

CUNNANE STRATTON REYNOLDS
LAND PLANNING & DESIGN

**Units 66 & 67 Fourth Avenue,
Cookstown Industrial Estate,
Tallaght, Dublin 24**

LANDSCAPE DESIGN RATIONALE

Rev J - Sept 2020

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Location

The proposed site is located on the corner of Fourth Avenue and Cookstown Road, Cookstown Industrial Estate, Dublin 24.



Google aerial view

Tallaght Town Centre is 400m from the site, and the Dublin mountains are approximately 3.5km away. Within a 1km radius from site there are playing fields & open space, two community centres, four schools, along with Tallaght Institute of Technology a 3rd level educational facility.

There are excellent views from the site looking south and south west towards the Dublin Mountains. It is open to the south and east, but surrounded by existing light industrial & warehouses to the north and west. The site is currently occupied by two large buildings, one small building and hard surfaces. It is a 'brownfield site' with little or no topsoil or subsoil of any quality. There is no existing trees on the site.



Composite photo of site location

Planning Context

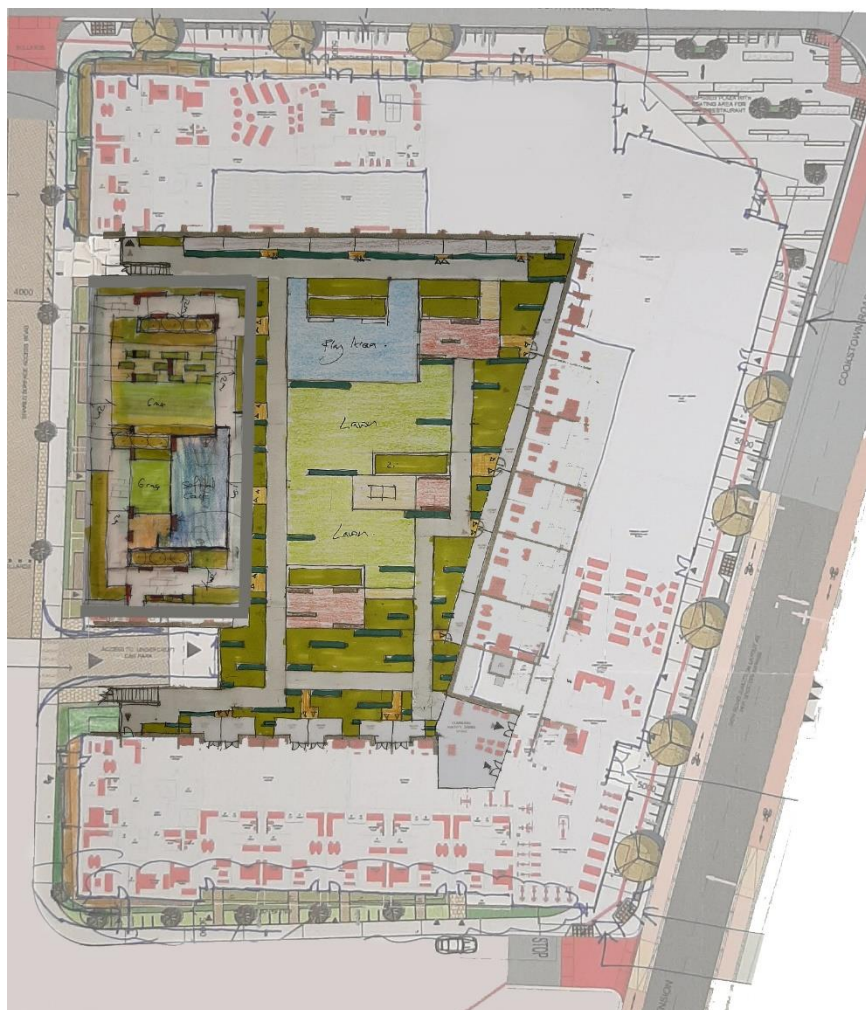
Situated within the Cookstown area of Tallaght, the site is within the South Dublin County Council jurisdiction. The proposed development landscaping policies and objects will adhere to the 2016-2022 County Development Plan and the Tallaght Town Centre LAP 2020.

Landscaping, external areas and the urban structure of the site will be designed to address the following planning requirements:

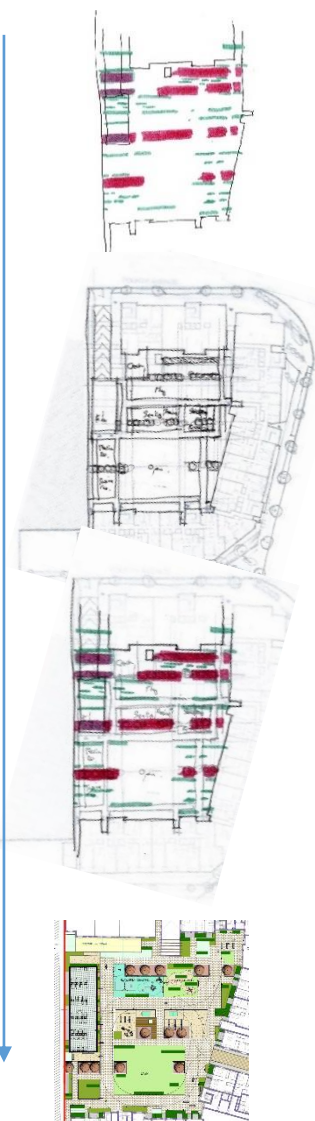
- Extension of the Tallaght Town Centre transformation with new residential, increased commercial/ retail, civic and cultural uses and functions (site is within the LAP neighbourhood titled 'The Centre');
- Enhancement of public realm in terms of street trees, attractive landscaping and landscaping elements;
- Create a family of furnishings, finishes and detailing that are in keeping with the neighbourhood 'The Centre' to emphasise sense of identity of the neighbourhood;
- Create new streets to improve permeability, that foster safety through active frontages and passive overlooking on to the streets;
- Upgrading of the existing pedestrian and cycle way to encourage sustainable modes of transport;
- Provision of adequate communal and public open space (combined or separate);
- Utilising the street landscaping to incorporate the buildings into a good urban framework, that can adequately provide for active and passive recreational facilities;
- To use the communal open space as an opportunity for environment and water cycle management (SuDS);
- Ensure buildings overlook and connect with proposed open spaces;
- Provision for children's play facilities;
- Incorporation of native plants into the landscaping to improve urban biodiversity, create wildlife habitats and improve pollen diversity;
- Coordination of services with landscaping so ducting, pipes, attenuation and lights can be implemented without conflict;
- Provision in the design for adequate substrate for the trees and planting to grow;
- Incorporation of landscaping along streets to soften them; and
- Provision of adequate bike parking facilities for residents and visitors.



Conceptual Image



Sketch Design



Design Development



Conceptual Images

AIMS FOR PROPOSED DESIGN

- To create a vibrant, energetic and usable landscape.
- To create communal amenity space that will be visually pleasing from above as well as functional at first & second floor level.
- To ensure the design allows for a diversity of activities and be adaptable for future uses, enabling the space to be used by all ages.
- To allow circulation routes in multiple directions.
- To create an attractive and distinctive built environment.
- To design a mixed use development that clearly defines the future character of Tallaght Town Centre and the Cookstown regeneration area.
- To ensure there is an active and interesting public realm along streets which creates unity in the design language for 'The Centre' Neighbourhood and for the junction of Fourth Avenue and Cookstown Road.
- To create unity in the overall aesthetics through the language of form.
- To utilise the geometric forms within the design to imply without dictating, passive and active spaces.

CONCEPT

The concept behind the design draws upon the intent to use a strong structure of horizontal lines that slide in and out of each other, creating rectangular spaces that lend themselves to a series of outdoor rooms that can then be used for a variety of activities.

Drawing upon the pattern language, specific activity spaces have been created within the roof gardens, from play, to seating areas for quiet reflection, to gardening areas. Planting has been used carefully to allow trees, shrubs and hedges to be used to establish different characters to each area. Planting will also be used as a privacy barrier between the communal, public and private areas.

The public realm has been designed to create a uniformity to the language within the streets hierarchy and to give a strong sense of identity to the Tallaght Town Centre / Cookstown area. These include incorporating a similar cobbled and bollarded edge to that use in Belgard Sq., Tallaght Town Centre, using a consistent material finishes for paving and street furnishings, and keeping the street widths consistent with the type of use.





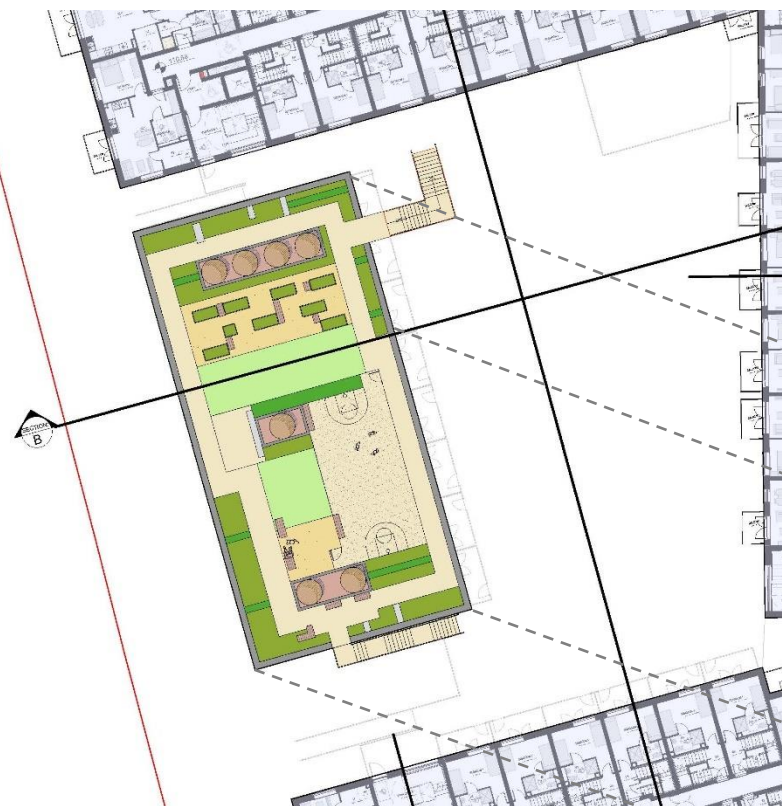
Proposed landscape plan at street level. NTS
(see dwg. 16360-2-102 for scaled drawing and more details)



Perspective of the proposed streetscape at the corner of 4th Ave. & Cookstown Rd.



Perspective of the proposed streetscape on New Access Road



Proposed communal open space plan on the second floor level. NTS
(see dwg. 16360-2-122 for scaled drawing and more details)



Perspective of the proposed courtyard communal open space



Proposed communal open space plan on the first floor level. NTS
(see dwg. 16360-2-112 for scaled drawing and more details)

BICYCLE PARKING

It is proposed to provide the full amount of bicycle parking for visitors as set out by the new apartment guidelines, one for every two units. These spaces have all been positioned on the street and close to apartment block entrances so that they are easily accessible by visitors. The breakdown of visitor parking requirements is as follows:

Visitor Bike Parking	
	On the street
Residential – 1 per 2 units	126no.
Commercial Units – 1/200m2	2no.
Total	128no.

Visitor bicycle parking on the street will consist of ‘U’ shaped bike stands.



Good incorporation of bike stands in Tallaght Streets



Examples of bike stands

URBAN IMPROVEMENTS AND STREET HIERARCHY

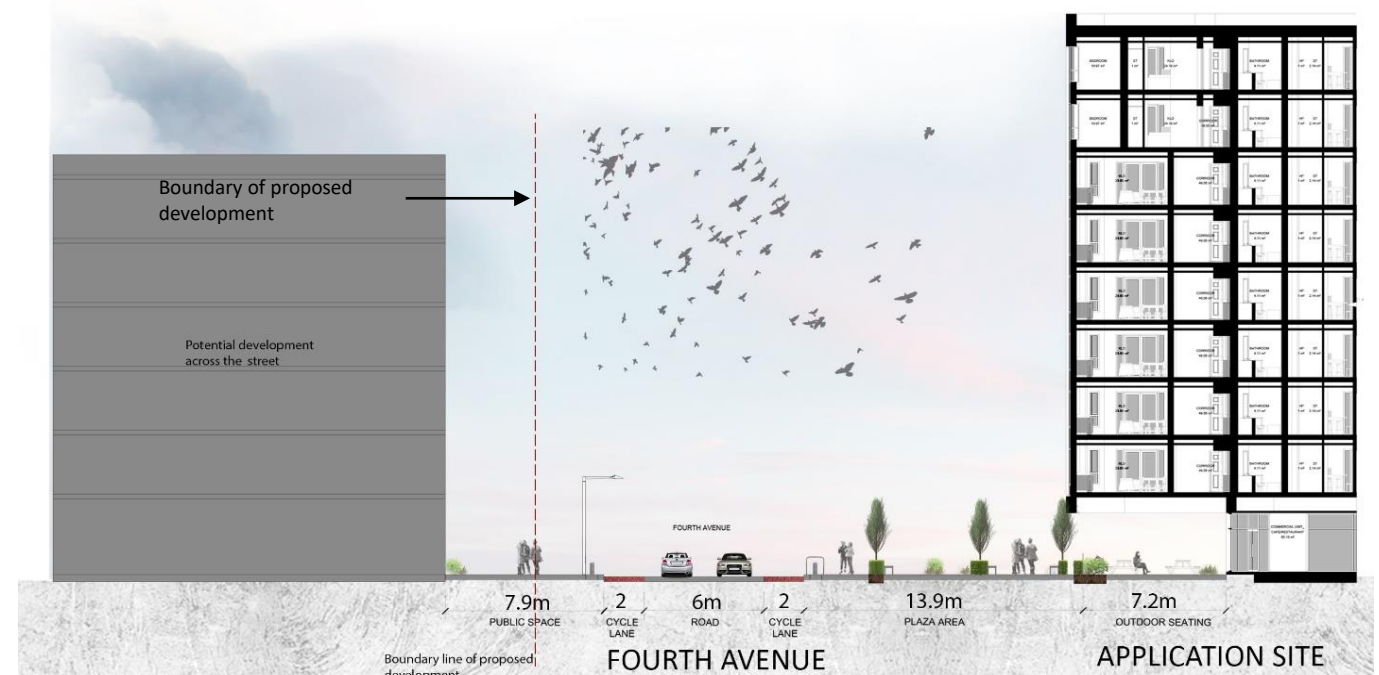
Street character is important to create a sense of place of an area and distinguish it from other districts of a city.

The experience for the pedestrian in a street will be extended up the access steps to the first floor roof garden communal amenity spaces, giving the feeling of a transition space that feels like a street but clearly defining it as a semi-private entrance.



Street Character Strategy

- Cookstown Road
- Fourth Avenue
- Local Access Road
- Home Zone
- Access to undercroft car
- Pedestrian access to
- Location of temporary road access



Section F_F – Section through Plaza Area



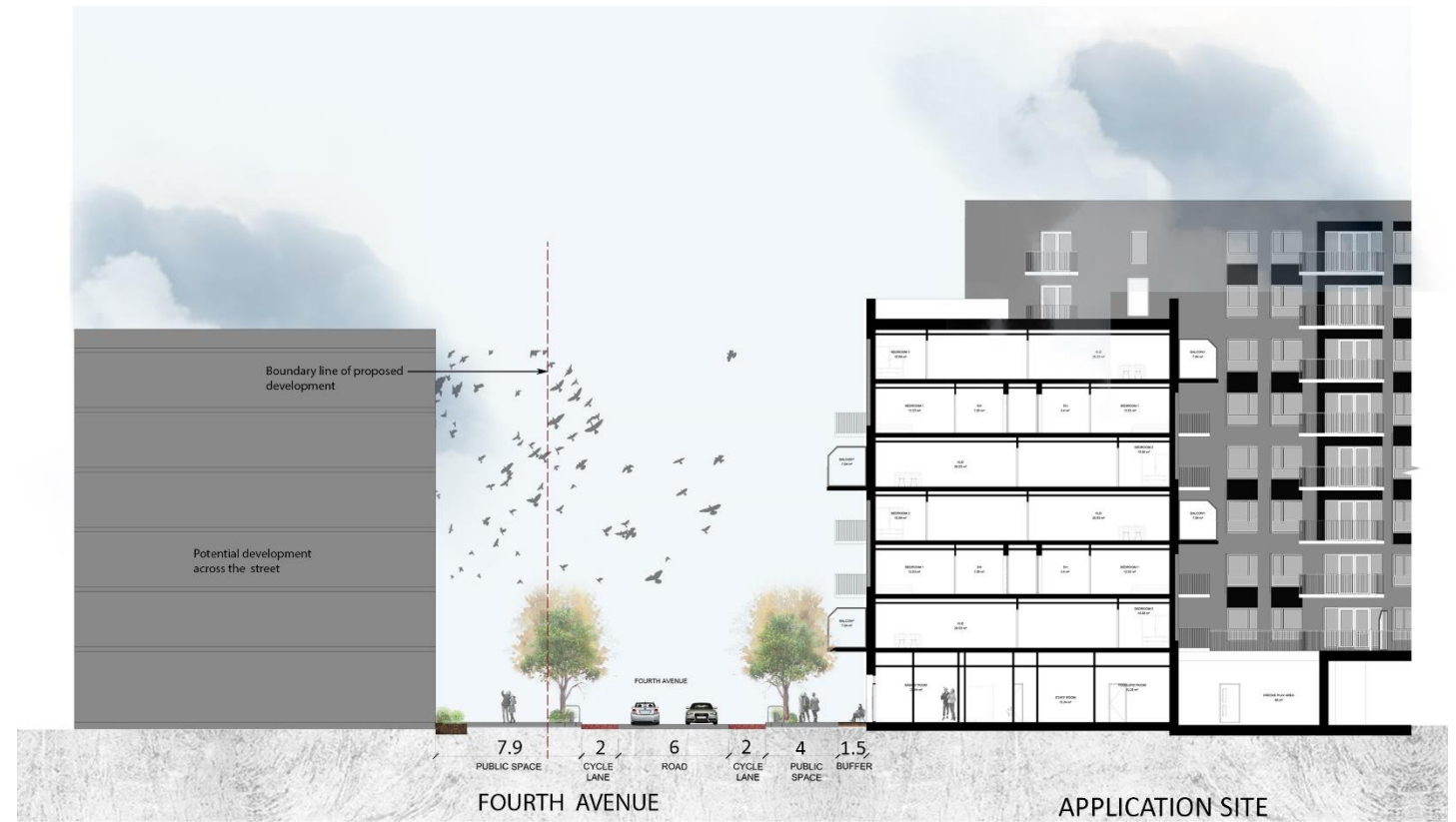
URBAN IMPROVEMENTS

The treatment to the streets has been designed to provide a comfortable and pleasant experience for people whether they are travelling by foot, bicycle or vehicle.

Surfaces will be treated using different materials to clearly delineate to a user that they are on a pedestrian only area, shared surfaces, cycle track or vehicular surface and when one particular user has priority over another.

Footpath finishes will tie in with the existing footpaths in Tallaght consisting of: a 30cm kerb; 70cm cobble strip with bollards/ seating/ bike stands; and min. 2 and 5m paved pedestrian area on main streets. For smaller streets there will be a 15cm kerb and min. 1.2m paved footpath such as the one to the south of the site.

The contribution this development will give to the streets will reflect the user needs and feel of the street.



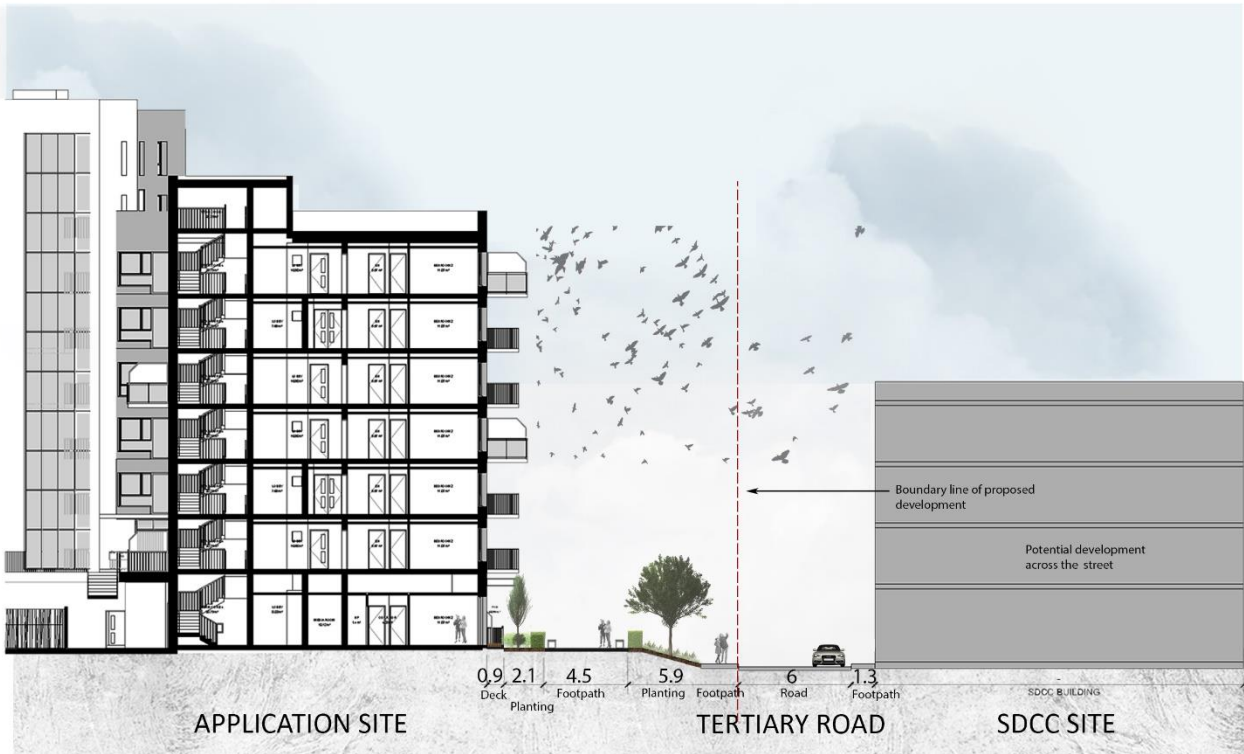
Section C_C – Typical example of character of Fourth Avenue



URBAN IMPROVEMENTS



Section D_D – Typical example of character of Cookstown Road



Section E_E – Typical example of character of the Local Access Road

URBAN IMPROVEMENTS – NEW ACCESS ROAD AND OPEN SPACE

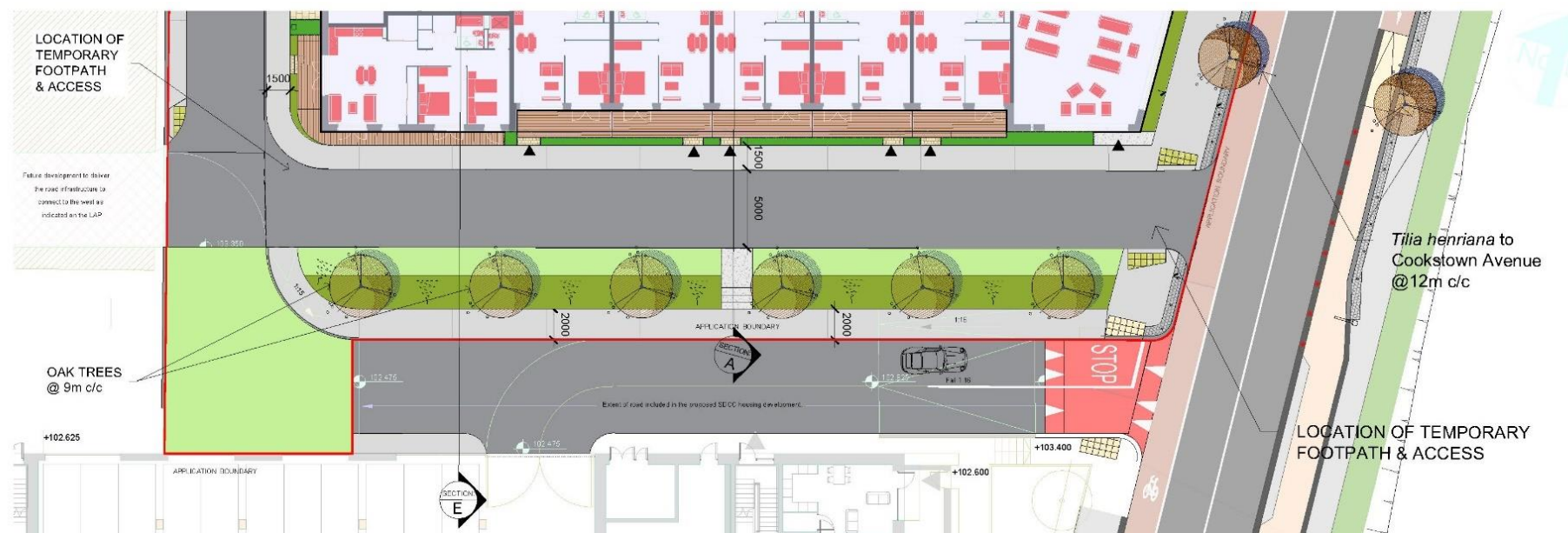
To the south of the site it is proposed to create a linear park that creates an attractive open spaces as well as a connection between the proposed development and the adjoining development on SDCC lands to the south.

As the proposed development is reliant on the road to the south of the site being constructed prior to this development, the lower image opposite illustrates the temporary works that will occur to allow access to the basement carpark in the event of any delays in the construction if the south boundary road.

The first, with the road along the southern boundary i.e. independent of SDCC's redevelopment to the south. The second, showing our road removed and our development tying in with SDCC's road should it come to be developed before we get out of the ground.



*Proposed linear park and road layout to the south of the site
(see dwg. 16360-2-104 for scaled drawing and more details)*



*Proposed temporary road layout to the south of the site.
(see dwg. 16360-2-104 for scaled drawing and more details)*

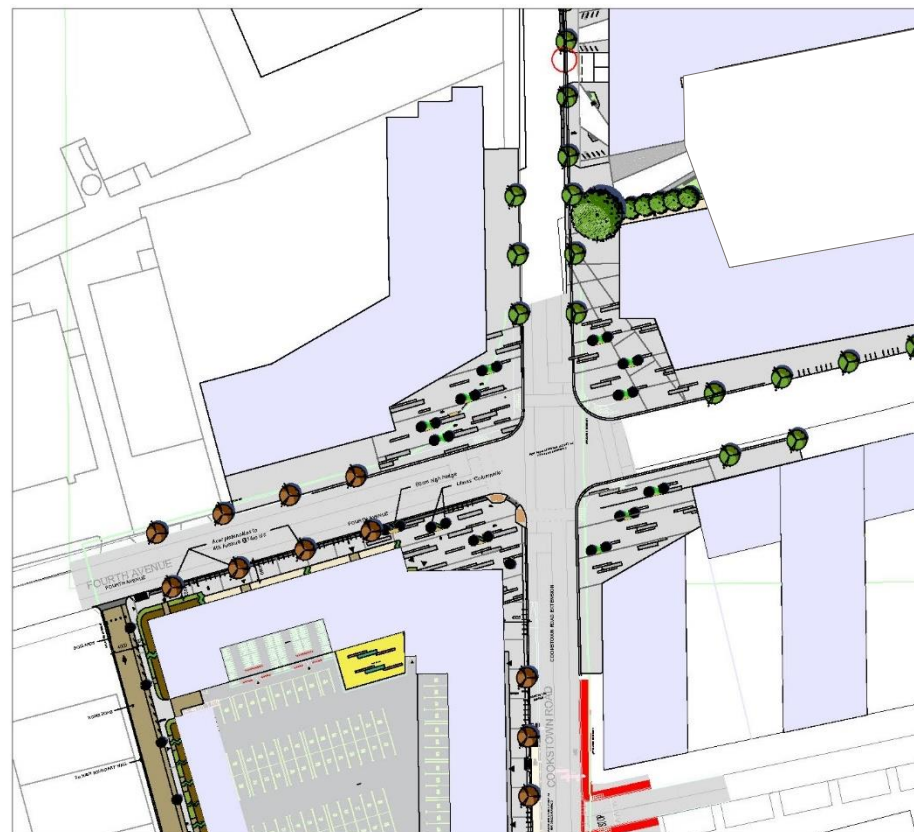
URBAN IMPROVEMENTS - COOKSTOWN CROSS

When looking at the design at the corner of the proposed development consideration was given to how it would work as a design if the other 3 corners of were also developed at this future cross roads.

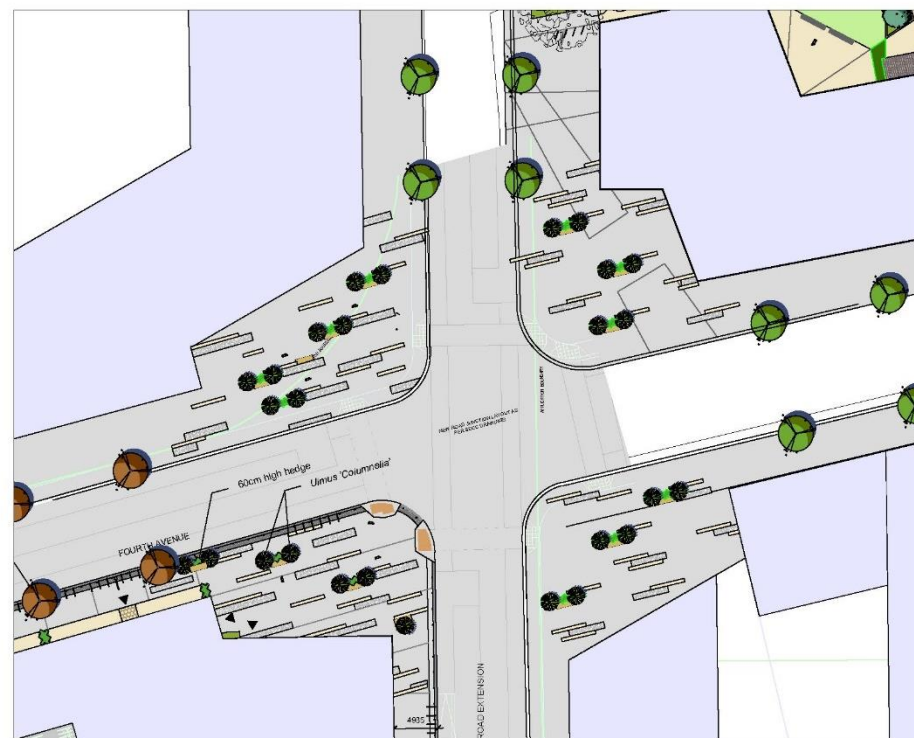


Proposed development design at Cookstown Road / Fourth Avenue Junction

The proposed design for the development has been laid out to create one quarter of a proposed square or plaza, with the feature paving materials and soft landscaping design illustrated to show how it could extending to the other 3 corners. This plaza would establish a important node point along Cookstown Road where it junctions with 4th Avenue and the link to Tallaght Hospital to the east. It's use as a public realm could be for anything from outdoor café/ restaurant / pub seating, to mini street theatre / performances, art gallery displays, a meeting points for residents and outdoor spaces for workers during their break time.



Potential design of Cookstown Cross



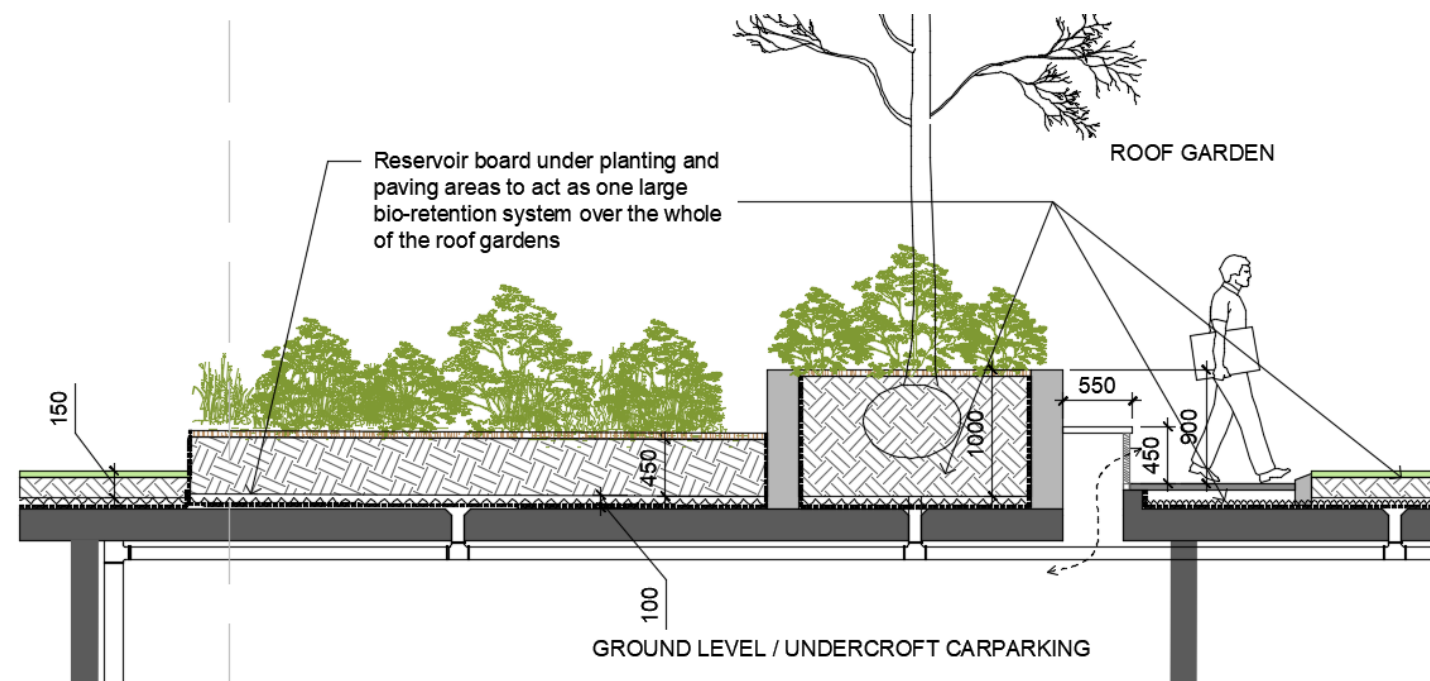
Landscaping and Incorporation of Suds

The proposed Storm Water Drainage System (SuDS) will be incorporated into the landscaping through a number of different elements. These will include permeable paved surfaces, sedum green roofs to buildings, and permeable landscaped areas with a reservoir board underneath that will act as a bio-retention system under the whole of the roof garden areas. This in turn will help to maintain moisture levels within the soil, thus reducing the consumption of water through the automatic irrigation system.

Full details for the SuDS system can be found in the engineers report.



Typical details illustrating the SuDS bio-retention system under the roof garden.



Typical section illustrating the locations of reservoir board which will hold the SuDS bio-retention system under the roof garden.

USABILITY AND ACTIVITY AREAS

There are a number of activity areas provided throughout the gated communal open spaces for the residents. These spaces include the provision of:

- Seating areas of varying sizes for groups to meet and chat or individuals who want to sit quietly and read a book.
- Areas that can accommodate community gatherings such as barbecues, birthdays and social evenings.
- A children's playground.
- Table tennis tables for active use for all ages.
- Softball play area with basket ball hoop, again for active recreation for all ages.
- A network of paths to allow for circular perambulation.
- Open grass area for lying on, kicking a ball or walking the dog.
- A community gardening area.

ACCESSABILITY

Accessibility has been incorporated to ensure there is universal access to the key areas within the courtyard. Desire lines to and from the main gates to stairwells have been incorporated into the design but without losing the feeling of a large open space. The paths have the added benefit of creating a good network of paths around the courtyard for perambulation.

OPEN SPACE ALLOCATION

The proposed site is 7,022m² and the open space provided within the internal gated roof gardens is 1,792m². There is an addition 569m² within the linear public park at ground level.



Play Space – To Communal Amenity Space

Play is how children learn about themselves and the world we live in and has been described as *'The work of the child'* by Mary Montessori.

Currently the nearest larger playground for older kids is 1.4km to the south in Sean Walsh Memorial Park. There are parks to the east of the site, approximately 1.4 – 1.8km away, at Redwood / Tree Park Road where there is a playground and at Parkhill where there is exercise equipment. There is also a proposed district playground designated for the future park to the southeast of the site as indicated LAP. It is proposed to balance this by providing a toddlers play lot for young children and a teenager/young adults area within the communal open space. Typical facilities for such teenagers/adults would include areas for a softball games area (MUGA) and table tennis table.

In accordance with the development plan, the play area will be a min. of 100m², be 5m from the nearest residential dwelling and have min. 5 pieces of equipment.

The play area will be designed to act as instigator of natural play rather than a director of what that play will be and to inspire the imagination. It will include for interesting and varied topography, hiding places, trees, grass and soft safety surfaces. The play space will challenge the children in relation to running, jumping, rolling, climbing and balancing, while also experiencing a range of emotions such as opportunities to be powerful/powerless, scared/confident, and in/out of control. It will provide the children with a freedom of choice, spontaneity, and an absence of directly imposed rules.

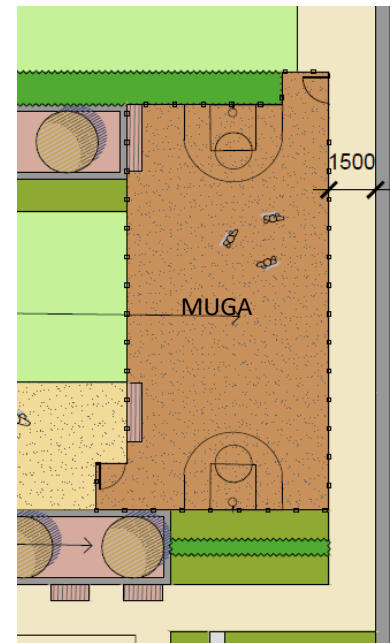
Softball area will be at the 2nd Floor roof garden with a 2.4m high fence around it and a net overhead to stop balls escaping. The table tennis table will be on the 1st floor within the covered outdoor seating area. To aid reducing noise volumes soft surfaces will be used.

Furnishings & Surfaces:

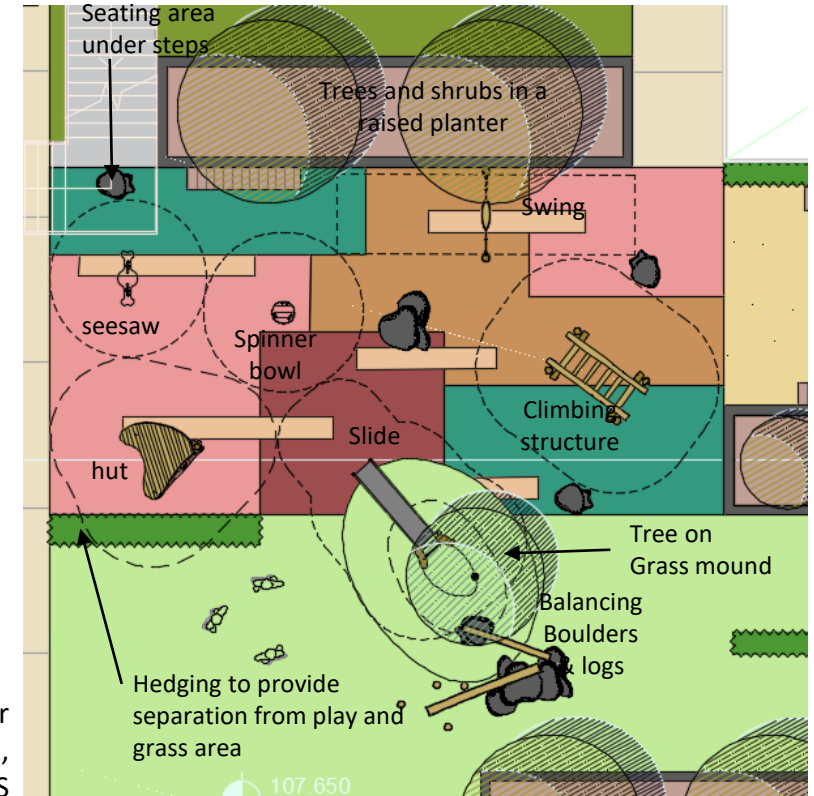
Furnishings will be similar to what is illustrated in the images displayed. The play area will have a rubber safety surface and grass, suitable surfaces for on a roof garden. See also 'Material & Finishes' section of this report for facilities for teenagers and adults.

Safety:

All furnishings and surfaces within the children's play spaces will be to ISEN 1176/ISEN 1177 standards and meeting the RoSPA, NSC and other appropriate health and safety requirements. The play space has been designed around the Ready, Steady, Play! And Naps, Leaps and Neaps guidelines.



2nd Floor MUGA,
Scale: NTS



Plan of 1st Floor
playground,
Scale: NTS



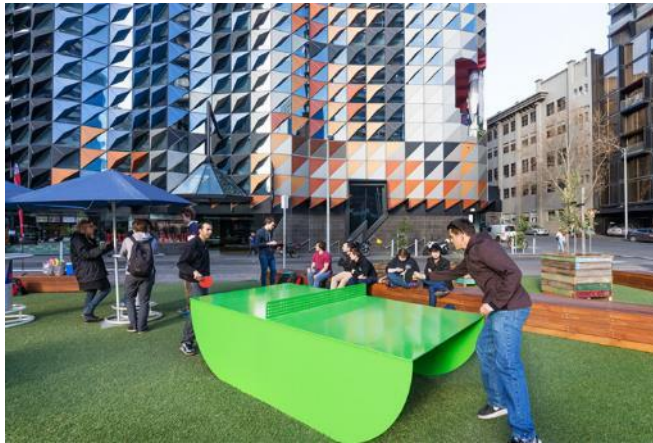


Table Tennis Table



Soft Ball Play Areas



Rubber and mulch play surfaces



Crèche Play Area



Bins, aluminium & steel



Seating, timber & steel



Bicycle Stands, steel



Bollards, steel



Patterned Concrete Slabs



Rolled Dust Gravel



Fine Brushed Concrete Footpath



Resin bound glass inset into paving



Raised Planters with Seating, glazed brick



Column Lighting for courtyard



Feature paving lighting



Bollard Lighting



Vents to be built under plantings and seating

All materials will be designed to a high standard, will be robust and withstand a long life, as well as meet the CE standard.

All areas will be designed to facilitate universal access to all users and be in compliance with Part M of the building regulations, as well as meet the CE standard.

Lighting will be designed to meet the required lux levels for the site and streets, and comply with SDCC County Councils standards.

Lights have been positioned so they are 6m from proposed trees within the street areas. Where different, either the lighting design has been adjusted or the tree species amended so as to not block the street lighting.

All proposed planting species have been selected based on their suitability for their location. In particular the planting that will be in raised planters above the undercroft carpark will be suitable for the limited soil depth, be drought tolerant and robust enough for public realm and communal amenity spaces.

All planters will be suitable constructed to provide adequate growing space for the shrubs and trees. All planting will be planted as per the details on the following pages. All landscaping will be implemented and maintained in accordance with the maintenance and management schedule at the back of this report.

Street Trees:



Tilia henryana –
Caucasian Lime



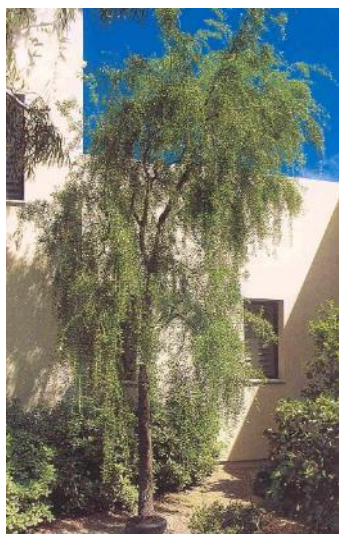
Acer platanoides –
Norwegian Maple Trees and
the narrow variety



Ulmus 'Columella'
Narrow Elm Trees



Acer rubrum 'Scanlon'–
Narrow Red Maples Trees



Betula pendula 'Tristis' –
Narrow Weeping Birch



Acer palmatum
Japanese Maple

Courtyard Trees:

Shrubs:



Aster novi-belgii



Berberis f. 'Amstelveen'



Geranium sp.



Hydrangea sp.



Lavendula 'Hidcote'



Miscanthus sp.



Pinus mugo 'Nana'



Spirea j. 'Firelight'

Groundcover:



Ajuga reptans



Hedera helix



Geranium m 'Czador'



Hyacinthoides non-scripta



Anemone nemorosa

Hedging:

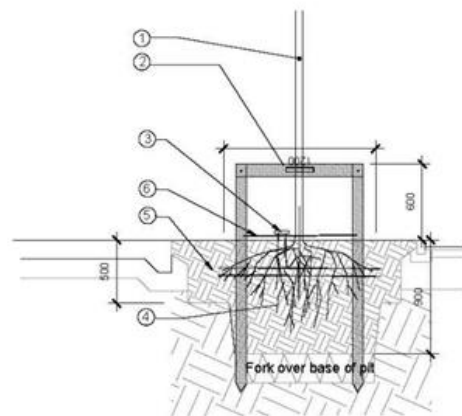
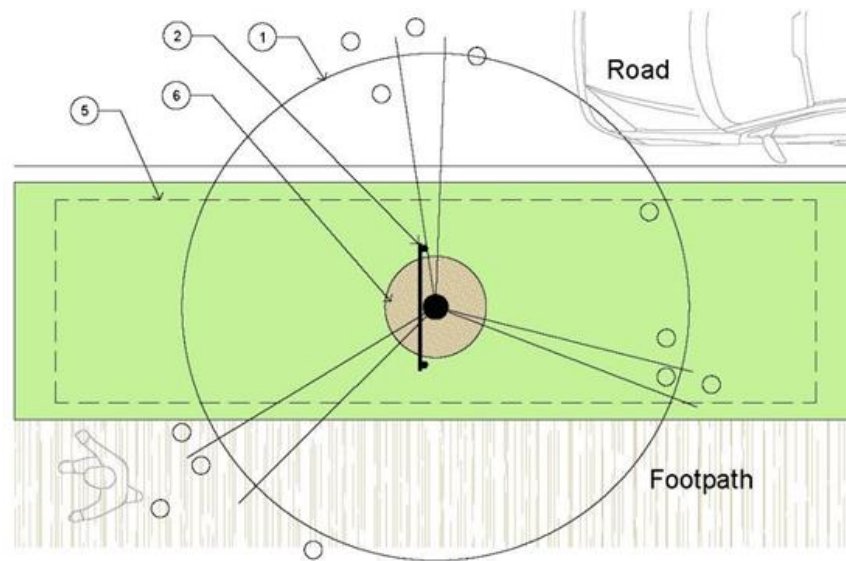


Buxus sempervirens



Fargesia murielae

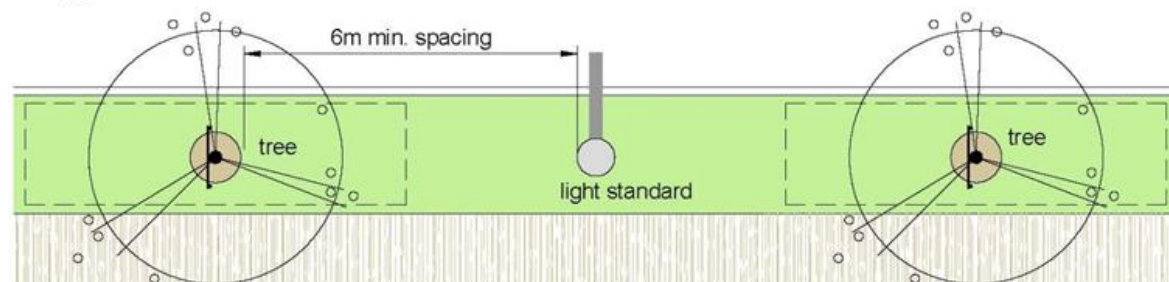
Street Tree & Roof Garden Planting Details



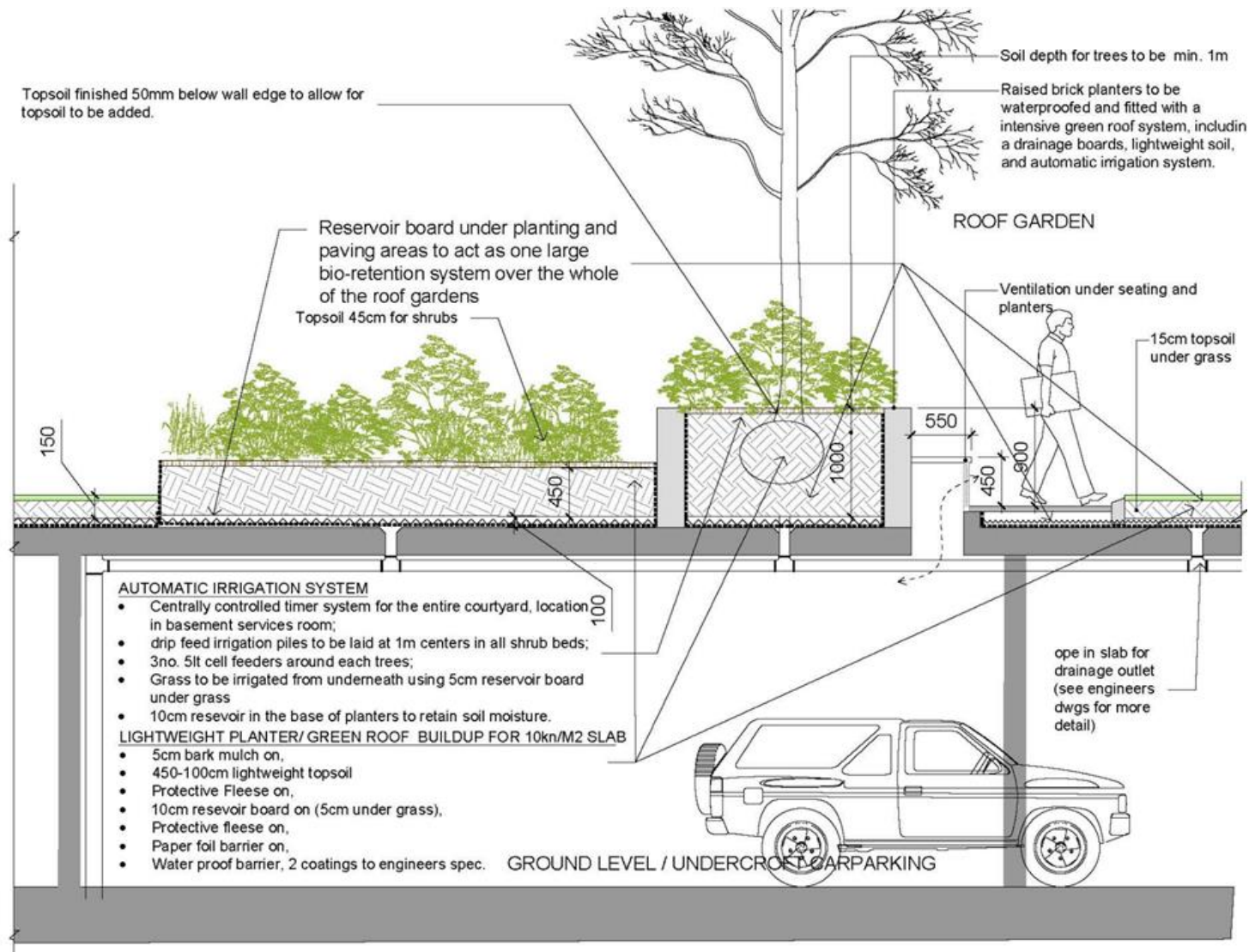
NOTES

- ① To have a clear stem height of 2000mm.
- ② 2no. 75mm diameter stakes pressure treated driven 1300mm below ground 600mm above ground with specified biodegradable adjustable tie affixed to tree & stake.
- ③ 6cm diameter perforated flexible plastic drainage pipe positioned as shown over rootball with one end open to surface to facilitate watering.
- ④ Pits to be size 120(w)x90(d)cm. Remove the full depth of topsoil and set aside for reuse. Scarify sides, break up base of pit to a depth of 200mm and incorporate a soil ameliorant into base. Back fill pit with topsoil mixed with soil ameliorant in 150mm firmed-in layers. All planting to receive a minimum of 25lt water per m² immediately after planting.
- ⑤ The tree pit root zone shall extend beyond the tree pit for a 6 x 1.7m area 50cm deep.
- ⑥ 75mm bark mulch in 80cm dia circle to base of trunk.

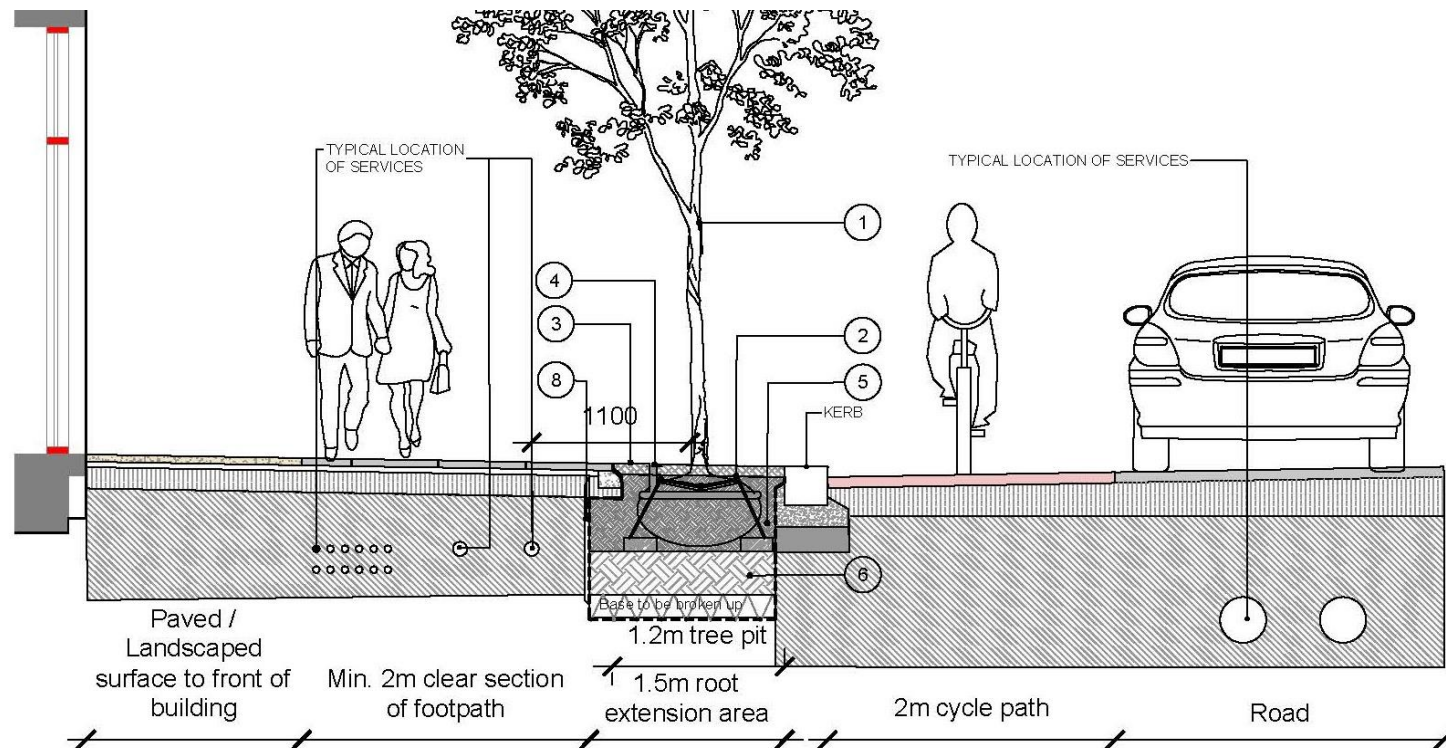
V01 Tree Pit Detail for Street Trees.
SCALE: 1:50@A3



V03 Light Standard and Street Trees Setout.
SCALE: 1:125@A3

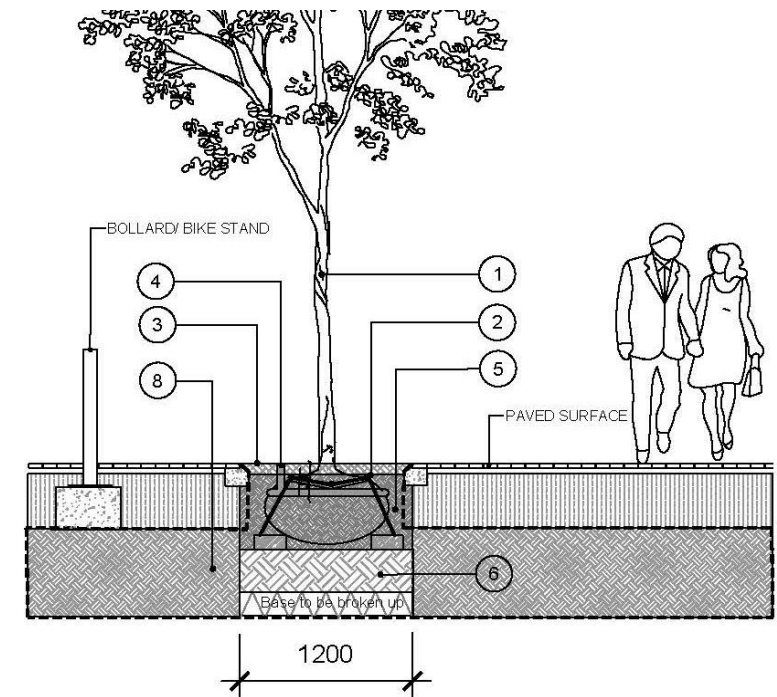


V02 Raised Planter Detail with Drainage
SCALE: 1:50@A3



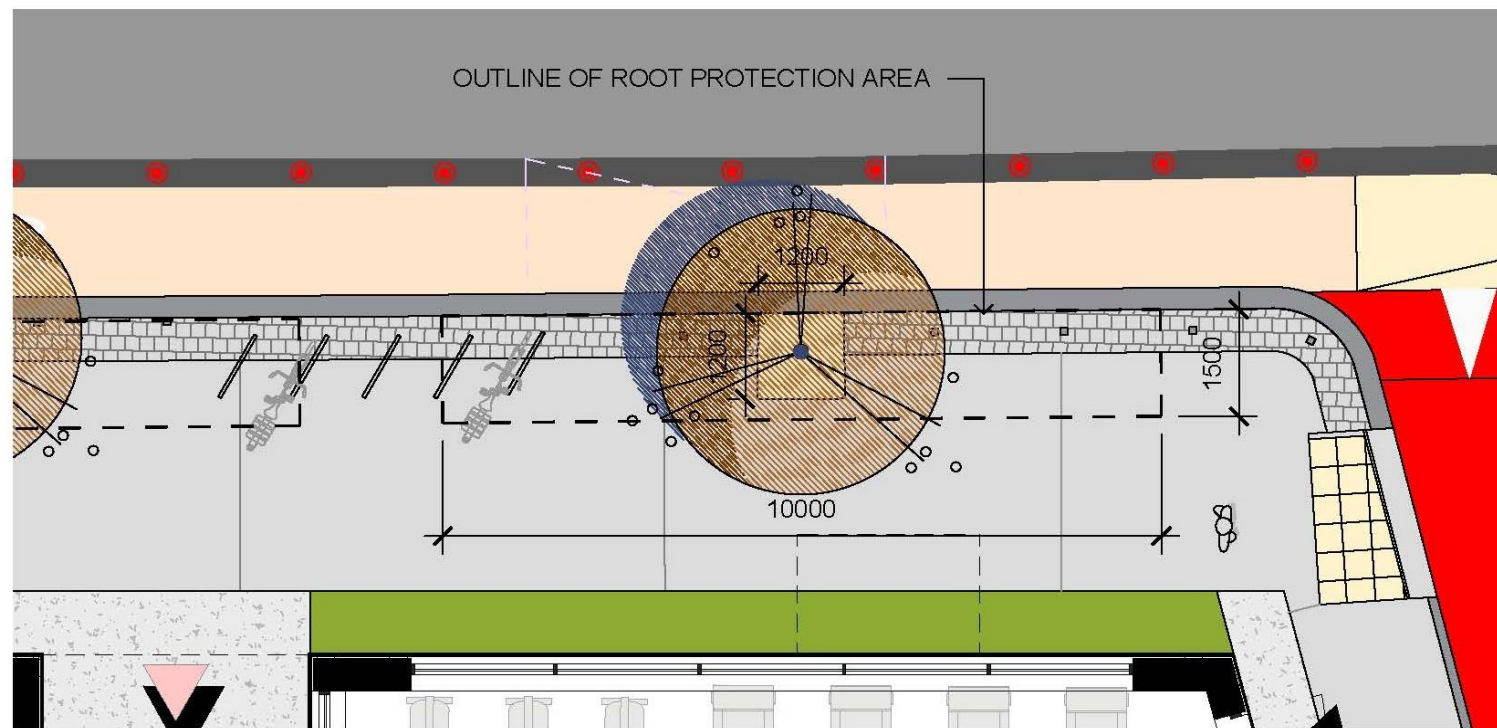
Tree Pit In Paved Area Detail – Section
Scale: 1:50 @ A3

Scale: 1:50 @ A3



Tree Pit In Paved Area Detail – Long Section
Scale: 1:50 @ A3

Scale: 1:50 @ A3



Tree Pit In Paved Area Detail — Plan

Scale: 1:1000 @ A3

NOTES

1. Tree to have a clear stem height of 2m.
2. Tree anchoring system, using 3no. 8 thread steel wire cables lagged up over timber frame over rootball using webbing straps and anchored using 3no. 100 x 15 x 20cm sleepers. Straps to be tightened using ratchet tensioner. Supplier: greenleafireland.com
3. 50mm, 6mm Arbour resin 30-50mm depth on 30mm 6mm grit, on geotextile filtration membrane. Supplier: greenblue.com
4. 6cm diameter perforated flexible plastic drainage pipe positioned as shown over rootball, with capped end open to surface and finished level with the ground.
5. Pits to be size 1200mmx1200mmx1200mm. Remove the full depth of topsoil (to BS882) and set aside for reuse. Scarify sides, break up base of pit to a depth of 200mm.
6. The pit will be back filled with subsoil (to BS8601) to 300mm depth or to a level that allows the rootball to sit comfortably in the ground.
7. 15m2 area root zone under paving surface, made up of 50% 35-60mm aggregate, 30% clean horticultural sand, 20% loam topsoil to BS3882, rapped in a large gauged geotextile.
8. Root protection barrier, ReRoot 600 ribbed polyethylene; supplier: greenblue.com.

INTRODUCTION

This document sets out the proposed maintenance and management plans for the establishment and ongoing maintenance of the landscape element of the proposed development. There will be a minimum 18 months defects period on all soft landscape works implemented. Thereafter the landscaping will be maintained in perpetuity consecutive 12 months periods.

1.0 SOFT LANDSCAPE WORKS SPECIFICATIONS

1.1 Site Clearance Generally

- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with any dimension exceeding 25mm.
- Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life. In accordance with current Health and safety legislation.
- Vegetation: remove all weed growth.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.

1.2 Weed Control

Remove all noxious and undesirable weeds from the sit. Weeds shall include: Ragwort, Himalayan Balsam, Giant hogweed & Japanese knotweed, Thistle, Dock, Common Barberry, Male Wild Hop and Spring Wild Oat, or any other noxious species identified by the Department of Environment. For the removal of certain species such as Japanese Knotweed a method statement is to be prepared and submitted to the Department of Environment.

1.3 Standards

In preparing the landscaping, supplying plants and maintaining the landscaping the following standards are to be adhere to:

- | | |
|-------------------|--|
| • BS 3882 | Specification for topsoil and requirements for use |
| • BS 3936-1 to 10 | Specification for the supply of nursery stock |
| • NPS | National Plant Specification |
| • BS 3998 | Tree Works: Recommendations |
| • BS 4428 | Code of Practice for general Landscape Operations |
| • BS 5837 | Tree in relation to Construction |
| • BS 7370-1 to 5 | Grounds Maintenance |
| • BS 8545 | Trees: from nursery to independence in the landscape-recommendations |
| • BS 8601 | Specification for subsoil and required use |
| • BS EN 1722-9 | Fences Specification for mild steel - low carbon steel - fences with square verticals and flat horizontals |
| • RoSPA | Standards for safety for play and exercise equipment. |

The latest publications for each document are to be used.

1.4 Soil Conditions

- Soil for cultivating and planting: Moist, friable and do not plant if 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.

1.5 Climatic Conditions

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

1.6 Times of year for planting

- Deciduous trees and shrubs: Late October to early March.
- Evergreens/Conifers: October/November or Feb/ March.
- Container Grown plants: Any time of years.

1.7 Mechanical Tools

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

1.8 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.

1.9 Preparation, Planting and Mulching Materials

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

1.10 Plants/ Trees - General

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: Balanced with branch system.
- Species: True to name.

1.11 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.

1.12 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 and BS 3936.

1.13 Plant/ Tree Substitution

Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering. Submit alternatives, stating the price and difference from specified plants/ trees. Obtain approval before making any substitution.

1.14 Plant Handling, Storage Transport and Planting

- Standard: To HTA 'Handling and Establishing Landscape Plants'.
- Frost: Protect plants from frost.
- Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Planting: Upright or well balanced with best side to front.

1.15 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.

1.16 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.

1.17 Surplus Material

Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, pruning's and other arising's: Remove.

1.18 General Planting/Seeding

- Planting shall be carried out within the contract period but not during periods of frost, drought, cold drying winds or when the soil is waterlogged, or when the moisture of the soil exceeds field capacity.
- All containers and protective coverings including biodegradable coverings to root systems shall be removed prior to planting. Roots, except for emergent vegetation, shall be teased out from the root-ball, spread evenly and not twisted.
- All plant material shall be planted upright or placed so as to be well-balanced. Extreme care

is to be taken to avoid damage to the root system, stem and branches when planting. The plant shall be positioned such that after planting the original soil mark on the stem is at finished ground level.

- Following completion of planting, grass seeding and turf laying, the soil over the whole of the planted, seeded or turfed area shall be sufficiently watered to achieve its field capacity.
- On completion of planting, watering and mulching, all areas shall be left tidy and weed-free and shall be maintained in a tidy and weed-free state until completion of the works.
- For shrub and transplant pit planting, notch planting and ordinary planting, the plant positions shall be set at equal centres in order to obtain a natural dense cover when mature. For notch and pit planting plants shall be planted in parallel lines. Planting positions in each row shall be staggered with the previous row.
- Finely-broken backfill material shall be carefully spread around roots and root trainers of all plants and the plants given slight shake to ensure that all interstices/ gaps are filled with soil, which shall then be consolidated by heeling. Careful filling and heeling shall continue as necessary at 150mm layers.

1.18.1 Mulching

Newly planted shrub areas shall be mulched immediately after planting to a depth of 50mm or in accordance with the details indicated on the drawing. Mulch shall be coarse chipped tree bark, composted for 2-4 months. Particle size 25-75mm diameter. No Fines.

1.18.2 After Planting & Mulching

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
- All areas shall be left tidy and weed-free and shall be maintained in a tidy and weed-free state until completion of the works.

1.19 Tree Planting

Attached in the appendix are typical tree planting details for this site.

1.19.1 Tree Pits

- Sizes: at least 300mm greater than rootball in all directions.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 100mm.
- Pit sides: Scarify.

1.19.2 Semi-Mature Trees

- Standard: Prepare roots and transplant to BS 8545.
- Planting shall be carried out by positioning the tree in the centre of the pit closely against the tree stake and spreading the tree roots to their fullest extent.
- Backfilling material: Previously prepared mixture of topsoil excavated from pit and additional compost as required.
- Immediately following planting, trees with stakes shall be secured with tree ties. Tree ties shall be fixed so that movement of the tree shall not cause damage or abrasion to the bark, top tie to be 50mm below top stake.

1.19.3 Staking Generally

Softwood, peeled chestnut, larch or pine, straight, free from projections and large or edge knots and with pointed lower end. Adjustable rubber ties to be fixed to all trees and at the correct size for the tree.

1.19.4 Mulch Circles/Squares

All existing trees/newly planted trees within open grass areas or grass verges shall have 50mm depth mulch circle/square of a maximum 1m diameter or as allowed by verge width.

1.20 Shrub Planting

- All shrubs are to be pit planted. General pit dimensions are to be wide enough to accommodate roots when fully spread and 75mm deeper than root system.
- Break up base of pit to a depth of 150 mm, incorporating soil ameliorant/ conditioner at 50 g/m².
- Pits to be backfilled with previously excavated material. Backfilling to be done in layers of 150mm depth; at each stage the filling to be firmly consolidated.
- Soil ameliorants can be premixed with the soil applied or mixed in during planting.
- Soil ameliorants to consist of an approved compost at 10L per m²; and 150g/m² of 10:10:10 NPK slow release fertilizer, or as approved.
- All shrub areas to be finished, with 75mm of medium grade bark mulch.

1.21 Hedgerow Planting

- Preparation: Dig trench to 500mm width for single staggered row, ensuing pit base is broken up 100mm deeper than plant rootball.
- Ameliorants: Compost at 10lt/m² and 10:10:10 NPK slow release fertiliser at 150g/m².
- Planting: Mix in soil ameliorants with excavated topsoil, or if there is poor topsoil then mix in with imported new topsoil. Firm down topsoil lightly in layers of 150mm by treading.
- Additional Requirements: If there is no existing fencing or barrier, install a protective fence to stop people walking through it until hedge is established. If there is livestock adjoining hedge install a stockproof fence or electrical fence 1m from hedge line until hedge is established.
- Prior to new growth cut the hedge back by 300mm to encourage new growth from base.

1.23 Removing Trees and Shrubs

- Identification: Clearly mark trees and hedges to be removed.
- Work near retained trees: Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.

1.24 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.
- Defects Period: 5 years.

1.25 Green Roofs

Due care is to be taken when planting in gardens to ensure no damage occurs to the waterproof membranes. All planting is to be laid over a green-roof system that complies with EEuropean Federation of Green Roof Associations, (EFB), or equivalent, and in accordance with the drawings provided.

1.26 Grass Seeding**1.26.1 Herbicide Application**

- Type: Suitable for suppressing perennial weeds and existing grass.
- Timing: Allow fallow period before cultivation.
- Duration: As manufacturer's recommendation

1.26.2 Seedbed cleaning before sowing

Operations: Kill pernicious weeds with selective contact herbicide.

1.26.3 Cultivation

- Compacted topsoil: Break up to full depth.
- Soil ameliorant/ Conditioner/ Fertilizer are to be used to boost late seeding only. Type to be used is to be agreed with the administrating body depending on the time of year and the condition of the soil.
- Tilth: Reduce topsoil to a tilth suitable for blade grading.
 - Depth: 75 mm.
 - Particle size (maximum): 20 mm.
- Material brought to the surface: Remove stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass, rubbish and debris.

1.26.4 Topsoiling

- Areas to be reinstated shall be top-soiled to a min. depth of 150mm.
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on Units 66&67nd to complete the work.
- 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.

1.26.5 Grading

- General appearance to be achieved: A fine graded finish to bring the ground to a uniform and even grade at the correct finished levels with smooth, flowing contours.
- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
- Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above 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.

1.26.6 Fertilizer for Seeded Areas

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

1.26.7 Final Cultivation

- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
- Depth: 50-100mm.
- Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
- Remove surface stones/earth clods exceeding:
 - Pastoral areas: 50mm.
 - Fine lawn areas: 10mm.
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

1.26.8 Grass Seed

- All seeds shall carry appropriate certificates.
- Seed shall be purchased fresh for each growing season and seed purchased impervious sowing seasons is not to be used.
- Seed shall be stored under non-transparent wrapping, off the ground, in a dry, shaded place, in well ventilated conditions under cover and shall be protected from vermin and contamination until required for use.
- No seeding shall take place until the seedbed is completed. All seeding shall be carried out within the sowing season.

1.26.9 Sowing

- General: Establish good seed contact with the root zone.
- Method: To suit soil type, proposed usage, location and weather conditions during and after sowing.
- Distribution: 2 equal sowings at right angles to each other.
- Protection: fence off areas with suitable fencing to stop people or animals from trampling new growth.

1.26.10 Grass sowing season

Grass seed generally: April to June or August to November.

1.27 Cleanliness

After completion of all works remove all debris and waste material from site.

- 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.

2.0 MAINTENANCE

The maintenance programme will be organised on the basis of specific **performance standards** which must be met by the contractor at all times and will be the basis on which this contract will be assessed. Along with these performance standards a monthly report sheet shall be filled out and returned each month. Details of the performance standards are outlined below.

Remove all noxious and undesirable weeds from the sit. Weeds shall include: Ragwort, Himalayan Balsam, Giant hogweed & Japanese knotweed, Thistle, Dock, Common Barberry, Male Wild Hop and Spring Wild Oat, or any other noxious species identified by the Department of Environment. For the removal of certain species such as Japanese Knotweed a method statement is to be prepared and submitted to the Department of Environment.

Performance Standards and Maintenance Operations

2.1 Grassed Areas

2.1.1 Fine-Cut Grass Areas

Fine cut grass areas shall achieve an even cover of vegetation of uniform height and colour comprising predominantly of grass species. No more than 5% of the grass areas shall contain dicotyledonous (dicots) weeds, except clover. Grass cutting shall not be carried out during excessively wet or waterlogged conditions. Contractor to inform administrative authority if conditions are unsuitable.

Fine-Cut Mowing

Where practical fine grass areas shall be cut using a cylinder mower, otherwise a rotary mower shall be used. All grass clippings shall be collected and removed off-Units 66&67fter each cut.

Lawn grass cutting shall be carried out every 10-14 days during the growing season, (throughout the period of March to October), but will need to be adjusted according to season's weather conditions. Grass shall be kept at a maximum height of 50mm and minimum height of 35mm. A minimum of 24 cuts shall be carried out annually.

Weed Control

Lawn grass areas shall be treated using an approved selective herbicide according to manufacturer's instructions. Areas of invasive and noxious species in the lawn or areas, shall be spot sprayed.

Fertilizer

Approved fertilizer shall be applied 2no. times per year to lawn areas if required due to poor grass growth / establishment or yellowing. Spring fertilizer application of NPK ratio 9:7:7 shall be applied in May of each year and Autumn/Winter fertiliser of NPK ratio 3:12:12 shall be applied in October of each year to all fine cut grass areas.

2.1.2 Amenity Grass Areas

Amenity grass areas shall achieve an even cover of vegetation of uniform height and colour comprising predominantly of grass species. Unless otherwise agreed with the landscape architect no more than 15% of the grass areas shall contain dicotyledonous (dicots) weeds, except clover. Grass cutting shall not be carried out during excessively wet or waterlogged conditions. Contractor to inform administrative authority if conditions are unsuitable.

Amenity Grass Mowing

Where practical grass areas shall be cut using a cylinder mower, otherwise a rotary mower shall be used. Unless excessive or unsightly, or likely to cause a nuisance or damage to the sward, arisings shall be spread evenly over sward areas collected.

Lawn grass cutting shall be carried out every 10-14 days during the growing season, (throughout the period of March to October), but will need to be adjusted according to season's weather conditions. Grass shall be kept at a maximum height of 75mm and minimum height of 35mm. A minimum of 24 cuts shall be carried out annually.

Weed Control

Areas of invasive and noxious species in lawns, shall be spot sprayed.

Weed infestations shall be reviewed in the context of the aesthetic and amenity functioning of the grass and if necessary controlled or eradicated.

Fertilizer

Approved fertilizer shall be applied 2no. times per year to lawn areas if required due to poor grass growth / establishment or yellowing. Spring fertilizer application of NPK ratio 9:7:7 shall be applied in May of each year and Autumn/Winter fertiliser of NPK ratio 3:12:12 shall be applied in October of each year to all fine cut grass areas.

2.1.4 Edging and Strimming

Grass edges along pathways, planting borders, roadways, trees, lampposts, signs and any other obstacle shall be kept neat and tidy at all times.

Between the months of March and October inclusive edging shall be carried out to all areas of grass abutting isolated/ specimen trees or shrub borders or mulch circles. These areas shall be maintained using a half moon tool or similar to maintain straight or curved defined line and shall be carried out a minimum of 2 - 3 times per year.

Mowing strips against permanent obstacles shall be a max. width of 150mm and shall be maintained using a hand strimmer. Large areas of desiccated/ burnt off grass are not permitted. Strimming shall be carried out a min. of 12 times per year.

Grass clipping and all arisings shall be swept up and removed off site.

2.1.5 Spring Bulbs in Grassed Areas

Only cut grassed areas populated by spring bulbs after the leaves of the bulbs have died down and/or yellowed completely. Initially reduce height by one third, followed by a 2-3 stage further reduction over two weeks to achieve desired grass height.

2.1.6 Failed areas

Areas of grass which fail or are damaged or worn shall be reinstated by re-turfing or re-seeding in accordance with the original specification.

2.2 Shrub Planting

Shrub areas shall be kept litter and weed free, particularly of perennial weeds. Healthy growth shall be maintained to cover as much as possible of the planting area and allowing the individual plants to achieve as near as possible their natural form. With the exception of hedges, boxing or pruning to shapes is prohibited. Plants shall be contained with designed planting areas and pruned to avoid obstructing pathways or sightlines. Climbers are to be pruned and tied into trellises as required, with two main inspections annually to check trellis system is intact and anchor points are secure.

2.3 Pruning

In general pruning shall be done only to enhance natural growth. Dead, damaged and diseased portions of the plant will be removed. All cuts shall be flush and clean, leaving no stubs or tearing of bark. All major pruning shall be done following flowering or during plant's dormant season. Emergency or minor pruning shall be done when needed.

Pruning shall be carried out to maintain proper size in relationship to adjacent plantings and intended function. Remedial attention and repair to shrubs shall be provided as appropriate by season or in response to incidental damage.

Groundcover plants shall be pruned as required to restrain perimeter growth to within planting bed areas where adjacent to walks and curbs. Tip prune selected branches of low growing shrub or groundcover masses to maintain even overall heights and promote fullness.

Certain plants, such as Cornus spp. will require heavy annual pruning in order to maintain healthy colourful stems and healthy leaves. All arising's from pruning shall be removed of site.

2.4 Weed Control

Planting beds shall be maintained relatively weed free (no more than 10% of weed cover at maximum) by hand weeding or spot spraying any emergent weeds during the growing season with Glyphosate or approved equivalent. Saplings shall be removed from all planting areas on emergence or immediately after to prevent establishment.

Specific weed control operations shall be carried out a min of 9no. times per year, however it will be the contractor's duty to control weeds by hand weeding or other if weed cover exceeds 10% of the planting area.

2.5 Watering

The Contractor will be responsible for the watering of all trees and shrubs during the maintenance period. Watering shall mean applying clean health water (chlorinated water accepted) to moisten the full depth of root run of each tree or shrub. Avoid washing or compaction of the soil surface. Any landscaping damage, discolouration or failing to show signs of healthy growth as a result of under watering will be replaced at the contractors cost.

The contractor will notification the Landscape Architect and keep a record of attendance for each visit. Spot checks will be made to ensure full compliance with this condition. It will be the Contractor's responsibility to source water for these applications. Additional watering may be required depending on weather.

The frequency of watering must be increased should the weather conditions turn excessively dry. It is the contractor's responsibility to monitor weather conditions to ensure the watering schedule is adjusted accordingly. It will be the responsibility of the Contractor to notify the Client of any additional requirements and agree the number of additional watering visits.

2.6 Mulching

Shrub beds shall contain a min. depth of 50mm bark mulch throughout the year. Contractor to top-up as 2 times per year or as appropriate to maintain depth. Mulch is not required in areas where plant foliage completely covers the soil surface, such that the soil is not visible through the foliage. The contractor shall spot treat to remove emergent weeds as specified above but do not cultivate or incorporate the mulch into the soil. Any mulch outside of designated planting areas shall be returned to the planter on a weekly basis.

Mulch shall be uniform in colour and appearance, and free of leaves, sticks, or trash. Mulch may be chipped or shredded wood, bark. When replacing existing mulch, use a mulch product that is similar in appearance to that already at the site.

2.7 Pest and Disease Control

The contractor will be responsible for maintaining the plants in a healthy and vigorous growth. Where disease, pest damage or fungi ingress is identified, the Contractor is to inform the Landscape Architect/ Client's Representative and agree treatment prior to application.

2.8 Tree Planting Care

Trees shall be maintained in a healthy, vigorous growing condition with a well-shaped framework for future growth.

2.8.1 New Tree Planting

Spring and autumn of each year during the maintenance period the trees, double-stakes, rabbit guards and ties shall be checked and adjusted, the soil firmed, any dead wood removed back to healthy tissue and mulch adjusted to original levels. Any broken stakes or ties evident throughout the maintenance period shall be replaced.

A 1m-diameter mulch circle/square shall be maintained at the base of each tree located in open grass areas or grass verges. Top up bark mulch to 75mm where required and make good any mulch mats.

During the first growing season all standard trees / semi-mature trees shall be watered at least five times during the growing season - in April, May, June, July and August unless otherwise directed by the Landscape Architect. During the second growing season trees will be kept well watered, particularly during June, July and August.

The edge of the mulch circle shall be maintained in a neat and tidy condition as above.

The surface of all planting pits is to be kept free of weeds during the maintenance period by hand weeding of annual weeds, and spot application of translocated herbicide, (as per manufacturer's instructions), for perennial weeds to be carried out on three visits during the growing season.

2.8.2. Tree Stakes and Ties

Check tree stakes and ties on each maintenance visit. Repair, strengthen and adjust (loosen / tighten) to ensure optimum functioning and trees not being damaged by poor fixings. If trees no longer require stake / tie remove. Prior to handover, check all tree stakes and ties and remove those no longer required.

2.8.3 Existing Trees

The existing trees will be under the management of the LUAS operations post remedial work to ensure their retention and protection during construction.

2.9 Green Roof System and Irrigation

Care is to be taken not to damage any fleeces or waterproof membranes during maintenance. Irrigations systems are to be blown-out and a full pressure test carried out annually and monitored for leaks. Remove soil and dead foliage from irrigation pipes to ensure they do not get blocked. Cut back root systems if they become entangled in the irrigation system. Regular monitoring (bi-monthly) should occur to ensure the timer system and moisture monitoring system, are working efficiently and make adjustments to suit the weather conditions, if required.

2.10 Litter Clearance/Pick-up

The contractor shall maintain all areas free from litter. This shall mean the removal of all extraneous litter, rubbish and any other debris from all areas, which will include grass areas, planted areas, car parks, footpaths as well as woodlands and tree canopies.

Notwithstanding the above it is expected that the contractor and his staff shall take sufficient pride in the appearance of the Units 66&67nd that they would pick up all visible litter during every site visit.

In addition to removal of litter from footpaths, planted areas, etc., the contractor shall make provision for the immediate (within 1 days of notification) arrangement for collection and removal of all extraneous matter which has been deliberately been deposited on site by persons known or unknown (fly-tipping).

2.11 Replacements

Any tree, hedge or shrub that is removed, uprooted, destroyed or becomes seriously damaged, defective, diseased, or dead shall be replaced in the same location with another plant of the same species and size as that originally planted within 5 years after planting. All such replacements shall be carried out in the first available planting season after the requirement to do so is recognised.

3.0 Maintenance Programme

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

ONGOING REQUIREMENTS:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lawn grass cutting (Min 24 cuts)		*	**	**	***	***	***	***	***	**	**	
Edging to lawn grass areas				*			*			*		
Rough Grass							*					
Fertiliser application to lawn grass areas.					*		*			*		
Hedge pruning/cutting					*			*			*	
Shrubs pruning and feeding				*		*			*			
Weed control of hedge and shrub planting areas		*	*	*	*	*	*	*	*	*	*	
Tree pruning											*	*
Removal of tree stakes (3-5yr)				*								
Mulch top-up to tree circles/ squares						*				*		
Herbicide app. to tree mulch circles				*			*			*		
Herbicide app./weeding to shrubs & hedgerow				*			*			*		
Watering of new trees (or after 3 weeks of no rain)				*	*	*	*	*				
Trimming of scrub areas												*
Weed control of scrub areas				*					*			
Application of residual weed killer to footpaths, cycle paths.				*								
Litter Clearance/pick up	***	***	***	***	***	***	***	***	***	***	***	***