

Landscape Architectural Statement of Response to the Pre-application Consultation

Project: Proposed Strategic Housing development (alterations to phase 1 residential and proposed phase 2 residential development) at the Frascati Centre, Frascati Road, Blackrock, Co. Dublin

Client: IMRF II Frascati Limited Partnership / Davy IMRF II GP Limited



Date: 24th August 2020

Re: Case Reference: ABP-306989-20 Proposed Development: Alterations to Phase 1 permission of 45 no. apartments of previous permitted Reg.Ref:D17A/0950 and ABP-300745-19 to provide a total of 105 no. apartments and associated site works.

Frascati Centre, Frascati Road, Blackrock, Co. Dublin.

With reference to the above please find following Stephen Diamond Associates response to comments raised by Marc Campbell Assistant Parks Superintendent and additional information items relating to landscape specific issues set out in An Bord Pleanála's Pre-Application Consultation Opinion (identified below by ABP reference numbers).

This report is to be reviewed with reference to the attached landscape plan drawings:

• 19-524-PD-01	Landscape Master Plan & Planting Schedule	1:500 at A1
• 19-524-PD-02	Landscape Plan	1:200 at A1
• 19-524-PD-03	Landscape Plan Level 5	1:100 at A1
• 19-524-PD-04	Communal Open Space	1:200 at A1
• 19-524-PD-05	Construction Sections	1:25/1:100 at A3
• 19-524-PD-06	Construction Sections	1:25/1:100 at A3
• 19-524-PD-07	Construction Sections	1:100 at A3
• 19-524-PD-08	Construction Sections	1:100 at A3
• 19-524-PD-09	Green Wall Elevations on Completion	1:100 at A1
• 19-524-PD-10	Green Wall Elevations 3 Years Post Completion	1:100 at A1
• 19-524-PD-11	Green Wall Elevations 6 Years Post Completion	1:100 at A1
• 19-524-PD-12	Green Roofs	1:250 at A1

Response to further information items set out in the Pre-Application Consultation Opinion prepared by An Bord Pleanála are as follows:

5. 'A report that specifically addresses the proposed materials and finishes of, landscaped areas and any screening/boundary treatment. Particular regard should be had to the requirement to provide high quality and sustainable finishes and details which seek to create a distinct character for the development.

SDA Response:

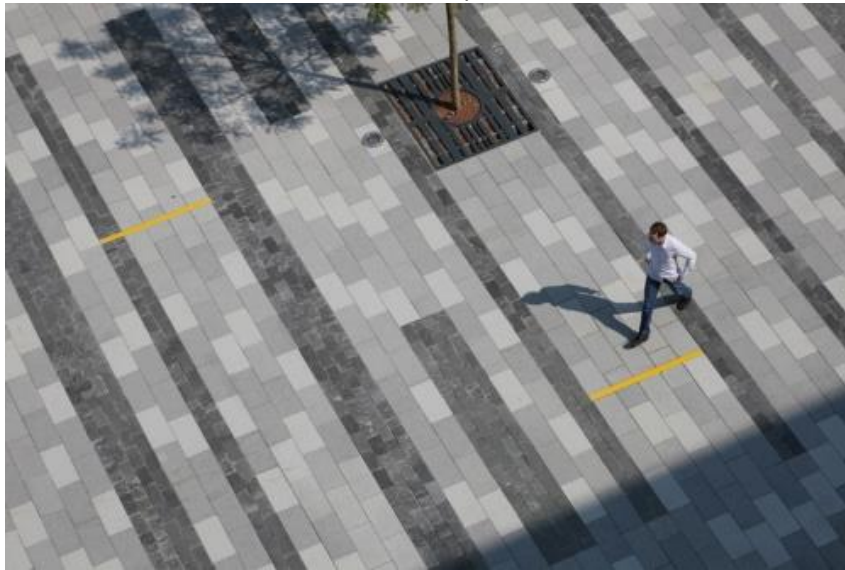
A site-generated landscape architectural approach was applied to the Frascati site, with careful consideration given to its orientation, aspect, microclimate, landscape and context. Specific emphasis was placed on the development of appropriate, robust and timeless landscape design proposals.

The spatial arrangement of hard and soft landscape materials has been developed in tandem with proposed architectural layouts to create a unified whole and settle the development into the site context and existing setting. Specific attention has been applied to screening of the proposed development relative to adjacent residences, in particular those located along Frascati Park, Mount Merrion Avenue and Lisalea.

Hard landscape materials have been selected based on quality, durability, maintenance requirements, sustainability, aesthetics and suitability relative to adjacent materials, as follows:

1. **Silver grey granite paving** 80mm depth with intermittent dark grey granite strips (of rigid construction to facilitate vehicular access) to shared surface pedestrian priority plaza located south west elevations. Introduced to improve pedestrian access and enhance connection to 20 cycle stands (40no covered cycle parking spaces) and two cargo bike spaces located along the south western site boundary backing onto Frascati Park residences. Contrasting strips of dark grey granite paving extend the principal architectural geometry out across the shared surface perpendicular to vehicle movement as a traffic calming measure.

Introduction of a high quality granite paving in this location serves to reduce the prominence of vehicular access and forge a stronger connection with the pedestrian and cyclist. We view the plaza as valuable respite offering visual relief to and a break in dark bitmac surfacing to the existing looped vehicular access route around the site perimeter.

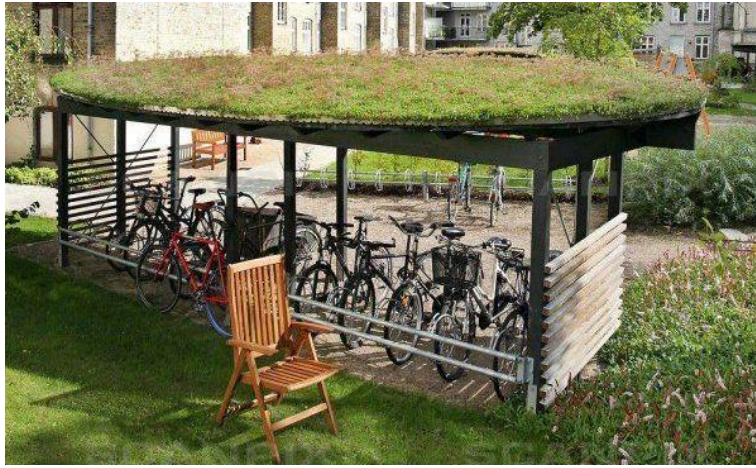


above: 80mm depth granite paving to shared surface pedestrian priority plaza located south west elevations

2. **Exposed aggregate concrete paving** to covered cycle parking spaces located along western side of shared surface plaza to Frascati Park boundary



3. Cycle shelter, galvanized mild steel painted finish with sedum green roof to reduce surface water run-off, enhance biodiversity and reduce visual impact.



above left: Covered cycle shelter located along granite paved shared surface. **above right** stainless-steel Sheffield cycle stand.

- 4. Seating.** Elongated bench seating provide focus and offer a variety of seating options configured to follow the sun arc from early morning through to evening. Seating has been arranged to support a range of activities within the heart of central courtyard space.



- 5. Artificial grass lawn** to active play areas and open space to the communal courtyard



'MT-24 PLAYGRASS'
Type: Tufted filled synthetic grass carpet

Material: Polyethylene (UV Stabilized)
Yarn type: 8.800 / 1 dTex fibrillated straight
Yarn quality: Environmental friendly, free of lead and cadmium
Primary backing: 100% PP black double with fleece, Weight 146 gr/m²
Secondary backing: Black Latex compound with a base of styrenebutadiene (SBR), with drainage holes, Weight 836 gr/m²
Waterpermeability: 60 liter/min/m²
Pile height: 24 mm
Colour: Olive-Green
UV stability: Meets DIN 53387 Standard (6000 hours)

Refer to landscape plan 19-524-PD-01 for boundary screen planting proposals. This drawing also contains the landscape works planting schedule with further detail provided on tree species and size specification.

6. A plan of the proposed open space clearly delineating public, semi-private and private spaces should also be provided, as well as a detailed breakdown of the total area of same. These plans should clearly highlight how the proposals provide for an appropriate variety and suitable location(s) of children's play spaces.

SDA Response:

The proposed development provides two communal terraces at second floor level within the Phase 1 area with a total area of 550.67 sq.m and a communal courtyard within the proposed Phase 2 area measuring 625 sq.m. Roof terraces are also proposed at fifth floor level above the Phase 1 units (99.8 sq.m) and Phase 2 (189 sq.m) units. The combined total of 1,719.63 sq.m of communal amenity spaces equates to 16.5 sq.m per residential unit and exceeds the minimum requirement of 627 sq.m as required under the Apartment Guidelines 2018 (19*4+ 28*5 + 51*7 + 6*9). The communal open space for both Phase 1 and 2 will be accessible to all residents. Refer to Reddy A+U architectural plans for private terraces areas. (Final figures to be check with JSA and Reddy).

Please refer to SDA drawing number -19-524-PD-04 for communal open space areas under Phase 2.

7. Comprehensive landscaping proposals to be submitted.

7(a) Detail of the landscaping of podium areas to include planting depths, irrigation method and maintenance regime (also ref below comment from Marc Campbell).

Parks and Landscape Services comments from Marc Campbell Assistant Parks Superintendent, date 30th April 2020, are highlighted below in italics:

Comments:

'The applicant's landscape design proposal is based on podium gardens and terraces. Although this is nothing new within dense urban development, its success lies in the detail of the infrastructure put in place to both establish and sustain these environments in a successful and sustainable manner. DLRCC Parks Department accept the principle of podium landscape design, but significantly more detail is required for an accurate assessment to be made on the proposal. There are concerns relating to the fundamental elements required to establish and support a thriving ecosystem; sufficient growing space, growing medium, irrigation, drainage, natural light and maintenance systems.'

SDA Response:

Detail of the landscaping of podium areas to include planting depths, irrigation method and maintenance regime has been provided in the attached landscape plan drawings. Plan dimensions to all podium planters is provided on drawings 19-524-PD-01 and 19-524-PD-02. Further specific detail on topsoil depths provided to ensure the successful establishment and long term survival of trees, hedgerows and shrub/climbers is detailed in Construction Sections CS-01, CS-02, CS-03 and CS-04. A

minimum of approx. 600-800mm depth topsoil will be provided to all above podium trees, reducing to 300mm depth for ornamental shrub planting.

Enrich Intensive Roof Soil, a lightweight modified topsoil mix has been specified to all above podium planters and building elevation planters. This specially tailored soil mix is designed for use on roof gardens to facilitate trees, shrubbery and floral gardens detailed within podium planters. Enrich Intensive Roof Mix is Manufactured to the FLL Guidelines and BS 3882:2015. See Appendix A for Enrich Intensive Roof Mix data sheet. Provision of a 40/60mm drainage board across all intensive planters will facilitate free drainage to a series of outlet gullies provided across podium level and building elevation planters.

Taking into consideration the exposed nature of roof gardens, in particular to the coastal site setting of Blackrock, 'G Roof', a tree anchoring system by Platipus is proposed to secure all above podium trees to include *Betula pubescens* (downey birch), *Sorbus acuparia* (mountain ash) and smaller multi stemmed trees e.g. *Corylus avellana* (hazel) and *Prunus spinosa* (sloe). This system employs an anchor slot system to secure the Plati-Mat Rootball fixing cables to address potential displacement caused by wind deflection created by the building surface (down draught & wind tunnel effect). Ref Appendix B for 'G Roof' tree anchoring system data sheet.

A fully integrated automatic drip irrigation system has been specified to all intensive planters located above ground level to ensure the establishment and long term success of the scheme. For full details refer to Appendix C Automated Irrigation system to Intensive planters

Maintenance Regime to podium garden areas and general landscape works across the site are to comprise a 12 months maintenance & defects liability period, to commence on practical completion of soft landscape works, continuing perpetually on an annual basis.

Maintenance operations require 14 maintenance visits per growing season (April- October) carried out on a fortnightly basis and 2 additional maintenance visits over winter period. 16 no. maintenance visits required per annum extending perpetually on a permanent basis for the full lifespan of the building.

For further detail on the maintenance regime to podium areas and wider site landscape maintenance regime refer to 'Appendix D' Landscape Maintenance Works.

7(b) Precedent schemes for podium gardens with similar size/scale planting required.

SDA Response:

As noted by Marc Campbell of DLRCC Parks Department above podium gardens are nothing new and have become standard within dense urban development. The following sequence of photos illustrate a similar roof garden scheme at The Mater Misericordiae University Hospital, overlooking North Circular Road, Dublin 7 with main roof garden provision at 2nd floor level. Soft landscape works specification, perennial planting species, shrub and tree species details proposed match that specified for the Mater Hospital project. Design works and tender procedures for this project were completed by Stephen Diamond Associates in 2008. Completion of the works was achieved under supervision by SDA in 2012. The first two photos were taken summer 2012 approx three to four months post practical completion. The third photo, source STW, illustrates the planting at a slightly later date (estimated to be summer 2013).



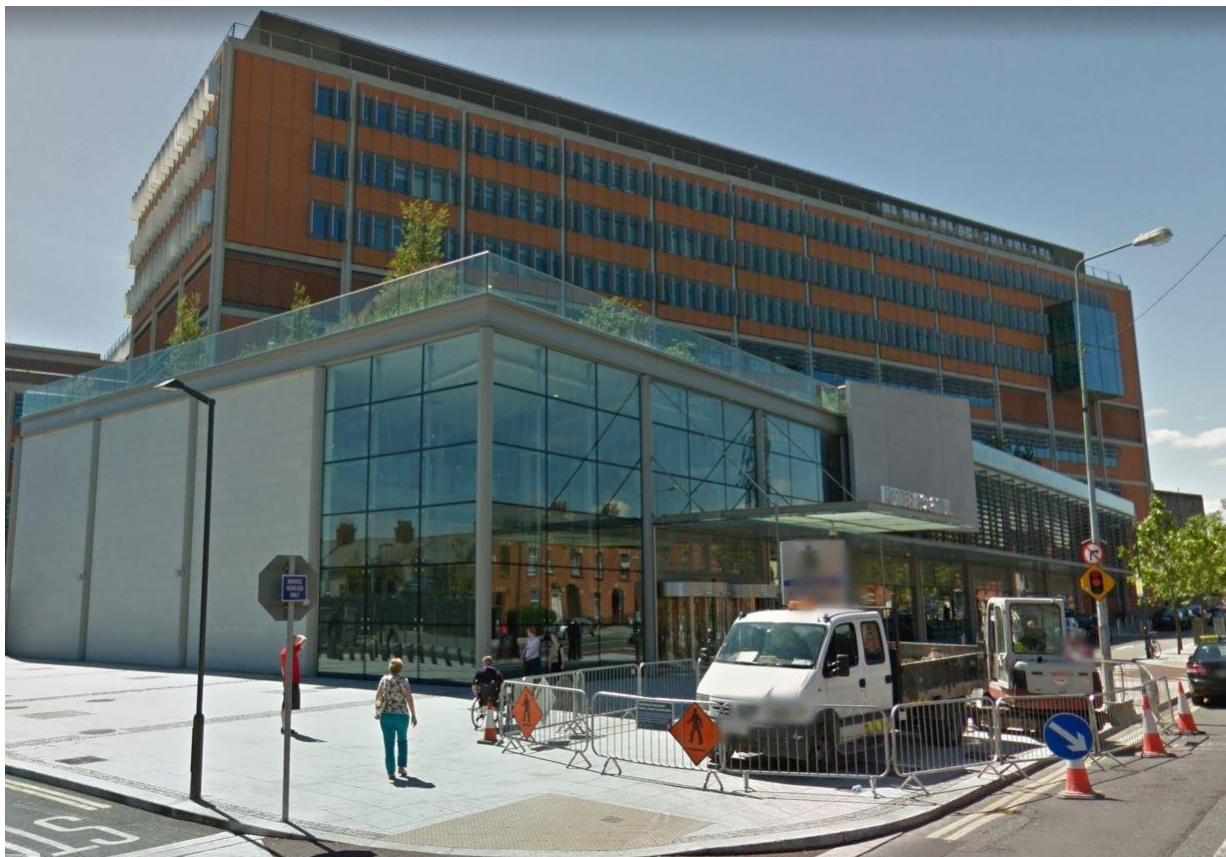
Above: view looking north across central seating area. Topsoil depths 300mm increasing to approx 600-800 mm depth provision at trees. Photo taken summer 2012, approx 4 months post completion.



Above: view looking west across the main roof garden at second floor level overlooking North Circular Road. Photo taken summer 2012, approx 4 months post completion.



above: Mater adult hospital roof garden (source Scott Tallon Walker web site). We estimate this photo was taken summer 2013.



Above: photo of Mater Hospital roof garden (source Google date June 2014) taken from ground level shows tree crown development approx 2 years post completion.



above: photo of above podium roof garden (source Google, date Sept 2019) shows the successful establishment, increased scale and bulking out of trees canopies approx 7 years post completion

7(c) Usability of podium gardens for residents to be considered with definition of spaces for different types of use i.e. BBQ, exercise, play and areas that are more private.

The central communal open space has been designed as a dynamic space to excite, stimulate and provide children and family with a central gathering space. Its layout and spatial design provides ease of access to seating areas and gathering spaces configured to encourage social interaction and an enhanced sense of community.

The inner courtyard provides an attractive, enclosed environment with large sun lawn, communal south facing paved terracing, shade garden and raised planted beds to allow for interspersed small native tree species to provide protection, intimacy and configured to allow maximum daylight penetration to gathering spaces at courtyard/ podium level. We have responded to the architect's block orientation through the configuration of elements within the courtyards. South orientated embedded wooden benches are placed to offer a comfortable, pleasant and private gathering area to the residents, bringing the outside nature into the courtyards.

The area to the south of the communal courtyard receiving reduced levels of sunlight is defined by a shaded garden. Planters and native feature trees are strategically positioned to give sense of scale and screening with informal pockets of gathering space within. Clear-stemmed and multi-stemmed trees are specified to create a sense of security, clarity and free movement beneath the leaf canopies. These trees will provide clear visibility beneath the foliage of the trees for parents to observe children in the communal courtyard areas. Clear-stemming will be specified to 2.5m off finished topsoil levels.

Activity pivots around a central grass lawn. We see this lawn as a fundamental landscape element, recalling the familiar domestic character of a family garden.

Shelter is provided by the wrap round form of the proposed architecture. We would note the positive impact of the architectural design in enclosing the courtyard space to create a favourable microclimate.

Buffer planting species are proposed along the buildings elevations to avoid overlooking and people walking close to the apartments.

This will be in the form of mature tree planting and a *Laurus nobilis* hedgerow maintained at 1.3m height to allow sunlight into the main communal space.

This will provide greater privacy to the units residing on the ground floor. Access points are provided onto the courtyard for these residents encouraging communal activity. Providing courtyard level access to apartments will help bring life to the courtyard and encourage interaction amongst residents much like a terraced street. Such communal gathering spaces serve an important function in apartment developments where residents can often feel isolated from their neighbours.

Conceived as a place of escape or refuge from the noise and pollution of the adjoining roads, we envisage the communal courtyard as a sanctuary to the hectic nature of city life. It has been designed to provide a distinctive social space configured to encourage interaction between neighbours and generate an enhanced sense of community.

Such communal gathering spaces are becoming increasingly important to our psychological health and wellbeing due to the increasingly urbanised nature of our environment and increasing sense of isolation experienced by many. They specifically play an important role in apartment developments providing an opportunity for people from different floors to meet.

Landscape scheme proposals have been developed to move beyond the traditional concept of play provision through the selection of off-the-shelf equipment to a Nature-based Play Opportunities approach, in line with the UK's 'Learning for Landscapes' philosophy and the Irish governments National Children's Play Policy 'Ready Steady Play'.

'We enrich the lives of children by helping them to connect with nature, become more active, learn outdoors, develop social skills and have fun.' (Learning from Landscapes).

A revised play strategy has been developed based on the guiding principle of sustainability, re-use, connection to nature and the utilisation of found or locally sourced materials for play. Our aim is to fabricate the majority of play items and seating from locally sourced timber, with select fabricated play units by Richter.

Refer to drawing 19-524-PD-02 for further detail and general arrangement layout of play facilities, hard and soft landscape treatments.

Play is organised around a meandering 'Play Route' surfaced using locally sourced lily pad stepping logs and rounded Irish stone boulders encourage children to journey through the open space to a series of strategically placed play items to include:

- Tree trunk balance beams secured along the ground plane in a horizontal position;
- Sound cushions by Richter
- Jumping discs by Richter
- Wild boar and Charcoal Bear by Richter



1 Sound Cushions - RICHTER



2 Jumping Discs - RICHTER



3 Wild Board - RICHTER

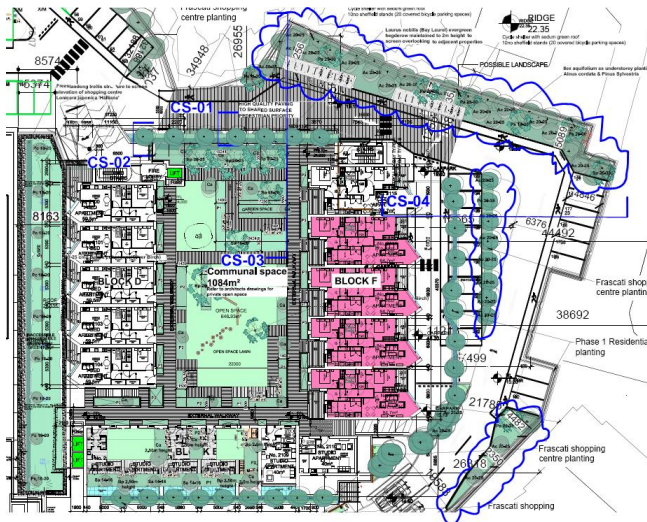


4 Charcoal Bear - RICHTER

7(d) Topographical survey of the site and detailed cross sections to indicate existing and proposed ground levels across the site, proposed FFL's, road levels, open space levels, drainage infrastructure, landscaping, etc. relative to each other and relative to adjacent lands and structures including public roads.

SDA Response:

It is not proposed to adjust existing ground levels. Pre-existing ground levels are to be retained except for three locations (highlighted by blue cloud on the below plan) where it is proposed to break out bitmac surfacing across a number of existing car parking spaces and access road surfacing to facilitate additional screen planting to mitigate the proposed development by way of visual impact and reduce surface water run-off. These areas of additional planting would be excavated to a depth of 400mm and backfilled with 300mm depth topsoil finished with 75mm depth bark mulch. Individual tree pits measuring 1m3 will be provide to each tree. Refer to landscape plan drawing number 19-524-PD-01 for further detail.



Above: excerpt from landscape plan drawing 19-524-PD-01 to illustrate three areas where existing ground levels are to be excavated to facilitate screen planting.

9. Detailed report with supporting drawings of the green wall elements to be included. This should include reference to successful precedents local to the subject site, with use of similar or same planting species.

SDA Response:

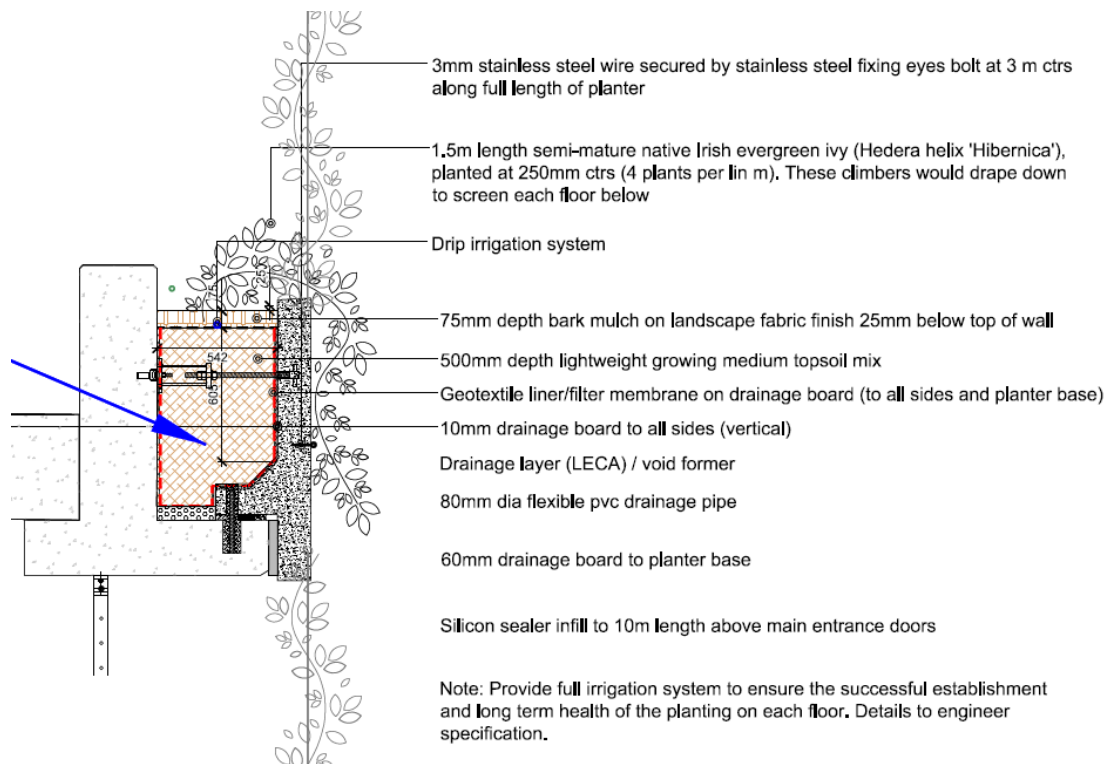
Proposals for the green wall system correspond to green wall planting specifications, species i.e. evergreen native Irish ivy ‘*Hedera helix Hibernica*’ and details implemented at East Point Business Park Multi Storey Car Park, located at Alfie Byrne Rd, Dublin 3, D03 K7W7 (ref below photo). The subject site would occupy a similar coastal setting and microclimate to that at East Point Business Park. However, exposure levels in particular to prevailing winds and storm systems would be considerable higher at East Point Business Park site given the open nature of its setting within Dublin Docklands.

Detail guidance on the proposed green wall planters was provided by Peter O’Toole of Peter O’Brien and Sons Landscaping, landscape contractor responsible for East Point Business Park. We would also note the proposed green wall detail is currently under construction at the new Multi Storey Car Park Extension and refurbishment project, located at St Vincents University Hospital, Elm Park, Dublin 4. Installation of these works are currently under site supervision by Stephen Diamond Associates.

Full details of the proposed green wall systems can be found in SDA drawings 19-524-PD-01 Landscape Master Plan & Planting Schedule and construction sections CS-01, CS-02, CS-03 and CS-04 (ref drawings 19-524-PD-05 through to 09). For clarity Illustrations of the green wall are included in drawing numbers 19-524-PD-09 detailing Green Wall Elevations on Completion; 19-524-PD-10 Green Wall Elevations 3 Years Post Completion and 19-524-PD-11 Green Wall Elevations 6 Years Post Completion. We have selected this sequence as a realistic timeline to maturity, in lieu of 1, 2, 3 years sequence requested.



Above: East Point Business Park green wall system.



Illustrations of the green wall after completion, and after 1, 2, 3 years etc. should be included to demonstrate the length of time that will be needed before full growth will be achieved.

SDA Response:

Refer to landscape drawing number 19-524-PD-08 for illustrations of the green wall on completion of the project after 3 years and finally after 6 years when the green wall vegetation will have reached maturity as represented in the above photo of East Point Business Park.

Detail of the maintenance regime required with reference to any experience the maintenance team have with green wall treatments. Contingency plans in the event of extreme weather events, disease or failure of planting should also be included.

SDA Response:

A 12 months maintenance & defects liability period will be put in place with the appointed soft landscape works contractor responsible for implementation of tree, shrub and green wall planting under the main works contract. Any plants failures or damage caused in the event of extreme weather will be replaced by the landscape contractor during the 12 month defects period.

Maintenance visits will be carried on a fortnightly basis during the growing season (April- October) with four further visits over winter (November - March).

Details of the maintenance regime have been provided in the attached NBS Maintenance works specification. For full details refer to 'Appendix D' Landscape Maintenance Works.

Following the completion of the one year's defects liability period for the main landscape contract, responsibility for the day to day maintenance of all areas in the site curtilage will be passed to a landscape management company. Maintenance operations will continue perpetually to cover the following maintenance regime: 14 maintenance visits per growing season (April- October) carried out on a fortnightly basis and 2 additional maintenance visits over winter period. 16 no. maintenance visits required per annum extending perpetually on a permanent basis for the full lifespan of the building.

The management company will engage a landscape sub-contractor. It will be the management company's responsibility to monitor and review the works of the sub-contractor to ensure the management objectives as outlined below are attained.

Management Objectives:

The objectives of the management company will be as follows;

- To maintain all areas in a neat, tidy and substantially weed free condition,
- To ensure that all green walls are maintained in a condition that contributes to the visual amenity of the development and provides the required levels of screening
- Green wall. Inspect stainless steel rope, trellis systems, bolt fixings, tensioners and associated fixings on a yearly basis and repair as required.
- To establish and maintain tree and shrub planting to provide an overall landscape framework for the development.
- Ensure plant failures are replaced immediately, across all green wall systems. Rootballed trees and shrubs to be replaced during the current/next available planting season, commencing November through to the following March.
- To ensure the irrigation systems remain in operation perpetually

Performance Criteria:

Performance criteria are indicators for assessing the quality and success of the particular plant mixtures used for a purpose i.e. structure/ screen planting, specimen planting, tree planting etc.

Such indicators will be based upon aspects such as;

- Health and condition of planting
- Plant growth
- Achievement of desired effect

The achievement of the performance criteria and the monitoring of the landscape contract will be under the direction and supervision of the developer's landscape architect. As previously stated, the management company will monitor longer-term performance criteria.

Appendix A

Enrich 'Intensive Roof Mix' data sheet



Enrich Intensive Roof Mix

Enrich Extensive Roof Mix is Manufactured to the FLL Guidelines and BS 3882:2015

Range of Use	Enrich Intensive Roof Soil is a specially tailored soil mix designed for use on roof gardens featuring trees, shrubbery and floral gardens and podium planters.
Material	Recycled crushed brick, Leca aggregates, soil and Compost.
Purity	Sustainable free from physical and chemical contaminants and pathogens.
Quality	F.L.L Guidelines and BS 3882:2015
Particle Density	≤2.48
Porosity	25-35%
Soil Texture	Sandy Loam
Moisture Content	10-20%
Conductivity	<3300 μS/cm
Saturated Hydraulic Conductivity	Average 2.9x10 ⁻⁵ m/s (104mm/hr)
Plant Available Nutrient Values	Average
Total Nitrogen	0.20-0.310 %w/w
Available Phosphorous	50-90 mg/L
Available Potassium	200-800 mg/L
Available Magnesium	150-250 mg/L
Available Calcium	200-1000 mg/L
Available Copper EDTA	2-8.5 mg/L
Available Zinc EDTA	10-30 mg/L
Available Sodium	40-70 mg/L
Available Sulphate	200-1000 mg/L
Hot Water-Soluble Boron	1.5-5 mg/L
Organic Matter (LOI)	3-10 %w/w
pH Value	6 – 8.5
Carbon : Nitrogen Ratio	10-20 : 1
Bulk Density	≤1.2 g/cm ³
Saturated Bulk Density	≤1.6 g/cm ³

HEALTHY SOIL HEALTHY PLANTS HEALTHY PEOPLE

Enrich Environmental Limited
Larch Hill, Kilcock, Co. Meath,
Ireland, W23 W9DN

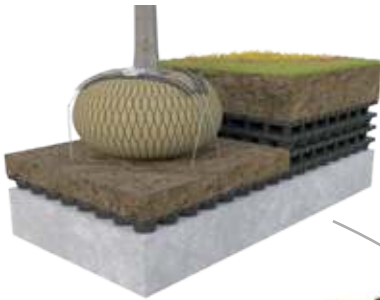
T: +353 1 610 3672
E: info@enrich.ie
W: www.enrich.ie

Appendix B

'G Roof' tree anchoring system using anchor slots by Platipus

Creating Amazing Urban Green Landscapes

With urban areas continuing to grow around the world, the need to utilise the green spaces available is at an all-time high. The use of living walls and green roofs has become the established solution for maximising these urban green areas and enjoying the many benefits that they bring. Platipus has developed a range of solutions for almost every urban planting situation.



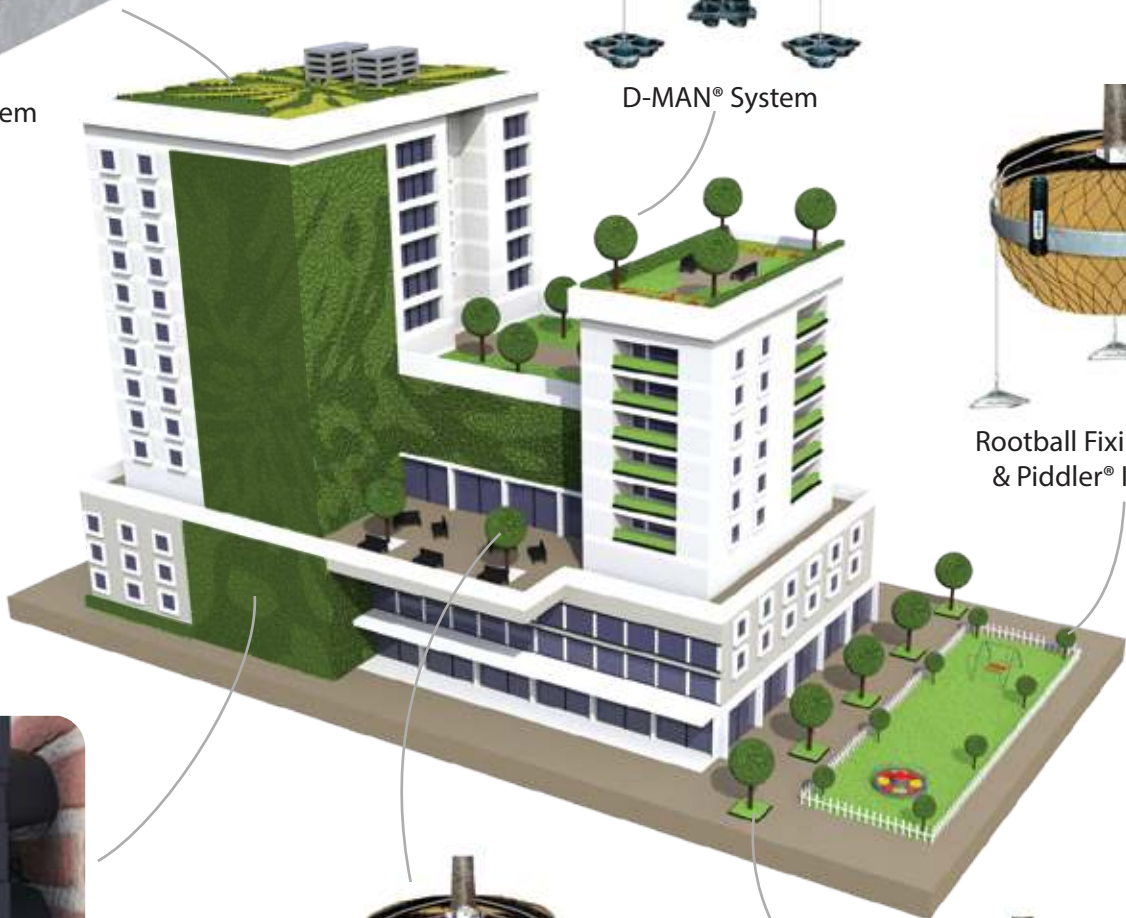
G-ROOF System



D-MAN® System



Rootball Fixing System & Piddler® Irrigation



G-WALL System



Eyebolt System



Deadman System

PDEA®, ARGs® and ARVS® are Registered Trademarks of Platipus Anchors.
 Platipus Anchors technology is protected by International Patents, Trademarks and Registered Copyright.

PLATIPUS

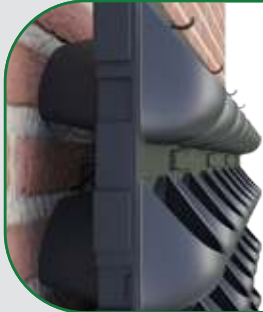
TREE ANCHORING SYSTEMS

The Professionals' Choice

Tendertext Document

NEW!

G-WALL SYSTEM



G-WALL incorporates our already hugely successful and patented D-MAN® cell to ensure guaranteed strength and security for your living wall project. The modular nature of the G-WALL allows for incredibly simple vertical and horizontal expansion, using interlocking, omnidirectional cells with an individual cell capacity of 580ml.

- Quick & easy to assemble / build
- No batons, rails, hanging grids or membranes
- Each cell provides 4 pockets for planting
- Unique pocket 'drip-through' water system

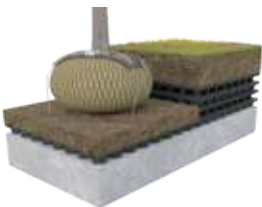


DESCRIPTION	SINGLE UNIT	UNITS PER 1m ²
Material	Polypropylene	
Colour	Black	
Weight		
Empty	0.7kg	11.2kgs
Planted	3.75kg	60kgs
Drip line	13-14mm	

DESCRIPTION	SINGLE UNIT	UNITS PER 1m ²
Pot size	0.35 to 0.5 litres	N/A
Plants density	4	64
Design life	20 years	
Dimensions (mm)	250 x 250 x 75	1000 x 1000 x 75
Units per 1m²	16	

NEW!

G-ROOF SYSTEM



The G-ROOF is a modular structural support system ideal for intensive and extensive roof gardens. The durable G-ROOF cells can be connected and placed directly on a waterproofed surface and the rigid system provides ideal load bearing support. Trees and shrubs can be secured in any location using anchor slots designed within the cell.

- Planting area levels can be constructed easily by stacking & rotating cells 90°
- Replaces drainage and rootbarrier layers
- Integrates with standard Platipus Tree Anchoring Systems
- Cells contain integrated cups for valuable water storage



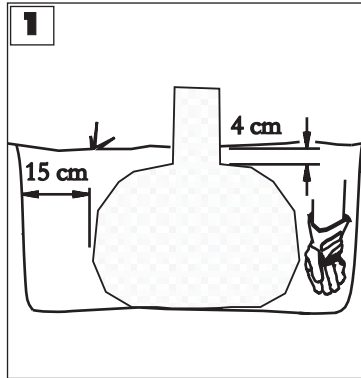
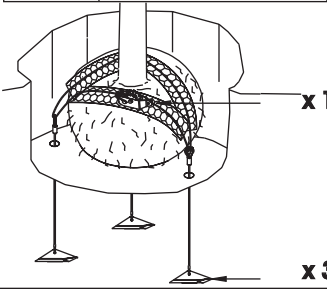
DESCRIPTION	SINGLE UNIT	UNITS PER 1m ²
Material	Polypropylene	
Colour	Black	
Height	75mm	
Weight		
Empty	0.5kg	8kgs
Water retention		
With filling	0.6 litres	10 litres
Filling volume	1.5 litres	25 litres

DESCRIPTION	SINGLE UNIT	UNITS PER 1m ²
Compressive strength		
Without filling (tonnes)	2.5	
Dimensions (mm)	250 x 250 x 75	1000 x 1000 x 75
Units per 1m²	16	N/A
Design life	20 years	

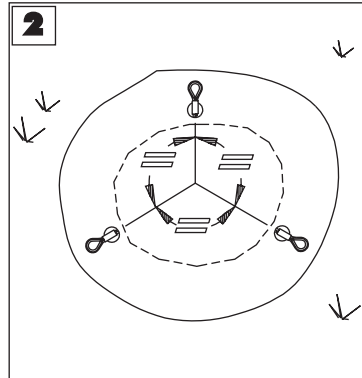
PDEA®, ARGs® and ARVS® are Registered Trademarks of Platipus Anchors. Platipus Anchors technology is protected by International Patents, Trademarks and Registered Copyright.

Rootball Fixing Kit Instructions - Plati-Mat

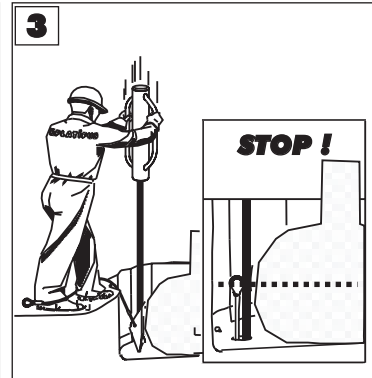
RF1	For trees 2-4.5m tall and 7-22cm girth.
RF2	For trees 4.5-7.5m tall and 22-45cm girth.
RF3	For trees 7.5-12m tall and 45-75cm girth.
RF4	For trees over 12m tall and over 75cm girth.



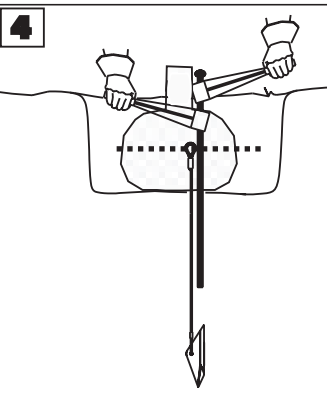
Allow clearance around and above the rootball.



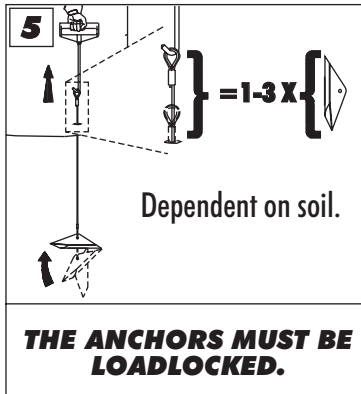
Anchors should be equally spaced as close to the base of the rootball as possible.



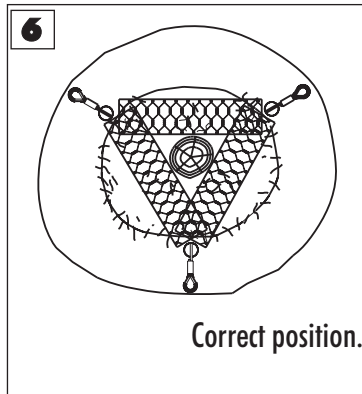
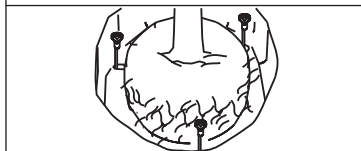
Drive the anchor vertically until the eye is half way down the rootball.



Remove the drive rod using rod removers.

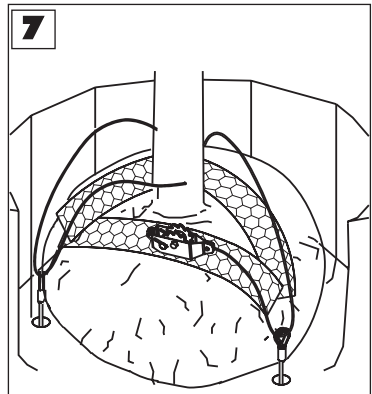


THE ANCHORS MUST BE LOADLOCKED.

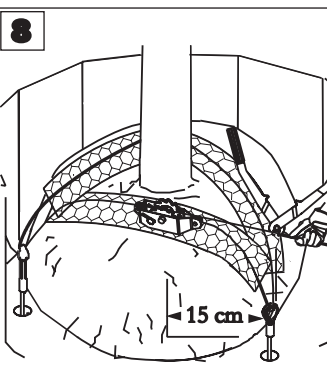


Correct position.

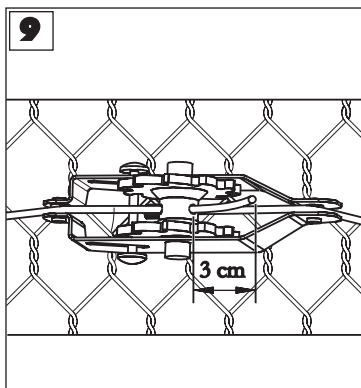
Lay the Plati-Mat across the rootball in line with the Anchors.



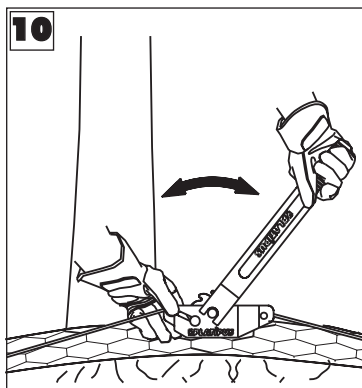
Lace the tendon around the rootball as shown.



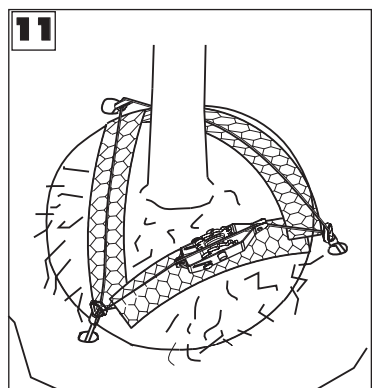
Pull the slack through and cut off excess tendon.



Thread the end of the tendon through the hole in the tensioner wheel and cut off excess tendon.



Wind the tendon onto the tensioner to tighten.



Tighten and adjust the tendon until taut all round.

PLATIPUS ANCHORS LIMITED, Kingsfield Business Centre, Philanthropic Road, REDHILL, Surrey, RH1 4DP, England.

Tel: +44 (0) 1737 762300 Fax: +44 (0) 1737 773395

Web: www.platipus-anchors.com E-Mail: info@platipus-anchors.com

Reg. No. 1680529 England - Quality Management and Design Systems to ISO 9001 - Reg. EAQA/75

Appendix C

Automated Drip Irrigation system to Intensive planters

S14 Irrigation

To be read with Preliminaries/ General conditions.

GENERAL

110 IRRIGATION SYSTEM ABOVE SLAB

- Source: Mains water supply.
- Water meters: Required.
- Backflow prevention device: Required.
- Water storage tanks: Not required.
- Pumps: Required.
- Pipelines: UV resistant, root resistant.
 - Insulation: Not required.
- Draw-off taps/ valves: Draw off tap for above ground use.
- Filters: Required.
- Outlets: Tape lines/ Dripper system.
- Electrical supply: 220v mains electrical supply (24v output) to be provided to control system within each irrigation area.
- Accessories:
 - Controllers ;
 - Electronic timer ;
 - Mechanical timer ;
 - Pressure gauge ; and
 - Valve boxes.

130 WATER REQUIREMENTS DURING SPRING AND SUMMER

- Intensive Planting: 2 linear metres of drip irrigation per m² of planting; operated for 1 hour during a 24 hour period (during darkness) for 5 days a week, applying 60 Litres to each m², 12 Litres per day.

140 IRRIGATION SYSTEM COMPONENTS

- Irrigation Mains water supply.
- Irrigation pump and automatic filtration.
- Low voltage irrigation control system.
- Main irrigation supply pipe.
- Irrigation sub-mains.
- Drip irrigation within the planters.
- Hand-watering valves.

PERFORMANCE

210A DESIGN AND DETAILING

- Requirement: Complete the design of the irrigation system.
- Proposals: Submit drawings (showing equipment positions and pipeline routes), technical information, calculations and manufacturer's literature.
- General: Design the irrigation systems to comply with the relevant parts of BS 7562, BS 8558, BS EN 805, BS EN 806-2, -3 and -5 and BS EN 12484-4.

- 220 PIPELINE DESIGN
- Sizes: Calculate to suit probable simultaneous demand for the entire system and to ensure:
 - Flow rates (minimum): Delivery pipelines: 32mm supply pipe, flow rate 1800L/hr @ 2.5 bar minimum to pop-up sprinklers..
 - Suitable discharge rates at distribution points.

- 230 DISCHARGE REQUIREMENTS
- Fitting: Dripper system: 1200 Lt/hr at 2 bar .
 - Operation of appliances: Provide adequate flow rates from available water pressure.

PRODUCTS

- 310 DEZINCIFICATION
- Fittings, pipelines and equipment located below ground or in concealed or inaccessible locations: Gunmetal or other material resistant to dezincification.

- 320 WATER METERS TO MEASURE WATER REQUIRED FOR IRRIGATION MANAGEMENT
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.

- 325 BACKFLOW PREVENTION DEVICES DEVICES TO MAINS WATER SUPPLY
- Standard: To BS EN 13959, type EC or ED.
 - Type: Copper alloy check valve with intervening test cock.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Fluid Category: 3.

- 345A PUMP SELECTION
- General: Select variable speed pump at or near the most efficient part of the performance curve for required duty 2.5 bar minimum to pop-up sprinklers. 2bar to dripper system.

- 368 POLYETHYLENE PIPELINE FOR UNDERGROUND USE
- Standard: To BS EN 12201-2, Kitemark certified.
 - Jointing: Compression fittings to BS EN 12201-3.
 - Colour: non-potable.

- 382 VALVES GENERALLY
- Types: Approved for the purpose by the local water supply undertaker and of the appropriate pressure rating.
 - Location: Adjacent to equipment to be isolated and where they can be readily operated and maintained.
 - Joints: To suit the pipe material.
 - Operation:
 - Handwheels: For control purposes.
 - Lockshields: For isolation or regulation of circuits or equipment.

- 383 STOP VALVES AND DRAW-OFF TAPS FOR ABOVE GROUND USE
- Type: Copper alloy.

- 384 STOP VALVES FOR BELOW GROUND USE
- Type: DZR Copper alloy CZ 132 to BS 5433.

S14 Irrigation

- 392 FLOW REDUCING SERVICING VALVES
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- 393 PRESSURE REGULATORS
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Material/ Finish: Manufacturer's standard.
 - Working pressure (maximum): To suit irrigation requirements.
- 394 SOLENOID VALVES
- Manufacturer: Hunter or EQA.
 - Product reference: PGV or EQA.
 - Material/ Finish: as cast.
 - Operation: Automatic, pressure sensing with manual override.
 - Operating pressure range (recommended): 1.5-4 bar (150-400 kPa).
 - Flow control: Automatic.
- 395 FILTERS
- Type: In-line 100micron disc.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Flow rate: 1.8 m³/h.
 - Accessories: Automatic backflush, mesh, 11mm/2" BSP threaded connections.
- 420 MAIN IRRIGATION SUPPLY PIPE
- Provided water mains will be connected to the irrigation main supply pipe via an isolation valve and double check valve. The double check valve will prevent contamination of the water mains from the irrigation main supply.
 - Pipe within landscaped areas: 32mm MDPE or EQA to pop-up sprinklers 20mm MDPE or EQA to dripper system, tough flexible pipe which can be buried directly into the soil.
 - Fittings: Compression type.
 - The irrigation main supply pipe will end at each solenoid valve group.
- 421 IRRIGATION SUB-MAINS PIPE
- From the solenoid valves, 32mm and 20mm (ref above) MDPE pipe will be installed to the lawn areas and planters, running under paving etc, branching into each planter.
 - Each valve will irrigate 100m² of planting.
 - Porous pipe systems as per Clause 422 will connect directly to the 20mm irrigation submains.
 - For lawn irrigation zones, the sub-mains will be 32mm MDPE.
- 422 POROUS PIPE SYSTEMS
- Manufacturer: Netafim or EQA.
 - Product reference: 'Techline AS 16mm' by Netafim or EQA.
 - Pipe size: 16 mm.
 - Depth: 75 mm.
 - Operating pressure: 2-2.5 bar.
 - Discharge: 2 Lt/h PC dripper every 300mm.
 - Accessories: Air relief valve and Barbed elbows, plugs and tees, 16mm fittings, held in place by pegs.

S14 Irrigation

450 CONTROLLERS

- Type: - Digital;
 - Fully automatic with rain and moisture sensors; and
 - Multi zone (capable of operating up to 6 solenoid valves simultaneously)
 - 24V..
- Manufacturer: Hunter or EQA.
 - Product reference: 'I-Core 24 zone' by Hunter or EQA.
- Power: Mains operated with battery back up; 220V input, 24V output.
- Features: 12 hour clock with PM indication;
 - Automatic operation with manual override;
 - Fourteen day watering calendar;
 - Frost sensor;
 - Lockable, weather resistant case;
 - Moisture sensor, wireless, to prevent irrigation during wet weather;
 - Pump start; and
 - Rainstat
 - 24V solenoid valves, installed in groups in central locations
 - Low voltage multi-core control cable, 0.8mm x 20 core. The cable will be installed from the irrigation control panel, to the last group of solenoid valves. The cable will follow the route of the main irrigation supply pipe and is suitable for burial..

475 PRESSURE GAUGE

- Type: Integral to pump.
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Display: Digital.
- Scale: Imperial and metric.
 - Range: 0-4 bar and 0-400 kPa.

480 VALVE BOXES

- Manufacturer: Irritec/Carson Brooks or EQA.
 - Product reference: 305mm Rectangular and 254mm Round by Irritec/Carson Brooks or EQA.

EXECUTION

610 INSTALLATION GENERALLY

- Standard: In accordance with the relevant parts of BS 7562-5, BS 8558, BS EN 805, BS EN 806-4 and BS EN 12484-4, water supply regulations and the requirements of the water supply undertaker.
- Generally:
 - Fixing: Secure and neat in locations and depths suitable for the purpose.
 - Outlets and valves: Adequately support to prevent pipes being strained during operation.
 - Open ends of pipes: Temporarily seal with purpose made plugs or blanking caps to prevent ingress of dirt, insects or rodents during installation.
- Equipment, components and accessories:
 - Store in original packaging in dry conditions.
 - Where appropriate, securely fix parallel or perpendicular to the enclosing structure.
- Corrosion resistance: In locations where moisture is present or may occur, provide corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.
- Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
- Access: Allow adequate space for inspection, servicing and maintenance.

S14 Irrigation

612 PIPELINE INSTALLATION

- Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
- Joints, bends and offsets: Minimize.
- Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
- Electrical equipment: Install pipelines 150 mm (minimum) clear of electrical equipment. Do not run pipelines through electrical enclosures or above distribution boards, controllers or outlets.
- Insulation: Allow space around pipelines to fit insulation without compression.
- Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.
- Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines passing through walls, floors or other building elements.

615 FITTING INSULATION TO EXTERNAL SUPPLY PIPELINES

- Location: Where exposed to air and where less than 750 mm below ground level.
- Installation:
 - Fixing: Securely and neatly in accordance with manufacturer's recommendations and with the split on 'blind' side of pipeline.
 - Over fittings and at supports: Continuous leaving no gaps.
 - Timing: Do not fit insulation until completion of testing.

COMPLETION

910 TESTING

- Standard: To BS EN 12484-5.
- Notice (minimum): Three days.
- Condition of pipework and equipment prior to testing: Correctly installed, secure and clean.
- Pressure testing: Joints, fittings and components must be free from leaks and signs of physical distress when tested for at least one hour as follows:
 - Systems fed directly from the mains: Apply a test pressure equal to 1.5 times the maximum pressure to which the installation or relevant part is designed to be subjected in operation.
 - Systems fed from storage: Apply a test pressure equal to the pressure produced when the storage cistern is filled to its normal maximum operating level.
- Other test procedures: As recommended by the manufacturer and required by the water undertaker.
- Test results: Submit.

911 INSPECTION TESTING

- Standard: To BS EN 806-4, clause 6.1.

912 FLUSHING AND DISINFECTION

- Standard: To BS EN 806-4, clauses 6.2 and 6.3.

920 COMMISSIONING

- Equipment: Check and adjust operation of equipment and controls.
- Outlets: Check operation of outlets for satisfactory rate of flow.

S14 Irrigation

930 DOCUMENTATION

- Submit prior to completion:
 - Full technical description of each system installed.
 - Manufacturers' operating and maintenance instructions for all equipment and controls.
 - Manufacturers' guarantees and warranties.
 - Operating instructions for the system as a whole giving optimum settings for all controls.
 - Record drawings showing the location of circuits, fittings, pipes, apparatus and operating controls.
 - Electrical inspection and completion certificates to BS 7671.
- Number of copies: Five.

940 OPERATING TOOLS

- Tools: Supply tools for operation, maintenance and cleaning purposes.
- Keys: Supply keys for valves, vents and cabinets.

950 SPARES

- General: At completion provide the following: One extra sprinkler head and One replacement filter cartridge.

Appendix D
Landscape Maintenance Works

12 months maintenance & defects liability period, to commence on practical completion of soft landscape works, continuing perpetually on an annual basis.

14 maintenance visits per growing season (April- October) carried out on a fortnightly basis and 2 additional maintenance visits over winter period. 16 no. maintenance visits required per annum extending perpetually on a permanent basis for the full lifespan of the building.

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY**105 MAINTENANCE OBJECTIVES**

- ~ Location: All soft landscaped & grassed areas.
 - Duration: 12 months.
- ~ Aims: Improved landscape visual amenity and Provide wildlife habitat and increase biodiversity.
- ~ Restrictions: To be agreed with client.
- ~ Results: As scheduled.

110 NOTICE

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

130 REINSTATEMENT

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

155 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.

160 WATER RESTRICTIONS

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

170 DISPOSAL OF ARISING

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

180 CHIPPING OR SHREDDING

- ~ General: Not permitted on site.

181 MECHANICAL EQUIPMENT

- ~ General: Minimize.
- ~ Prohibited equipment: Chippers.
- ~ Timing: Use of mechanical equipment allowed between the hours of 9:00 am and 5:00 pm only.

190 LITTER

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

195 PROTECTION OF EXISTING GRASS

- ~ General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 CLEANLINESS

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

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING

- ~ Duration: One full growing seasons from the date of planting.
- ~ Weed control:
 - Method: Keep planting beds clear of weeds by maintaining full 75mm thickness of mulch.
 - Area: Maintain all planting beds (tree, shrub/perennial) as a weed free area
- ~ Trees: When in leaf, spray crowns during warm weather.
 - Timing: After dusk.
- ~ Watering: Contractor's choice.

502 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.

510 TREE STAKES AND TIES

- ~ Inspection/ Maintenance times: As scheduled and immediately after strong winds.
- ~ Stakes:
 - Replace loose, broken or decayed stakes to original specification.
 - If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
- ~ Ties: Adjust, re-fix 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: During spring when no longer required to support the tree.
 - Fill stake holes with lightly compacted soil.

520 REFIRMING OF TREES AND SHRUBS

- ~ Timing: After strong winds, frost heave and other disturbances.
- ~ Re-firming: 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 re-firm.

540 PRUNING GENERALLY

- ~ Pruning: In accordance with good horticultural and arboricultural practice.
 - Removing branches: Do not damage or tear the stem or bark.
 - Wounds: Keep as small as possible and cut cleanly back to sound wood.
 - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
 - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- ~ Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.

- ~ Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
 - ~ Disease or infection: Give notice if detected.
 - ~ Growth retardants, fungicide or pruning sealant: Do not use unless instructed.
- 545 PRUNING OF EXCESSIVE OVERHANG
- ~ Timing: As instructed.
 - ~ Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
 - ~ Special requirements: Allow ground cover plants to partially overlap paths and lawns.
- 550 PRUNING OF EXCESSIVE HEIGHT
- ~ Timing: As instructed.
 - ~ Operations: Remove excessive height as instructed.
- 555 PRUNING TREES AND SHRUBS
- ~ Standard: To BS 7370-4.
 - ~ Special requirements: Growth retardants not permitted.
- 575 PRUNING ORNAMENTAL SHRUBS
- ~ General: Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
 - ~ Suckers: Remove by cutting back level with the source stem or root.
- 620 REMOVAL OF DEAD PLANT MATERIAL
- ~ Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.
- 630 DEAD AND DISEASED PLANTS
- ~ Removal: As soon as possible.
 - ~ Replacement: In the next suitable planting season.
- 635 REINSTATEMENT OF SHRUB/ HERBACEOUS AREAS
- ~ Dead and damaged plants: Remove.
 - ~ Mulch/ matting materials:
 - Carefully move to one side and dig over the soil, leaving it fit for replanting.
 - ~ Do not disturb roots of adjacent plants.
 - ~ Replacement plants:
 - Use pits and plants: To original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
 - Additional requirements: Submit details and cost of plants before ordering.
 - ~ Dressing: Slow release fertilizer:
 - Type: Contractor's choice.
 - Application rate: As manufacturer's recommendations.
- 645 WEED CONTROL GENERALLY
- ~ Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 100 mm high.
 - ~ Adjacent plants, trees and grass: Do not damage.
- 650 HAND WEEDING
- ~ General: Remove weeds entirely, including roots.
 - ~ Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
 - ~ Completion: Rake area to a neat, clean condition.
 - ~ Mulch: Reinstate to original depth.
- 655 WEED CUTTING BY HAND OR MACHINE
- ~ Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 75 mm.
 - ~ Herbicides: Remove arisings before application.

- 657 HERBICIDE TO KILL REGROWTH
- ~ Type: Suitable foliar acting herbicide to kill regrowth.
 - ~ Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.
- 670 WEED CONTROL WITH SUMMER HERBICIDE
- ~ Type: Suitable foliar acting herbicide.
 - ~ Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.
- 675 DIGGING OVER
- ~ General: Dig over beds. Do not damage existing plants, bulbs and roots.
Depth of dig (minimum): 150 mm.
- 680 SOIL AERATION
- ~ Compacted soil surfaces:
 - Prick up: To aerate the soil of root areas and break surface crust.
 - Size of lumps: Reduce to crumb and level off.
 - ~ Damage: Do not damage plants and their roots.
- 690 MAINTENANCE OF LOOSE MULCH
- ~ Thickness (minimum): 75 mm.
 - Top up: As required to maintain a consistent 75mm cover.
 - ~ Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
 - ~ Weeding: Remove weeds growing on or in mulch by hand weeding.
- 695 FERTILIZING ESTABLISHED TREES AND SHRUBS
- ~ Time of year: After flowering.
 - ~ Type of fertilizer: Slow release.
 - ~ Application: Spread evenly.
Rate: As manufacturer's recommendations.
- 700 SNOW REMOVAL FROM SHRUBS/ TREES
- ~ Standard: To BS 7370-4.
 - ~ Plants subject to snow removal: All evergreens.
 - ~ Timing: Within 24 hours of snowfall.
- 705 WINTER LEAF REMOVAL
- ~ Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
 - ~ Arisings: Compost on site.
- 710 WOODLAND PLANTING MAINTENANCE
- ~ Watering: In exceptional circumstances to prevent plants dying.
 - ~ Loose plants: Re-firm surrounding soil, without compacting.
 - ~ Vegetation: Except trees and coppice shoots to be retained, cut down to 100 mm above ground level within the plantation area.
 - Arisings: Leave between rows.
 - ~ Ditches and drains: Keep clear.

TREE WORK

- 810 TREE WORK GENERALLY
- ~ Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
 - ~ Protection: Avoid damage to neighbouring trees, plants and property.
 - ~ Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
 - ~ Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'.
Cut vertical branches similarly, with no more slope on the cut surface than is necessary to

shed rainwater.

- ~ Appearance: Leave trees with a well balanced natural appearance.
- ~ Chain saw work: Operatives must hold a Certificate of Competence.
- ~ Tree work: To be carried out by an approved member of the Arboricultural Association.

815 ADDITIONAL WORK

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

820 PREVENTION OF WOUND BLEEDING

- ~ Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION

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

830 CLEANING OUT AND DEADWOODING

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

835 CUTTING AND PRUNING GENERALLY

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

860 REMOVING TREES, SHRUBS AND HEDGES

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

865 BARK DAMAGE

~ Wounds:

- Do not attempt to stop sap bleeding.
- Bark: Remove ragged edges using a sharp knife.
- Wood: Remove splintered wood from deep wounds.
- Size: Keep wounds as small as possible.

~ Liquid or flux oozing from apparently healthy bark: Give notice.

870 CAVITIES IN TREES

~ Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.

~ Water filled cavities: Do not drain.

~ Sound wood inside cavities: Do not remove.

~ Cavity openings: Do not cover.