

CUNNANE STRATTON REYNOLDS
LAND PLANNING & DESIGN

CARRIGALINE, CO. CORK
Landscape Design Rationale Report

PROJECT NO. 21623
April 2022



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The Inspector's Report on Recommended Opinion: 311799-21 and Notice of Pre-Application Consultation Opinion: Case Reference: ABP-311799-21 required additional items to be given further consideration. Below are CSR responses to landscape items raised:

Item no. 6. *Justification of layout, location and hierarchy and quantum of open space provision, both communal and public open space (POS). Clarity with regard to compliance with Development Plan standards*

Response:

The proposed development provides 80% open space and 40% of usable open space which comprises residential 2 no. residential courtyard spaces, a large public plaza space on podium, a multi-functional plaza space at ground level which provides connectivity with a new town park and riverside amenity walk which leads to the main street of the town. The hierarchy of spaces ranges from semi-private to communal plaza space and destination public park space.

Open space provision exceeds the Development Plan requirement for 12-18% open space provision and is accommodated across the site aligned with the multi-functional character of the site and the needs of residents and the wider town community. In response to Cork County Council's *Recreation and Amenity Policy Interim Approach to Implementation 2019* including indicative thresholds for recreational facilities, the following provisions are made in line with the promotion of high quality, accessible and suitably proportioned areas of open space.

- Courtyard breakout spaces young children and families including 2 no. Local Play Areas
- New Town Park with
 - 2 no. Lawn spaces for kickabout and informal play, one 1850 sq. m and the other 965 sq. m in size
 - 1 no. Local Play Area with swings and multi-use play unit
 - 1 no. outdoor gym
 - Plaza space with seating and coffee kiosk
- Plaza spaces with planting and seating for residents and shoppers

Item no. 8. *Detail landscape drawings that illustrate hard and soft landscaping, useable communal open space, meaningful public open space, quality audit and way finding. The public open space shall be usable open space, accessible and overlooked to provide a degree of natural supervision. Details of play equipment, street furniture including public lighting and boundary treatments should be submitted*

Response:

Hard and soft landscape proposals, communal open space and meaningful public open space are detailed on the following landscape drawings:

- Landscape Masterplan drg. no. 21623-2-1
- Sections drg. no. 21623-2-102
- Riverside Link to Town Centre drg. no. 21623-2-103

Quality audit and wayfinding are dealt with under the Engineering Report prepared by MHL.

Public lighting is shown on Landscape Masterplan drg. no. 21623-2-1 and boundary treatments are shown on Sections drg. no. 21623-2-102

Public open space and play equipment provision are explained in the response to item 8 above while passive supervision is illustrated on 9 page of this document.

Response to An Bord Pleanála Opinion

Item no. 9. *Details of a Green Infrastructure Plan, Landscaping Plan, Arboriculture Drawings, and Engineering Plans that take account of one another.*

Response:

The tree survey report and accompanying Tree Constraints Plan and Tree protection Plan which support this submission deal with existing site boundary trees. The survey has informed adjustment of the proposed site layout in the south-western corner of the site to ensure retention and protection of existing mature trees.

Landscape Masterplan drawing no. 21623-2-1 has evolved in coordination with the project Engineering and Architecture Plans.

Green Infrastructure components are shown on page 12. These include tree planting proposals which have the following key functions:-

- The provision of a long-term landscape framework which will soften and enhance the built environment.
- Provision of screening along site boundaries
- Spatial definition across public open spaces and streets.
- The provision of seasonal variation and interest through the site including along pedestrian/cyclist routes.
- Promotion of the biodiversity potential of the site.

Refer to the following pages of this report for additional detail on key landscape plan considerations:

- Design Aims and Objectives, Pg 4
- Design Strategy, Pg 5
- Open Space and Passive Supervision, Pg 9
- Recreation and Amenity Pg 10
- Connectivity, Pg 11
- Green Infrastructure, Pg 12
- Tree Removal and Mitigation, Pg 13
- SuDS and Biodiversity, Pg 14

Cork County Council's Consultation Opinion: Case Reference: ABP-311799-21 / Cork County Council (CCC) Ref. No. 35 Carrigaline. Below are CSR responses to landscape items raised:

Item no. 4. Issues that may be considered by An Bord Pleanála

Design & Layout

- **CCC Opinion:** *The CGI images could be more detailed and show the impact of the development on the existing dwellings on the Kilmoney Road more accurately as one looks from the Co-Op entrance along the Kilmoney Road in a westerly direction.*

Response: 4no. additional viewpoints have been added to the Landscape and Visual Impact Assessment (LVIA) report in response to this request. Refer to viewpoints 13, 14, 15 & 16 of the LVIA (Chapter 12 of the EIAR).

- **CCC Opinion:** *The landscape and public realm strategy is welcomed, but is lacking in detail regarding the interface with the Owenabue river.*

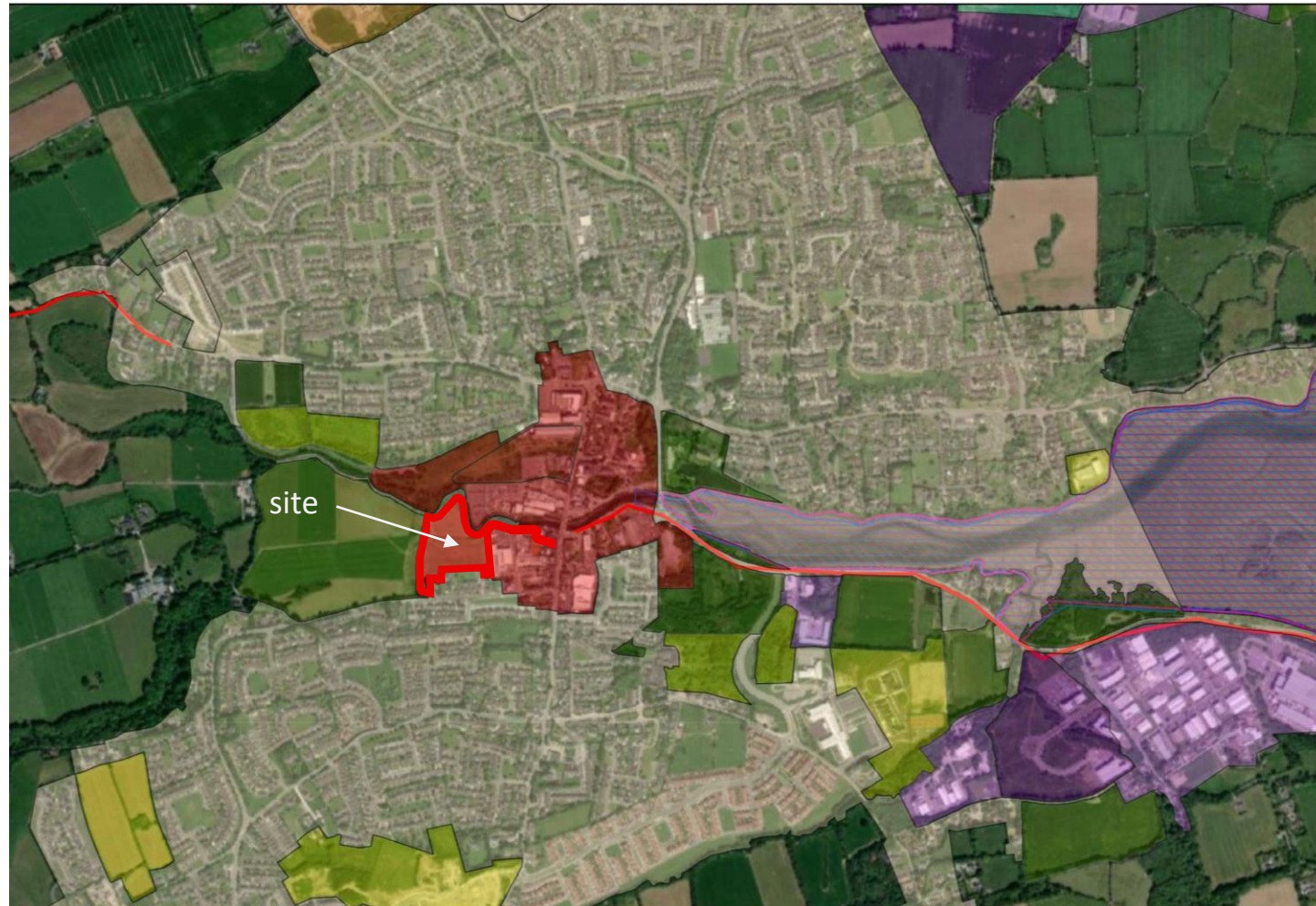
- **Response:** Refer to Landscape Masterplan drg. no. 21623-2-1 and Sections drg. no. 21623-2-102 which show the provision of a riparian zone immediately to the south of the Owenabue River comprised of existing trees and riverbank vegetation which is to be retained in its natural condition and supplemented with additional native tree planting, providing a buffer zone between the waters edge and the path and town park.

- **CCC Opinion:** *Design details of proposed pedestrian route across third party lands to the east connecting with the town core*

Response: Refer to Riverside Link to Town Centre drg. no. 21623-2-103 which shows the proposed route and includes a representative section and precedent imagery to demonstrate proposed materials, planting, lighting and fencing.

- **CCC Opinion:** *Details of riverside seating, viewing, meeting areas, etc. and how the route traverses the Co-Op yard and how it ultimately connects in with the main street. Is route aspirational or deliverable?*

- **Response:** Details of riverside seating, viewing, meeting areas, etc. are shown on Landscape Masterplan drg. no. 21623-2-1 and Sections drg. no. 21623-2-102. The area also includes a coffee kiosk with tables and chairs overlooking the adjacent play area and outdoor gym in the park. Refer to Riverside Link to Town Centre drg. no. 21623-2-103 for the proposed route and includes a representative section and precedent imagery to demonstrate proposed materials, planting, lighting and fencing. The route is deliverable as per the letter of agreement from the owner of the adjoining property.



Legend

- | | | |
|---|-----------------------------------|------------------------------------|
| Green Infrastructure | Community | High Technology Campus Development |
| Residential | Business and General Employment | Scenic Routes |
| Existing Residential/Mixed Residential and Other Uses | Town Centre/Neighbourhood Centres | Proposed Natural Heritage Areas |
| Existing Mixed/General Business/Industrial Uses | Utility and Infrastructure | Special Protection Areas |
| | Residential Reserve | |



Site Context

The proposed development site is located immediately at the western edge of Carrigaline Town in a setting described as Urban area in Cork County Councils Draft Development Plan. The site is a greenfield site located at the interface between urban and rural character areas.

The site is zoned for residential development. This report provides an overview of key landscape design considerations in support of a planning application.



Legend

- Rural Housing Policy Area Types
- Urban Area
 - Metropolitan Green Belt

Design Aims & Objectives

The landscape strategy for the project site at Carragaline aims to deliver the following:-

- **Place Making'** - working collaboratively with project architects, engineers and planners to create a strong and unique identity for the development and a distinctive sense of place.
- **Connectivity/Permeability** – provision of adequate pedestrian and cycle linkages across the development in line with principles of DMURS.
- **Recreation and Amenity** - provision of usable open spaces, well distributed across the site, and designed to allow ease of access, supervision and overlooking.
- **Child Friendly Spaces** – an approach to open space design that allows children of all ages to move freely and safely around their neighbourhood and local area.
- **Legibility** – layout of open-spaces and walking/cycling routes that is visually coherent and can be navigated with relative ease.
- **Boundaries** – retention of existing trees along vegetation where possible.
- **Biodiversity** – bolstering habitat value of the overall site and riparian zone with a wildlife friendly tree, shrub and meadow planting strategy developed in line with the principles and recommendations of the All Ireland Pollinator Plan.
- **Maintenance and Management** – requiring that all specified hard and soft materials, finishes and treatments are robust, durable and can be managed / maintained with relative ease.

Design Strategy



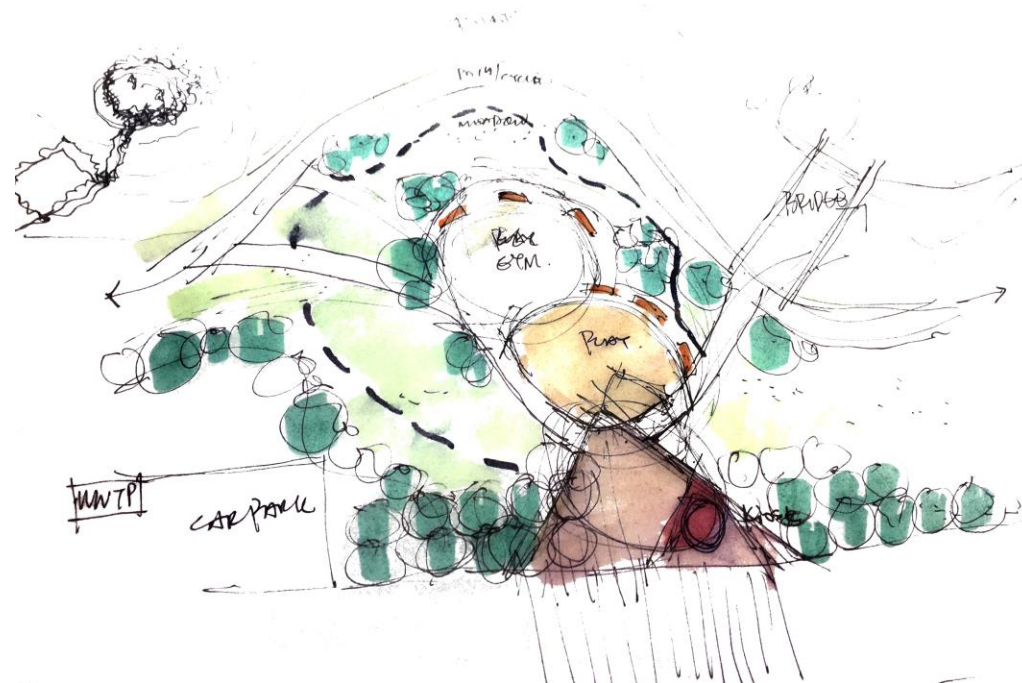
The landscape design proposals for the site aim to create an outdoor environment that is equipped to meet the needs of local residents whilst providing an attractive town park destination for the wider town population.

A network of accessible cycle-walkway linkages will be provided to connect these spaces to Carragaline Main Street. The greenway link will be sufficiently set back from the river to avoid disturbance along the riverbank.

Clear stem trees, lawns and shrubs will provide an extensive network of green infrastructure throughout the scheme providing a diverse natural habitat and rich visual amenity for residents. The extensive landscaping around the buildings will also have the effect of anchoring the development in the local landscape setting.

A large plaza space situated between the apartment blocks allows for overlooking of a generously proportioned civic space and active circulation node. Residential courtyard spaces provide readily accessible areas for informal play and social interaction.

Ramped access is provided where required where significant level changes occur within the scheme.



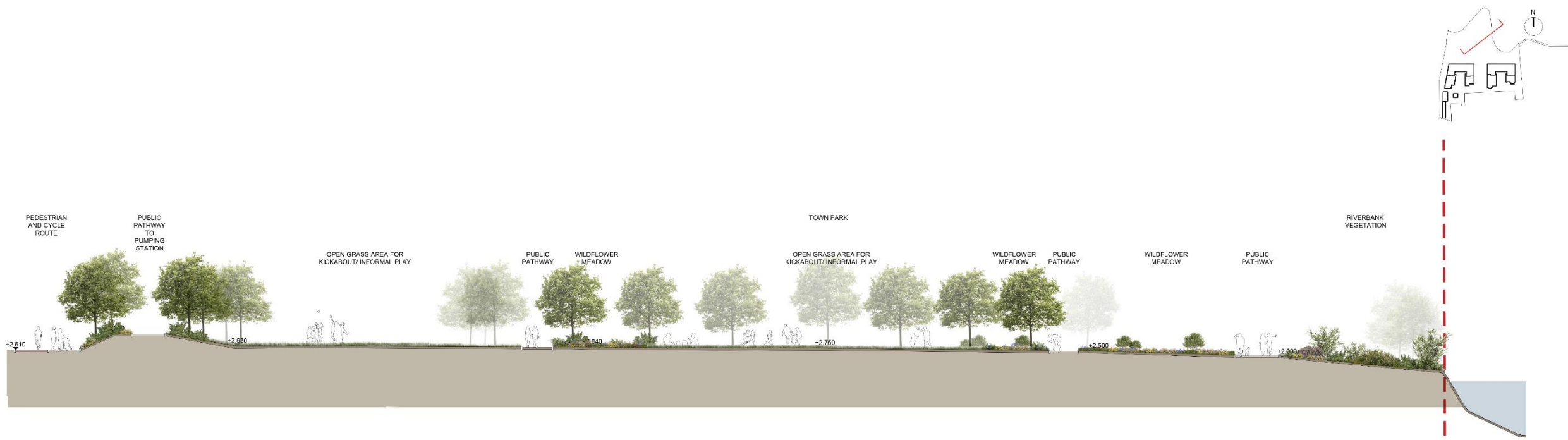
Early design sketches/studies exploring form of public open spaces and parkland

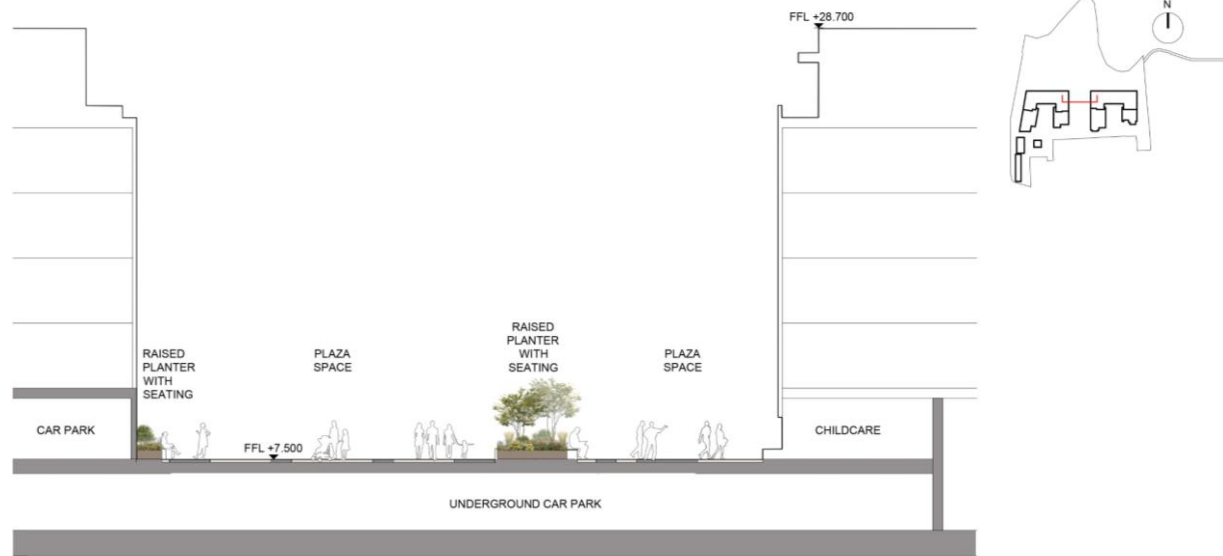
Landscape Master Plan



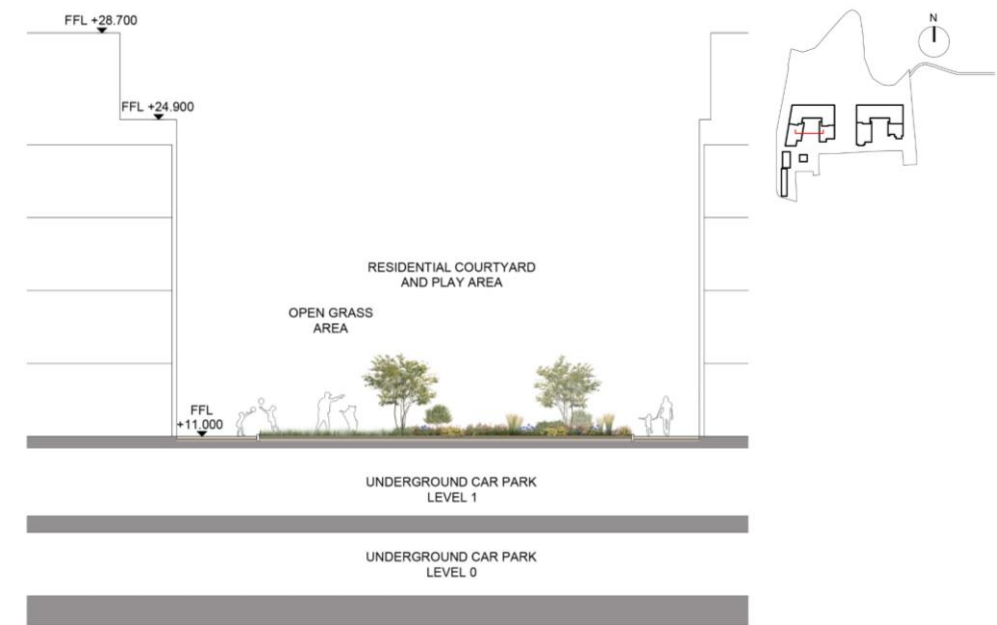
- LEGEND**
- Indicative paving pattern - modular paving units, colour and pattern tbc
 - Paved surface - material tbc
 - Bound paved surface - material and colour tbc
 - Wildflower meadow
 - River
 - Mown Lawn
 - River bank vegetation - retained
 - Understorey native shrubs and ornamental groundcovers
 - Detention basin mown or managed for biodiversity
 - Native field trees - informally arranged
 - Avenue trees - formally arranged
 - Terraced seating
 - Ramp and step access
 - Coffee dock / park pavillion
 - Raised planter with integrated seat
 - Play area surface - tbc
 - Cycle stands

Site Sections
Town Park

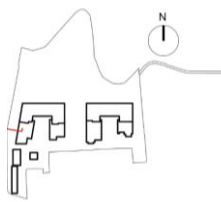
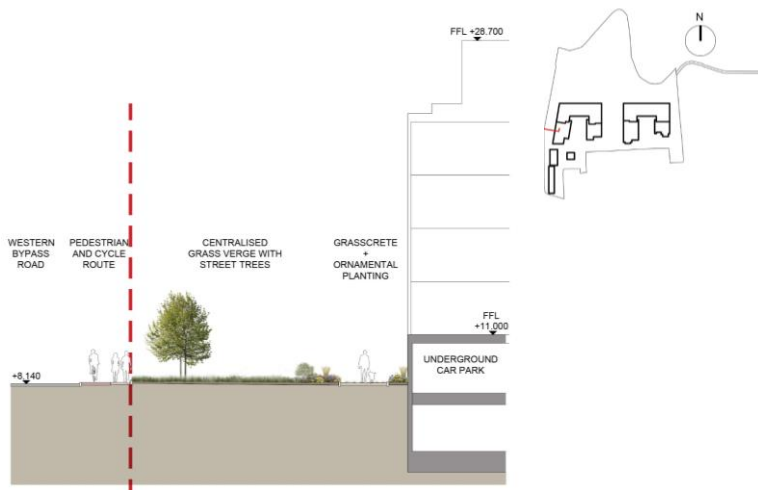
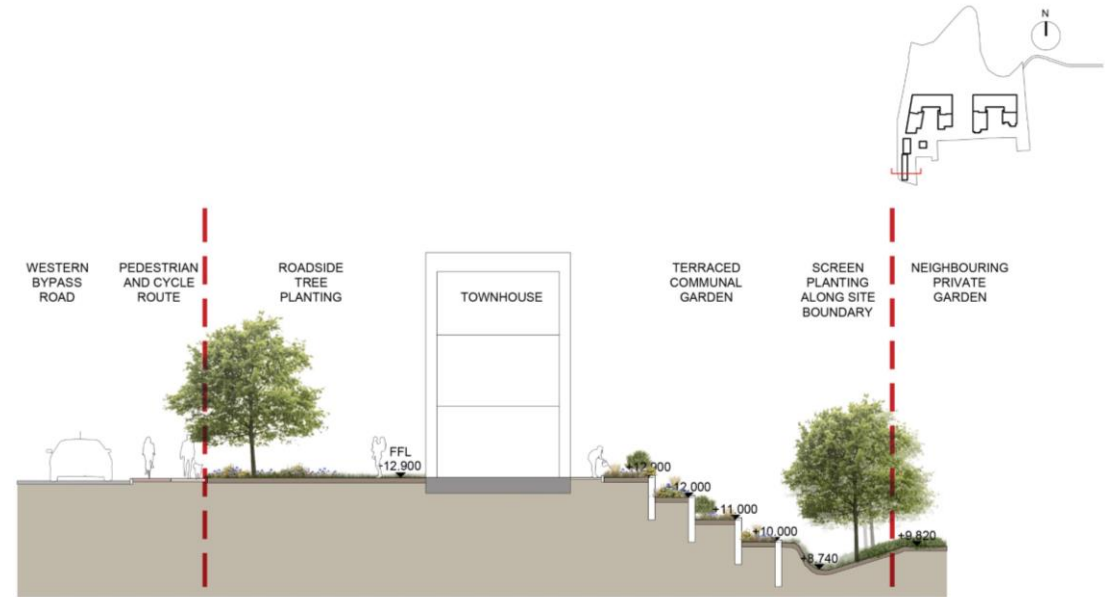
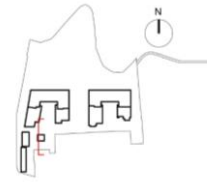
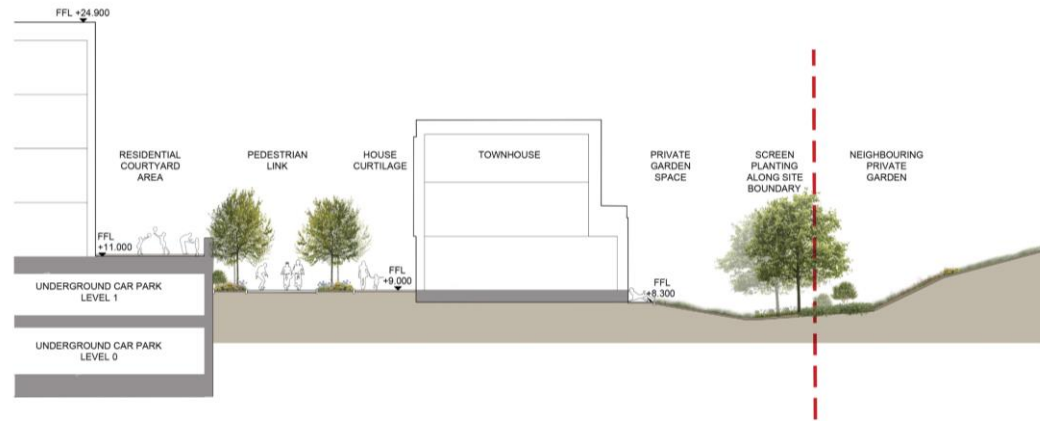




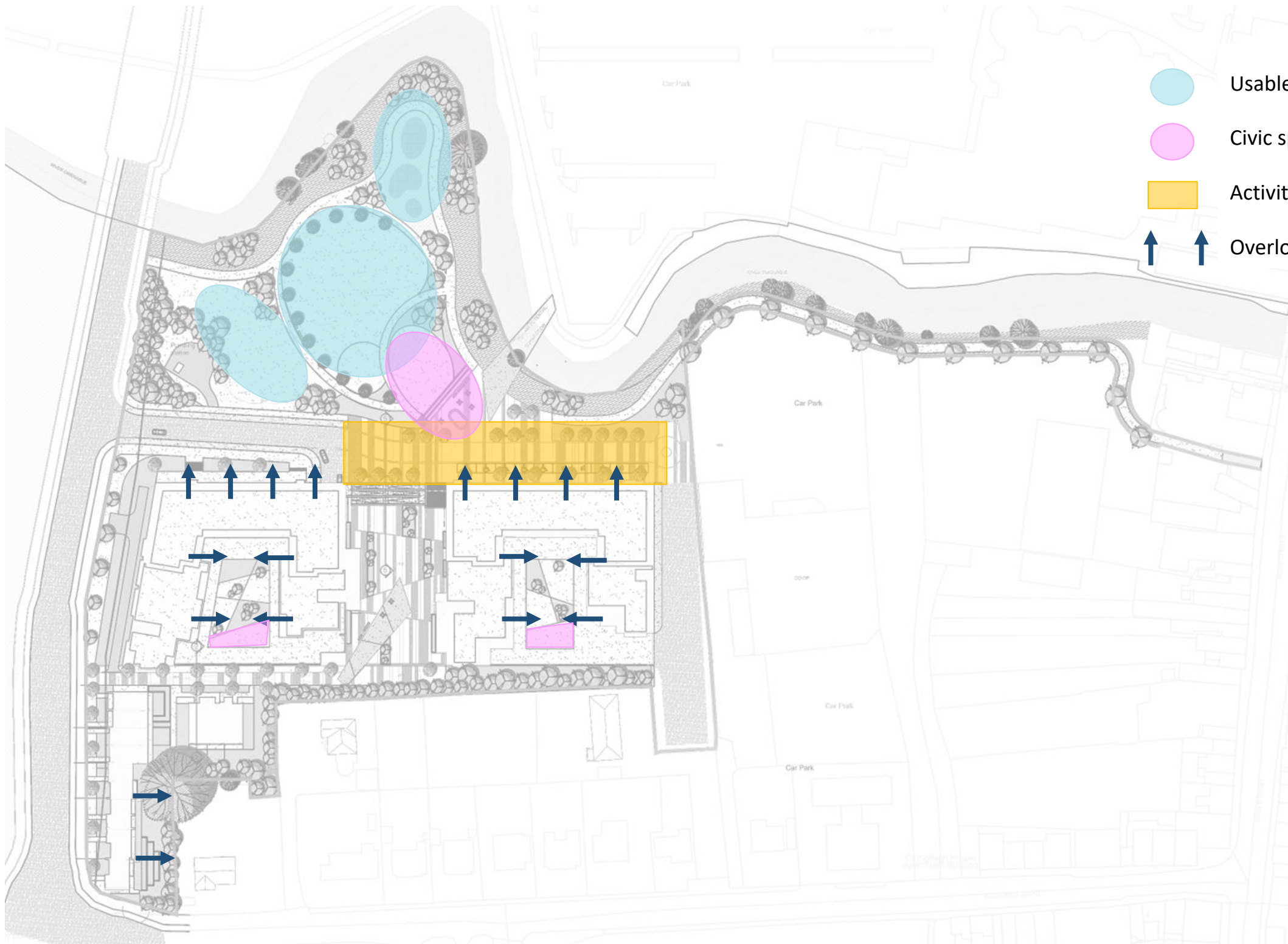
Site Sections
Podium Level



Site Sections
Townhouse

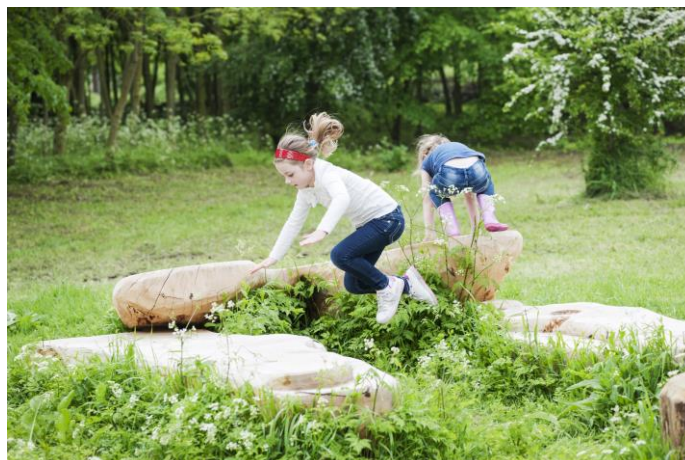


Concept: Open Space & Passive Supervision



- Usable open space
- Civic space and promenade
- Activity hub and play
- Overlooking

Concept: Recreation & Amenity



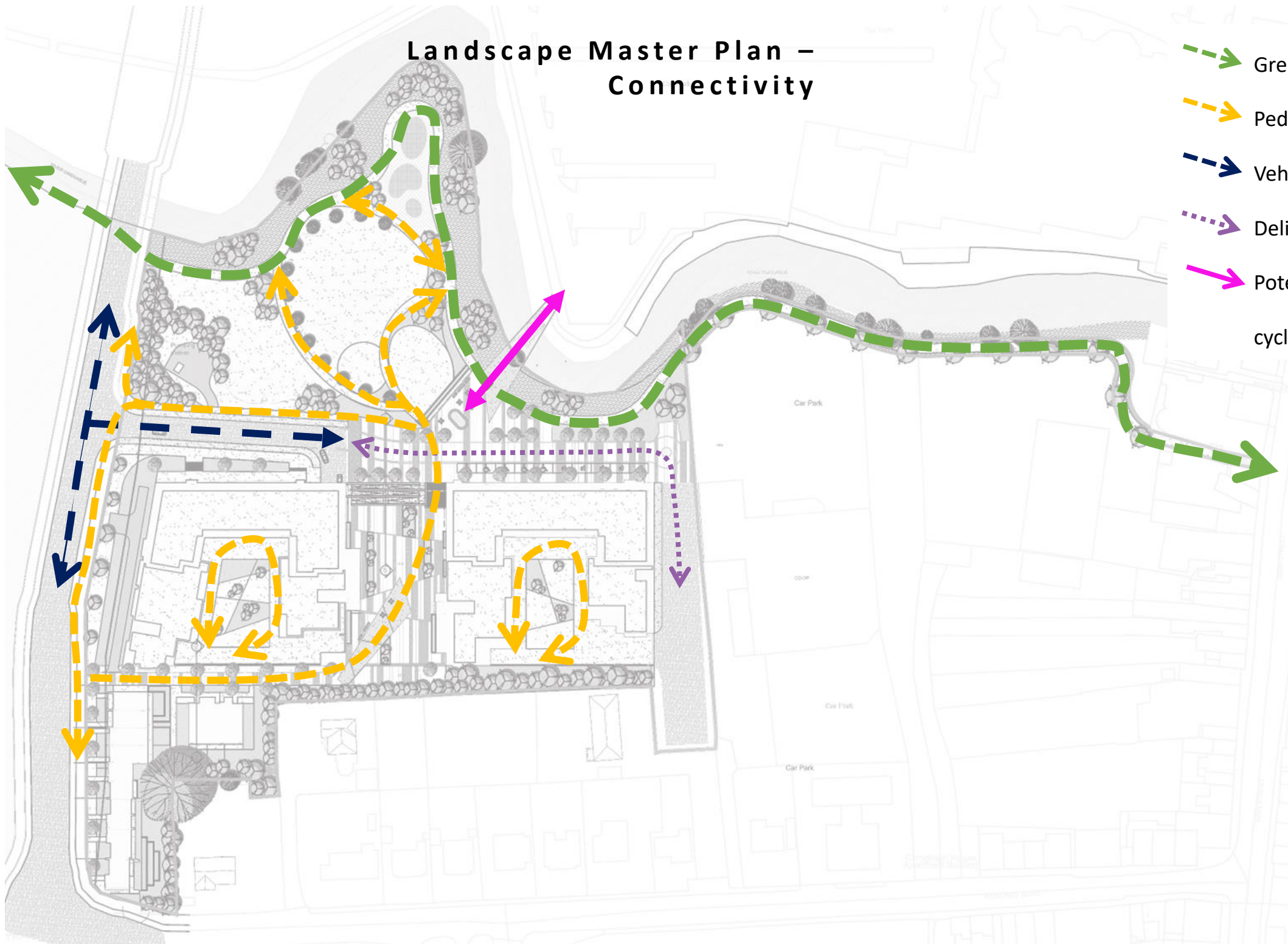
The proposals for the SHD at Carrigaline cater for both passive and active recreation with a range of on-site amenities including a riverside park and greenway, courtyard spaces within and between the proposed apartment blocks and large public civic spaces forward of the apartment blocks overlooking the play area and Owenboy river.

Amenities provided within the scheme include:-

- 1no. local scale play area (min. 400sq.m area) and associated natural play features (e'g mounding in grass) overlooked by residential and commercial units to the south.
- 1no. large publicly accessible kick-about greens within the park.
- Activity trail / greenway along the river linking the development to the town centre and future amenity lands to the west .
- A network of circulation paths and trails within the park itself.
- Gathering area / amphitheatre within the park consisting of tiered seating terrace overlooking play area.
- A large generously proportion civic space / promenade featuring a grid of trees and coffee dock/sandwich bar.
- 2no. courtyards within the apartment blocks consisting of usable mown lawns, trees, shrubs and flexible use hardstand areas.

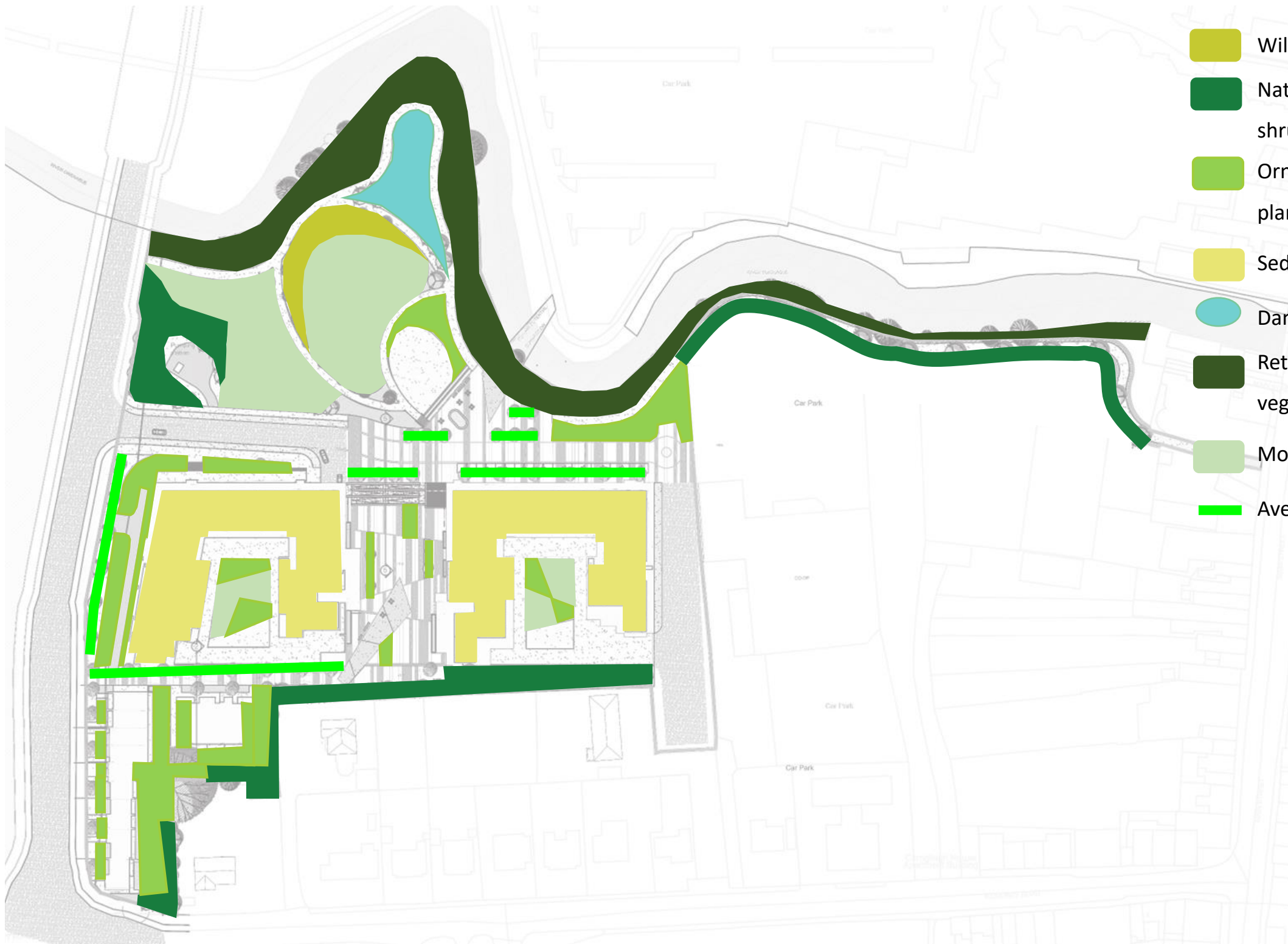
Concept: Connectivity

Landscape Master Plan – Connectivity



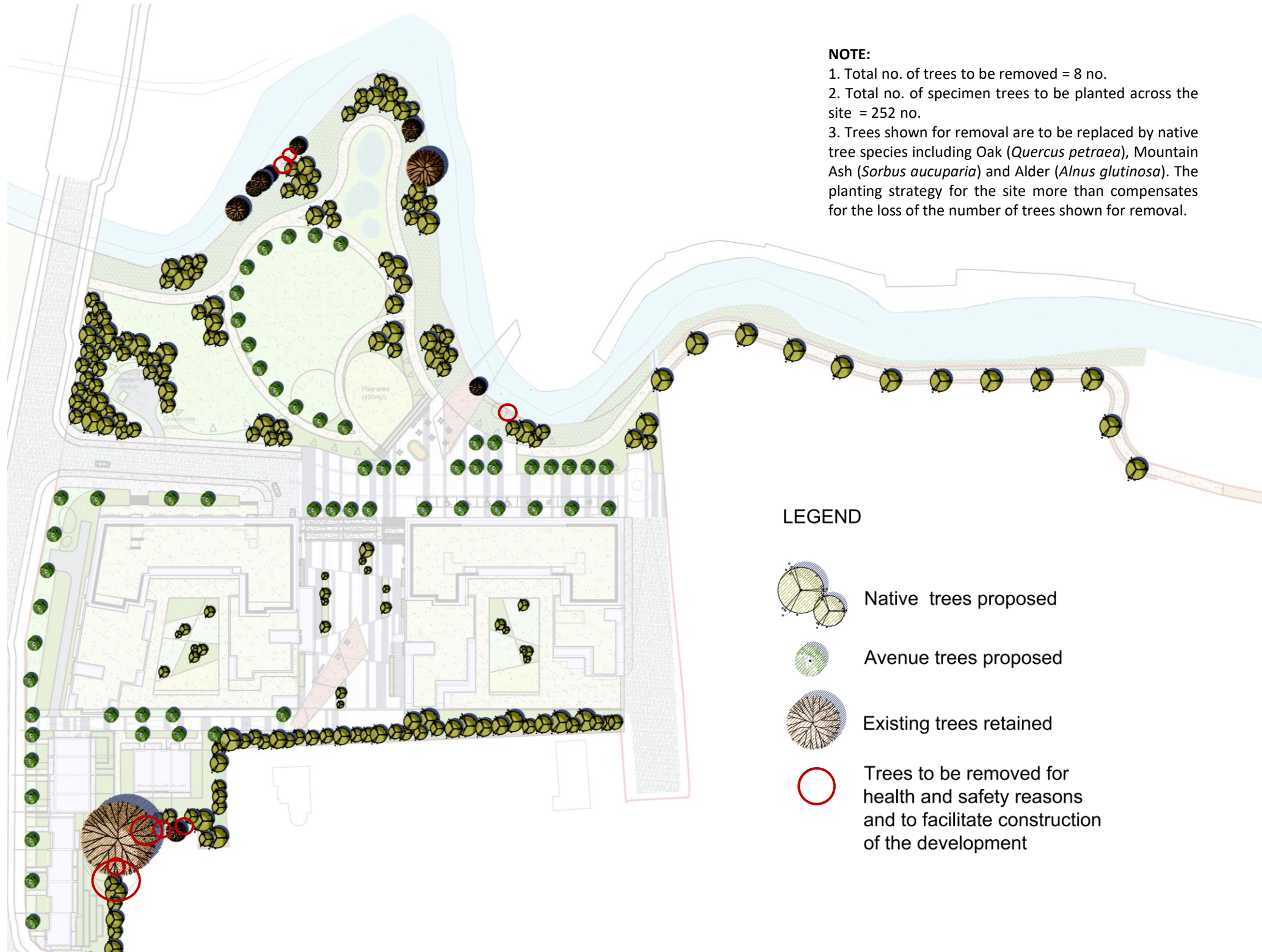
- Greenway
- Pedestrian circulation
- Vehicular access
- Delivery vehicles
- Potential future combined cycle-walkway bridge link

Concept: Green Infrastructure



- Wildflower meadow
- Native broadleaf trees and shrub understorey
- Ornamental tree and shrub planting
- Sedum carpet (to roofs)
- Damp meadow / pond
- Retained riparian zone vegetation
- Mown grass
- Avenue trees


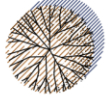

Concept: Tree Removal/Mitigation
Planting Proposals



NOTE:

1. Total no. of trees to be removed = 8 no.
2. Total no. of specimen trees to be planted across the site = 252 no.
3. Trees shown for removal are to be replaced by native tree species including Oak (*Quercus petraea*), Mountain Ash (*Sorbus aucuparia*) and Alder (*Alnus glutinosa*). The planting strategy for the site more than compensates for the loss of the number of trees shown for removal.

LEGEND

-  Native trees proposed
-  Avenue trees proposed
-  Existing trees retained
-  Trees to be removed for health and safety reasons and to facilitate construction of the development

Concept: SuDS and Biodiversity



Nature based solutions will be employed wherever possible within the scheme to store and attenuate stormwater run-off and floodwater.

A sustainable urban drainage systems (Suds) approach takes account of a range of factors including biodiversity, water quality, and amenity in the management of floodwater and stormwater run-off. Suds related landscape proposals for the Carragaline scheme include:

- a detention basin / temporary pond designed and managed to attenuate water whilst simultaneously supporting and enriching the biodiversity and habitat value of the site.
- sedum carpet to apartment block rooftops to capture, and attenuate stormwater run-off whilst providing an excellent source of food/foraging for pollinating and nectar-feeding insects.

Enhancement of biodiversity within the scheme includes management of meadow grass areas which will be allowed to flower and set seed around the margins of the open space lawns. Brash and logs from locally sourced brush and fallen / felled trees will be stacked and bundled into small cribs and piles to be placed at various locations around the site to help bolster and develop the habitat value of the site and provide shelter and refuge to a diverse range of small animals, birds and invertebrates.

The proposed greenway will be set back a minimum of 7m from the edge of the riverbank to protect and help safeguard the sensitive riparian zone. Groups of native trees will be planted within the zone in consultation with the project ecologist to help stabilise the bank and increase its habitat value.

Landscape Concept: Soft Landscape

Tree Planting to include – typically 16-18/18-20cm girth 4-6m ht:



Quercus petraea



Prunus sp



Ulmus 'Lobel'



Acer campestre



Tilia cordata



Betula pendula

Shrubs to include:



Rosmarinus officinalis



Hebe rekaiensis



Prunus tenella



Potentilla fruticosa



Skimmia japonica



Lavanula 'Hidcote'



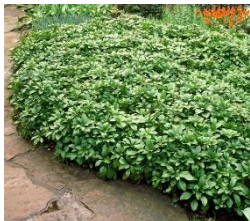
Allium 'Globemaster'



Stachys byzantine 'Big Ears'



Erysimum 'Bowles's Mauve'



Pachysandra terminalis 'Green Carpet'



Parthenocissus tricuspidata



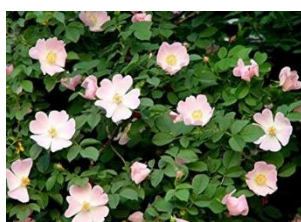
Clematis armandii



Lonicera periclymenum

Irish wild flower conservation grade mix:

Black Meddick, Centaury, Cornflower, Corcockle, Cowslip, Devil's Bit, Scabious, Eyebright, Kidney Vetch, Lady's Bedstraw, Marjoram, Oxeye Dasy, Yarrow, Yellow Rattle, Red Bartsia



Landscape Concept:
Hard Landscape Materials & Finishes



Feature paving in public space



Tree grills



Bench with armrests



Raised planters with seating



Ballylusk compacted gravel play zone



Concrete Path



Hot rolled asphalt

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

04. Maintenance & Management

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 round or square verticals and flat horizontals

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.

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 European 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.
- Glyphosate and other controlled chemical pesticides will not be used under any circumstances.
- Suitable herbicide use to the instruction of a registered professional user.
- Timing: Allow fallow period before cultivation.
- Duration: As manufacturer's recommendation.

1.26.2 Seedbed cleaning before sowing

Operations: Herbicides as per registered professional user only.

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 administering 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 site and 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 site. 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-site after 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 Glyphosate-free herbicide according to a registered professional user and manufacturer's instructions. Areas of invasive and noxious species in the lawn or areas, shall be mechanically removed or spot sprayed by a registered professional user.

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 mechanically removed. Glyphosate and other chemical pesticides will not be used under any circumstances unless otherwise instructed by a registered professional user. 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 within designated 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-free herbicide 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 accepted method if weed cover exceeds 10% of the planting area.

2.5 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.

2.6 Tree Planting Care

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

2.7 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 mechanical weeding of annual weeds and perennial weeds - to be carried out on three visits during the growing season.

2.9. 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 Woodland/Scrub Area Management

Woodland areas specified shall be maintained in a healthy, vigorous condition and free from litter and noxious weeds throughout the year.

Certain areas of woodland may require thinning over the 5-year period. These areas shall be thinned by no more than 10%, removing only the weaker tree specimens. Thinning shall be carried out as directed onsite by administrative authority.

Weed control around trees bases and in shrub areas will be achieved by mulches and mulch top ups only. Contractor to ensure that no damage is caused to trees by herbicide application.

Areas of natural scrub as indicated on the maintenance plans shall be contained by trimming back once per year. The contractor shall control noxious weeds. This shall be carried out 2no. times per annum.

All clearance operations within woodland and scrub areas shall be carried out outside of the bird-nesting season to preserve the bird life in the area. This season extends from the 1st March to 31st August.

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, carparks, footpaths as well as woodlands and tree canopies.

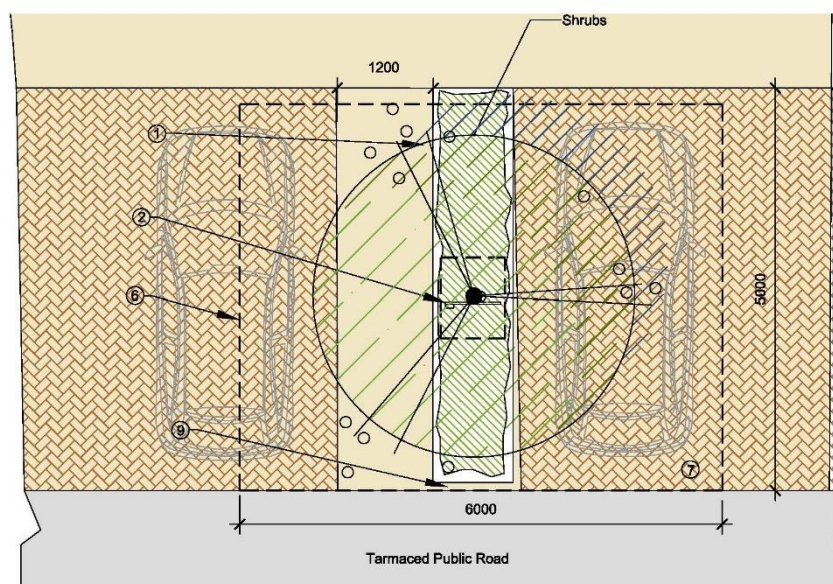
Notwithstanding the above it is expected that the contractor and his staff shall take sufficient pride in the appearance of the site and that they would pick up all visible litter during every site visit.

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).

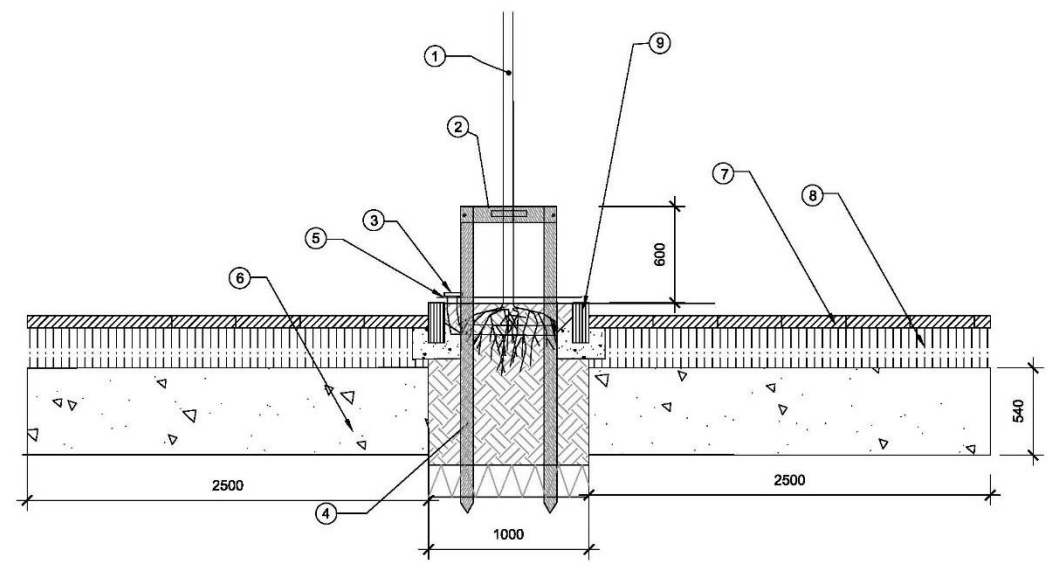
2.11 Replacements

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 the defect period after planting. All such replacements shall be carried out in the first available planting season after the requirement to do so is recognised.

Tree planting detail



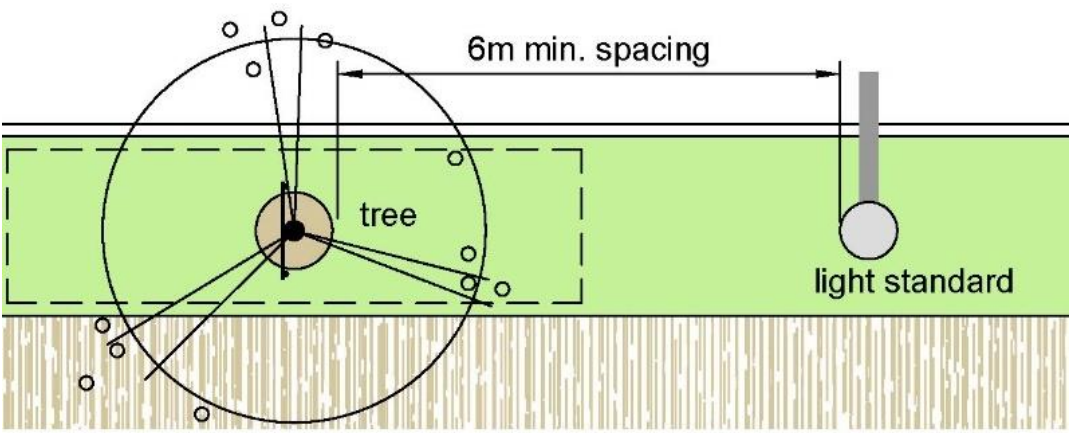
VO1: Street Tree Pit Detail – Plan



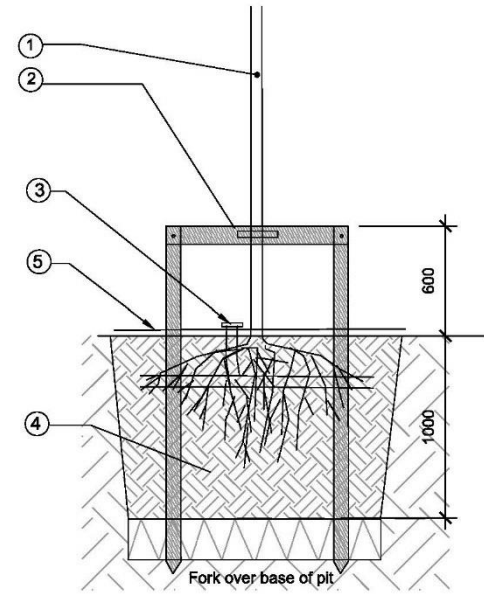
VO1: Street Tree Pit Detail – Section

NOTES

- ① Tree 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 80x125x100cm. 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 ameliorants in 150mm firmed-in layers. All planting to receive a minimum of 25lit water per m2 immediately after planting.
- ⑤ 50mm bark mulch in 80cm dia circle to base of trunk.
- ⑥ 16m3 area root zone under permeable paving for parking bays, made up of 50% 70-100mm aggregate sizes, 30% multipurpose topsoil and 20% grit (20mm down).
- ⑦ Permeable parking paving to engineers spec.
- ⑧ Sub base to parking to engineers spec.
- ⑨ Kerb to engineers spec.



VO2: Street Tree Pit and Light Standard Detail – Plan



VO2: Street Tree Pit Detail – Section

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 1x1x1m or 15cm wider than rootball which ever is greater. 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 ameliorants in 150mm firmed-in layers. All planting to receive a minimum of 25lit water per m2 immediately after planting.
- ⑤ 50mm bark mulch in 80cm dia circle to base of trunk.

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						*				*		
Weed control to tree mulch circles				*			*			*		
Weed control to shrubs & hedgerow				*			*			*		
Watering of new trees (or after 3 weeks of no rain)				*	*	*	*	*				
Trimming of scrub areas												*
Weed control of scrub areas				*					*			
Weed control to footpaths, cycle paths.				*								
Litter Clearance/pick up	***	***	***	***	***	***	***	***	***	***	***	***