

CUNNANE STRATTON REYNOLDS

T3 Residential Development,
Clonburris SDZ
South Dublin County

For CAIRN

Specification for Soft Landscape Works

DATE: October 2022

Table of Contents

- 1.0. GENERAL
- 2.0 PROGRAMME
- 3.0 LANDSCAPING AND PLANTING
- 4.0 MAINTENANCE

APPENDICES

- A FERTILIZERS, HERBICIDES AND MULCHES
- B MAINTENANCE PROGRAMME

| REVISION | DATE | CHANGES MADE |
|----------|------|--------------|
|----------|------|--------------|

1.0 GENERAL

- 1.1. The Contractor is deemed to have visited and inspected the site and surroundings and to have satisfied himself/herself on all matters relating to the nature and extent of the proposed works and contract requirements before tendering.
- 1.2. The Contractor shall, if required, furnish the Employer's Representative with satisfactory evidence that materials are of the origin and quality specified and shall provide samples for approval and for testing by the Employer's Representative who shall have power to reject all materials, which do not correspond with approved samples.
- 1.3. All lorries or trucks calibrated to convey soil and sand, ballast, clinker etc. to or from the site shall carry only that amount calibrated there on.
- 1.4. The Contractor shall appoint a Project Supervisor and prepare a maintenance and health and safety file for the duration of the contract in accordance with the Safety, Health and Welfare at Work: Construction Regulations 2013.
- 1.5. The Contractor shall keep an accurate record of delays due to adverse weather, including description of the weather, type(s) of work affected and number of hours lost. The Contractor shall use all reasonable and suitable aids and methods to prevent or minimise delays during adverse weather conditions.
- 1.6. Where and to the extent that materials, products and workmanship are not fully detailed or specified they are to be of a standard appropriate to The Works and suitable for the functions stated in or reasonably to be inferred from the project documents, and in accordance with relevant good practice.
- 1.7. Materials and workmanship shall comply with current British Standards (BS) and EN standards and all carry a CE label. For products specified to a British or European Standard obtain certificates of compliance from manufacturers when requested. Do not use materials containing concentrations of toxins, pathogens or other extraneous substances, harmful to plant, animal or human life, unless otherwise approved.
- 1.8. This Specification is to be read in conjunction with all drawings and accompanying documentation and appendices.
- 1.9. Products/materials to be new unless otherwise specified.
 - All products/materials are to have a CE label (Certified European).
 - Where a different choice of manufacturer or source is allowed for any particular product, the whole quantity required must be of the same type, manufacturer and/or source unless otherwise approved. The Contractor shall produce written evidence of sources of supply when requested and submit approval for the products within the first 6 weeks post the award of contract or by a date otherwise agreed with the Employer's Representative.
 - Ensure that the whole quantity of each product required is of consistent kind, size, quality and overall appearance.
 - Where consistency of appearance is desirable ensure consistency of supply from the same source. Do not use different colour batches where they can be seen together.
 - If products are prone to deterioration or have a limited shelf life, order in suitable quantities to a programme and use in appropriate sequence. Do not use if there are any signs of deterioration, setting or other unsatisfactory condition.
- 1.10. Handle, store, prepare and use or fix each proprietary product in accordance with its manufacturer's current printed or written recommendations. Inform the Employer's Representative if these conflict with any other specified requirement. Submit copies when requested.
- 1.11. The tender will be deemed to be based on the products specified and recommendations on their use given in the manufacturers' literature current at the date of tender.
- 1.12. If the specified product has been withdrawn by the manufacturer or fundamentally changed, particularly in relation to its use in the work, notify the Employer's Representative immediately.
- 1.13. The Contractor shall check all documentation and the products themselves to ensure compliance with the contract documents or approved alternative. Where different types of any product are specified, check to ensure that the correct type is being used in each location. In particular, check that:

- The sources, types, qualities, finishes and colours are correct, and match any approved samples.
 - All accessories and fixings which should be supplied with the products have been supplied.
 - Sizes are correct. Where tolerances are critical, measure a sufficient quantity to ensure compliance.
 - The delivered quantities are correct, to ensure that shortages do not cause delays in the work.
 - The products are clean, undamaged and in good condition. Products which have a limited shelf life are not out of date.
- 1.14. The Contractor shall protect products and materials from over-stressing, distortion and other damage on site and after installation up to Substantial Completion:
- Keep clean and free from contamination.
 - Prevent staining, chipping, scratching or other disfigurement, particularly of products exposed to view in the finished work.
 - Keep dry to prevent premature setting, moisture movement and similar defects. Where appropriate store off the ground and allow free air movement between stored products.
 - Prevent excessively high or low temperatures and rapid changes of temperature in the products.
 - Protect adequately from rain, damp, frost, sun and other elements as appropriate. Ensure that products are at a suitable temperature and moisture content at time of use.
 - Ensure that storage sheds and covers are of ample size, in good weatherproof condition and well secured.
 - Keep different types and grades of products separately and adequately identified.
 - Keep products in their original wrappings, packings or containers until immediately before they are used. Wherever possible retain protective wrappings after fixing and until shortly before Substantial Completion. Ensure that protective measures are fully compatible with and not prejudicial to the products/materials.
- 1.15. The Contractor's operatives must be appropriately skilled and experienced for the works involved.
- 1.16. Details of all chemicals used shall be submitted to the Employer's Representative prior to its use. Inspection or any other action by the Engineer, Landscape Architect, Architect or Employer's Representative must not be taken as approval of products or work unless the Employer's Representative so confirms in writing in direct terms referring to:
- Date of inspection
 - Part of the work inspected
 - Respects or characteristics which are approved
 - Extent and purpose of the approval
 - Any associated conditions.
- 1.17. Pesticides (including fungicides), shall be used only where suitable to facilitate the required minimum control for the protection of the planting, i.e. minimum % allows damage to planting from any fauna or flora at any one time, and then only suitable products as permitted under legislation or Department of Agriculture Regulations.
- 1.18. Where work is near water, drainage ditches or land drains, comply with the Department of Agriculture, Food and Marine guidelines for the use of herbicides on weeds in or near water courses and lakes. Discovery of any noxious or contaminating weeds, not previously identified, should be reported to the Employer's Representative immediately.
- 1.19. When applying any chemicals:
- Observe all precautions recommended by the manufacturer and remove containers from site immediately after they have been emptied or are no longer required.
 - Operatives must hold a suitable training for the use of chemicals (as defined by the HSA), or work under the supervision of a suitable training person.
- 1.20. The Contractor shall take all necessary precautions to prevent nuisance from smoke, dust, rubbish, vermin and other causes. Burning of materials arising from the work is not permitted on site. The Contractor shall adequately maintain roads and footpaths within and adjacent to the site and keep surfaces and gullies clear of mud and debris. Any damage to roads and footpaths caused by site traffic or otherwise consequent upon the Works must be made good to the satisfaction of the Local Authority or other owner. The Contractor shall bear any costs arising.
- 1.21. The Contractor shall remove rubbish, debris, surplus material and spoil regularly and keep the site and works clean and tidy.
- Ensure that non-hazardous material is disposed of at a tip approved by the waste regulation authorities.

- Remove all surplus hazardous materials and their containers regularly for disposal off site in a safe and competent manner as approved by the waste regulation authorities and in accordance with relevant regulations. Ensure relevant licenses are obtained by The Contractor or Sub-Contractor and retain waste transfer documentation on site.
- 1.22. The Contractor shall provide adequate temporary protection to the whole of his work and shall include temporary coverings and all other measures for protecting the work from damage. Any work damaged by weather, traffic or other causes due to inadequate temporary protection shall be removed and made good at the cost of the Contractor. Temporary fencing shall comply with the relevant specifications for items to be protected, whether it is services, trees, people or structures.
 - 1.23. The Contractor shall prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features which are to remain in position during the execution of the Works.
 - 1.24. Prevent trespass of work people. Take all reasonable precautions to prevent damage to adjoining property. Obtain permission as necessary from the owners if requiring to gain access to or use adjoining property, and pay all charges. Clear away and make good on completion or when directed. Bear the cost of repairing any damage arising from execution of the Work.
 - 1.25. Tools, plant and equipment shall be used in such a way as to avoid damaging or despoiling any structures, road surfaces, drains, grassed areas, fencing, trees, fuel lines, oil, gas, electricity, telephone and water services. Any such damage shall be made good and restored to the satisfaction of the Employer's Representative at the expense of the Contractor.
 - 1.26. Where the Employer is to take possession of any section or part of the Works, such section or part will, after its substantial completion, be able to function separately from the adequate functioning of the remaining Works located elsewhere on the site, and shall be of a finish to allow for suitable public access over the area.

During the execution of the remainder of the Works, ensure that completed Sections or parts of the Works have continuous and adequate provision of services, safe access and egress.
 - 1.27. The Contractor shall provide for all site accommodation and all materials/equipment required to undertake the Works. Equipment may include mobile canteens, w.c.'s, hired plant, vehicle/trailers for transporting plant material, steel containers for secure overnight storage of plants and fencing material. Location of such is to be submitted as part of the tender.
 - 1.28. The Contractor shall provide electricity and all equipment for lighting and power for the Works and make temporary arrangements for distributing about the site.
 - 1.29. The Contractor will be responsible for providing a sufficient supply of clean fresh water for the execution of the Works. Obtain Employer's Representative approval before using a supply other than mains water.
 - 1.30. If the water supply is or is likely to be restricted by emergency legislation, inform the Employer's Representative without delay and ascertain the availability and additional cost of water from alternative sources.
 - 1.31. **Site Clearance**
All rubbish, debris and foreign matter shall be collected and removed off site to a tip by the Contractor. Excavation shall include any material other than bedrock. All excavation is to allow for depositing off site to a tip by the Contractor. The Contractor shall report to the Employer's Representative if they find any contaminants or noxious substances, which are listed under the EPA's directive.

Where replacing / resurfacing existing surfaces and laying temporary surfaces, excavate as required to receive construction materials, remove any soft spots prior to back filling with foundations of crushed stone (NRA spec., clause 804 or as indicated on the drawings) in 150mm compacted layers up to proposed levels. Where required, a vibration platter or roller is to be used in accordance with the engineer's specifications. Existing footpaths, paths, tracks, plinths and kerbs to be removed, where indicated, are to be broken out to be removed and deposited to tip off site. Care should be taken to ensure adequate growing substrate is provided where planting is to occur in areas in-fill.
 - 1.32. **Site Investigation Works**
Where required, the Contractor shall dig site investigation pits as directed by the Employer's Representative. The Contractor shall notify all service authorities and adjacent owners of the proposed works not less than 10

days before commencing site operations. Before starting work check positions of existing services using record drawings, radio-detection devices and site observation.

Take precautions, record locations and follow each service authority's recommendations for work adjacent to existing services. Do not interfere with their operation without consent of the service authorities or other owners. If any services are damaged as a result of the Works, immediately notify the Employer's Representative and the appropriate service authority. Make arrangements for making good without delay to the satisfaction of the service authority or other owner as appropriate.

Replace marker tapes or protective covers disturbed by site operations to the service authority's recommendations.

- 1.33. The Contractor shall backfill pits as directed by the Employer's Representative or in accordance with the works as per the contract documents.

1.34. Setting out, Formation Levels & Earthworks

A setting out drawing will be provided as part of the construction drawings in AutoCAD electronic format only. Check the levels and dimensions of the site against those shown on the drawing and taken from the AutoCAD drawing, and record the results on an AutoCAD electronic copy of the drawings, or noted on the drawings if AutoCAD format is not available. Notify the Employer's Representative in writing of any discrepancies and obtain instructions before proceeding. The Contractor shall be responsible for setting out all areas to the satisfaction of the Employer's Representative. All discrepancies should be raised prior to undertaking the Works.

For setting out of planting, the contractor shall agree an approach to implementation of planting plans where mixes and random groupings proposed and prepare sample arrangement or seek guidance if necessary.

1.35. Appearance and Fit:

The Contractor shall arrange the setting out, erection, juxtaposition of components and application of finishes to ensure satisfactory fit at junctions. No practically or visually unacceptable changes in plane, line or level shall occur and a true, regular finished appearance is required.

Wherever satisfactory accuracy, fit and/or appearance of the work are likely to be critical or difficult to achieve obtain approval of proposals or of the appearance of the relevant aspects of the partially finished work as early as possible.

- 1.36. Upon completion of all works maintenance manuals and warranties for all furnishings, fixtures and finishes are to be included in the overall Operation and Maintenance Manual compiled as part of the Health and Safety File. Such manuals shall include: supplier of replacement fixings, treatments and parts; cleaning requirements; supplier of replacement item/ furnishing; and RAL colours for painted finishes.

2.0 PROGRAMME

The Landscape Contractor will carry out all preparation and planting works to reflect a phased handover of completed areas as agreed with the main contractor.

3.0 LANDSCAPING AND PLANTING

3.1 Topsoil and growing media

3.1.1 PRELIMINARY REQUIREMENTS:

- Submit programme before execution of works.
- Samples: All samples or changes to products to be submitted within 2 weeks of the commencement of the contract.

3.1.2 WORKMANSHIP

- Standard: All works are to be carried out in accordance with BS 4428 and of a consistence supplied/ applied in accordance with BS 3882 & 8545.
- Operatives: Contractor shall have the appropriate skills and experiences for the type of work, have appropriate training and be a competent landscape Contractor with ALCI accreditation or equivalent.
- Site staff responsible for supervision and control of work: minimum 15 years' experience.

3.1.3 GRADING SUBSOIL

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.
- Definition: Sub-soil to mean soil as described in BS 8601.

3.1.4 SUBSOIL SURFACE PREPARATION

- General: Excavate and/ or place fill to required profiles and levels.
- Loosening disturbed/compacted ground prior to spreading of topsoil:
 - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
 - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
 - Rock and chalk subgrades: Lightly scarify to promote free drainage if below subsoil level. If below topsoil level, break up to 500mm depth.
- Stones: Immediately before spreading topsoil, remove stones larger than 50 mm. Remove Arisings, contaminants and debris and Builders rubble.

3.1.5 INSPECTING FORMATIONS

Give notice: Before spreading topsoil for lawn areas and planting beds. Notice period of 5 days.

3.1.6 PREPARATION OF UNDISTURBED TOPSOIL

- Standard: In accordance with BS 4428.
 - Grading and cultivation: To suit cultivation operations specified.
- Hard ground: Break up thoroughly.
- Clearing: Remove visible roots and large stones with a diameter greater than 50mm.
- Areas covered with turf or thick sward: Plough or dig over to full depth of topsoil – minimum depth 450mm.
- Fallow period (minimum): 2 weeks.

Weed control: At appropriate times treat with a suitable translocated non-residual herbicide.

3.1.7 SURPLUS TOPSOIL TO BE REMOVED

Generally: Remove from site topsoil remaining after completion of all landscaping work to designated CCC site less than 20km from the Site.

3.1.8 IMPORTED SUB-SOIL

Standard: To BS 8601 2013

Grade: Multi-purpose sandy loam.

Source: to be approved. Note: Requirements for careful harvesting and storage of material prior to supply / use.

Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 8601 2013 may be requested.

3.1.9 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: sandy loam.
- Source: to be approved.
- Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 3882, clause 6 and table 2.
- Additional analyses: N/A.

3.1.10 STRUCTURAL TREE SOIL

- For constructed tree pits in paved areas
Structural Soil consisting of crushed hard stone aggregate, clay loam and Gelscape hydrogel in the following proportions by volume. Total moisture at mixing should be 10% (AASHTO T-99 optimum moisture).

- 80% Crushed stone (granite or hard limestone) graded from 20 – 40mm highly angular with no fines.

Grading (PSD to BS 1377-2:1990)

| Sieve Size | % passing (by mass) |
|------------|---------------------|
| 40mm | 90-100 |
| 28mm | 20-55 |
| 20mm | 10 |

A ratio of nominal maximum to nominal minimum particle size of 2 is required

Acceptable aggregate dimensions should not exceed 2.5:1.0 for any two dimensions chosen. Minimum 90% with one fractured face, minimum 75% with two fractured faces.

Resistance to fragmentation, LA <40%

Magnesium sulphate soundness: <18%

- 20% Clay loam (gravel<5%, sand 25-30%, silt 20-40%, clay 25-40%), based on USDA classification system.
Uniform composition, free of stones greater than 12.5mm, lumps, roots, debris or other extraneous matter; it shall not contain substances harmful to plant growth or human health.
Nutrient levels N 0.1-0.3%; P 16-100mg/l; K 120-900mg/l. Methods of analysis in accordance with BS 3882:2015, unless otherwise stated
pH: 6.0 – 7.6
Soluble salt; Less than 1.0 millimho per cm
Cation exchange capacity: > 10
Carbon:nitrogen: < 33:1
- Soil Organic matter should range between 2% and 5%.
- Hydrogel, a potassium propenoate- propenamide copolymer added, if required, at 0.03kg dry weight per 100kg crushed stone or as the manufacturers recommendations, to prevent separation of the stone and soil during mixing and installation.

The soil should be mixed using suitable equipment to provide a uniform and consistent material and should be laid in 150-200mm consolidated layers – See Structural Tree Pit Detail. The structural soil should not leach pollutants into the surface water.

Sources: CU (Cornell University) Structural Soil from Landtech Soils (www.Landtechsoils.ie) or equivalent

3.1.11 BIO-RETENTION SOIL FOR SUDS FEATURES

This will be a sandy loam conforming to the following specification:

- clay and silt (< 0.063 mm) < 5%
- fine sand (0.063–0.2 mm) < 20%
- medium sand (0.2–0.6 mm) 35% to 65%
- coarse sand (0.60–2.0 mm) 50% to 60%
- fine gravel (2.0–6.0 mm) < 10%

The filter medium should be well-graded, and the composition should contain limited particle size range.

Organic matter content should be 3–5% (w/w).

pH: 5.5–8.5 (1:2.5 soil/water extract)

Electrical conductivity (EC) should be < 3300 µS/cm (1:2.5 soil/CaSO₄ extract)

Major plant nutrients:

- Total nitrogen should be 0.10–0.30%
- Extractable phosphorus should be 16–100 mg/l
- Extractable potassium should be 120–900 mg/l

(Methods of analysis in accordance with BS 3882:2015, unless otherwise stated.)

Saturated hydraulic conductivity (permeability)

The saturated hydraulic conductivity should be between 100mm/h and 300mm/h. This should be checked in-situ, using the ring infiltration test method as described in BS EN ISO 22282-5:2010. (Note that where large volumes of engineered soil are to be used, it is wise to test the hydraulic conductivity before delivery to site using a laboratory test. ASTM F1815-06 is commonly used in other applications such as sports pitches).

Porosity

The total porosity should be > 30% when tested in accordance with BS 13722-2:1990.

The contractor will provide certification of soil tests confirming supplied soil conforms to the above specification.

NB: Additional ameliorants for planting operations are set out in the planting specification.

3.1.12 LIGHTWEIGHT GREEN ROOF SOILS

To be Enrich Extensive Roof Mix (or equivalent) Manufactured to FLL Guidelines
From Enrich Environmental Limited, Larch Hill, Kilcock, Co. Meath, Ireland, W23 W9DN
T: +353 1 610 3672 E: info@enrich.ie www.enrich.ie

Conforming to the following analysis:

| | |
|---|--|
| Range of Use | Enrich Extensive Roof Soil is a specially tailored soil mix designed for use on roof gardens that feature grasses and other blanket foliage. |
| Material | Recycled crushed brick, aggregates and Enrich Compost. |
| Purity | Sustainable free from physical and chemical contaminants and pathogens. |
| Particle Density | ≤2.9 |
| Porosity | ≥20% |
| Soil Texture | Loamy Sand |
| Moisture Content | 8-15% |
| Conductivity | <3300 µS/cm |
| Saturated Hydraulic Conductivity | Average 1.3×10^{-4} m/s (468mm/hr) |
| Plant Available Nutrient Values | Average value |
| Total Nitrogen | 0.2-0.3 %w/w |
| Available Phosphorous | 40-70 mg/L |
| Available Potassium | 200-700 mg/L |

| | |
|---------------------------------------|-------------------------|
| Available Magnesium | 100-200 mg/L |
| Available Calcium | 200-900 mg/L |
| Available Copper EDTA | 1.5-5 mg/L |
| Available Zinc EDTA | 10-20 mg/L |
| Available Sodium | 40-70 mg/L |
| Available Sulphate | 200-1000 mg/L |
| Hot Water-Soluble Boron | 1-5 mg/L |
| Organic Matter (LOI) | 3-7 %w/w |
| pH Value | 6.5 – 8.5 |
| Carbon : Nitrogen Ratio | 10-20 : 1 |
| Bulk Density | ≤1.1 g/cm ³ |
| Bulk Density at Field Capacity | ≤1.35 g/cm ³ |

3.1.13 COMPOST

- Standard: In accordance with PAS 100.
- Supplier: Submit proposals.
- Product reference: To be agreed.
- Type: Sanitized and stabilized compost.
- Horticultural parameters:
- pH (1:5 water extract): 5.5 – 6.5.
- 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.
- Location: shrubs, hedge, planting areas and trees.

3.1.14 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.

3.1.15 HANDLING TOPSOIL

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

3.1.16 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): 300 mm.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

3.1.17 SPECIFIC TOPSOIL/GROWING MEDIUM REQUIREMENTS

- Semi-Mature & Standard Trees – Ref detailed drawings.
- Hedges – Minimum 450mm depth X 700mm wide topsoil.
- General and ornamental shrub planting areas – 400mm depth of topsoil – except under trees.
- Ornamental grasses and herbaceous planting areas – 400mm depth of topsoil – except under trees.
- Beneath tree canopies – maximum 200mm of topsoil over lightly cultivated (100mm) existing soil.
- Wildflower Meadow Areas – Minimum 50mm of low nutrient non-clay sub-soil over free draining substrate.
- Constructed tree pits in Paved Areas (Stockholm System) – See Drawing No 15373/3/902

3.1.18 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Below adjoining paving or kerbs:
 - For grass seeded areas – flush.
 - For planting beds –50mm below.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.

3.1.19 DOCUMENTATION

- Timing: Submit at handover.
- Contents:
 - Full description of all soil components.
 - Record of source for all soil components.
 - Analyst's report for each test carried out.
 - Record drawings showing the location and depth of all soils by type and grade.
 - Supplier's declaration of compliance with BS 3882.
 - Number of copies: 3.

3.2 SEEDING/TURFING

3.2.1 GENERAL INFORMATION/REQUIREMENTS

3.2.1.1 PRELIMINARY REQUIREMENTS:

- Submit programme before execution of works.
- Samples: All samples or changes to products to be submitted within 2 weeks of the commencement of the works or within reasonable time to allow for changes to be made prior to practical completion.

3.2.1.2 WORKMANSHIP

- Standard: All works are to be carried out in accordance with BS 4428: 1989 and BS3936: 1998.
- Operatives: Contractor shall have the appropriate skills and experiences for the type of work, have appropriate training and be a competent landscape Contractor with ALCI accreditation or equivalent.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods to be used.

3.2.1.3 SEEDED AND TURFED AREAS

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

3.2.1.4 CLIMATIC CONDITIONS

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

3.2.1.5 WATERING

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

3.2.1.6 WATER RESTRICTIONS

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

3.2.1.7 NOTICE

- Give notice before:
 - Setting out.
 - Applying herbicide.
 - Applying fertilizer.
 - Preparing seed bed.
 - Seeding or turfing.
 - Visiting site during maintenance period.
 - Period of notice: 5 working days for setting out, all others 2 working days.

3.2.1.8 SETTING OUT

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

3.2.2 PREPARATION

3.2.2.1 PREPARATION MATERIALS

- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.

3.2.2.2 HERBICIDE FOR ALL AREAS

- No use of herbicides like glyphosate or other equivalent for suppressing perennial weeds is allowed.

3.2.2.3 SOIL AMELIORANT/CONDITIONER

- Type: Alginure Granulate 'S'
- Reference/ Description/ Grading: see drawings.
- Samples: n/a
- Application rate: see drawings.
- Timing: Apply prior to cultivation.

- Product: Submit details.

3.2.2.4 PEAT

Peat or products containing peat: Do not use.

3.2.2.5 CULTIVATION - GENERAL

- Compacted topsoil: Break up to full depth.
- Soil ameliorant/ Conditioner/ Fertilizer: Fully incorporate into topsoil to a depth of 150mm.
- Tilth: Reduce topsoil to a tilth suitable for blade grading:
 - Depth: 50mm.
 - Particle size (maximum): 30mm.
- Material brought to the surface: Remove stones and clay balls larger than 30 mm in any dimension, roots, tufts of grass, rubbish and debris.

3.2.2.6 GRADING

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
- Hollows and ridges: Not permitted.
- Finished levels after settlement: level with adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 150mm.
- Give notice: If required levels cannot be achieved by movement of existing soil.

3.2.2.7 FERTILIZER FOR ALL PLANTING AREAS

- Type: 9:7:7 NRK slow release granules, or ratio suitable for the time of year when seeding.
- Manufacturer: submit details.
- Product reference: submit details.
- Application: Before final cultivation and three to five days before planting.
- Rate: Spread evenly at 100 gms/sq.m or suitable for product and time of year when planting.

3.2.2.8 FERTILIZER FOR ALL GRASSED AREAS

- Types: Apply both:
 - Superphosphate with a minimum of 18% water soluble phosphoric acid.
 - A sulfate of ammonia with a minimum of 20% nitrogen.
- Application: Before final cultivation and 3 to 5 days before seeding/turfing.
- Coverage: Spread evenly, each type at 70g/m², in transverse directions.

3.2.2.9 FINAL CULTIVATION

- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
 - Depth: 50mm.
 - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
 - Remove surface stones/earth clods exceeding:
 - General areas: 30mm.
 - Fine lawn areas: 10mm (play space area only).
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

3.2.2.10 MEADOW AREAS – GROUND PREPARATION

- Prepare a seeding bed of weed free soil to a depth of 100mm (composed of 50% topsoil: 50% subsoil well mixed prior to spreading) over a prepared free draining subsoil base preformed to required levels. leave for 10 days for any weed growth to occur before spraying any emergent weed growth with glyphosate herbicide;
- Allow sufficient time for herbicide to react before raking off any dead plants;
- Cultivate soil to a crumbly/friable texture before grading to achieve smooth flowing contours.

3.2.3 SEEDING

3.2.3.1 GRASS SEED

- Mixture: see drawings for grass seed mixtures.

3.2.3.2 QUALITY OF SEED

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

3.2.3.3 SOWING

- General: Establish good seed contact with the root zone.
- Method: by hand or by petrol drive machine. If to be by Hydraulic submit method statement.
 - Distribution: to rate specified.

3.2.3.4 GRASS SOWING SEASON

- Grass seed generally: Optimum dates April or November. Outside March – May and October - December months seeding mixes to be adjusted accordingly.

3.2.3.5 MEADOW GRASS SOWING SEASON

- Meadow seed generally: April or September

3.2.3.6 MEADOW AREAS – SEEDING

- Sow wildflower seed by evenly hand broadcasting only when ground conditions are suitably dry;
- Rake entire area ensuring seeds are lightly covered with soil and out of reach of birds before lightly rolling seed bed firm ensuring seed contact with soil.

3.2.4 PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS OF GRASSED AREAS

3.2.4.1 MAINTENANCE

Duration: Carry out the operations in the following clauses from completion of planting until substantial completion.

3.2.4.2 FAILURES OF SEEDING/ TURFING

- Defective materials or workmanship: Areas that have failed to thrive.
 - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeded/ returfing.
 - Timing of making good: The next suitable planting season.

3.2.4.3 MAINTAINING AMENITY GRASSED AREAS

- Maximum height of growth at any time: 75 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 35 mm.
 - Arisings: Spread evenly over cut areas.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
 - Arisings: Remove.
- Stones brought to the surface: Remove regularly.
 - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
 - Watering: When instructed.

3.2.4.4 MEADOW GRASSED AREAS

- Preparation: Before each cut remove all litter and debris.
- Height and frequency of cut in first growing season:
 - Time of first cut: April, July/August or September.
 - Height of first cut: 150mm.
 - Frequency of subsequent cutting (min.): 1 in 1st year. Mown strip along paths 5 cuts /per year.
 - Height of growth permitted (maximum): N/A.
- Height and frequency of cut in second growing season:
 - Time of cut: Year: Year 2 = 2 cuts in spring and autumn. For mown strip along cycle paths 5 cuts per year.

- Height of cut: 150mm.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
 - Arisings: Remove.
- Watering: N/A.
- Other: See suppliers specifications included in the appendix of this document.

3.3 EXTERNAL PLANTING

3.3.1 GENERAL INFORMATION/ REQUIREMENTS

3.3.1.1 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: Remove remnants of old furniture and CCTV.

3.3.1.2 SOIL CONDITIONS

- Soil for cultivating and planting: Moist, friable and (except 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.

3.3.1.3 CLIMATIC CONDITIONS

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

3.3.1.4 TIMES OF YEAR FOR PLANTING – subject to adjustment to reflect preferred sequencing and mitigation requirements of late planting

- Deciduous trees and shrubs: November to late March.
- Conifers and evergreens: November to late March.
- Container grown plants: At any time if ground and weather conditions are favourable.
 - Watering and weed control: Provide as necessary.
- Dried bulbs, corms and tubers: September/ October.
- Green bulbs: After flowering in spring.

3.3.1.5 MECHANICAL TOOLS

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

3.3.1.6 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.

3.3.1.7 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.

3.3.1.8 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: 5 working days for setting out, all others 2 working days.

3.3.1.9 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.
- Give notice: before ordering or using.

3.3.2 PLANTS/ TREES

3.3.2.1 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: Irish seed provenance where feasible. Origin and Provenance have the meaning given in the National Plant Specification.

3.3.2.2 PLANTS/ TREES - SPECIFICATION CRITERIA

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

3.3.2.3 BULBS/ CORMS/ TUBERS

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

3.3.2.4 SEMI-MATURE TREES

- Standard: Prepare roots and transplant to BS 8545.
- Backfilling material: As per drawing.
- Support: Stake as per drawing detail.
- Protection: Wrap trunks with willow protection and leave on for at least two summers.

3.3.2.5 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.

3.3.2.6 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: All ash tree must be supplied with relevant passports and Dept. Agriculture, Food and Marine (DAFM) inspection cert.

3.3.2.7 PLANT/ TREE SUBSTITUTION

- For 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.

3.3.2.8 PLANT HANDLING, STORAGE TRANSPORT AND PLANTING

- Standard: To The Horticultural Trade Association (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.

3.3.2.9 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.

3.3.2.10 PROTECTION OF EXISTING GRASS

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

3.3.2.11 SURPLUS MATERIAL

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

3.3.3 PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

3.3.3.1 HERBICIDE TO CLEAR OVERGROWN BEDS

Herbicides: Do not use.

3.3.3.2 PEAT

Peat or products containing peat: Do not use.

3.3.3.3 COMPOST

All planted areas: hedges, shrub and groundcover areas, ornamental grass and herbaceous / bedding areas, including feature shrubs and trees within planted areas.

- Locations: All planting areas.
- Type: Sanitized and stabilized compost.
- Manufacturer/ Supplier and product reference: Contractor's choice.
- Standard: To PAS 100.
- Horticulture parameters:
 - pH (1:5 water extract): 5.5-6.5.
 - 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: 50mm thick layer.
- Other requirements: Submit 5kg sample before ordering.

3.3.3.4 FERTILIZER FOR SHRUBS, HEDEROWS AND TREES

- Type: 9:7:7NPK slow release granules.
- Manufacturer: submit details.
 - Product reference: contractor's choice.
- Application: cultivated into topsoil before planting or during planting.
 - Rate: Spread evenly at rate indicated on the drawings.

3.3.3.5 ANTIDESICCANT FOR CONIFERS/ EVERGREENS

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

3.3.3.6 CULTIVATION

All planted areas: hedges, shrub and groundcover areas, ornamental grass and herbaceous / bedding areas, including feature shrubs and trees within planted areas.

- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2-8 mm.
 - Depth: as specified on drawings.
 - Timing: Within a few days before planting.
 - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 50mm above below paving or kerbs.
- Undesirable material brought to the surface: Remove visible weeds, roots and large stones with any dimension exceeding 30mm.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.
- As part of the cultivation process incorporate applied 50mm compost layer, as specified above, thoroughly into cultivated depth.

3.3.4 PLANTING SHRUBS/ HERBACEOUS PLANTS/ BULBS

3.3.4.1 PLANT LAYOUT AND SPACING TO ALL BEDS

- As indicated on Drawings

3.3.4.2 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: See drawing details.
- Backfilling material: Reuse excavated material.

3.3.4.3 PLANTING BULBS/ CORMS/ TUBERS

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

3.3.4.4 HEDGES

- Shrubs for hedges: Consistent in species, cultivar and clone to ensure a uniform hedge.
- Planting: In trenches 700mm wide X 400mm deep to take full spread of roots. Set out plants evenly.
- Form: Min. 5-7 breaks no higher than 100mm from base.

3.3.4.5 FENCING SUPPORT FOR NEW HEDGES

- Type: Timber post and general pattern wire mesh.
- Planting: In trenches 700mm wide X 400mm deep to take full spread of roots. Set out plants evenly.
- Form: Min. 5-7 breaks no higher than 100mm from base.

3.3.4.6 AFTER PLANTING

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Standard: To BS 1722-2.
- Height: 800mm.
- Timing: Before planting hedge.
Support: Lightly secure hedge plants to fence wires at appropriate intervals.

3.3.4.7 MULCHING PLANTING BEDS

- Material: Medium grade bark mulch.
 - Purity: Free of pests, disease, fungus and weeds.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: 75 mm depth.
- Finished level of mulch: 25 mm above adjacent grassed or paved areas.

3.3.5 PLANTING TREES

3.3.5.1 ANTIDESICCANT FOR CONIFERS/ EVERGREENS

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

3.3.5.2 TREE PITS

- Sizes: As drawings

3.3.5.3 TREE PIT ACCESSORIES

- Locations: All trees.
- Manufacturer: Contractor's choice.
- Product reference: Submit proposals.
- Type: Perforated plastics irrigation pipe, 50 mm diameter, in circle above and around sides of rootball, with plastics cap.

3.3.5.4 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: 80 mm.
 - Position: Lay around perimeter of pit within aggregate layer.
 - Discharge: Connect to road gully as drawing.
- Geotextile filter:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Position: Lay over aggregate before installing tree or backfill.
 - Completed pits: Test for free drainage before planting.

3.3.5.5 STAKING GENERALLY

- Stakes: Round softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
 - Preservative treatment: Not required.
- Nails: To BS 1202-1, galvanized, minimum 25mm long and with 10 mm diameter heads.
 - Stake size (minimum): 80mm diameter.

3.3.5.6 LONG SINGLE STAKING

- Staking: Drive stakes vertically at least 500mm into bottom of pit on either side of tree position before planting.
 - Backfilling: Consolidate material around stakes.
- Height of stakes: Cut off just below lowest branch of tree or 1.2m above ground.
- 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.

3.3.5.7 TRIPLE/ DOUBLE STAKING

- Staking: Drive stakes vertically at least 500 mm into bottom of pit on either side of tree position before planting.
 - Backfilling: Consolidate material around stakes.
- Height of stakes: Cut to approximately 400-600mm above ground level, suitable so it does not interfere with canopy.
- Ties: Adjustable ties.
- Tying: Secure tree firmly but not rigidly to cross bar.

3.3.5.8 TIES

- Type: Adjustable with buckle and rubber stopper, to allowing for growth and to prevent chaffing.
- Material: Recycle rubber or polycarbonate.
- Durability: To be fit for purpose for min. 3 year.
- Product: Contractors choice.

3.3.5.9 MULCHING TREES

- Material: Medium grade bark mulch.
 - Purity: Free of pests, disease, fungus and weeds.
- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: As indicated on drawing details.

3.3.6 PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS OF PLANTING

3.3.6.1 MAINTENANCE

Duration: Carry out the operations in the following clauses from completion of planting until substantial completion.

3.3.6.2 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: In accordance with an agreed defects rectification programme.

3.3.6.3 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.

3.3.6.4 PLANTING MAINTENANCE GENERALLY

- Weed control: Maintain weed free area around each tree and shrub.
 - Diameter (minimum): The larger of 1 m or the surface of original planting pit.
 - Keep planting beds clear of weeds: By use of suitable herbicides.
- Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards.

- Broken or missing items: Replace.
- Rubbing: Prevent.
- Ties: Adjust to accommodate growth.
- Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
- Frequency of checks: At each scheduled maintenance visit.
- Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
- Trees: Spray crown when in leaf during warm weather.
 - Timing: After dusk.
 - Watering: When instructed.

3.3.6.5 PLANTING MAINTENANCE – FERTILIZER

- Time of year: March or April.
- Fertilizer: Slow release.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Application: Evenly spread, carefully incorporating below mulch materials.
 - Application rate: To manufacturer's recommendations.

3.3.6.6 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.

3.3.6.7 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 a schedule of any ongoing maintenance problems experienced during the defects liability period.

3.3.6.8 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.

4.0 MAINTENANCE

4.1 GENERALLY

4.1.1 PRELIMINARY REQUIREMENTS:

- Submit programme before execution of works.
- Period: for soft landscaping 12 months after substantial completion.

4.4.1 WORKMANSHIP

- Standard: All works are to be carried out in accordance with BS 4428: 1989, BS 7370-4:1993 and BS7370-1:1991.
- Operatives: Contractor shall have the appropriate skills and experiences for the type of work, having appropriate training and be a competent landscape Contractor with ALCI accreditation or equivalent.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods to be used.

4.4.2 MAINTENANCE OBJECTIVES

- Location: To all areas indicated on the drawings.
 - Duration: for the length of the defects period.
- Aims: To ensure the good establishment of planting and grass.
- Restrictions: Working in the facility of a public space, requiring specific control measure.
- Results: A well-established planting area with plants in a healthy and vigorous growing condition and no more than 10% failures.

4.4.3 NOTICE

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

4.4.4 REINSTATEMENT

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

4.4.5 WATERING

- Supply: Potable mains water.
- Quantity: Wet to field capacity.
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to root zone.
- Frequency: As necessary for the continued thriving of all planting.

4.4.6 WATER RESTRICTIONS

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

4.4.7 DISPOSAL OF ARISING

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

4.4.8 CHIPPING OR SHREDDING

General: Not permitted on site.

4.4.9 MECHANICAL EQUIPMENT

- General: Minimize.
- Prohibited equipment: N/A.
- Timing: to be agreed.

4.4.10 LITTER

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

4.4.11 CLEANLINESS

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

4.5 GRASSED AREAS

4.5.1 MAINTENANCE OF GRASSED AREAS

- General: Maintain turf in a manner appropriate to the intended use.
- Soil and grass:
 - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
 - Waterlogging and compaction: Prevent.
 - Damage: Repair trampling, abrasion or scalping.
- Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
 - Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

4.5.2 MAINTENANCE OF GRASSED AREAS

- Standard: To BS 7370-3. Carry out maintenance appropriate to each category of turf, as follows:
 - Objectives: To BS 7370-3, table 6.
 - Programme: To BS 7370-3, clause 11.
 - Mowing methods: To BS 7370-3, table 3.

4.5.3 GRASS CUTTING GENERALLY

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

4.5.4 TREE STEMS

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

4.5.5 LEAF REMOVAL

- Operations: Collect fallen leaves.
- Disposal: Remove from site for recycling.

4.5.6 MAINTAINING PERENNIAL WILD FLOWERS AND MEADOWS

- Agree a bespoke maintenance programme for selected wild flower and meadow mix
- Preparation: Before each cut remove all litter and debris.
- Height and frequency of cut in first growing season:
 - Time of first cut: April, July/August or September.
 - Height of first cut: 150mm.
 - Frequency of subsequent cutting (minimum): 1 in 1st year, for mown strip along cycle paths 5 cuts per year.
 - Height of growth permitted (maximum): N/A.
- Height and frequency of cut in second growing season:
 - Time of cut: Year: Year 2 = 2 cuts in spring and autumn. For mown strip along cycle paths 5 cuts per year.
 - Height of cut: 150mm.
- Trimming: All edges.
 - Arisings: Remove.

4.5.7 LEVELING HOLLOWES AND BUMPS IN TURF

- Standard: To BS 7370-3, clauses 12.4 and 12.5.

4.5.8 SPOT WEEDKILLING IN ROUGH GRASS AREAS

- Herbicide: as approved.
- Operations: Spot treat noxious weeds.

4.5.9 FIRST CUT OF ALL GRASSED AREAS

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

4.5.10 MOWING AMENITY GRASS

- Grass height: 75 mm maximum.
- Arisings: Spread evenly over cut areas.

4.5.11 TOP DRESSING

- Location: All lawns.
- Timing: Contractor's choice.
- Material: Compost/ sand/ loam mix.
- Supplier: Contractor's choice.
 - Product reference: Contractor's choice.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Not required.
- Application rate: 1.5 kg/m².

4.5.12 EDGES TO SEEDED AREAS

- Location: Planting beds and around newly planted trees.
- Timing: After seeded areas are well established.
- Edges: Cut to clean straight lines or smooth curves. Draw back soil to permit edging.
- Arisings: Remove.

4.5.13 RE-FORMING GRASS EDGES

- Location: All edges.
- Edges: Draw back soil and re-form edges to clean straight lines or smooth flowing curves, sloping slightly back from vertical.

4.5.14 LEVELLING HOLLOWES AND BUMPS IN TURF

Standard: To BS 7370-3, clauses 12.4 and 12.5.

4.5.15 REINSTATEMENT OF DAMAGED GRASS

- Damaged grass: Remove to a depth of 30 mm.
- Preparation: Cultivate substrate to a fine tilth.
- Reinstatement: Contractor's choice of turfing or top soiling and reseeding:
 - Turfing: Quality and appearance to match existing.
 - Reseeding: Fill with fine topsoil to BS 3882 general purpose grade, free from stones, debris and weeds. Reseed with a seed mix to match existing grass in quality and appearance.
- Protection and watering: Provide as necessary to promote successful germination and/ or establishment.

4.6 SHRUBS/TREES/HEDGES

4.6.1 ESTABLISHMENT OF NEW PLANTING

- Duration: One full growing seasons from the date of planting.
- Weed control:
 - Method: Keep planting beds clear of weeds by use of suitable herbicides.
 - 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.

4.6.2 ESTABLISHMENT OF NEW PLANTING – FERTILIZER

- Time of year: March or April.
- Type: Slow release.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
 - Application rate: As manufacturer's recommendations.

4.6.3 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: When instructed.
 - Fill stake holes with lightly compacted soil.

4.6.4 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.

4.6.5 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.

4.6.6 PRUNING OF EXCESSIVE OVERHANG

- Timing: As instructed.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: None.

4.6.7 PRUNING OF EXCESSIVE HEIGHT

- Timing: Annually.
- Operations: Remove excessive height as instructed.

4.6.8 PRUNING TREES AND SHRUBS

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

4.6.9 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.

4.6.10 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.

4.6.11 TRIMMING ESTABLISHING HEDGES

- General: Allow to reach planned height as rapidly as possible.
- Form: Trim back lateral branches moderately.

4.6.12 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.

4.6.13 DEAD AND DISEASED PLANTS

- Removal: Within one week of notification.
- Replacement: In the next suitable planting season.

4.6.14 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 details and cost of plants before ordering.
- Dressing: Slow release fertilizer:
 - Type: Submit proposals.
- Application rate: As manufacturer's recommendations.

4.7 WEED CONTROL

4.7.1 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.

4.7.2 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.

4.7.3 WEED CUTTING BY HAND OR MACHINE

- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 50 mm before pulling carefully so as not to disturb shrub roots.
- Herbicides: Give notice before use.

4.7.4 WEED CONTROL WITH WINTER HERBICIDE

- Type: Suitable residual soil acting herbicide.
- Time of year: Unless otherwise agreed, complete before end of March.
- Timing: Allow recommended period for herbicide to take effect before clearing dead.

4.7.5 WEED CONTROL WITH SUMMER HERBICIDE

- Type: Suitable foliar acting herbicide.
- Timing: Allow recommended period for herbicide to take effect before clearing dead.

4.8 OTHER REQUIREMENTS

4.8.1 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.

4.8.2 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.

4.8.3 MAINTENANCE OF LOOSE MULCH

- Thickness (minimum): 75 mm.
 - Top up: Annually.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by herbicide treatment.

4.8.4 FERTILIZING ESTABLISHED TREES AND SHRUBS

- Time of year: During April or May.
- Type of fertilizer: Slow release.
- Application: Spread evenly.
- Rate: As manufacturer's recommendations.

4.8.5 SNOW REMOVAL FROM SHRUBS/ TREES

- Standard: To BS 7370-4.
- Plants subject to snow removal: As instructed.
- Timing: When instructed.

APPENDIX A – MAINTENANCE PROGRAMME

This programme is a guideline only and times of operations may vary on approval by landscape architect.

Years 1-2

| ONGOING REQUIREMENTS: | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lawn grass cutting (Min 24 cuts) | | * | ** | ** | *** | *** | *** | *** | *** |
| Rough grass verges (Min 1 cut / yr) | | | | | | | * | | |
| Edging to lawn grass areas | | | | * | | | * | | |
| Meadow Grass | | | | * | | | | | * |
| Fertiliser application to lawn grass areas. | | | | | * | | | | |
| Hedge pruning/cutting | | | | | | | | | |
| Weed control of hedge planting areas | | | * | * | * | * | * | * | * |
| Shrubs pruning and feeding | | | | * | | | | | * |
| Tree pruning | | | | | | | | | |
| Removal of tree stakes on existing Standard trees (3-5yr) | | | | * | | | | | |
| Mulch top-up to tree circles/ squares | | | | | | * | | | |
| Herbicide app. to tree mulch circles | | | | * | | | * | | |
| Herbicide app./weeding to shrubs & hedgerow | | | | * | | | * | | |
| Watering of new tree planting | | | | * | * | * | * | * | |
| Trimming of scrub areas | | | | | | | | | |
| Weed control of scrub areas | | | | * | | | | | * |
| Application of residual weed killer to footpaths, cycle paths. | | | | * | | | | | |
| Litter Clearance/pick up | *** | *** | *** | *** | *** | *** | *** | *** | *** |