

Landscape Specification and Maintenance Document

PROPOSED DEVELOPMENT AT GRANGEBROOK AVENUE, DUBLIN 16.

Document No.: P487-02



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Landscape Specification

1.0 Description of Work

The work consists of general works, site preparation, and tree, shrub and hedgerow planting and grassing.

The landscape design is to read in conjunction with the Landscape Design, P508-01, is to be implemented on a phased basis, to coincide with the phasing of the building works. All landscaping is to be completed prior to occupation of the buildings.

1.1 Standards of Workmanship and Materials

The Landscape Contractor shall satisfy the Landscape Architect that all works have been carried out to comply with BS 4428: 1989 (General Landscape Operations), BS 3936 (Nursery Stock), and BS 3882 (Topsoil).

It is essential that the site is tidy at all times, and that the planting appears healthy. The Landscape Contractor should be prepared, at all times, to ensure that such conditions are met and should include for this in his rates.

Any materials not meeting the specifications or qualifying for the approval of the Landscape Architect, for whatever cause, shall be rejected.

The Landscape Contractor shall familiarise himself/herself with the layout of services and the positions of all structures on the site and shall be liable for any damage to the above.

No existing plants shall be removed or damaged, other than those specified by the Landscape Architect.

1.2 Season

Landscape work shall take place in the appropriate season and only when the conditions are suitable, i.e. it is dull, moist and mild, without undue risk of frost or drying winds.

There shall be no cultivation or planting when the soil is frozen or waterlogged.

If exceptional weather conditions occur after planting, e.g. heavy frosts, measures shall be taken as approved by the Landscape Architect.

1.3 Replacement

The landscape contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time up to practical completion and in the 36 months after planting.

The landscape contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time prior to hand over.

Plant failures will not be charged to the Landscape Contractor if the failure is due to; damage by hares, rabbits, deer, livestock where not protected by guards or fencing, damage/ losses due to theft, vandalism or disturbance by other contractors.

Persistence of weed in planted areas will be regarded as a contributory cause of failure due to drought. Prolonged dry weather will not exonerate the landscape Contractor if the scheduled maintenance operations have not been carried out as programmed.

1.4 Defects Liability Period

The Landscape Contractor shall be responsible for any plants that fail to take during the first full growing season and to 36 months from date of completion.

1.5 Program of Operation

The Landscape Contractor shall execute his works in conformity with a program to be agreed with the Landscape Architect and shall include in his estimate for working within an agreed time limit.

No individual areas will be handed over unless there is an agreed sectional completion. The Landscape Contractor shall allow for keeping individual areas adequately maintained until the whole has been completed.

1.6 Site Inspection

Prior to the submission of tenders to the Landscape Architects, the Landscape Contractor is expected to visit the site and familiarise himself with the nature of the existing roads and pathways, the soil conditions, slope gradients, any hazards and other matters affecting the works. No extra charges will be made for any misunderstandings, or incorrect information or any of these points, or on grounds of insufficient description or lack of information will be allowed.

1.7 Setting Out

The Landscape Contractor will be responsible for checking all schedules and drawings by the Landscape Architect. In the event of any discrepancies being found between such schedules and drawings, or if the Landscape Contractor considers that additional detail drawings are required, the Landscape Contractor shall report such discrepancy in writing at least ten days before the works are to be executed.

The right is reserved to adjust the exact position of trees and specimen shrubs after they have been set out on site.

Any trees which are planted without approval of the setting out may be required to be re planted at the Landscape Contractor's expense.

1.8 Insurance, Indemnities, etc.

The Landscape Contractor shall indemnify, and keep indemnified the Client against all actions, suits, claims, demands, costs and expenses whatsoever, by reason of, or arising out of the execution of the Contract Works, or any of the matters connected therewith, whether such claim or proceedings be brought or costs or expenses incurred under or virtue of Workmen's Compensation Act, Client's Liability Act, or any other statute or at Common Law, or otherwise howsoever.

1.9 Health and Safety

The Landscape Contractor shall in performing the Services adopt safe methods of work in order to protect the health and safety of his own employees, the employees of the Client and of all other persons, including members of the

public and shall comply with the requirements of the Health and Safety at Work Act 1974, The Management of Health and Safety Regulations 1992, Control Of Substances Hazardous to Health (COSHH) Regulations 1988 and 1994, and of the Road Traffic Act 1988 and of any other Acts, Regulations, Orders or any European Directive pertaining to the health and safety of employed persons.

The Landscape Contractor shall at the time of submitting his Tender provide to the Client a written copy of his health and safety working procedures relating to the performance of the Contract.

1.10 Default in provision of the service

Without prejudice to any other powers of the Client, if the Landscape Contractor, for whatever reason fails to provide or perform the Services in whole or in part completely in accordance with the terms of the Contract then without prejudice to any remedy contained herein the Client may by his own or other workmen provide and perform such Services or part thereof in which the Landscape Contractor has made default. The costs and charges incurred by the

Client in so doing shall be paid by the Landscape Contractor to the Client on demand or may be deducted by the Client from any moneys due or which may become due to the Landscape Contractor.

In the event of non-completion of specified works, non-compliance with specification, faulty workmanship or use of defective materials, the Landscape Contractor will be deemed to be in breach of contract and payment may be withheld in full or in part pending completion or execution of remedial works.

2.0 Earthworks

2.1 Topsoil

Topsoil shall be native topsoil as removed and stored.

Where required, all imported topsoil to be of medium texture, pH matching that of the native topsoil, stone content 10mm in size not greater than 5% by weight, and no stones greater than 40mm in any dimension, and shall conform to BS 3882:1965. Topsoil shall be a free draining sandy loam.

Topsoil imported onto the site shall be free from Weeds listed in the Noxious Weeds Act 1936 and Schedule Three of The 2011 European Communities (Birds and Natural Habitats) Regulations (S.I. 477).

Topsoil imported onto the site shall be free from pollutants.

In so far as possible, the client shall ensure that imported topsoil will be obtained from green field sites as close as possible to the site. The Client shall nominate a suitably qualified professional to carry out a survey of the extraction site to ensure that non-native invasive weeds are not present on the site. If such plants are found to be present at the site of extraction, soil should not be imported from this location due to the risk of spreading these species.

Topsoil shall be free of perennial weed roots, i.e. couch grass, sticks, sub soil or any waste, toxic, putrescent or foreign matter.

After spreading, the soil should be cultivated to crumb size to a condition suitable for blade grading. Large stones and unwanted material 75mm and over should be picked off and carted away. Areas should then be blade graded to true flowing contours.

As topsoiling proceeds all consolidated wheel tracks shall be forked over.

Final grading of the top 150mm is to be carried out to ensure a true specified level and slope to avoid dishing or other depressions where water may collect. The use of a heavy roller to roll out humps will not be permitted and any area that becomes unduly compacted during the grading operation shall be loosened by forking or harrowing.

2.2 Topsoil levels

All topsoil shall be placed and graded by the Main Contractor to the following levels:

shrub and hedgerow planting	450mm
tree planting	1200mm x 1200mm x 750mm pit
Urban Tree Soil/Amsterdam Tree Soil from an approved source:	
tree planting	2400mm x 2400mm x 1200mm pit

2.3 Maintenance of topsoil stockpiles

Where applicable, stockpiles of 1 year duration or less: treat the growing weeds with 'Roundup' applied at 5 litres per hectare, diluted and applied in accordance with the manufacturers' instructions, when they are growing strongly (May - June). Noxious weeds (dock, thistle, ragwort) shall be treated before they flower.

2.4 Plants Generally

All plants shall conform fully to the specification in respect of species, size and quality.

The Landscape Contractor shall investigate the sources of supply and satisfy himself that he can supply all of the plants specified on the planting schedule in the size, variety and quality before submitting a bid. Substitutions will not be permitted. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of nearest equivalent size or variety, with an equitable adjustment of contract price.

All plants shall be well grown, sturdy and bushy, according to type, and free from all disease and defects.

All trees, shrubs and other plant material shall comply with the minimum requirement of the relevant British Standards below:

BS 3936 Part 1: Specification for trees and shrubs

2.5 Time of Lifting

Bare root plants must only be lifted when the ground is moist and the plant is dormant between November and end March of the current year. Lifting must never take place when there is a severe ground frost. Particular attention must always be paid to the protection of the roots on lifting when there is a strong drying wind or sun.

2.6 Protection

Care must be taken to ensure that bare roots are protected from physical damage and desiccation at all times. All bare roots must be covered within two hours of lifting.

2.7 Trees

Trees shall conform to the appropriate British Standards.

All trees should be full and well-shaped, bark unmarked and have healthy root systems.

2.8 Tree Sizes

Unless otherwise specified, all trees shall be as follows :-

Type	Girth	Height
Semi-Mature	16-18cm girth	5.0-6.0m
Multi-stem	multistem	3.5m

All Semi-Mature trees shall be supplied and fitted with two knee high tree stakes in accordance with details on the Landscape Plan, P487-01.

Tree stakes shall be peeled poles of oak, sweet chestnut, pine or douglas fir, or tanalised larch. All stakes shall be preserved with water borne copper chrome arsenic to IS 131, to a net dry salt retention of 5.3kg per cubic metre of timber.

Stakes shall be supplied as sizes specified. They shall be at least 1.8 metres long unless otherwise specified, with a minimum diameter of 75 mm at both butts.

Stakes shall be driven prior to planting with a drive all, wooden maul or cast iron mell, not with a sledge hammer. Trees shall be fitted with rubber tie and spacer and nailed to the stake. Tree ties shall be rubber or PVC or proprietary fabric laminate composition and shall be durable enough to hold the tree secure in all weather conditions for a period of three years.

They shall be flexible enough to allow for proper tightening of the tie.

Trees are to be watered to field capacity as and when required to ensure continued thriving of trees.

2.9 Approved chemicals

All chemicals used shall be non-toxic to human beings, birds and animals under normal use, and chemicals which are not agriculturally approved shall not be used.

The use of the following herbicides is acceptable:

Roundup

Basta

Actrilawn 10

Casoron G

Kerb Flo

The use of the following fertilizers is acceptable:

Fisons PS5 : grass areas

Osmocote Plus- fertiliser N:P:K 15:9:11 plus trace elements: Shrub areas

Enmag - 4:19:10 + 7.5% : Tree planting

2.10 Planting Generally

All planting operations shall be carried out in accordance with BS 4428 and good horticultural practice.

Shrubs, Whips and Transplants

All plant material must comply in all respects with the current edition of BS 3936 Parts 1, 4, and 5. Trees shall be sturdy, with a balanced root and shoot development, sizes shall conform to schedule.

Cultivation Generally

The aim of cultivation is to produce a well-drained and textured soil suitable for plant growth.

All areas to be planted shall be cultivated to a minimum depth of 450mm or deeper if specified. Areas where obvious compaction has occurred shall be ripped.

Stones above 75mm longest dimension shall be removed from the top 100mm layer of shrub planting areas. Any plants stored temporarily on site shall be protected from adverse weather conditions. Plants with damaged root systems shall not be accepted.

Controlled release fertiliser N:P:K 15:9:11 plus trace elements - Osmocote plus or similar approved shall be applied at specified rates and raked into the top 50mm layer.

The surface shall be raked to a tilth suitable for planting.

Mulch

On completion of planting, the total area of the disturbed soil is to be mulched to a depth of 50mm. The soil and the mulch shall be thoroughly wetted prior to application, and also prior to application a complete clearing through and weeding of the area shall be carried out, leaving the soil weed free, smooth and conforming to acceptable finished levels.

2.11 Tree Planting

Planting pits for trees in undisturbed ground will be backfilled with excavated material. Tree pits in mounds or other made up ground shall be backfilled with topsoil.

All tree pits shall be excavated 200mm wider in all directions than the natural root spread, or rootball, and the base forked to improve drainage. Stakes shall be positioned before backfilling.

Topsoil backfill shall be mixed with peat substitute in the ratio of 4:1. 60g Enmag or similar approved slow release fertiliser shall be incorporated. The backfill shall be settled and well firmed around the roots

2.13 Grass Areas

Upon completion of all construction works, all damaged and new areas of green open space are to be graded and in-filled with permeable topsoil where required.

All seed shall carry Irish Department of Agricultural Certificates. All seeding shall be carried out within the sowing season i.e. April to October. The Amenity grass seed mixture shall be 35% Chewings Fescue, 35% Slender Red Fescue, 20% Smooth Stalked Meadow Grass and 10% Browntop Bent.

Immediately prior to sowing the upper 50mm soil shall be reduced to a fine tilth by the use of a chain harrow or other suitable plant. Fertiliser or other soil ameliorants shall be evenly incorporated into the upper 50mm of soil during final cultivations at the rate of 50 grams per square metre as per supplier's recommendations.

Sowing shall be carried out by evenly distributing the seed at the specified rates .i.e. 5-10g/sq.m. Sowing shall be immediately followed by lightly raking the surface of the soil to cover the seeds, by use of a chain harrow or other suitable plant. The total quantities of seed for each area shall be divided in half, each half being broadcast in transverse directions.

After sowing, the ground shall be raked or chain harrowed immediately.

2.14 Watering

During dry periods at any other times deemed necessary prior to practical Completion, the Landscape Contractor shall water all plant areas. The Landscape Contractor must give notice to the local water Authority that a supply of water will be required for the execution of the works.

The Landscape Contractor is to ensure that he is aware of any restrictions on the use of water and hose pipes which may be applied by the water Authority and is to comply with any such restrictions. Any damage caused by soil-wash shall be immediately rectified by the Landscape Contractor at his own expense, to the approval of the Landscape Architect.

2.15 Weeding

All planting areas are to be kept free of weeds and rubbish prior to Practical Completion. All planting areas are to be hoed, forked or hand weeded. The use of chemicals shall be only be upon approval from Landscape Architects.

Roundup - by Monsanto chemicals Ltd. 4 - 5litre/Ha. Do not apply when rain is forecast within six hours. Do not apply when wind is likely to cause spray drift (over 24kph / 15mph). Allow for leaf symptoms to develop before carrying out any cultivations. Apply to manufacturers recommendations. Apply 'Roundup' to kill existing grass pre seeding, and weeds germinating in topsoil.

If germinating weed grasses are less than 100mm high and broad leaved weeds have not produced full-sized leaves, do not apply 'Roundup'. Apply 'Basta' @ recommended rates, 4 to 7 days before cultivating.

Basta - by Hoechst Ltd. 3 - 7.5litre/Ha. Do not apply when rain is forecast within six hours. Apply to manufacturers recommendations.

'Actrilawn 10' - by May + Baker Ltd., 11litre/Ha. Shall be used in accordance with manufacturer's instructions. Apply 'Actrilawn' when grasses have reached the two leaf stage or beyond, and when seedlings have emerged and have reached cotyledon or two leaf stage (approx. 4 weeks after sowing). Do not mow grass within 7 days of treatment.

Casoron G - Granular weedkiller to be applied 5.6-22.5 kg /1000sq.m. Shall be used in accordance with manufacturer's instructions.

Kerb Flo - weedkiller to be applied 3.75 - 4.25litre/Ha. Shall be used in accordance with manufacturer's instructions.

3.0 Maintenance Operations

3.1 Landscape Maintenance Objectives

Tree planting shall exhibit annual, healthy growth consistent with the species selection and the prevailing Site conditions. Trees shall exhibit a firm attachment of the roots to the soil and the crown of the tree shall be visible greater than when planted and greater than any die-back.

Hedgerow and shrub planting shall exhibit annual, healthy growth consistent with the species selection and the prevailing Site conditions. The overall visual impact shall be greater than when planted, there shall be no gaps through hedge planting and collectively the hedge shall create a strong visual line of vegetation within the landscape. The plants shall have knitted together and formed a closed canopy (the ends of branches and plant shoots of adjacent plants shall touch or overlap so as to provide a closed canopy which will increasingly and over time shade out plant competition from grasses and other weeds and so provide an acceptable level of sustainability and low maintenance).

All grass areas which have not established successfully shall be made good as appropriate and shall have a complete cover of the sown plants with no bare or dead patches or weeds.

All planting shall exhibit signs of self sustainability by no later than the end of the 3 year establishment period and protective fencing, stakes, ties, tree shelters shall be assessed immediately prior to the end of this period, adjusted as required and removed where no longer required.

3.1 Maintenance Of Trees, Hedgerows and Shrub Planting

3.11 Maintenance period

The Landscape Contractor shall be responsible for the aftercare and maintenance of the completed works for 36 months from the date of practical completion.

3.12 Weed control

Weeding may only be done by hand, except in exceptional circumstances where persistent perennial weeds may be treated chemically. The use of chemicals shall only be upon approval from the Landscape Architect.

In the winter a first application of the residual weedkiller 'Kerb Flo' shall be applied in the according to the manufacturer's instructions, for tree areas, immediately after the area has been planted and before any weed germination has taken place.

Annual or perennial weeds which grow shall be spot treated by the contact weedkiller 'Basta', according to the manufacturer's instructions, care been taken to ensure no spray touches any part of the leaves.

An application of 'Roundup' may be applied from August on, strictly according to the manufacturer's instructions for tree areas. It is to be noted that the surface of the ground shall not be physically disturbed.

Noxious weeds (dock, thistle, ragwort) shall not be allowed to establish.

All soil surfaces shall be generally free of weeds at all times and shall be entirely free of weeds after each maintenance visit. No grass shall be allowed to encroach into soil areas.

Weed free circles around trees shall be 1000mm diameter in grassed areas. Weeds shall not cover 10% of circle at any time during maintenance period.

Weed free bands are to be maintained along hedges. Weeds shall not cover 10% of circle at any time during maintenance period. No weeds shall be allowed develop in areas of shrub planting.

3.13 Watering

Careful attention to water is essential during dry spells and may be critical in the case trees. Trees shall be watered as necessary and to their full planting depths. Water trees as required after any period of 4 weeks without significant rainfall (less than 5mm).

3.14 Fertilizer

Apply top-dressings of organic matter such as cow, horse or sheep manure or proprietary materials to trees and shrubs once in spring, twice during the summer and once again in winter.

This treatment is to be carried out for the duration of the maintenance contract.

Alternatively, if so wished, inorganic fertilizer can be applied as 'Osmocote' 18:11:10, @ 50g / square metre in spring and late summer.

3.15 Wind firmness, stakes and tree ties

All plants shall be regularly inspected for wind firmness and firmed as necessary at the same time. Stakes shall likewise be checked for firmness and all tree ties inspected and made good as required.

3.16 Pruning / trimming

Any pruning should involve removal of dead, diseased or badly crossing branches or shoots. Dead heading reduces competition for nutrients between the developing seeds and the rest of the plants so that further growth and flowering is often stimulated.

All hedges shall be clipped to maintain uniform and tidy appearance.

Mixed native hedgerows are to be trimmed annually in November and maintained to a maximum height of 2.0m. All other hedgerows are to be maintained to a maximum height of 1.0m.

4.0 Maintenance Of Grass Areas

4.1 Maintenance period

The Landscape Contractor shall be responsible for the aftercare and maintenance of the completed works for 36 months from the date of practical completion.

4.2 Cutting

All grass areas which have not established successfully shall be made good as appropriate and shall have a complete cover with no bare or dead patches or weeds.

All grass areas shall be mown not less than 13 times during each establishment year. Mowing shall be between May and August. The height of the grass shall be 35mm.

Swaths of grass cuttings shall be collected up and removed from Site by the Contractor.

The Contractor shall control and remove from all grass areas, any pernicious or noxious weeds by physical or chemical means as necessary. Such weeds shall be removed before they come into flower.

Table 1.0 Maintenance Years												
OPERATION (during the Maintenance Years)	Date, by Month (Starts April)											
	A	M	J	J	A	S	O	N	D	J	F	M
List of Visits	X											
Plant Replacement Inspection					X							
Plant Replacement							X	X	X			
Watering	X	X	X	X	X	X						
Refirming	X	X	X	X	X	X	X	X	X	X	X	X
Removal of Litter	X	X	X	X	X	X	X	X	X	X	X	X
Pest and Disease Control	X	X	X	X	X	X	X	X	X	X	X	X
Plant Support	X	X	X	X	X	X	X	X	X	X	X	X
General Pruning	X	X	X	X	X	X	X	X	X	X	X	X
Anti-Desiccant Application to Evergreen and Conifers						X					X	
OPERATION TO TRANSPLANTS AND SHRUBS												
Weed Control	X	X	X	X	X	X	X	X				X
Slow Release Fertilizer								X	X			
OPERATIONS TO TREES												
Weed Control	X	X	X	X	X	X	X	X				X
Slow Release Fertilizer									X	X		
Tree Inspection	X	X	X	X	X	X	X	X	X	X	X	X
OPERATIONS TO ORNAMENTAL BEDS												
Weed Control	X	X	X	X	X	X	X	X				X
Slow Release Fertilizer												X
OPERATIONS IN GRASS AREAS												
Grass – Mowing	X	X	X	X	X	X	X					
Grass – Control and Removal of Pernicious Weeds	X	X	X	X	X	X	X	X				