FOSTERSTOWN NORTH SHD

LANDSCAPE DESIGN REPORT : FOSTERSTOWN SHD PROPOSED RESIDENTIAL DEVELOPMENT AT SWORDS

PLANNING SUBMISSION FOR OUR CLIENT J. MURPHY (DEVELOPMENTS) LIMITED

APRIL 2022

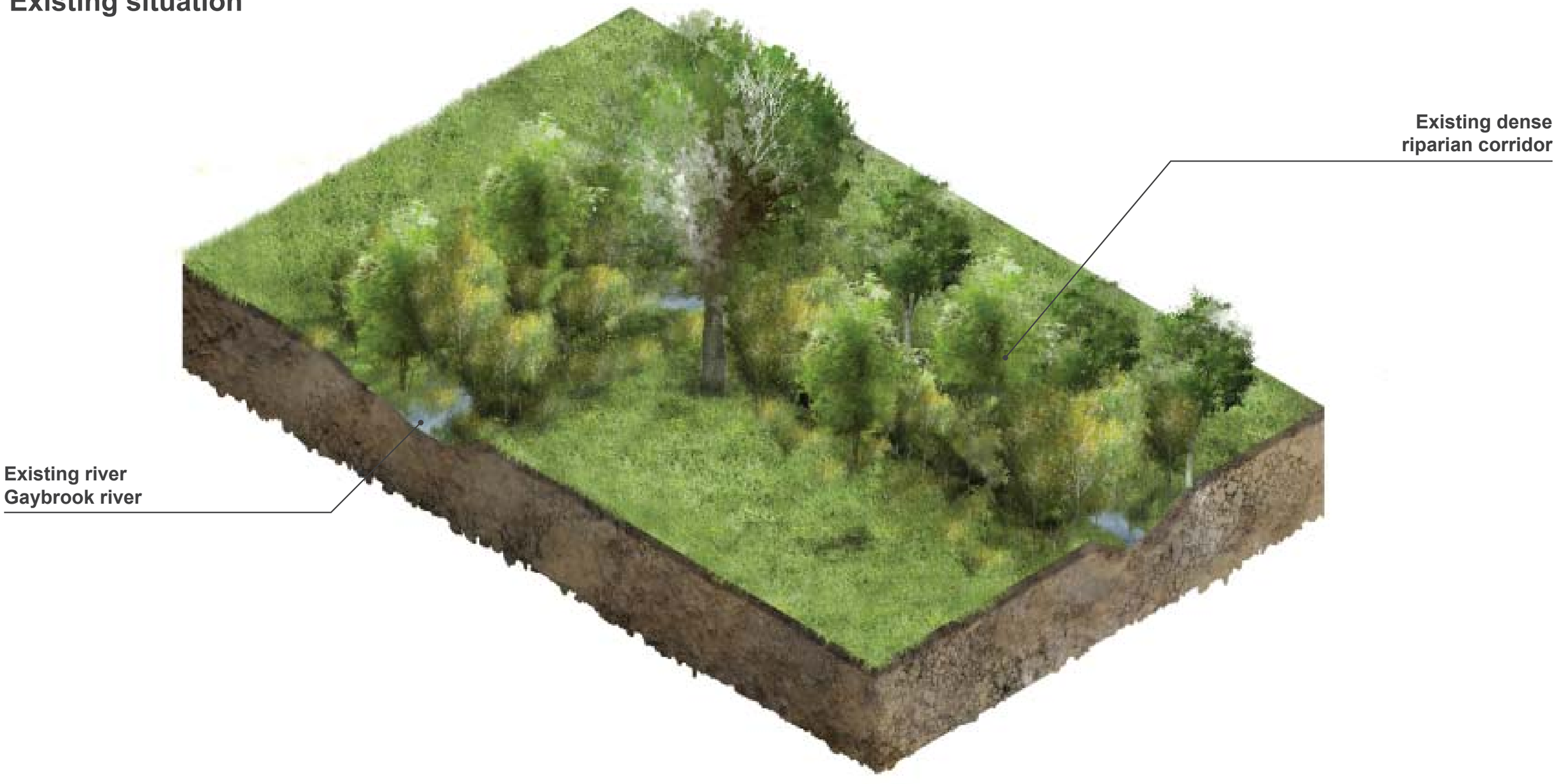
MITCHELL + ASSOCIATES

REPORT

1.0 PRELIMINARY LANDSCAPE STUDY

Landscape Design Concept

Green riparian corridor
Existing situation

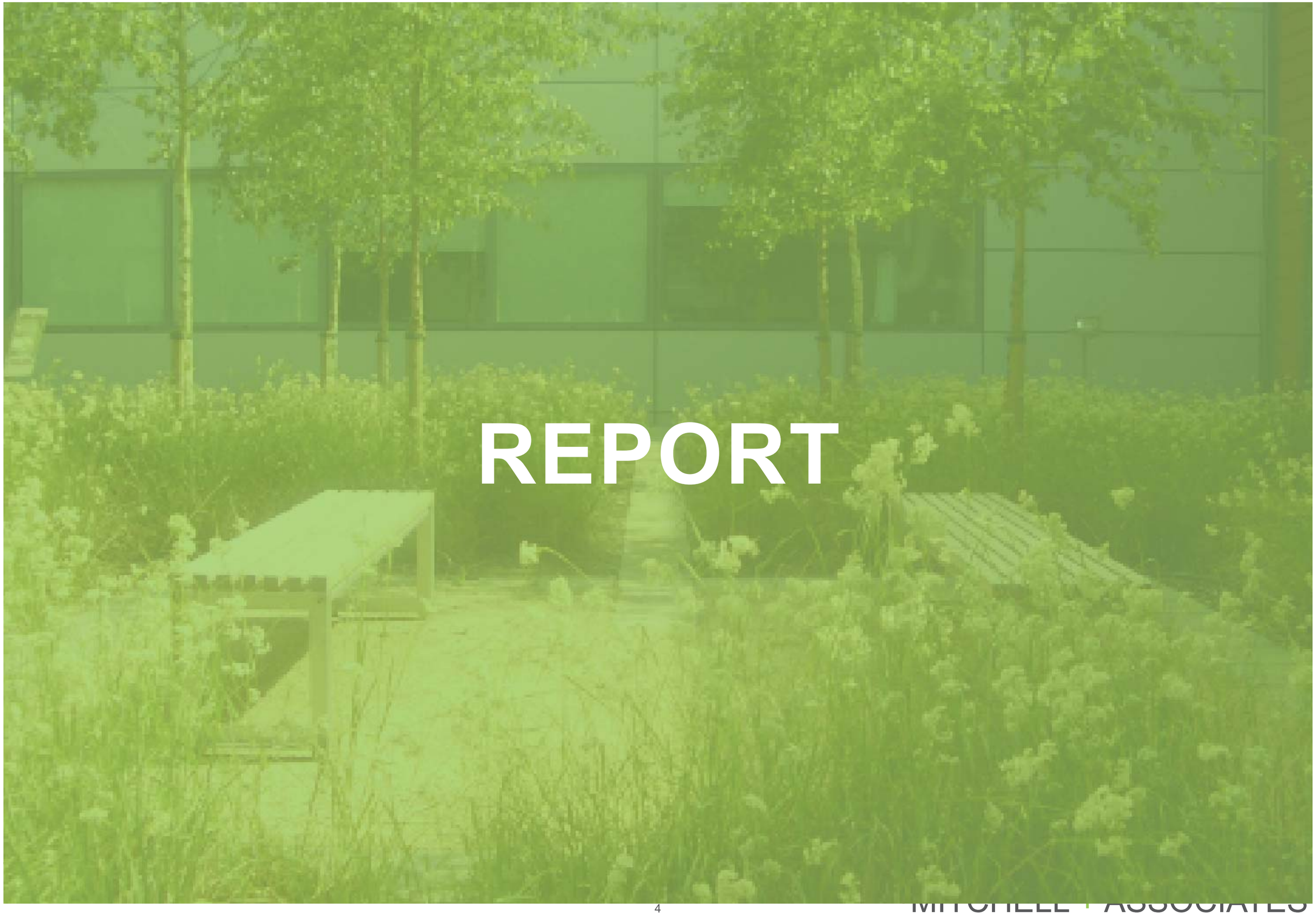


REPORT

1.0 PRELIMINARY LANDSCAPE STUDY

Landscape Design Concept

Green riparian corridor
Re-profiled edge of the river
Maintenance on either sides



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2.0 DESIGN STATEMENT

Landscape Design Description

2.1 OVERVIEW

This Landscape Design Statement is prepared in relation to the proposed Strategic Housing Development at lands as Fosterstown North, Dublin Road/ R132, Swords, Co Dublin. 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, taking into account the landscape objectives within the Swords Masterplans Part C: Fosterstown May 2019, Fingal Development Plan 2017-2023 and National Guidelines to ensure a strong sense of place for the proposed development appropriate within the surrounding landscape context.

The primary landscape design objectives are as follows:

- To to create a high quality attractive environment with amenity facilities for the proposed residences that is robust, accessible, useable, connected and supervised.
- To retain existing tree lines and hedgerows where possible so that the scheme has an appropriate degree of maturity from the outset, consultation between the Arborist, Engineer and Architecture disciplines has occurred to retain existing trees on site and ensure space for future tree planting for the proposed planting structure.
- A scheme which protects and enhances biodiversity through the following: the inclusion of the riparian corridor along the minor tributary of the Gaybrook River into the open space network; the protection of hedgerows/existing trees where feasible to Arborist recommendations; and an appropriate planting pallet selection and landscape planted structure to mitigate loss of habitat and create ecological linkages through the proposed form of the new development.
- To Integrate with the existing and future surrounding context with new physical and visual connections through the public open space.
- To connect to and utilise existing green infrastructure as an amenity for walking, cycling and running. There are proposed green route-connections east west through the open space along the existing Riparian Corridor and a north south separate pedestrian cycle future link enabling connections from the open space network through to the adjacent norhern development site as per the Masterplan.
- The green infrastructure will be designed to mitigate flood risk through the use of integrated SUDS measures.
- To create a network of external spaces that allows for flexibility in recreation activity, for social interaction and active play as well as spaces that are quiet and calming, spaces which allow a connection to different habitats and enable a tree and hedgerow planting structure to be established across the site. Moreover, the new tree structure is designed to grow and mature within the context of the proposed development ensuring the creation of a sylvan character for the site into the future.
- To develop a suite of boundary treatments that respond to the varying site conditions, the proposed surrounding context and the local vernacular. The creation of a Tree lined avenue along the proposed Link Road, a tree lined and planted street frontage to apartments The permeability of the scheme along the existing stream to allow connections between adjacent open space.
- To create a ‘free play’ strategy for the site that takes cognisance of local and regional play facilities under the guidance of Fingal County Council. To provide opportunities for children of all ages and backgrounds to structured and unstructured play facilities in an accessible and safe manner.
- To undertake a fully coordinated approach to site services, in particular to SUDS
- To create a streetscape structure which follows best practice guidelines in Design Manual for Urban Roads and Streets.
- To follow the guidelines in Design Standards for New Apartments including provision of privacy strip planting to groundfloor apartments and play facilities.
- To develop a palette of hard and soft landscape materials that will be deployed in a hierachical manner. The materials will have a bespoke quality (in certain instances), be durable, and respond to budget allocation.
- The planting pallet will be selected with regard to the Councils Actions to Help Pollinators: All Ireland Pollinator Plan 2021-2025

For the purposes of this report, the landscape strategy for the development can be broken down into the following key external areas:

1. Communal Amenity Spaces
2. Public Open Space, Riparian Corridor incorporating Green Routes
3. Play Strategies
4. Streetscape

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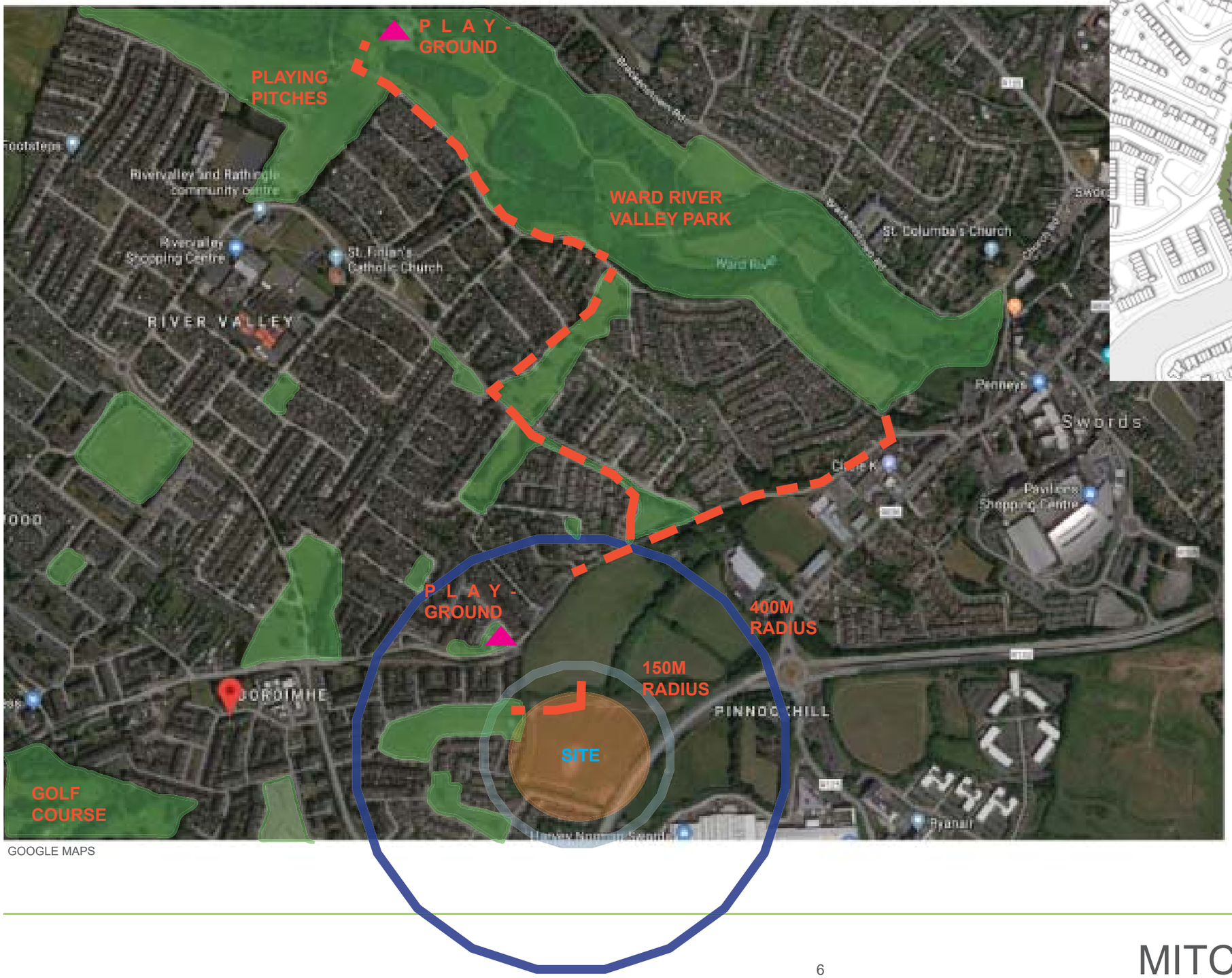

GOOGLE MAPS

SWORDS MASTERPLAN PART C FOSTERSTOWN EXTRACT

5 | Green Infrastructure

Key Objectives

The following are the key Green Infrastructure Objectives for the Fosterstown Masterplan lands:

1. Provide an east-west green corridor along the existing stream encompassing pedestrian and cyclist infrastructure, connecting from existing open space at Rivervalley Kitchen to the west of the lands with the R132 to the east of the lands.
2. Provide a north-south green corridor along the existing stream encompassing pedestrian and cyclist infrastructure connecting from the proposed east-west corridor to the proposed Fosterstown Link Road.
3. Provide a high-quality landscaped space/square opposite the proposed MetroLink station on the R132.
4. Ensure that the proposed Fosterstown Link Road, as well as the proposed local access streets as shown on the road hierarchy, are lined with trees planted in conjunction with the pits.
5. Provide active open space facilities in the form of playing pitches adjacent to the school site and available for use by local residents outside of school requirements.
6. Provide an area of high quality landscaped open space to the north-east of the lands, adjacent to the R132, to provide high-quality green space and provide a setback for the proposed hotel from the R132.
7. Conserve, protect and enhance existing trees and hedgerows within the Masterplan lands to help foster biodiversity in the area.
8. Ensure that new or extended open space networks are designed to facilitate people with a broad range of ability.

- **CONNECTIONS**
- The site benefits from proximity to the playing fields, playground, fitness equipment and amenities of the Ward River Valley Park, approximately 1Km to the north of the site, the playing fields are further along the park 1.6km distance from the site.
-
- Closer open green space amenity areas are within 400m of the site to the west and south-west of the site in neighbouring residential development.
-
- The Masterplan lands directly to the south zone have a key objective 5.5 Green Infrastructure *"Provide active open space facilities in the form of playing pitches adjacent to the school site and available for use by local residents outside of school requirements."* This is incorporated as part of the proposals with 2No. playing pitches provided.
-
- Interlinked pedestrian and cycle facilities to maximise safe connectivity and permeability within the area and to public transport facilities.
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- Creation of an attractive open space green route, along an accessible north south axis through the center of the schemes green spaces through the site to connect via a future bridge to existing north/south tree line green route.
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- Provision of a combined cycle and pedestrian facilities 3.0m wide to traverse the site on this north south route in the centre of the site and along the southern boundary Riparian Zone in an East West route and also pedestrian/cycle facilities along the western boundary.
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- The main cycle routes are provided as seperate routes away from roads and vehicular movement. The cycling and pedestrian routes link to the main open space spine of the Masterplan lands orientated along the Riparian Corridor of the Gaybrook Stream (North).
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- **OPEN SPACE and LANDSCAPE STRUCTURE**
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- Change of identity in landscape character areas by change of hardworks/street furniture materials, tree species and planting pallet.

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DESIGN STATEMENT

Landscape Design Description

Communal Open Space

We refer to the Site Plan – Open Space drawing no. PL-21-07 prepared by PCOT Architects in consultation with M+A, which outlines the area of public and communal open space. In summary, the proposed development provides for 9,779 sq.m of public open space (excluding the riparian strip) which equates to 22% of the land in the applicant's ownership (4.405ha). This increases to 13,134 sq.m in total when including the riparian strip, equating to c. 30% of the total site area in the applicant's ownership. The linear open space along the edge of the Gaybrook Stream accommodates pedestrian and cycle movement as well as recreation use. It should also be noted there is an additional area of incidental open space of 2,150 sq.m.

The Public Open Space includes provision of 2 no. playing pitches (with an area of c. 3,706 sq.m) that will be for use of residents and also by the future school to be delivered on the lands to the north. This accords with the Fosterstown Masterplan objective to 'Provide active open space facilities in the form of playing pitches adjacent to the school site and available for use by local residents outside of school requirements.' Provision is also made for a basketball hoop and outdoor gym equipment.

The POS also includes a central tree lined route between Blocks 6 and 7, linking the riparian strip to the public plaza, this area will be open to the public, but is above a basement / undercroft car park and therefore will not be offered for taking in charge (i.e. it will be under the control of the management company). The public plaza provides a flexible use paved area with a raised lawn. Raised planters frame the circulation and seating spaces, in addition to short term cycle parking. The high quality paved areas allow for free pedestrian movements and accommodation of café style seating areas associated with the proposed commercial units. The location and size of this plaza area is in keeping with the Fosterstown Masterplan and provides a key connection to the future Metrolink station and existing Airside Retail Park with a proposed controlled pedestrian crossing.

The open space footpath network will allow permeability through the space.
The allocated communal amenity space facilitates various proposed uses. Central lawns enable kick about active play, overlooking the central spaces are proposed outdoor seating and communal dining areas with bbq facilities, picnic tables etc. Playground facilites cater for individual play, group play, social interaction, imaginative play, climbing and balancing movement. There will be adjacent seating for supervising adults which can be also be used as a picnic area. Visitor cycle stands shall be included in the spaces.

Provision is made for 6,724 sq.m of communal open space, exceeding the Apartment Guidelines requirement of 4,153 sq.m.

Semi-Private Landscape (Associated with Apartments and Surface Carparking, 0-6yr old Play spaces, Seating and Socialising Areas, Visual Amenity).
The arrangement of the residential apartment blocks around courtyards spaces, allows for communal gardens that serves the immediate residents overlooking the spaces.

These spaces will provide a secure and safe outdoor setting consisting of seating both for group socialising and for individuals, ornamental tree and structural planting, flowering mixes to encourage pollinator species, incidental play elements for toddlers all combining to generate pleasant and inviting gardens.

The spaces will be designed to encourage social interaction with ample passive supervision. The southern courtyard edges shall link down to the lower linear open space along the stream boundary through a series of southern facing planted seating terraces.

Further details on the proposed public plaza are discussed below.

Stream riparian boundary edge and Central Tree Line

North/South future connections are incorporated to retain central ecological features of the hedgerow/tree lines. Connecting pathways along these routes bring pedestrians/cyclists through into the development and connect down to the southern open space of the Riparian Corridor and its associated green link path network. The north south connection continues through to adjacent development parcels within the overall Fosterstown masterplan through the provision of a pedestrian/cycle bridge across the steam.

The southern boundary edge of the stream shall be included within a Riparian strip, with development kept back by a minimum of 10m from the stream bank. It is proposed to locate a communal amenity linear open space along this edge accommodating pedestrian movement as well as recreation use. The ground floor apartments adjacent to the path are bounded by a 1.5m minimum wide privacy planting strip with decorative shrub planting for privacy for adjacent apartment units. There is a 4.0m wide cycle/pedestrian path through the linear open space along the stream which will be developed to reinforce its landscape amenity and biodiversity value with planted banks and seating terrace pods. The stream channel is proposed to be a planted bank, graded into marginal terraces for a variety of habitats capable of withstanding a changing water level in the edge condition and to incorporate seating terraces and sun lounges. This edge is proposed to be protected by a horizontal knee rail which allows for visual permeablility to the stream but demarcates the bank and stream environment and suggests restricted access.

These connection corridors enable the retention of existing trees and

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PLAY STRATEGY

Provision for play for children is being made in the proposed development. It is informed by the National Children's Play Policy 'Ready Steady Play" and seeks to utilise existing features of the site to create a natural, "free" playground across the site.

There are flexible lawn spaces proposed within the communal amenity areas which can be utilised for a variety of play opportunities. These are inclusive spaces enabling informal play for all age groups with adjacent seating and picnic areas. Incidental play sculptures shall be located within the central courtyard spaces.

There are a number of trees existing on site that will be removed as part of this development. It is proposed to utilise the felled trees by transforming (where possible) the tree trunks and larger limbs into a suite of natural play equipment that will cater for children of all age groups.

The tree trunks and steeping logs are arranged as an obstacle course with smaller timber animal sculptures catering for toddler play. It is proposed to allow the grass surface to continue around the play elements to integrate play into the wider public open space.

Within the 'Design Standards for New Apartments - Guidelines for Planning Authorities (Updated 2018) it is a requirment for Apartments development of 25 or more units to providea 85-100sqm playground for 0-6 year olds and in developments over 100 units to provide a 200-400 sqm playground for older children. According to research in Amsterdam, an optimum distance for a child up to five years old to be taken to play in a residential area is 150m. For an older child this is 300m. The dedicated 0-6 years old play zones are within 150m of the entire proposed development and the older child playspace is within 300m.

The proposed development includes more than 100 units with two or more bedrooms. 3 no. play space areas are provided within the communal open space which accords with the Apartment Guidelines requirement for younger children and toddler play area (85-100sqm), and an natural play area within the public open space accords with the Guidelines requirement for play areas (200 – 400 sq. metres) for the specific needs for older children and young teenagers, in a scheme that includes 100 or more apartments with two or more bedrooms.

The playground area shall be located centrally within the apartment development in an area that is overlooked and passively supervised by the adjacent apartments and footpath.

The chosen play equipment enables individual play, group play, and social interaction, imaginative play, climbing, spinning and sliding movement. There is adjacent sculptural seating for supervising adults as well picnic tables for social interaction.

Existing tree lines that are retained shall integrate natural play elements into the tree groves. Bark mulch surfacing will integrate the incidental play elements into the woodland groundflora.

Adjacent to the northern stream boundary edge is a linear amenity area which incorporates a play element trail along a connecting pathway. It includes fallen logs, stepping stones, linear lawns with informally marked goal areas, play sculptures. Picnic tables are sited at path intersection nodes as well as informal seating areas. Informal marker posts or granite boulders set out goal areas for ball games. The lawn area can be utilised for active play and for family/communal events.

The stream linear amenity space contains existing retained trees and a planted understorey bank and long lawn mowing regime edge. This space will have educational value with interpretation panels installed for learning about pollinators/biodiversity and native plants.

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Landscape Design Description

PLANTING STRATEGY

The palette of plants has been chosen to integrate the scheme with the surrounding area and to provide shelter and amenity value within the site. Dominant tree species reflect the planting palette of the local area and suitable local species have been utilised as well as feature species for seasonal interest. The palette of plant species used is based on a range of hardy species which will reduce maintenance over-time and contribute to the early and rapid development of the planted installation.

The planting pallet has been selected with regard to the '*Councils Actions to Help Pollinators: All Ireland Pollinator Plan 2015-2020*'. The planting strategy contains areas of pollinator friendly mowing regime, hedgerow planting with the recommended 75% hawthorn plus 25% of four other native species,. 75% pollinator friendly species within the shrubs and groundcover mix and inclusion of pollinator friendly street trees. The selected planting mix includes shade friendly species as well as being robust and low maintenance.

The majority of the species used will be native and of local origin. Additional planting is recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. In keeping with the recommendations of the All Ireland Pollinator plan it is proposed to plant boundary hedgerows with native Irish hedgerow species with 75% "Hawthorn" and 25% of four other native species, we are proposing 10% "Hazel", 10% "Field Maple", 2.5% "Blackthorn" and 2.5% "Dogrose".

Street trees adjacent to hard paved footpaths and car parking spaces shall be planted into a constructed tree pit with structural root soil please refer to the Planting Detail Drawing. Street tree locations have been coordinated with proposed lighting column locations.

Privacy planting strips 1.5m wide are provided at ground floor apartments as per best practice guidelines in Design Standards for New Apartments.

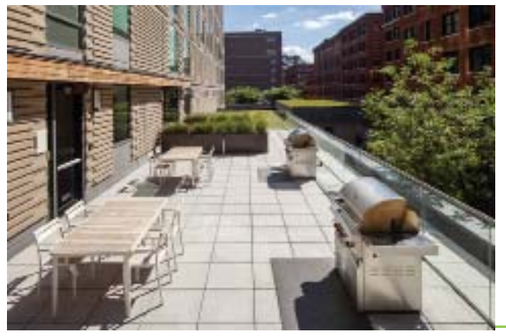
The planting schedule shall be developed as the scheme progresses to detail design for the planning application.

PRECEDENT

PRECEDENT

APARTMENT COMMUNAL AMENITY SPACE : PRECEDENT IMAGES

FLEXIBLE CENTRAL LAWN AREA, COMMUNAL SEATING AND OUTDOOR DINING AREA WITH BBQ FACILITIES, GARDEN SEATING PODS, SUN LOUNGERS, INCIDENTAL CHILDRENS PLAY AREAS, SOUTH FACING TERRACE SEATING



PRECEDENT

STREAM BOUNDARY and CENTRAL TREE LINE LINEAR OPEN SPACE

COMPACTED GRAVEL PATH, LINEAR OPEN LAWN AND MEADOW EDGE WITH NATURAL PLAY AND OUTDOOR GYM ELEMENTS AND SEATING AREAS, BOUNDARY TREE PLANTING, BIODIVERSITY

PRECEDENT

PLAY STRATEGY : PRECEDENT IMAGES

INCIDENTAL PLAY ITEMS IN CENTRAL COURTYARDS FOR TODDLERS, PLAYGROUND SPACES 100 sqm NATURAL PLAY ELEMENTS TO STREAM CORRIDOR OPEN SPACE AND RETAINED TREE GROVE
OUTDOOR GYM, FLEXIBLE LAWNS FOR ACTIVE PLAY AND FAMILY/COMMUNAL EVENTS

PRECEDENT

APARTMENT STREETSCAPE : PRECEDENT IMAGES

STREET TREE AVENUE PLANTING, BICYCLE and PEDESTRIAN PATH PROVISION, CYCLE PARKING STATIONS, PRIVACY STRIP PLANTING TO GROUND FLOOR APARTMENTS, BIORETENTION TREE PITS, PERMEABLE PAVING TO CARPARKING SPACES, STREET TREE PLANTING TO VISUALLY BREAK CARPARK SPACES

APPENDIX A: FOSTERSTOWN NORTH SHD LANDSCAPE REPORT

Applicant Name: J. Murphy (Developments) Ltd.

Project Title: Fosterstown North SHD

Application Address: Lands at Fosterstown, Swords, Co. Dublin

Application Site Area (Area or Proposed Development): 4.666 ha

Land in applicant's ownership: 4.392 ha

Summary Development Description:
The proposed development comprises a Strategic Housing Development of 645 no. residential units (comprising of 208 no. 1 bedroom units, 410 no. 2 bedroom units, and 27 no. 3 bedroom units), in 10 no. blocks, with heights ranging from 4 no. storeys to 10 no. storeys over an undercroft / basement level. The proposals include 1 no. community facility in Block 1, 1 no. childcare facility in Block 3, and 5 no. commercial units in Blocks 4 and 8 (for Class 1-Shop, or Class 2- Office / Professional Services or Class 11 Gym or Restaurant / Café use, including ancillary takeaway use) in Blocks 4 and 8.
The proposal contains a total of 363 no. car parking spaces, 63 at surface level and 300 at undercroft / basement level, and 1,518 no. bicycle parking spaces. Bin stores, plant rooms and block cores are located at undercroft / basement level. The proposed development includes private amenity space in the form of balconies / terraces for all apartments The proposed development will also include the provision of public and communal open space, including 2 no. playing pitches, children's play areas and an ancillary play area for the childcare facility.

The proposed development includes road upgrades, alterations and improvements to the R132, including construction of a new vehicular access, with provision of a new left in, left out junction to the R132, and construction of a new signalised pedestrian crossing point. The proposals include for removal of a section of the existing footpath, provision of a break in the existing bus lane and installation of bollards within the existing chevroned centre reservation. The proposals also internal roads, cycle paths and footpaths, vehicular access to the undercroft / basement car park, and future connection and access to the adjoining lands to the north.

The development includes all associated site and infrastructural works, including foul and surface water drainage, PV panels at roof level, 5.no ESB Substations, hard and soft landscaping, boundary treatment, internal roads, cycle paths and footpaths, and all associated and ancillary site works.

RESPONSE TO AN BORD PLEANÁLA BOARD ORDER ABP-307260-20

Revised Landscape Architectural Documentation has been issued to address specific items raised as follows:

1. ***Visual Impact/ CGIs and photomontages, sections and continuous elevations where relevant, of the main elevation treatment including but not restricted to the following:***

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- ***The interface of the development with the R132,***
- ***Relationship with the riparian corridor along northern site boundary,***
- ***Public plaza addressing and connecting with future Metrolink station,***
- ***Relationship between the ground floor and undercroft parking and the treatment along the internal access road.***

Landscape Architectural Response:

Landscape Sections have been produced for the above situations. Please refer to Drawing Landscape Section 110.

The landscape treatment for interface of the development with the R132/Dublin Road is described as follows:

A cycle path 2.0m wide and a pedestrian path 2.0m are located adjacent to the R132 Road as per the future BusConnects design, please refer to Engineers report. An adjacent grass verge includes large scale trees at 14m c/s, spaced 7.0m away from street lighting columns in compliance with FCoCo guidelines. The proposed street tree species is an upright semi-mature Plane Tree variety, Platanus orientalis 'Cuneata' "Oriental Plane" 30-35cmg, clear stem to 2.2m min. Swords Main Street contains London Plane trees. They are a robust species, tolerant of urban pollution.

A secondary line of trees is located meandering in an informal pattern between the path and the building line edge to provide for seasonal planting interest to the adjacent residences, pollinator friendly native species for biodiversity value and for filtering views between the road and the development edge.

Secondary Tree Line Species R132
"Alder" Alnus glutinosa 16-18cmg rb, pf
"River Birch" Betula nigra 'Heritage' (Multistem) +3.5m
"Hazel" Coryllus avellana 16-18 cmg rb pf
"Crab Apple" Malus sylvestris 14-16 cmg rb, pf
"Rowan" Sorbus aucuparia 20-25cmg rb, pf
"Scots Pine" Pinus sylvestris +3.5m height
A pollinator friendly mowing regime grass verge provides habitat diversity adjacent to a native clipped predominantly "Hawthorn" hedgerow, planted following guidance in the All Ireland Pollinator Plan 2021-2025 Council Guide. Managed at between 1.2m and 1.5m height, 75% Hawthorn and 25% 4 other species. Planted in a double staggered row, 6 plants per linm, well feathered whips, bare root with a central post and wire fence to protect establishment.

The planting of the native hedgerow is part of mitigation measures for the loss of Hedgerow number 1 and Hedgerow 24 located along the field boundary to the Dublin Road (Please refer to Tree Survey Plan). Hedgerow 1 is an" Elder" hedge with sections of overgrown "Bramble" in fair

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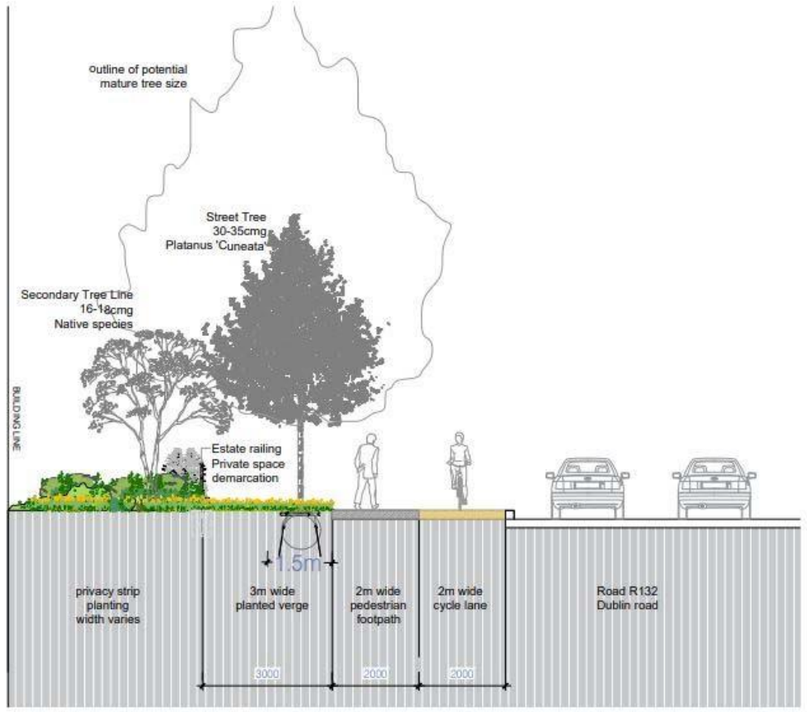
condition in an unmanaged state. Hedgerow 24 is in fair condition, in an unmanaged state. It is a native boundary hedgerow consisting mainly of self-seeded blackthorn and early-mature hawthorn.

Between the hedgerow and the ground floor units is a wide low woodland groundcover planted zone as per the below:

Section 3.41 of the Sustainable Urban Housing: Design Standards for New Apartments advises that '*where ground floor apartments are to be located adjoining the back of a public footpath or some other public area, consideration should be given to the provision of a 'privacy strip' of approximately 1.5m in depth. This should be influenced by the design, scale and orientation of the building and on the nature of the street or public area and if provided, subject to appropriate landscape design and boundary treatment'.*



The landscape treatment for the relationship with the riparian corridor along the northern site boundary is described as follows:

The Gaybrook Stream forms the boundary to the north of the site. The existing condition is of an overgrown, dark stream with a sheer edge.

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Discussions with the Parks Department and the Biodiversity Office in Fingal County Council has led to the proposal to reprofile the stream edge due to its sheer and deep edge profile and dark overgrown vegetation leading to low biodiversity value and safety concerns.

The reprofiling proposal incorporates marginal shelves with a 1:3 bank to the edge of the Riparian Strip. Proposed native tree and shrub planting for habitat provision are spaced to ensure visual permeability to the stream bed for passive surveillance.

Design proposals have been developed with reference to the document *"Planning for Water Courses in the Urban Environment: A Guide to the Protection of Watercourses through the use of Buffer Zones, SUDS systems, Instream Rehabilitation, Climate/Flood Risk and Recreational Planning".* A Guideline Developed by Inland Fisheries Ireland.

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STEP 1 – PROTECT STREAMSIDE ZONE >10M

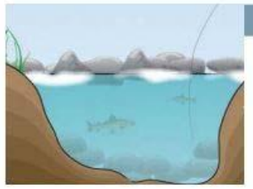
- ENSURE SUFFICIENT SPACE IS SET-ASIDE , I.E. >10M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- PLANT WITH NATIVE MARGINAL AND EMERGENT VEGETATION.

STEP 2 – CONSTRUCT MIDDLE ZONE 15M-30M

- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >15M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- CREATE AMENITY WALKS ETC.
- PLANT WITH NATIVE TREES AND VEGETATION.

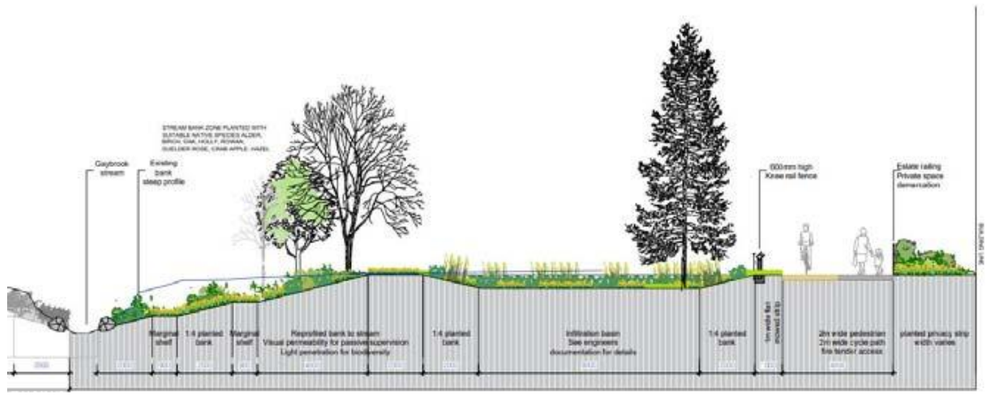
STEP 3 – CONSTRUCT OUTER ZONE >8M

- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >8M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- INCORPORATE SUDS (E.G. SWALES, RETENTION PONDS ETC.).
- ENSURE SUDS LINK APPROPRIATELY TO DEVELOPMENT IN A TREATMENT TRAIN.
- CONSIDER WIDER AMENITY USES IF APPROPRIATE.



STEP 4 – REHABILITATE INSTREAM CHANNEL

- IF WATERCOURSE WAS PREVIOUSLY DEGRADED BY DRAINAGE, REHABILITATE WITH APPROPRIATE HABITAT RESTORATION TECHNIQUES.
- CONTACT INLAND FISHERIES IRELAND FOR ADVICE.
- RECREATE HABITAT VARIABILITY.
- CONSIDER CREATION OF ANGLING POOLS IF APPROPRIATE.
- CONSIDER SAFETY REQUIREMENTS (E.G. AVOID STEEP BANKS.)
- ENSURE WORK IS CARRIED OUT TO A HIGH ECOLOGICAL STANDARD. *CONSULT WITH IFI FOR FURTHER ADVICE*



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The cross section includes for private terraces, privacy strip planting, a combined cycle/pedestrian route, SUDS features integrated for water management and habitat creation and new tree /shrub /meadow/marginal shelf planting structure for habitat provision.

An east west 3m wide combined cycle/pedestrian route within the Riparian Strip linking the Dublin Road to the Boroimhe Residential Development is in compliance with the masterplan objective:

"The existing stream which crosses the lands shall be maintained within a riparian corridor. The majority of the public open space shall be provided along the stream and it shall link into the existing public open space at Boroimhe. The riparian corridor will provide pedestrian and cycle facilities to facilitate movement of people through the site and to the metro station and wider Swords area."

The line between public space and private space shall be visually demarcated through privacy strip planting and a low timber knee rail. A timber knee rail shall be included to demarcate the top of the slope down to the stream bank.

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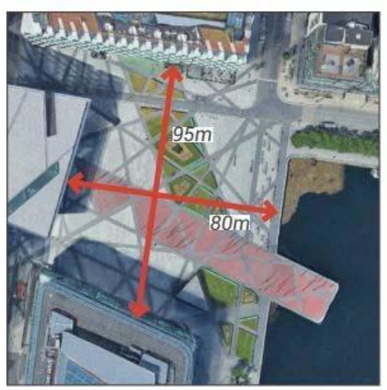
The landscape treatment for the Public Plaza and connection with the future Metrolink station is described as follows:

The public plaza location and design references the Fosterstown Masterplan outline design. It is located to provide a key connection to the future Metrolink station and the existing Airside Retail Park with a proposed controlled pedestrian and cycle crossing point. The plaza is a filter space onto the main north south pedestrian/cycle link through the Fostertown Masterplan lands. The masterplan lands are connected across the Gaybrook Stream by a proposed pedestrian and cyclist bridge.

The scale of the public space at approximately 76m in length x 32m wide is comparable to other plaza's in the public realm within Co Dublin.

↑ Wolf Tone Square - 2965m² Public Open Space

↑ Dundrum Town Centre - 3250m² Public Open Space



↑ Grand Canal Plaza - 7500m² Public Open Space

↑ Clancy Quay Plaza - 2360m² Public Open Space

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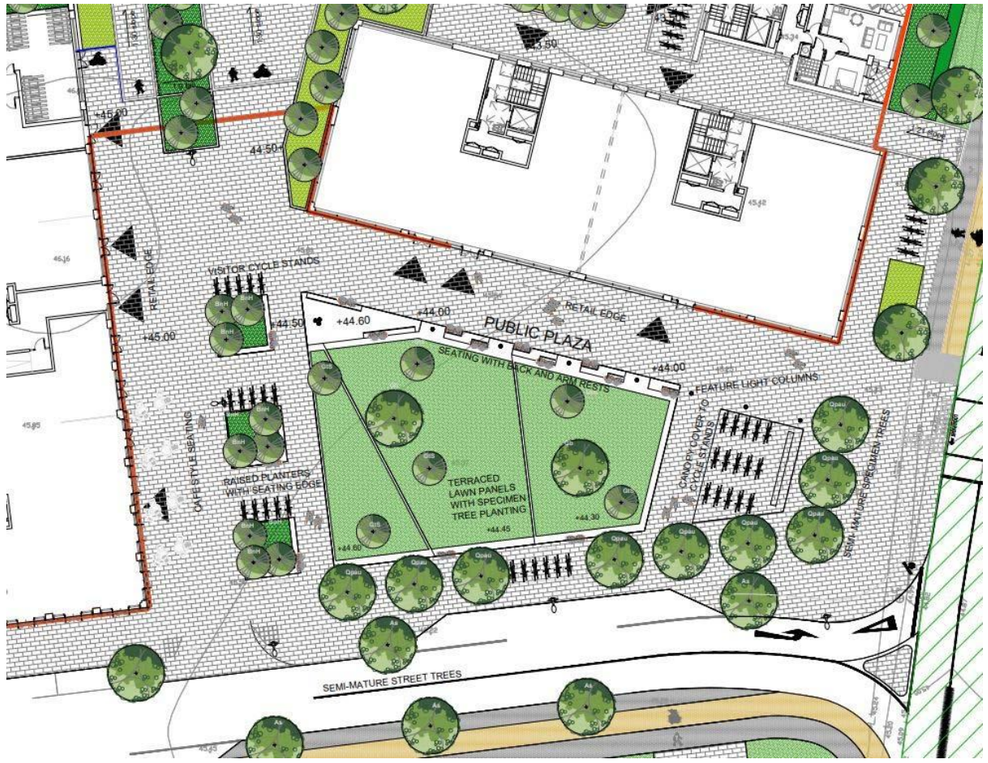

▪ High quality paved retail edges 7m to 9m wide allow for free pedestrian movement and accommodation of café style seating areas.

▪ A central raised area of lawn panels provides for flexible activities, linear seating to the edges and feature tree planting.

▪ Raised planters frame the circulation and seating spaces and contain seasonal interest trees and decorative shrub planting as well as delineating areas for short term cycle parking.

Please refer to the Landscape Masterplan 100 and Landscape Sections 110 drawings.

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The landscape treatment between ground floor apartments and the internal access road is described as follows:

The internal access road is designed for a strong landscape character with:

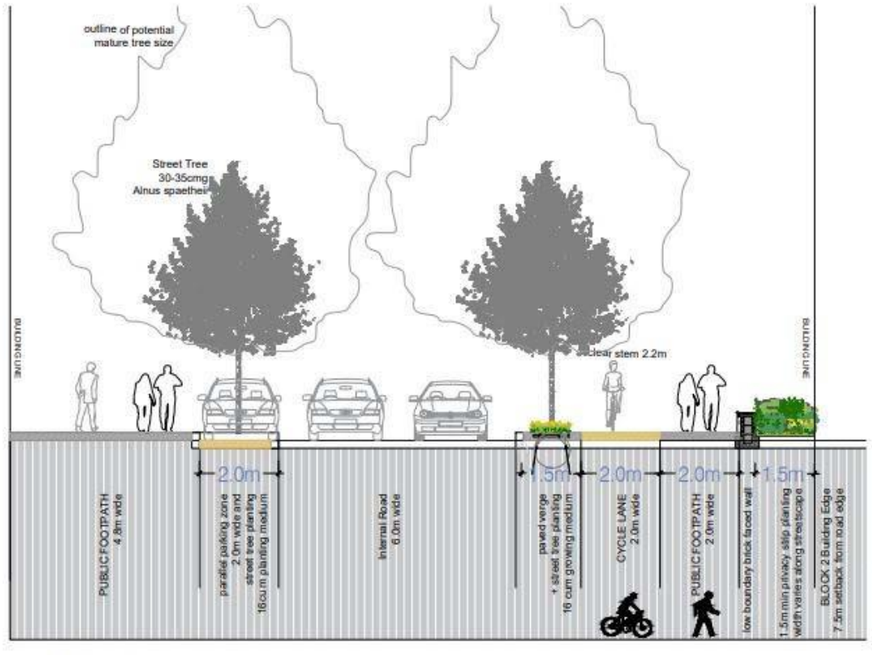
▪ separated 2.0m wide cycle and 2.0m wide min pedestrian routes from the vehicular carriageway,

▪ street tree planting within a 1.5m wide verge zone with access to 16cum of growing medium and spaced 7.0m away from street lighting columns and integrated with underground services provision. Proposed street tree species are Alnus spaetheii 30-35cmg clear stem to 2.2m min and Tilia cordata 'Streetwise' 30-35cmg clear stem to 2.2m min.

▪ privacy strip planting to ground floor apartments, in compliance with:

Section 3.41 of the Sustainable Urban Housing: Design Standards for New Apartments advises that '*where ground floor apartments are to be located adjoining the back of a public footpath or some other public area, consideration should be given to the provision of a 'privacy strip' of approximately 1.5m in depth.* '

▪ high quality paving and street furniture provision including visitor cycle stand provision.



SECTION BB ENTRANCE ROAD LANDSCAPE STRUCTURE Scale 1:100

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10. A landscape and permeability plan of the proposed open space within the site clearly delineating public, semi-private and private spaces, areas to be gated, treatment of interface areas and provision of future connections to adjoining lands.

Landscape Architectural Response:

Please refer to Drawing Permeability Plan 109

Fosterstown Masterplan (extract from the Development Plan)

A north south vehicular connection is provided within the design proposal by the internal link road, future access to adjoining lands, please refer to engineering drawings for details.

▪ *"Connection to Airside Retail park"*

A controlled crossing point for pedestrians and cyclists adjacent to the pubic plaza is provided within the design proposal to link to Airside Retail Park and future Fosterstown Metro Station.

▪ *"Bus connects proposed route along the R132/Dublin Road and Proposed Fosterstown Metro Station."*

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The proposed route has been incorporated into the design proposals together with a 2m wide dedicated cycle lane and 2m wide pedestrian path.

> ▪ *"The existing stream which crosses the lands shall be maintained within a riparian corridor. The majority of the public open space shall be provided along the stream and it shall link into the existing public open space at Boroimhe. The riparian corridor will provide pedestrian and cycle facilities to facilitate movement of people through the site and to the metro station and wider Swords area."*

A 3m combined cycle and pedestrian path is provided within the design proposal within the riparian strip connecting the Boroimhe Residential Estate to the west with the Dublin Road (R132) pedestrian/cyclist infrastructure to the east. This link widens to 4m with a dedicated 2.0m wide cycle path and 2.0m wide pedestrian path between the internal link road and the R132 Dublin Road in order to accommodate fire tender access.

Potential for future connections to be facilitated by the Planning Authority on the footpath and cycle network alongside the Internal Road network have been made to the Boroimhe residential development to the south and west.

> *"North south pedestrian route towards the proposed pedestrian bridge, defined public routes and private spaces with the proposed scheme."*

The north south pedestrian/cyclist route within the Fosterstown Masterplan is provided within the design proposals as a central public route connecting to the northern masterplan lands via a proposed future pedestrian/cyclist bridge.

The north south public route is passively supervised by overlooking apartments and access points to the apartment cores along the route. The public route provides access to the gate controlled central communal courtyard spaces of the surrounding apartment blocks, to provide for "*Defensible semi-private space for effective use by residents of the apartment blocks"* as requested by Fingal County Council.

. The route links apartment residents to the lower riparian strip amenity area and east west path route, a future link to the northern lands, a link between communal courtyards, a pedestrian link to the retail area and public plaza activities, a cycle link to basement cycle storage and a pedestrian link to the underground carpark.

11. The landscape masterplan shall also identify existing/future pedestrian and cycle path connections to Swords to the north of the site and lands to the south to include Airside Retail Park, in particular, with regard to Bus Connects

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Landscape Architectural Response:

Please refer to Engineers Details + Drawings Landscape Masterplan 100 and Permeability Plan 109

14. Details to include plan and cross-section drawings of the proposed reprofiling of Gaybrook Stream.

Landscape Architectural Response:

Please refer to drawings 103 Riparian Zone Detail Area and 110 Landscape Sections and above section answering item 1.0 of this report for detailed description of design proposals.

RESPONSE TO FINGAL COUNTY COUNCIL PA OPINION REF PPSHD/002/20

Revised Landscape Architectural Documentation has been issued to address specific items raised as follows:

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1. ***Request by Community Culture and Sports Division that the developer provide a piece of public art in accordance with the per cent for art guidelines and Fingal County Council requirements.***

Landscape Architectural Response:

Amendments have been made to the scheme to include for a piece of public art in accordance with the per cent for art guidelines, and proposed to be located at the intersection of the public north south route through the center of the scheme and the east west public route along the Riparian strip, to be agreed with Final County Council.

2. ***Parks and Green Infrastructure Division report requests further information in respect to the riparian corridor, open space provision and SUDS measures, retention of existing hedgerows and trees and the interface between existing and proposed development boundaries***

Landscape Architectural Response:

Please refer to previous response under Item 1.0 for Riparian Corridor detail design description and Item 10.0 for open space provision illustration and description.

Please refer to engineers documentation for SUDS measures details.

The Landscape Masterplan 100 illustrates how SUDS detention and retention basins have been incorporated into the open space network as a use of source control to manage day to day rainfall, for the enhancement of amenity value and biodiversity provision and to be available for use in most weather conditions. The detention basins have incorporated stepping and balance logs as natural play features, they are managed as pollinator friendly lawn and meadow mowing regimes for biodiversity value, the planting structure adds visual amenity value and they are available for use in most weather conditions.

The retention basin is designed for biodiversity value and visual amenity with marginal planting within stepped terraces and banked edges as well as its SUDS function, there is seating adjacent to overlook the feature area.

The Playing Pitch dimensions cater for a minimum full-sized pitch which can be subdivided into two smaller training pitches.

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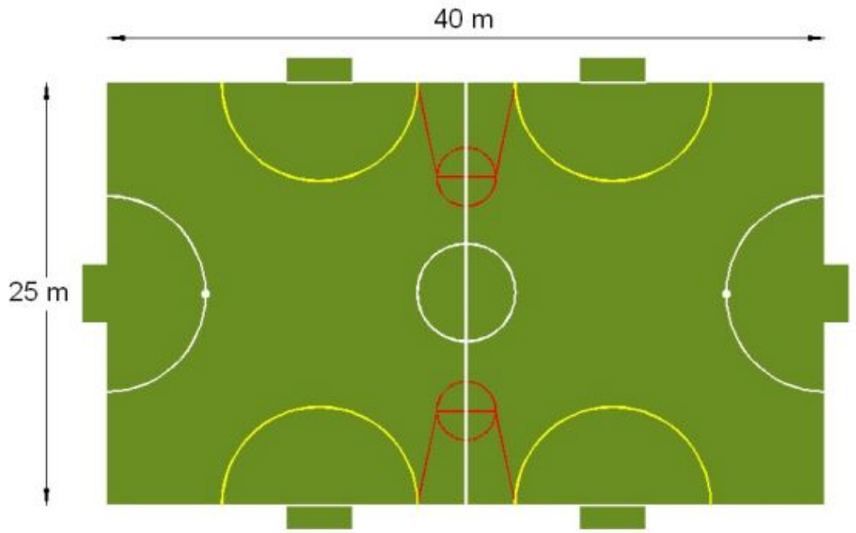

Figure 5b - Dimensions of MUGA with facilities for small sided football and recreational basketball practice

The 40x25m pitch dimension for the two pitches shown complies with FA guidance for MUGA pitches which cater for small-sided football and recreational basketball practice.

The design accommodates:
Under 10's Mini Soccer for FA guidance overall size 51.75x33.45m for a single combined pitch.
Seven a side pitch FA guidance, 50x30m with runoff zone.
Five a side pitch FA guidance 25 x 16.5m.
Player run-off complies with FA 2m minimum requirement.

Please refer to Drawing Landscape Sections 110 for cross section of playing pitch with Boroimhe Residential Development.

Existing Trees and Hedgerows
Please Refer to Arboricultural documentation

Play provision has been accommodated within communal amenity space.

Please refer to Drawing Boundary Key Plan 107 and Boundary Details 108 for detail on the interface between existing and proposed development boundaries.

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Planting Structure

The design incorporates wildlife considerations in the retention/ protection/ management and reinforcement of existing hedgerows/treelines and the reprofiling of the Gaybrook Stream Riparian Corridor. Existing trees and hedgerows on the site will be protected where possible in line with the objectives of the Fosterstown Masterplan and brought back into a managed state and reinforced with new planting.

Vegetation clearance will take place outside the breeding bird season (ie the start of September to the end of February, inclusive) to avoid any potential impact on breading birds. Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any site clearance and repeated as required to ensure compliance with Irish wildlife law. This will be carried out under the supervision of a qualified Ecologist.

Varied habitats shall be created for ecological connections; the riparian corridor along the Gaybrook Stream, swales, SUDS basin infiltration areas, bioretention planting areas, meadow management areas, hedgerow boundaries and wet ditch network, groundcover and shrub planting and new tree planting.

The proposed planting structure is a mosaic of native habitats, it aims to strengthen areas for wildlife, biodiversity and green infrastructure across the site.

For a detailed description of the existing site ecology please refer to consultant Ecologist Documentation.

The proposed planted structure is designed to create connectivity in habitat and different experiences of containment/protected microclimates through hedgerow/tree line/parkland structural planting, sheltered courtyards with raised planters and peripheral open grass areas with varying meadow types for active and passive recreation, play and biodiverse habitats. Planting throughout shall focus on sensory interest and stimulation.

The overarching aim for the establishment of vegetation communities at the site is to produce through management practices and new planting a mosaic of native habitats in one location. This is seen to be a way of maximising the biodiversity potential of the site, providing new opportunities for expansion of (and cross-interaction between) habitats whilst also providing an attractive area of green open space with high visual and recreational amenity value.

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Whilst areas will have a naturalistic character, others such as the communal courtyards will be more formal. Some areas will be exposed whilst others will be more intimate and sheltered, providing opportunities for interest and a varied experience whilst moving around the site.

Hedgerow Structures

"Natural Hedgerow" along the Dublin Road streetscape, a minimum of 1.5m in width. This hedgerow may incorporate an existing swale to the side finished with a grassy meadow verge a minimum of 2m on the street side; and

Box cut hedgerows to define communal open space areas and privacy strip planting in internal courtyards.

Planting Typologies

A number of specimen trees will be planted around the site individually, in small groups and along streets. These will provide additional habitat, landscape structure, visual reference points and amenity value, particularly in areas close to recreational features and path routes. The species have been chosen to complement the landscape character or to be native species in the area.

The planting strategy contains areas of pollinator friendly mowing regime, hedgerow planting with the recommended 75% hawthorn plus 25% of four other native species, 75% pollinator friendly species within the shrubs and groundcover mix and inclusion of pollinator friendly street trees. The selected planting mix includes shade friendly species as well as being robust and low maintenance.

Street trees adjacent to hard paved footpaths and car parking spaces shall be planted into a constructed tree pit with structural root soil please refer to the Planting Detail Drawing. Tree locations have been coordinated with proposed lighting column locations.

Privacy planting strips 1.5m wide minimum are provided at ground floor units as per best practice apartment guidelines.

Phasing of the open space network

In terms of Phasing of the open space network early planting has been considered to secure the planted structure is delivered in tandem with proposed staged completions of the development. Prioritizing phasing of the open space network allows for adequate establishment periods for the new planting structure and playing fields, to ensure the handover of a robust open space infrastructure.

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Landscape Management

Planting and management of the open space network shall be undertaken in accordance with pollinator friendly management objectives as outlined in the *"All Ireland Pollinator Plan 2021-2025 (Councils: Actions to Help Pollinators)"* National Biodiversity Data Centre and will include interpretative signage highlighting the areas Managed for Wildlife.

Varied grass cutting regimes will provide for a species richness within the grassland areas, especially in the context of their location on the outskirts of an urban area.

Reference Document

All Ireland Pollinator Plan 2015-2020 (Councils: Actions to Help Pollinators) NBDC

There are 7 key actions in the guidance document – all of which inform the design of the proposed park.

A: Identify and protect existing areas that are good for pollinators
B: Alter frequency of mowing of grassy areas to allow more native plants to flower
C: Pollinator friendly planting
D: Provide wild pollinator nesting habitat: hedgerows, earth banks and hotels
E: Reduce the use of pesticides
F: Raise public awareness of pollinators
G: Tracking progress and recognition for efforts

Importance of pollinators in agriculture is to be highlighted within the meadow/orchard field. Based on the NBDC Protecting Farmland Pollinators 5 criteria:

1. Flowering Native Hedgerows
2. Flowering margin of 0.5 to 2 metres around field edges
3. Low to zero pesiticide inputs
4. Pollinator friendly trees
5. Wildflower meadow, flower rich pasture, cover crop, herbal ley

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Implementation of a habitat management plan according to pollinator friendly recommendations with varied grass cutting regimes will provide for a species richness within the grassland areas and meadows having potential to have a very high value for pollinating insects especially in the context of their location on the outskirts of an urban area.

Grass cutting regimes are located to reduce maintenance operations, the sloping nature of the Riparian corridor results in areas of embankments in the open space network, these are in the main planted with marginal planting, shrub pocket planting and meadow management regime with minimal maintenance required. Where they occur in grass areas the steeper slopes areas between 1:4 and 1:8 are minimized and managed as meadow areas with a one cut annual regime. Sloped areas 1:8 and to level are managed as a pollinator friendly 5 cut annual regime outside of playing pitches and pockets of cropped amenity lawn for active play.

PLANT SCHEDULE LIST

Planting Mixes by Area

Amenity Grassland and Grass Footpath Seeding

Botanical Name	**Common Name**	**%Mix**
Broadcast sow these areas at an even rate of 250kg/ha using the following mix:		
Agrostis capillaris	Common Bent	10
Festuca rubra ssp. Juncea	Slender-creeping red fescue	47
Lolium perenne	Perennial Ryegrass	20
Poa pratenis	Smooth Meadow Grass	20
Trifolium repens	White Clover	3

Main Grassland Seeding

Botanical Name	**Common Name**	**%Mix**
Broadcast sow these areas at an even rate of 40kg/ha using the following mix:		
Agrostis capillaris	Common Bent	1
Anthoxanthum odoratum	Sweet Vernal-grass	2
Alopercurus pratensis	Meadow Foxtail	4
Cynosurus cristatus	Crested Dogstail	6
Dactylis glomerata	Cocksfoot	6
Festuca arundinacea	Tall Fescue	4
Festuca pratensis	Meadow Fescue	8
Festuca rubra ssp. Juncea	Slender-creeping red fescue	8

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Lolium perenne	Perennial Ryegrass	30
Lotus corniculatus	Birdsfoot Trefoil	4
Phleum bertolonii	Smaller Cats Tail	4
Phleum pratense	Timothy	5
Plantago lanceolata	Ribwort Plantain	2
Poa pratenis	Smooth Meadow Grass	6
Poa trivialis	Rough-stalked Meadow-grass	5
Trifolium pratense	Red Clover	3
Trifolium repens	White Clover	2

Meadow Areas Seeding

Mixture including bee and pollinator friendly species and supporting nitrogen fixing species.

Botanical Name	**Common Name**	**%Mix**
Broadcast sow these areas at an even rate of 40kg/ha using the following mix:		
Briza media	Quaking Grass	3
Cynosurus cristatus	Crested Dogstail	31
Festuca ovina	Sheeps Fescue	22
Festuca rubra ssp juncea	Slender-creeping Red Fescue	22
Phleum bertolonii	Smaller Cat's tail	5
Helictotrichon pubescens	Downy Oat-grass	4
Achillea millefolium	Yarrow	1
Anthyllis vulneraria	Kidney Vetch	1.5
Centaurea nigra	Common Knapweed	1
Centaurea scabiosa	Greater Knapweed	1
Daucus carota	Wild Carrot	1.5
Galium verum	Ladys Bedstraw	1.5
Knautia arvensis	Field Scabious	1.5
Leontodon hispidus	Rough Hawkbit	0.5
Leucanthemum vulgare	Oxeye Daisy	1
Lotus corniculatus	Birdsfoot Trefoil	2
Origanum vulgare	Wild Marjorum	0.5
Pimpinella saxifrage	Burnet-saxifrage	0.5
Sanguisorba minor	Salad Burnet	0.5
Carlina vulgaris	Carline Thistle	2

Hedgerow Planting

As per All Ireland Pollinator Plan 2021-2025 75% Hawthorn and 25% 4 other native species

Plant randomly @ 6No. whips per linear meter in a double staggered row

Botanical Name	**Common Name**	**Size**	**%Mix**	**Spec**
Type 1 Box Cut Natural Hedgerow				
Crataegus monogyna	Hawthorn	60-90cm	75%	well feathered to base, BR
Corylus avellana	Hazel	60-90cm	15%	well feathered to base, BR
Sambucus nigra	Elder	60-90cm	5%	well feathered to base, BR
Prunus spinosa	Blackthorn	60-90cm	2.5%	well feathered to base, BR
Lonicera periclymenum	Honeysuckle	60-90cm	2.5%	BR
Type 2 Natural Hedgerow and randomly planted intermittent tree line planting				
Crataegus monogyna	Hawthorn	60-90cm	75%	well feathered to base, BR
Corylus avellana	Hazel	60-90cm	10%	well feathered to base, BR
Sambucus nigra	Elder	60-90cm	5%	well feathered to base, BR
Prunus spinosa	Blackthorn	60-90cm	2.5%	well feathered to base, BR
Rosa canina	Dogrose	60-90cm	2.5%	well feathered to base, BR
Trees planted intermittently and randomly 1 per 10-15linm				
Alnus glutinosa	Alder	1.5m tall		well feathered to base, RB
Crataegus monogyna	Hawthorn	1.5m tall		well feathered to base, RB
Corylus avellana	Hazel	1.5m tall		well feathered to base, RB
Sorbus aucuparia	Rowan	1.5m tall		well feathered to base, RB
Type 3 Box Cut Hedges Communal Courtyards				
Plant @ 3-5No. per linear meter in a single line				
Ilex aquifolium 'Alaska'	Holly	90-120cmg	600mm tall	container 3/linm
Ilex crenata 'Green Lustre	Box Leaf Holly	90-120cmg	600mm tall	container 3/linm

Woodland Understorey Planting

Botanical Name	**Common Name**	**Size**	**%Mix**
Anthriscus sylvestris	Cow Parsley	P9, pf	2.5
Digitalis purpurea	"Foxglove"	P9, pf	2.5
Dryopteris felix mas	Male Fern	9cm pot	20
Hedera helix Hibernica	Ivy	9cm pot	20
Lonicera periclymenum	Honeysuckle	9cm pot	5
Luzula sylvatica	Woodrush	9cm pot	25
Molinea caerulea	Purple Moor Grass	9cm pot	20
Primula vulgaris	Primrose	9cm pot	2.5
Viburnum opulus	Guelder Rose	3Lt	2.5
Bulbs			
Hyacinthoides non-scripta	Bluebell	topsize	

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STREET TREES

cmg = centimeter girth, rb = rootballed, cg = container grown, pf = pollinator friendly

with reference to "Forest of Fingal, A Tree Strategy for Fingal"

Botanical Name	Common Name	Size	Numbers
Alnus spaethii	"Spaeth's Alder"	30-35cmg rb, pf	17No.
Tilia cordata 'Streetwise'	"Small Leaved Lime"	30-35 cmg rb, pf	14No.
Platanus orientalis 'Cuneata'	"Oriental Plane"	30-35cmg rb	16No.

SPECIMEN TREES PLAZA

Botanical Name	Common Name	Size	Numbers
Betula nigra 'Heritage' (Multistem)	"River Birch"	+3.5m height rb	9No.
Gingko biloba	"Maidenhair"	20-25cmg rb	2No.
Gleditsia tricanthos 'Sunburst'	"Honey Locust"	20-25cmg rb	6No.
Quercus palustris	"Pin Oak"	30-25cmg rb, pf	11No.

RIPARIAN PARKLAND TREES

Botanical Name	Common Name	Size	Numbers
Alnus glutinosa	"Alder"	16-18cmg rb	18No.
Betula pendula	"Birch"	16-18cmg rb	25No.
Corylus avellana	"Hazel"	16-18 cmg rb pf	5No.
Larix decidua	"Larch"	20-25 cmg rb	2No.
Malus sylvestris	"Crab Apple"	16-18 cmg rb	7No.
Quercus petraea	"Sessile Oak"	20-25 cmg rb	5No.
Salix caprea	"Willow"	16-18 cmg rb	9No.
Sorbus aucuparia	"Rowan"	16-18 cmg rb, pf	5No.

CENTRAL ROUTE TREES

Alnus spaethii	"Alder"	20-25cmg rb	16No.
Betula pendula	"Birch"	16-18cmg rb	9No.
Corylus avellana	"Hazel"	16-18 cmg rb pf	7No.
Malus sylvestris	"Crab Apple"	16-18 cmg rb	13No.

BOUNDARY TREES

Acer campestre	"Field Maple"	16-18 cmg rb	1No.
Alnus glutinosa	"Alder"	16-18 cmg rb	6No.
Betula pendula	"Birch"	16-18cmg rb	12No.
Sorbus aucuparia	"Rowan"	20-25 cmg rb, pf	26No.
Prunus avium 'Plena'	"Bird Cherry"	20-25 cmg rb	5No.
Pinus nigra	"Black Pine"	+3m height	5No.
Pinus sylvestris	"Scots Pine"	+3m height	4No.

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COMMUNAL COURTYARD TREES

Amelanchier 'Robin Hill' "Snowy Mespilis"	16-18cmg rb, pf	multistem	52No.
Alnus spaetheii	"Alder"	16-18cmg rb	4No.
Betula pendula	"Multistem Birch"	+2.5m height rb	38No.
Coryllus avellana	"Hazel"	16-18 cmg rb pf	22No.
Liquidamber styraciflua	"Sweetgum"	20-25cmg rb	11No.
Prunus avium 'Plena'	"Wild Gean"	20-25cmg rb, pf	6No.
Pinus sylvestris	"Scots Pine"	+3m height	1No.
Sorbus aucuparia	"Rowan"	16-18 cmg rb pf	59No.
		New Trees	**448No.**

DECORATIVE SHRUB AND GROUNDCOVER PLANTING 75% Pollinator Friendly

Botanical Name	Common Name	Size	Spacing
Anemone 'Honorine Jobert'	"Japanese Anemone"	1.5LT, pf	4 per sqm
Camassia leitchlinii	Camassia	topsize	
Hydrangea 'Annabelle'	"Hydrangea"	2Lt, pf	3 per sqm
Libertia grandiflora	"Libertia"	3Lt	3 per sqm
Liriope muscari	"Liriope"	2Lt, pf	6 per sqm
Luzula nivea	"Snowy Woodrush"	3Lt	5 per sqm
Rosmarinus officianalis	"Rosemary"	3Lt, pf	3 per sqm
Sarcococca humilis	"Christmas Box"	3Lt, pf	4 per sqm
Sedum spectabile 'Stardust'	"Ice Plant"	2Lt cg, pf	6 per sqm
Verbena bonariensis	Verbena	2Lt, pf	4 per sqm
Dryopterixs Felix Mas	"Male Fern"	2Lt	4 per sqm
Hedera helix 'Hibernica'	"Ivy"	1.5Lt cg, pf	6 per sqm
Lonicera pericylmenum	"Honeysuckle"	1.5Lt cg, pf	1 per sqm
Viburnum opulus	"Guelder Rose"	60-90mm, pf	1 per sqm
Viburnum tinus	"Laurustinus"	2Lt, pf	4 per sqm
Skimmia japonica	"Skimmia"	3Lt, pf	4 per sqm
Hebe rakiensis	"Hebe"	3Lt, pf	4 per sqm

Bioretention Planting

Botanical Name	Common Name	Size	%Mix
Trees			
Alnus glutinosa	Alder	16-18cmg	35
Amelanchier lamarkii	Snowy Mespilus+3.5m height multistem		30
Betula nigra	River Birch	16-18cmg	35

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Understorey

Camassia leitchlinii	Camassia	topsize	10%
Carex pendula	Sedge	2Lt	30%
Iris pseudoacorus	Yellow Flag	9cm pot	10%
Luzula nivea	Snowy Woodrush	2Lt	15%
Luzula sylvatica	Woodrush	2Lt	15%

Marginal Planting Riparian Corridor

Botanical Name	**Common Name**	**Size**	**%Mix**
Filipendula ulmaria	"Meadowsweet"	P9	20%
Caltha palustris	"Marsh Marigold"	P9	15%
Carex pendula	"Sedge"	P9	20%
Lythrum salicaria	"Purple Loosestrife"	P9	5%
Molinia caerulea	"Purple Moor Grass"	P9	15%
Ranunculus flammula	"Lesser Spearwort"	P9	5%
Iris pseudacorus	"Flag Iris"	P9	20%

Roof Sedum Mix

Soprema sedum mat. ***Sedum mat to be sourced and grown in Ireland. Minimum vegetation coverage 75%, thickness 20-40 mm.***

Species mix must comprise at least 5-7 sedum species with minor parts of grass and herbs.

Reference species: Sedum acre Aureum', Sedum album 'Coral Carpet', Sedum album 'Mini', Sedum album 'Athoum', Sedum hispanicum, Sedum 'Summer Glory', Sedum 'Reflexum', Sedum 'Weihenstephaner Gold', Sedum 'Voodoo'

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INVASIVE SPECIES MANAGMENT

Invasive Species Management

Invasive Species: A specialist biosecurity company shall be appointed to undertake additional surveys and prepare a management plan prior to works being undertaken to ensure no further nuisance or off-site spread of invasive species occurs. Their recommendations will be incorporated into the Landscape Maintenance Specification.

Protection strategy and outline specification for the protection of trees and hedges

1. Mitigation measures: Assessment of the condition of trees and hedges, Tree Protection Strategy and Arboricultural Impact Assessment and a specification to outline procedures which shall be undertaken to effectively retain trees free from negative construction impacts for the duration of the proposed construction shall be prepared. The tree protection details shall be in accordance with B.S.5837:2012 *Trees in Relation to Design, Demolition and Construction - Recommendations.*

2. Key issues for tree/hedgerow protection: Appointment of a Consulting Arborist (CA), scheduling of tree and construction works, establishment of on-site tree protection, monitoring of tree protection, supervision of works in the vicinity of trees, post construction re-assessment of retained trees.

3. Site arborist: A site arborist shall be appointed prior to the commencement of site construction works and retained for the duration of construction works and shall be appointed to carry out a post-construction tree survey.

4. Scheduling of works: Pre-construction tree works as follows: Remedial works to retained trees throughout the site as per the Tree Survey document and erection of tree protection fencing. The removal of hedgerow, treeline or scrub vegetation shall not take place from March to August inclusive as per the Wildlife Act. Trees removal felling to take place between September to November to avoid periods when Bats are most active.

5.1 Preservation of Trees Obligations:
Monitoring
The Site Arborist will: Supervise all tree works, assess on-going tree protection, liaise with the relevant authorities during the project. Constantly monitor the project with regard to tree health to ensure that no damage is caused to the subject trees during the operational works. Report any negligent damage to trees which will prejudice their health. Monitor works carried out by the Arboricultural Contractor and Main Contractor within the 'Protected Tree Zone'.

The Arboricultural Contractor will: Submit a full method statement containing machinery to be used, removal of wood etc to the CA. Carry out works to the most up to date arboricultural practices

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available e.g. BS 3998. 2010 Recommendations for tree work (as amended). Undertake work only with suitably qualified operatives in constant consultation with the Site Arborist. Trees identified for removal will be section felled in wooded areas so as not to damage remaining trees.

The Main Contractor will: Undertake all work in accordance with this specification. Ensure that all personnel, operatives, sub-contractors etc. are aware of this specification and operate accordingly. Notify the Site Arborist of any potential conflicts that may affect the health, vigour, viability of trees.

5.2 Protected Tree Zone: The 'Protected Tree Zone' should under no circumstances be used for storage of materials, equipment, or site debris. No fires should be lit within the Protected Tree Zone, or equipment washed or cleaned.

5.3 Code of Practice for the preservation of trees: Develop a Code of Practice to be brought to the attention of all site personnel including Contractors, Sub-Contractors and Engineering Specialists associated with the project. All operations to be in accordance with B.S. 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations. The Contractor shall purchase and make available on site a copy of the above.

6.0 Post Construction
A post construction tree survey report on the condition of retained trees shall be carried out with recommendations provided for remedial work where necessary.

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PHASING OF LANDSCAPE WORKS

The phasing of the landscape is coordinated with the phasing of the overall scheme.

LANDSCAPE MANAGEMENT
Maintenance should maximise the biodiversity potential of the site, providing new opportunities for expansion of (and cross-interaction between) habitats whilst also providing an attractive area of green open space with high amenity value. The open space network can be broken down into the following softworks planting types for maintenance:

Amenity Active Use Grassland
Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases. The lawn is to be maintained to 40mm height to create a close mown turf for active and passive recreational use.

Operations: Grass maintenance strips to be cut at 2 week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site. Lightly roll Amenity Grass areas in spring and autumn annually to consolidate the soil. Carry our when ground conditions are appropriate when soil is moist but not waterlogged. Any settlements or local depressions should be made good.

Grass Footpaths
Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases to a width of 3m to clearly indicate the circulation network.

Operations: Grass maintenance strips to be cut at 2 week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site.

Maintenance Grass Strip to All Pathways
Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases to a width of 2m to both sides of all pathways. This maintenance strip is required to all tarmac, concrete, compacted gravel and grass footpaths. Mown grass edges to present a maintained appearance to the open space and prevent overhanging of tall grasses or planting encroaching upon the circulation network.

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Operations: Grass maintenance strips to be cut at 4 week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site.

Pollinator Friendly Grassland Area
Objective: These are areas for amenity use that are maintained to a higher level of 75mm and cut less frequently than general amenity grass areas. This is to create a different character to the woodland area and to promote biodiversity following the recommendations of the All Ireland Pollinator Plan 2021-2025.

Operations: Grass shall not be mown until the 15th of April. Thereafter grass shall be cut on a six weekly rotation (5 cut and lifts per year). Second cut at the end of May, third cut in mid-late July to maximise growth of Clovers and other wildflowers, fourth cut at the end of August and the fifth cut after mid-October. Remove cutting arisings to off site compost facility. Carry out when ground conditions are appropriate when soil is moist but not waterlogged. Any settlements or local depressions should be made good.

Meadow Grassland Areas
Objective: Meadow areas are to produce and promote a species rich meadow providing for increased biodiversity and different character areas to the park network.

Operations: Meadow areas shall be cut once a year in late September to a height of 75mm. Meadow areas that are cut should be left for 3-5 days so that insects can move to refuges as moisture content is lost from the cut areas. Meadow cuttings are then to be removed from site. As a general rule always remove 'cut' materials as most wildflowers will die if grass cuttings are not removed. If winters are mild meadow can be mown or toped between October and April if growth exceeds 250mm.

Grassland Slopes
Objective: Grassland slopes are general areas of grassland and areas where gorse or brambles should not be allowed to colonise on banks of the site.

Operations: Gorse, brambles, herbaceous and scrub growth to be cleared to ground levels of 75mm height. Grass cuttings to be broken down and spread evenly across the cut area to remain on site. Grassland slopes to be cut at the end of July and the end of September annually.

Hedgerows Management
Box Cut Hedgerow

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o Treatment 1 will comprise an Urban type "Box-Cut Hedgerow";
Natural Hedgerows
o Treatment 2 will comprise a "Natural Hedgerow", a minimum of 1.5m in width. This hedgerow may incorporate an existing swale to the side finished with a grassy meadow verge a minimum of 2m bounding both sides; and
o Treatment 3 a "Natural Hedgerow", a minimum of 2m in width with a minimum of 2m bounding both sides.

The Natural Hedgerows will be maintained so that a diversity of hedgerow structure is provided. Tall and short (≤3m) sections will be provided. Thick and dense cover at the base of the hedgerow will be maintained and gaps along hedgerows will be minimised. The outer edges of the Natural Hedgerows will be maintained so that they undulate, or have a wavy plan profile.

Natural Hedgerows will be managed as follows:
o Hedgerow trimming will be undertaken on two to five year rotations to create diversity in hedge structure and allow some species to produce fruit (an important food source for birds) in different years.
o Hedgerow trimming will be alternated between sections of hedgerows so that at least one-third of the hedgerow length remains uncut.
o Hedgerow trimming will be undertaken between the months of January and February.

Box-Cut Hedgerows will be a minimum width of 1m and a minimum height of 1.5m. They will be comprised of typical native hedgerow species.

Box-Cut Hedgerows will be cut on an annual basis during the months of January and February. Hedges should not be cut between March and August as this is the main breeding season for nesting birds. Encourage a bushier and denser hedge by cutting at least 2cm above the previous years growth. This keeps the hedge full of vigor and growth. It is easy to prune a hedge too heavily and lose the fruit. Remove all hedge cuttings from the site.

Scrub Planting Areas
Objective: Areas planted with scrub and shrubs to be maintained to create a mosaic of native habitats in one location. Maintenance should maximise the biodiversity potential of the site, providing new opportunities for expansion of (and cross-interaction between) habitats whilst also providing an attractive area of green open space with high amenity value.

Operations: Planting areas to remain clear of weeds to a diameter of 1m circle around each plant planted. Achieved by maintenance of 75mm depth of mulch and hand clearance of any weedy vegetation grown around or within the plant guards. At all times, weed cover to be less than 5% and

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no weed to exceed 100 mm high. Check condition of stakes, ties, guys and guards. Replace broken or missing items. Adjust if necessary to allow for growth and prevent rubbing of bark. Review presence of rabbits within the park and if risk of damage to juvenile planting is low remove spiral rabbit guards after three years all other guards to be removed after five years. Gently firm loosened soil around plants. Straighten leaning trees/ shrubs. Frequency of checks: Every month or after periods of strong winds. Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools. A two meter strip of unmown grass will surround all areas of scrub to form a buffer zone and to increase species biodiversity. This course of action will prevent indiscriminate pedestrian trampling but will allow areas for picnicking, sunbathing etc.

Riparian Corridor/Marginal planting/Bioretention SUDS features
Objective: A wetland is an area of land whose soil is saturated with moisture either permanently or seasonally and that contains shallow pools of water. Wetlands are considered the most biologically diverse of all the ecosystems as they contain a wide range of plant and animal life. Wetlands to be protected and extended to offer natural flood water storage and improved water quality, lock away huge amounts of carbon, provide havens for wildlife and interesting places for people to visit and enjoy.

Operations: Maintain a dense canopy of wetland plants across the wetland to resist weed growth. Replant any bare ground or dead areas with a plant species that seems to be growing well in the wetland. This should be monitored annually with new planting as per plant species list as necessary. Harvesting is not required, as direct plant uptake of nutrients generally only accounts for a small proportion of nutrient removal. If harvesting is practiced, it should ideally be done in midsummer, allowing sufficient growth season for the growth of a canopy before winter. If not managed correctly, harvesting of the plant canopy can enable weed invasion. Weeds and any pests should be controlled as the plants establish. Hand weeding should be normally be sufficient, but needs to be done before weeds become well established and deeply rooted. Remove weeds by hand when they are young. If you leave them to grow large, they can develop extensive root systems that can be hard to pull out. Invasive plant species such as algal growth and plant dieback to be physically removed as necessary. If plants look to be suffering form lack of water, check water levels are correct and water is inflowing freely. This may indicate a problem with leakage in the system, or may be due to low water flows and high plan evapotranspiration rates in dry summer conditions. Sediment should be removed as necessary to maintain a minimum of 50% of the design depth. Care should also be taken in the event that fertilisers or herbicides are applied adjacent to any of the wetlands to avoid an increased level of nutrients entering the wetland which promotes excessive plant growth and decay, favouring simple algae and plankton over other more complicated plants, and cause a severe reduction in water quality. Avoid shading of wetland vegetation by overhanging trees, or accumulation of leaves from around the site. Trim surrounding vegetation to maintain

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open air space above the wetland. Other maintenance works such as monitoring of inlets/outlet, flow regulating devices, siltation of storage areas are not detailed as part of these works.

Long Term Objective: Harvesting and replanting of emergent plants once every 15-20 years.

Hard Surfaces including: Insitu Concrete and Tarmac Pathways, Compacted Gravel and Paved Areas

Note: Paved areas that drain into grass areas/rain gardens, tree pits and planted areas avoid use of high concentrations of salt, detergent or soil-acting herbicides. Materials used in repairs should match the existing surface material specification, and be laid to the same depth as originally specified and, where applicable, to a similar degree of compaction.

Objective: Tarmac pathways and steps throughout the area are to provide a solid surface for users of the open space to circulate. Maintain clean, even, consistent surfaces, safe for use by normal traffic in all weather conditions.
Hard surfaces to be kept free from the following:
• litter including autumn leaf fall,
• dust and accumulated grit,
• stains, e.g. oil or paint spillage,
• graffiti,
• weeds, moss and algae
• standing water

Operations: Arisings or cuttings to be removed from pathways after maintenance of planting. Surface of tarmac pathways to be clean, not slippery, build up of algae etc to be removed.

Insitu concrete –
Refer to Engineers documentation for repairs compliance
If litter accumulates, increase the frequency of sweeping.
Where weeds colonise cracks and joints, remove and repair.
If moss and algae grow, treat by scraping or sweep.

Tarmac –
If litter accumulates, increase the frequency of sweeping.
Where weeds colonise cracks and joints, remove and repair.
If moss and algae grow, treat by scraping or sweep.
Where the surface becomes uneven or there is a drainage problem, patch or replace to falls. Repair cracking and frost damage by raking out and repairing or replacing the surface. Potholes to be

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reinstated should be cut back to sound material, the sides cut vertically to a square/rectangular shape, painted with bitumen emulsion, and filled with new bitumen.

Compacted Gravel – Ballylusk aggregate dust, well compacted on hardcore subbase.
If litter accumulates, remove by picking or sweeping.
If the surface is stained, replace it.
Where weeds colonise, remove.
Surfaces should be raked/rolled at least once a year in winter when wet.
Where the surface becomes uneven or there is a drainage problem, rake and roll when wet, and make up levels to falls.
Surfaces should be repaired by loosening, raking and making up with matching material to maintain profiles, levels and gradients, followed by rolling.

Furniture and Signage
Play Equipment
Objective: To provide opportunities to play and exercise within the open space network for individuals of all ages and abilities. Including opportunities for social interaction, physical activity, imaginative or intellectual stimulation, creative
achievement, emotional and educational development.

Operations: A visual inspection is to be carried out when on site carrying out other maintenance works or at 2 week intervals whichever is more frequent, or immediately in response to reports or complaints from the public. This inspection must bring any defects to the immediate attention of the management company. As a general policy, equipment is repaired as soon as possible. Every twelve months a full ROSPA inspection shall take place using independent inspectors. This results in a full written report with a safety assessment and recommendations for action. The recommendations are acted upon immediately, or should they require large capital investment, they will be used as justification to support the
application for funding.
Play equipment is repaired by the manufacturer/supplier other than routine replacements.

Stone mulch banding, dry stone walls
Objective: Provide an area on site for the collection of stones cleared from the site as part of soil preparation/excavations. Stone mulch bands provide refuge locations for eco-system invertebrates.

Operations: Any stones unveiled during maintenance practices to be positioned in these areas.
Keep free of weeks, do not allow soil to enter areas. In advance of grass or meadow cutting replace dislodged stones back onto the areas.

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Signage
Located in the Riparian Corridor and meadow areas

Education and information Boards
Objectives: Communicate information and promote the ecological and educational benefits of the Riparian Corridor/wetlands/meadow areas to the public. Encourage and highlight use of park amenities.

Operations: Sign to remain clear and free from vandalism.
As a general policy, signage is to be repaired as soon as possible. In the event the artwork of the education boards is damaged or fades over time, replacement laminate to be applied to existing metalwork or entire piece to be replaced. As a general policy, signage is to be repaired as soon as possible, as the presence of damaged signage is not conducive to first rate park.

Planting Seasons
- Bare Root Deciduous Stock: November to Mid March
- Rootballed Deciduous Stock: November to Mid March
- Rootballed Evergreens and Conifers: late September or October or between March and early May
- Container Grown Stock: Any time of the year
- Grass Seeding: Spring or Autumn – when the soil is still warm and there is the promise of rain.

No planting should take place during periods of frost, drought, cold drying winds or when soil in water logged, or when the moisture of the soil exceeds field capacity (the maximum amount of water that soil can hold).

Grass Seeding
Grass seeding should only be carried out at the correct season from late summer to mid autumn and in suitably calm but moist weather conditions. If the opportunity to sow grass in autumn is not possible sow seed in mid Spring, but only if there is the promise of rain as it is critical to provide the seed with sufficient water to prevent it from shriveling up and dying. Ideal growing conditions for grass seed to germinate is warm soil damp from rain. Seed should be cross sown in two directions at right angles to each other (half the seed to be used in each directions) to prevent striping.

Replacements
In September or each year, the Landscape Maintenance Team shall provide a list of all trees and plants that are dead, dying, vandalised or not growing in a vigorous condition. These are to be replaced during the November – December of the same year or for evergreens April/May of the following year. All plants shall be planted at the size as shown in the Planting Schedule.

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All replacement planting shall be in accordance with the Specification/Planting Schedule.

Dead Plant Removal
Remove dead plants and dead parts of plants as soon as possible and replace plants within the appropriate planting seasons.

Works near Existing Trees and Softworks
When developing near existing trees, ground levels, especially under their canopies should remain unchanged. Most roots are found in the top 600mm of soil. They often grow out further than the trees height. The majority of these roots can be thin in diameter. Some species of trees can tolerate a small increase in level – generally up to 75mm but since most of the roots occur in the top 600mm of soil, raising the ground level can reduce the air available to the root zone and change the feeding of the tree by these roots and lead to the demise of the tree.
Paths of underground service runs should avoid the tree root spread of existing trees and if this is unavoidable then any excavations should be carefully done by hand and services ducting placed through the roots by hand.
Ideally no roots should be severed, so where construction is of necessity within the root spread, damage must be minimized by careful routing of services, with any excavation carried out by hand to allow larger roots to remain undamaged. No root over 25mm in diameter should be cut; they can be left bridging a trench while pipes or cables are laid. Smaller roots should be cut cleanly by hand.
Pipes and cables can be passed through or under root systems that have been given minimum disturbance by hand digging. If services cannot be routed clear of trees, they can be laid below the root run level, at about 1.2m or greater depth. When back-filling trenches, the correct sequence of topsoil above subsoil should be observed.
Services
No digging below 300mm depth using powered machinery will be permitted near to known sub-surface pipe and infrastructure locations. In all other areas the depth restriction will be 600mm deep.

Tree Surgery and Emergency Tree Works
A tree survey condition report on the condition of the existing trees on site has been undertaken. Any recommendations should be implemented by qualified personnel in compliance with British Standard B.S. 3998: 1989 'Recommendations for tree work."
Following this initial tree condition survey, trees seen to be in good condition should undergo regular visual safety inspections. A visual inspection should be carried out as part of the routine maintenance works on site coupled with specific visits following storm events or periods of very heavy rain.

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Trees should be reviewed for dead wood in the canopy, storm damage, decline in vigour in the crown or damage caused following other maintenance practices.
In addition to regular visual surveys of the existing trees a professional tree condition survey should be undertaken by a suitably qualified arboricultural consultant every 3 years producing a report on condition of trees.
Any recommendations should be implemented by qualified personnel in compliance with British Standard B.S. 3998: 1989 'Recommendations for tree work." Any wind damaged trees or tees requiring emergency works should be made as safe as possible and contact made with the management company.
An annual inspection of the trees will establish and programme restorative/remedial pruning, and in order to prevent an aging tree stock, some new trees will be planted to reinforce the existing tree planted structure.

Scheduling of works
Pre-construction tree works will follow that outlined below
• Remedial works to trees being retained throughout the site as per the Tree Survey document.
• The erection of tree protection fencing

Protected Tree Zone.
The 'Protected Tree Zone' should under no circumstances be used for storage of materials, equipment, or site debris. No fires should be lit within the Protected Tree Zone, or equipment washed or cleaned.
Code of Practice for the preservation of trees.
The Code of Practice will be brought to the attention of all site personnel
including Contractors, Sub-Contractors and Engineering Specialists associated with works on site. All operations to be in accordance with BS 5837 Trees in Relation to Construction (2005). The management company should purchase and make available on site a copy of the above.

The Arboricultural Contractor will:
• Submit a full method statement containing machinery to be used, removal of wood etc to the CA.
• Carry out works to the most up to date arboricultural practices available e.g. BS 3998. Recommendations for tree work (as amended).
• Undertake work only with suitably qualified operatives in constant consultation with the Site Arborist.
• Trees identified for removal will be section felled in wooded areas so as not to damage remaining trees.

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Topsoil

Topsoil should be clean, free from stones, perennial weeds, roots and other plant matter, sticks, sub soil or any waste, toxic, rotting or foreign matter. The soil should be fertile with a humus and fibre content and be of a medium texture having a pH value of between 6.0 and 7.5 (unless imported for specific wildflower meadow seeding areas. Imported topsoil should not contain stones greater than 40mm in size, nor have a total stone content exceeding 10 per cent by mass.

Topsoil should be spread evenly on formation levels. Grass areas and shrub/groundcover areas should have a minimum of 150mm and 450mm respectively, after firming. Stones should be removed up to 40mm in diameter.

Plant Material

All plants should be well grown, sturdy and bushy, according to type, and free from all disease and defects. All plants should be adequately hardened off prior to planting, where frost or cold winds may be a problem. This is particularly relevant to planting at the Dublin foothills.

• Shrubs should be bushy, well established nursery stock with a good fi brous root system.
• All trees should be full and well shaped, bark unmarked and have healthy root systems. Rootballed trees should be rootballed immediately when lifted at the nursery.
• The rootball should be suitable for the size of crown and the rootball should be flat bottomed.
• The rootball should be formed through regular transplanting; every 2-3 years minimum. The rootball should be wrapped in hessian and steel wire netting or other suitable and approved decomposable material. Trees should have a well defi ned, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown should be well shaped, balanced, of a form and habit natural for the species.
• All coniferous trees should be supplied rootballed or container grown, with a good fibrous root system. Trees should conform to specified height with well developed, uniform branching systems.

Planting Preparation

The proper preparation of the ground, the quality of plants and materials, and good planting techniques are essential for proper plant growth and establishment, ensuring minimal loss of plants and ease of maintenance. Where the project requires earthworks such as the formation of subsoil levels and topsoiling works it is important that it is done in the right way to avoid compaction, so that the best conditions are available for planting.
If topsoil is stockpiled on site it should be stored in mounds of maximum height 1.5m constructed so that they shall shed water and not puddle. Care should be taken that no trafficking of placed topsoil and no mixing of topsoil and subsoil take place. Any Topsoil stockpiles should be kept weed free.

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The areas for planting should be prepared prior to planting by ensuring that the subsoil is free draining and well cultivated and suitable for topsoiling. The aim of cultivation is to produce a well-drained and textured soil suitable for plant growth.
All areas to be planted or seeded should be cultivated to a minimum depth of 450mm or deeper if needed. Areas where obvious compaction has occurred should be ripped to allow adequate drainage.
Subsoil should be placed in layers not exceeding 150mm in depth.
To create the best growing environment for the planting in subsoil a combination of actions were applied to each planting pit. Any future planting works into subsoil should follow the following these principals:
• The pits should be dug prior to delivery of plants so that the tees are out of the ground for as short a time as possible.
• Planting to be into pits which are excavated 200mm deeper and 300mm greater in diameter or 1/3 greater depth and diameter than the root size (whichever is greater)
• The plant must be planted to the same level relative to top of soil as that grown in the nursery.
• The sides and bottom of the planting pits are to be thoroughly broken up by forking to alleviate compaction and to facilitate drainage.
• When planting on slopes ensure that an area made by a 0.3m diameter circle from the centre of each plant is level (horizontal) at the ground surface upon completion of backfilling.
• The backfill or soil placed back in around the plant roots will comprise of broken up (to a loose friable state) soil removed to form the planting pit. Large solid soil / clay clods larger than 50mm will be rejected and deficiencies made up with topsoil.
• Bare root stock to be dipped in root dip gel containing sufficient species of mycorrhizae for the tree or shrub being planted, water holding gel and bio-stimulant.
• 100mm bark mulch to be applied to surface for weed suppression and water retention

Planting Seasons

• Bare Root Deciduous Stock: November to Mid March
• Rootballed Deciduous Stock: November to Mid March
• Rootballed Evergreens and Conifers: late September or October or between March and early May
• Container Grown Stock: Any time of the year
• Grass Seeding: Spring or Autumn – when the soil is still warm and there is the promise of rain.

No planting should take place during periods of frost, drought, cold drying winds or when soil is water logged, or when the moisture of the soil exceeds field capacity (the maximum amount of water that soil can hold). Grass Seeding Grass seeding should only be carried out at the correct season from late summer to mid autumn and in suitably calm but moist weather conditions. If the opportunity to sow grass in autumn is not possible sow seed in mid Spring, but only if there is the

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promise of rain as it is critical to provide the seed with sufficient water to prevent it from shrivelling up and dying. Ideal growing conditions for grass seed to germinate is warm soil damp from rain. Seed should be cross sown in two directions at right angles to each other (half the seed to be used in each directions) to prevent striping. Replacements In September or each year, the Landscape Maintenance Team shall provide a list of all trees and plants that are dead, dying, vandalised or not growing in a vigorous condition. These are to be replaced during the November – December of the same year or for evergreens April/May of the following year. All plants shall be planted at the size as shown in the Planting Schedule. All replacement planting shall be in accordance with the Specification/Planting Schedule.

Control of dogs

It is recommended that dogs should be kept on a lead when walking the path network within the open spaces, except for in the designated dog park to prevent disturbance to wildlife. Signage should be erected to encourage public cooperation. This may help to reduce disturbance impacts to bird species.

Protection strategy and outline specification for the protection of trees and hedges

Mitigation measures

- Assessment of condition of trees and hedges
- Tree Protection Strategy
- Arboricultural Impact Assessment.

Specification designed to outline the procedures which should be undertaken to effectively retain trees free from negative construction impacts for the duration of the proposed construction. The tree protection details are in accordance with the recommendations made within B. S. 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations.

Key issues:

- Appointment of a Consulting Arborist (CA).
- Scheduling of tree and construction works.
- Establishment of on-site tree protection.
- Monitoring of tree protection and supervision of works in the vicinity of trees.
- Post construction re-assessment of retained trees.

Site arborist

A site arborist shall be appointed prior to the commencement of site construction works and retained for the duration of construction works and should be appointed to carry out a post-construction tree survey.

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Scheduling of works

- Pre-construction tree works will follow that outlined below
- Remedial works to trees being retained throughout the site as per the Tree Survey document.
- The erection of tree protection fencing

Preservation of Trees

Contractor obligations

Contractor – consulting arborist obligations

Protected Tree Zone.

The 'Protected Tree Zone' should under no circumstances be used for storage of materials, equipment, or site debris. No fires should be lit within the Protected Tree Zone, or equipment washed or cleaned.

Code of Practice for the preservation of trees.

Develop a Code of Practice. The Code of Practice will be brought to the attention of all site personnel including Contractors, Sub-Contractors and Engineering Specialists associated with the project.

All operations to be in accordance with B.S. 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations.

The Contractor should purchase and make available on site a copy of the above.

The Site Arborist will:

- Supervise all tree works and assess on-going tree protection.
- Liaise with the relevant authorities during the project.
- Constantly monitor the project with regard to tree health to ensure that no damage is caused to the subject trees during the operational works.
- Report any negligent damage to trees which will prejudice their health.
- Monitor works carried out by the Arboricultural Contractor and Main Contractor within the 'Protected Tree Zone'.

Arboricultural Contractor will:

- Submit a full method statement containing machinery to be used, removal of wood etc to the CA.
- Carry out works to the most up to date arboricultural practices available e.g. BS 3998. 2010 Recommendations for tree work (as amended).

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- Undertake work only with suitably qualified operatives in constant consultation with the Site Arborist.
- Trees identified for removal will be section felled in wooded areas so as not to damage remaining trees.

Main Contractor will:

- Undertake all work in accordance with this specification.
- Ensure that all personnel, operatives, sub contractors etc. are aware of this specification and operate accordingly
- Notify the Site Arborist of any potential conflicts that may affect the health, vigour and viability of trees.

Post Construction

A post construction tree survey report on the condition of retained trees should be carried out with recommendations provided for remedial work where necessary.

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