungal attack.
- Report to landscape architect or Employers Representative any signs of insect and/or fungal attack, and apply approved pesticides immediately as instructed.
-

Any pesticides (herbicides, insecticides, fungicides etc.) shall be kept to the minimum and be non residual.

659 REFIRMING

- Trees and shrubs, and where appropriate their stakes, to be regularly checked, particularly after high winds, and refirmed and reset to proper grades or upright positions as necessary.
- Trees and shrubs and where appropriate their stakes, to be checked and refirmed and reset to proper grades or upright positions as necessary.

663 CLEANLINESS

- Remove arisings etc. from hard surfaces/planting beds, and maintain site in a clean and tidy condition.
- Litter removal: Remove litter/tipped material from planted areas during each visit for weed control.
- Regularly clean pots/planters.

669 MAINTENANCE INSTRUCTIONS

- Before the end of the Rectification Period submit typewritten and bound maintenance specification for all works for the following five years.

670 FINAL MULCHING

- At the end of the Rectification Period for shrubs mulch the whole surface of planting beds with approved bark mulch to bring all areas to the required depth of 50mm.

END OF SPECIFICATION