Devoy Barracks, Naas, Co.Kildare - Landscape Design Report



April 2022

MITCHELL + ASSOCIATES

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Project Description

The development site is located on John Devoy Road, Naas, Co Kildare, known as Devoy Barracks. The proposed development is for the construction of 219 no. residential units, comprising of a mix of terraced houses (42 no. in total), and duplex / apartment units (177 no. in total) ranging in height from 2 to 5 storeys, a 59-place childcare facility, public and communal open spaces and all associated site works and infrastructure. Vehicular and pedestrian access is proposed via an existing access point on the John Devoy Road along the southern boundary with additional pedestrian and cycle access provided to the east, and future pedestrian and cycle connection opportunities provided to the north, west and east.

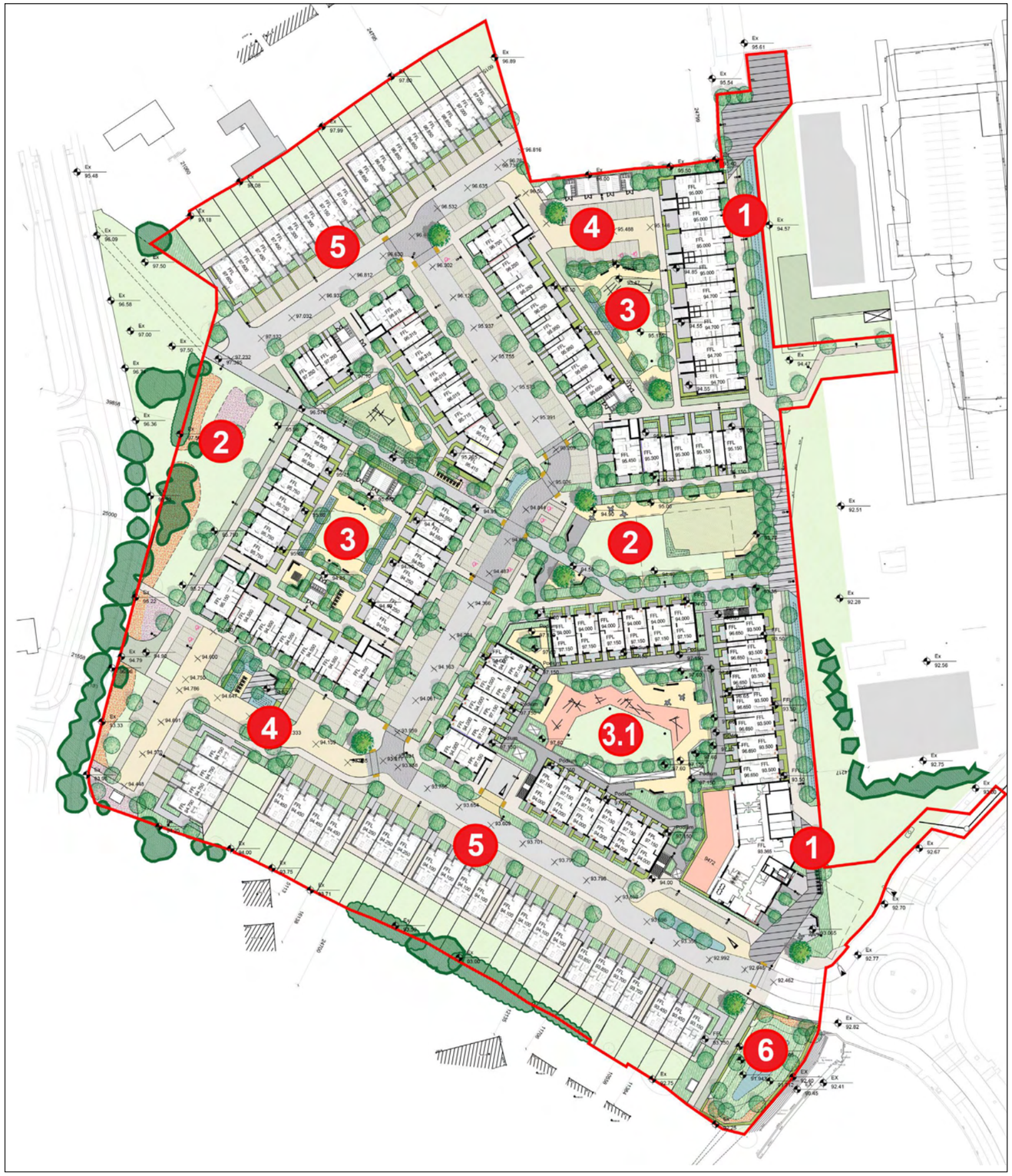


Specific changes and additional information from pre-planning in response to the ABP/KCC Opinion include –

- Additional landscape cross sections included
- Refer to Arborists documentation re measures for the retention and protection of existing trees and hedgerows along the site boundaries
- Details of external landscape materials and finishes included
- Finished topsoil depths clarified on Typical Planting Details drawing 108 and Landscape Outline Specification
- Feature mounding are of a minimum gradient 1:16
- Tree planting proposals include root protection barriers (dwg 108)
- Compacted gravel omitted and replaced with resin bound gravel
- Hardwood play grade chip omitted and replaced with safety play grass matting
- Play areas to be natural/nature play spaces and conform to European standards EN 1176-1-11 and EN 117 Playground equipment and surfacing
- PC concrete kerbing indicated on Typical Planting Details drawing 108, no timber kerbing to be included
- All seating now indicated as stone, metal and recycled composite timber material
- Tree planting and public lighting has been coordinated as per the Landscape Masterplan
- Details/drawings in relation to SUDs features included in Landscape Design Report page 15 and engineers documents
- PC concrete paving slip resistance indicated in Landscape Outline Specification
- Comprehensive boundary treatment and details now provided as per drawing 104

LANDSCAPE ZONES

PLAN, PROJECT DESCRIPTION AND LANDSCAPE OBJECTIVES



Landscape Objectives

The overall aim of the landscape design is to create a high quality attractive environment with amenity facilities for the surrounding proposed residences and users of the park spaces / green links. The proposal takes into account the landscape objectives within the Kildare County Council Development Plan 2017-2023, The Naas Local Area Plan 2021-2027 and the National Guidelines to ensure a strong sense of place for the proposed development appropriate within the surrounding landscape context. The landscape design elements shall be robust, accessible, useable, connected and passively supervised. The open spaces are multifunctional, catering for amenity uses both active and passive but also fulfilling objectives of movement and access, biodiversity, microclimate/shelter and SUDS requirements. The external open space arrangement has been designed to allow for flexibility in recreational activity. They allow for social interaction, for active play but also for spaces that are quiet and calming. All spaces are accessible and inclusive for all ages and abilities and are interconnected via the pedestrian/cycle routes and shared surface spaces.

1. Linear public open space
2. Public open space
3. Communal open space
3.1 Podium level communal open space
4. Homezones
5. Oncurtilage parking
6. Bio-swale/ Wetland

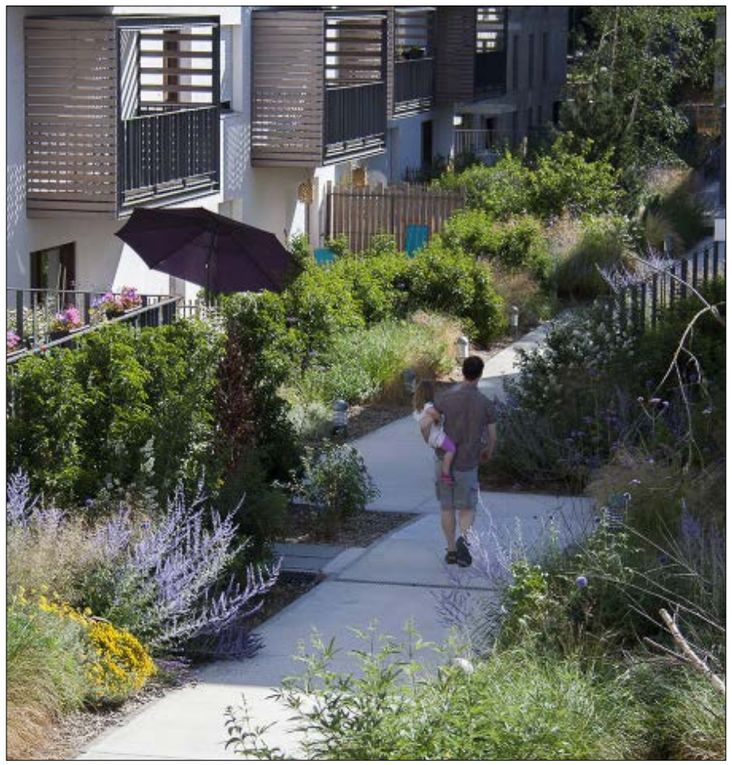
RESIDENTIAL + COMMUNAL OPEN SPACES STRATEGY

RATIONAL+ REFERENCE IMAGES

Each residential and communal open space share a similar landscape language through the materiality used and amenities provided. The communal open space to the south shall be on a structural podium level to allow additional car parking underneath. In this instance raised planters will be utilized to gain sufficient soil depths. Each communal open space shall be defined and delineated with soft landscape. Shrub, groundcover planting at lower scale and hedge and tree planting to give a vertical, upright structure and spatial definition while the hard landscaping will inform a general hierarchy. Access is further delineated by a 1.2m high timber self-closing gate connecting to post and wire fencing concealed within hedge planting. Access points and node spaces are highlighted with larger feature tree and gently mounded shrub planting. Bin and bike stores can also be located amongst mounded planting.

Within the communal open areas, ground floor units can avail of private open terrace space defined by 1.2m high hedge planting and each shall also include 1no. bike stand. This interface will allow for a general passive supervision while screening from circulation routes. Between the circulation routes and the central open space is an additional depth of soft landscape in the form of shrub, tree, hedge and swale planting giving further spatial definition, utlize water run-off and to add biodiversity. The general range of planting species selected are native and pollinator friendly.

Within the central spaces there are opportunities for play and spaces for both active and passive involvement, inclusive for all ages, ethnicity and culture. Play opportunities are provided in the form of open grass ‘kick-about’ space or toddler/younger and older children play areas.





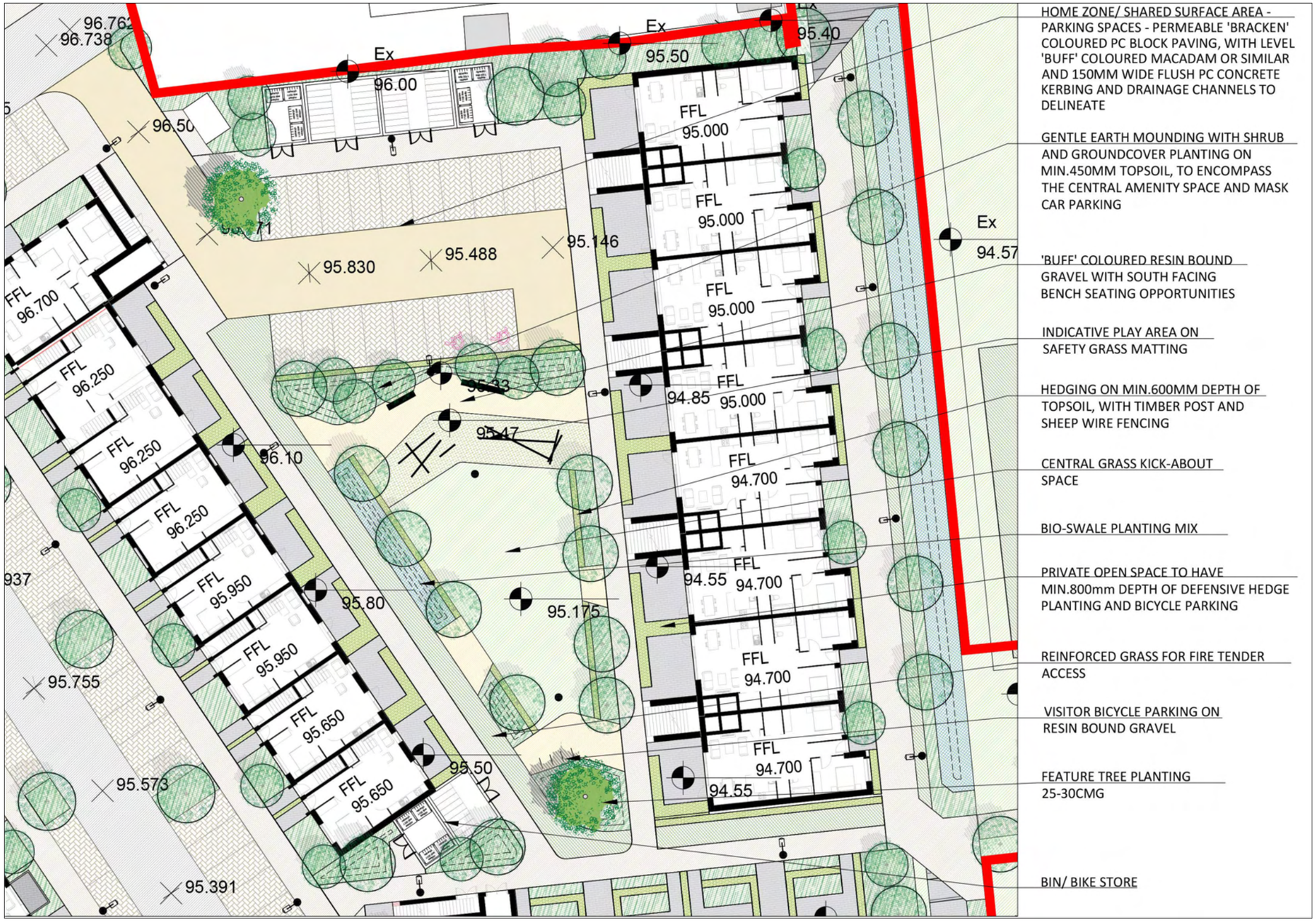




Typical section through private terrace and communal open space

RESIDENTIAL + COMMUNAL OPEN SPACE 1 - NORTH

PLAN + REFERENCE IMAGES









RESIDENTIAL + COMMUNAL OPEN SPACE 2 - WEST

PLAN + REFERENCE IMAGES



'BUFF' COLOURED RESIN BOUND GRAVEL WITH SOUTH FACING BENCH SEATING OPPORTUNITIES

INDICATIVE PLAY SPACE ON SAFETY GRASS MATTING ENCLOSED WITH SHRUB PLANTING, 1.1M HIGH HEDGE PLANTING WITH POST AND SHEEP WIRE FENCING WITHIN - THIS PLAY AREA WILL CATER TO TODDLERS AND CHILDREN UP TO THE AGE OF 4+ AND WILL CONSIST OF A PLAY ELEMENTS BASED ON THE PRINCIPALS OF NATURAL PLAY (IE. TIMBER BALANCE BEAMS, STEPPING LOGS AND PLAY MOUNDING WITH INTEGRATED SLIDES) IT IS A SPACE FOR RESIDENTS IN THEIR OWN RESIDENTIAL OPEN SPACE. THIS AMENITY ENCOURAGES SOCIAL INTERACTION BETWEEN RESIDENTS WITHIN A PASSIVELY SUPERVISED COMMUNAL SPACE

PRIVATE OPEN SPACE TO HAVE MIN.800mm DEPTH OF DEFENSIVE HEDGE PLANTING AND BICYCLE PARKING

SELF-CLOSING TIMBER GATE DELINEATING SEMI-PRIVATE RESIDENTIAL AMENITY SPACE

VISITOR BICYCLE PARKING ON RESIN BOUND GRAVEL WITH WILDFLOWER PLANTING ADJACENT

TREE LINED PUBLIC PEDESTRIAN AND CYCLE AVENUE CONNECTING EAST AND WEST

BIN/ BIKE STORE

'BUFF' COLOURED RESIN BOUND GRAVEL WITH SOUTH FACING BENCH SEATING OPPORTUNITIES

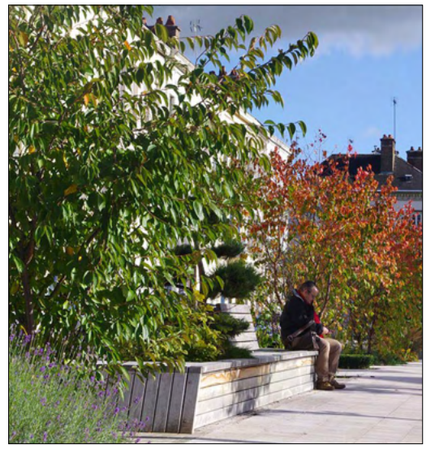
BIO-SWALE PLANTING MIX

CENTRAL GRASS KICK-ABOUT SPACE

LARGE SCALE CHESS BOARD FOR OLDER PLAY

VISITOR BICYCLE PARKING ON RESIN BOUND GRAVEL











CGI - Communal Open Space West

RESIDENTIAL + COMMUNAL OPEN SPACE 3 - SOUTH, PODIUM LEVEL

PLAN + REFERENCE IMAGES











CGI - Communal open space south, podium level with car parking under

PUBLIC OPEN SPACE STRATEGY

RATIONAL+ REFERENCE IMAGES

The main public open space is located centrally to the scheme and will allow for east-west permeability as well as connections to the north and south. As these areas are to be taken in charge, hard landscape materials have been selected for their robustness, longevity, overall quality and are as per the requirements of Kildare County Council. Resin bound gravel, safety play surface grass matting, with PC concrete kerbing have been selected alongside PC concrete paving with a natural stone aggregate finish. In situ concrete footpaths have also been proposed to further indicate a hierarchy of space and circulation. The public open space is an active space towards the eastern end, connecting with the north-south linear parade, where the older children's play area is located. The eastern edge is bookended with Birch tree grove planting which encompasses and defines the open space. South facing bench and sculptural/ playful seating opportunities are provided allowing parents, guardians and residents to passively supervise the grass 'kick-about' and play space. Seating will be robust and will utilize composite timber seating tops, back and arm rests for comfort. The play area will cater to older children and consist of traditional and natural play elements with a potential 'assault course' theme to pay homage to the historical Devoy Barracks. It is provided to fulfil the requirements of the residents, but is available to the wider community, bearing in mind there is no other local play space.

Towards the western end, where the design connects and knits in with the existing open space, the landscape character is passive, focusing on biodiversity and passive amenity. Existing trees and hedgerows to be protected, retained and managed to maximise their visual softening of the proposed scheme and to maintain and improve the sites biodiversity. A selective mowing regime in accordance with the 'All-Ireland pollinator Plan' will be maintained and areas of wildflower seeding will be planted to further maximise biodiversity and visual amenity.





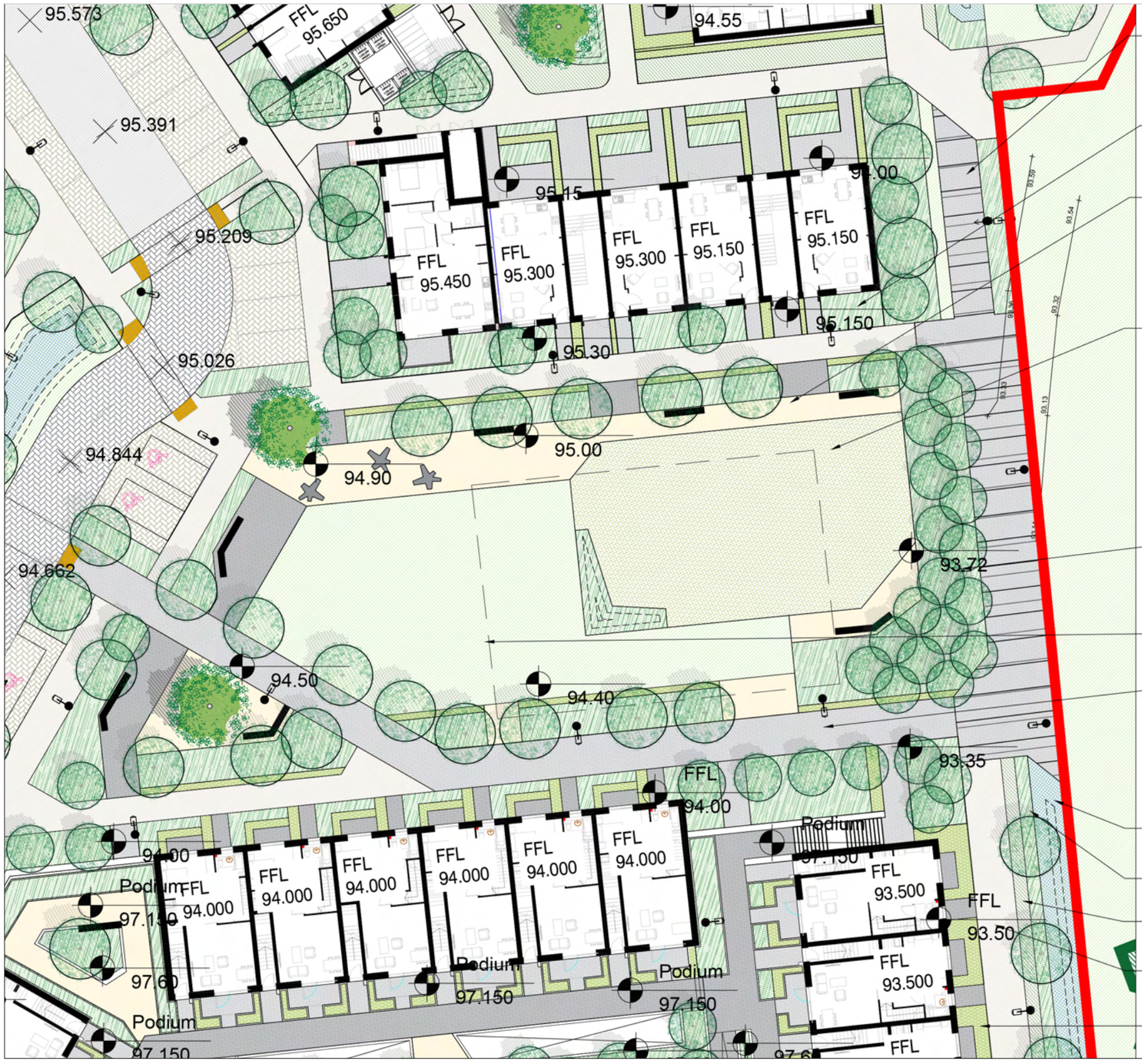








PUBLIC OPEN SPACE - EAST





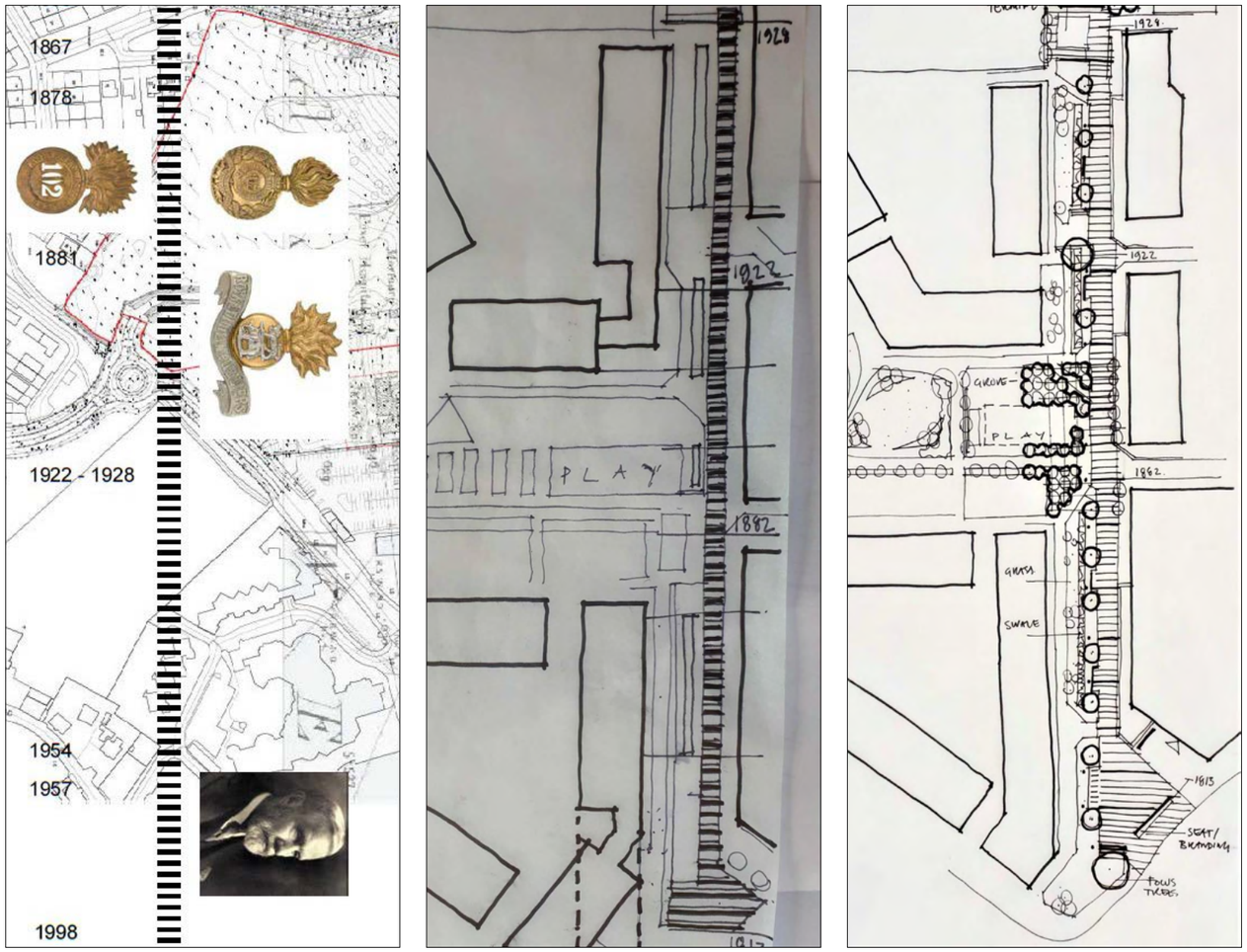




PUBLIC OPEN SPACE - LINEAR EAST



The linear public open space to the east of site has been strategically designed to act as an appropriate edge treatment to the development. It will support pedestrian permeability and general connectivity to the north, south and west of site whilst having the capability to merge seamlessly into future developments and public open space to the east. The north and south ends are highlighted with PC paviours to create a sense of arrival while PC paving is also used to indicate the central area of public open space. Within the linear park, tree, shrub and bio-swale planting shall be provided. The extensive inclusion of planted swales along the east boundary will provide for a particular ecology type and add to the sites biodiversity whilst assisting the sustainable drainage strategy.



Early conceptual sketches exploring potential extent of linear park, connections to adjacent lands and the proposed development. Potential cultural heritage / Devoy Barracks timeline concept denoting local history connecting north and south axis.



CGI - Public open space - linear east

PUBLIC OPEN SPACE - WEST



REPLACEMENT HAWTHORN HEDGING

LINE INDICATES FUTURE POTENTIAL CYCLE AND PEDESTRIAN CONNECTION

EXISTING MOWN GRASS LAWN

EXISTING TREES AND HEDGEROW TO BE MANAGED, PROTECTED AND RETAINED WHERE POSSIBLE (REFER TO ARBORICULTURAL REPORT FOR DETAILS AND TREE PROTECTION FENCING) WILDFLOWER SEED MIX AND SELECTIVE MOWING REGIME FOR POLLINATORS, GENERAL BIODIVERSITY AND VISUAL AMENITY

PUBLIC FOOT/CYCLE PATH PROVISION FOR FUTURE CONNECTION TO APPLICATION SITE BOUNDARY

2m REINFORCED GRASS STRIP FOR FIRE TENDER ACCESS

2m IN SITU CONCRETE FOOTPATH

2.4m DEPTH OF DEFENSIVE PLANTING

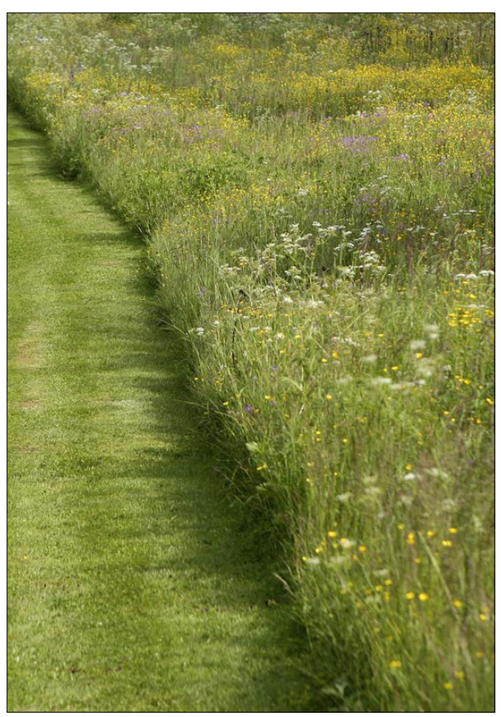
PC CONCRETE PAVING SURFACE FINISH TO HIGHLIGHT DWELLING ACCESS WITH 'BOX' HEDGING TO DIVIDE

PROPOSED NATIVE SPECIES TREE PLANTING TO COMPLEMENT EXISTING TREES









HOMEZONES AND STREETSCAPES

Homezones Objectives/Strategy:

-Designed primarily to meet the needs of pedestrians, cyclists, children and residents and to reduce speeds and the dominance of vehicles

-Utilising visually contrasting surface materials, street furniture, tree and shrub planting to define homezones

-Introduction of SUDS tree and shrub planting areas utilising road water runoff

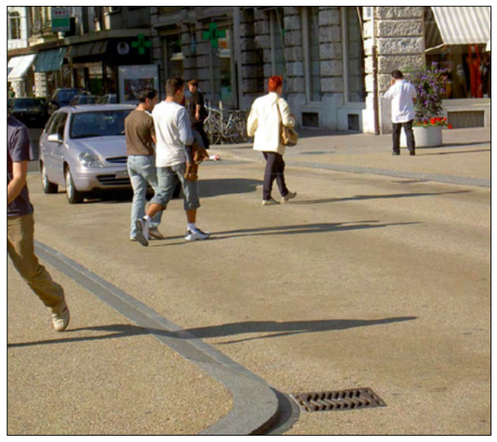
-Biodiversity enhancement coordinating with sustainable drainage

-Residential Interface

-Buffer, spatial definition

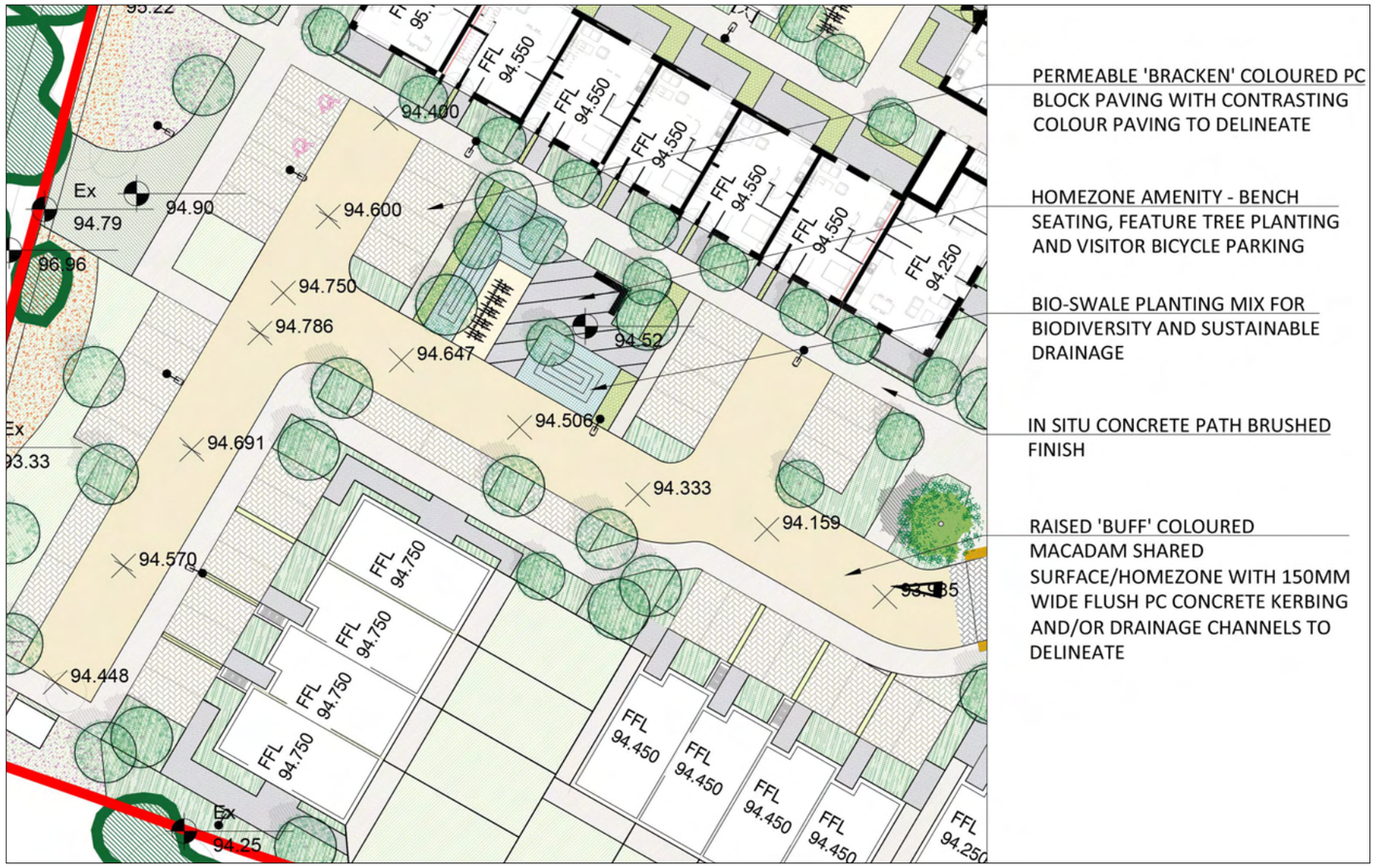
-Potential car parking on landscaped areas to be controlled by planting density and low hedging planting













CGI - Homezone

PLAYFULNESS AND RECREATION STRATEGY

Opportunities for Play:
All play areas to conform to European standards EN 1176-1-11 and EN 117 Playground equipment and surfacing

Play amenity is achieved in 3 ways:
1. Younger Children – for residents in their own residential open space. This amenity encourages social interaction between residents within a passively supervised communal space.

2. Older children – this is located in public open space. It is provided to fulfil the requirements of the residents, but is available to the wider community

3. Playfulness – the design is aimed at encouraging playfulness, offering space for spontaneous and imaginative play, with elements that may stimulate that – such as mounds and tree trunks, swales and biodiversity etc.

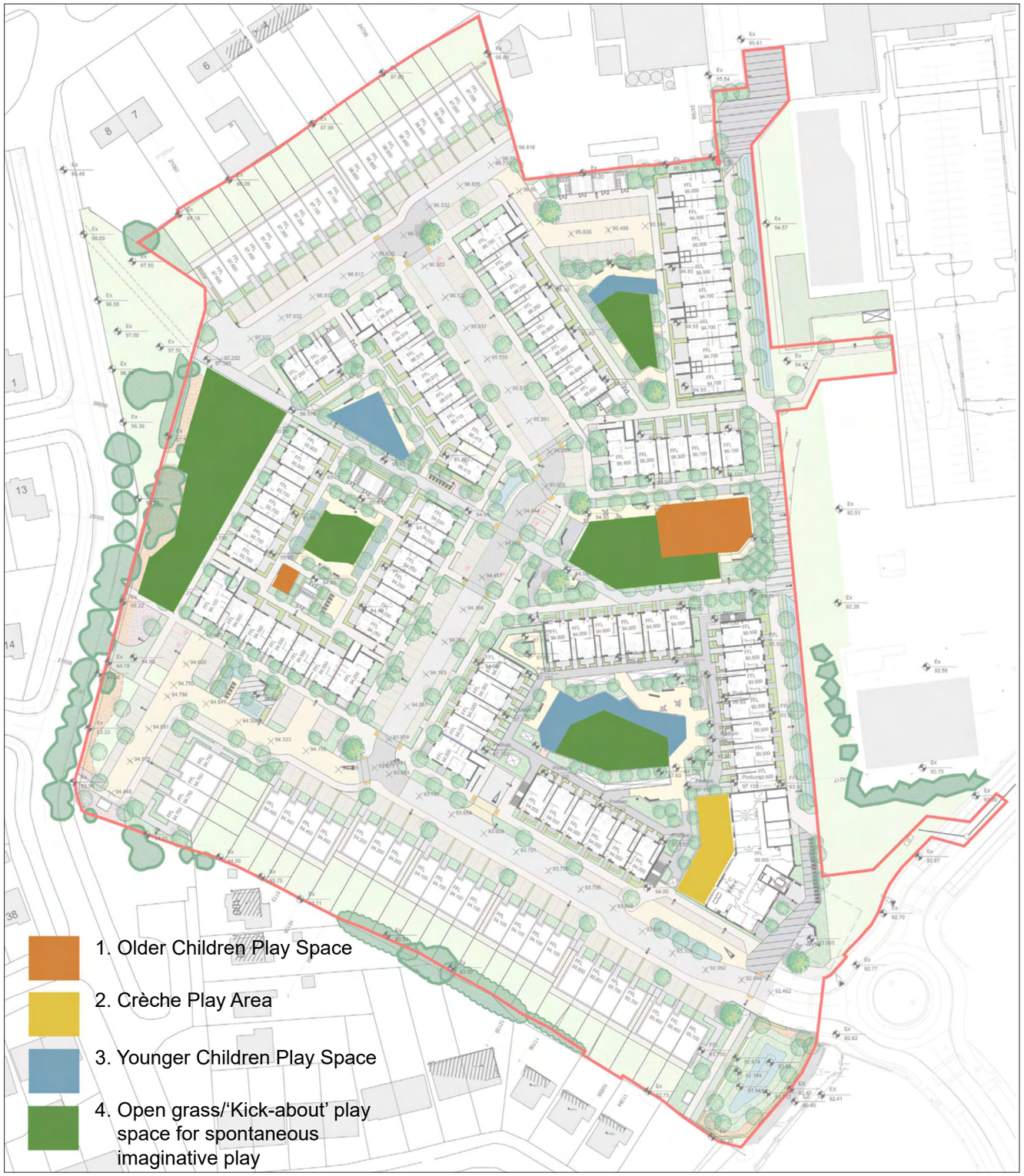












GREEN INFRASTRUCTURE, BIODIVERSITY and SUDS STRATEGY

Green Infrastructural connectivity :
Access & Recreation; Biodiversity & SuDS;

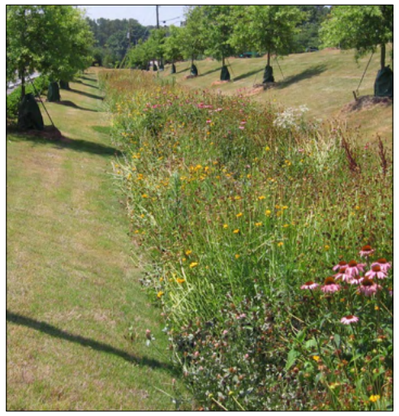
- main North-South axis providing potential future connection to St. Patrick's Terrace at the site's north-eastern corner
- East-West axis linking with adjacent lands - KCC offices to the east and Arconagh residential estate to the west
- Biodiversity enhancement coordinating with Sustainable Drainage
- Identification or development of cultural heritage

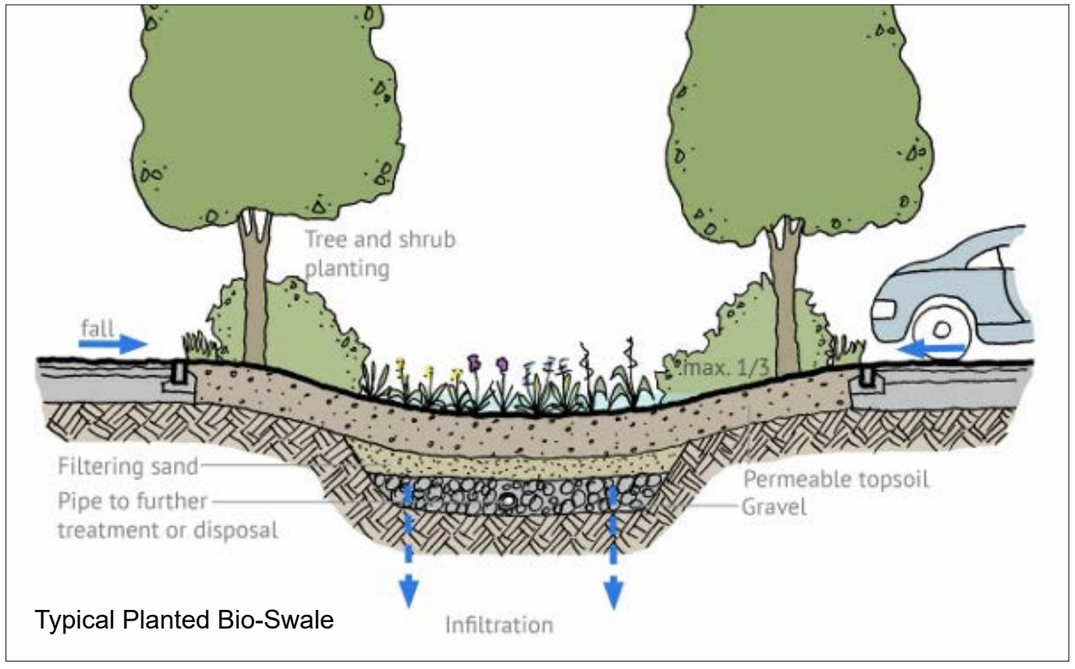
Sustainable Drainage and Biodiversity :

- Attenuation and Filtration - soakaways, permeable paving, tree pit drainage and bio-swales
- Visibility of rainwater management
- Associated increase in habitat and biodiversity
- Potential use of bioretention features as buffer zones to residential /public interface
- Native plant selection
- Pollinator - friendly plant selection

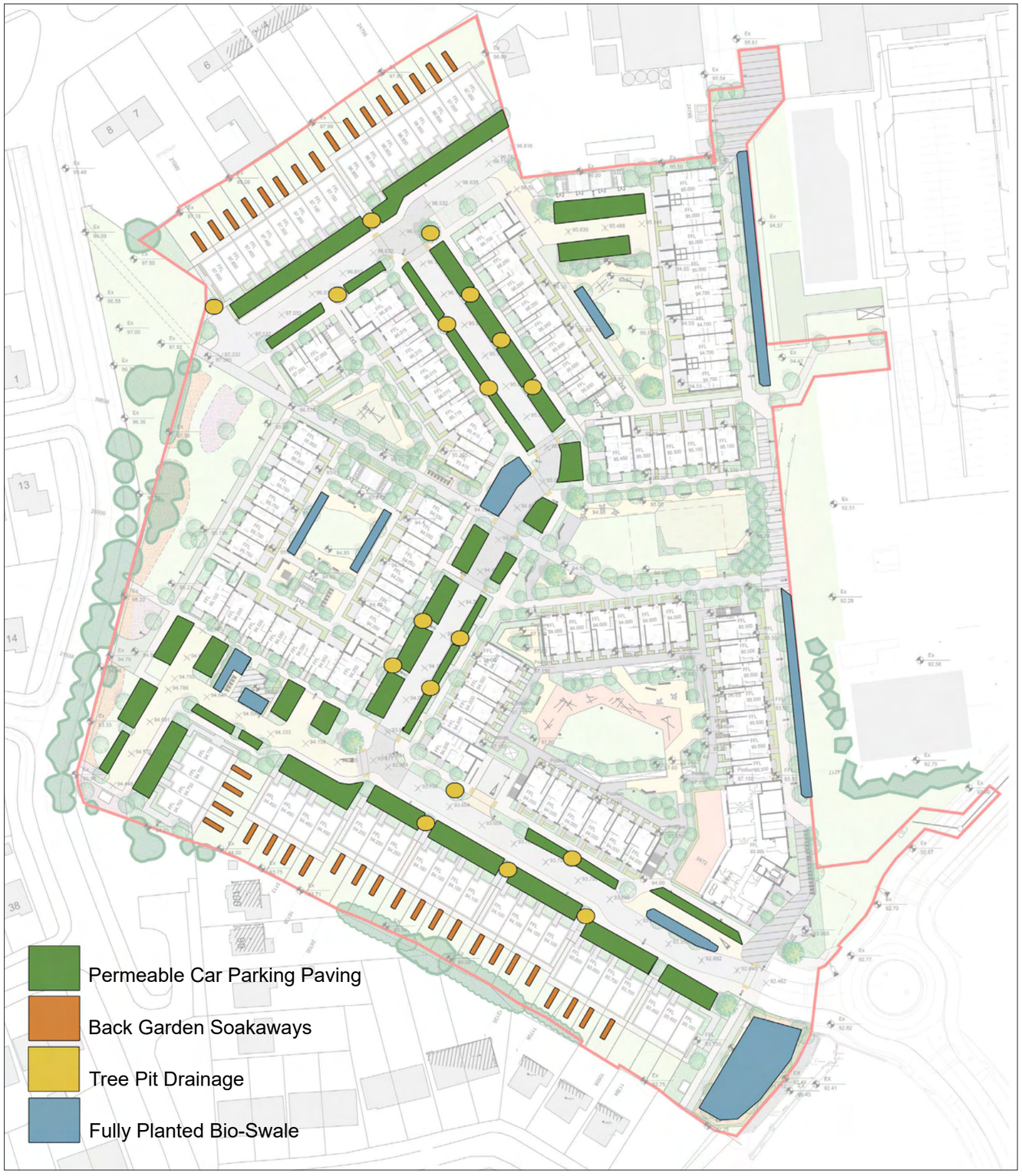
Note: Refer to engineers proposed drainage layout for SuDS locations



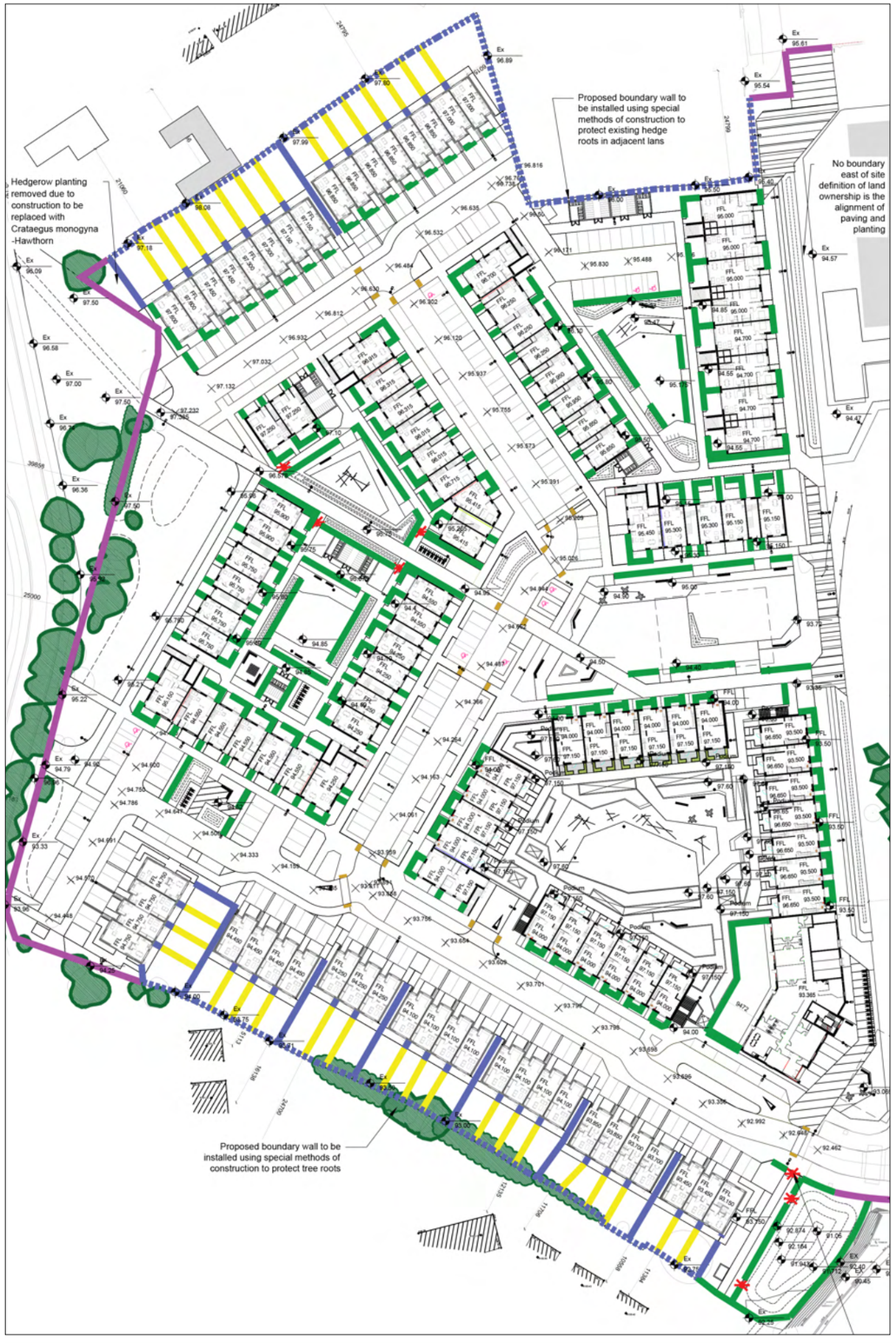


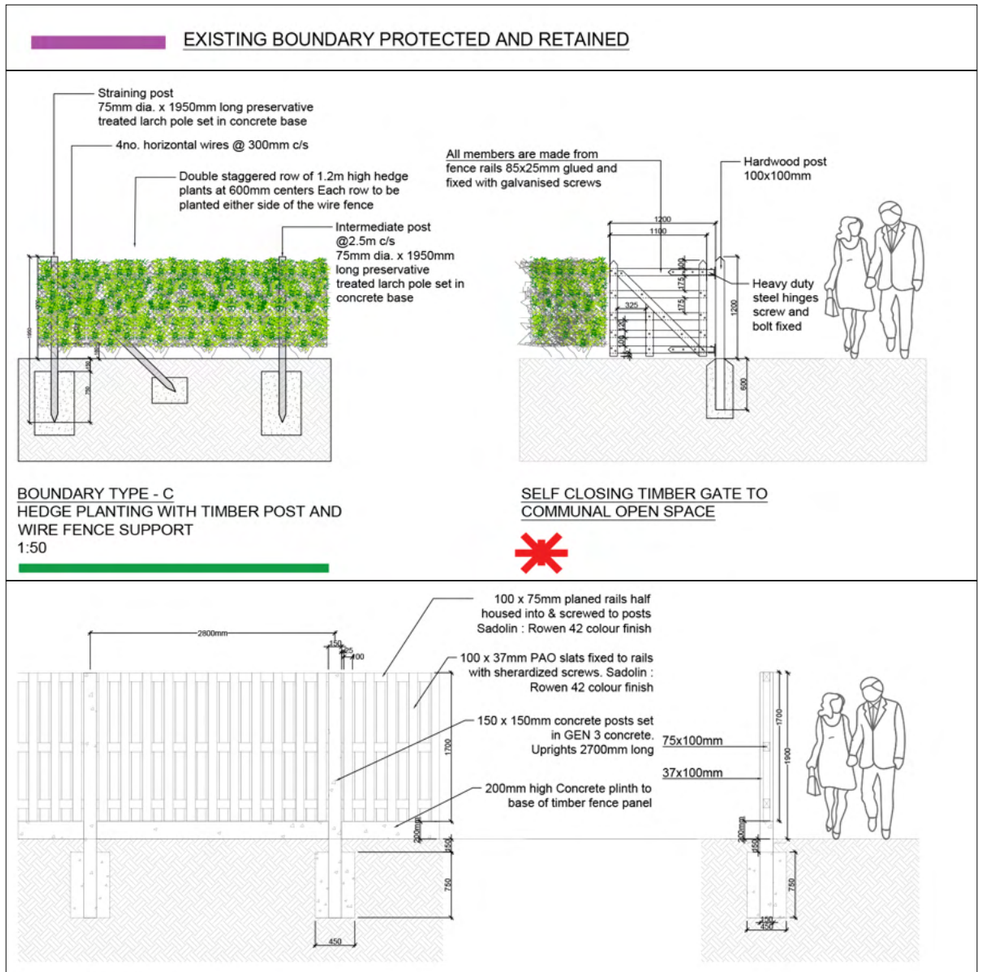


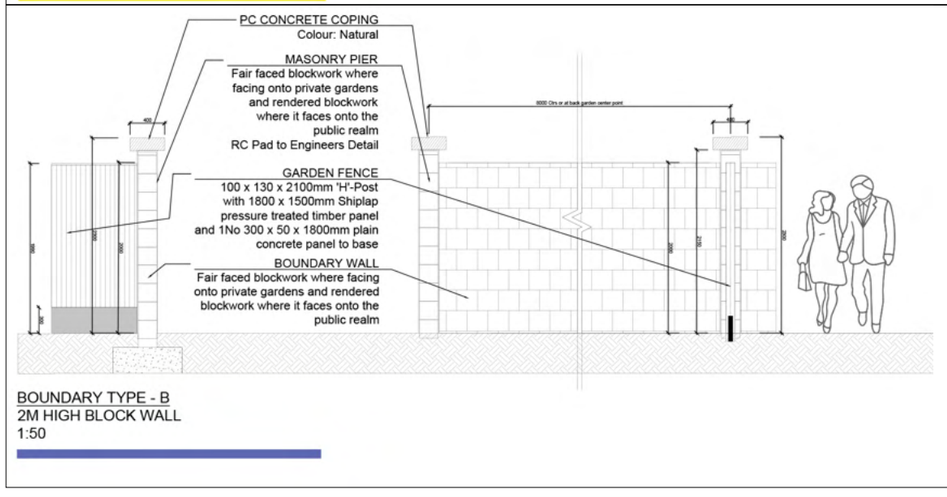
Typical Planted Bio-Swale

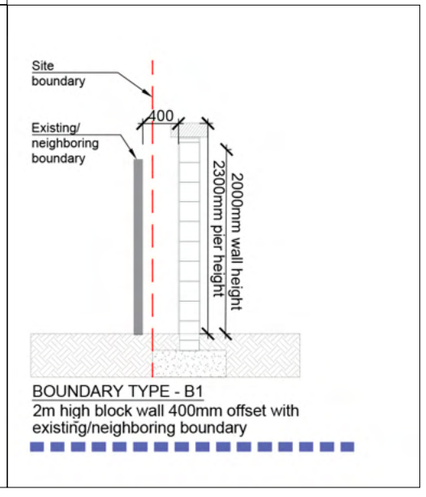


BOUNDARY PLAN AND DETAILS



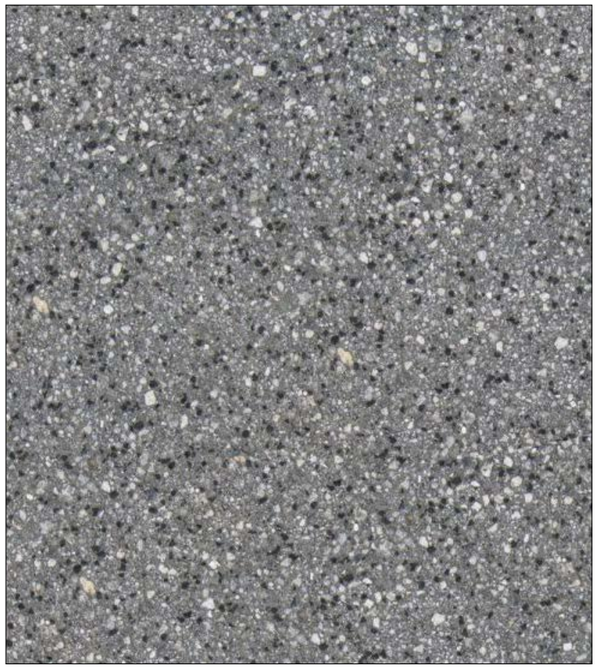




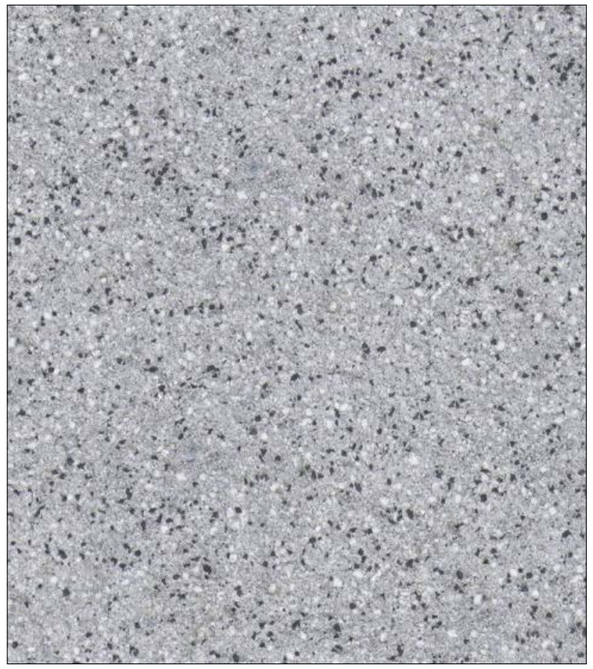


LANDSCAPE MATERIALITY

REFERENCE IMAGES



Graphite - Precast concrete



Silver - Precast concrete



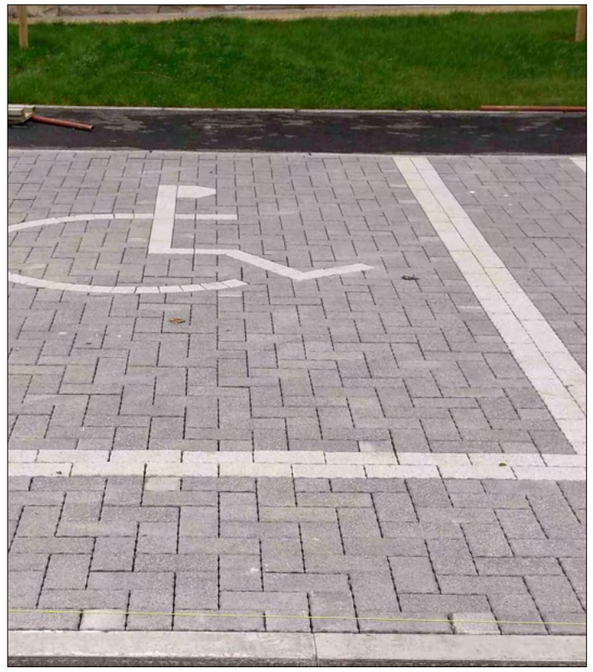
Insitu concrete foothpath, brushed finish



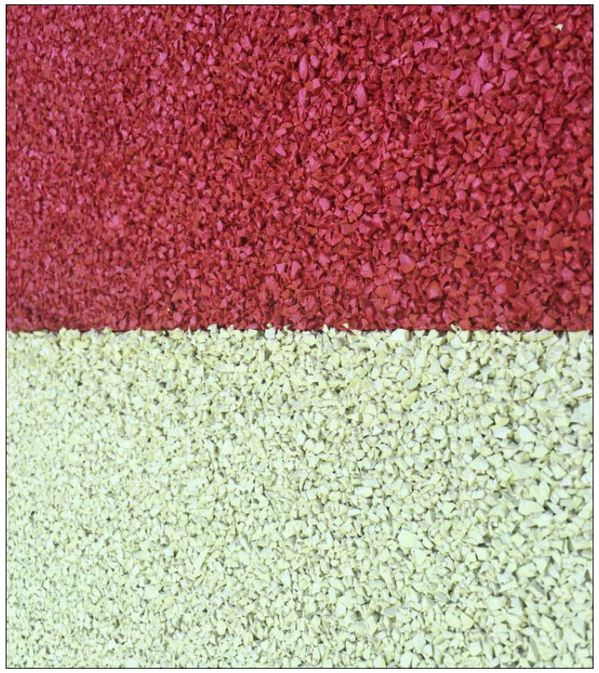
Resin bound ‘buff’ coloured aggragate



Buff macadum home zones



Permeable paving parking spaces



Wetpour resin bound play surfacing

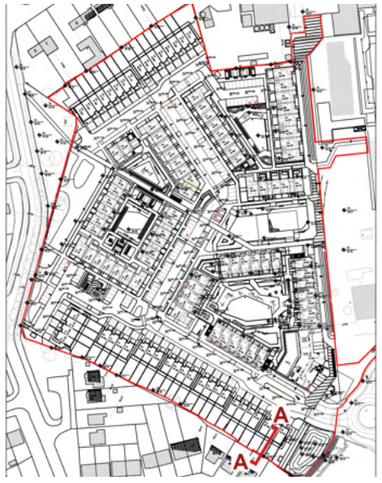


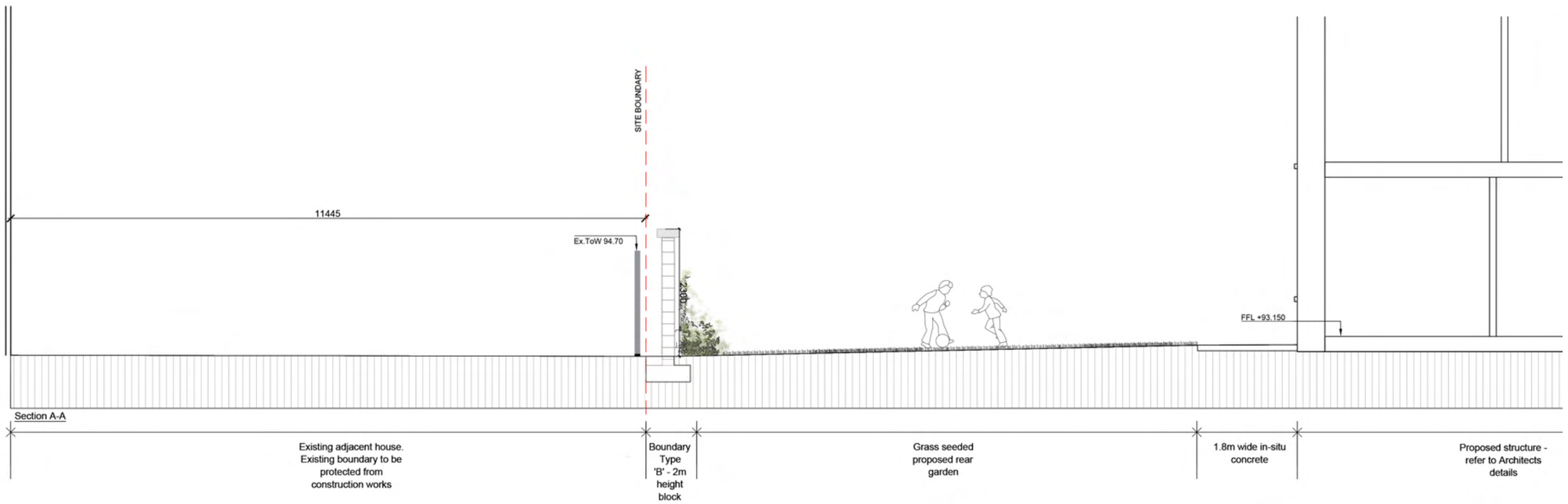


Safety grass play matting

Landscape Section A-A

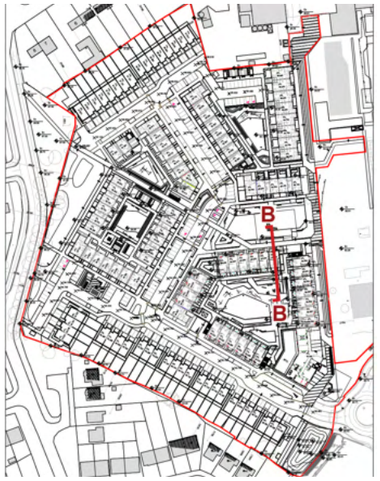
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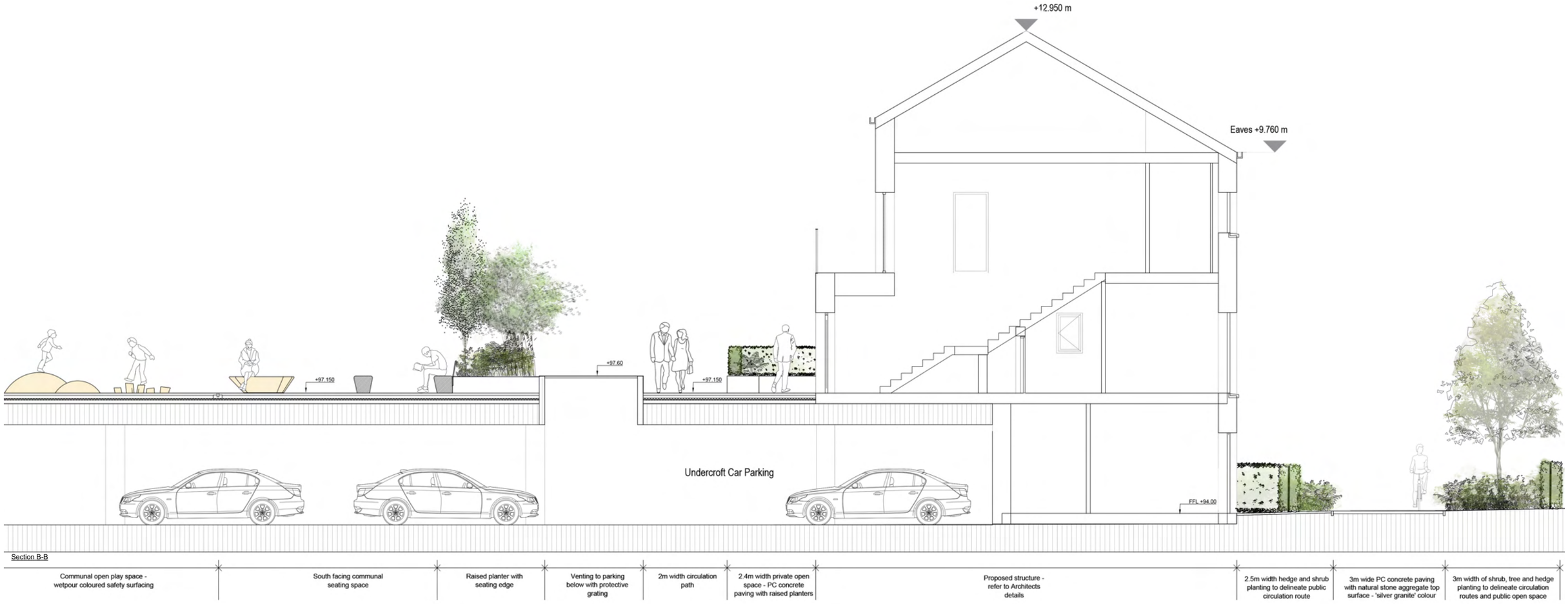




Landscape Section B-B

A3 reduction - Not to scale.

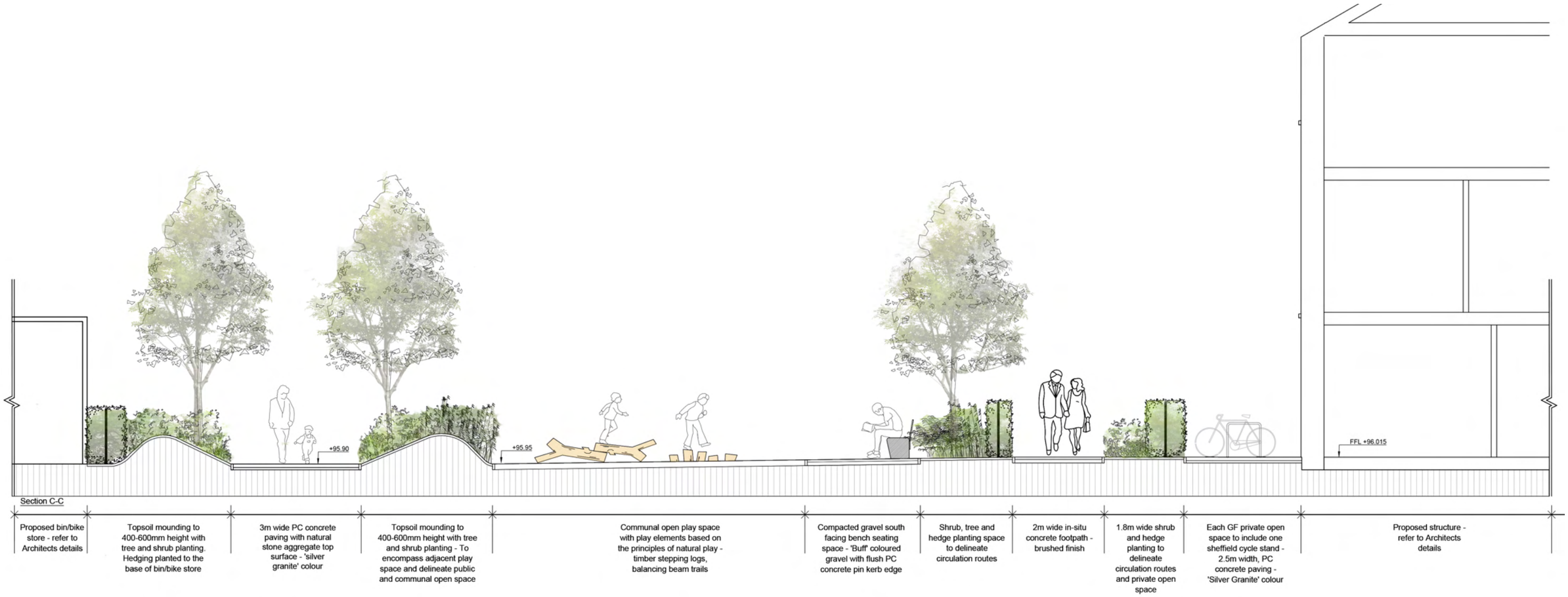




Landscape Section C-C

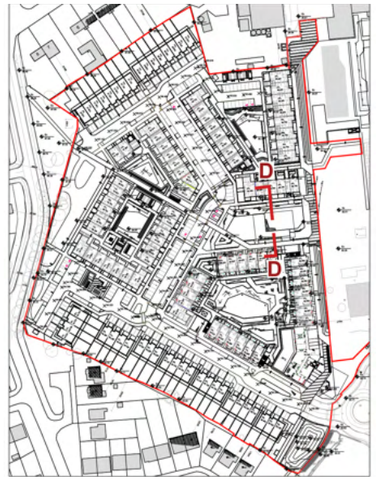
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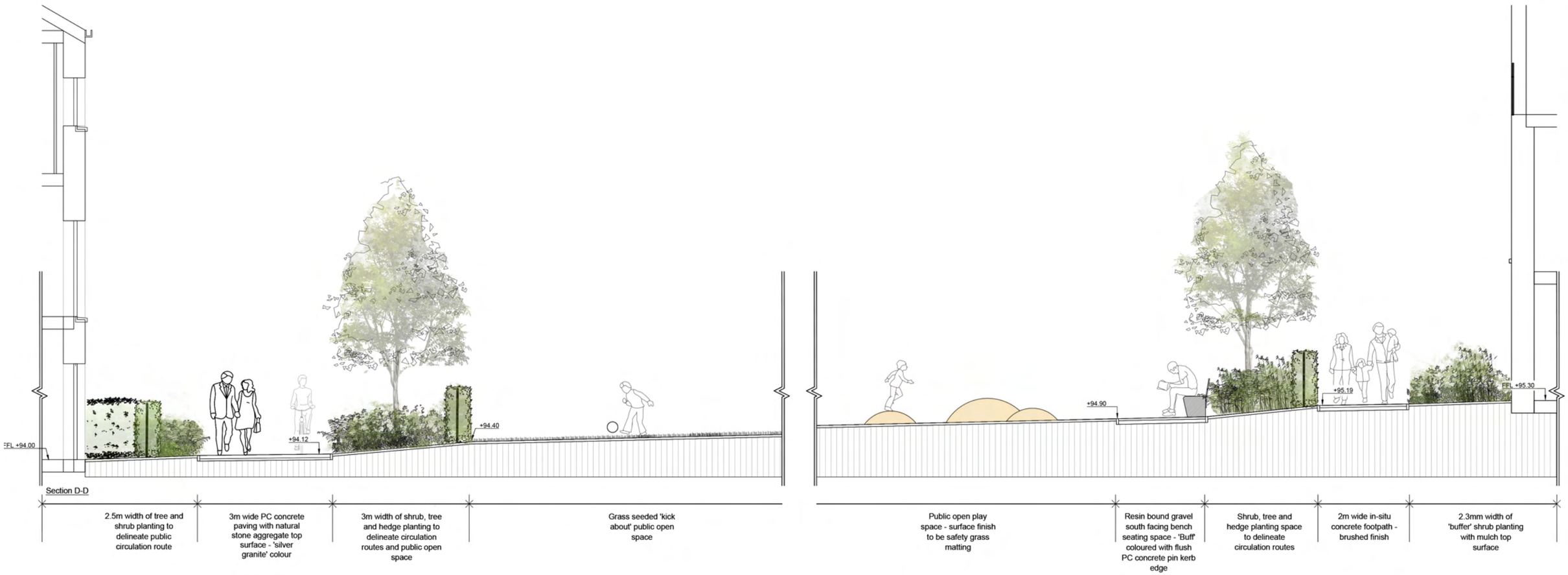




Landscape Sections D-D

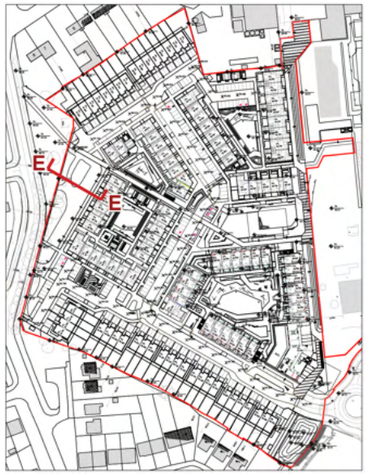
A3 reduction - Not to scale.





Landscape Sections E-E

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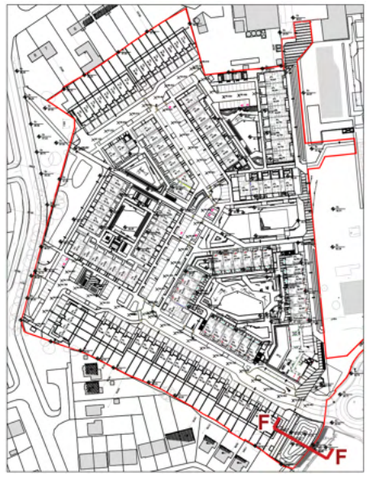


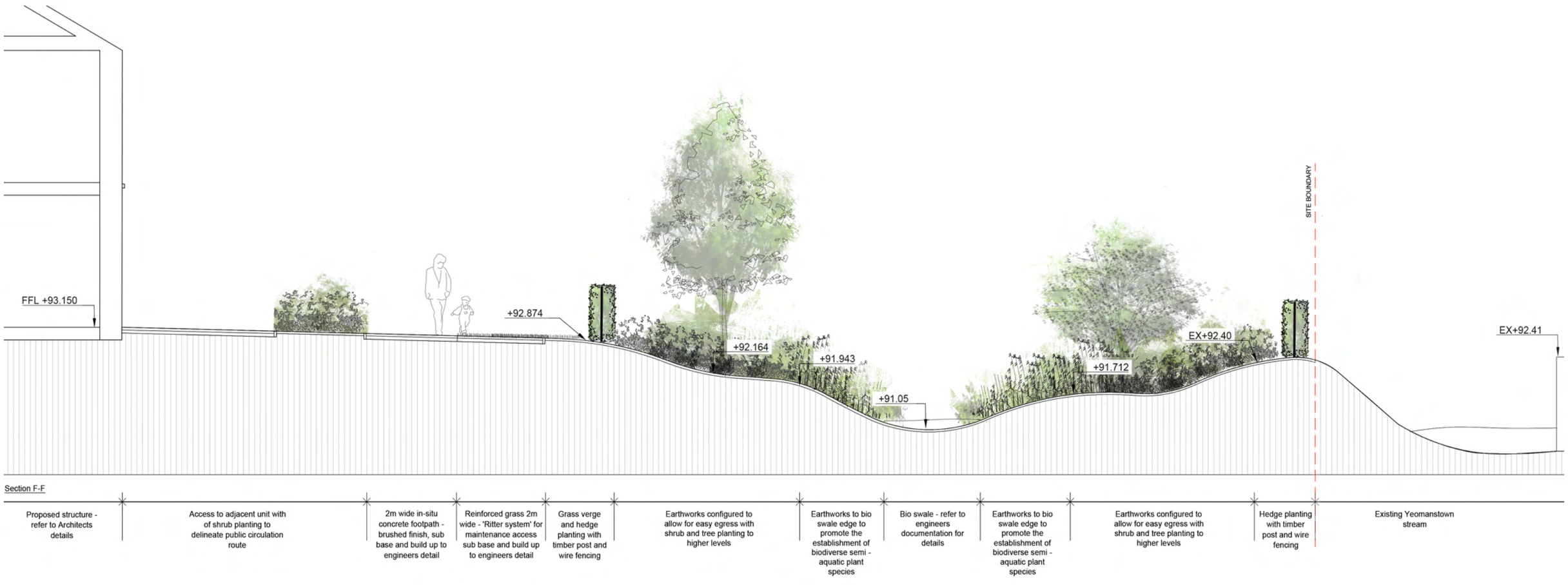


Landscape Sections F-F Constructed Bio-Swale/Wetland

A3 reduction - Not to scale.

Constructed bio-swale wetland to aid site sustainable drainage strategy. To be planted with swale plant mix to lower levels and shrub planting to higher levels. Earthworks configured to allow for easy egress and to promote the establishment of a wetland habitat. Access to be controlled with hedge planting with timber post and wire fencing and lockable gates. Existing Yeomanstown Stream, outside site boundary to be protected and retained.





PROPOSED PLANTING SCHEDULE

TREE PLANTING

NB: All trees should be full and well-shaped, bark unmarked and have healthy root systems. All trees to have a 2m clear stem unless otherwise specified.

Acer campestre	Field Maple	Rootballed	18-20cmg
Alnus spaethii	Alder	Rootballed	16-18cmg
Amelanchier lamarckii	Snowy Mespilis	Multistem	+3.5m
Betula pendula	Birch	Rootballed	16-18cmg
Betula utilis 'Jaquemontii'	Himalayan Birch	Multistem	+3.5m
Crataegus laevigata 'Paul's Scarlet'	Hawthorn	Rootballed	18-20cmg
Corylus colurna	Turkish Hazel	Rootballed	16-18cmg
Fagus sylvatica	Beech	Rootballed	16-18cmg
Liquidambar Styraciflua	Sweetgum	Rootballed	25-30cmg
Pinus sylvestris	Scots pine	Rootballed	18-20cmg
Pinus nigra	Austrian Pine	Rootballed	16-18cmg
Pyrus 'Chanticleer'	Ornamental Pear	Rootballed	18-20cmg
Quercus palustris	Red Oak	Rootballed	18-20cmg
Salix alba 'Tristis' ambig	White willow	Rootballed	18-20cmg
Sorbus aucuparia	Rowan	Rootballed	18-20cmg
Sorbus aucuparia sheerwater seedling	Mountain Ash	Rootballed	18-20cmg
Tilia cordata 'Greenspire'	Small Leaved Lime	Rootballed	18-20cmg
Ulmus 'New horizon'	Elm	Rootballed	16-18cmg

SWALE PLANTING MIX

SPECIES	COMMON NAME	SPECIFICATION
Butomus umbellatus	Flowering rush	Min 3L Pot, planted 5 per m2
Caltha palustris	Marsh marigold	Min 3L Pot, planted 5 per m2
Filipendula ulmaria	Meadowsweet	Min 3L Pot, planted 5 per m2
Iris pseudacorus	Yellow flag Iris	Min 3L Pot, planted 5 per m2
Lythrum salicaria	Purple loosestrife	Min 3L Pot, planted 5 per m2
Mentha aquatica	Water mint	Min 3L Pot, planted 5 per m2
Ranunculus repens	Creeping Buttercup	Min 3L Pot, planted 5 per m2
Salix spp.	Willow Species	Min 3L Pot, planted 5 per m2
Typha latifolia	Bulrush	Min 3L Pot, planted 5 per m2
Phragmites australis	Common reed	Min 3L Pot, planted 5 per m2

WILDFLOWER MIX C

Range: Wild Flower Mixture
Sown at 3g per m2
Product Code: WF04

Species mix to include the following species:
Bladder Campion, Bluebell, Birdsfoot Trefoil, Corn Marigold, Corn Poppy, Corncockle, Cornflower, Cowslip, Cow Parsley, Feverfew, Field Scabious, Foxglove, Hedge Garlic Mustard, Hemp Agrimony, Lesser Knapweed, Marjoram, Meadowsweet, Mullein, Ox-eye Daisy, Purple Toadflax, Ragged Robin, Red Bartsia, Red Campion, Red Clover, Ribwort Plantain, St Johnswort, Upright Hedge Parsley, Sorrel, Wild Angelica, Wild Carrot, Yarrow, Yellow Flag Iris, Yellow Rattle, Yellow Agrimony, Dames Violet, Greater Celandine, White Bedstraw, Burdock

GENERAL PLANTING MIX - Shrubs, Perennials, Hedging, Grasses and Ferns

On minimum depth of 450mm topsoil. 75mm mulch applied continuously NB: Herbaceous plants shall be supplied as well rooted clumps, showing several healthy buds, and grown in pots. Pots shall be appropriate to the size of the plant supplied.

SPECIES	COMMON NAME	SPECIFICATION
Blechnum spicant	Hard Fern	Min 3L Pot, planted 5 per m2
Calamagrostis 'Karl Foerster'	Feather Reed Grass	Min 2L Pot, planted 4 per m2
Carex pendula	Weeping sedge	Min 3L Pot, planted 5 per m2
Cortaderia selloana 'Pumila'	Pampas grass	Min 3L Pot, planted 5 per m2
Crocosmia 'Lucifer'	Montbretia 'Lucifer'	Min 2L Pot, planted 6 per m2
Dryopteris Filix-mas	Male Fern	Min 2L Pot, planted 5 per m2
Euonymus europaeus	Spindle	Min 3L Pot, planted 5 per m2
Lavandula 'Hidcote'	Lavender	Min 2L Pot, planted 5 per m2
Luzula nivea	Snowy Woodrush	Min 3L Pot, planted 5 per m2
Rosmarinus officinalis	Rosemary	Min 3L Pot, planted 5 per m2
Sarcococca x confusa	Sweet box	Min 5L Pot, planted 4 per m2
Sedum 'Ruby Glow'	Ruby Glow	Min 3L Pot, planted 5 per m2
Sedum spectabile 'Brilliant'	Showy stonecrop	Min 3L Pot, planted 5 per m2
Stipa gigantea	Giant feather grass	Min 5L Pot, planted 3 per m2
Stipa pennata	European feather grass	Min 3L Pot, planted 5 per m2
Thymus serpyllum	Thyme	Min 1L Pot, planted 5 per m2
Hebe rakiensis	Hebe	Min 1.5L Pot, planted 5 per m2
Hydrangea quercifolia	Snow Queen	Min 1.5L Pot, planted 3 per m2
Ilex aquifolium	Holly	Min 1.5L Pot, planted 3 per m2
Sarcococcoca humilis	Christmas Box	Min 2L Pot, planted 5 per m2
Sedum spectabile 'Stardust'	Ice Plant"	Min 2L cg, planted 6 per m2
Stipa tenuissima tennuifolia	Feather Grass	Min 2L Pot, planted 4 per m2
Anemone 'Honorine Jobert'	Japanese Anemone	Min 1.5lt planted 4 per m2
Buxus sempervirens	Box (Hedging)	Min Ht. 40-60cm, BR double staggered row @250mm centres, 6 plants/lm
Crataegus monogyna	Hawthorn (Hedging)	Min Ht. 60-80cm, BR double staggered row @250mm centres, 6 plants/lm
Fagus Sylvatica	Beech (Hedging)	Min Ht. 60-80cm, BR double staggered row @250mm centres, 6 plants/lm
Prunus laurocerasus	Laurel (Hedging)	Min Ht. 60-80cm, BR double staggered row @250mm centres, 6 plants/lm
Anemone nemerosa	(Bulbs)	topsize 20 per sqm
Narcissus 'February Silver' "Daffodil"	Daffodil (Bulbs)	topsize 20 per sqm
Narcissus 'February Gold'	Daffodil (Bulbs)	topsize 20 per sqm

WILDFLOWER MIX B - (Tolerates shade)

Design by Nature GF03
Sown at 3g per m2
Species mix to include the following species:

Birdsfoot Trefoil, Black Meddick, Cowslip, Devil's Bit Scabious, Meadow Buttercup, Field Scabious, Hemp Agrimony, Kidney Vetch, Lady's Bedstraw, Lady's Ann lace, Lesser Knapweed, Meadowsweet, Mullein, Ox-eye Daisy, Purple Loosestrife, Ragged Robin, Red Campion, Red Clover, Ribwort Plantain, Rough Hawksbit, Sorrel, St Johnswort, Wild Angelica, Wild Carrot, Yarrow, Yellow Agrimony, Yellow Rattle, Teasel and more. Also includes 35% annuals: Corn Marigold, Corn Poppy, Corncockle, Cornflower, Scented Mayweed,

Outline Landscape Softworks Specification

PC concrete paving -Textured granite aggregate.
Slip/ Skid resistance: Extremely low: (>75 USRV).
Standards: Manufactured to BS EN 1338:2003 and BS EN 1339: 2003.
Installed to BS 7533-3:2005 and BS 7533-4: 2006.
Strength: BS EN 1338: 2003: > 3.6 MPa.
BS EN 1339: 2003: > 3.5 MPa.

PRELIMINARIES
Description of Work

The work consists of general works, site preparation, soil preparation, grass and meadow seeding, bulb/corm planting, shrub/groundcover planting, hedge and tree planting.
Exact dates for completion of works will be finalised after the award of the contract.
The construction of hardworks shall be carried out in tandem with the main construction programme whereby care is taken to avoid any unnecessary machinery traffic on completed areas.
Topsoiling shall be carried out in areas where the underground service works and hardworks elements are complete so that no undue disturbance to topsoiled areas is ensured.
Planting of bareroot and rootballed stock shall take place in the following planting season from completion of topsoil works; namely November – March.
Container grown stock and grass seeding shall be carried out in the appropriate weather conditions following completion of topsoil works

Standards of Workmanship and Materials
The Landscape Contractor shall satisfy the Landscape Architect that all works have been carried out to comply with BS 4428(General Landscape Operations), BS 3936 (Nursery Stock), and BS 3882 (Topsoil).
It is essential that the site is tidy at all times, and that the planting appears healthy. The Landscape Contractor should be prepared, at all times, to ensure that such conditions are met and should include for this in his rates.
Any materials not meeting the specifications or qualifying for the approval of the Landscape Architect, for whatever cause, shall be rejected.
The Landscape Contractor shall familiarise himself/herself with the layout of services and the positions of all structures on the site and shall be liable for any damage to the above.
No existing plants shall be removed or damaged, other than those specified by the Landscape Architect

Notice of Intentions and Recording Actions
The Landscape Contractor shall give 48 hours notice of his intention to commence setting out, planting and maintenance visits.
The Landscape Contractor shall return a weekly record of all site actions.

Leaving the Site Tidy
The site shall be left in a neat and orderly condition at the end of each day's work.

Season
Landscape work shall take place in the appropriate season and only when the conditions are suitable, i.e. it is dull, moist and mild, without undue risk of frost or drying winds.
There shall be no cultivation or planting when the soil is frozen or waterlogged.
If exceptional weather conditions occur after planting, e.g. heavy frosts, measures shall be taken as approved by the Landscape Architect.

Replacement
The sub-contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time up to practical completion and in the twelve months after planting.
The sub-contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time prior to hand over.
Plant failures will not be charged to the Landscape Contractor if the failure is due to; damage by hares, rabbits, deer, livestock where not protected by guards or fencing, damage/ losses due to theft, vandalism or disturbance by other contractors.
Persistence of weed in planted areas will be regarded as a contributory cause of failure due to drought. Prolonged dry weather will not exonerate the landscape Contractor if the scheduled maintenance operations have not been carried out as programmed.

Damage
All trees and plants are to be adequately and carefully packed and protected to survive transport, whatever means, to the site, during loading, transit or unloading.
If in spite of these precautions roots, branches, or shoots suffer slight damage, they are to be carefully pruned.
If major damage has occurred, the plant or tree shall be rejected and replaced at the Landscape Contractor's own expense.
Defects Liability Period
The Landscape Contractor shall be responsible for any plants that fail to take during the first full growing season (18 months) from date of completion.

Protection
The Landscape Contractor shall provide adequate temporary protection to the whole of his work and shall include temporary coverings, planked barrow runs and all other measures for protecting the work from damage.
The Landscape Contractor shall also protect from damage all existing roadways, kerbs, services and other completed works on site.
Any work damaged or soiled by weather, traffic or other causes due to inadequate temporary protection shall be removed and made good at the cost of the Landscape Contractor. The form of protection is left to the discretion of the Landscape Contractor.

Programme for Landscape Works
Programme of Operation
The Landscape Contractor shall execute his works in conformity with a programme to be agreed with the Landscape Architect and shall include in his estimate for working within an agreed time limit.
No individual areas will be handed over unless there is an agreed sectional completion. The Landscape Contractor shall allow for keeping individual areas adequately maintained until the whole has been completed.

Earthworks
Any subsoil and/or topsoil stripping and storage shall be done prior to commencement of construction of roads, buildings, services, etc. and shall be carried out as set out in the landscape architects specification for earthworks.
No works in relation to grading and topsoilingshall be carried out in conditions where materials are wet.
Any stockpiling of soil shall be in accordance with landscape architects specification whereby stockpile heaps will not exceed 1.5m in height to avoid compaction. While topsoil is stacked, measures will be taken to ensure that weed control by spraying with total or appropriate selective weedkillers is carried out during the growing season to prevent weeds seeding.

Hardworks
The construction of hardworks shall be carried out in tandem with the main construction programme whereby care is taken to avoid any unnecessary machinery traffic on completed areas.
Softworks
Topsoiling shall be carried out in areas where the underground service works and hardworks elements are complete so that no undue disturbance to topsoiled areas is ensured.
Planting of bareroot and rootballed stock shall take place in the following planting season from completion of topsoil works; namely November – March.
Container grown stock and grass seeding shall be carried out in the appropriate weather conditions following completion of topsoil works

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

Setting Out
The Landscape Contractor will be responsible for checking all schedules and drawings by the Landscape Architect. In the event of any discrepancies being found between such schedules and drawings, or if the Landscape Contractor considers that additional detail drawings are required, the Landscape Contractor shall report such discrepancy in writing at least ten days before the works are to be executed.
The right is reserved to adjust the exact position of trees and specimen shrubs after they have been set out on site.
Any trees which are planted without approval of the setting out may be required to be re planted at the Landscape Contractor's expense.

Supervision and Contractor's Staff
The Landscape Contractor shall ensure full and adequate supervision of the site during the duration of the works.
The Landscape Contractor shall at all times during the Contract period employ sufficient persons of appropriate abilities, skills, care, and experience as are required for the proper performance of the Services in accordance with the Contract and shall ensure that a sufficient reserve of persons is available to provide the Services during holiday periods, absences due to sickness and special events/emergencies.
The Landscape Contractor will appoint a Contract Manager to supervise those persons employed to perform the Services in accordance with the Contract.
The Contract Manager must be available and present in the Contract Area at all times that the Services are being carried out.
The Landscape Contractor shall notify the Supervising Officer of the name, address and telephone number of the appointed Contract Manager who will be responsible for receiving notification from the Employer of complaints and instructions under the Contract.
The Employer shall be entitled to notify the Landscape Contractor by notice in writing to remove from the Contract or discipline any employee of the Landscape Contractor (which for avoidance of doubt shall include the Contract Manager or his deputy) who, in the reasonable opinion of the Supervising Officer, has shown himself to be unsuitable to perform his duties under the Contract.
The Employer shall in no circumstances be liable either to the Landscape Contractor or to the employee in respect of any liability, loss or damage occasioned

by such removal or disciplinary action and the Landscape Contractor shall fully and promptly indemnify the Employer against any claim made by such employee.
The Landscape Contractor shall ensure that every person employed by the Landscape Contractor in and about the provision of the Services is at all times properly and sufficiently trained and instructed with regard to: the task the person has to perform;
any relevant provisions of the Contract; relevant rules, procedures and standards of the Employer; all relevant rules, procedures and statutory requirements concerning Health and Safety at work; fire risks and fire precautions; and the necessity to observe the highest standards of courtesy and consideration to the public to promote and enhance the Employer's image and reputation.

Sequence of Operations
The sequence of operations shall be as described unless written authority to vary is obtained from the Landscape Architect.

Insurance, Indemnities, etc.
The Landscape Contractor shall indemnify, and keep indemnified the Employer against all actions, suits, claims, demands, costs and expenses whatsoever, by reason of, or arising out of the execution of the Contract Works, or any of the matters connected therewith, whether such claim or proceedings be brought or costs or expenses incurred under or virtue of Workmen's Compensation Act, Employer's Liability Act, or any other statute or at Common Law, or otherwise howsoever.
The Landscape Contractor shall indemnify the Employer in respect of accidental injury, loss or damage caused by, through or in connection with his work. The Landscape Contractor shall arrange insurance to cover the risk of such accidental injury, loss or damage and shall have the Employer indemnified by such insurance policies with approved insurance companies as detailed hereunder and shall take all necessary steps to keep such policies validly in force during the period of Contract work. The Landscape Contractor shall produce such insurances when requested by the Employer.
Employer's Liability Policy
This policy should provide for indemnification of the Employer in respect of claims which could be made against it as principal by employees of the Landscape Contractor.
Public Liability Policy
This policy should provide for the following:
Indemnification of the Employer as principal.
Unlimited cover generally and a limit not less than €1,000,000.00 in respect of any one accident.
Full Motor Insurance Policy

Health and Safety
The Landscape Contractors shall at their own cost arrange for the safe keeping during and after delivery to works of all manures, plants and equipment necessary to complete the job in hand. All oil and petrol containers must be kept in suitable sheds and the Landscape Contractor shall observe all regulation regarding the storage of poisonous and/or inflammable liquids.
The Landscape Contractor shall in performing the Services adopt safe methods of work in order to protect the health and safety of his own employees, the employees of the Employer and of all other persons, including members of the public and shall comply with the requirements of the Health and Safety at Work Act 1974, The Management of Health and Safety Regulations 1992, Control Of Substances Hazardous to Health (COSHH) Regulations 1988 and 1994 of any other Acts, Regulations, Orders or any European Directive pertaining to the health and safety of employed persons.
The Landscape Contractor shall at the time of submitting his Tender provide to the Employer a written copy of his health and safety working procedures relating to the performance of the Contract.
The Landscape Contractor shall review his Health and Safety policy and safe working procedures as often as may be necessary and in the light of changing legislation or working practices or the introduction of new Work Equipment and shall notify the Supervising Officer in writing of any such revisions. The Supervising Officer may require the Landscape Contractor to amend its health and safety policy and safe working procedures to comply with any change in legislation or working practices or required as a result of the introduction of new Work Equipment.

Equal Opportunities Policy
The Landscape Contractor shall keep his equal opportunities policy in force for the duration of the Contract to comply with statutory obligations. Any findings of unlawful discrimination against the Landscape Contractor during the three years prior to the commencement of the Contract shall be reported to the Employer, together with details of the steps taken to avoid repetition.

Waiver
Failure by the Employer at any time to enforce the provisions of the Contract or to require performance by the Landscape Contractor of any of the provisions of the Contract shall not be construed as a waiver of any such provision and shall not affect the validity of the Contract or any part thereof or the right of the Employer to enforce any provision in accordance with its terms.

Acceptance
Payment will be made to the Landscape Contractor following certification of completed works by the Landscape Architect. There shall be no sectional handover unless previously agreed. In appropriate circumstances and where the contract involves the application of a defects liability period following practical completion of landscape works, there shall be a retention amounting to 5% of the total contract price, which shall be released when defects have been made good at the end of the defects liability period.

Default in provision of the service
Without prejudice to any other powers of the Employer, if the Landscape Contractor, for whatever reason fails to provide or perform the Services in whole or in part completely in accordance with the terms of the Contract then without prejudice to any remedy contained herein the Employer may by his own or other workmen provide and perform such Services or part thereof in which the Landscape Contractor has made default. The costs and charges incurred by the
Employer in so doing shall be paid by the Landscape Contractor to the Employer on demand or may be deducted by the Employer from any moneys due or which may become due to the Landscape Contractor.
In the event of non-completion of specified works, non-compliance with specification, faulty workmanship or use of defective materials, the Landscape Contractor will be deemed to be in breach of contract and payment may be withheld in full or in part pending completion or execution of remedial works.

SPECIFICATION
EARTHWORKS

Method of work
No works in relation to grading and topsoiling to be carried out in conditions where materials are wet.
Provide catchment drains or ditches to collect excess run-off and prevent water entering from adjacent land. Remove scrub as well as top growth by cutting and burning. Flail or swipe mowers can be used. Where turf is excessively thick, plough, disc harrow, and reduce vegetative content by weathering and cultivations.
In late April - early May, apply 'Roundup' at 5 litres per hectare, diluted in water at 200 litres per hectare, at a pressure not exceeding 30 p.s.i. Apply evenly over full area of soil to be stripped. Apply when weather is mild and grass is growing. Do not apply when rain or showers are forecast within six hours or when wind may cause drift (over 24kph/15mph). If rain falls within the min mum period, retreat.
After application, leave the soil surface undisturbed for a minimum period of 15 days, to allow foliage symptoms to develop. If possible, leave undisturbed for two months.
Strip topsoil from all areas liable to disturbance of any kind, including building works, roads, underground services, all temporary access routes, compounds and storage areas. Strip the full designated working area, and any other areas liable to encroachment and traffic.
Do not run machinery over ground before stripping.
Strip the full depth of sod and topsoil. Avoid stripping into the subsoil layers.
Where a hedgerow is to be maintained, do not strip within 4 metres of it. Soil must not be stripped from any part of the area under the canopy of an tree which is to be retained.

Stockpiles
When soil is in a condition for stacking, remove all topsoil to its full depth and place it in heaps either off site in a convenient position, or on the neutral line of cut and fill. Strict precautions are essential to prevent loss or admixture with subsoil.
Soil heaps should be formed in positions which facilitate eventual respreading, reduce travel to a minimum and will not result in interference with subsequent major levelling and/or grading operations. Stockpiles shall be located on dry, free draining ground, not subject to standing water. If water ponds against the stockpile, temporary drains shall be cut to relieve it. Avoid running machinery over stockpiles.
Stockpile heaps should not exceed 1.5m in height to avoid compaction.
While topsoil is stacked, measures should be taken to ensure that weed control by spraying with total or appropriate selective weedkillers is carried out during the growing season to prevent weeds seeding.
Topsoil stockpiles shall not be covered by subsoil, rock, rubble, site debris, fuel or chemical pollution. Where there is a danger of contamination or topsoil and subsoil stockpiles intermingling the topsoil stockpile shall be fenced off.
Temporary yards, storage areas or hardstanding areas shall not drain towards topsoil stockpiles.
Topsoil is the property of the Employer, and shall not be removed from site without consent given from Employer or Landscape Architect.

Subsoil cultivations
Subsoil should be placed in layers not exceeding 150mm thick; consolidation of fill may be accomplished by the use of special compacting machinery or by running over it with the next load; filling by tipping over an exposed face is not recommended because of the difficulty of consolidation.
After completion of subsoil moving, the formation level should be graded with the box scraper to even, running contours and then, depending on the soil texture and degree of compaction, loosened with a subsoiler or ripper.

Subsoil levels
Subsoil levels shall be 200mm below the finished ground levels in all areas for grass seeding to allow for 250mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.
Subsoil levels shall be 400mm below the finished ground levels in all areas for shrub planting to allow for 450mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.
Subsoil levels shall be 550mm below the finished ground levels in all areas for shrub planting to allow for 600mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.
Subsoil levels in all areas for tree planting shall be 900mm below the finished ground levels to allow for 900mm of topsoil to be placed.
Topsoil
Topsoil shall be native topsoil as removed and stored.
All imported topsoil to be of medium texture, pH matching that of the native top-

soil, stone content 10mm in size not greater than 5% by weight, and no stones greater than 40mm in any dimension, and shall conform to BS 3882:1965.
Topsoil shall be a free draining sandy loam. Depth of topsoil to be as specified.
Topsoil shall be free of perennial weed roots, i.e. couch grass, sticks, sub soil or any waste, toxic, putrescent or foreign matter.
After spreading, the soil should be cultivated to crumb size to a condition suitable for blade grading. Large stones and unwanted material 75mm and over should be picked off and carted away. Areas should then be blade graded to true flowing contours.
As topsoiling proceeds all consolidated wheel tracks shall be forked over.
Final grading of the top 150mm is to be carried out to ensure a true specified level and slope to avoid dishing or other depressions where water may collect.
The use of a heavy roller to roll out humps will not be permitted and any area that becomes unduly compacted during the grading operation shall be loosened by forking or harrowing.

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

grass seeding	150mm
shrub / groundcover planting	450mm
hedge planting	600mm
tree planting	1200mm x 1200mm x 1200mm pit

Maintenance of topsoil stockpiles
Stockpiles of 1 year duration or less: treat the growing weeds with 'Roundup' applied at 5 litres per hectare, diluted and applied in accordance with the manufacturers instructions, when they are growing strongly (May - June). Noxious weeds (dock, thistle, ragwort) shall be treated before they flower.
Stockpiles of up to 2 year's duration: roughly grade top and slopes of topsoil. Sow Italian Ryegrass at 50kg per hectare as a temporary grass cover. Control noxious weeds with a proprietary weedkiller such as 'Bandock' , diluted and applied in accordance with the manufacturers instructions, when they are growing strongly (May - June).

Tree Planting
Planting pits for trees in undisturbed ground will be backfilled with excavated material. Tree pits in mounds or other made up ground shall be backfilled with topsoil.
All tree pits for all trees other than semimature trees shall be excavated 200mm wider in all directions than the natural root spread, or rootball, and the base forked to improve drainage. Stakes shall be positioned before backfilling.
Topsoil backfill shall be mixed with peat substitute in the ratio of 4:1.
60g Enmag or similar approved slow release fertiliser shall be incorporated.
The backfill shall be settled and well firmed around the roots avoiding air pockets.
All semimature tree pits shall be excavated 500mm wider than the natural root rootball, and 150mm deeper to allow for 250mm of backfill mix, tamped firm to 150mm. In all semimature tree pits an additional depth of 150mm should be dug to allow for a 150mm gravel layer at the bottom of the pit to aid in drainage.
Sides of tree pit shall be ripped and loosened to ensure a good bond with the backfill and to avoid root girdling.
All semimature tree pits shall be backfilled with mix consisting of: 10 parts native topsoil and 5 parts sharp sand. 60g Enmag or similar approved slow release fertiliser shall be incorporated.

Plants Generally
All plants shall conform fully to the specification in respect of species, size and quality.
The Landscape Contractor shall investigate the sources of supply and satisfy himself that he can supply all of the plants specified on the planting schedule in the size, variety and quality before submitting a bid. Substitutions will not be permitted. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of nearest equivalent size or variety, with an equitable adjustment of contract price.
All plants shall be well grown, sturdy and bushy, according to type, and free from all disease and defects.
The Landscape Architect reserves the right to reject any plant material before or after planting if it does not conform with the specification.
All plants shall be adequately hardened off prior to planting, where frost or cold winds may be a problem. All plants shall be supplied with temporary labels with the full botanical name , on each bundle or batch of plants.
The Landscape Contractor should indicate in their tender source of material to be used and where it can be inspected prior to award of contract.
All plants that do not conform to the specification will be automatically rejected and must be removed from site and replaced at the Landscape contractor's expense.
All trees, shrubs and other plant material shall comply with the minimum requirement of the relevant British Standards below:

BS 3936	Part 1: Specification for trees and shrubs
BS 3936	Part 4: Specification for forest trees
BS 3936	Part 5: Specification for Poplars and Willows
BS 3936	Part 6: Specification for herbaceous, perennials and alpines
BS 3936	Part 9: Specification for bulbs, corms and tubers
BS 3936	Part 10: Specification for groundcover plants

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

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

Bundling
Whip planting must be in bundles of the same species and size, all shoots must face in the same direction so that roots and shoots are not in contact, and must be of equal numbers. Bundles are to be securely tied with supple material which will not, by its nature or tension, cause damage to the plants.

Labelling
Each individual plant, bundle, bag, or lot of one species shall be labelled with a securely attached label, clearly indicating the plant name, grade and quantity.

Grass Seed
Grass seed shall conform to the requirements of British Standard 4428:1969 and subsequent amendments, and to the European communities (seed and fodder plants) regulations 1976.
The Landscape Contractor shall supply, with each seed mixture, a certificate stating the composition, purity, germination, year of collection and country of origin.
The germination capacity of each constituent of the mixture should be not less than 80%, and the purity of the mixture not less than 90%.
Total weed seed content should not be more than 0.5% and the total content of other crop seeds should not be more than 1%. These minimum figures shall be for the current 14 month period of annual tests.
The seed is to be thoroughly re-mixed before sowing to avoid patchiness on the ground and is to be 'Coburns Urban Parks mix' or similar approved, sown at a rate of 35 - 50g per square metre.
(James Coburn + Sons Ltd., 32 Scarva Street, Banbridge, Co.Down BT32 3DD Telephone: 08 - 018206 - 62207 Fax: 08 - 018206 - 27250)
Container grown Shrubs, Groundcovers, Climbers and Herbaceous Plants
Shrubs shall be bushy, well established nursery stock with a good fibrous root system. They shall be container grown, true to size, name and description as scheduled. Shrubs shall conform to the appropriate British Standards.
Plants shall not be pot bound, nor with roots deformed or restricted.
Bare root material will only be accepted where specified.
Herbaceous plants shall be supplied as well rooted clumps, showing several healthy buds, and grown in pots. Pots shall be appropriate to the size of the plant supplied, minimum size 0.5litres (80mm square or 90mm diameter).

Whips and Transplants
All plant material must comply in all respects with the current edition of BS 3936 Parts 1, 4, and 5.
Transplants shall not be less than 3 years old and have been transplanted at least once. Trees shall be sturdy, with a balanced root and shoot development, sizes shall conform to schedule.
Willows shall have been stumped and transplanted at the end of the first year in the nursery.

Trees
Trees shall conform to the appropriate British Standards.
All trees should be full and well shaped, bark unmarked and have healthy root systems.
The Landscape Architect must inspect and approve all trees prior to lifting or planting. Trees must all be of identical size and shape and should originate from the same stock nursery and stand.
Rootballed trees shall be rootballed immediately when lifted at the nursery.
The rootball shall be suitable for the size of crown and the rootball shall be flat bottomed.
The rootball shall be formed through regular transplanting; every 2-3 years minimum. The rootball shall be wrapped in hessian and steel wire netting or other suitable and approved decomposable material.
Standard pleached trees shall have a clear stem 1.7m to 1.85m in height from ground level to the lowest branch, a minimum girth of 8cm at 1m from ground level and a total height of 2.75m to 3m.
They shall have a well-defined, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown shall be well shaped, balanced, of a form and habit natural for the species.
All advanced nursery trees shall comply with BS 5236: 1975. They shall have a well-defined, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown shall be well shaped, balanced, of a form and habit natural for the species. Trees shall have a sturdy, reasonably straight stem not less than 1.8m from ground level to the lowest branch.
All advanced nursery stock trees shall be supplied with roots balled.
All coniferous trees shall be supplied rootballed or container grown, with a good fibrous root system. Trees shall conform to specified height with well developed, uniform branching systems.

Shrub/Groundcover Sizes
All shrubs and groundcovers shall be supplied as sizes indicated in the Bill of Quantities and Contract drawings.

Whip Sizes
Unless otherwise specified, all trees shall be as follows:-
Whips, 600 - 1200mm high, 150 x 150 x 150mm minimum root dimension. To have a sound central leader and well formed branches.
Tree Sizes
Unless otherwise specified, all trees shall be as follows:-

Type	Girth	Height
Whip planting	-	600-1200mm

Half Standard Tree	4-6cm	1.8-2.1m
Light Standard Tree	6-8 cm	2.25-2.5m
Standard Tree	8-10 cm	2.75-3m
Selected Standard Tree	10-12 cm	3-3.5
Heavy Standard Tree	12-14 cm	3.5-4m
Extra Heavy Standard Tree	14-16 cm	4-4.5m
Advanced Extra Heavy Standard Tree	16-18 cm	5m
Semimature Tree	20-22 cm +	6.5-7m +

Tree Anchors, Stakes, Guys, etc.
All trees other than semimature trees and whips trees shall be supplied and fitted with one tree stake per tree.
Tree stakes shall be peeled poles of oak, sweet chestnut, pine or douglas fir, or tanalised larch. All stakes shall be preserved with water borne copper chrome arsenic to IS 131, to a net dry salt retention of 5.3kg per cubic metre of timber.
Stakes shall be supplied as sizes specified.
They shall be at least 1.8 metres long unless otherwise specified, with a minimum diameter of 75 mm at both butts.
Stakes shall be driven prior to planting with a drive all, wooden maul or cast iron mell, not with a sledge hammer.
Trees shall be tied to each stake with a purpose made tie and spacer, the tie to be overlapped and thrice nailed to the stake. Tree ties shall be rubber or PVC or proprietary fabric laminate composition, and shall be durable enough to hold the tree secure in all weather conditions for a period of three years.
They shall be flexible enough to allow for proper tightening of the tie.
Tree ties shall be 25mm -40mm wide depending on tree size. They shall be fitted with a simple collar spacer to prevent charring, and with a buckle for adjustment.
All Semimature trees shall be supplied and fitted with anchoring system: “Platipus root anchoring system kit” (as by Duckbill Anchors Ltd., Perrywood Business Park, Honeycrock Lane, Salfords, Nr. Redhill, Surrey, England, RH1 5DZ Tel: 01737 762300).

Mulch
Mulch shall be graded bark chippings from coniferous trees, particles 25 - 75mm, free of fine material, dust or wood.
Mulch will be rejected if in the Landscape Architect’s opinion it is likely to be wind blown.
The Contractor should arrange to have an on site sample (or samples) inspected by the Landscape Architect prior to spreading. Spreading without the approval of sample is at the Contractor’s own risk.

Approved chemicals
All chemicals used shall be non-toxic to human beings, birds and animals under normal use, and chemicals which are not agriculturally approved shall not be used.
The use of the following herbicides is acceptable:
Roundup
Basta
Tritox (only after 2nd cut)
Kerb Flo
The use of the following fertilizers is acceptable:
Fisons PS5: grass areas
Osmocote Plus- fertiliser N:P:K 15:9:11 plus trace elements: Shrub areas
Enmag - 4:19:10 + 7.5%: Tree planting
The Landscape Contractor may only use alternative formulations and manufacturers with prior approval by the Landscape Architect.
All weed killer and fertiliser shall be applied with properly designed equipment, maintained in good order and calibrated to deliver the specified volume, evenly and without localised overdosing. All quantities shall be accurately measured.

WORKMANSHIP

Site Clearance
Remove and dispose of off-site any rubbish still occurring in topsoiled areas, including weeds, old masonry and rubble, metal, wood, and stones, excavating as necessary to permit the specified depth of final cultivations.
All scrub areas shall be grubbed and all existing plants of same shall be removed and disposed of including all root systems unless otherwise specified.
Before topsoiling, remove all stones over 75mm in diameter. Dig out any areas polluted by oil or chemicals and make up with clean soil. Break up the formation under any areas liable to ponding of rainwater, so that they drain.
Topsoil shall be moved and spread only in dry weather. No work to topsoil shall be carried out when it is waterlogged, or if it’s moisture content is conducive to structural deterioration. Minimise compaction of topsoil and subsoil when spreading, running machinery over the surface as little as possible.

Cultivation Generally
The aim of cultivation is to produce a well-drained and textured soil suitable for plant growth.
All areas to be planted, or seeded shall be cultivated to a minimum depth of 450mm or deeper if specified. Areas where obvious compaction has occurred shall be ripped.
Stones above 75mm longest dimension shall be removed from the top 100mm layer of shrub planting areas.

Final preparation - Seeding Areas
One week before seeding, Fisons PS5 or similar approved pre-seeding fertiliser shall be spread at a rate of 70g per square metre and incorporated in the surface layer. The soil shall be firmed and raked to a fine tilth suitable for seeding.

Final Preparation - Shrub planting areas
Coarse clean moist compost or approved peat substitute shall be forked in at a rate of 5kg per square metre and incorporated to a depth of 200mm.
Controlled release fertiliser N:P:K 15:9:11 plus trace elements - Osmocote plus or similar approved shall be applied at specified rates and raked into the top 50mm layer.
The surface shall be raked to a tilth suitable for planting.
Final Preparation Whip planting areas
Coarse clean moist compost or approved peat substitute shall be forked in at a rate of 5kg per square metre and incorporated to a depth of 200mm.An approved fertiliser shall be spread at a rate of 70g per square metre and raked into the top 50mm layer.
The surface shall be raked to a tilth suitable for planting.

Planting Season
Forestry transplants and feathered trees other than evergreens will be planted between November and march inclusive. Evergreens will be planted in October or in April/May.
Planting shall normally be carried out during the period 1st October to 31 March in suitable weather.
Containerised plants may be planted throughout the year provided the weather is suitable, the soil is sufficiently moist and each planted is watered following planting.
Planting out with the specified planting period will only be permitted in exceptional circumstances at the discretion of the landscape Architect; such exceptional circumstance shall include unsuitable weather and no penalty shall be incurred under provided that any delay is formally accepted by the Landscape Architect as attributed to this cause. In
the event that works are delayed by inclement weather, the landscape Contractor shall complete them at the earliest opportunity afforded by suitable weather.

Planting Generally
All planting operations shall be carried out in accordance with BS 4428 and good horticultural practice.
The Landscape Contractor shall provide the Landscape Architect with the species and quantities reserved from each named nursery, and the Landscape Architect shall have the right to inspect such nursery stock as deemed necessary, prior to its purchase by the contractor.
All plant labels are to be kept on their respective plants by the Landscape Contractor until the final inspection has been carried out. Only on approval from the Landscape Architect may such labels be removed by the Landscape Contractor.
Bare root stock shall be delivered to the site on the day of planting.
If under exceptional circumstances planting cannot take place within 12 hours of delivery, stock shall be healed in or their roots shall be adequately covered with moist hessian or good quality topsoil fir a maximum period of ten days. The roots are to be kept moist throughout this time by adequate watering. Waterlogging shall be prevented.
Any plants which fail due to inadequate protection prior to planting shall be rejected and replaced at the Landscape contractor’s own expense.
Any plants stored temporarily on site shall be protected from adverse weather conditions. Plants with damaged root systems shall not be accepted.
After planting, any minor damage shall be rectified by pruning.
Plants which, in the opinion of the Landscape Architect, have been seriously damaged during planting shall be rejected and replaced at the Landscape Contractor’s expense.
All planting shall be firmed up if loosened by frost or wind.
Prior to planting all bare rooted plants shall be completely immersed in a container of Alignure Root Dip (1:99) solution and container grown plants shall be sprayed with the solution according to manufacturer’s instructions.

Seeding and Establishment
Grass seeding rate shall be: 25-35gm per square metre.
Wildflower seeding rate shall be: 5gm per square metre.
Seeding shall only be carried out at the correct season and in suitably calm but moist weather conditions.
Seed shall be cross sown in two directions at right angles to each other (half the seed to be used in each directions) to prevent striping.
After sowing, all areas shall be lightly raked with a chain harrow or by hand.
About 48 hours before first cut, large stones (more than 40 mm in any dimension), should be removed and all areas rolled with a light roller to firm grass and press in all remaining stones.
When the grass is established and from 40 mm to 75 mm high, according to the seed mixture, it should be topped with a roto-scythe so as to leave from 25 mm to 50 mm of growth, to cut weeds, to control the growth of coarser grass and to encourage tillering.
Grass areas shall only be accepted as reaching practical completion when germination has proved satisfactory and all weeds have been removed.
No payment for re-seeding shall be made to the landscaping Sub-Contractor if the seed fails due to any cause whatsoever. He shall be required to make good the soiling and repeat the seeding until a good sward is obtained.

Shrubs
All shrubs shall be pit planted in precise locations as shown in plans. Pits shall be excavated 150mm wider in all directions than the natural root spread of the plant, and the bottom of the pit must be well forked to improve drainage.
Back filling of all pits shall be with soil and compost or an approved peat substitute in the ratio of 4:1.
All plastic and non-degradable wrappings and containers shall be removed before planting. Make four vertical cuts with a sharp knife on the quadrants through the edge of container grown rootballs to sever girdling roots.
Whip Planting
All whips shall be notch planted in staggered pattern. Whip trees shall be planted randomly with no more than 5 plants of the same species planted in groups. Blocks of similar species are not to be planted. Pits shall be excavated 150mm wider in all directions than the natural root spread of the plant.

Tree Planting
Planting pits for trees in undisturbed ground will be backfilled with excavated material. Tree pits in mounds or other made up ground shall be backfilled with topsoil.
All tree pits for all trees other than semi mature trees shall be excavated 200mm wider in all directions than the natural root spread, or rootball, and the base forked to improve drainage. Stakes shall be positioned before backfilling.
Topsoil backfill shall be mixed with peat substitute in the ratio of 4:1.
60g Enmag or similar approved slow release fertiliser shall be incorporated.
The backfill shall be settled and well firmed around the roots avoiding air pockets.
All semi mature tree pits shall be excavated 500mm wider than the natural root rootball, and 150mm deeper to allow for 250mm of backfill mix, tamped firm to 150mm. In all semi mature tree pits an additional depth of 150mm should be dug to allow for a 150mm gravel layer at the bottom of the pit to aid in drainage.
Sides of tree pit shall be ripped and loosened to ensure a good bond with the backfill and to avoid root girdling.
All semi mature tree pits shall be backfilled with mix consisting of: 10 parts native topsoil and 5 parts sharp sand. 60g Enmag or similar approved slow release fertiliser shall be incorporated.
Backfilling shall be firmly tamped every 150-200mm and when pit is half full the backfill shall be flooded for further settlement. After excess water has drained further soil shall be added, tamped, and a final watering shall be given just before the final 75mm of backfill added.
The backfill shall be settled and well firmed around the roots avoiding air pockets.
All trees shall be well watered after planting.
All semi mature trees shall be transported to the site of planting one tree at a time, and only when the pit has been dug and the backfill mixed on site.
All semi mature trees shall be supported on transit by the rootball only. Manhandling of the rootball will not be permitted. The stem shall not be supported. The crown may be supported by hand only if the Landscape Contractor deems it necessary.
No tyred machinery except approved balloon-tyred machinery shall be used in the excavations of the tree pits. While excavating, tracked or balloon wheeled machinery shall operate on protective mats or wooden sheets to prevent compaction.
All semi mature trees shall be secured with a Platipus rootball fixing kit as per manufacturer's instructions. See schedule for rootball fixing in Bill of Quantities.
All timber frames to be used with the Platipus rootball fixing system shall be fixed with nail plates at each junction so that the individual members of the finished frame shall be flush with each other and of one level. Where possible the timber frames shall be constructed so that an optimum condition is achieved between preventing the timber frame from appearing above finished ground levels, and also ensuring that an uncompromised frame for anchorage exists (i.e. the frame shall be made as large as possible so that it can sit on the lowest part of the top rootball).
All ratchet tensioning systems shall be nailed to the timber frame so that the ratchet shall remain upright and in the position intended when installed.
All timber frames of the rootball fixing system shall be installed to ensure that when the tree pit is backfilled the frame shall be covered by a minimum of 50mm of mulch.
All rootballs of semi mature trees are to be surrounded with a 4 inch perforated land drain pipe to aid in future waterings.

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

Watering
During dry periods at any other times deemed necessary prior to practical Completion, the Landscape Contractor shall water all plant areas.
The Landscape Contractor must give notice to the local water Authority that a supply of water will be required for the execution of the works.
The Landscape Contractor is to ensure that he is aware of any restrictions on the use of water and hose pipes which may be applied by the water Authority and is to comply with any such restrictions. Any water carried out shall take care to avoid soil wash off the shrub area and disturbance of the peat mulch. Any damage caused by soil-wash shall be immediately rectified by the Landscape Contractor at his own expense, to the approval of the Landscape Architect.
Watering shall be carried out to add moisture to the full planting depth. No minor surface watering shall be carried out. The Landscape contractor shall allow for watering of all plants to field capacity as and when necessary, until practical completion is achieved.

Weeding
All planting areas are to be kept free of weeds and rubbish prior to Practical Completion. All planting areas are to be hoed, forked or hand weeded. The use of chemicals shall be only be upon approval from Landscape Architects.
Roundup - by Monsanto chemicals Ltd. 4 - 5litre/Ha. Do not apply when rain is forecast within six hours. Do not apply when wind is likely to cause spray drift (over 24kph / 15mph). Allow for leaf symptoms to develop before carrying out any cultivations. Apply to manufacturers recommendations. Apply 'Roundup' to kill existing grass preseeding, and weeds germinating in topsoil.
If germinating weed grasses are less than 100mm high and broad leaved weeds have not produced full-sized leaves, do not apply 'Roundup'. Apply 'Basta' @ recommended rates, 4 to 7 days before cultivating.
Basta- by Hoechst Ltd. 3 - 7.5litre/Ha. Do not apply when rain is forecast within six hours. Apply to manufacturers recommendations.
'Actrilawn 10' - by May + Baker Ltd., 11litre/Ha. Shall be used in accordance with manufacturer's instructions. Apply 'Actrilawn' when grasses have reached the two leaf stage or beyond, and when seedlings have emerged and have reached cotyledon or two leaf stage (approx. 4 weeks after sowing). Do not mow grass within 7 days of treatment.
Kerb Flo - weedkiller to be applied 3.75 - 4.25litre/Ha. Shall be used in accordance with manufacturer's instructions.

SPECIFICATION
MAINTENANCE OF TREE PLANTING

Maintenance period
The Landscape Contractor shall be responsible for the aftercare and maintenance of the completed works for 18 months from the date of practical completion.

Weed control
Weeding may only be done by hand, except in exceptional circumstances where persistent perennial weeds may be treated chemically. The use of chemicals shall only be upon approval from the Landscape Architect.
In the winter a first application of the residual weedkiller 'Kerb Flo' shall be applied in the according to the manufacturer's instructions, for tree areas, immediately after the area has been planted and before any weed germination has taken place.
Annual or perennial weeds which grow shall be spot treated by the contact weedkiller
'Basta', according to the manufacturer's instructions, care been taken to ensure no spray touches any part of the leaves.
An application of 'Roundup' may be applied from August on, strictly according to the manufacturer's instructions for tree areas. It is to be noted that the surface of the ground shall not be physically disturbed.
Noxious weeds (dock, thistle, ragwort) shall not be allowed to establish.
All soil surfaces shall be generally free of weeds at all times and shall be entirely free of weeds after each maintenance visit. No grass shall be allowed to encroach into soil areas.
Weed free circles around trees shall be 1000mm diameter in grassed areas.
Weeds shall not cover 10% of circle at any time during maintenance period.

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

Fertilizer
Apply top-dressings of organic matter such as cow, horse or sheep manure or proprietary materials to trees and shrubs once in spring, twice during the summer and once again in winter.
This treatment is to be carried out for the duration of the maintenance contract.
Alternatively, if so wished, inorganic fertilizer can be applied as 'Osmocote' 18:11:10, @ 50g / square metre in spring and late summer.

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

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

MAINTENANCE OF SHRUB PLANTING
Maintenance period
The Landscape Contractor shall be responsible for the aftercare and maintenance of the completed works for 12 months from the date of practical completion.

Weed control
Weeding may only be done by hand, except in exceptional circumstances where persistent perennial weeds may be treated chemically. The use of chemicals shall only be upon approval from the Landscape Architect.
In the winter a first application of the residual weedkiller 'Kerb Flo' shall be applied in the according to the manufacturer's instructions, for shrub areas, immediately after the area has been planted and before any weed germination has taken place.
Annual or perennial weeds which grow shall be spot treated by the contact weedkiller
'Basta', according to the manufacturer's instructions, care been taken to ensure no spray touches any part of the shrubs.
An application of 'Roundup' may be applied from August on, strictly according to the manufacturer's instructions for shrub areas. It is to be noted that the surface of the ground shall not be physically disturbed.
If foliar acting weedkillers are applied, all plants shall be protected during their application with 'Arboguard', 'Politec' or similar approved. No residual herbicide shall be used in the first season of planting.
Noxious weeds (dock, thistle, ragwort) shall not be allowed to establish.
All soil surfaces shall be generally free of weeds at all times and shall be entirely free of weeds after each maintenance visit. No grass shall be allowed to encroach into soil areas.
Weed free bands along hedges shall be 750mm wide. Weeds shall not cover 10% of circle at any time during maintenance period.

Watering
Careful attention to water is essential during dry spells and may be critical in the case large shrubs. Shrubs shall be watered as necessary and to their full planting depths.

Fertilizer
Apply top-dressings of organic matter such as cow, horse or sheep manure or proprietary materials to trees and shrubs once in spring, twice during the summer and once again in winter.
This treatment is to be carried out for the duration of the maintenance contract.
Alternatively, if so wished, inorganic fertilizer can be applied as 'Osmocote' 18:11:10, @ 50g / square metre in spring and late summer.

Hypericum Rust
All Hypericum spp. plants shall be treated with 'Bayleton 5' for rust, according to manufacturers' instructions.

Pruning / trimming
Any pruning should involve removal of dead, diseased or badly crossing branches or shoots. Dead heading reduces competition for nutrients between the developing seeds and the rest of the plants so that further growth and flowering is often stimulated.
Deciduous shrubs are best pruned in winter when new and old growth can be easily distinguished.
Allow shrubs which flower on the current season's growth to be pruned back to older wood soon after flowering.
Any pruning should involve removal of dead, diseased or badly crossing branches or shoots.
Dead heading reduces competition for nutrients between the developing seeds and the rest of the plants so that further growth and flowering is often stimulated. All hedges shall be clipped to maintain uniform and tidy appearance.

Wind firmness
All plants shall be regularly inspected for wind firmness and firmed as necessary at the same time.

MAINTENANCE OF GRASS SEEDED AREAS
Maintenance period
The Landscape Contractor shall be responsible for the aftercare and maintenance of the completed works for 12 months from the date of practical completion.

First roll and cut
When grass has grown to 38mm it shall be lightly rolled and two days later mowed with an approved mower having no roller and sufficiently sharp to avoid root pulling. Mowing shall be carried out under dry weather conditions.

Further cuttings
Thereafter grass shall be cut regularly (a total of 32 times during each growing season)
to a length consistent with the season and quality of growth, and rolled as necessary.
Cuttings shall not normally be removed unless otherwise directed. Cuttings shall be spread evenly on grassed areas. All grass cuttings shall be swept and removed from hard standing areas.
Note: Grass shall be established with a height of cut at about 20mm.
Mowing shall be carried out under dry weather conditions.
Prior to mowing all litter shall be removed from grass areas.
Grass cutting in areas of bulbs/corms shall not be undertaken until June or until such time as dieback has occurred.

Fertilizing
The sward shall be given one application of an approved top dressing 10:10:20 applied in two equal passes in transverse directions at a combined rate of 17 g/ square metre, also avoid any banding.

Weed control
The sward shall be maintained weed free by the application 'Actrilawn 10' - by May + Baker Ltd., 11litre/Ha. Weedkiller shall be used in accordance with manufacturer's instructions. Apply 'Actrilawn' when grasses have reached the two leaf stage or beyond, and when seedlings have emerged and have reached cotyledon or two leaf stage (approx. 4 weeks after sowing). Do not mow grass within 7 days of treatment.
A selective weedkiller shall be applied for the presence of Clover; a formulation of 'Mecoprop' and 2, 4-D suitable for turf. Apply when clover is growing vigorously, in accordance with manufacturer's instructions. Do not spray in windy conditions, or within 1.5m of shrub planting without protection. Apply in two half doses, at right angles to each other.

Settlement
Any settlements or local depressions shall be made up by the Landscape Contractor at his own expense.
The whole new grass areas shall be handed over as complete well established sward at the end of the maintenance period and all necessary work (whether specifically mentioned or not) shall be carried out to secure this end.

Trimming
The edges of seeded areas adjoining beds and margins where board edgings or mowing margins have not been constructed are to be carefully trimmed square and true to line.

Acceptance
Unless otherwise stated in the programme of completion, individual areas will not be accepted until the whole of the works have been completed. The Landscape Contractor shall include for keeping such areas correctly maintained and protected until handed over.

GENERAL
Debris removal
All paper and trash in the planted areas shall be removed on a monthly basis. All paper and trash shall be disposed of by the contractor outside of the Client's facilities.
Remove excessive amounts of leaf and litter (dead twigs, branches, leaves, bark, etc.) as it accumulates in maintained areas. Leaves and other organic material useful as a mulch may be left in place upon approval of the Client. Additional visits will be facilitated as requested by Client.
Stone or debris over 50mm diameter shall be removed or buried after each maintenance visit.

Monthly Maintenance - Maintenance Certificate
Throughout the one year maintenance period following completion of planting, the Contractor shall maintain the site in a weed free, tidy and tended condition. He shall include in the Schedule of Rates a realistic amount to cover the cost of such maintenance for the full year period.