

CUNNANE STRATTON REYNOLDS
LAND PLANNING & DESIGN

CASTLELAKE SHD 18.3HA SITE,
CARRIGTWOHILL,
CO. CORK

LANDSCAPE DESIGN RATIONALE REPORT

Job no. 21642

10th June 2022
RevC

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1.0 CONTEXT

1.2 Existing Landscape Features

Existing Vegetation & Landscape Features



1.0 CONTEXT

1.3 Landscape Planning Context

The proposed site is situated in the Cork County Council jurisdiction. The legislative context for development is set out in the Cork County Development Plan (Cork CDP) 2022-2028.

The planning related landscape policies and objectives that relate to the proposed site are listed as follows:

Current development plan Open Space Requirement

The development plan require there to be 12-18% of a site area to be allocated for open spaces, which can be dropped to 10% if the quality is particularly high.

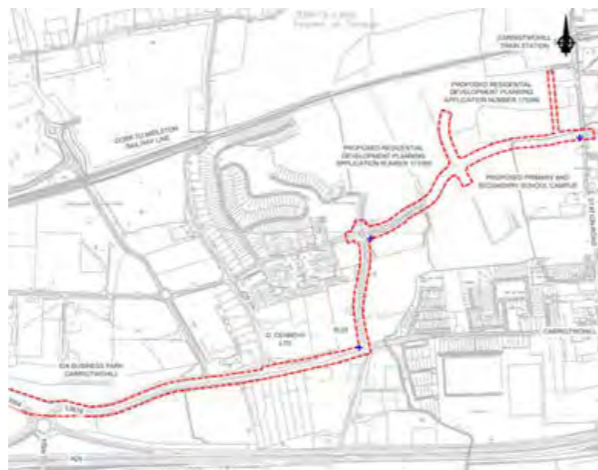
Open Space Recreation and Amenity Policies

For schemes of 100 units or more, greater provision for on-site recreational facilities to cater for the needs of the development including play areas for young children and facilities for older age groups will be require. The size and number of such facilities shall be determined by the Planning Authority by reference to the scale of the development, house mix, location, site characteristics, opportunities to link with other recreational facilities, etc. Policies outlined look to include the following within open spaces:

- Neighbourhood/Local Play Areas
- District Play Areas/ Ball Courts/ Multi Use Games Areas (MUGAs)
- Recreational Walks/ Jogging Routes
- Alternative facilities, other than those outlined, can be considered for substitution for the items listed. The acceptability or otherwise of substitute facilities shall be at the discretion of the Planning Authority.

Provision of facilities:

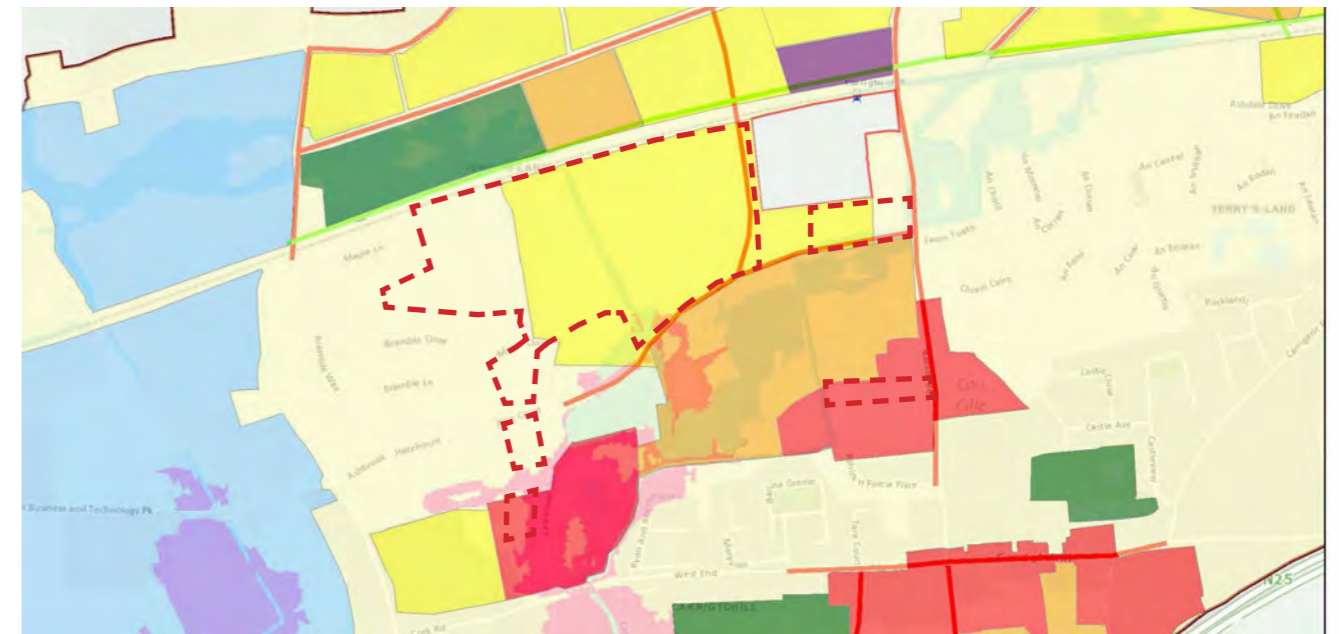
- Open Spaces shall comply with the Specification Document provided as part of the current Recreation and Amenity Policy.
- Play areas should be sited where they will be overlooked, safe, connected and contribute to the amenities of the development, with sufficient traffic calming where play areas are close to roads.
- Recreational walking/jogging routes to be designed for universal appeal for all age. The should be integrated into the design and be of sufficient length to provide a usable route or enhance connectivity to adjoining residential areas and nearby recreational infrastructure.
- Ball courts and MUGAs provided on larger schemes should be located at a sufficient distance from houses to avoid nuisance but still to be overlooked.
- Recreational facilities shall be integrated both functionally and aesthetically into the overall layout of the development and open space and shall be operational before the housing becomes occupied. The appropriate use of trees, planting and other natural features can add to play areas providing a welcome space for children and carers.



Greenway Pedestrian and Cycle Route from Bury's Bridge, Kilcoolishal to Carrigtwohill via Glounthaune

The following is an outline of the general landscape related policies and objectives:

- Incorporated into the design the protection, management and enhancement of the existing green and blue infrastructure.
- Provide a green and blue infrastructure plan, illustrating how green/blue infrastructure has been incorporated into the proposed design and how they contribute to the wider green/blue infrastructure of the surrounding area. This Plan should identify environmental assets and include proposals which protect, manage and develop green infrastructure resources in a sustainable manner.
- Encourage the retention and integration of existing trees, hedgerows and other features of high natural value.
- Protect trees that are subject to Tree Protection Orders.
- Encourage the provision of trees for urban shading and cooling in urban environments and public realm spaces.
- Encourage the use of native trees/ planting species, and pollinator friendly species.
- Incorporate mitigation measures for wildlife habitats.
- Create pleasant routes for walkers and cyclists linking the development with the railway station, town centre, schools, other open spaces and other principal areas of the town.
- Pedestrian & cyclist routes to comply with the latest DMURS standards
- Incorporate the SuDS strategy into the open spaces and landscaping design.
- Careful consideration shall be given to create good connectivity with the town and neighbourhood centres.
- Developments close to the train station to include for high density residential, small scale retails and community uses.



MD LAP 2017, Cork CPD 2022-2028. (Proposed site outlined in red dashed line).

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<ul style="list-style-type: none"> □ Municipal Districts (Effective 31st May 2019) □ Land Use Zonings ■ Business ■ Community ■ Industry ■ Open Space 	<ul style="list-style-type: none"> ■ Residential □ Special Policy Area ■ Town Centre ■ Existing Built Up Areas — Roads And Walkways — ROAD 	<ul style="list-style-type: none"> — WALK ■ Flood Zone A ■ Flood Zone B □ Development Boundary
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2.0 LANDSCAPE DESIGN CONCEPT

2.1 Aims and Objectives

The landscape design aims to:

- Deliver a high quality, attractive and suitable landscape for all users.
- Integrate a strong and fitting landscape and housing design within the existing urban framework.
- Promote a permeable and legible landscape and streetscape.
- Improve site connectivity with town facilities and focal points.
- Create a green infrastructure plan that connects into the green infrastructure of the wider area. Ensure good circulation for both pedestrian and cyclists.
- Create a strong sense of place for people to identify with.
- Promote and integrate Protected Views and Aspects.
- Develop a hierarchy of Public Open Space by integrating a variety of good active and passive recreation.
- Create a secure environment with safe and well overlooked areas.
- Integrate a variety of active and passive play and recreational areas for all ages.
- Incorporate and protect existing natural features into the residential scheme.
- Plant strong network of trees and vegetation, using as much native species as is possible.
- Provide for biodiversity corridors and wild-life habitat.
- Integrate functional and attractive SuDs features into the scheme.
- Create a landscape design that further establish a rural feel for a rural, satellite town.

2.2 Scheme Description

The proposed development consists of 716 unit development on 18.3ha site, of which 16.6ha would be considered delopable lands. Units consist of 2-3 storey houses and duplex, and 7 no. 4-5 storey apartment buildings. The proposed development is the latest stage in an overall masterplan for the Castlelake district of Carrigtwohill town. The residential and commercial areas currently constructed, sit to the west and south of the proposed development. The proposed development is split up into 7 zones, fitting in and around the existing built development and the road infrastructure currently being built.

The proposed landscape areas consist of a series of open spaces including 2 large neighbourhood parks; 10 local parks, a 'Village Green/ Plaza' area; communal amenity space for the apartments;



Masterplan, previous application(2017)



Proposed Masterplan (2022)



2.0 LANDSCAPE DESIGN CONCEPT

2.2 Design Description

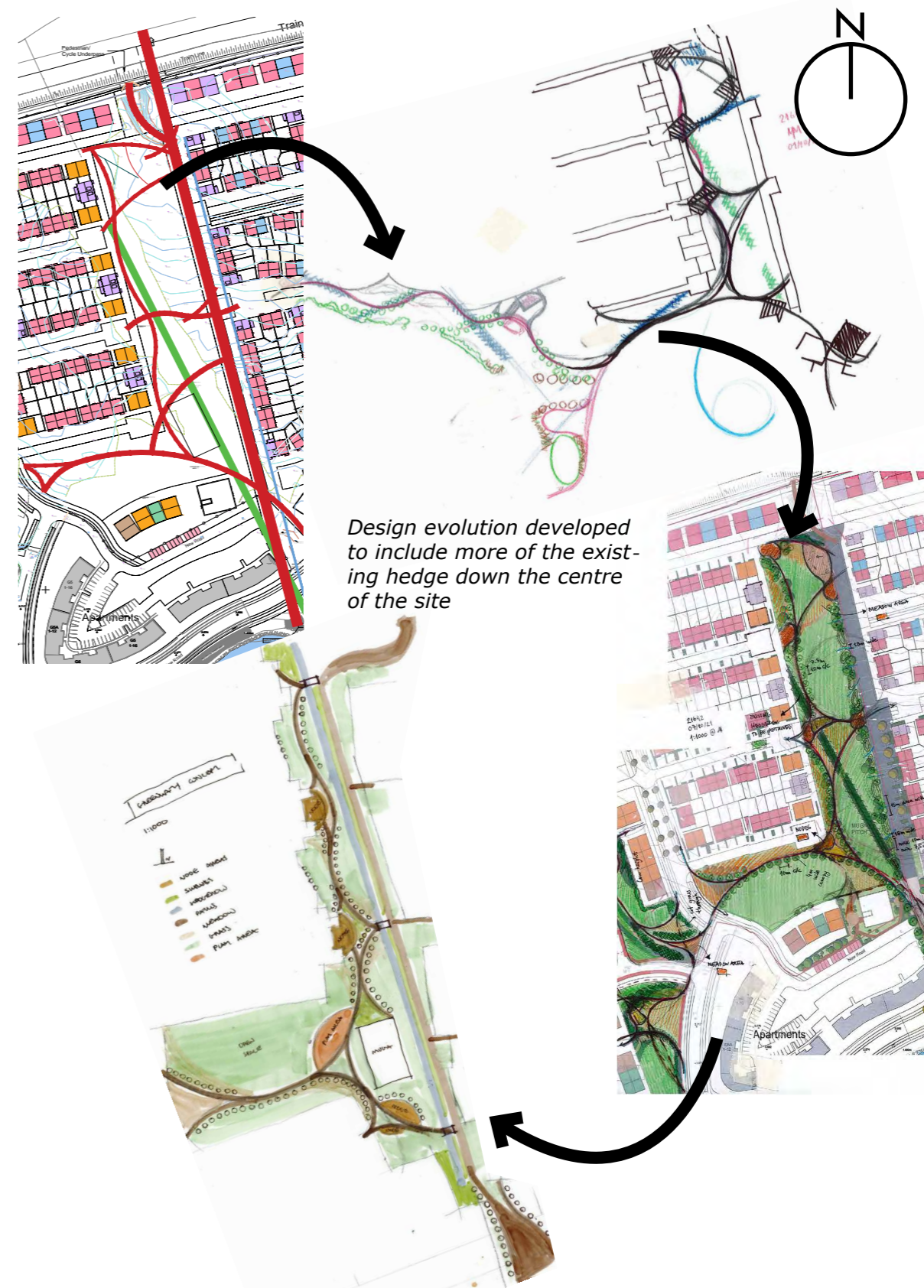
The proposed landscape design draws upon the rural context of this satellite town of Cork city, with people looking to have a more rural lifestyle, whilst still being within a short commute of the city centre. The proposed design concept looks to create a naturalistic landscape style. Through the use of geometry, a strong structural form will be created within the design to give a sense of place and belonging and connect with the built forms, but with a softness through the use of curved geometry to strengthen the rural connection and connect with the naturalistic planting.

Soft and meandering lines are carefully positioned and shaped to create a clear overall identity. These flowing curves have been creatively positioned to provide opportunities for movement, activity and rest, resulting in a diverse public realm and series of highly legible amenity open spaces each with their own character. This approach encourages people to engage in the landscape and public realm while they make the most of the frequent opportunities to use it.

The design will create a series of spaces and network of paths which will be diverse in textural and spatial qualities. Within the open spaces there will be areas for informal play, passive/active recreation and passive leisure, enhanced by the inclusion of features and elements such as seating, paths, walls, trees, woodlands, land forms, bulb planting and wildflowers meadow grass.

Open spaces will incorporate existing natural features, such as trees, hedgerows and scrub and grassed areas. Where ever possible, proposed native trees and plants will be used. Non-native species will be used where it is know that they enhance local biodiversity or where no native species would be considered more practical for the location, such as with street trees. Material finishes as well as the style of landscaping will tie in with the vernacular of the town and the proposed finishes being currently developed for the Carrigtwohill Public Realm Regeneration Plan.

The principles of encompassing all age groups, universal accessibility and sustainable development will be applied to ensure an inclusive, comprehensive and environmentally responsible design solution.



As part of the final concept the central ditch and hedge are predominantly retained. They will form a key feature of the neighbourhood park while enhancing the site's existing green and blue infrastructure.

2.0 LANDSCAPE DESIGN CONCEPT

2.3 Urban Design Strategy & Visual Connection

Key visual connection points have been identified to better relate the site with its environs and community focal spaces.



Attractive views of the Hills north of the site, with the band of vegetation along the railway line in the mid view.



Long distant views looking south over the River Lee Valley from the top of the site.

Other developments within the local area have been taken into consideration to help integrate the proposed development into the wider environs of Carrigtwohill. This includes connecting in with Carrigtwohill Urban Regeneration Development Fund (URDF) initiative which seeks to improve the public realm of Carrigtwohill and provide better connectivity with residential developments. The Carrigtwohill URDF proposals include upgrading the full length of Station Road of which part of the scheme directly borders the site's eastern ends.



Carrigtwohill URDF proposed plans (sheet 5 and 6) and photo montage (viewpoint 2 looking northwards) of proposal along Station Road ©Cork County Council 2022

Urban Strategy & Views

- Existing Civic Spaces
- Proposed Civic Spaces (off-site)
- Proposed Civic Spaces (on-site)
- Railway
- Visual Connection Points To Emphasize
- Open Spaces
- Urban Street Regeneration








2.4 Circulation & Wayfinding Strategy

Circulation:

Main connection routes have been identified to ensure the site is permeable within the site and with its surroundings. Vital links for pedestrian and cycling are illustrated on the diagram below. These routes guarantee that the development is accessible in its entirety, providing inclusivity to the all users with the surrounding areas.

The development has been designed so to directly link into the shared cycle and foot paths along the Bury's Bridge to Carrigtwohill Greenway (under construction) and proposed Carrigtwohill to Middletown Inter Urban Cycleway. This will provide residents and visitors within the development easy access to the railway station and dedicated cycle/footpaths across the wider area encouraging less reliance on private car transport and promoting active recreational activity.

Circulation Strategy

-  Rail Line
-  Pedestrian Links
-  Cycle and Pedestrian Links
-  Open Spaces
-  Attenuation Pond



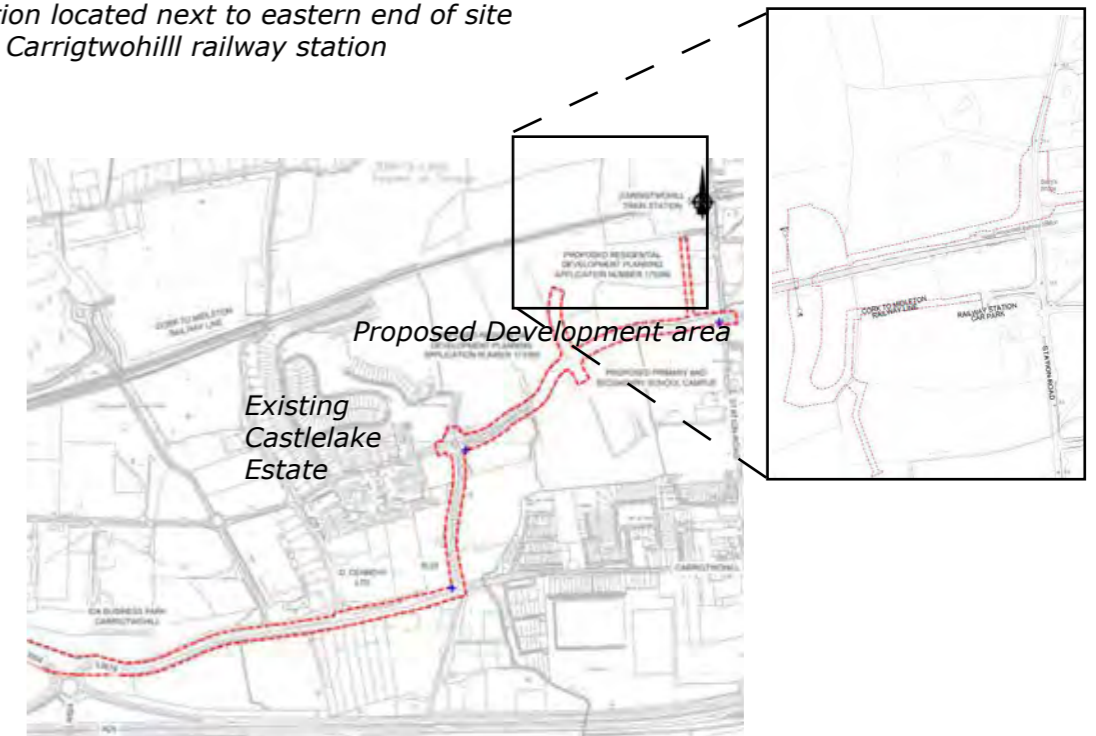
Wayfinding

The open spaces across the proposed development have been designed so that they each have they own unique distinctive character through the use of varying planting, hard surfaces and finishes. These elements will be distinguishable not only visually but also through touch, smell and sound for less able visual users.

Pathways have been designed for all abilities to provide easy orientation around the proposed development. Signage can be provided where necessary to further aid users making wayfinding decisions along these routes and open spaces.



Carrigtwohill to Middleton Inter-Urban Cycle Route (sheet 2 ©Cork Co Co 2022) section located next to eastern end of site and Carrigtwohill railway station








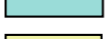
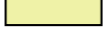



Greenway Pedestrian and Cycle Route from Bury's Bridge to Carrigtwohill

2.5 Existing and Proposed Vegetation

Open Space

Water Course

-  Existing Scrub
-  Existing Hedgerow
-  Existing Trees
-  Existing Public Open Space
-  Existing Ditch
-  Proposed Public Open Space
-  Proposed Public Local Park
-  Proposed Semi-Private Communal Space
-  Proposed Water Course
-  Street Tree Planting



Existing landscape features overlaid on the proposed plan



Existing landscape features retained within the proposed



Proposed landscape features

2.0 LANDSCAPE DESIGN CONCEPT

2.6 Green Infrastructure Plan

The green infrastructure plan for this development will draw upon that set out in the Country Development Plan.

- It will utilise the network of paths, roads and open spaces to create landscape corridors;
- These corridors can then be appreciated as green spaces that are attractive to walk or cycle along for functional or pleasurable purposes; and
- To act as green corridors for wildlife to travel along, helping to connect and improve biodiversity within the area.
- The corridors have been located to link up all open spaces within the proposed development and connect to the wider green and blue infrastructure network across the adjoining established development, town and it's wider rural hinterland.
- The proposals will seek to retain and enhance existing natural features across the site, wherever possible, including an established hedgerow and ditch through the central neighbourhood park, stream along the proposed development's eastern edge and various existing trees.
- Habitat creation and tree retention measures will be incorporated into the design through the recommendations provided by the ecologist and arborist.
- Planting proposals will seek to enhance the existing retained vegetation within the site and on boundaries, and will include new public open spaces, private gardens and roof garden. This will include the planting of native trees, hedgerows, woodlands/copses, thickets of shrubs, wildflower meadow grass and bulbs. Some non-invasive, non-native planting will also be provided.
- All planting will be selected that is supportive of the All Ireland and Pollinator Plan.
- The proposed species rich grassland and native wildflower mixes will create swards of diverse meadow grassland which will support a rich diversity of invertebrates, birds and mammals species.
- Sustainable Urban Systems (SUDS) will be provided across the proposed development to control and manage surface overflow. These will be designed so incorporated into the landscape and provide biodiversity benefits.
- High quality active and passive recreational spaces will be provided, ranging in scale from small pocket parks to large neighbourhood park, with strong access links to these spaces from the proposed development and the wider community.



Woodstock Stream to site's eastern end



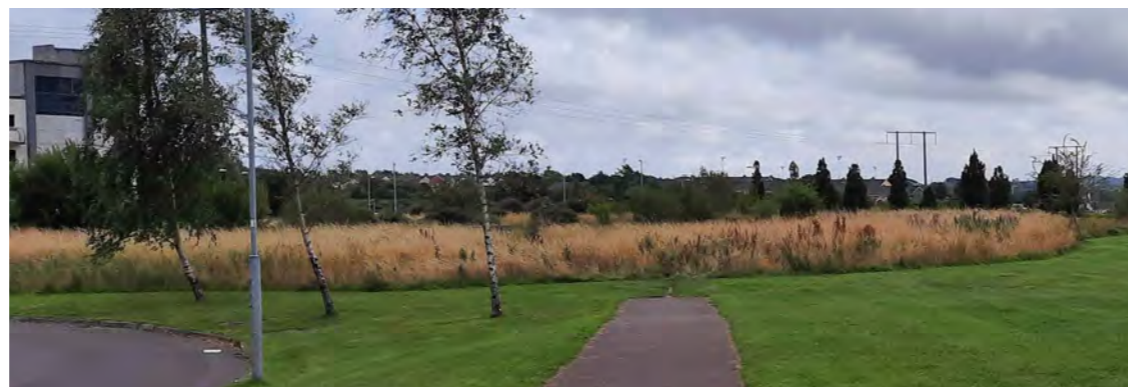
Heavily vegetated ditch along central part of site



Existing grasses and scrub within the northwestern part of site



Existing wetland pond with aquatic and avian wildlife



Existing native meadow grass



Existing woodland on adjoining park with mixed native and non-native planting

Green Infrastructure Diagram

- Existing Trees To Be Retained
- Existing Hedge To Be Retained
- Existing Hedgerow To Be Removed
- Proposed Principal Network Of Green Corridors
- Proposed Secondary Network Of Green Streets
- Proposed Open Space
- Existing Open Space (off site)
- Existing Overhead Power Line
- Existing Water Course/ Ditch To Be Retained
- Existing Ditches To Be Retained



2.7 Landscape Design and Public Realm Strategy

-  Pedestrian and Cycle Links
-  Homezone Area
-  Pedestrian Nodes
-  Main Playground Area (Active Recreation Area)
-  Playground Area (Natural Play Areas, Kick-About Area)
-  Existing Public Open Space
-  Proposed Public Open Space
-  Proposed Local Public Space
-  Proposed Private Communal Space
-  Existing Trees To Be Retained



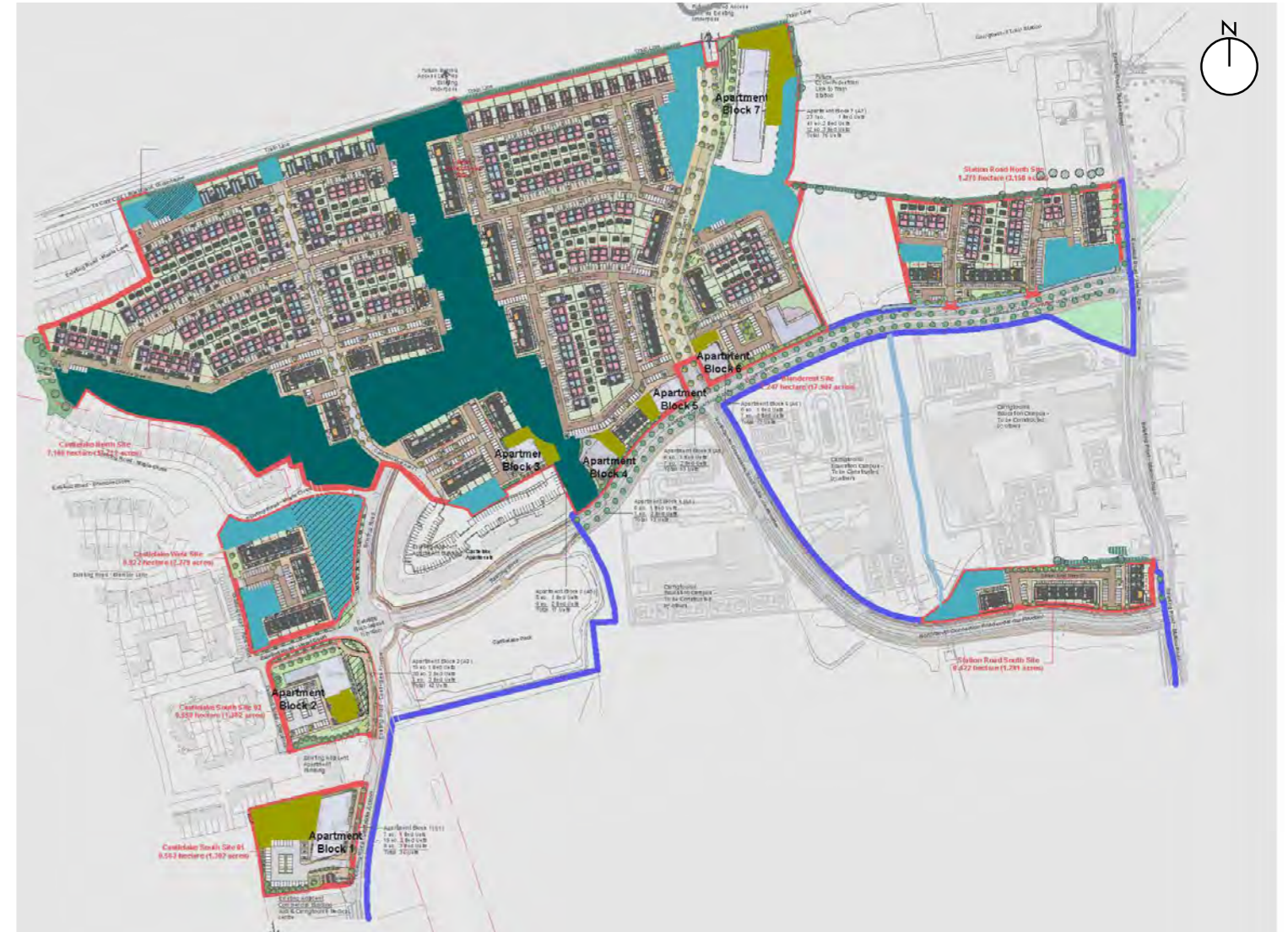
3.1 Landscape Masterplan



See Drawing 21642-2-100 for details

3.3 Open Space Quantum

Apartment and People Quantities (New apartment guidelines for apt qtys and CDP for hsing qtys)						
	1 BED	2 BED	3 BED	hses units	Total	
no. apts	71	110	27		208	no.
no. houses & duplex units				508	508	no.
Total number of units	71	110	27	508	716	no.
Public Open Space						
Developable Site Area					166,033	m2
Minimum public open space required to be 12% of developable site					19,924	m2
Optimum public open space required to be 18% of developable site					29,886	m2
Split as follows:						
Neighbourhood Park					18,336	m2
Neighbourhood Park under pylons					7,947	m2
Local Park					12,323	m2
Local Park under pylons					3,482	m2
Total Open Space provided (excluding pylon area)					30,659	m2
Total Open Space provided (including landscaped spaces under pylons)					42,088	m2
Apartment Communal Space (Design Standards for New Apartments, 2020)						
Area in m2/apt. size	6	8	10	total required	total provided	m2
Block 1	8	18	8	272	1,541.7	m2
Block 2	15	20	7	320	465.0	m2
Block 3	8	9		120	418.2	m2
block 4	6	7		92	236.8	m2
block 5	6	7		92	208.2	m2
Block 6	6	7		92	186.5	m2
Block 7	23	41	12	586	1,439.1	m2
Communal open space required total area	72	109	27	1,574	4,495.5	m2
Playground Requirements						
	no. units					
Neighbourhood park play areas						
7no required combined into 1 large 500m2 space						1 no
30-85m2 incidental play areas						4 no
Local park play areas						
140m2 active play area						1 no
30-85m2 incidental play areas						8 no.
Communal Apts play areas within the overall m2 of space						
Block 1	34					85 m2
Block 2	42					85 m2
Block 3 (split into 3 small spaces)	17					85 m2
Block 4	13					85 m2
Block 5	13					85 m2
Block 6	13					85 m2
Block 7	76					100 m2



The above table and figure provides a break down of the key open spaces across the proposed development. Cork County Council 'Interim Recreational and Amenity Policy', requires a minimum of 12-18% of a site to be open space. The proposed development achieved public open space of approx. 3.06Ha / 18.5% of the site's usable area 16.6Ha lands (excluding the pylon), and 4.2Ha / 25.3% when including the land under the pylons wayleave.

Houses have amenity space in the form of private back gardens and in the quantum of public open space. Duplex apartments have theirs in the form of private terraces, semi-private communal spaces and within the quantum of the public open spaces. Apartments have theirs in the form of private terraces, semi-private communal spaces and within the quantum of the public open spaces.

The design of the open spaces across the proposed development's has taken account of the interim guidance provisions requiring a range of recreational activities for different ages groups and abilities across various sizes of open spaces which are well connected and safe to use.

3.0 PROPOSED LANDSCAPE DESIGN

3.4 OPEN SPACE PARKS

3.4.1 Neighbourhood Park



The Neighbourhood Park will provide:

- A large park which is a key characteristics of the proposed development whilst providing a new public park within the town of Carrigtwohill.
- A naturalistic design which develops upon the park's existing green and blue infrastructure. Diverse planting of native trees, scrub and wildflower meadows to enhance existing hedgerows and scrub. A linear blue/ green corridor consisting of the enhanced existing ditch and stream which will be incorporated into the proposed site's SUDs scheme. All greatly benefiting the natural environment and the park users.
- Social interaction of residences and visitors.
- Wide range of passive and active recreation activities for various age groups and abilities.
- A space that is safe and well connected with passive surveillance from surrounding houses.
- Creation of pocket parks within the neighbourhood park close to cul-de-sacs and houses allows each street to have a sense of ownership of a localised open space.

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Open spaces are a key component of public realm. The large scale and wide-range of uses, defines the scope and community value of a Neighbourhood Park. This park will be 1.73ha in size and accessible to all the main civic spaces located within a 1km radius.

Diverse in both ecological and social importance, this multi-functional public open space will serve as a public vantage point in Carrigtwohill. The Neighbourhood Park will provide passive and active recreational space such as MUGAs, kick-about areas, as well as, large and small play areas.

Footpaths and cycleways connect each activity space and links to Local parks. These can be used for a wide variety of active and passive recreational uses, including walking, cycling, running, jogging, dog walking and roller-blading. All paths will be designed to universal accessibility standards.

Natural features are to be retained and enhanced with new native trees, shrub and wildflower meadow planting and incorporating the existing stream into the proposed development's main SUDs scheme.

Design of this park and smaller open spaces through 'safety by design' allows passive surveillance of the space from within the park and neighbouring properties. The existing steep bank down to the ditch has been shaped back (max.1:4 slope) on the west side, where there is little or no existing hedge, to ensure that there is save egress out of the area, the ditch can be passively surveyed from paths and dwellings, and to facilitate maintenance access.

The Village Green has been deliberately placed to function as a the neighbourhood park entrance, and central point in the residential development. It will function as a civic space, to establish a focal area within the Castlelake district, enabling and encourages social gathering. Its strategic location, scale and materials choice renders this areas importance and purpose. The feature paving and planting scheme have been carefully selected to reinforce this.



3.0 PROPOSED LANDSCAPE DESIGN

Neighbourhood Park Artist's Impression



Neighbourhood Park Reference Images



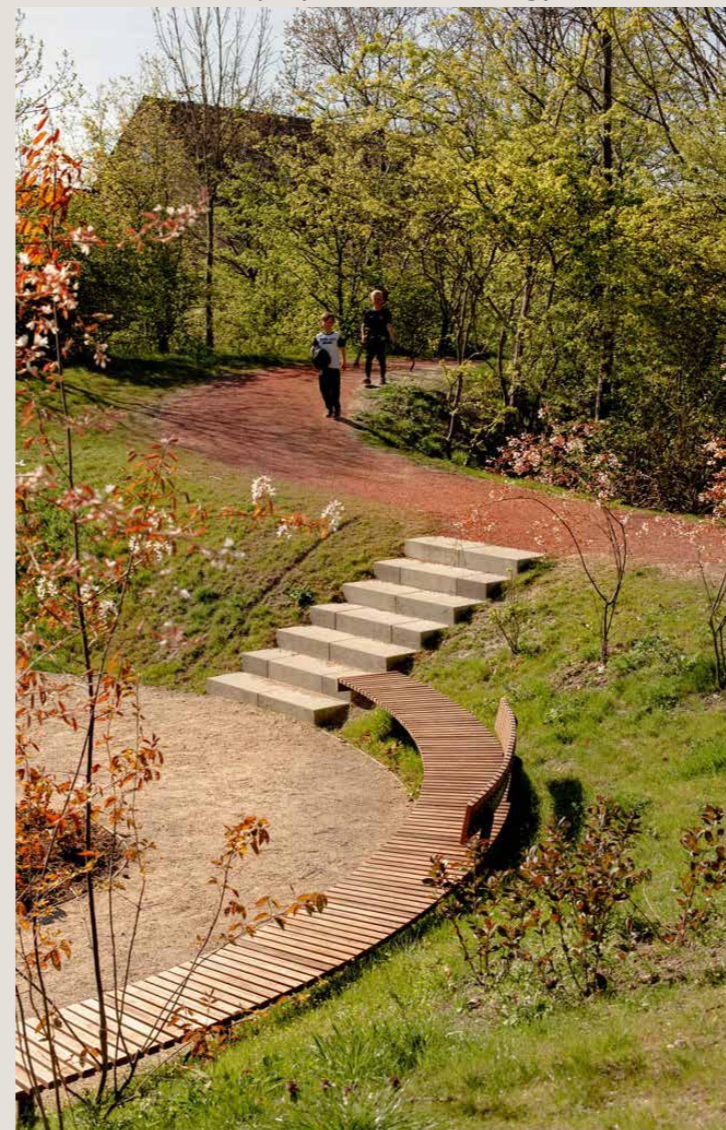
Curved laid routes through grassed areas give an informal feel to the public open space. Tree planting with clear stems helps visitors and users of the park to see through the planted areas.



Mowed paths through wildflower meadow grass provide informal connection routes. Seasonal dynamics will be introduced in this proposed link strategy.



Medium height shrubs create an intimate route while complying with overhead wire wayleave requirements of a maximum 4m height.



Node areas provide relaxing areas throughout the public open space.



Wildflower, meadow grassed areas and native planting play an important role in improving biodiversity.



Incidental play areas featuring natural play equipment can be found along the main routes through the parks.

3.0 PROPOSED LANDSCAPE DESIGN

CASTLELAKE SHD 18.3HA SITE

3.4.2 Local Parks

Typical examples of Local Parks located across the proposed development



Blandcrest Local Park 01



Artists Impression of Station Road North Local Park 02



The local parks are located throughout the development so that there is access within no more than 3 minutes to an open spaces.

These open spaces park will provide:

- Spaces that are landscaped to establish distinct character to each residential area and safe, but with a general theme to the style of planting for the development.
- Provide universal access.
- Provide for social interaction between residents and visitors.
- Provide incidental play opportunities for various age groups.
- Provide amenity space for duplexes.



Castlelake West Local Park 01



Blandcrest Local Park 02



Station Road North Local Park 01 & 02

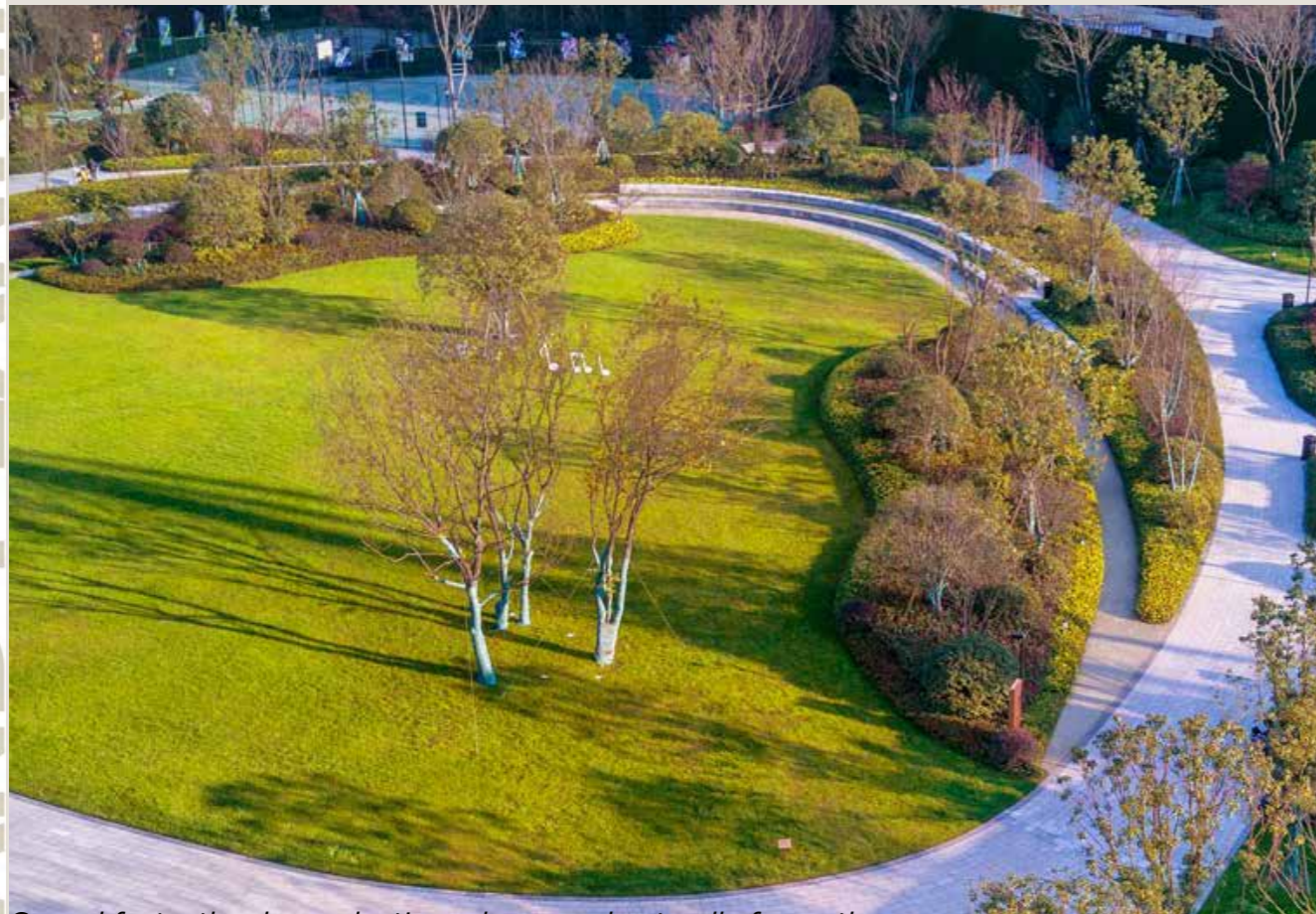
Local Park Reference Images



Wildflower and bulb planting provide seasonal change and a natural context along the paths.



Natural elements can be used both as furniture and informal play.



Curved footpaths shape planting scheme and naturally frame the open space.



Proposed planting provides enough segregation from the surrounding roads.



Small rolling hills will provide natural play elements.

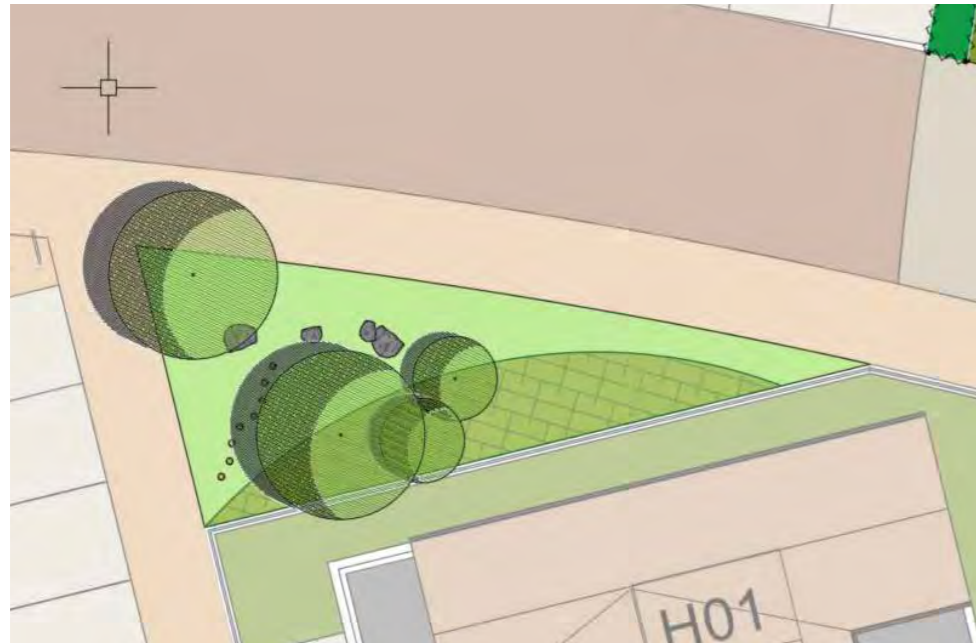


Accessible routes will promote site wide connectivity of all parks.

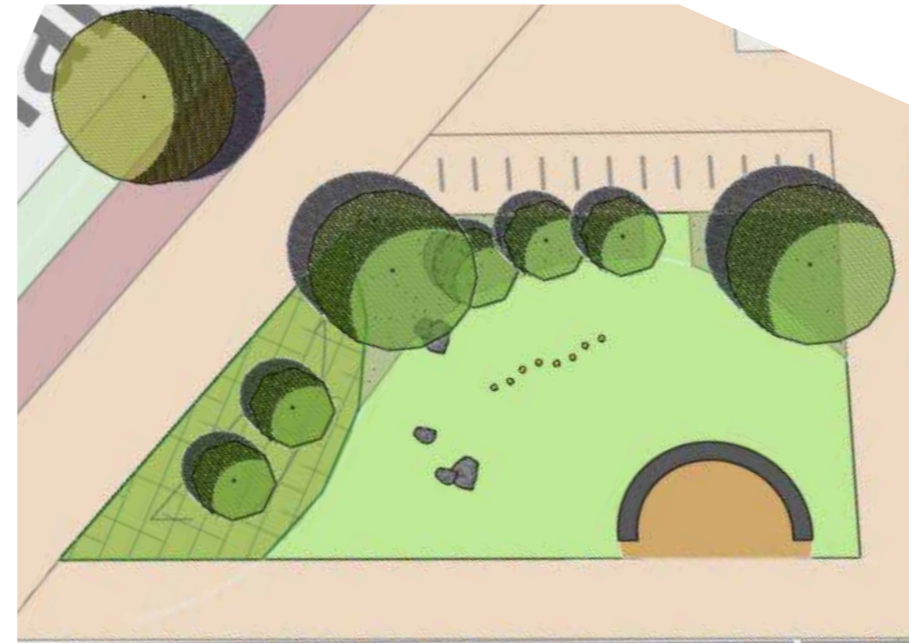
3.0 PROPOSED LANDSCAPE DESIGN

3.4.3 Pocket Parks

Typical examples of small pocket parks across the proposed development



Blandcrest Street 02 Pocket park with trees, shrubs and incidental play elements such as rocks and logs.



Between Blandcrest Street 01 & Main Road Pocket Park 02



The pocket parks will provide small intimate spaces directly adjoining housing areas and make good use of what would otherwise be considered left over land.

These small amenity spaces will provide:

- An attractive space to view.
- Area for local community to gather.
- Strengthen the character of each areas.
- Provide play opportunities for passive recreation.



Between Blandcrest Street 01 & Main Road Pocket Park 01



Artist's Impression of a pocket park within the central Neighbourhood Park

Pocket Parks Reference Images



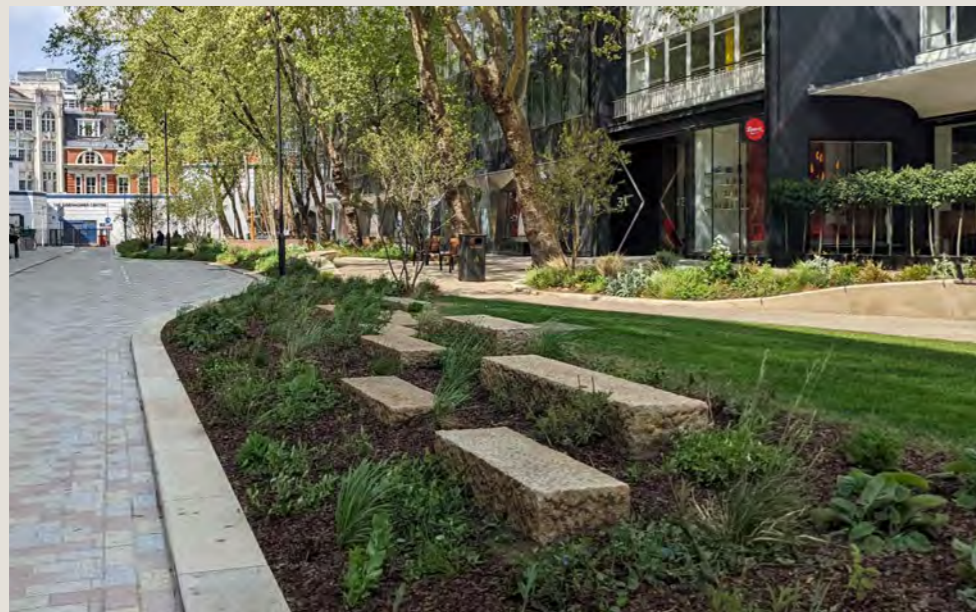
Small landscaped areas maximize year-round enjoyment by all residents.



Use of trees provide structure and create partially enclose intimate spaces for users.



Small natural play elements



Design provides an interface with adjoining street offer a good balance of passive surveillance and privacy.



Outdoor seating provide an informal gathering area.



Areas of seating next to play area allow supervised play

3.0 PROPOSED LANDSCAPE DESIGN

3.4.4 Communal Open Space - To the apartment blocks



The semi-private communal amenity space will provide informal recreation activity areas for common use of the apartment residents and their guests.

These private amenity spaces will provide:

- Spaces that are landscaped to feel homely and safe.
- Ensure universal access.
- A space to be appreciated from the inside as well as outside.
- Informal social activity areas that are orientated to avail of the sunny spots.
- Play opportunities for various age groups but predominantly the 0-6yr age group.
- Ensure the amenity space is adaptable to meet the changing and diverse needs of different occupiers.



Artist's Impression of Apartment Communal Open Space

Communal Open Space Reference Images



Well-landscaped areas to maximize year-round enjoyment by all residents.



Communal open space will be easy to maintain, with well defined boundaries.



The design of the edge interfaces to communal outdoor spaces should offer a good balance of passive surveillance and privacy.



Outdoor seating and activity areas will provide a pleasant outlook and visual amenity for all users.



Feature planting will be used to confer a relaxing environment whilst framing key activity areas.

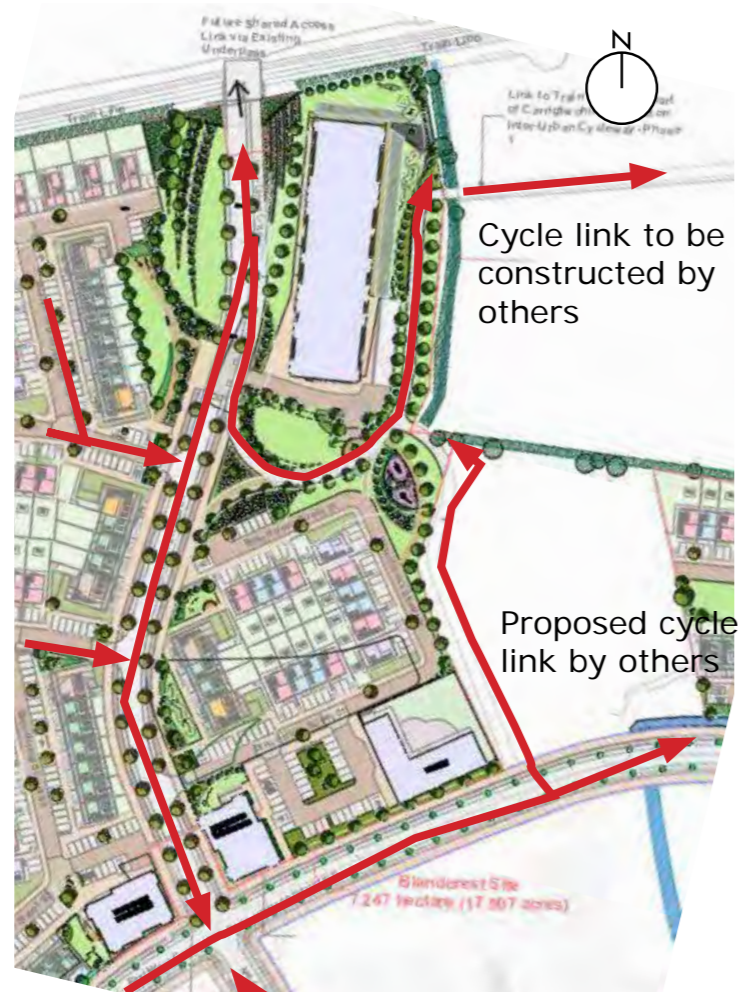


Reasonably level space suitable for active play as well as picnics and relaxing.

3.0 PROPOSED LANDSCAPE DESIGN

3.5 Footpath/ Cyclepath Strategy & Landscape Design

3.5.1 Cycle and Pedestrian link to Carrigtwohill Train Station



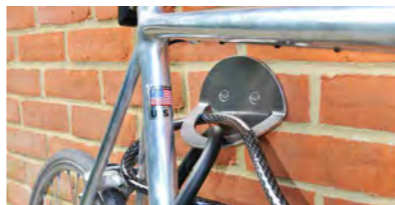
Cycle link to be constructed by others

Proposed cycle link by others

Cycle circulation through the proposed development's eastern end and neighbouring connections.



Sheffield stands in key areas such as the 'Village Green' and large playground.



Typical bike parking fixings against terrace houses.

An important aspect of the proposed development is its network of paths, roads and open spaces that provide good pedestrian and cyclist infrastructure for recreational and functional purposes, linking the development with the facilities within the town and connecting in with the green infrastructure of the wider area.

As part of this proposed development, Cork County Council have a granted planning for a cycle link through the development up to Station Road. This link connects in with the Bury's Bridge & Carrigtwohill - Middleton Inter Urban Phase 1 Cycleway. It will provide a direct shared pedestrian/cyclist link to the station from the northeast corner of the development, and the wider areas and into the city centre.

Bicycle Parking will be provided for all properties within the development and across the areas of open space. Providing secure spaces to park one's bike will encourage residents and visitors to actively engage in cycling as a healthy mode of transport when travelling through the proposed development and beyond.

The bike parking provision include:

- 1 external space for visitors attached to the front wall of all terrace houses.
- Parking provided to the rear garden space of each semi-detached and detached house.
- Parking within the enclosed rear garden space of all duplexes.

Breakdown of provisions for the apartments and visitor parking to the apartments, creche and on site parking are listed in the tables below.

Houses & Duplexes Bicycle Parking Requirements					
Bed	No of Units	No of required residential spaces	No of required visitor spaces		
1 Bed	82	1 per Unit	82	0.5 Per Unit	41
2 Bed	202	2 per Unit	404	0.5 Per Unit	101
3 Bed	199	3 per Unit	597	0.5 Per Unit	99.5
4 bed	25	4 per Unit	100	0.5 Per Unit	12.5
Total	508		1183		254

Apartments Bicycle Parking Requirements					
Bed	No of Units	No of required residential spaces	No of required visitor spaces		
1 Bed	72	1 per Unit	72	0.5 Per Unit	36
2 Bed	109	2 per Unit	218	0.5 Per Unit	54.5
3 Bed	27	3 per Unit	81	0.5 Per Unit	13.5
4 bed	0	4 per Unit	0	0.5 Per Unit	0
Total	208		371		104

OVERALL BICYCLE PARKING PROVISIONS		
Type	Required	Provided
Houses & Duplexes	2 Per Unit	Spaces in Private Areas
Secured Apartments Cycle Spaces	371	460
Allocated Apartments Visitor Cycle Spaces	104	176
Creche Cycle Spaces	-	22
On-Street Visitor Cycle Spaces	254	260
Total	729	918



Shared route for pedal cycles and pedestrians only.

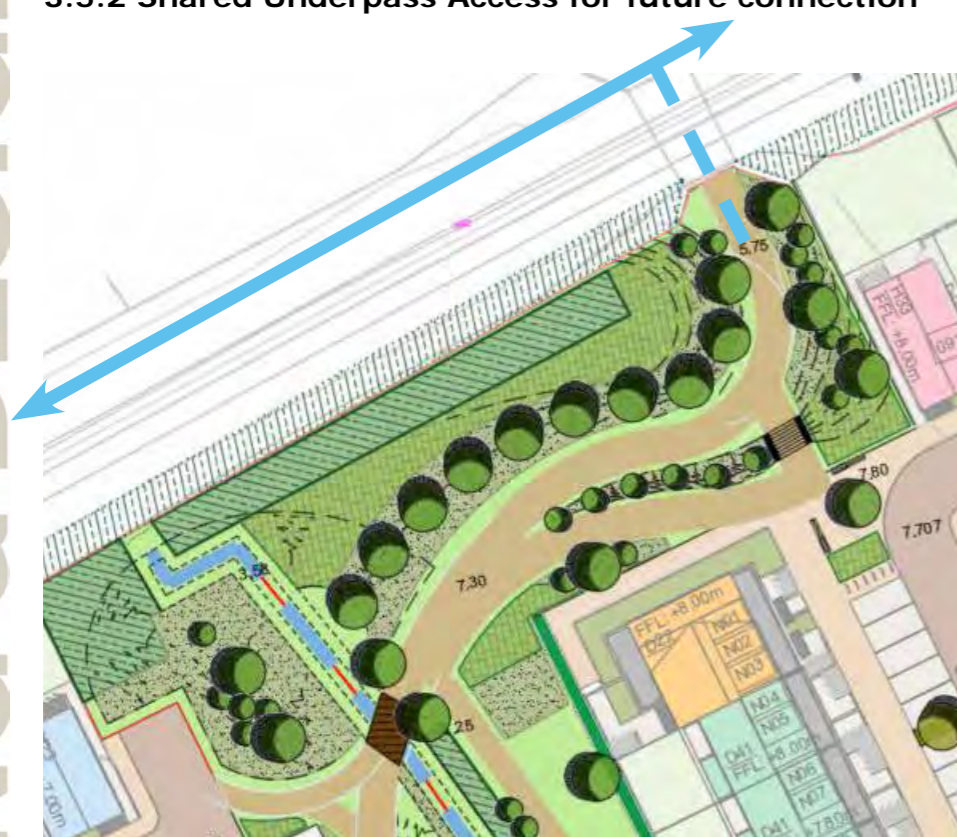


School link for students and parents alike.

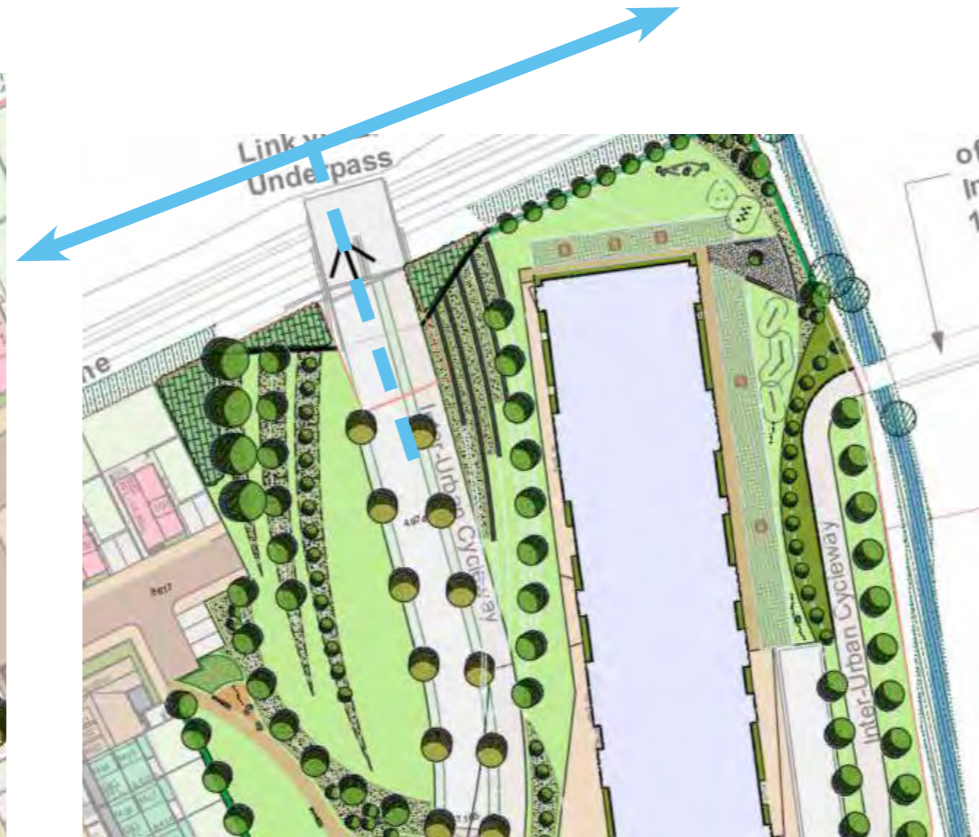
3.0 PROPOSED LANDSCAPE DESIGN

3.5.2 Shared Underpass Access for future connection

CASTLELAKE SHD 18.3HA SITE



Existing Underpass 1 next to northern end of Neighbourhood Park, with access reshaped to tie in with the proposed development.



Existing Underpass 2 along Blandcrest Main Road 1, connecting with the Inter-Urban Cycleway, (as approved by Cork County Council).



Future connection

Improving pedestrian and cycling connectivity on site will be key to link the residential development with its surroundings. Via railway underpasses, it will connect the proposed development with the future lands North of the railway line zoned for development.

The entrances to the underpasses will be attractively landscaped with open wide grasses terraces, banks and tree planting, to ensure the paths are open and wide and passively surveyed from adjoining properties.

These roots will also have the benefit of providing green corridors for wildlife, providing safe passage for animals under the railway line.



Planted embankment will frame Underpass access and allow for passive surveillance from adjacent units



Planting will guarantee a safe environment, encouraging people and cyclists to use this link and provide a green infrastructure corridor.



3.0 PROPOSED LANDSCAPE DESIGN

CASTLELAKE SHD 18.3HA SITE

3.6 Streetscapes

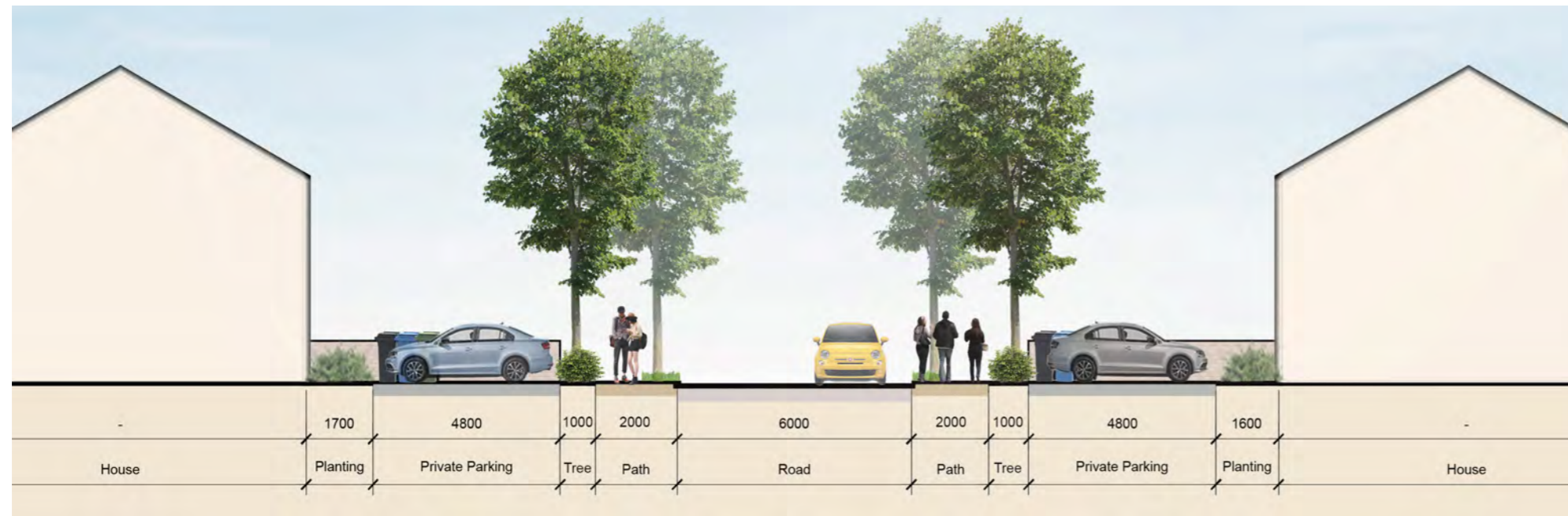
3.6.1 Streetscapes - Distribution Avenue



The main roads will be a central thoroughfare of the estate with roads leading off either side to the various housing.

Planting will to them has been selected to provide an avenue of Lime trees (*Tilia spp.*), which will create a distinct and pleasant tree lined character to these dominant roads, while clearly defining the separation between the public footpath and public road spaces.

The presence of the trees will aid in the slowing of traffic along the road and form a green corridor as part of the site's Green Infrastructure Strategy.



Artist's impression of the Distribution Avenue

3.0 PROPOSED LANDSCAPE DESIGN

CASTLELAKE SHD 18.3HA SITE

3.6.2 Streetscape - Homezone

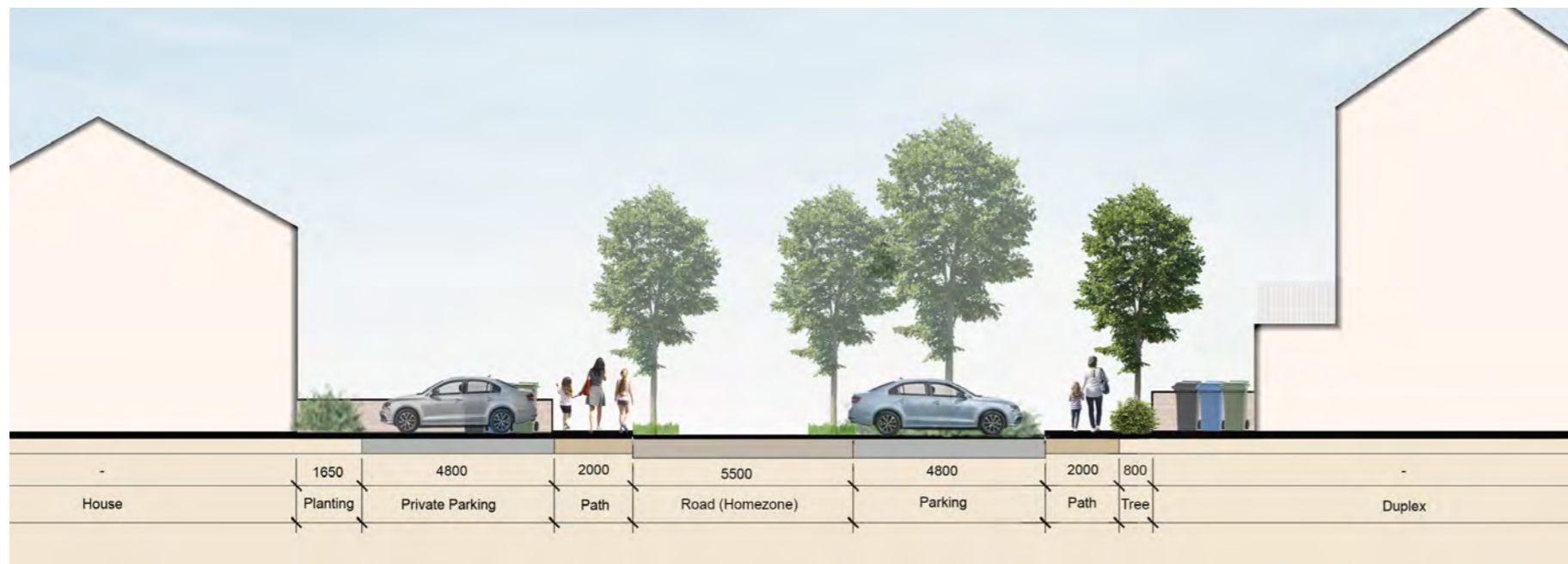


Home zones have been designed to encourage a high level of social interaction between residents.

Street trees have been added to lessen the impact of the proposed surface treatment. The presence of vegetation near circulation routes, particularly in chicanes, provides a separation between the public and private, aids in slowing down cars, improves the street aesthetics and provides a wildlife corridor. This improves the site's Green Infrastructure Strategy.

Benefits of a homezone:

- Added social interaction for children through greater informal adult supervision.
- The home zone will become an active area for children to meet and play with friends.
- Traffic calming measures will be carefully located to not cause nuisance to properties and compromise safety but to slow traffic down, without impeding its flow.



3.0 PROPOSED LANDSCAPE DESIGN

CASTLELAKE SHD 18.3HA SITE

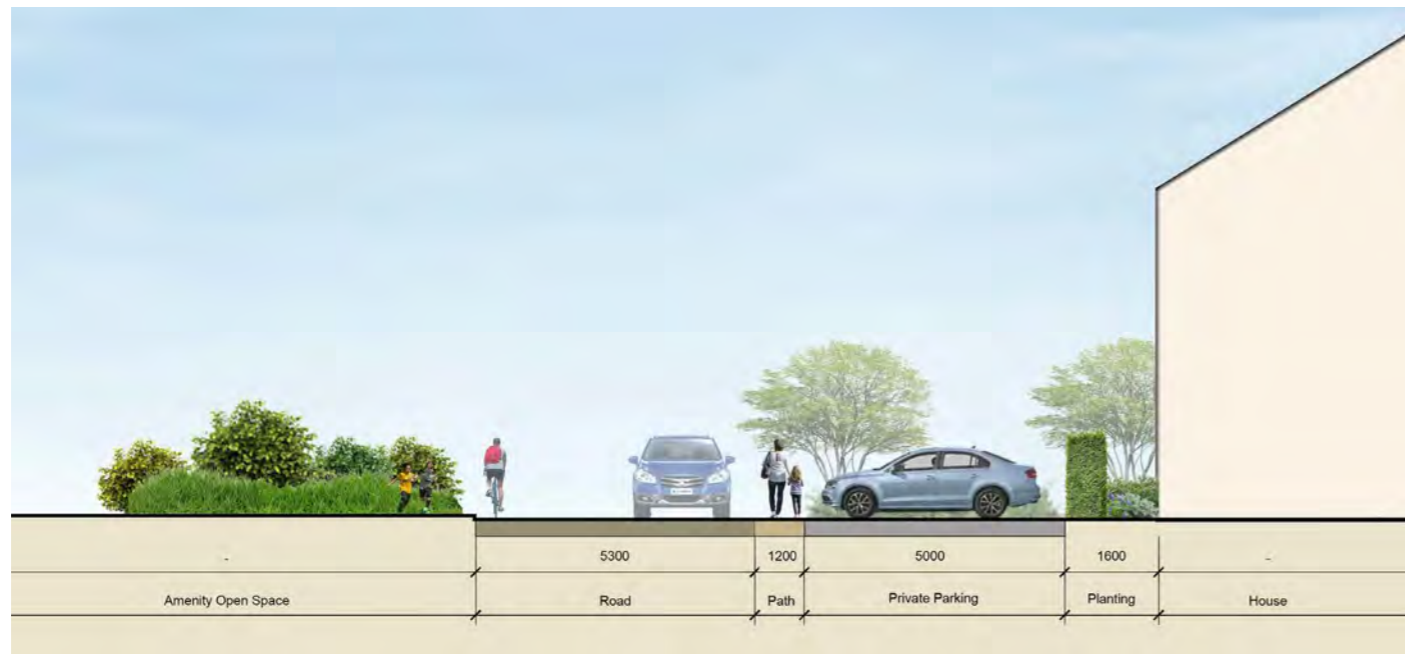
3.6.3 Streetscape - Shared Surface (East of Neighborhood Park)



The shared surface on the north side of the west Neighbourhood Park, Castlelake Street 09, has been designed to soften and allow for a less formal approach between road, parking and pedestrian/cycling route, but with clear delineation of each surface and its use through the application of different material finishes.

Private parking bays will be permeable surfaces linking with the SuDS strategy. The permeable parking and paving beside trees will be designed to incorporate suitable substrate to facilitate growing trees, and to absorb surface water run off.

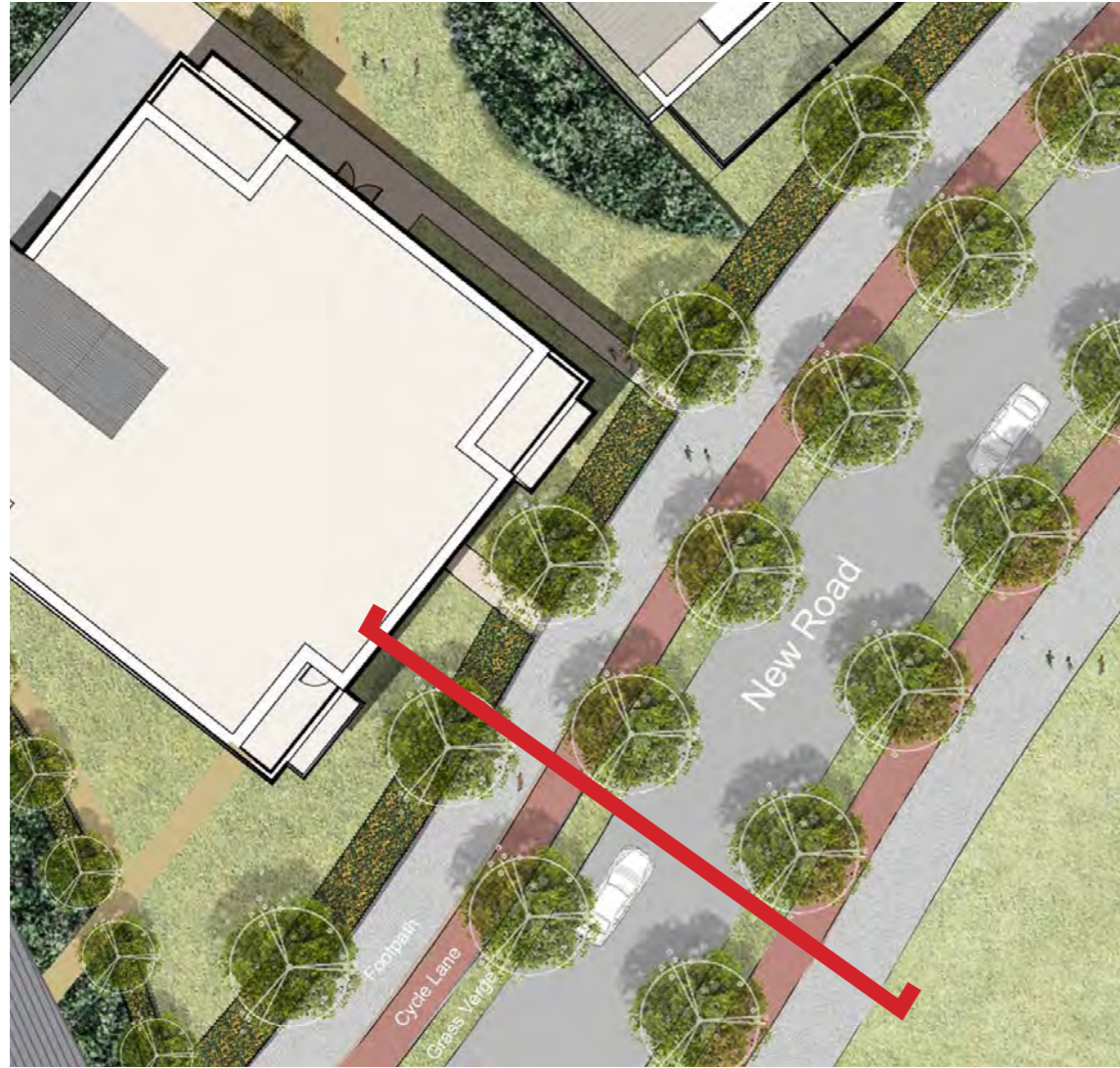
Planting and low berms will be added to provide a soft barrier between the shared surface and the public open space.



3.0 PROPOSED LANDSCAPE DESIGN

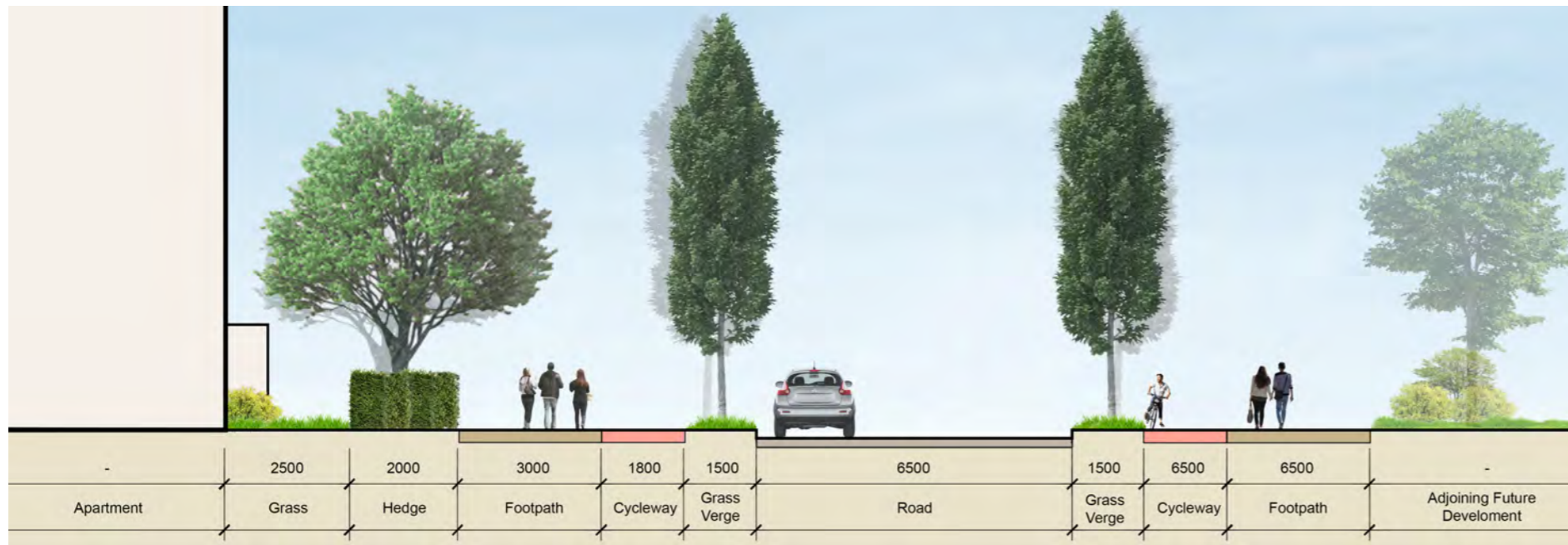
3.6.4 Streetscape - Main Distribution Road

CASTLELAKE SHD 18.3HA SITE



As a main distribution road within the area, this roads which connects Castlelake to Station Road, has been built to create a large avenue feel. In keeping with this, the proposed buildings have been set back, along with the boundaries of the duplex and apartments, to provide a 2m tree and shrub lined strip to provide a:

- Green corridor;
- Larger street trees of Limes (Tilia spp.);
- Buffer between private and public zones; whilst
- Still ensuring a visual connection between the road and dwellings.



Artist's impression if the Main Distribution Road

3.0 PROPOSED LANDSCAPE DESIGN

3.7 Play Strategy

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

Currently the nearest larger playground for older kids is 1km to the south in Carrigtwohill Park. 20mins walk away. There is a large adventure playground for bigger kids and a smaller, more traditional playground, for smaller children within Carrigtwohill Park.

To the south of the development site are playing fields within Scoil Chiodhna grounds. To the southeast are playing fields within St. Aloysius School grounds.

To the west of the development site are two small soft surface play areas, primed for equipment to be installed, and large neighbourhood park with kick-about spaces and woodlands, which are actively being used by children to play in.

PLAY STRATEGY

- Existing Playground/ Play Area
- Existing Exercise Track
- Proposed District Play Area (Active Retention Equipment)
- Proposed Local Play Area (Natural Play Elements, Kick-about area)
- Existing Sports Pitches
- Proposed MUGA playing court

- Walking distance
- 1km- 20mins
 - 400m- 8mins
 - 150m- 2mins



3.0 PROPOSED LANDSCAPE DESIGN

3.7.1 Passive and Active Play

In accordance with the development plan it is proposed to introduce play areas throughout the development. These will consist of one large play area and a MUGA for all ages in the Neighbourhood park and 12 small incidental play areas, or 'Play Lots', within the local Parks for younger ages. The location and strategy for the play spaces has been determined following 'The Ready, Steady, Go' and 'Laps, Leaps and Neaps' guidelines. To ensure longevity of the play equipment and low maintenance, incidental play / natural play equipment will be used.

The large play area will be 500m² and the play lots will vary from 30-85m² depending on the location. Play areas will be located so they are well overlooked but not so close to properties where noise could become a nuisance.

The play areas are located across the proposed development from within the smallest pocket park, local park, apartment communal spaces and within the neighbourhood park. They have been designed so that are easily overlooked by neighbouring houses with good connections and set back from the public roads in accordance with the development plan

Active Recreation

Active play will be facilitated within the two larger playgrounds and in the grassed kick-about spaces within the park. This will provide for a wide variety of recreational needs for all ages, helping to improve the physical and mental well being of its residents and visitors. Active playgrounds will include equipment for running, jumping, climbing, swinging, balancing, sliding, spinning. In addition to the active play equipment these playgrounds will also contain some passive recreation to encourage socialising and more one on one mental exercise.

The kick-about spaces will provide for such activities social/ practice football, rounders, hurling, soccer, running, as well as a big space to chase after the dog. A MUGA has been located in the centre of the park to provide for more organised games of sport such as football, basketball, netball, tennis, bowls, petanque and badminton. It will have an all-weather surface and be contained by 2.4-3m high fencing.

Passive Recreation

Passive play has been predominantly located within the small play areas and play-lots throughout the site. This will provide localised play areas close to each group of houses / street, which can be passively survey from homes, and facilitate less noise play.

They will incorporated play equipment designed to act as instigator of natural play rather than a director of what that play will be and to inspire the imagination. Play spaces will include for interesting and varied topography, fallen logs, boulders, hiding places, trees, grass and soft safety surfaces. The play space will challenge the children to do some active play such as running, jumping, rolling, climbing and balancing, while also experiencing a range of emotions such as opportunities to be powerful/powerless, scared/confident, and in/out of control. It will provide the children with a freedom of chose, spontaneity, and an absence of directly imposed rules, encouraging children to set goal-orientation and develop problem solving skills.



not to scale

- Playground Area
- Natural Play Areas
- Site Boundary



3.0 PROPOSED LANDSCAPE DESIGN

3.7.2 Routes and Paths

The proposed development provides a network of well connected and legible paths through it's open spaces and shared streets which link up with the neighbouring developments, existing and proposed cycle/footpath network. These routes promote active travel for all abilities through the development and out to the surrounding area. These routes will have exercise equipment located along them to facilitate active athletics training

The routes provide opportunities for the user to engage in both passive walking , dog walking and cycling to more active forms of exercising such as Nordic walking, jogging/running, roller skating/skate boarding and trim trail training.




The design ensures their is a clean smooth surface for the path at a universally accessible gradient of no more than 1:21, with varied visual interests along the routes which will be enhanced by the tree lined paths and the integration of the retained natural features alongside these paths.

3.7.3 Furnishings & Surfaces

Furnishings will be similar to what is illustrated in the images displayed. The play area will have a soft safety surface of grass and wood chips. Rubber safety surfaces will be kept to a minimum for environmental and maintenance purposes. All furnishings and surfaces within the children's play areas will be to ISEN 1176/ ISEN 1177 standards and meeting the RoSPA, NSC and other appropriate health and safety requirements. Universal access will be applied to the large play area and some of the play lots, where appropriate, to ensure children of all abilities can use them.



not to scale

-  MUGA Area
-  Adult Exercise Area
-  Site Boundary



3.0 PROPOSED LANDSCAPE DESIGN

3.8 Planting Strategy and Proposal

3.8.1 Planting Design Concept

Proposed planting, quantities and specifications will be subject to detailed design drawings and a Maintenance and Management Report being prepared for tender and construction stages. This document will take into consideration the taking-in-charge requirements set out by Cork County Council.

The planting strategy responds to site pressures and place-making principles for proposed users key factors are to create a strong network of structural planting through the use of trees and woodland planting to create a naturalistic landscape, that aims to:

- Create a scenic, robust and purposeful landscape that performs all year round.
- Retain where feasible the hedgerow along the site and use vegetation to screen and enhance views.
- Use plant species that are good pollinators.
- Plant robust species that are low in maintenance.
- Maintenance plants that are only 4m high under the pylons, and design them in such a way as to detract the eye from the pylon but without making the park feel too enclosed.
- Planting will provide changes in texture and colour throughout the year.
- All planting will be supplied in accordance with the standards set out in section 4 Maintenance and Management . Prior to planting on site a quality audit will be carried on the plants to be supplied.

Biodiversity and Wildlife Habitats

A strong element of the proposed design is to create a naturalistic landscape setting so this will work very well in protecting and creating biodiversity and wildlife habitats.

- Existing hedgerows and scrub retained in open spaces and along site boundaries will be augmented with additional planting to improve their quality.
- Proposed planting in open spaces will be native where ever possible, we will then try to use as much naturalised species that contribute to biodiversity. Biodiversity planting will include street trees, woodland copses, screen planting, hedgerows, wildflower meadow grass, swale / riparian planting and mown grass.
- We will incorporate the policies set out in the All Ireland Pollination Plan when selecting planting species.
- We will incorporate 20 bat and 25 bird boxes on existing trees retained.
- Tree logs from removed tree on site will be left in-situ in appropriate locations to great habitats for wildlife.
- SuDS measures are being incorporated into the landscape design in the form of retained ditches and incorporating storm water run off from surfaces into the landscaping, where ever possible. These will have a mix of riparian / ditch wildflower meadows, trees and shrubs.

Planting for Safety by Design

Naturalistic landscapes are often seen as overgrown places that are unsafe. This does not have to be the case. Tree planting will be positioned in the design so that there are clear views under the tree canopy. Shrubs / screen planting and retained scrub planting will be in small groups so that all areas can be seen from anyone direction where ever possible. In addition, the proposed development has been designed so that there are no long sections of back walls, with houses overlooking open spaces, creating passive surveillance as much as possible.

The existing hedgerow down the central neighbourhood park has the potential to create an unsafe barrier, however this has been mitigated by facing the buildings out onto the open space and paths to ensure they are well overlooked. In addition to this the west bank of the ditch has been graded back to create open views down to the ditch base and ensuring safe egress in the event that the ditch is accessed.

Images to be inserted



Naturalistic Landscape

Public Realm

Artist's Impression of planting

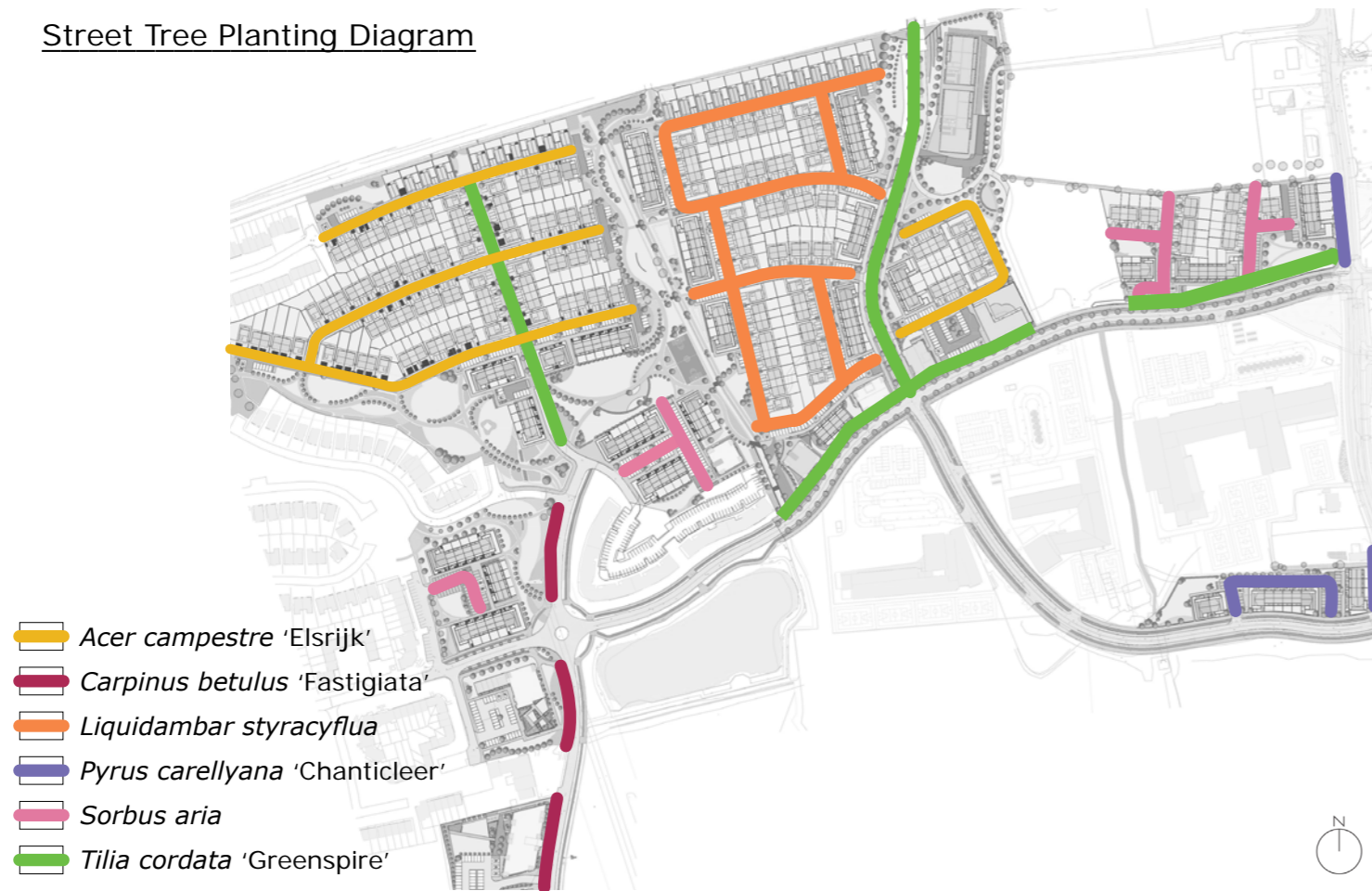
3.0 PROPOSED LANDSCAPE DESIGN

3.8.2 Street Trees

Street trees will support street hierarchy and have been selected based on a right tree right place philosophy. Trees that function well in highly impermeable surfaces are selected along the Main Distribution Road. Suitable tree planting pits with sufficient subtract will be used to allow growth without lifting paving.

Tree Planting	Height / girth or pot size
Street Trees	Height / girth or pot size
<i>Pyrus calleryana</i> 'Chanticleer'	14-16cm, 4.25-6m ht., br.
<i>Acer campestre</i> 'Elsrijk'	14-16cm, 4.25-6m ht., br.
<i>Tilia cordata</i> 'Greenspire'	16-18cm, 6m+ ht., RB
<i>Sorbus aria</i>	14-16cm, 4.25-6m ht., br.
<i>Liquidambar styraciflua</i>	16-18cm, 6m+ ht., RB
<i>Carpinus betulus</i> 'Fastigiata'	16-18cm, 6m+ ht., RB

Street Tree Planting Diagram



Carpinus betulus 'Fastigiata'



Tilia cordata 'Greenspire'



Acer campestre 'Elsrijk'



Liquidambar styracyflua



Pyrus carellyana 'Chanticleer'



Sorbus aria

Street Trees

3.0 PROPOSED LANDSCAPE DESIGN

3.8.3 Neighbourhood Park Planting

Trees

Medium to large sized trees that suit open spaces will be selected with a range of growing habits including clear stemmed, tall and slim as well as multi-stemmed trees, to add variety and enhance the sense of openness and enclosure within the site.

Clear stemmed trees will be located along paths and close to roads to ensure there is expansive views across the open spaces. Fastigate species will be sited where space is tight, along the central ditch to enhance its linearity and where there is a need to punctuate the landscape. Multi-stem species will be used to create form and structure low to the ground and around natural play areas to provide partial screening and a more intimate setting.

Tree planting will be purposely positioned to shape views and to enhance the design intent for the open spaces. Feature planting will be included at the 'Village Green' to enhance this central meeting point and as an entrance to the central neighbourhood park.

Large Trees	Height / girth or pot size
<i>Acer platanoides</i>	14-16cm, 4.25-6m ht., br.
<i>Acer platanoides</i> 'Columnare'	14-16cm, 4.25-6m ht., br.
<i>Alnus glutinosa</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Fagus Sylvatica</i>	14-16cm, 4.25-6m ht., br.
<i>Pinus sylvestris</i>	120-150cm, RB
<i>Populus tremula</i>	14-16cm, 4.25-6m ht., br.
<i>Populus nigra</i>	14-16cm, 4.25-6m ht., br.
<i>Quercus petraea</i>	14-16cm, 4.25-6m ht., br.
<i>Salix pentandra</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Ulmus</i> 'Dodoens'	14-16cm, 4.25-6m ht., br.
<i>Tilia tomentosa</i> 'Brabant'	14-16cm, 4.25-6m ht., br.
Small - Medium Trees	Height / girth or pot size
<i>Betula pendula</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Crataegus monogyna</i>	14-16cm, 4.25-6m ht., br.
<i>Prunus avium</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Prunus padus</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Salix caprea</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Salix cinerea</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Sorbus aria</i>	12-14cm gth, 3.5-4.25m ht., br.
<i>Sorbus aucuparia</i>	12-14cm gth, 3.5-4.25m ht., br.
Feature Trees	Height / girth or pot size
<i>Acer rubrum</i>	14-16cm, 4.25-6m ht., br.
<i>Catalpa bignoniodes</i>	14-16cm, 4.25-6m ht., br.
<i>Prunus s.</i> 'Shirotae'	18-20cm gth., 6m+ ht., RB
<i>Prunus x yedoensis</i>	18-20cm gth., 6m+ ht., RB
<i>Magnolia kobus</i>	18-20cm gth., 6m+ ht., R/B, 4xtr.
<i>Salix alba</i> 'Tristis'	16-18cm gth, 4-6m ht



Ulmus 'Dodoens' Fagus Sylvatica Quercus petraea Populus nigra



Catalpa bignoniodes Salix pentandra Salix alba Pinus sylvestris



Sorbus aucuparia Prunus avium Salix cinerea



- Fagus sylvatica
- Quercus petraea
- Prunus avium
- Acer platanoides
- Acer platanoides 'Columnare'
- Pinus sylvestris
- Tilia tomentosa 'Brabant'

- Fagus Sylvatica, Betula pendula, Pinus sylvestris.
- Salix alba 'Tristis', Sorbus aria, Catalpa bignoniodes, Salix cinerea.
- Ulmus 'Dodoens', Magnolia kobus, Populus nigra, Betula pendula, Salix Alba.



Neighbourhood Park



Betula pendula

Large Trees

Small-Medium Trees

3.0 PROPOSED LANDSCAPE DESIGN

Woodland/Screen Planting, Hedgerows and Boundary Planting

This woodland and screening planting aims to provide an element of screening between private amenity and public spaces as well as to reinforce strong lines of trees already present in areas, as well as, emphasizing and framing pedestrian connections.

The pylon wayleave area restricts the type of planting that can be accommodated. To create an intimate and familiar setting, swathes of low medium native shrubs will be planted under the pylons and electricity lines to create habitats within the woodland mix, tying in with the curvature of the pathways through the park. Outside of the 10 m buffer zone, shrubs have been designed to be inter planted with scattered with native small trees.

The use of large sized shrubs along the proposed footpaths have been designed to create a visual connection with the existing adjacent open spaces in Castlelake estate and will be a low maintenance mix with high biodiversity value.

Woodland /Screening Planting, at 2/m2.		total area	
		Height / girth or pot size	
	<i>Alnus glutinosa</i>	1.75-2m ht., br. Maidens	5%
	<i>Betula pendula</i>	1.75-2m ht., br. Maidens	5%
	<i>Crataegus monogyna</i>	90-120cm ht, 1+1 br., @6/m	15%
	<i>Corylus avellana</i>	90-120cm ht, 1+1 br., @6/m	14%
	<i>Cytisus scorparius</i>	90-120cm ht, 1+1 br., @6/m	3%
	<i>Euonymus europaeus</i>	90-120cm ht, 1+1 br., @6/m	3%
	<i>Ilex aquifolium</i>	30-40cm ht,cg 2lt, m/f @ 6/m	5%
	<i>Larix decidua</i>	1.75-2m ht., br. Maidens	3%
	<i>Prunus spinosa</i>	90-120cm ht, 1+1 br., @6/m	20%
	<i>Rosa canina</i>	60-90cm ht, 0+1 br., @6/m	2%
	<i>Salix caprea</i>	125-150cm ht, 0+2 br., @6/m	10%
	<i>Salix cinerea</i>	125-150cm ht, 0+2 br., @6/m	10%
	<i>Sambucus nigra</i>	90-120cm ht, 1+1 br., @6/m	5%

Large Shrub Screen Planting under 4m, @ 2/m2		total area	
		Height / girth or pot size	
	<i>Corylus avellana</i>	90-120cm ht, 1+1 br., @6/m	4%
	<i>Berberis vulgaris</i>	60-90cm ht, 1+1 br., @6/m	10%
	<i>Euonymus europaeus</i>	60-90cm ht, 1+1 br., @6/m	15%
	<i>Ilex aquifolium</i>	30-40cm ht,cg 2lt, m/f @ 6/m	3%
	<i>Ligustrum vulgare</i>	90-120cm ht, 1+1 br., @6/m	5%
	<i>Prunus spinosa</i>	90-120cm ht, 1+1 br., @6/m	15%
	<i>Rosa canina</i>	60-90cm ht, 0+1 br., @6/m	5%
	<i>Salix caprea</i>	90-120cm ht, 0+1 br., @6/m	10%
	<i>Salix cinerea</i>	90-120cm ht, 0+1 br., @6/m	15%
	<i>Sambucus nigra</i>	90-120cm ht, 1+1 br., @6/m	7%
	<i>Viburnum opulus</i>	90-120cm ht, 1+1 br., @6/m	10%
	<i>Ribes sanguineum</i>	60-90cm ht, 0+1 br., @6/m	1%

Hedgerows

Hedge appropriate vegetation will be selected to create a green structural edge and reinforce boundaries between public and private spaces. Hedgerows will be a mix of evergreen and deciduous species to provide variety and interest.

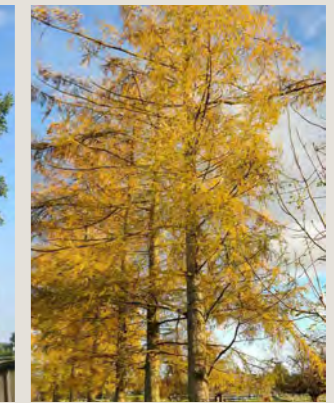
Clipped Hedges		Height / girth or pot size	
H1	<i>Fagus sylvatica</i>	90-120cm ht, 1+2 br., @6/m	100%
H2	<i>Ilex aquifolium</i>	30-40cm ht,cg 2lt, m/f @ 6/m	20%
	<i>Crataegus monogyna</i>	90-120cm ht, 1+1 br., @6/m	80%
H3	<i>Ligustrum vulgare</i>	90-120cm ht, 1+1 br., @6/m	100%



Woodland Mix Tree Planting Examples.



Alnus glutinosa



Larix decidua



Rosa canina



Salix caprea



Salix cinerea



Sambucus nigra



Corylus avellana



Cytisus scorparius



Euonymus europaeus



Prunus spinosa



Crataegus monogyna



Ligustrum vulgare



Fagus sylvatica

Ilex aquifolium

Woodland Screening / Hedgerow Infill

3.0 PROPOSED LANDSCAPE DESIGN

Wildflower Meadow Mixture

Drifts of colour and texture of bulbs and wildflowers will be proposed in public areas, of predominantly native species with a high proportion of pollinators. A grouped into colour palette mixes, they will create a strong aesthetic from spring right through to early autumn.

Species List:

Grassland Wildflower Mix:

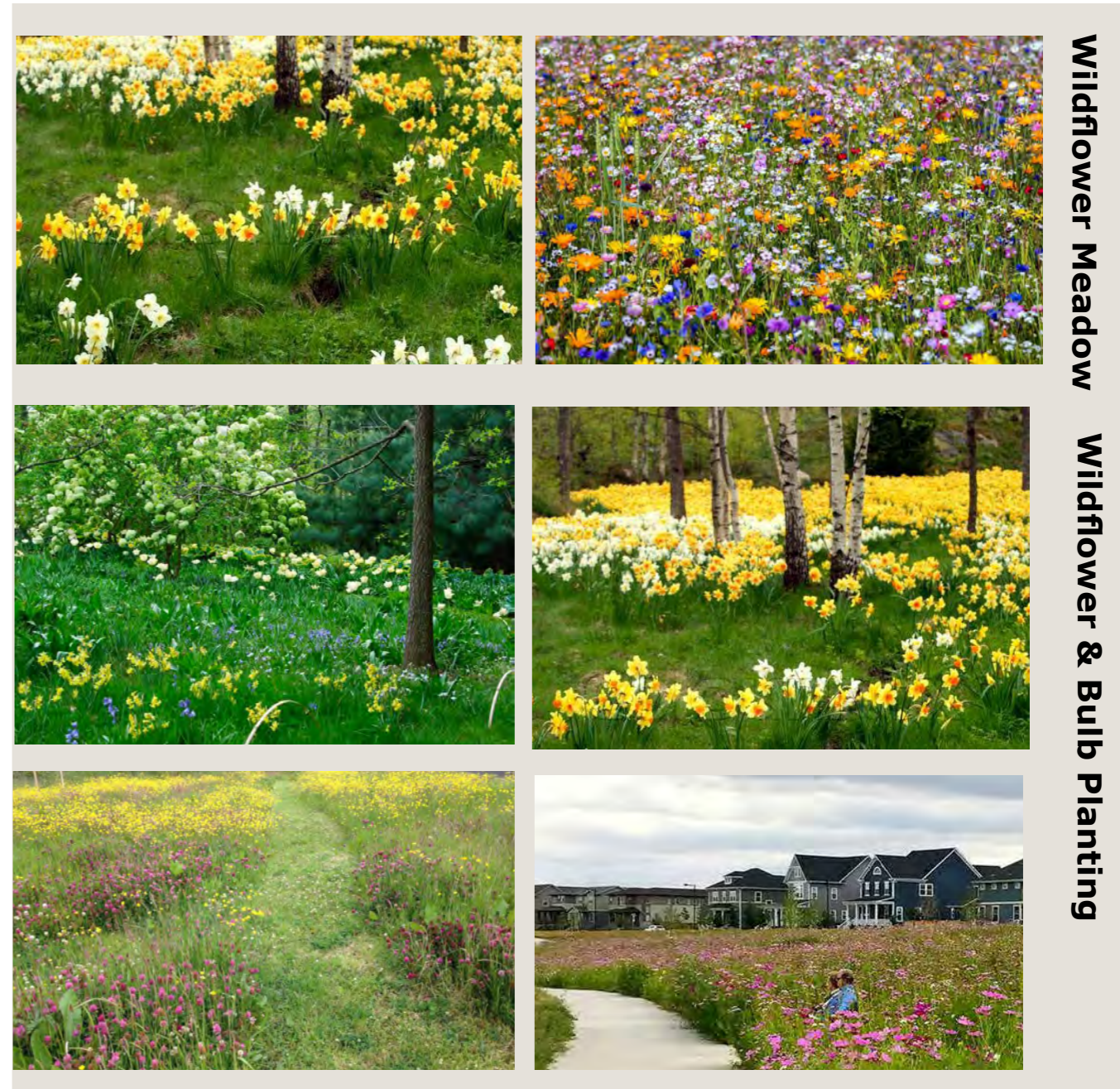
Birdsfoot Trefoil, Black Meddick, Devil's Bit Scabious, Corn Marigold, Corn Poppy, Corncockle, Cornflower, Cowslip, Eyebright, Fleabane, Kidney Vetch, Lady's Bedstraw, Lesser Knapweed, Marjoram, Scented Mayweed, Ox-eye Daisy, Ribwort Plantain, Red Campion, Red Clover, Red Bartsia, Rough Hawksbit, Selfheal, Sorrel, St Johnswort, White Campion, Wild Carrot, White Clover, Yarrow, Yellow Rattle, Daffadils, Bluebells. (additional species may be added according to the details supplied about your site conditions.)

Swale / Riparian Mix:

Birdsfoot Trefoil, Black Meddick, Corn Chamomile, Corn Marigold, Corn Poppy, Corncockle, Cornflower, Cowslip, Devils bit Scabious, Eyebright, Meadow Buttercup, Field Poppy, Fleabane, Greater Trefoil, Lady's Bedstraw, Lesser Knapweed, Scented Mayweed, Meadowsweet, Ox-eye Daisy, Purple Loosestrife, Ragged Robin, Red Bartsia, Ribwort Plantain, Selfheal, Water Avens, Wild Carrot, Yellow Flag Iris, Yellow Rattle, Meadow Cranesbill, Wild Valerian, Marsh Marigold.

Shady Mix:

Bluebell, Burdock, Dog Violet, Cowslip, Devils Bit Scabious, Foxglove, Hedge Garlic Mustard, Lesser Knapweed, Meadowsweet, Ramson, Red Campion*, Ribwort Plantain, Sorrel, Upright Hedge Parsley, Wild Angelica, Wood Avens, Hemp Agrimony, Hoary Plantain, Primrose, Sweet Violet, Wood Sage, Pokeweed, Cow-Parsley, Wood Sanicle, Welsh Poppy.



Wildflower Meadow

Wildflower & Bulb Planting

3.0 PROPOSED LANDSCAPE DESIGN

3.8.4 Local Park Planting

Will have a similar mix of species of trees and scrubs to that used within the Neighbourhood Park. The local, smaller scale character of these parks will be reflected in the use of small trees with only the occasional larger feature tree used.



- Prunus shirotae
- Corylus avellana
- Betula pendula
- Fagus sylvatica
- Betula pendula, Prunus avium 'Plena', Quercus petraea.
- Viburnum opulus, Prunus spinosa, Corylus avellana.

Pocket Park Planting

Pocket parks will also be created around the development in incidental open spaces adjoining the houses and on street corners. These will have a similar mix of small trees proposed within them, for the neighbourhood park but will also have some ornamental shrubs using similar species as proposed for the apartments, (see list of plants on following page).



3.0 PROPOSED LANDSCAPE DESIGN

3.8.4 Apartment Planting

The proposed planting with in each of the gated communal amenity spaces for the apartment block have been designed to create a unique sense of identity for each one. Plants will be selected from the following list of typical species.

Tree Planting	Height / girth or pot size	
<i>Acer campestre</i> 'Streetwise'	2-2.5m ht. MS, RB.	
<i>Amelanchier</i> 'Lamarkii'	1.25-1.5m ht. MS, RB.	
<i>Betula pendula</i>	14-16cm, 4.25-6m ht., br.	
<i>Betula utilis</i> 'Jacquimontii'	14-16cm, 4.25-6m ht., br.	
<i>Pyrus calleryana</i> 'Chanticleer'	14-16cm, 4.25-6m ht., br.	
Shrubs, Grasses and Perennials		total area
	Height / girth or pot size	
<i>Berberis x frikartii</i> 'Amstelveen'	2lt pot, @ 4/m2	10%
<i>Carex testacea</i>	2lt pot, @ 4/m2	10%
<i>Ceanothus</i> 'Blue Mound'	2lt pot, @ 4/m2	10%
<i>Choysya ternata</i> 'Sundance'	2lt pot, @ 4/m2	10%
<i>Euonymus fortunei</i> 'Colouratus'	2lt pot, @ 4/m2	10%
<i>Fatsia japonica</i>	2lt pot, @ 4/m2	10%
<i>Forsythia x intermedia</i> 'Lynwood Variety'	3lt pot, @ 4/m2	10%
<i>Hebe</i> 'White Gem'	2lt pot, @ 4/m2	10%
<i>Lavandula a.</i> 'Hitcote'	3lt pot, @ 4/m2	10%
<i>Lavandula stoechas</i>	2lt pot, @ 4/m2	10%
<i>Lonisera pileata</i>	3lt pot, @ 4/m2	5%
<i>Hedera helix</i> 'Hibernica'	2lt pot, @ 4/m2	10%
<i>Hypericum</i> 'Hitcote'	3lt pot, @ 4/m2	10%
<i>Olearia traversii</i>	7.5lt pot @ 1/m2	1%
<i>Perovskia</i> 'Blue Spire'	3lt pot, @ 4/m2	5%
<i>Pinus mugo</i> 'Mops'	5lt pot, @ 1/m2	5%
<i>Rosa</i> 'Ruby'	3lt pot, @ 4/m2	10%
<i>Rosmarinus officinalis</i>	3lt pot, @ 4/m2	10%
<i>Sambucus nigra</i> 'Black Lace'	5lt pot, @ 1/m2	2%
<i>Santollina c.</i> 'Nana'	2lt pot, @ 4/m2	10%
<i>Stipa tenuissima</i>	2lt pot, @ 4/m2	10%
<i>Syringa vulgaris</i> 'Mme Florent Stepman'	5lt pot, @ 1/m2	2%
<i>Viburnum davidii</i>	2lt pot, @ 4/m2	10%
<i>Viburnum farreri</i>	5lt pot, @ 1/m2	2%

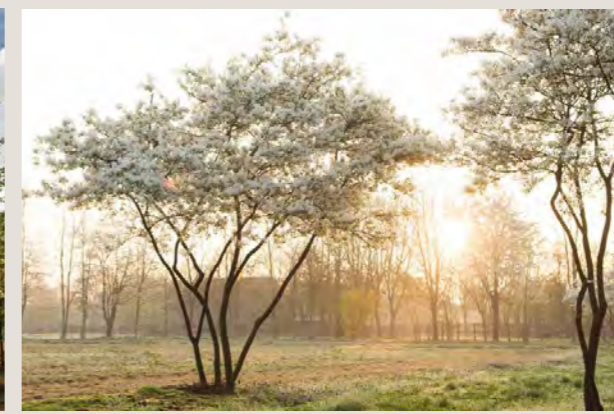
Perennials & Grasses

Supplied as 2lt pots and planted at 5/m2 in groups of 7-15. Typical Species will include:

Agapanthus afticanus, Aster x Frikartii 'Monch', Anemone hyb. 'Honorine Jobert', Bergenia cordifolia, Calamagrostis x acutiflora 'Karl Foerster', Centurea montana, Carex morrowii, Carex pendula, Crocosmia 'Paul's Best Yellow', Dryopteris erythrosora, Dryopteris erythrosora, Euphorbia amygdaloides var. robbiae, Foeniculum vulgare, Geranium macrorrhizum, Heleborus orientalis, Iberis semp. 'Snowflake', Isotoma fluviatilis, Liriope muscari, Libertia grandiflora, Iychnis flos-cuculi, Lythrum salicaria, Lysimachia nummularia 'Aurea', Molinia caerulea, Polypodium vulgare, Rosmarinus officinalis 'Prostratus', Rubeckia ful. 'Goldsturm', Salvia microphylla 'Huntington Red', Stachys byzantina 'Fuzzy Wuzzy', Solidago 'Goldkind', Stipa gigantea, Verbena bonariensis, Anemone nemorosa, Galanthus nivalis, Gladiolus 'Blue Isle', Hyacinthoides non-scripta, Narcissus 'Thalia'.



Acer campestre 'Streetwise'



Amelanchier 'Lamarkii'



Betula utilis 'Jacquimontii'



Carex testacea



Ceanothus 'Blue Mound'



Choysya ternata 'Sundance'



Euonymus fortunei 'Colouratus'



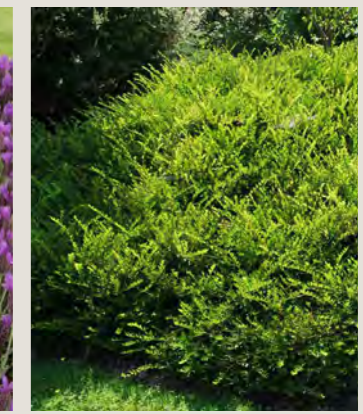
Forsythia x intermedia 'Lynwood Variety'



Lavandula angustifolia 'Hitcote'



Lavandula stoechas



Lonisera pileata



Apartment planting



Hypericum 'Hitcote'



Perovskia 'Blue Spire'

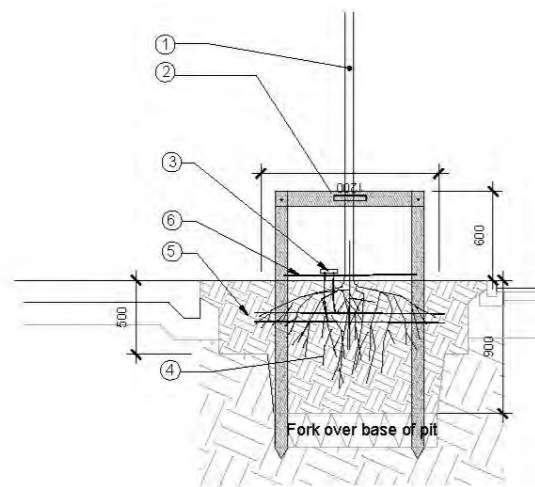
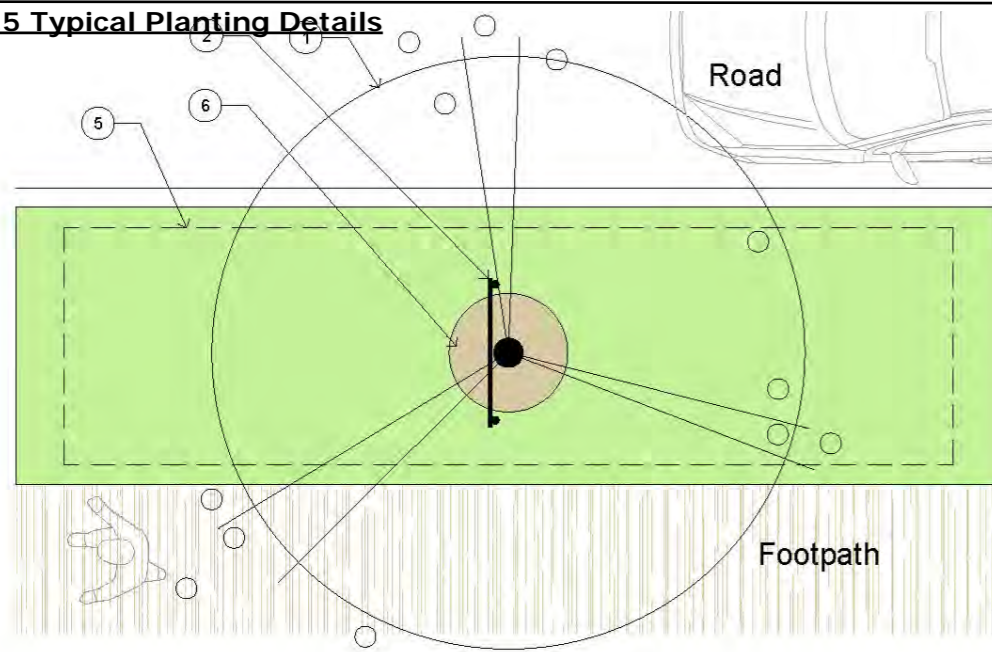
Tree Planting

Shrubs, Grasses and Perennials

3.0 PROPOSED LANDSCAPE DESIGN

CASTLELAKE SHD 18.3HA SITE

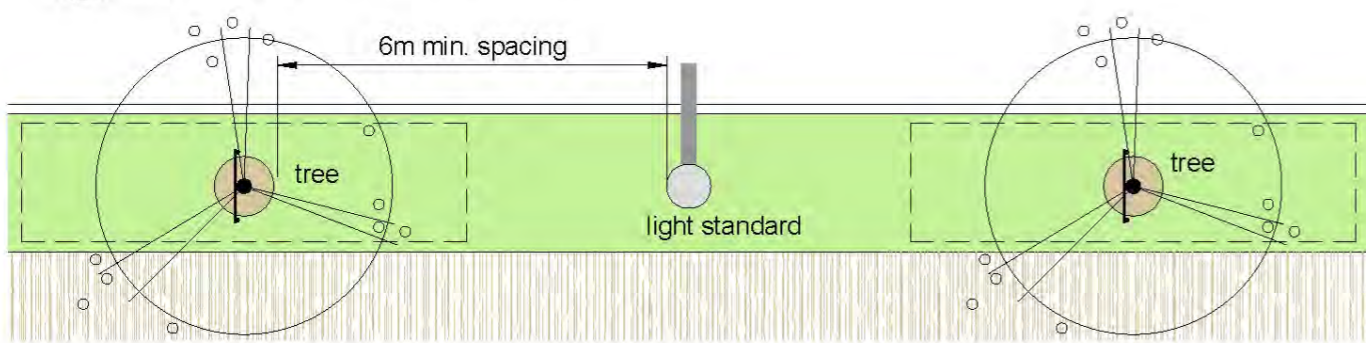
3.8.5 Typical Planting Details



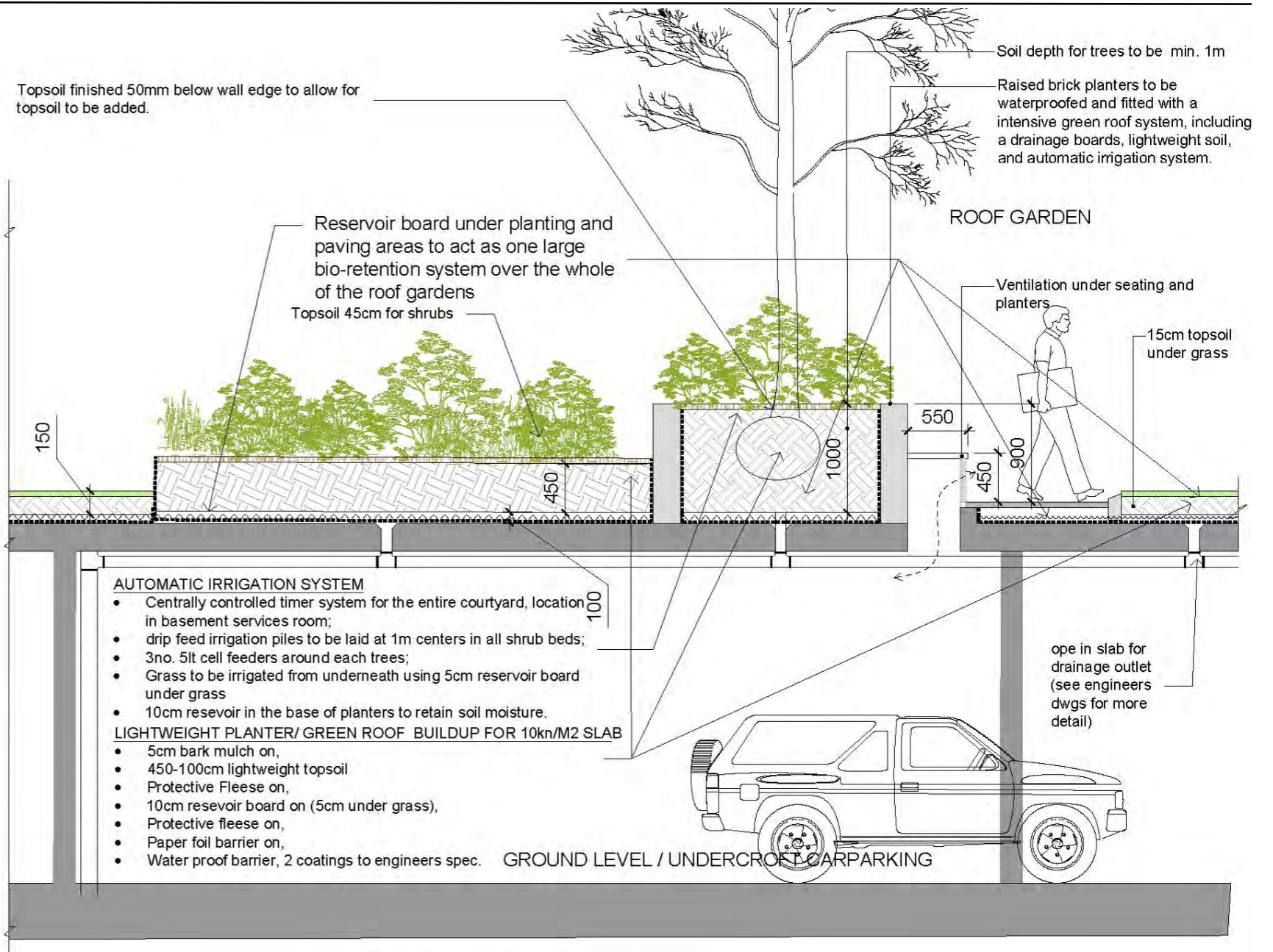
NOTES

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

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



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



Topsoil finished 50mm below wall edge to allow for topsoil to be added.

Soil depth for trees to be min. 1m

Raised brick planters to be waterproofed and fitted with a intensive green roof system, including a drainage boards, lightweight soil, and automatic irrigation system.

Reservoir board under planting and paving areas to act as one large bio-retention system over the whole of the roof gardens
Topsoil 45cm for shrubs

AUTOMATIC IRRIGATION SYSTEM

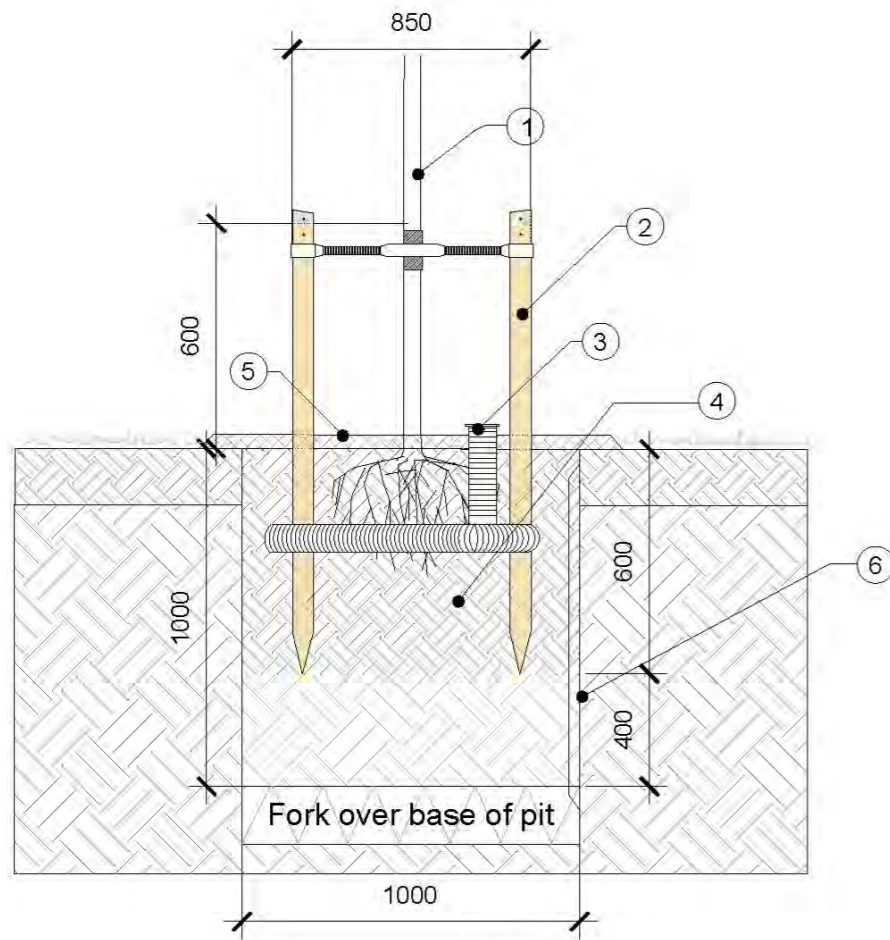
- Centrally controlled timer system for the entire courtyard, location in basement services room;
- drip feed irrigation piles to be laid at 1m centers in all shrub beds;
- 3no. 5lt cell feeders around each trees;
- Grass to be irrigated from underneath using 5cm reservoir board under grass
- 10cm resevoir in the base of planters to retain soil moisture.

LIGHTWEIGHT PLANTER/ GREEN ROOF BUILDUP FOR 10kn/M2 SLAB

- 5cm bark mulch on,
- 450-100cm lightweight topsoil
- Protective Fleese on,
- 10cm resevoir board on (5cm under grass),
- Protective fleese on,
- Paper foil barrier on,
- Water proof barrier, 2 coatings to engineers spec.

GROUND LEVEL / UNDERCROFT CARPARKING

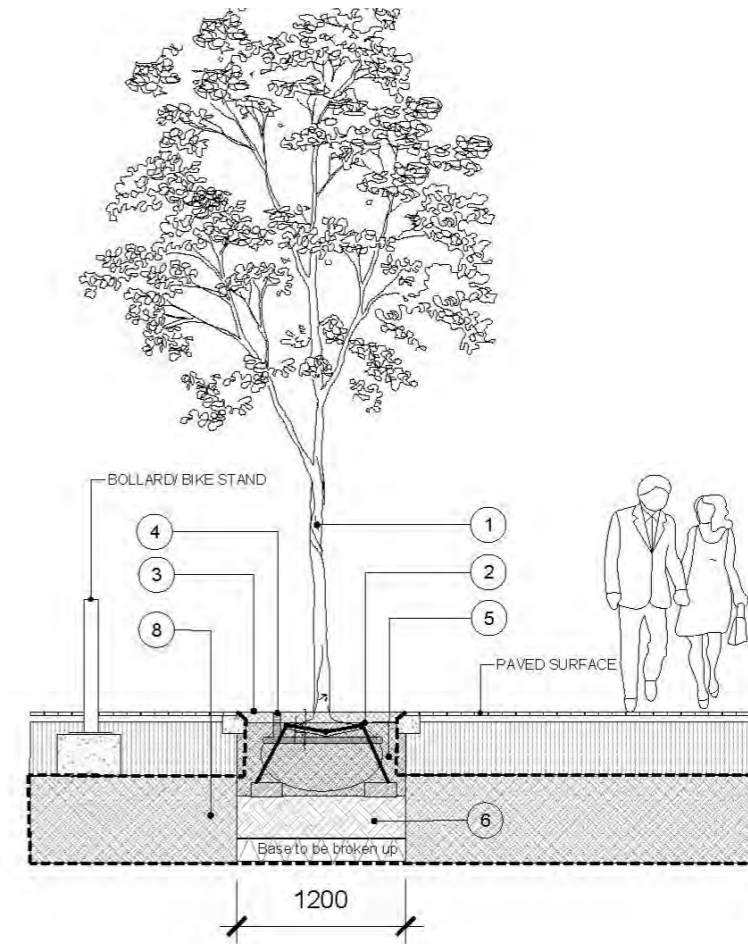
V02 Raised Planter Detail with Drainage
SCALE: 1:50@A3



Tree Pit Detail - In Grass/Shrub areas
Scale: 1:25 @ A3

NOTES

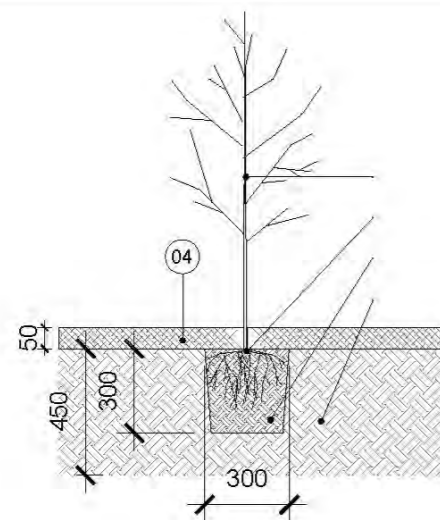
1. Tree to have a clear stem as indicated on planting plan.
2. 2no. 75mm diameter stakes pressure treated driven 1000mm below ground 400 - 600mm above ground, with specified biodegradable rubber strap around wire at tree and nailed to 100x30x950mm crossbar. Locate stakes 475mm from tree trunk.
3. (for 14+cm girth trees) 6cm diameter perforated flexible plastic drainage pipe positioned as shown over rootball with one end open to surface to facilitate watering and capped.
4. Tree pits to be min. size 1000 x 1000 x 1000mm, or 150mm beyond rootball. Remove the full depth of topsoil and set aside for reuse. Scarify sides and back fill pit with 400mm depth of subsoil in 200mm layers and lightly firmed in. Incorporate a soil ameliorant into base and back fill remainder of pit with topsoil mixed with soil ameliorants in 150mm firmed-in layers. All planting to receive a minimum of 25 lt water per m2 immediately after planting.
5. 50mm medium grade bark mulch in 800mm dia circle to base of trunk.
6. Root barriers are to be used when electrical, gas, oil or media service ducts are within 600mm of the tree stem, or when water, sewer, storm service pipes are within 1000mm of a tree stem. Type: 600-1000mm deep flexible ribbed plastic root barrier to be placed along the side of the tree pit facing the services. Seams to be sealed with root proof tape to stop root penetrating through gaps.



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

NOTES

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



Planting Pit Detail for Shrubs/Whips
Scale: 1:25 @ A1/ 1:50 @ A3

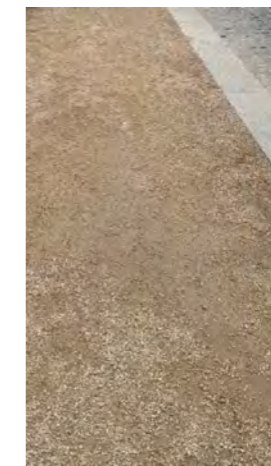
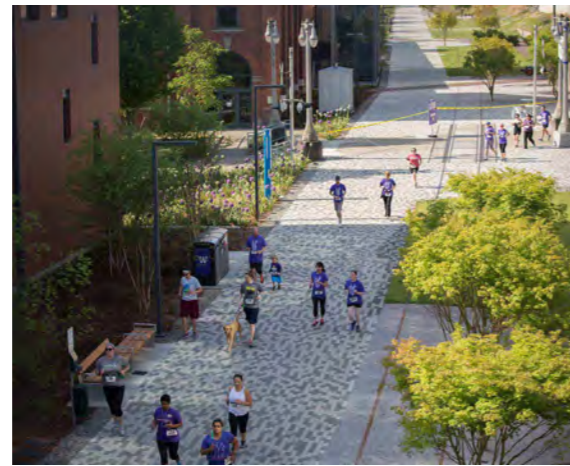
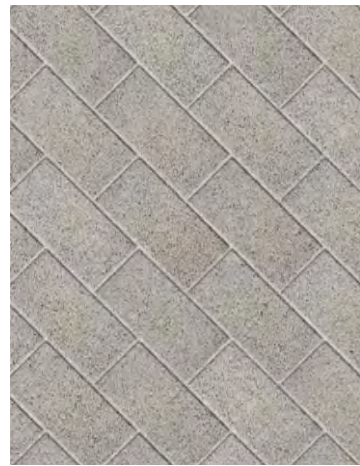
NOTES:

1. Proposed Shrub/Whip.
2. Excavate pit 300 x 300 x 300mm, fork over base to 150 mm depth and scarify walls of whip pit prior to planting. Backfill with topsoil with ameliorant incorporating as per specification, Lightly firming in layers of 150 mm. Water with 3lt of water immediately after planting.
3. 450mm topsoil.
4. 50mm, 6mm medium grade bulk mulch
5. Min. 300mm subsoil below planting

3.0 PROPOSED LANDSCAPE DESIGN

3.9 Materials and Finishes

A robust palette of quality materials is envisaged. Used creatively to form well functioning and robust/sustainable and beautiful residential places. Materials will be of a quality to with stand a long life and have CE cert. A full quality audit will be carried out prior to installation of all materials. All street lighting will be positioned so no closer than 6m from a tree, or 10m if trees and lampposts are in a straight line, or the tree species used will be of a fastigate nature, with a canopy that will be no closer than 6m from a lamppost. For lighting proposals see the engineers drawings. For play equipment see previous pages. For boundary materials see architects drawings and documents.

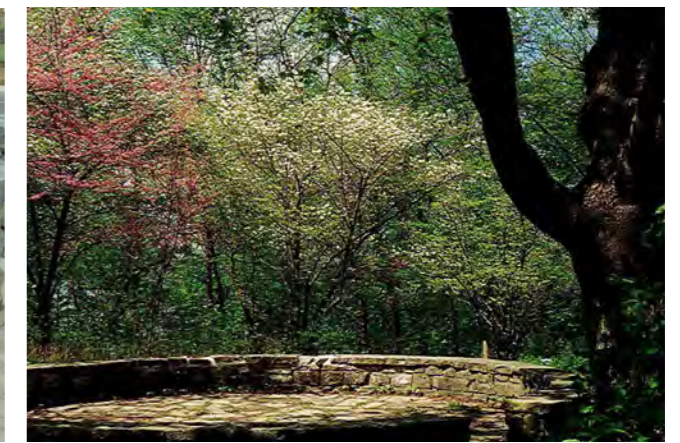


Pavers and Block Paving, Concrete and Reconstituted Stone

Coloured Asphalt Surfaces - to paths and shared surface roads, (see engineers drawings for type).

Rolled Dust Paths, 10mm down locally sourced aggregate

Resin Bound Gravel (to apartments only)



Rubber Safety Surface, (to parts of the large playground only)

MUGA, coloured asphalt surfaces with 2.4m high green mesh fenced surround

Engineered wood chips to play areas

Reconstituted stone Concrete block and natural stone walls using local vernacular style, as informal seating areas and to create terraces.



Sheffield Bike Stands, steel

Bins, steel

Seating, Timber and Steel

Pedestrian Bridge, concrete and steel with asphalt or concrete surface

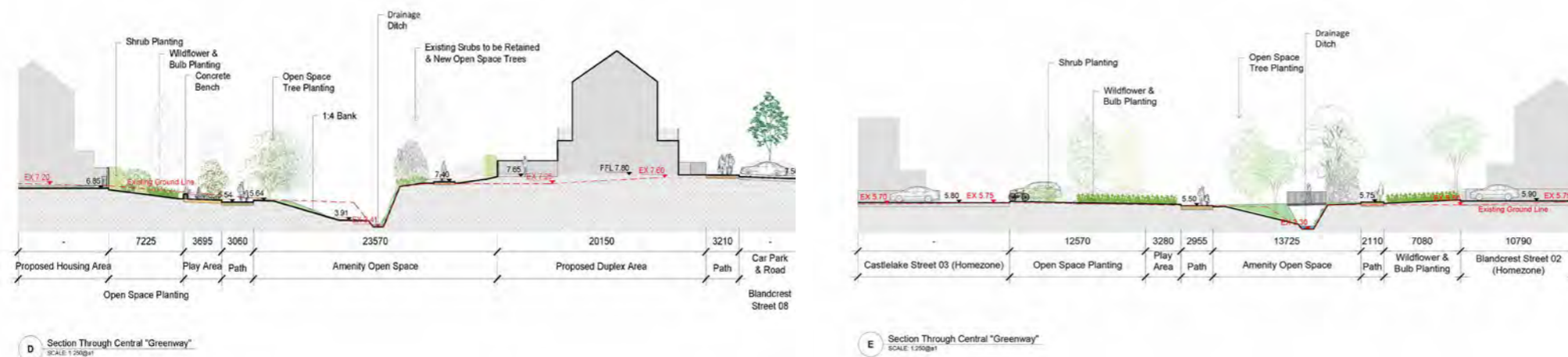
Bird box and inset Bat housing

3.0 PROPOSED LANDSCAPE DESIGN

3.10 SUDS

The landscaped open spaces have been designed to accommodate SUDS measures such as swales, filter strips and filtration tree pits, to help retain the surface flow across the proposed development and feedback into the local ground table, watercourse network.

The existing drain running through the centre of the site will function as a key SUDs feature. The diversion of water to this drain will reinvigorate it as a bio-diversity corridor, and any excess water will flow into the existing section of stream along the southern boundary which itself flows into nearby existing Castlelake lake.



Sections across the retained drainage ditch acting as a SUDS feature - see section drawing 21642-2-202 for details



Swale framed by wildflower planting



SUDS marginal planting to ditch as a key feature within open parkland



SUDS street tree pits



Breaks in the kerb allow surface overflow into the filter strip



Existing Castlelake lake south of the site



Open section of the existing Woodstock Stream to site's eastern end



Existing central drain relatively dry and overgrown by vegetation

INTRODUCTION

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

1.0 SOFT LANDSCAPE WORKS SPECIFICATIONS

1.1 Site Clearance Generally

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

1.2 Weed Control

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

Weeds are to be removed by hand with the use of glyphosate based herbicide product only used where absolutely necessary. Alternative biodegradable herbicides should be used where ever possible. Herbicides should be applied at the rate specified by the manufacturer's and in accordance with appropriate health and safety requirements. All planting areas are to have weeds removed 2 weeks prior to planting and again, if necessary, 3 days before planting, to remove as much of the weed growth as possible prior to planting. Where shrub foliage cover is closely compact, weeds are to be removed by hand. Herbicide spraying is not to occur when winds are greater than 24kpm, when the facilities are in use by the staff or public, or during periods of persistent rain.

1.3 Standards

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

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

1.4 Soil Conditions

Soil for cultivating and planting: Moist, friable and do not plant if waterlogged.
 Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

1.5 Climatic Conditions

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

1.6 Times of year for planting

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

1.7 Mechanical Tools

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

1.8 Watering

Quantity: Wet full depth of topsoil within the root area of each plant.
 Application: Even and without damaging or displacing plants or soil.
 Frequency: As necessary to ensure establishment and continued thriving of planting. The frequency of watering must be increased should the weather conditions turn excessively dry. It is the contractor's responsibility to monitor weather conditions to ensure the watering schedule is adjusted accordingly. Any landscaping damage, discolouration or failing to show signs of healthy growth as a result of under watering will be replaced at the contractors cost.

- Typical watering quantities are as follows:
 - Typical number of visits in first year: 10.
 - Typical quantity of water per visit per tree size:

Tree Size	Water Capacity
20-25cm gth	60L
18-20cm gth	40L
16-18cm gth	30L
14-18cm gth	25L
12-14cm gth	20L
10-12cm gth	18L
8-10cm gth	12L
6- 8cm gth	8L
Feathered	5L
Whips/cg. shrubs	2.5L
Conifers <1m ht	8L
Conifers 1-1.2m ht	10L
Conifers 1.2-1.5m ht	18L
Conifers 1.5-2m ht	25L

Notify: Prior notification to the Landscape Architect and a record of attendance will be requested for each visit. Spot checks will be made to ensure full compliance with this condition. It will be the Contractors responsibility to source water for these applications. Additional watering may be required depending on weather.

It will be the responsibility of the Contractor to notify the Client of the additional requirements and agree the number of additional watering visits.

1.9 Preparation, Planting and Mulching Materials

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

1.10 Plants/ Trees - General

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

1.11 Container Grown Plants/ Trees

Growing medium: With adequate nutrients for plants to thrive until permanently planted.
 Plants: Centred in containers, firmed and well watered.
 Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
 Hardiness: Grown in the open for at least two months before being supplied.
 Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

1.12 Labelling and Information

General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:

- Full botanical name.
- Total number.
- Number of bundles.
- Part bundles.
- Supplier's name.
- Employer's name and project reference.
- Plant specification, in accordance with scheduled National Plant Specification categories and BS 3936.

Plant Health Regulations: In accordance with Regulation (EC) No. 2016/2031 and Regulation No. 2017/625 of the European Parliament and of the Council, all plants are to be supplied with a plant passport. Landscape contractor is to be register with the Department of Agriculture, Food and the Marine (DAFM), as a professional operator procuring and supplying plants for landscape works. A plant health registration form is to be provided on request.

Additional information: All Ash/ Fraxinus trees, if permissible, must be supplied with relevant passports and Dept. Agriculture, Food and Marine (DAFM) inspection cert.

1.13 Plant/ Tree Substitution

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

1.14 Plant Handling, Storage Transport and Planting

Standard: To HTA 'Handling and Establishing Landscape Plants'.

Frost: Protect plants from frost.

Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.

Planting: Upright or well balanced with best side to front.

1.15 Treatment of Tree Wounds

Cutting: Keep wounds as small as possible.

Cut cleanly back to sound wood using sharp, clean tools.

Leave branch collars. Do not cut flush with stem or trunk.

Set cuts so that water will not collect on cut area.

Fungicide/ Sealant: Do not apply unless instructed.

1.16 Protection of Existing Grass

General: Protect areas affected by planting operations using boards/ tarpaulins.

Excavated or imported material: Do not place directly on grass.

Duration: Minimum period.

1.17 Surplus Material

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

1.18 General Planting

Planting shall be carried out within the contract period but not during periods of frost, drought, cold drying winds or when the soil is waterlogged, or when the moisture of the soil exceeds field capacity.

All containers and protective coverings including biodegradable coverings to root systems shall be removed prior to planting. Roots, except for emergent vegetation, shall be teased out from the root-ball, spread evenly and not twisted.

All plant material shall be planted upright or placed so as to be well-balanced. Extreme care is to be taken to avoid damage to the root system, stem and branches when planting. The plant shall be positioned such that after planting the original soil mark on the stem is at finished ground level.

On completion of planting, watering and mulching, all areas shall be left tidy and weed-free and shall be maintained in a tidy and weed-free state until completion of the works.

For shrub and transplant pit planting, notch planting and ordinary planting, the plant positions shall be set at equal centres in order to obtain a natural dense cover when mature. For notch and pit planting plants shall be planted in parallel lines. Planting positions in each row shall be staggered with the previous row.

Finely-broken backfill material shall be carefully spread around roots and root trainers of all plants and the plants given slight shake to ensure that all interstices/ gaps are filled with soil, which shall then be consolidated by heeling. Careful filling and heeling shall continue as necessary at 150mm layers.

1.18.1 Mulching

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

1.18.2 After Planting & Mulching

Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.

Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.

All areas shall be left tidy and weed-free and shall be maintained in a tidy and weed-free state until completion of the works.

1.19 Tree Planting / Specimen Large Shrubs

1.19.1 Planting Pit

Included within this report are typical tree planting details for this site.

Standard: Prepare roots and transplant to BS 8545.

Planting shall be carried out by positioning the tree in the centre of the pit and spreading the tree roots to their fullest extent. Immediately after planting secure all guys and cables for the tree anchoring system.

Backfilling material: Previously prepared mixture of topsoil excavated from pit and additional compost as required.

1.19.2 Tree Pits

Sizes: at least 300mm greater than rootball in all directions.

Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.

Pit bottoms: With slightly raised centre. Break up to a depth of 100mm.

Pit sides: Scarify.

1.19.3 Rootball Guy Anchors

All specimen shrub/trees to be fixed with underground tree anchor system. No surface level stakes and ties. Protective matting and straps not cables should be used over rootballs. Rootball and cables should always be covered with min. 50mm topsoil and 50mm mulch. All cables should be stainless steel. Anchoring systems should be suitable sized concrete, stone or pressure treated timber, of a weight suitable to counterbalance the tree weight at full growth for the tree within the containerised situation.

1.19.4 Staking Generally

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

1.19.5 Mulch Circle/Square Surround

All newly planted trees within open grassed areas or in grass verges shall have a min.50mm mulch circle/square of max. 800mm dia. or as allowed by verge.

1.20 Shrub Planting

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

1.21 Hedgerow Planting

Preparation: Dig trench to 500mm width for single staggered row, ensuing pit base is broken up 100mm deeper than plant rootball.

Ameliorants: Compost at 10lt/m² and 10:10:10 NPK slow release fertiliser at 150g/m².

Planting: Mix in soil ameliorants with excavated topsoil, or if there is poor topsoil then mix in with imported new topsoil. Firm down topsoil lightly in layers of 150mm by treading.

Additional Requirements: If there is no existing fencing or barrier, install a protective fence to stop people walking through it until hedge is established. If there is livestock adjoining hedge install a stockproof fence or electrical fence 1m from hedge line until hedge is established.

Prior to new growth cut the hedge back by 300mm to encourage new growth from base.

1.22 Removing Trees and Shrubs

Identification: Clearly mark trees and hedges to be removed.

Work near retained trees: Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.

1.23 Failures of Planting

Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.

Exclusions: Theft or malicious damage after completion.

Rectification: Replace with equivalent plants/ trees/ shrubs.

Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.

Defects Period: 5 years.

1.24 Green Roofs

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

1.25 Grass Seeding

1.25.1 Herbicide Application

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

1.25.2 Seedbed cleaning before sowing

- Operations: Kill pernicious weeds with selective contact herbicide.

1.25.3 Cultivation

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

1.25.4 Topsoiling

- Areas to be reinstated shall be top-soiled to a min. depth of 150mm.
 - Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
- Corrosive, explosive or flammable;
 - Hazardous to human or animal life;
 - Detrimental to healthy plant growth.

1.25.5 Grading

- General appearance to be achieved: A fine graded finish to bring the ground to a uniform and even grade at the correct finished levels with smooth, flowing contours.
- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
- Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 150mm.
- Give notice: If required levels cannot be achieved by movement of existing soil.

1.25.6 Fertilizer for Seeded Areas

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

1.25.7 Final Cultivation

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

1.25.8 Grass Seed

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

1.25.9 Sowing

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

1.25.10 Grass sowing season

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

1.26 Cleanliness

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

Soil and arisings: Remove from hard surfaces and grassed areas.

General: Leave the works in a clean tidy condition at completion and after any maintenance operations.

2.0 MAINTENANCE

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

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

Performance Standards and Maintenance Operations**2.1 Grassed Areas****2.1.1 Fine-Cut Grass Areas**

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

Fine-Cut Mowing

Where practical fine grass areas shall be cut using a cylinder mower, otherwise a rotary mower shall be used. All grass clippings shall be collected and removed off-site after each cut.

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

Weed Control

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

Fertilizer

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

2.1.2 Amenity Grass Areas

Amenity grass areas shall achieve an even cover of vegetation of uniform height and colour comprising predominantly of grass species. Unless otherwise agreed with the landscape architect no more than 15% of the grass areas shall contain dicotyledonous (dicots) weeds,

except clover. Grass cutting shall not be carried out during excessively wet or waterlogged conditions. Contractor to inform administrative authority if conditions are unsuitable.

Amenity Grass Mowing

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

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

Weed Control

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

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

Fertilizer

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

2.1.3 Meadow Grass

Meadow grass cutting will occur twice in the first year in spring once grass has established and in August/September to improve growth. There after it can be cut annually. Cut grass should be removed from field to stop rotting and damage to grass growth.

Weed Control

Areas of invasive and noxious species in meadow grass areas, shall be spot sprayed.

Fertilizer

Fertiliser is not to be applied to meadow grass areas unless there is no establishment and only then at dilute rates.

2.1.4 Edging and Strimming

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

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

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

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

2.1.5 Spring Bulbs in Grassed Areas

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

2.1.6 Failed areas

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

2.2 Shrub Planting

Shrub areas shall be kept litter and weed free, particularly of perennial weeds. Healthy growth shall be maintained to cover as much as possible of the planting area and allowing the individual plants to achieve as near as possible their natural form. With the exception of hedges, boxing or pruning to shapes is prohibited. Plants shall be contained within designed planting areas and pruned to avoid obstructing pathways or sight-lines.

2.3 Pruning

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

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

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

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

2.4 Weed Control

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

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

2.5 Mulching

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

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

2.6 Watering

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

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

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

2.7 Pest and Disease Control

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

2.9 Tree Planting Care

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

2.9.1 Existing Tree Planting

The contractor shall be responsible for the removal of tree stakes and ties from existing trees which are no longer in need of support generally trees with trunk girths larger than 35cm or after 3 years of establishment, whichever occurs first. Stakes shall be removed off site and disposed of at contractor's own expense.

50mm depth mulch circles/squares of a maximum 80cm diameter, or as allowed by verge width, shall be maintained at the base of all existing standard trees. The mulch circle/square shall be maintained plant free and weed free by the application of an approved herbicide. Residual herbicide is not permitted. The contractor shall allow for 3 no. herbicide treatment within these areas. 1 no. application in winter, 1 no. application in spring and 1 additional treatments, or as required to maintain the area at the min. tolerance of 10% weed growth.

Edging between mulch and grass areas shall be maintained as outlined above under fine-cut grass areas.

Allowance shall be made for the removal of suckers, broken, diseased or damaged branches. Remove branches which encroach on pathways/roadways or sight-lines.

2.9.2 New Tree Planting

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

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

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

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

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

2.9.3 Tree Stakes and Ties

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

2.5 Woodland/Scrub Area Management

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

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

Woodland areas shall be sprayed 3 times per year with a suitable contact herbicide. Contractor to ensure that no damage is caused to trees by herbicide application.

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

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

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2.11 Riparian/Wetland Planting

All rubbish and debris shall be removed from the entire surface of the waterbody, including any partially submerged items. Inlets and outlets shall be inspected twice per year usually in February and October and their condition with any obstructions and all rubbish and debris removed.

Control weeds of undesirable species to areas of vegetation. Herbicide applied to weeds in or near waterbodies, including banks adjacent to ditches, shall not be within 2m of the watercourse. Weeds in the waterbodies shall be removed by hand weeding or by mechanical means before or during flowering.

Silt depth shall be inspected once per year in April. Where required silt shall be removed. The depth of silt to be removed, available storage areas for drying-out, requirements for disposal and access shall be confirmed in a method statement to be submitted to the landowner and Fisheries Ireland.

Where required reed beds shall be inspected twice per year in February and October. The timing and methodology of inspection and operations shall avoid affecting habitats of birds, fish and invertebrates. The presence of protected or rare species shall be reported to the EPA.

Any works to waterbodies must be reported to the Fisheries Ireland and the EPA and a method statement of the works to be carried out submitted.

2.12 Green Roof System and Irrigation

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

2.13 Litter Clearance/Pick-up

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

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

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

2.14 Replacements

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

3.0 Maintenance Programme

This programme is a guideline for the typical maintenance require in the first 1-3 years. Times of operation may vary on approval by the Landscape Architect.

ONGOING REQUIREMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lawn / Grass Cutting (min.21)			*	**	***	****	*****	*****	***	**	*	
Edging to grassed areas (apartments only)				*			*					
Rough Grass/ Verges						*						
Fertiliser application to grass areas					*		*		*			
Hedgerow pruning and feeding				*		*			*			
Clipped hedgerows, pruning / clipping					*			*				
Natural hedgerows, pruning /clipping										*		
Shrub pruning and feeding.				*		*		*				
Weed control of tree, hedgerow and shrub planting by hand.		*	*	*	*	*	*	*	*	*	*	
Weed control of tree, hedgerow and shrub planting using a suitably approved herbicide.				*			*					
Care of shrubs, perennials & grasses, including thinning out & removal of damaged / decaying foliage and limbs.			*			*		*		*		
Tree pruning.											*	*
Checking of tree support systems (Stakes, ties, guys), check at every visit.	*	*	*	*	*	*	*	*	*	*	*	*
Mulch top up to trees, shrubs and hedgerows.			*					*				
Watering of new trees (as indicated or after 2 weeks of no rain).				*	*	*	*	*	*			
Watering of new shrub planting (as indicated or after 2 weeks of no rain).				*	*	*	*	*	*			
Application of suitable herbicide to footpaths in open spaces / landscaped areas, if weeds identified.				*								
Litter Clearance / pick-up within landscaped areas	*	*	*	**	***	****	*****	*****	***	**	*	*