landscape design

20_174-PD Landscape Architecture Design Rationale Report

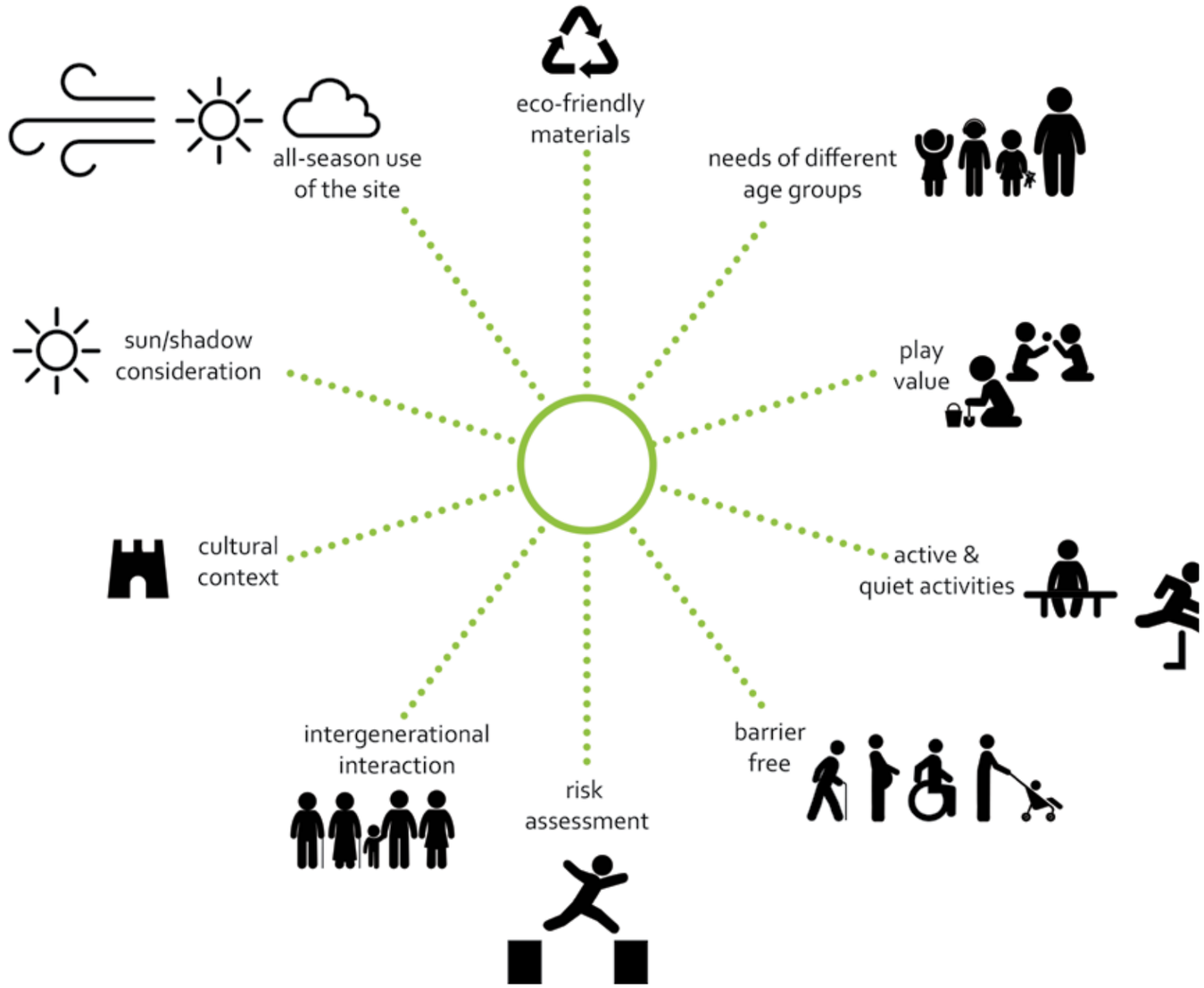
Applicant's Name: Torca Developments Ltd.

Project Title: Strategic Housing Development, Carley's Bridge, Enniscorthy, Co. Wexford

TABLE OF CONTENTS

Existing Site Photographs		Page 1
Landscape Design Statement		Page 2
Desk Study Analysis	- Relevant Policies + Objectives	Page 3-7
	- Design Rationale + Response	
Desk Study Analysis	- Ecological, Topographical + Water	Page 8
Desk Study Analysis	- Existing Plant Communities	Page 9
Desk Study Analysis	- Existing Animal Communities Likely to Occur	Page 10
Landscape Design Concepts - Green Blue Infrastructure		Page 11-13
Palette of 'Hard' Landscape Materials		Page 14-15
Landscape Design Concepts - Amenity Open Space + Play		Page 16-17
Landscape Plan + Numbered Legend		Page 18-19
Riverside Amenity Open Space 01		Page 20-21
River Urrin Riparian Buffer Zones		Page 22-23
Riverside Amenity Open Space 02		Page 24-25
Riverside Amenity Open Space 03		Page 26-27
Streetscape + Dwelling Gardens 04		Page 28
Streetscape + Dwelling Gardens 06		Page 29
Sloped Millbrook Connections 05		Page 30-31
Green Ginnels Communal Space 07		Page 32-33
Green Ginnels Communal Space 08		Page 34-35
Northern Pedestrian Entrance 09		Page 36-37
Creche + Junior Childrens' Amenity Play		Page 38-39
Planting Design Rationale		Page 40
Typical Planting Details		Page 41
Irish Water/ Uisce Eireann Typical details		Page 42
BS 5837 Typical existing tree and vegetation protection measures		Page 43
12 month Maintenance Schedule		Page 44-45
NBS Specification for Landscape Maintenance Works		Page 46-49

LANDSCAPE DESIGN PRINCIPLES



EXISTING SITE PHOTOGRAPHS

V1 Verified View taken looking north-west from a cul-de-sac corner of the existing Millbrook housing development. The existing hedgerow provides substantial screening to views into the site.

V3 Verified View looking south-west, taken from an open space in the existing Millbrook housing development. Glimpses of the site are possible through the scrubby hedgerow at the base of the existing Oak trees.

V6 Verified View taken looking south-west from the Carley's Bridge Road along the existing site boundary showing coppiced trees and hedgerow screening views into the development site.

V4 Verified view taken from Carley's Bridge Road, looking west over the River Urrin towards the development site in the distance.

LANDSCAPE DESIGN STATEMENT

Aerial photograph of site context and subject site, © Maxar Technologies Google Maps Satellite 2020

DESIGN STATEMENT

This document has been prepared by Landscape Design Services, chartered landscape architects as supplementary information to accompany an application for permission to An Bord Pleanála for a development at Carley's Bridge Road, Enniscorthy, Co. Wexford. This report accompanies the landscape plan, planting plan and details prepared by Landscape Design Services for the proposed development, extracts of which have been reproduced for reference in this report.

This report outlines the site in its current condition, describes the landscape design approach taken and the landscape design proposals.

DEVELOPMENT PROPOSALS

This application is for the following development proposals:

- The proposed Strategic Housing Development will comprise a residential development of 233 no. units (53 no., 3-4 bed houses and 180 no. 1/2/3 bed duplexes/apartments).
- Provision of a creche.
- Associated car parking, bicycle parking, and open spaces/landscaping
- Vehicular and pedestrian accesses provided via Carley's Bridge Road to the north west, pedestrian/cyclist access via Carley's Bridge Road to the north and Millbrook Residential Estate to the east of the site.
- All associated site works including boundary treatments, plant, bin stores, site services and connections to facilitate the development.

SITE LOCATION

The subject site is located at Carley's Bridge Road (a local third class road), Enniscorthy, Co. Wexford, within the Wexford County Council Local Authority area. The north-western site boundary of the subject site fronts onto Carley's Bridge Road which connects the R744 road to Ross Road, directly into Enniscorthy town centre.

The majority of the subject site has been zoned R1 (new residential/low medium density) under the Enniscorthy Town and Environs Development Plan 2008-2014; extended to 2020). The remainder of the site along the Urrin River has been zoned G5, for local space and amenity. The subject site is roughly rectangular in shape, measuring approximately 8.7 hectares in area, with approximately 170m of road frontage onto Carley's Bridge Road. The site is bounded on all perimeters by hedgerows and watercourses (the Urrin River, the River Lyre and their tributaries and drainage channels, and on most boundaries by mature native tree-lines, primarily Oak to the northern, eastern and southern site boundaries, with Alder, Crack Willow and Oak along the Urrin riparian boundary. The site is comprised of improved agricultural grazing land with a low stone/sod wall and hedge boundaries to the perimeter along Carley's Bridge Wall. The site rises from the north of the site, adjoining the public road, and falls towards the southern corner of the site.

LOCAL CONTEXT

Carley's Bridge Road is located on the eastern outskirts of Enniscorthy, approximately 0.5 kilometres from the town centre. To the north of the subject site a dense old woodland called Carraigabruse Woods lines the banks of the River Lyre between it and Potter's Way; to the west of the existing site entrance the site is bounded by the River Urrin and its riparian habitats, which meander gently to bound the subject site to the south-west.

The land-uses to the north-east of the site consist of the extended urban fabric of Enniscorthy (mainly residential areas); and to the north, east and south the use is predominantly agricultural. The existing housing is characterised by predominantly two-storey housing developments (the 'Millbrook' housing development) to the immediate north and east of the site. Some single dwellings are located along Carley's Bridge Road itself. Surrounding habitats comprise improved agricultural grassland, varied buildings, amenity grasslands, mixed woodland, hedgerows and tree-lines.

DETAIL DESIGN RESPONSE TO ABP + WCC OPINION

The site layout design has significantly evolved over the past year to improve amenity open space provision across the site, improve legibility and way-finding, integrate eco-system services, and improve habitat for wildlife, in response to the concerns raised in the An Bord Pleanála opinion.

The site layout is logical and responsive to the site conditions at the development site. We feel that the architect's and engineer's site layout has resulted in the creation of an attractive and well-detailed public realm, and that the arrangement of buildings, car-parking, access routes, open space and streetscape, car-parking and amenity is an efficient use of the site shape, existing vegetation and field drain features, the sloping topography, and is an informed response to the housing to the east and north, and the river bank. The developed site strategy has been well-formulated by Brian Dunlop Architects, with input from consulting engineers, arborist, ecologist and bat consultant, lighting engineer and landscape architecture consultants. It addresses issues like a clear and legible streetscape strategy, permeability and way-finding, consideration of universal access, flexibility in use, space, aspect and orientation, functionality, activation to open spaces and screening to views.

Two particular items were raised for clarification by An Bord Pleanála:

- *Item 2: A landscape and permeability plan of the proposed open space within the site clearly delineating public, semi-private and private spaces, areas to be gated, treatment of interface areas and provision of future connections to adjoining lands, location and design of identified play areas.*

Response: BDA have prepared a detailed diagram indicating the hierarchies and quantum of open space (public open space, communal amenity open space, private open space) in their site strategy design. Our landscape masterplan supports this approach to a clear hierarchy of open space by selecting hard and soft landscape materials selection appropriate to the use and functionality of the space. Designated areas for children's play (and that of adults!) and details of the design and specification of these spaces are highlighted on the main landscape plan, this report (pg 16-17), on the detail landscape plans and sections, as well as on our 'Amenity Play Strategy + Plan, Play Materials + Equipment Palette' drawing.

- *Item 3: A landscape masterplan for the proposed Riverside Park to include appropriate measures to address water safety at the water's edge.*

Response: Our team's detailed design approach for this area has been informed by the IFI guidance document 'Planning for Watercourses'. We have provided a 1.20m ht sweet chestnut fence along the riverbanks to provide a riparian buffer zone as shown on our landscape plans in a brown dashed line; and specifically addressed in detail on Pg 22-23 of this report 'River Urrin - Riparian Buffer Zones'. Gates will be provided along the fence for angler and maintenance access.

DESK STUDY ANALYSIS
- Relevant Policies + Objectives, Design Rationale + Response

The Landscape Report set outs how the proposed landscape design addresses each of the relevant policies, objectives and provisions of the County Development Plan and relevant national guidance. We have described the development proposals and the landscape architecture design responses under the headings below, as per the 'Best Practice Design Manual criteria' headings (Box 2, Pg 16).

DESIGN RATIONALE + RESPONSE

We have designed a landscaping scheme for this residential development which contributes to the creation of sustainable communities in accordance with the ambitions and policies of the documents and guidelines as listed below.

- '*Wexford County Development Plan 2013-2019*' 2013, WCC with reference to Chapters 4 '*Housing*', 5 '*Climate Change*', 7 '*Tourism*', 9 '*Infrastructure*', 10 '*Environmental Management*', 12 '*Flood Risk Management*', 14 '*Heritage*', 15 '*Recreation*', 17 '*Design*', 18 '*Development Management Standards*', and Appendices 5 '*Public Lighting*', 6 '*Roads and Footpaths*', 8 '*Open Spaces*', 9 '*Playground Equipment*'; 10 '*Overall Design*', 11 '*Access for the Disabled*' and 12 '*Surface Water*';
- '*Wexford County Council Biodiversity Action Plan 2013-2018*' Wexford County Council (2013);
- '*Taking in Charge of Private Residential Estates'*, Wexford County Council's Policy Document, adopted 2008.
- '*Enniscorthy Town and Environs Development Plan 2008-2014*', (extended to 2020) Wexford County Council, 2008.
- the '*National Pollinator Plan 2015-2020*';
- the '*Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages)*', DoELHG (2009);
- and the companion '*Urban Design Manual - A Best Practice Guide*', DoELHG (2009);
- '*Permeability: A Best Practice Guide*', National Transport Authority (2015)
- '*Building for Everyone: A Universal Design Approach*', National Disability Authority (2012);
- '*Design Manual for Urban Roads and Streets*', Department of Tourism, Trade and Sport, Department of Environment, Community and Local Government (2019).
- '*National Landscape Strategy for Ireland, 2015-2025*', Department of Culture, Heritage and the Gaeltacht (2015)
- '*Planning for Watercourses in the Urban Environment*', Inland Fisheries Ireland (2020 Update)

CONTEXT

The existing site context is generally 1 to 2-storey semi-detached housing to the north-east of the subject site, and we consider that the new housing scheme is an appropriate scale of development and good fit with the site context.

SENSE OF PLACE

The site setting on a south-west facing slope down to the banks of the wooded River Urrin, gives it a distinctive *genius loci*, and the retention of much of the existing planting in the proposed scheme will settle the new development into the receiving environment. We have proposed a landscape design which is distinctive and easily legible by the visitor and resident, and responds to the site setting. A high-quality durable palette of hard landscape materials such as stone and concrete paving, wooden seating elements and benches, and wooden play equipment lends a residential scheme an immediate sense of permanence and appropriateness. Tree and transplant planting in the riverside amenity open space has been selected from an indigenous palette suitable for the site setting, and supplemented with appropriate exotic pollinator-friendly trees, shrubs and flowering perennials.

SUSTAINABLE HOUSING

Sustainable development has been defined as development which 'meets the needs of the present without compromising the ability of future generations to meet their own needs'.

Our landscape action plan for sustainable design has been based on considering the following targets and issues:

- Re-use existing assets
- Design for minimum waste
- Promote high standards in design and construction and in the provision of residential amenity and services in new housing schemes
- Minimise energy use
- Pollution
- Biodiversity
- Durability
- Cost-effective design and maintenance
- Conserve water resources
- Landscape design that is easily managed and maintained
- Respect people and their local environment
- Providing residents with a environment that is healthy, accessible and visually attractive
- SuDS design

Most of the existing vegetation and wildlife corridors (tree-lines, drainage channels, hedgerows) at the site has been retained and protected in the proposed scheme, and supplemented with new planting. The designed housing scheme takes account of the contours and sloping topography of the site, and the views available over the sylvan landscape to the south-west. Much of the streetscape has been designed by the architects with 'Home Zone' principles and with generous tree planting in moisture-tolerant planter beds.

Close to each dwelling is a quality amenity communal open space, access to which has been designed using the principles of Universal Design to ensure that people of all ages and abilities can gain access to the communal open spaces. Where possible, we will use any natural rock outcrops discovered in the excavations as a feature of the amenity open spaces. The design team has reserved a large amenity open space along the banks of the Urrin River bounding the site to the south-west, and we have incorporated opportunities for passive and active recreation for the users.

The central amenity open space that we have called the 'Green Ginnels' has been designed by the team as integrated, accessible, overlooked and well-supervised. It provides a highly amenable outlook for residents from their homes, allowing them to walk out of their homes and almost immediately be in nature.

The planting palette relies heavily on an indigenous pollinator-friendly palette, which should establish easily on the site, require little maintenance to help establish, and be easily available at local nurseries. 'Succession' type transplant planting has been proposed to develop in the new biotopes in the main riverside amenity open space, and along the northern slopes of the 'Green Ginnels', which requires minimal maintenance.

Above: example of a quality streetscape in a new housing project, Goldsmith Street in Norwich.

Above: example of a simple amenity open space to a housing development with seating, grass lawns, ornamental trees and sculptural wooden play equipment for younger children, balancing the needs of passive and active amenity use.

Above: streetscape should support alternative methods of transport, especially cycling and walking, Goldsmith Street in Norwich.

Above: creating a planted perimeter and introducing planting close to porches of new houses helps settle a development into the site context and 'green' the site. Goldsmith Street, Norwich.

DESK STUDY ANALYSIS
- Relevant Policies + Objectives, Design Rationale + Response

The hard landscape palette comprises durable quality materials - larch, oak, stone, concrete, steel etc. Where new concrete paving units are proposed, they have been selected considering their process of manufacture (with 100% recycled water, using locally sourced materials in Ireland, and manufactured with a minimum of 25% non-primary aggregates, 10% pre-consumer aggregate replacement and 50% of the ordinary Portland cement replaced with a carbon-neutral cement replacement. All of these new pavings to car-parking spaces have been specified as permeable to absorb rain-water.

In-situ concrete pavings will be specified with a high proportion of local aggregates in the mix, eco-cement and GGBS (recycled ground granulated blast-furnace slag). We have specified a locally-sourced golden gravel to the main 'Cow Path' pedestrian paths through the site.

CONNECTIONS
Our design team has proposed a new public footpath and verge along Carley's Bridge Road to directly link the development site with the existing pedestrian connections and towards the town of Enniscorthy. A number of pedestrian entrances are provided along the road, including one directly into the riverside amenity park. A pedestrian site entrance has been provided at the north-eastern corner of the site so that people can quickly gain access to the amenities of Enniscorthy. The main entrance and boulevard avenue is clearly signalled by large street trees and 3.00m width paths, and a new pedestrian entrance has been provided to the riverside amenity open space.

Within the housing development, footpath widths are set at a minimum 2000mm with regular passing places provided, in order to prioritise pedestrians and cyclists. A raised entrance plateau and regular 'rumble strip' pedestrian crossings surfaced in natural stone setts arranged to break up the access roads, to highlight the presence of pedestrians and create a more 'home-zone' like character to the housing streets. The design team have also proposed a strong connection from the 'Millbrook' housing development with a 3.00m width gently-sloped shared cycle and pedestrian path through to the new Home Zone area, and directly to the riverside amenity park.

INCLUSIVITY
We have provided direct pedestrian connections from the public realm to the footpaths within the development, as well as a proposed new footpath in the public realm along Carley's Bridge Road. This will assist in creating a safe access for pedestrians, cyclists and road-users of all ages and abilities.

We have designed a landscape scheme with a clear hierarchy of quality materials, which is easy to way-find through in terms of legibility for residents and for visitors. In terms of the detail design of spaces we have been informed by the National Disability Authority's updated guidance on universal design of the built and external environment, 'Buildings for Everyone'.

A universal design approach has been used in terms of the landscape design, with loop paths provided in the open spaces, generous seating areas and paving which is suitable for trafficking by wheelchairs and buggies. Wooden play equipment and natural loose impact safety surfacing has been selected with sustainability, ease of maintenance and universal access prioritised. The landscape scheme has been designed with a clear hierarchy palette of quality hard and soft materials, which is easy to way-find through in terms of legibility for residents and for visitors.

VARIETY
The mix of housing types will assist in creating a neighbourhood which supports people of different ages and lifestyles, improving social inclusion. We have used play and recreation as the generator for activity in the open spaces, to promote a good mix of activities and to support Wexford County Council's role and policies to improve physical and mental well-being. A generous proportion of the amenity spaces have been given over to attractive playspaces and 'green gyms', with the remainder designated for other types of more passive recreation and biodiversity improvements, finished with wildflower meadows, amenity lawns, planting and loop paths for example.

Providing an active space for children to come out and play encourages use by families of external amenity spaces, and helps make connections. Generous seating elements encourages older people and parents to gather and facilitates passive supervision of play. Providing all-weather elements such as shelters, seating elements, green gyms and picnic sets encourages people to gather even on a foggy drizzly day, and meet their friends.

The streetscape in the centre of the site has been designed by the architects as a 'Home Zone' space, consisting of shared surfaces, areas of planting and design features, which encourages the street to become a play and amenity area.

EFFICIENCY
We feel that the architects' and engineers' site layout has created an attractive and well-detailed public realm, and the arrangement of new housing, private amenity gardens and amenity open spaces, is an efficient use of the site shape, the sloping topography of the site, and an informed response to the surrounding urban verge form and context, as well as the riparian border and ecological corridors at the site.

DISTINCTIVENESS
The simple orthogonal layout and introduction of planted elements such as street trees, hedging, and perennial planting will present an attractive, well-maintained appearance, with a distinct sense of place and a quality public realm. The use of durable, hard-wearing quality materials such as limestone and pre-cast concrete will reduce the maintenance requirements of the housing scheme, as will the specification of a high proportion of native and naturalised plants, which establish easily.

LAYOUT
The site layout is logical and responsive to the site conditions at the development site, with sloping contours to the south-west, and bounded by riparian and hedgeline/drainage channels. Retention and protection of the existing green boundaries has been prioritised by the design team as they provide the site with a distinctive sylvan setting and immediate sense of place.

The low-lying parts of the site bounding the River Urrin have been reserved for amenity open space, and 'green ginnels' have been proposed between the terraces of new housing stepping down the slope to create new ecological linkages and support universal access throughout the scheme. We have dispersed play areas throughout the development to enhance open spaces but also provide local streets with their own playspaces. Amenity open spaces such as the south-west oriented Gathering Space at the southern boulevard have been located to enjoy the benefit of retained mature Oak trees.

DESK STUDY ANALYSIS
- Relevant Policies + Objectives, Design Rationale + Response

Above: using felled trees as an informal play element which also acts as a biodiversity resource and habitat for invertebrates.

Above: introducing generous street trees with the space to mature and grow helps settle a development into the context, slow traffic and create a ‘green’ appearance to the streets.

A new pedestrian site entrance at the northern corner of the site closest to Enniscorthy provides a quick connection for residents who wish to take a short-cut home through the green streets and amenity open spaces of the new housing scheme. The design team has provided a universal accessible shared cycle and pedestrian 3.0m width path leading from the existing Millbrook housing development through an green open space into the heart of the new development at the Home Zone, and then into the Green Ginnels to create a loop walk. Between the gable ends of the apartments arranged along the southern boulevards, steps lead up to the Green Ginnels walking route and connect directly across the road to the main riverside amenity open space.

The main riverside amenity open space has been designed with retention of existing vegetation prioritised. Our design proposes to reuse an old gate entrance shown on maps as a new pedestrian entrance into the riverside amenity open space. Amenity play areas have been located on the higher ground of the amenity open space, with areas of existing marshland and reeds retained as an important visual and ecological amenity. The amenity open space has been landscaped with new biotopes wildflower meadows, rough grass areas, ‘field hedgerows’ of ornamental grasses, lawns and areas of indigenous tree and transplant plantings. The form of these biotopes has been conceptually derived from the meanders and islands of the River Urrin.

Play spaces and open spaces have been designed and detailed with consideration paid to existing and proposed underground and overground services routes to prevent clashes, as well as the contours of the site. The engineering team have paid particular consideration to the arrangement of underground attenuation tanks to support the provision of amenity open space and tree planting.

We have been informed by WCC’s specific objectives as outlined in the Development Plan chapters ‘Housing’, and ‘Heritage’ and Appendix 11 ‘Access for the Disabled’ to create a high-quality living environment for residents in terms of the overall layout and appearance of the development, which can foster community spirit, provide SuDS and reduce traffic movements. Such neighbourhoods should be designed with universal design as a starting point, as this promotes accessibility for people with disabilities and people with reduced mobility.

STREETS AND MOVEMENT

The architects have reserved large street tree planting pits in the streetscape which can help absorb rainwater cloudbursts, but also have been shown to reduce vehicular speeds. Regular pedestrian crossings have been proposed in the design, many of which will be paved in high-quality natural stone setts to distinguish them from the asphalt surface of the roads. These will help to highlight the presence of pedestrians and young children, and to slow traffic in the development, with the hope of creating a ‘home-zone’ like atmosphere in the housing scheme, where children are happy and safe to play in the street, as well as in the designed playspaces. The revised layout improves issues such as connectivity and permeability, allowing convenient access to spaces within the development, particularly towards the new childcare facility and amenity open spaces.

Open spaces have been designed to have passive surveillance from the new dwellings but also to create new ecological corridors and linkages through the site. The architects reserved wide spaces for wildlife between the terraces of dwellings which we have called the ‘Green Ginnels’, an old word meaning

Above: integrating natural playspaces near to housing eases passive surveillance and embodies principles of child-friendly planning at Vauban

Above: provinding privacy landscape planted buffers to the front of dwellings to ensure views into the housing are filtered

DESK STUDY ANALYSIS
- Relevant Policies + Objectives, Design Rationale + Response

Above: Inclusive design provision for ages 2-92; designing a child-friendly neighbourhood means designing for people of all ages and abilities

Above: Prioritise universal design principles and inclusive design principles in the streetscape and amenity open spaces

Above: The child-friendly neighbourhood of Vauban includes details such as 'play-along-the-way' and wider footpaths to ensure pedestrian comfort.

a passage between terraced houses. Universal access to these connecting spaces is provided from the streets and with stepped access provided between the gables of the apartment buildings from the southern boulevard.

OPEN SPACE AND AMENITIES

The specific objectives of WCC concerning 'Open Spaces' address the creation of a clear hierarchy and network of high quality open spaces that provide for active and passive recreation, and enhance the visual character, identity and amenity of the area. Car-parking has been dispersed by the architects throughout the development, and racks of cycle parking and bin storage has been located by them near each of the apartment blocks and close to the central amenity open spaces. This will improve sustainability as car-borne trips can be reduced.

New pedestrian entrances into the housing scheme have been provided at the Enniscorthy corner of the site to give quick access into the Home Zone area, at the main entrance to give access to the southern boulevard, and near Carley's Bridge itself to give direct access into the riverside amenity open space. The design proposes a new footpath in the public realm along Carley's Bridge Road which is a strong positive contribution to promoting pedestrian connections and to prioritise the use of walking, cycling and public transport, and facilitate people of all ages and abilities to walk and cycle.

We have proposed planting of indigenous species and naturalised species trees and hedgerows to all site boundaries to mature to screen the development, and to promote bio-diversity at the site. Linking open spaces and recreational areas can contribute to extending the 'Green Network' of ecological corridors, and serve a variety of amenity functions from passive and active recreation to provision of habitat and enhancement of biodiversity.

The amenity open spaces have been arranged as a chain throughout the site. At the main pedestrian entrance at the northern corner, an open space to support recreation and exercise has been provided, directly leading to a Green Ginnel walk, arching through the site and well passively-surveilled by the adjacent housing and apartment buildings. The main riverside amenity open space and park is located along the banks of the Urrin River in the low-lying contours of the site, and is provided with facilities for play and recreation in addition to supporting biodiversity.

In relation to the provision for play and recreation in the amenity open spaces, we took guidance from the National Children's Play Policy 'Ready Steady Play', the Guidelines on 'Quality Housing for Sustainable Communities' and 'Sustainable Urban Housing' by the DoHPLG, and provided suitable play opportunities for the future child population within the proposed development. A number of playspaces, natural in character to fit with the site, are arranged per age group (older children 11-15 and younger children 1-10) to activate the open spaces. Accessible routes are provided to these, and also to the green gym route along the Ginnels.

PUBLIC REALM

In consultation with the project architects and engineers, we have designed a safe, secure and enjoyable public realm. Quality materials and generous planted areas can help to create an instantly attractive and welcoming public realm. Making way-finding easy helps settle people into a new housing development much easier. Research shows that slowing traffic through simple design measures such as introducing street trees and rumble strips makes spaces safer. We have proposed a simple sweet chestnut pale-type fence and wooden gate enclosure to younger children's playspaces, and all amenity spaces are now passively surveilled by the houses addressing the open spaces, as well as by amenity benches, seating and picnic tables.

The development of the design to directly connect Millbrook housing with the riverside amenity open space along a 3.00m width gently-sloped path winding through the site has resulted in the site opening up positively for views, aspect, way-finding and play features, as well as the retention of key existing trees.

PRIVACY/AMENITY

Wexford County Council's Development Plan has specific objectives on 'Private and Semi-Private Open Space', to ensure that all dwellings have access to high-quality private open space, which must be well-integrated in the design of new residential developments. An objective of the policy is to ensure that private amenity spaces are designed in accordance with the quantitative standards set out in the Development Plan and the qualitative standards set out under the 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas', DoELHG (2009) and the accompanying 'Urban Design Manual - A Best Practice Guide', DoELHG (2009).

The design team's site layout proposes apartment buildings arranged along the south-facing southern boulevard, overlooking the main amenity open space along the river. A mix of housing typologies steps up the site with the contours, with a sloped heavily-landscaped 'ginnel' between the terraces of housing and the apartment buildings. Each apartment has a generous external terrace, duplexes now have private gardens, and each private dwelling garden to houses has been measured by the architect as in excess of 60m^2 area. The rear gardens of the residential dwelling houses have new Hornbeam or Holly hedges to the rear of garden, and decorative trees are planted to each rear garden of a dwelling.

All of the amenity open spaces have been detailed by the architectural team to provide passive surveillance and ensure overlooking and activation. We have provided appropriate planting and landscaping measures to provide privacy buffers in dwellings generally.

PARKING

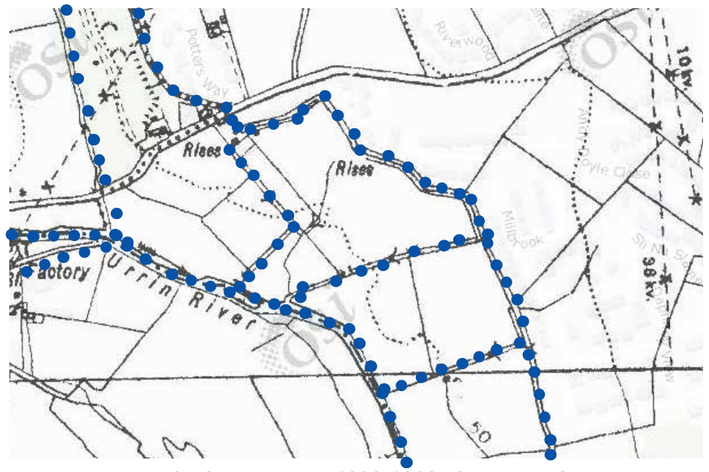
In order to make the parking areas safe and attractive, we differentiated the visual appearance of the car-parking spaces by paving them in high-quality pre-cast concrete permeable paving setts, 'Newgrange Clima-Pave' by Kilsaran, in a black limestone shot-blast finish. The bays of car-parking are distinguished from the asphalt-surfaced carriageway by a pre-cast concrete silver granite-aggregate kerb, laid flush with the paving.

The risk of reversing cars colliding with the proposed street trees is reduced by the introduction of a 'kick-kerb' to each street tree planting pit. Crossings, entrance areas and entrances to Home Zones will be paved in a natural stone sett finish to differentiate them from car-parking bays and from the asphalt carriageway. Residential car-parking bays have been provided close to dwelling entrances. All car-parking bays are passively surveilled by housing in the architect's site layout.

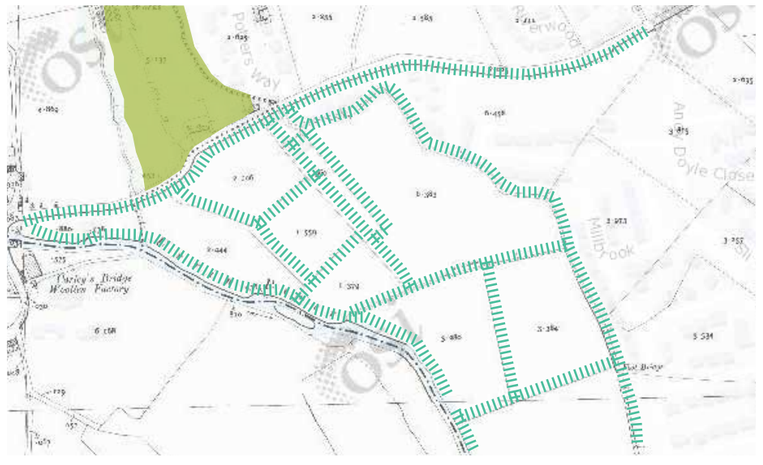
DETAILED DESIGN

On balance, we consider that the scheme design has been well-developed by the design team in relation to addressing landscape issues such as ecology, amenity, universal design, play, climate resilience and biodiversity. We have taken the concept of 'playability' for ages 2-92 as our key design driver and tried to embed this in the design to ensure activation and use.

DESK STUDY ANALYSIS
- Relevant Policies + Objectives, Design Rationale + Response

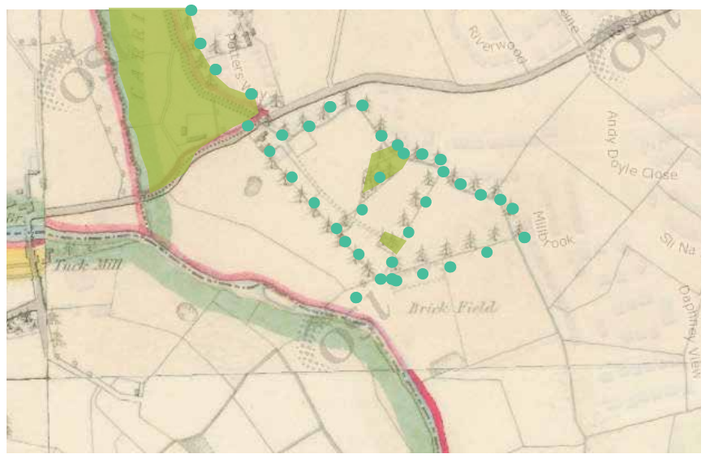


Above: Historic 6" Cassini map, 1830-1930, Ordnance Survey Ireland. Note the watercourses bounding the site (the tributary of the Lyre River to the northern site boundary, and the Urrin River to the south-west, drainage channels down the slope of the site).



Above: Historic 25"map, 1888-1913, Ordnance Survey Ireland. Mature native species tree-lines and hedgerows bound the site and break it up into a number of sheltered fields, limiting views and providing ecological corridors in the area surrounding the Urrin River.

Above: By Consulting Ecologist 'Whitehill Environmental - '*Aerial Photograph of the Entire Site (outlined in Red) and its Surrounding Habitats. Watercourses are highlighted in Blue'*. Important fish species such as brown trout, European eel and salmon were recorded upstream of Enniscorthy in the Urrin River. The Urrin and her catchment tributaries have been described by the EPA as of 'moderate' ecological status.



Above: Historic 6" map, 1837-1842, Ordnance Survey Ireland. Distinctive tree-lines and copses have emerged on the site, with large trees shown at the site boundaries. A gravel pit also appears to have developed on the site. Carrigabruse Woods are establishing around the brickwork factory to the north.

Above: Historic 25"map, 1888-1913, Ordnance Survey Ireland, overlaid on contemporary aerial photograph. Most of the hedge- and tree-lines have been removed except for those bounding the site, and the central one bisecting it.

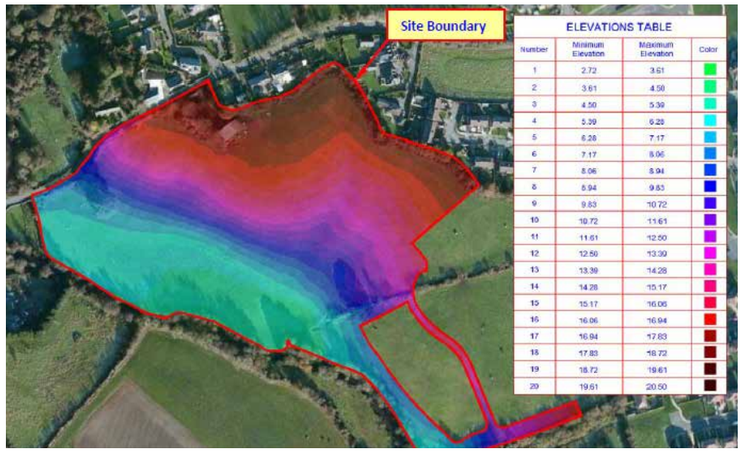
Above: The National Biodiversity Data Centre website has records for 3 protected species within the 1km grid squares (s9539 and S9639) of the proposed development; Brown Long-eared Bat *Plecotus auritus*, Badger *Meles meles*, and Whiskered Bat *Myotis mystacinus*, with a possible presence of Otter, *Lutra lutra*.

DESK STUDY ANALYSIS
- Ecological, Topographical & Water

Above: By Consulting Engineer 'IE Consulting' - '*Overland Flow Paths*'. Surface water flows across the site still follow the old field/drain boundaries, and provide a starting point for natural SuDS proposals.

Above: Wet woodland type habitats along the Urrin River/Slaney with alder carrs typical along the riparian corridors. *Alnus glutinosa* (Common Alder) shown.

Above: Wet woodland type habitats typical along the riparian corridor with *Betula pendula* (Silver Birch) shown.



Above: By Consulting Engineer 'IE Consulting' - '*Topographical Survey Derived DTM*' delineates the 1:100 year (1% Fluvial AEP) and 1:1000 year (0.1% Fluvial AEP) extreme flood levels in the Urrin and Lyre to the south of the site.

Above: Floating vegetation common along the watercourses locally includes *Nuphar lutea* (Yellow Water Lily).

Above: Marginal plants found along the riparian corridor include *Scirpus lacustris* (Common Club-Rush)

DESK STUDY ANALYSIS

Existing Plant Communities - Wet Woodlands, Alder and Silver Birch, Oak Woodlands and Typical Ground Flora

Above: *Filipendulina ulmaria* (Meadowsweet) found along the local riparian corridors in the wet woodlands and along the riverbanks.

Above: Oak woodlands are found locally, with *Quercus petraea* (Sessile Oak) the dominant oak species.

Above: Emergent trees within the oak woodlands include native *Pinus sylvestris* (Scot's Pine).

Above: Emergent trees within the oak woodlands include naturalised *Fagus sylvatica* (Beech).

Above: Occasional hummocky grasses such as Carex paniculata (the Greater Tussock Grass).

Above: Ground flora in the oak woodland include a high proportion of ferns such as *Phyllitis scolopendrium* (Hart's Tongue Fern), *Dryopteris filix-mas* (Male Fern) and *Polystichum setiferum* (Soft Shield Fern).

Above: Emergent trees within the oak woodlands include native *Taxus baccata* (Yew).

DESK STUDY ANALYSIS

Existing animal communities and species likely to occur

Above: The consulting project ecologist assesses that given the habitats and designations close to the site, it is possible that *Lutra lutra* (Otter) occurs locally.

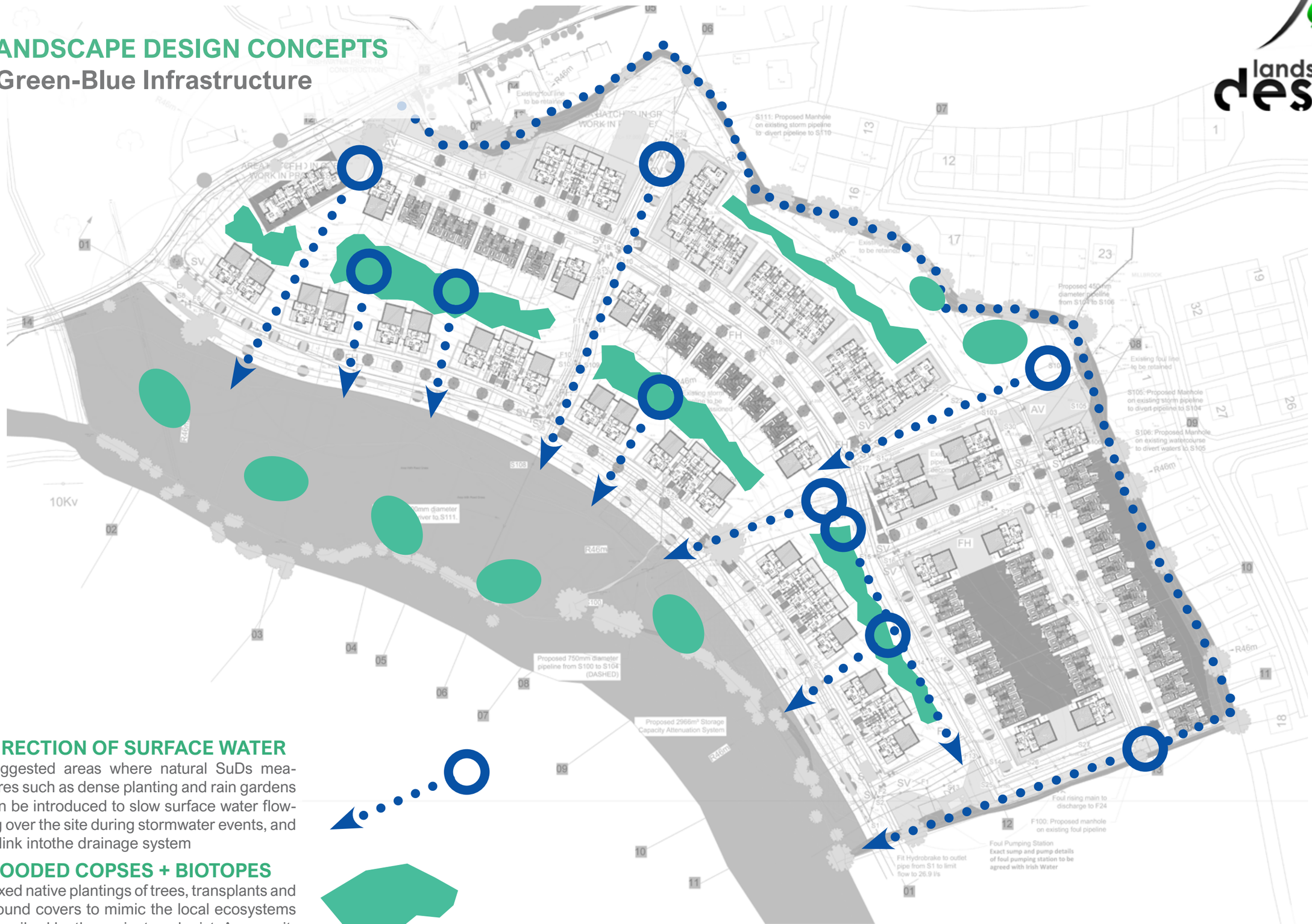
Above: Species present in the Urrin River as per the ecologist's report include brown trout, European eel, lamprey and salmon. The species richness of the watercourse is scored at 3, and the fish ecological status as good.

Above: The consulting project ecologist notes that there are records for the presence of *Meles meles* (Badger) from within the relevant 1km grid squares of the proposed development.

Above: The consulting project ecologist notes that there are records for the presence of *Myostis mystacinus* (Whiskered Bat) from within the relevant 1km grid squares of the proposed development.

Above: The consulting project ecologist notes that there are records for the presence of *Plecotus auritus* (Brown Long-Eared Bat) from within the relevant 1km grid squares of the proposed development.

LANDSCAPE DESIGN CONCEPTS
- Green-Blue Infrastructure



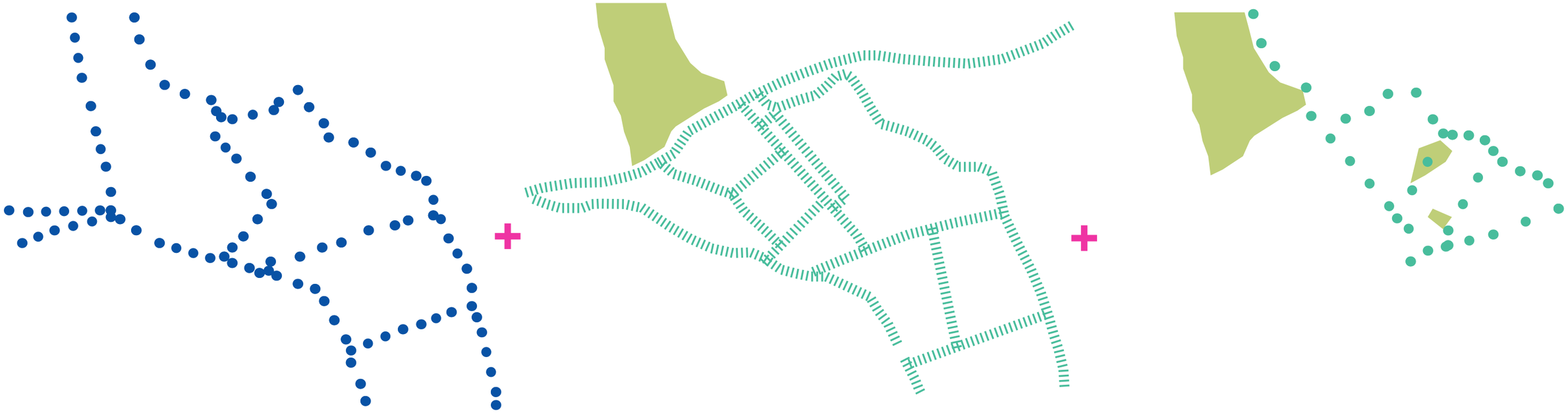
DIRECTION OF SURFACE WATER

Suggested areas where natural SuDs measures such as dense planting and rain gardens can be introduced to slow surface water flowing over the site during stormwater events, and to link intothe drainage system

WOODED COPSES + BIOTOPES

Mixed native plantings of trees, transplants and ground covers to mimic the local ecosystems described by the project ecologist. Areas suitable for bird boxes and in future bat boxes.

LANDSCAPE DESIGN CONCEPTS
- Green-Blue Infrastructure



Support historic ‘blue’ infrastructure

- to slow surface water flow through the site and provide blue corridors and habitat for wildlife through natural SuDs measures where possible, in consultation with the project engineers. Retain or replace existing watercourses to mitigate against the development impacts.

Above: ‘Wet woodlands’ of birch, alder and willow with bilberry and hazel under-storey plants; and ornamental grasses and rushes as ground cover plants.

Support historic ‘green’ infrastructure

- to allow animals such as hedgehogs and badgers to continue commuting through the site, and to provide biodiversity and wildlife through planting. Mature hedgerows and planting can support SuDS measures, as well as screen views of the development.

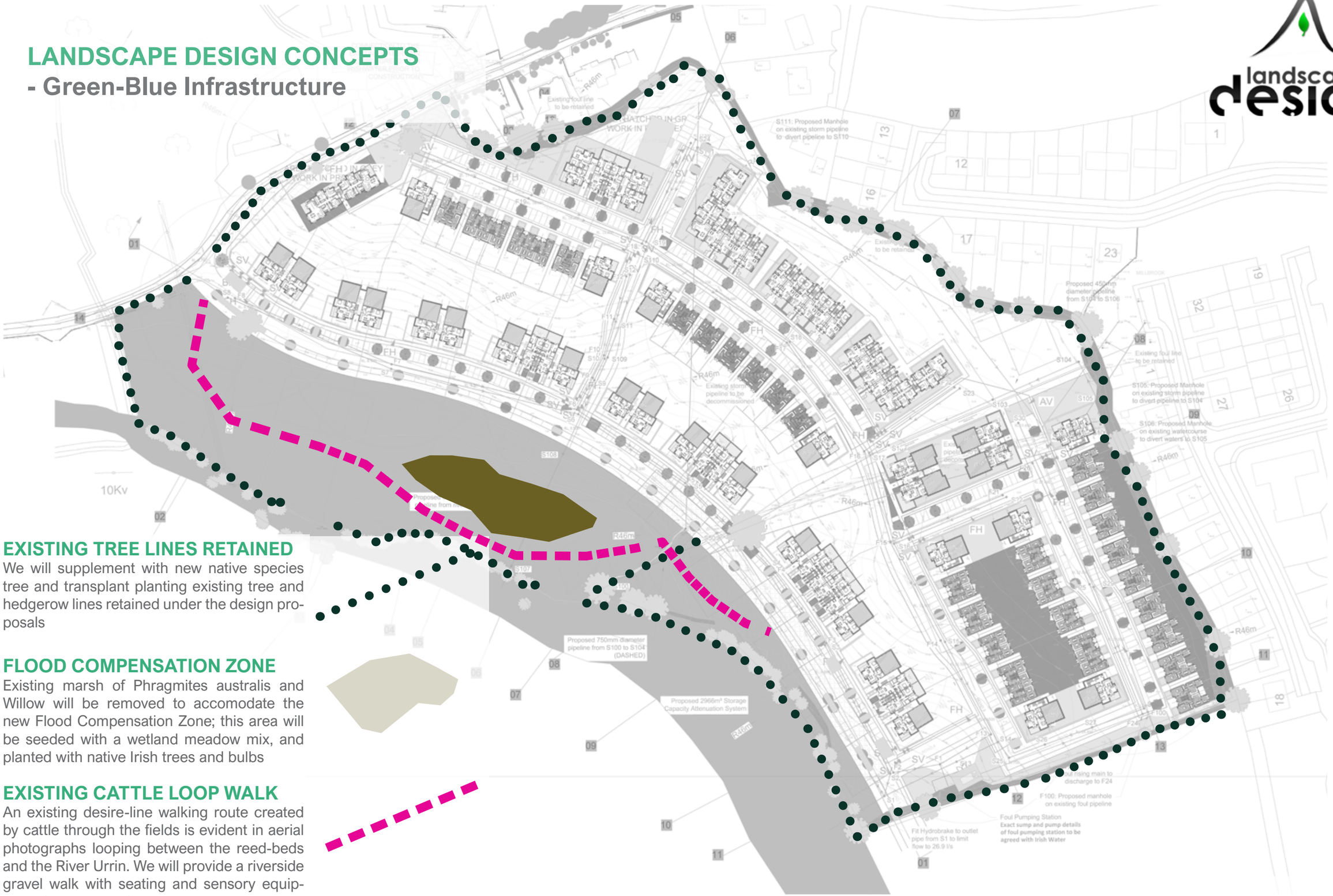
Above: ‘Upland woodlands’ of Oak and Pine, with fern and moss ground cover

Support historic lines of trees + copses

- large trees and woodland copses provide refuge for animals, are a biodiversity resource, instantly settle developments into the landscape, and reduce carbon loads.

Above: swale elements on a sloped hill, with retention area, and bridge, located in meadow beside road through village and bounding a playspace

LANDSCAPE DESIGN CONCEPTS
- Green-Blue Infrastructure



EXISTING TREE LINES RETAINED
We will supplement with new native species tree and transplant planting existing tree and hedgerow lines retained under the design proposals

FLOOD COMPENSATION ZONE
Existing marsh of Phragmites australis and Willow will be removed to accomodate the new Flood Compensation Zone; this area will be seeded with a wetland meadow mix, and planted with native Irish trees and bulbs

EXISTING CATTLE LOOP WALK
An existing desire-line walking route created by cattle through the fields is evident in aerial photographs looping between the reed-beds and the River Urrin. We will provide a riverside gravel walk with seating and sensory equipment for people of all ages + abilities in this location

PALETTE OF ‘HARD’ LANDSCAPE MATERIALS

We have selected a legible palette of clear and high quality landscape materials to the public and semi-private realms to help people easily move through and along the proposed development.

The proposed paving materials palette is as follows:
- exposed aggregate concrete to pedestrian and cycle street paths
- large format stepping stones to new paths in riverside amenity park
- self-binding golden gravel to the riverside walk
- Locally sourced granite and gravel to gathering areas
- permeable pre-cast concrete paving to car-parking areas
- natural loose impact safety surfacing of different materials complying with EN 1177 including play bark, pea gravel, play sand, lawn etc to amenity play areas, with issues such as elemental play, access for all, excavations near existing trees etc considered in selection

Above: amenity play area set in a low-lying riverside occasional flood plain. Foundations for play equipment in such areas should be bigger by a 1/3 because of the ground pressure.

Above: wooden play equipment selected to fit in with the pastoral character of the landscape

Above: minimal bat-friendly lighting elements and directional bollards

Above: Felled tree trunks and rounded glacial boulders located within the site to create informal seating elements and host wildlife, beside an attenuation pond.

Above: Mix of paving materials such as self-binding golden gravel with in-situ concrete, seating elements made from felled oak trees, and new semi-mature tree planting, beside a river

Above: corten surfaced bridge spanning a watercourse

We have selected a quality hard-wearing contemporary palette of street furniture to enliven the open spaces of the development and create a cohesive appearance to the new housing. The proposed street furniture palette is FSC recycled wood with steel supports, incorporating seats and picnic sets, e.g. the 'Drifter' range by Streetlife NL.

The provision of play spaces is a social necessity. Above all it is children who need play for the development of their personalities; however also young people and adults find relaxation and pleasure in play. The proposed play equipment palette is larch wood with steel feet by Richter Spielgerate.

All landscape lighting proposed for the riverside walkway and for the 'Millbrook' connection path will be as per the recommendations outlined in the ecological assessment, low lux emitting lights and the street lighting design will include measures to direct light away from the River Urrin, the Lyre and their tributaries.

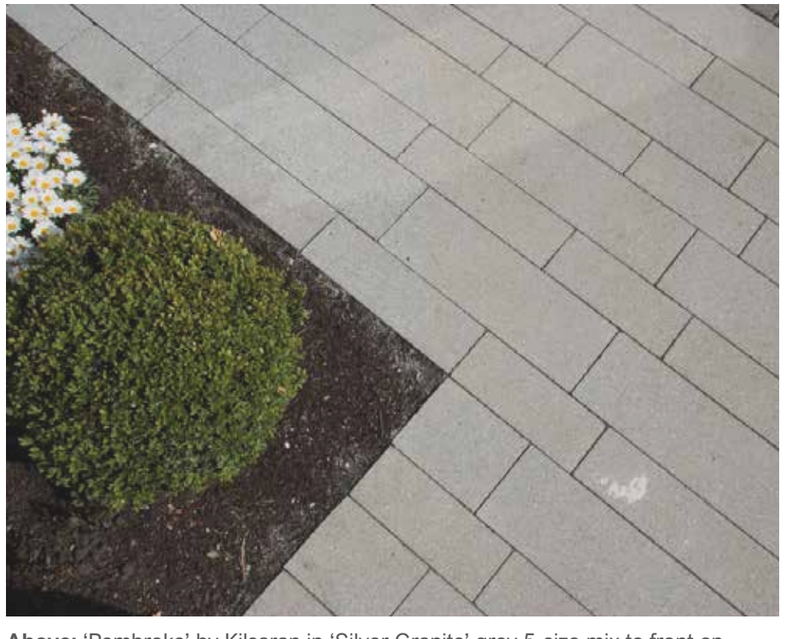
Above: mix of permeable pre-cast paving elements ('Clima-Pave Grange' by Kilsaran) and stone sett paving to Home Zone area

Above: natural loose impact attenuating safety surfacings to play areas

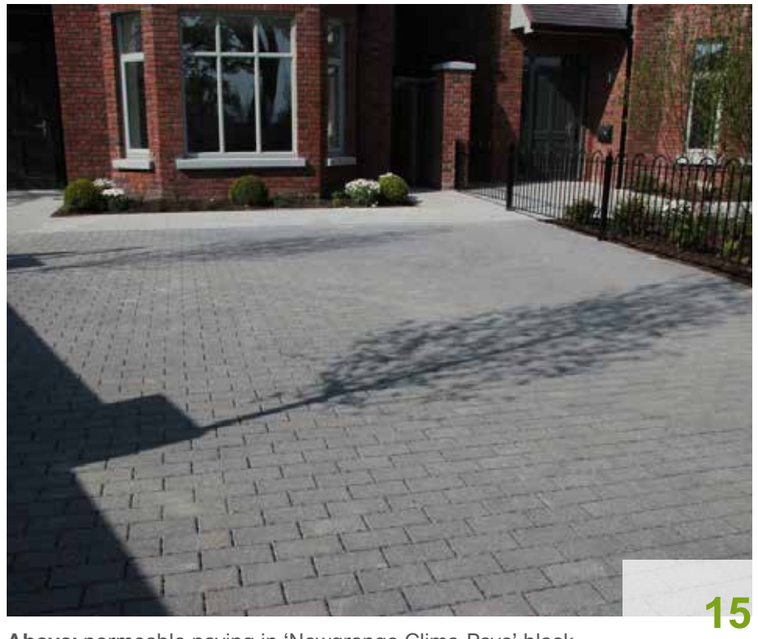
Above: self-binding golden coloured gravel, locally sourced

Above: vehicular/pedestrian interface paved in natural stone (flame-textured large format to indicate pedestrian priority, setts to slow traffic).

Above: exposed aggregate concrete to proposed public footpath along Carley's Bridge Road, and footpaths generally



Above: 'Pembroke' by Kilsaran in 'Silver Granite' grey 5-size mix to front entrances and rear patrios of dwellings



Above: permeable paving in 'Newgrange Clima-Pave' black ground granite aggregate finish, with 'Pembroke' silver grey granite paving to front entrance of dwelling

LANDSCAPE DESIGN CONCEPTS
- Amenity Open Space + Play

AMENITY AREA 5
approx 100m² younger children's 'natural' play amenity near creche
- imaginative play, constructive play and adventure play promoted in the equipment selection
- meeting point for young parents and guardians
- natural landscape elements
- fenced for security, given proximity to existing watercourse along site boundary

AMENITY AREA 6
approx. 100-200m² all-ages activity
located near site entrance to highlight presence, in a relatively level part of the site, encouraging accessibility for all abilities
- sensory space to appeal to all abilities
- health and well-being route, outdoor gym
- boules court, picnic seating etc

AMENITY AREA 4
approx 100m² younger children's 'natural' play amenity near Millbrook
- imaginative play, constructive play and adventure play promoted in the equipment selection
- meeting point for young parents and guardians
- natural landscape elements
- fenced for security, given proximity to existing watercourse along site boundary

AMENITY AREA 3
approx 200m² older children's 'natural' play amenity near Millbrook, with fitness equipment for all ages
- group play, social play and adventure play promoted in the equipment selection
- balance trail to promote physical development
- calisthenic fitness equipment located in a grassed area

AMENITY AREA 1
approx 200-400m² mixed ages 'natural' play amenity at riverside
- larger, more special pieces of play equipment at 'gateway' to development, located in higher contours of open space
- active physical play and adventure play encouraged here
- Two large and special 'anchor' pieces of equipment, one for 3-6 years, one for 6-12 years
- will require a crossing point for safe access
- prioritise retention of existing trees

AMENITY AREA 2
approx 100m² young children's 'natural' play amenity at riverside
- incorporating a sand-play area so that young children and toddlers can use 'Mill Wheels' for play to echo the industrial heritage of the river and stimulate elemental play
- role play and imaginative play with play houses and animals
- balance trail to promote physical development
- fenced because of proximity to road and river
- will require a crossing point for safe access
- fenced because of proximity to road and river

The document ‘Design Standards for New Apartments - Guidelines for Planning Authorities’, 2018, states in 4.1.3 ‘Children’s Play’ that the recreational needs of children must be considered as part of amenity space within residential schemes, and that ‘*children will play everywhere*’.

The landscape design and orientation of play areas can contribute significantly to their amenity value. We have chosen to use natural materials to fit with the sensitive sylvan landscape of the site setting. As per the Design Standards, children’s safety has been considered and protected throughout the entire site, particularly in terms of safe access to larger communal play spaces.

Children’s play in our scheme has been accommodated for as follows:

- Within small dispersed play spaces 85-100m^2 for the specific needs of toddlers and children up to the age of six, with suitable play equipment, within sight of the dwellings
- Creche playspace with age, activity and curriculum appropriate play equipment and surfacing
- Within larger play areas 200-400m^2 for older children and young teenagers
- ‘play along the way’ in the public open realm, with sensory sculptures and play equipment located at nodal points in gathering spaces and along footpaths

We have taken inclusivity and ‘play-along-the-way’ principles as a key driver for our detail design, as well as incorporating details such as child-friendly and ‘Think Toddler’ planning principles (wider footpaths, regular seating), improving children’s mobility etc. It is important to note that considering design for children results in good provision for all people, from 2 to 92.

landscape design

Above: ‘landscape elements’ such as mounding, tunnels, planting and boulders can enhance a playspace and incorporate climbing walls and embankment slides

Above: Wooden Climbing Structures act as a beautiful sculptural element in and of themselves, and can accommodate large numbers of children

Above: Wooden play equipment such as signal elements of Pyramid Towers with steel slides, and Climbing Structures, fit appropriately with heritage trees

Above: Groups of huts support role-play and shelter games, and can accommodate children of all abilities with ramps and stepped elements

Above: Wooden animals such as the Small Fish can echo the salmon in the Urrin River, and support young toddlers to climb steps, slide, jump and clamber at 600mm height

Above: sensory play elements such as Singing Stones attract people of all ages and abilities to play

LANDSCAPE - NUMBERED KEY

1. 2.00M WIDTH FOOTPATH + GRASS VERGE PROVIDED ALONG CARLEY'S BRIDGE ROAD
2. PEDESTRIAN SITE ENTRANCES
3. VEHICULAR SITE ENTRANCE
4. 20.00M WIDTH EXCLUSION CORRIDOR TO OVERHEAD LINE
5. EXTENT OF FLOOD COMPENSATORY MEASURES LOCATED IN 'MIDDLE ZONE' AS PER INLAND FISHERIES IRELAND GUIDELINES
6. 'COW PATH' LOOP WALK THROUGH RIVERSIDE AMENITY PARK WITH PLAY-ALONG-THE-WAY OPPORTUNITIES
7. PROTECTIVE CLEFT CHESTNUT FENCING TO PROTECT THE 'STREAM-SIDE ZONE' OF THE URRIN RIVER AS PER INLAND FISHERIES IRELAND GUIDELINES
8. SENIOR CHILDREN'S PLAYSPACE AT THE OLD OAK TREES
9. GENTLY-SLOPED PATH TO PROVIDE UNIVERSAL DESIGNED ACCESS FROM THE SOUTHERN BOULEVARD AVENUE DOWN TO THE RIVERSIDE AMENITY PARK
10. 1:3 PLANTED GRADIENT SLOPING DOWN FROM THE LANDSCAPE COVER TO THE UNDERGROUND STORMWATER ATTENUATION TANKS
11. LIGHTWEIGHT BRIDGE CONNECTION OVER FIELD DRAIN TRIBUTARY TO RIVER URRIN
12. JUNIOR CHILDREN'S PLAYSPACE ENCLOSED WITH HEDGE + CLEFT CHESTNUT PALE FENCE
13. PLANTED BIOTOPES OF NATIVE SPECIES TRANSPLANTS, BULB DRIFTS, TREE PLANTING
14. SOUTHERN BOULEVARD WITH 3.00M WIDTH SHARED PEDESTRIAN/ CYCLE PATHS EITHER OF STREET. PARKSIDE PATH TO BE FENCED WITH WOOD/STEEL ROAD SAFETY BARRIER. PLANTER BEDS AT APPROX EVERY 5-7 CAR PARKING BAY INTERVALS TO ENLIVEN AND GREEN STREETSCAPE
15. STEPPED LINK FROM SOUTHERN BOULEVARD TO GREEN GINNELS WALKING ROUTE
16. CENTRAL GATHERING SPACE AT OLD OAK TREE IN THE HEART OF THE DEVELOPMENT

17. GENTLY-SLOPED 3.00M WIDTH SHARED PEDESTRIAN AND CYCLE PATH TO SUPPORT PERMEABILITY THROUGH THE DEVELOPMENT, DIRECTLY LINKING THE HOMEZONE AREA TO THE SOUTHERN BOULEVARD AVENUE AND RIVERSIDE AMENITY PARK. PATH DESIGNED TO UNIVERSAL DESIGN PRINCIPLES WITH REGULAR RESTING PLACES AND LONGER LANDINGS. 'PLAY ALONG THE WAY' PRINCIPLES AND STEPPED SHORT-CUTS INTEGRATED ALONG THE ROUTE TO ENLIVEN IT FOR PEOPLE OF ALL AGES AND ABILITIES
18. GENTLY-SLOPED 3.00M WIDTH SHARED PEDESTRIAN AND CYCLE PATH TO PROVIDE A LINK THROUGH THE SITE FROM ADJACENT HOUSING DEVELOPMENT OF MILLBROOK TO THE HOME ZONE AREA AND ONTO THE SOUTHERN BOULEVARD AVENUE AND RIVERSIDE AMENITY PARK ALONG THE BANKS OF THE URRIN RIVER
19. PROPOSED BRIDGE AND PATH CONNECTION FROM ADJACENT MILLBROOK HOUSING DEVELOPMENT INTO THE SUBJECT SITE
20. SENIOR CHILDREN'S PLAYSPACE
21. JUNIOR CHILDREN'S PLAYSPACE ENCLOSED WITH HEDGE + CLEFT CHESTNUT PALE FENCE
22. HOME ZONE AREA
23. 'OAK LAWN' LOOP WALK ALONG NORTH-EASTERN SITE BOUNDARY WITH 'ACTIVE' SEQUENCE OF AMENITY OPEN SPACE
24. OAK SHELTER TO SUPPORT OUTDOOR GATHERING
25. JUNIOR CHILDREN'S PLAYSPACE OPENING TO THE SURROUNDING LANDSCAPE
26. CRECHE SECURE AMENITY OUTDOOR PLAYSPAC
27. OUTDOOR GYM AREA
28. STEPPED LINK TO CREATE DIRECT CONNECTION BETWEEN OUTDOOR GYM AREA AND STREETSCAPE WITH THE GREEN GINNELS WALKING ROUTE
29. PERIAN (GENTLY STEPPED) LINK TO ENABLE PEOPLE OF ALL AGES AND ABILITIES
30. WESTERN GREEN GINNEL
31. EASTERN GREEN GINNEL
32. DIRECT LEVEL ACCESS LINKING GREEN GINNEL ROUTE WITH GENTLY-SLOPED 3.00M WIDTH PATH

landscape design

RIVERSIDE AMENITY OPEN SPACE 01

This part of the site is currently arranged as improved agricultural pastureland, marginal scrub and marshland reeds. Alder and Crack Willow carrs hug the River Urrin's banks for much of the site's boundary with the river. A old 'cow path' created by the cattle which have grazed on the site commuting to their feeding and water station is clearly visible on aerial photographs.

Such a riverside meadow is often called in Irish a *caladh* (callow); which would traditionally support a wealth of biodiversity. Callow meadows are mown annually to prevent scrub growing over the meadows, and with a low nutrient level less competitive flowering plants grow, flower and set seed. We would like to welcome flora and fauna back into this part of the site and improve the habitat for them as well as the human residents.

The design team have designated this area south of the main boulevard as a new amenity public open space for the development. This part of the site is currently arranged as improved agricultural pastureland, marginal scrub and reeds. Existing Alder and Crack Willow carrs follow the River Urrin's edge for most of the site's boundary with the river, and a worn cow path created by the cattle which have grazed on the site is clearly visible on aerial photography.

A direct pedestrian link is provided from Carley's Bridge Road into the riverside amenity park and its loop walk. Play for ages 2-92 has been taken as a landscape design generator for the space, balanced with the need for the riparian area to support nature and biodiversity. Playable routes have been shown to increase happiness levels, agility, balance and dwell times in amenity open spaces, particularly in the housing quarter at Vauban, Freiburg.

The 'Cow Path' is used as the generator for a universally accessible amenity route through the new public open space alongside the River Urrin. Our design provides a diversity of landscapes and habitats in the new park, with the existing planting supplemented and formed into a new composition of abstract 'biotope islands' by the planting of additional native species trees and transplants. The form of these new biotopes is a reference to riparian islands in the Urrin.

The new pathway encircles the compensatory flood area depression as designed by our flood engineers, and skirts the base of the embankment to the new boulevard road to loop around. Tree and transplant planting, wildflower meadows and bulb planting have been introduced to settle the design into the riparian context. Seats, benches and picnic tables provide regular resting points to enjoy the views. A large playspace amenity for senior children has been provided above the historic flood level at the base of a large retained Oak Tree.

landscape design

Above: Larch with steel feet supports to wooden play equipment will fit well aesthetically in this sensitive environment

Above: gently-sloped and stepped access routes allow people of all ages and abilities choices to access all areas of the parkland

Above: integrate natural play elements such as earth mounds, tree trunks, boulders and tunnels into the landscape to create a playable route

Above: Chunky oak seats made from felled trees and electricity poles sign the presence of an amenity route along the river

Above: Older children's play area doesn't require to be enclosed, and can act as a beacon to enliven the park area, near the retained Oak trees

Above: winding path through riverside amenity allows universal access through the new parkland

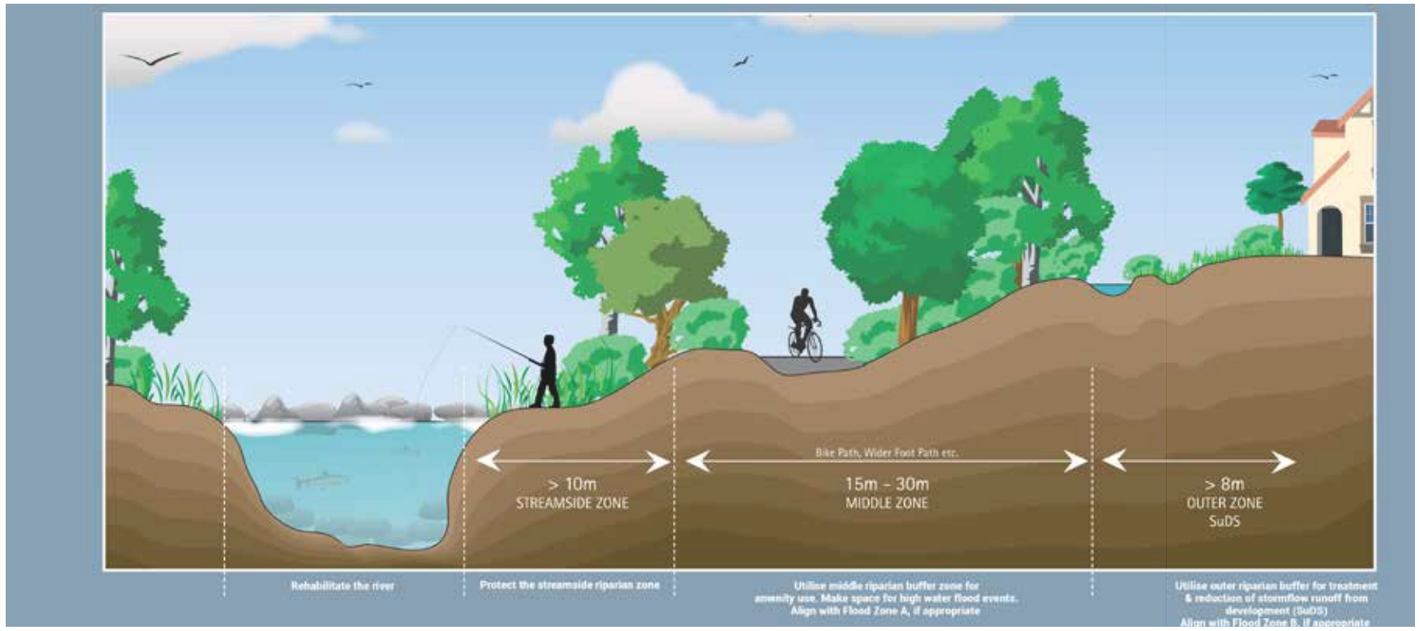
RIVER URRIN - RIPARIAN BUFFER ZONES

Our team's detail design for the riverside amenity open space has been informed by the Inland Fisheries Ireland document 'Planning for Watercourses in the Urban Environment', February 2020 edition. The four major objectives of this strategy for integrated watercourse protection are as follows:

1. Protect the Streamside Riparian Zone
2. Create a Middle Riparian Zone - can include amenity infrastructure, e.g.footpaths
3. Create an Outer Zone to incorporate sustainable urban drainage systems
4. Rehabilitate the river itself to recreate diversity of instream facilities found in natural channels.

The guidelines note that protection of the riparian zone doesn't preclude amenity use, and advocates the incorporation of amenity uses (walks, angling etc) into the middle or outer riparian buffer zones, so long as it is done sensitively and with minimal impact on the riparian environment.

Our design incorporates a >10.00m width 'Streamside Zone', i.e. a strip of vegetated land running parallel to the river, which acts as a buffer to negative human activity or development. The streamside zone has been protected in the detail design from infilling, so that in general most of the riverside is left intact to develop successionally. The existing vegetation along the riverbank has been surveyed and assessed by our consulting arborist.



Above, Above Left: Extracts from 'Planning for Watercourses in the Urban Environment, A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate/Flood Risk and Recreational Planning. A Guideline Developed by Inland Fisheries Ireland', IFI 2020.

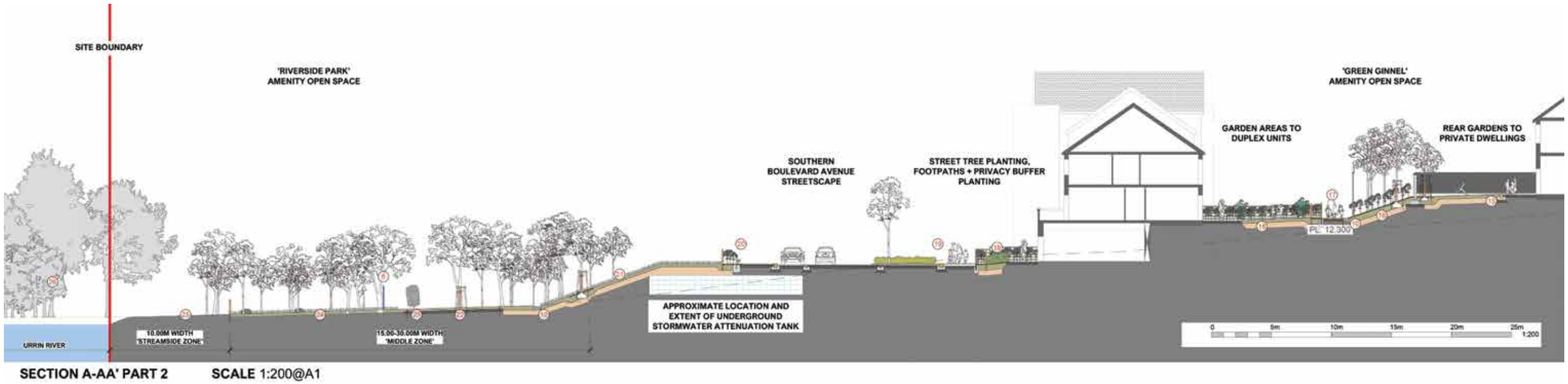
Left, Far Left: Examples of sweet chestnut pale-and-post fencing rolls, with additional strained wire for strength, and pressure-treated softwood gates, specified to fence off the 'Streamside Zone' to allow the riparian corridor to develop successionally. Gates for angler and maintenance access.

In general we have taken the approach to fence off the 'Streamside Zone' area with a light-touch sweet chestnut pale-and-post fencing system, with gates at regular intervals to enable angler and maintenance access when required. Fencing measures will support the riparian corridor vegetation to develop successionally and create a 'dark corridor' for commuting wildlife, while also preventing unsupervised young children such as toddlers gaining access to the riverbank. A vertical pale type rather than a horizontal construction prevents the fence being climbed. A light fence ensures easy visibility into the buffer from the adjacent walk.

Where the riverbank will be disturbed, such as near the pumping station in the southern corner of the site, we will seed and plant with appropriate native and local emergent vegetation/wildflower meadow seed mixes. The 'Streamside Zone' will be planted or seeded with native Irish tree species or conservation native seed mixes where required as infill planting or replacement planting to disturbed areas.

Our team's site design also incorporates a 15.00-30.00m varying width 'Middle Zone', which is suitable to support amenity uses such as walks, play areas etc, i.e. human uses. Managed woodlands, clearings and open spaces have been located in the Middle Zone. Paving in this area is all permeable, with gravel footpaths and bark, silica sand or pea gravel safety-surfaced play areas.

Natural SuDS measures (flood compensatory zone) and underground stormwater attenuation tanks have been designed by the engineering consultants in the 'Outer Zone' areas. Outer Zones are suitable to be used for the treatment and reduction of stormflow run-off from developments in the IFI guidelines.



SECTION A-AA' PART 2 **SCALE** 1:200@A1

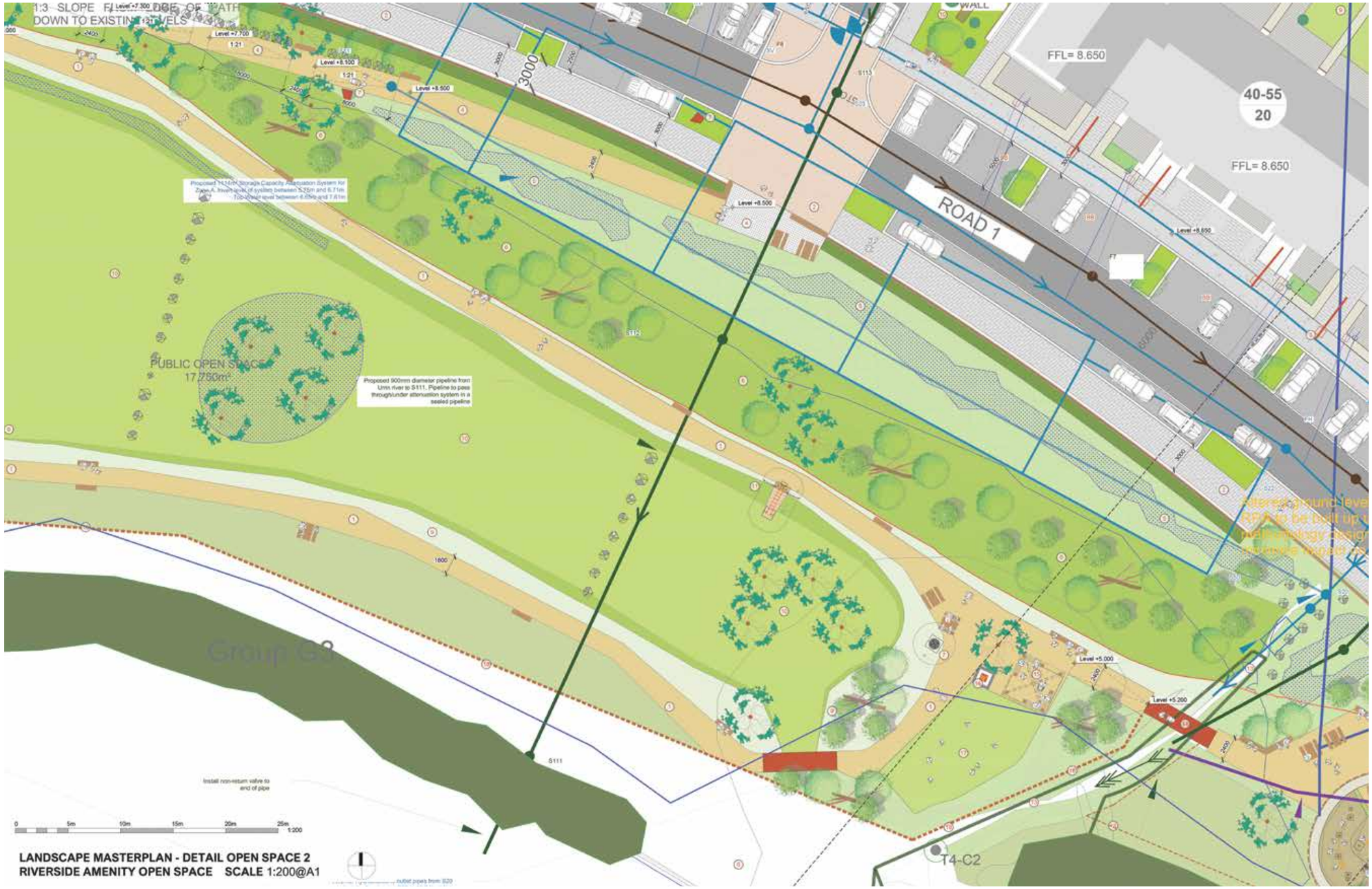
Above: Extract from Section A-AA', landscape section illustration indicating treatment to riverside amenity park/junction with southern boulevard avenue.

RIVERSIDE AMENITY OPEN SPACE 02

Our design proposals for the southern part of the riverside amenity open space begin at the Gathering Space, located roughly half-way along the boulevard street through the site. Under the shade of a retained Oak tree we propose a 'no-dig' paving treatment, with a distinctive curved bench to enclose the mature tree trunk. Picnic sets provide seating for families to enjoy the sunny aspect and the views over the River Urrin's wetlands and meadows.

The riparian buffer areas to the River Urrin and its tributary field drain are protected from regular human disturbance by a 1.20m ht wooden chestnut pale fence, to allow the existing planting to mature successionally as per the IFI guidelines. The Cow Path walk loops around the excavated area of the flood compensatory zone (FCZ), with seats, benches and picnic sets at regular intervals.

The theme of 'Play Along The Way' in the riverside amenity park is continued to ensure that the space is welcoming and supportive to local families. At the eastern end of the FCZ, a grass lawn will support kick-about play and recreational play, supervised by an all-weather shelter. A light-touch bridge over the existing field drain provides a universally accessible connection between the main park and the junior children's playspace.
The design team has retained much of the vegetation along the Urrin River, including a buffer strip with a minimal width of 10.00m at all points from the edge of the river. All new



LANDSCAPE MASTERPLAN - DETAIL OPEN SPACE 2
RIVERSIDE AMENITY OPEN SPACE SCALE 1:200@A1

landscape planting to infill gaps along the riverbanks is of indigenous riparian species such as Hazel, Birch, Oak, Willow and Elder, as advised by the project consulting ecologist and arborist. Herbicides will be avoided during all phases of the construction and operation as these chemicals can have bad impacts on pollinators.

Along the main southern boulevard, regular large tree pits provide a 'blue-green' SuDS measure to intercept rainwater, and provide a natural solution to deal with 'cloudbursts'. The introduction of the indigenous species transplant planted biotopes will also absorb storm-water run-off more quickly than a grassland habitat. These biotopes are designed to be wild and to take care of themselves, which will allow them to evolve with natural succession and minimal care, planted with alder trees and other water tolerant species. They will grow into small forests and wooded copses over time. We propose to locate some dead or felled trees in the biotopes to provide habitat for beetles, caterpillars, lichens and mosses.

The design generators for this part of the amenity open space are driven by the following issues: the existing field drain running through this part of the site and draining to the River Urrin; the River Urrin itself and its associated riparian buffer zones; the underground storm-water attenuation tank; the flood compensatory area; and the need to provide universal access from the boulevard avenue street level down to the riverside park; as well as eastwards towards a play area for junior children.

landscape design

Above: Durable sensory sculptures of stone to act as way-marking elements through the site, denoting gathering spaces

Above: gravelled footpaths through amenity open space; meadow landscaping with native Irish tree planting to general areas, with close-cropped meadow to flood compensation area

Above: Picnic sets located at gathering spaces and near playspaces

Above: Locating benches and seats at regular intervals ensures ergonomic comfort

Above: Streamside Zone protected by sweet chestnut pale and post fencing roll system

Above: winding path through riverside amenity allows universal access through the new parkland

RIVERSIDE AMENITY OPEN SPACE 03

Our design proposals for the southern part of the riverside amenity open space begin at the Gathering Space, located roughly half-way along the boulevard street through the site. Under the shade of a retained Oak tree we propose a 'no-dig' paving treatment, with a distinctive curved bench to enclose the mature tree trunk. Picnic sets provide seating for families to enjoy the sunny aspect and the views over the River Urrin's wetlands and meadows.

The riparian buffer areas to the River Urrin and its tributary field drain are protected from regular human disturbance by a 1.20m ht wooden chestnut pale fence, to allow the existing planting to mature successionally as per the IFI guidelines. The Cow Path walk loops around the excavated area of the flood compensatory zone (FCZ), with seats, benches and picnic sets at regular intervals.

The site layout design has been developed in detail design by the project architects and consulting engineers to open up a direct 3.00m shared pedestrian and cycle path link from Millbrook down to the amenity riverside open space. This route has been gently-sloped and graded to facilitate universal access through the site and support inclusion. The project engineer has undertaken detail design in order to retain T3, a mature

Common Oak Quercus robur, designated as worthy of retention by our consulting arborist.

Along the gently-sloped route of the shared foot/cycle path from Millbrook we have provided ‘snakes and ladders’ access choices. People can have the choice of using the 3.00m width path to get to the river or using steps as short cuts; or playable elements such as climbing ropes, balance logs and embankment slides to draw children’s interest and create opportunity for exercise.

The retained Oak and its Root Protection Area (RPA) as designated by the arborist have allowed us to provide a ‘gathering space’ square in the centre of the subject site. The consulting engineer has re-routed services designs to circle around the RPA and has provided a wildlife tunnel under the boulevard avenue road so that wildlife can continue to commute safely through the site along the route of the existing field drain. This gathering space has been surfaced with ‘no-dig’ type permeable cellular paving support system, and provided with seats, benches and picnic sets. This space will have beautiful views over the riparian landscape and amenity park. A raised table ensures pedestrian priority access across the boulevard road to the amenity park.

landscape design

Above: Simple bridge connection, ‘Solo’ by Streetlife over the existing watercourse to link the junior playspace area and amenity lawn with the main riverside park

Above: curved bench around the base of the existing Oak tree at the Gathering Space

Above: ‘Schwegler’ bird and bat boxes to welcome wildlife into the park

Above: gathering space, provided with picnic sets

Above: typical detail of reptilian *hiberniculae* to be constructed from recycled stone + tree trunk logs at the site

Above: junior children’s play area provided with high-quality larch play equipment suitable for use by children of all ages and abilities. Natural loose impact attenuating surfacing to be used.

STREETSCAPE + DWELLING GARDENS 04

The design intent in the dwelling public realm areas and private amenity recreational spaces is to create a quality legible streetscape with a clear hierarchy of space. The streetscape of the Home Zones and housing streets has been greened by the inclusion of a large street tree planter or planter bed regularly between car-parking bays, where underground services permit. This will improve the green-blue resilience of the streetscape, allowing stormwater to drain into the tree pit, creating shade and improving air quality.

Each private dwelling has been provided with a privacy screen of a hedgerow and perennial planting to the streetscape, with a generous garden to the rear. In the rear gardens of the private housing, we have proposed to plant a decorative tree per garden to provide immediate screening to views into and out of the development, along with a screen hedge of native species transplants to mature to provide year-round evergreen screening and act as a wildlife corridor. A grass lawn suitable for amenity play will also be provided as part of the soft landscape works to each private garden.

In consultation with the consulting project arborist and architect, we have proposed a mesh fencing and native species hedge to form the rear garden boundaries of the private housing backing onto the 'Millbrook' housing development. This will reduce excavation impacts on this important existing hedgerow and tree-line, and will allow wildlife to continue to 'commute' through the corridor and linking site boundaries. We will clear out the bramble undergrowth and rubbish in this area underneath the Oak trees to leave the better quality trees and bushes, with the cleared areas being supplemented with new native species transplants suitable for shady conditions.

STREETSCAPE + DWELLING GARDENS 06

The existing hedgerow bounding the site with the Millbrook housing contains a number of high-quality Quercus robur 'Common Oak' trees which we propose to retain and supplement where necessary. This hedgerow and drain provide a valuable wildlife corridor as well as screening views into the site. We have introduced the rounded 'biotopes' derived from the islands in the Urrin, as used in the riverside amenity open space, but here in the Oak Lawn seeded and planted with native species ornamental grasses and some isolated native and exotic trees. This space has been designed as a quieter communal amenity open space for passive recreation, with an open lawn.

The 'orchard' type planting to the rear of the proposed housing blocks will provide a visual, aesthetic and pollinating/fruiting amenity, while allowing open views for passive surveillance from the new dwellings of the amenity open space and the loop path through it. Buffer strips of amenity planting have been located to act as privacy buffers to dwellings from the streetscapes and paths through the development in this location.

The sloped 'orchard' type planting to the rear of the proposed housing blocks 08, 09 and 10 will provide a visual, aesthetic and pollinating/fruiting amenity, while allowing open views for passive surveillance from the new dwellings of the amenity open space immediately to the north and the loop path through it. This area has been simply landscaped as an amenity lawn outside of the designated Tree Protection Measure fencing, as the existing tree-line of Common Oak, hedgerow and field drain has their own inherent aesthetic beauty, function and benefit to wildlife. 'Play Along The Way' has been integrated with a balance trail, rocky steps etc. Green roofs have been provided to short-stay cycle shelters and to individual bin docks to private dwellings to 'green' the streetscape.

landscape design

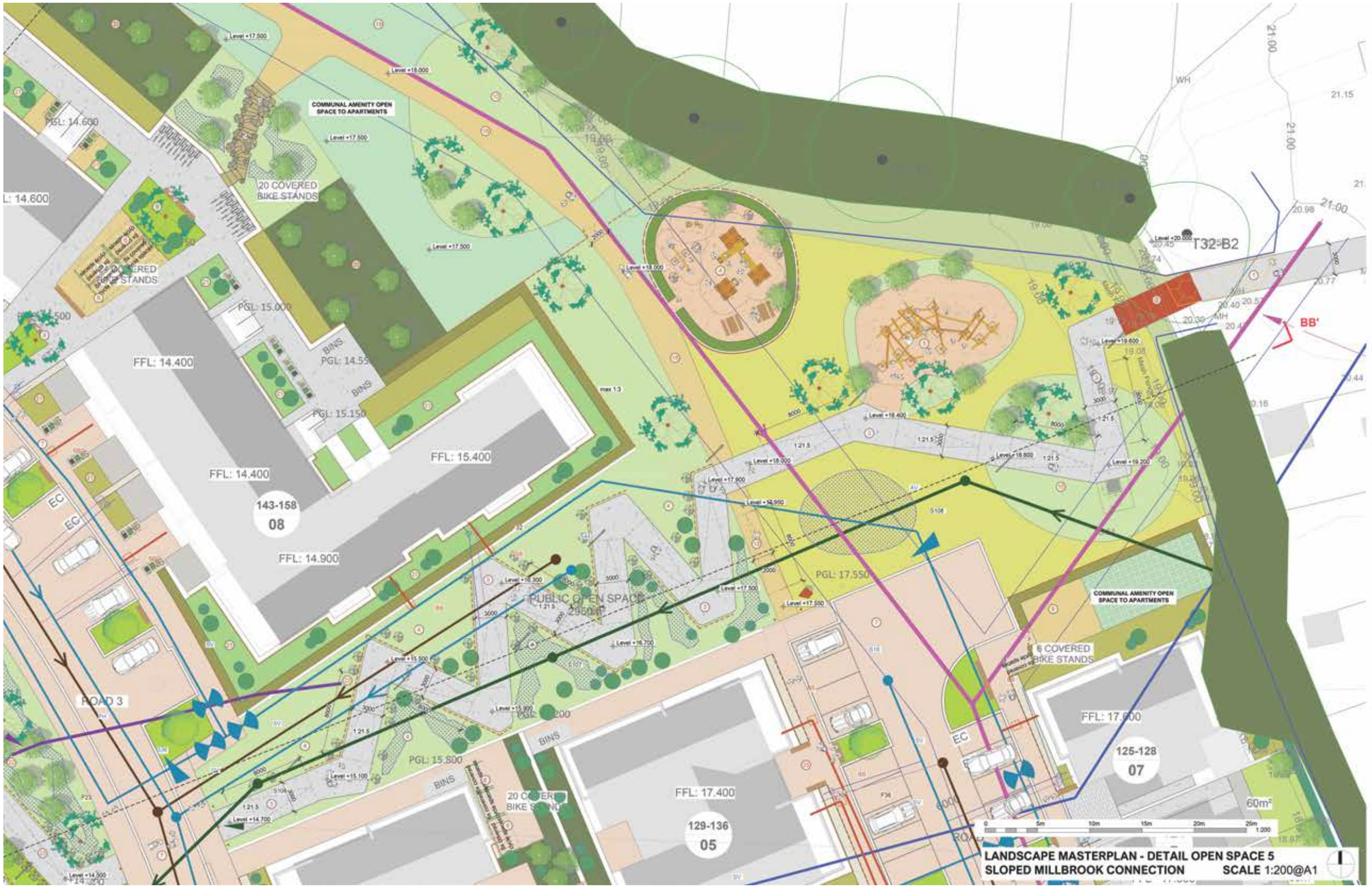
LANDSCAPE MASTERPLAN - DETAIL OPEN SPACE 6
TYPICAL STREETSCAPE IN HOME-ZONE + OAK LAWN SCALE 1:200@A1

SLOPED MILLBROOK CONNECTION 05

The design team have proposed a fully accessible 3.00m wide shared pedestrian and cycle path leading from the Home Zone area in front of Building 11 up through the open space, and gently sloping up to meet the existing levels and the site boundary with the existing open space in the 'Millbrook' housing development to the north-east. This gently-sloped, universal design-friendly approach has been graded at 1:21.5 for 8.0m lengths, rising 400mm height between landings. New small trees and large shrubs have been located to avoid underground services routes, and will be planted with root protection measures.

This gently-sloped winding approach has been graded at 1:21.5 for maximum 8.0m lengths, rising 400mm height between landings. New trees have been located to avoid proposed underground services routes, and will be planted with root protection measures.

Arboricultural and ecological surveys of the existing trees, hedgerows and field drains have informed the landscape design by establishing their condition and importance, and routes and functions of amenity open space have been planned accordingly by the design team. The existing hedgerow bounding the site with the Millbrook housing contains a number of high-quality Quercus robur 'Common Oak' trees which we propose to retain and protect.



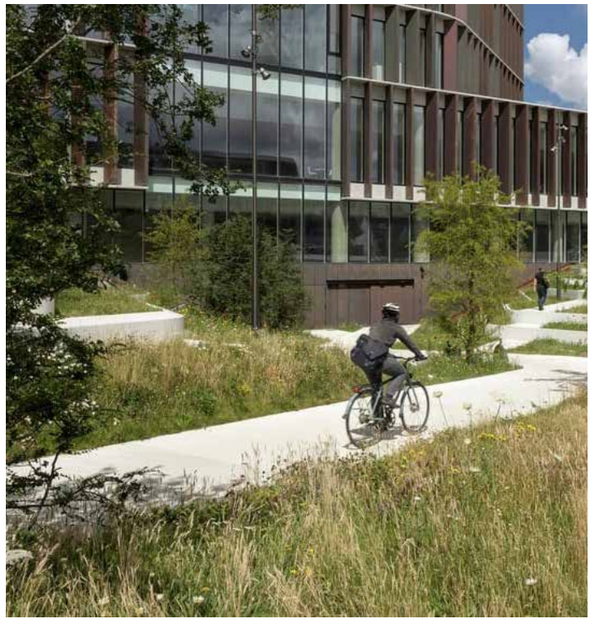
This tree-line, hedgerow and field drain provide a valuable wildlife corridor as well as screening views into the site. Naturalistic playspaces for younger and older children occupy part of the open space adjoining Millbrook, acting as a 'welcome mat' into the connecting route to the riverside amenity park.

Again, the 'orchard' type planting to the rear of the proposed housing blocks will provide a visual, aesthetic and pollinating/fruiting amenity, while allowing open views for passive surveillance from the new dwellings of the amenity open space and the loop path through it.

The existing hedgerow bounding the site with the Millbrook housing contains a number of high-quality *Quercus robur* 'Common Oak' trees which we propose to retain and supplement where possible. This hedgerow and drain provide a valuable wildlife corridor as well as screening views into the site. We have introduced the rounded 'biotopes' derived from the islands in the Urrin, as used in the riverside amenity open space, but here planted with native species ornamental grasses and some isolated native and exotic trees. In some places we have occupied the new biotopes with natural playspaces for younger and older children.

landscape design

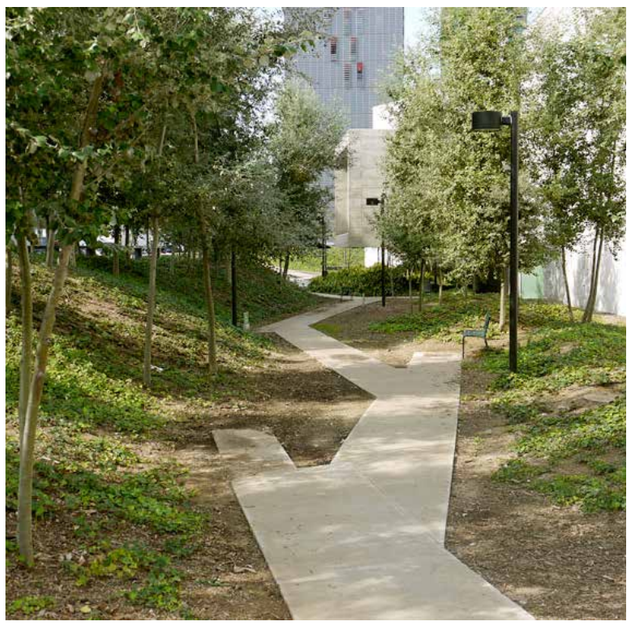
Above: Gently-sloped shared pedestrian and cycle path along a slope



Above: Pedestrians and cyclists comfortably sharing a 3.0m width gently-sloped path, surfaced in concrete

Above: Wooden picnic sets support families to enjoy the outdoors. Larch Climbing Structure fits well in a landscape characterised by mature trees, and looks good even when unoccupied. Play at different levels allows engagement by children of all abilities.

Above: Simple bridge connection over the existing watercourse drain to link Millbrook and the new development



Above: Gently-sloped concrete path winding through sloped landscaping with clear open views

Above: Wildlife measures such as Schwegler-type bird boxes affixed to suitable trees, and wildlife tunnels under new roads support fauna at the site

GREEN GINNELS AMENITY OPEN SPACE 07

A ‘ginnel’ is an alleyway between terraced banks of housing, and we have named the pedestrian-only landscape buffer zones between the housing blocks as they step down the slope of the subject site, to differentiate them in character from the streetscapes.

Immersion in wilder nature has been shown to have a strong effect on improving mental health. We have provided a number of seating and bench elements along the route to allow residents to stop and catch their breath. The Green Ginnel walking routes can also be provided with sensory stimulating sculptures such as ‘Singing Stones’ to encourage people of all ages and abilities to interact, create soft sounds and communicate with each other. These ginnel areas have been designed by the project architects to have good passive surveillance from the houses and duplex apartment dwellings addressing the spaces by having front gardens and communal amenity spaces facing directly onto these ginnel paths for good passive observation and activation.

A universally accessible route has been planned through the ginnels, to connect with the stepped access routes between the gables of the apartment buildings, down to the southern boulevard. The architects have provided an area to be landscaped as a new wildlife corridor of approx 13.00m width, arcing through the site at the rear of the apart-

ment buildings fronting on to the southern boulevard and the dwellings of the Home Zone. A min 1.8m width universally accessible gently-sloped path through this space - a communal 'green ginnel' - enables residents to take a walk in nature that is wilder, untamed and more natural in its character. Permeable golden gravel paths distinguish the ginnel paths from the 3.00m width concrete paved sloped connection from Millbrook to the riverside amenity open space.

We have designated the northern slopes of the ginnels to be planted as woodland copses to host wildlife, create green corridors and provide biodiversity; and 'rough grass spaces'. These green ginnels are naturally more physically challenging as they engage with the sloping character of the existing site. Strong visual and physical links to the main riverside amenity space are developed between the gable ends of the housing fronting onto the southern boulevard, where the stepped connections to the ginnels are provided, with regular resting and gathering areas located in these sunny spots. Large focal element tree s(native Scot's Pine, Horse Chestnut, Willow or Oak) highlight the presence of connections through the site to encourage permeability.

Seating elements are provided at roughly 20.00m intervals to encourage the elderly to take a rest, and look through the south-west oriented gable views to the Urrin River. The principle of 'Play Along The Way' has been continued with the provision of durable vandal proof metal and stone play and sensory sculpture points and equipment.

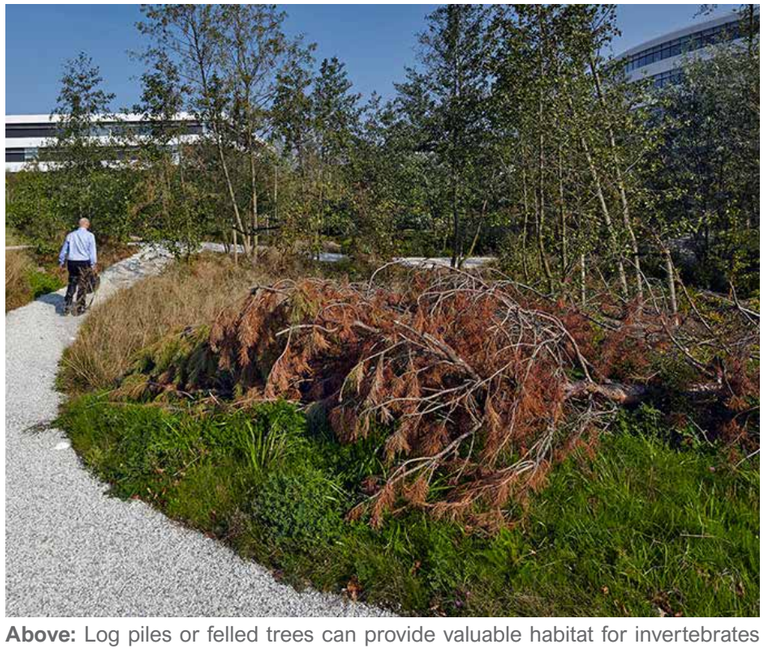
landscape design

Above: Durable 'Play Along The Way' elements located along the green ginnel walks

Above: Hornbeam hedging 1.20m ht to enclose the communal amenity open spaces along the Green Ginnels

Above: Gently-sloped and stepped areas along the Ginnel Walk, paved in permeable gravel

Above: Chunky oak seats made from felled trees at resting points along pathways



Above: Log piles or felled trees can provide valuable habitat for invertebrates and birds

Above: winding path through ginnel creates heavily planted areas in the ginnels in contrast to the adjacent hard-paved streets

GREEN GINNELS AMENITY OPEN SPACE 08

The design team has graded the slopes to the ‘green ginnel’ at approximately 1:3 and heavily planted these slopes with native tree, transplant and ground cover plants. The northern slope of the ginnels are densely planted with native trees such as Pine, Birch and Oak to create the sense of a wilder woodland copse, with the southern slope planted with dense shade-tolerant ground cover plants such as ferns, foxgloves and astilbes and multi-stemmed trees such as Wild Pear, Crab Apple and Birch etc to enable views and support pollinators.

To support bio-diversity, we intend to place several dead tree trunks and log piles in the space to encourage beetles, caterpillars and mosses to inhabit the space. The vegetation is designed to be ‘wilder’ in characteristic, and allow the green ginnels soft landscaping to the northern slopes to evolve with natural succession and minimal care.

Strong visual and physical links to the main riverside amenity space are developed between the gable ends of the housing fronting onto the southern boulevard, where the visual connections to the ginnels are provided through. Large focal element tree s (native Scot’s Pine, Willow or Oak, wildlife-rich Horse Chestnut) highlights the presence of these connections through the site to encourage permeability.

Seating elements are provided at roughly 20.00m intervals and at each of the gable stepped openings between the apartment buildings to encourage the elderly especially to take a rest, and look through the south-west oriented gable views to the Urrin River.

The communal amenity spaces for the apartment buildings and the private gardens to the duplexes directly address the ginnel spaces, which will assist in passive surveillance and activation of the walking routes. Hornbeam hedging encloses these spaces, with chestnut pale fencing and gates to the communal amenity open spaces, and estate type railings and gates to the the private gardens.

Golden coloured permeable gravel distinguishes the ginnel walks in character from streetscape paving, or the concrete paving to the 3.00m gently-slioped route through the site from Millbrook to the riverside amenity park. Signage will be minimalistic and rustic in character to fit with the nature of the ginnel spaces, with playable and exercise equipment located along the route.

We have chosen not to specify exercise equipment with moveable parts because of the likelihood of young children confusing this for play equipment; it is not designed to meet EN 1176 and consequently there are often maintenance issues and repeated toddler finger-traps in such equipment. Naturalistic equipment to support pull-ups, chin-ups and balance is more appropriate in such locations.

landscape design

Above: Typical signage for ‘Green Gym’

Above: ‘Green Gym’ fitness station along footpath through park, Stockholm.

Above: ‘Green Gym’ station located in Pine forest along woodland walk

Above: Open views through planted slope from apartment buildings along the southern boulevard to provide overlooking and passive surveillance of the ginnels

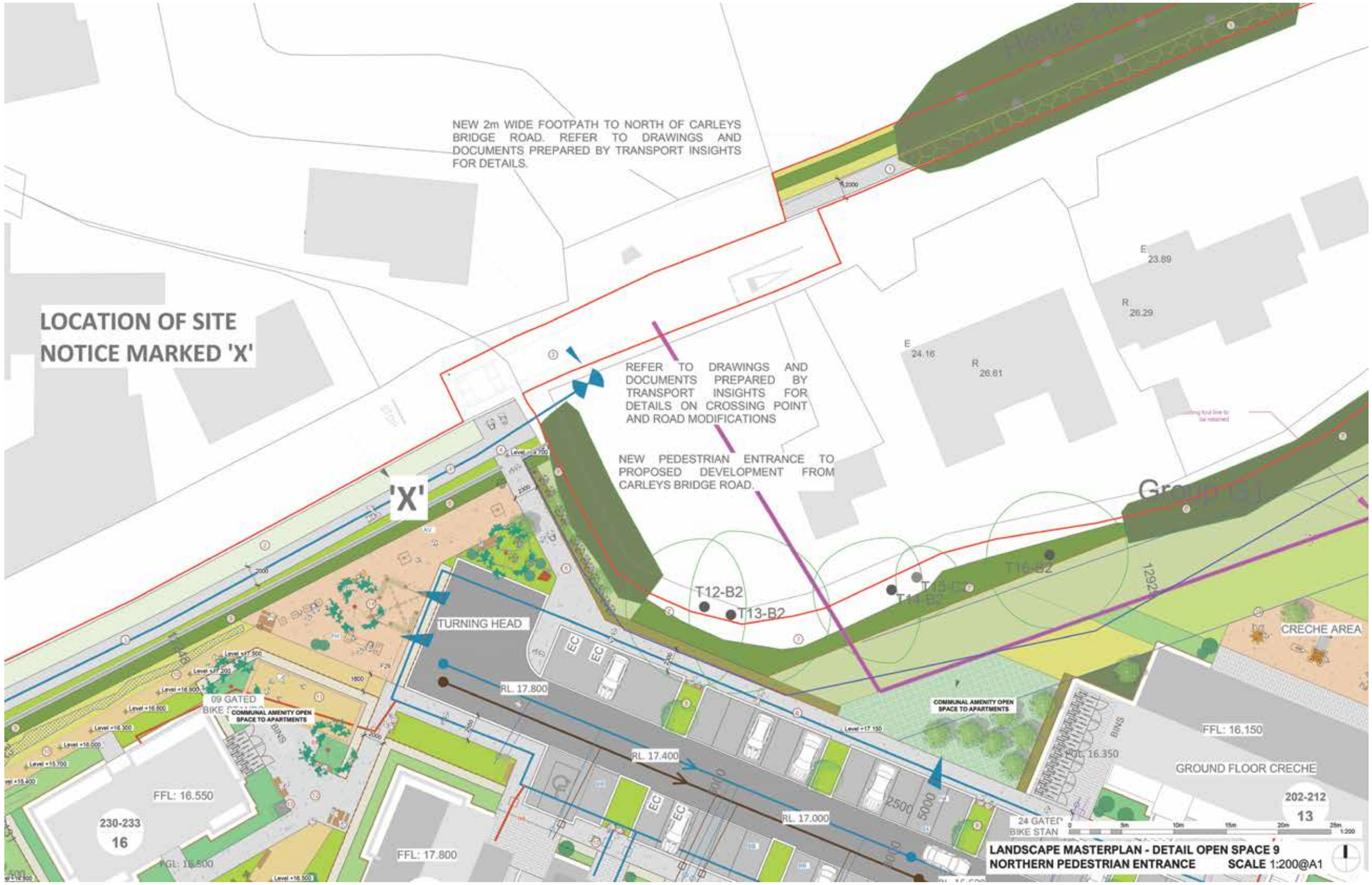
Above: Heavily planted slopes planted with native species trees, transplants and ground-cover plants to create a new wildlife corridor through the site, and filter views of the new development from opposing windows. The new trees will settle the development immediately into the receiving environment, with the transplants maturing to create successional development.

Above: Stepped access from the ginnels down to the southern boulevard, landscaped with natural stone, salvaged stone, and golden gravel pavings.

NORTHERN PEDESTRIAN ENTRANCE 09

The site and urban design of the scheme has developed to increase the importance and legibility of this pedestrian entrance to the site, physically closest to the urban core of Enniscorthy to the north-east. The site design has extended to provide a DMURS-compliant universal access footpath and crossing routes for pedestrians, detailed by the traffic consulting engineers to support safer walking for pedestrians along Carley's Bridge Road and to support access-for-all into the riverside park amenities.

The removal of some mature Oaks in this area (highlighted on the arboricultural drawings) has been mitigated by the planting of some large focal element trees where services permit (Oak, Willow), to provide shade and shelter to a more developed outdoor exercise area. A gravelled boules court and a wooden shelter have been added to this area to improve the facilities for residents and to support incidental exercise along-the-way in an area of the site which is accessible for people from 2-92.



Such an outdoor gym could include wooden fitness equipment such as hammocks, equipment for sit-ups, dips, squats, lunges, monkey bars and balance beams. The Green Ginnel walking route can also be provided with sensory-stimulating equipment such as Singing Stones to attract people of all ages and abilities to create soft sounds and communicate.

Picnic sets, seats and benches have been dotted through the area, including at every second street pit to reinforce the importance of the streetscape, site entrance and amenity open space, with playable interactive sensory sculptures and contemporary land-art sculptures placed at nodal points to help orient and direct way-finding through the site. The streetscape of the Home Zones and housing streets has been ‘greened’ by the inclusion of a large street tree planter every 5-7 car-parking spaces.

Each private dwelling has been provided with a privacy buffer screen of a hedgerow and perennial planting to the streetscape, with a generous south-facing garden to the rear. We have also provided another natural playspace for junior children near the creche, to act as a hub and meeting points for guardians, carers and parents living in this part of the housing scheme.

Above: Sensory equipment such as natural stone ‘Singing Stones’ to provide signal focal elements, and recall menhirs and ogham stones in the landscape

Above: Stepped paths through Green Ginnel connections of stone and gravel, with lowlevel bollard lighting. Simple landscaping of boulders, ornamental grasses and trees.

Above: Green Ginnel walk can be provided with fixed wooden fitness equipment for residnets to exercise upon.

Above: max 1:3 graded ‘orchard’ planting beds to mediate levels between proposed housing and existing grassland and allow views

Above: Green Ginnel path can incorporate recycled elements such as large format pavers and pebbles.

Above: Golden gravel space encouraging use as a boules court or space for ‘passive’ gathering

CRECHE + JUNIOR CHILDREN'S AMENITY PLAY 10

A distinctive linear group of existing trees and bushes line the field drain running along the northern and eastern boundary of this part of the site, according good landscape screening from adjacent housing when it is in leaf. This group includes numerous larger individual trees (mainly Oak and Ash), with a understorey growth of Ash, Blackthorn, Hawthorn and Willow. We propose to infill gaps with new mixed native species transplant hedgerow planting

Because of the presence of an existing underground foul services line and the required exclusion corridor for new tree planting either side of that, the opportunity for new tree planting is somewhat limited. Therefore we have provided ajunior children's playspace to support the operations of the creche facility and to attract children and families to the loop walk along the tree-lined north-eastern site boundary with 'Millbrook' and adjacent housing.

We have designed a secure amenity open space for the creche facility, suitable for children's play ages 0-5 and landscaped with toddler table and stools, multi-user adventure play equipment for toddlers, and elemental play equipment suitable for use by babies and toddlers. This has been considered with reference to age-appropriateness, play for all abilities, loose materials play, and support to a Montessori-type curriculum. A large grass lawn area provides space for children to run around, and for the creche facility to develop further.

Above: Junior Playspace themed 'Home' with larch play equipment. Provided with ramps, this equipment can be accessed by children of all abilities.

Above: Green roofed cycle shelters and bin-docks to dwellings, provided with nesting boxes, larch posts drilled for solitary bee nesting, wildlife panels etc.

Above: Grassland managed as a 'rough grass' meadow with mown areas for recreation and play. Retention of existing trees and hedgerow lines prioritised.

Above: max 1:3 graded planted slopes to mediate levels between proposed housing and existing grassland

Above: Each home has a 'green' frontage to the street, with a bin store

Above: Street trees are used to create structure along the streetscape and break up bays of car-parking

PLANTING DESIGN RATIONALE + CONSIDERATIONS:

- *ensure that glyphosate and other chemical interventions such as herbicides are not used in the management and maintenance strategies of open spaces and planting beds*
- *Refer to WCC Council's Biodiversity Action Plan and the National Pollinator Plan in selection of species on the Planting Schedule*
- *Identify in consultation with ecologist where Bat Foraging Sites, Alternative Bird Nesting and Foraging Sites, Badger Foraging Sites and Reptilian Habitat Compensatory measures can be introduced*
- *in consultation with the consulting ecolgoist ecologist, design to allow linkages to wider biodiversity*
- *'proof-check' the planting design against proposed underground services*
- *support existing retained planting and prioritise indigenous species*
- *support green and blue infrastructure*

Design Rationale + Response:

The Planting Schedule states quantities, species, sizes and rootball presentation. Spacings of plants are addressed in the planting details drawings which form part of this report and enclosure drawings. Reference has been made to the National Pollinator Plan and WCC's Biodiversity Action Plan in relation to the planting plan and schedule palette.

Planting south of the main boulevard, in the riverside amenity open space has been planned as indigenous tree, transplant and whip, wildflower and rough grass meadows, shrub and ornamental grasses and cultivars, to fit with the landscape setting of a riparian landscape. The Green Ginnels walk is proposed to be planted with a mainly indigenous planting palette, with some exotic species included in the 'Orchard' type planting areas, and plants selected for their suitability for slope stabilisation on the 1:3 graded slopes. Along the Carley's Bridge Road boundary, we have retained the existing hedgerow where possible and supplemented it with new indigenous tree and transplant hedgerow planting.

The 'Millbrook' connection 3.0m width pathway is proposed to be planted with a mix of primarily native species grasses ferns and forbs, with no large shrubs or trees proposed in these areas. Large scale street trees have been proposed throughout the streets, with constructed tree pits for these trees to enable them to mature to a large size. These species are a mixture of native and exotic species selected for the potential to adapt to changing climate conditions in the future as well as support existing native wildlife species in the interim, and provide a familiar landscape appearance, which will assist in the creation of a natural 'sense of place'.

New native and exotic tree and hedgerow transplant planting has been incorporated to increase the site's biodiversity, providing autumn colour and berries for birds, as well as appropriate screening for site boundaries in an urban context, in consultation with the project ecologist. We have proposed ecological mixes of evergreen and deciduous perennial plants and shrubs, ground-covers, ferns, bulbs and ornamental grasses to create a modern palette of plants which will require minimal maintenance but have an immediate strong visual aesthetic, helping to settle the new domestic housing into its receiving environment. A range of sizes of native cultivars and exotic species have been specified to support invertebrate and bird habitat, improving biodiversity in the site.

Proof-Check Planting Design against Services Routes

We have overlaid the civil engineering services routes layouts showing existing and proposed services, and the lighting engineer's proposed layouts on the landscape plans. We then proofed the tree and shrub planting against them to ensure that there are no conflicts between proposed tree, transplant and large shrub planting and existing and proposed underground and overground services routes.

The consulting engineers have revised their proposed drainage layouts to reduce potential impacts with street tree planting pits and especially existing retained trees. They have also reduced the impact of underground attenuation tanks on open spaces, by planning these mainly underneath the main southern boulevard and car-parking spaces.

Street Trees + Bio-retention Planting

We have provided constructed street tree planting pits along the streetscape, approximately every 5 car-parking spaces. These pits have been detailed with 'kerb-cuts' to allow surface water from footpaths and from the asphalt carriageway to drain into the pits and be taken up by moisture-tolerant perennial planting mixes. SuDs features such as bio-retention soils can be integrated into the tree pit. Opportunities for recreation and storm water planning should be combined with attention to the needs of ecology and biodiversity. Different native wild plant species in combination with selected exotic plants will create the basis for biodiversity habitat and attract pollinating bees and butterflies.

Amenity Trees

Trees have been located bearing in mind the proposed arrangement of underground services and attenuation tanks. No tree planting is proposed over the existing or proposed services routes or over the attenuation tanks. In regard to the selection of tree planting material, we have specified larger size 'parkland' or 'street-scale' trees to the open spaces, boundaries and at nodal points through-out the scheme, in order to draw attention to corners and to settle the new development into the landscape context, giving the scheme a 'sense of place'. All tree planting will be in accordance with 'BS8545 Trees from nursery to independence in t landscape'.

The principle of the new tree planting design is to provide differing species of larger semi-mature trees as feature and replacement trees within the site which are suitable for the context long-term with Scot's Pine, Oak, Horse Chestnut, Lime and Willow to feature as focal element large trees and street trees where pit size permits. Medium-sized exotic trees such as the Tulip trees, Sweetgum tree s, Cherry trees and Honey-Locust trees have been specified where their growth characteristics suit better to provide 'instant greening' and structure the street, open spaces and boundaries. Within plantings generally, smaller scale multi-stemmed trees and large shrubs will create year-round interest and attract wildlife into the new development. A mix of deciduous and evergreen, native and exotic trees will ensure a lively and varied appearance to the scheme over all seasons and proof it against climate change.

Sloping Sites

The site is sloped, and slopes of any kind are prone to erosion from rain, runoff, and foot traffic. Plants with deep, spreading root systems help prevent erosion by holding soil in place. Accordingly, we have proposed a mix of evergreen ornamental shrubs and grasses, ground cover plants and flowering perennials as new soft landscaping, which have roots at different depths. Both native cultivars and exotic species have been specified, which support invertebrate and bird habitat, improving biodiversity in the site. Images and descriptions of the plants proposed are included in the landscape drawing package. A dense and varied planting of vegetation prevents soil slippage as the roots grab the soil and hold it, and the foliage deflects the force of the rain.

Amenity Planting Generally

Ornamental grasses and their cultivars are excellent at storm-water up-take, require little maintenance, provide habitat for wildlife and in mass plantings can mimic the appearance of grasslands in the natural landscape. Combined in drifts in an approximately 70:30 ratio with ornamental forbs and structural plantings such as *Narcissi, Crocus*, *Liatris, Veronicastrum*, *Verbena bonariensis*, *Iris*, Day Lilies and African Lilies, Red Hot Pokers, Stoneflower, Sages, Yarrow and Coneflowers, grassland plantings can create landscapes that maintain year-round vibrancy and visual interest.

Private Open Space + Millbrook private housing boundary

In the rear gardens of the private housing, we have proposed to plant min. 1 tree per garden to provide immediate screening to views into and out of the development, along with a screen hedge of native species transplants to mature to provide year-round evergreen screening and act as a wildlife corridor with berrying plants. A grass lawn suitable for amenity play will also be provided as part of the soft landscape works.

In consultation with the consulting project arborist and architect, we have proposed a mesh fencing and native species hedge to form the rear garden boundaries of the private housing backing onto the 'Millbrook' housing development. This will reduce excavation impacts on this existing hedgerow and tree-line, and will allow wildlife to continue to 'commute' through the corridor and linking site boundaries. We will clear out the bramble undergrowth and rubbish in this area underneath the Oak trees to leave the better quality trees and bushes, with the cleared areas being included in the new planting scheme.

Landscape Maintenance and Management:

The maintenance schedule and specification has been designed to reduce the need for chemical weed-killers, and the planting schedule has been selected for quick establishment. A bark mulch topping and landscape fabric has been specified to all planter, hedging, tree planting and transplant beds to suppress perennial weeds. This management strategy will reduce dependence on chemical intervention, minimising the use of herbicides and excluding the use of glyphosate.

GENERAL PLANTING SPECIFICATION NOTES + PLANTING DETAILS -

GENERAL SPECIFICATION NOTES

For Proposed Tree, Hedge, and Shrub/herbaceous perennial planting - implementation and maintenance.

Site preparation: Imported topsoil shall be to BS 3882: 2012: 'Specification for topsoil and requirements for use', and be of medium texture with a high proportion of loamy material. It shall be free from subsoil, rubbish, roots of perennial weeds and other injurious to plant growth. All topsoil shall be stacked in heaps, not exceeding 2m high. During storage, topsoil heaps shall be kept free from contamination, compaction and weeds. Imported topsoil shall be from an approved source and a sample submitted and analysed/tested at an independent approved laboratory.

Soil Handling: Soil handling shall only take place during the driest parts of the year to prevent compaction of the in-situ soils.

Preparation for Topsoil: Re-spread topsoil shall be spread following completion of all hard landscape building works, following a thorough clearance and removal of building debris. The formation levels shall be as follows: Tree pits: 2m x 2m x 1m deep; bottom of pit broken up to a depth of 150- 200mm and scarify sides. Shrub & Hedge trenches and Shrub areas: minimum 0.45m deep.

Meadow Areas: Meadow sections of swale to have 150mm deep of free draining topsoil mix (75% topsoil / 25% coarse compost). 600mm below planted and meadow sections to be broken up to aid infiltration.

Root Protection: Area beneath Existing Trees: Cultivation to a depth of 400-450mm for shrub planting to be undertaken by hand using hand tools only to minimise root damage. If significant roots are encountered, these will be left undamaged and dug around. Where new topsoil is required, existing soil shall be removed by hand and backfilled with new topsoil by hand to existing levels.

Backfilling with Topsoil: Tree pits and Shrub beds shall be backfilled, in layers, with topsoil thoroughly mixed with planting organic compost and slow release fertilizer shall be used to plant all shrubs and hedges. All finished levels shall be 25mm above adjacent paving. The shrubs shall be shaken during backfilling to avoid air pockets and the soil must be firmed as the hole is filled.

Cultivation: Topsoil shall be cultivated to a minimum of 450mm deep on planting areas to a medium tilth, removing all rubbish, vegetation, perennial weeds, roots, stones over 50mm in any one dimension and raked to even levels.

PLANTING

Plant Stock and Timing: Plant material shall conform to BS 3936 Part 1: 1992, Part 2: 1990; Part 9: 1998; Part 10: 1990 and BS4043: 1989 and shall be protected at all times in transit to the site. The planting season shall be from 1st October to the 31st March. Planting shall not be carried out during periods of frost, drought, cold drying winds, or when the soil is waterlogged.
The planting shall be carried out in the first planting season following practical completion of the building and hard landscaping. Planting outside the planting season will require adequate watering to ensure establishment.

Planting: All trees, hedges & shrub planting shall be planted upright at the same depth as the nursery soil level and evenly spaced, leaving room for growth. Allow at least 300mm clearance between the rootball and the edge of the pit to facilitate staking/anchoring and to allow adequate amount of backfill around the root ball.

Trees in soft landscape (open public space) shall be staked and braced with a cross member. Immediately following planting, all plants shall be watered-in to field capacity. Irrigation pipes: shall be included at the base of each individual tree and shall be 80mm flexible plastic perforated pipe of a suitable length to wrap around the full circumference of the rootball with a 'T' piece allowing sufficient pipe to extend just above the finished ground level with a plastic cap.

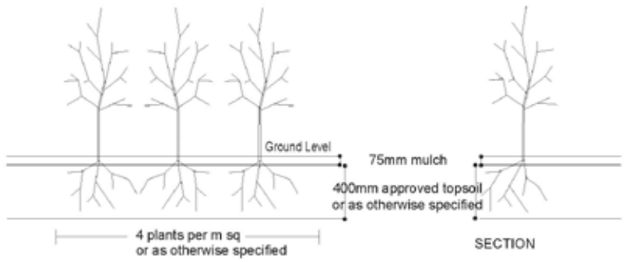
Mulching:
Prior to the application of mulch, the planting areas shall be completely weed free and watered sufficiently to achieve field capacity. The surface of the planting areas shall be mulched with a layer of Organic Compost Mulch or Fine Composted Bark Mulch composted for 2-4 weeks with a particle size of 0-8mm, to a depth of 50mm, ensuring that the low branches of shrubs and herbaceous plants are not smothered. The mulch shall be topped-up to maintain, after settlement, a depth of not less than 50mm.

IMPLEMENTATION
All tree, shrub planting areas shall be carried out in the first planting season after all the building works and the hard landscaping areas have been set out and completed.
-Deciduous trees and shrubs - Late October to late March
-Herbaceous plants: September/October and March/April
-Container grown plants: At any time if conditions are favorable
-All construction works to be carried out to manufactures recommendations regarding climatic conditions and controls.

AFTER CARE PERIOD
Maintenance: The Aftercare Period shall extend for an 18 month period. During the Aftercare Period maintenance visits shall be carried out, at least monthly from April to September and twice during the dormant season to carry out the following operations to establish healthy growing plants in weed free areas. Maintenance operations shall include: watering, firming-up, pest and disease control, grass cutting, general pruning, weed control, top up mulch and autumn tidying.

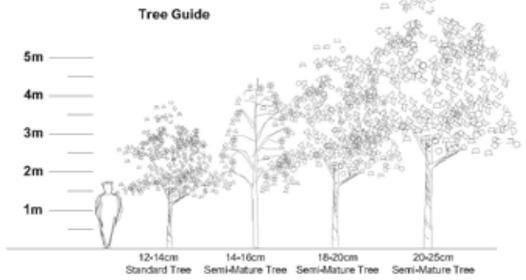
REPLACEMENT PLANTING:
All plants, which have died, are missing or have failed to thrive, shall be noted and replaced with the same size and species as originally planted, in the following planting season.

SHRUB/TRANSPLANT PLANTING DETAIL

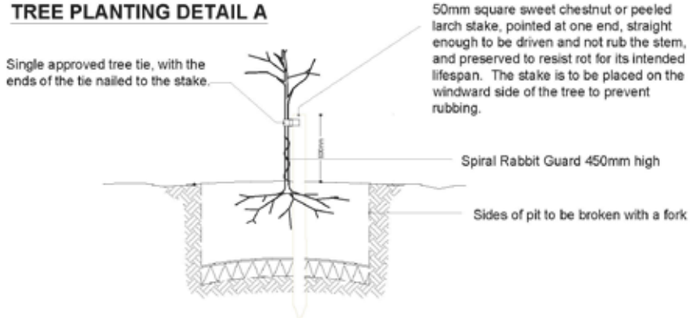


1. All shrub planting beds to min. 300mm depth of quality approved topsoil to BS:3882 or as otherwise specified.
2. Break up the soil in the base of each pit.
3. Mix the dug soil with a slow release fertiliser and a specified soil ameliorant.
4. Planting is to be carried out to densities specified.
5. Once planted, back-fill with the remaining soil and firm as before.
6. Top dress the planting area with a 75mm depth of approved medium-grade bark mulch.

TREE SIZE GUIDE

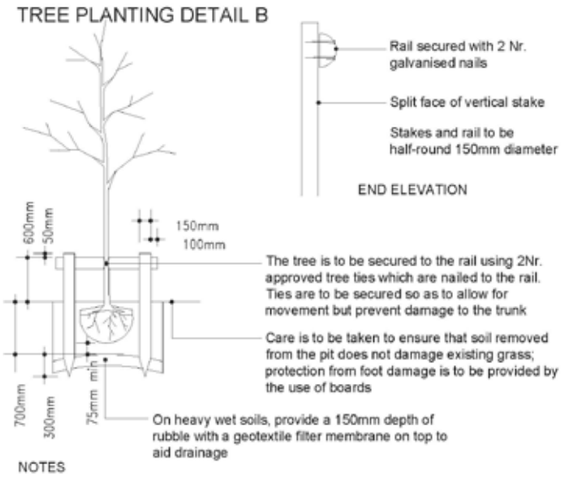


TREE PLANTING DETAIL A



1. The tree pit should be excavated to allow adequate clearance between the root ends (when fully spread) and the side of the pit. The depth of the pit should be a minimum of 700mm, and at least 75mm greater than the depth of the root system.
2. Fork the bottom and sides of the pit to break up the subsoil. Back-fill as shown to the level of the roots. Mix the dug soil with a slow release fertiliser and an approved soil ameliorant.
3. Prior to planting, prune back all damaged roots to healthy growth; soak the trees in water whilst waiting to be planted; dip all bare-rooted trees in an approved root dip. Drive in the stake so that it is a minimum of 300mm below the bottom of the pit, and 600mm above the ground level.
4. Plant the tree ensuring that the original depth is maintained and that the roots are spread to their fullest extent.
5. Carefully work the prepared backfill soil between the roots while shaking the tree slightly.
6. Backfill in layers up to the existing ground level, firming by treading, taking care not to damage the roots.
7. Fix the tree to the stake. Spread 75-100mm depth of medium-grade bark mulch over a minimum area of 1m diameter around the tree, and maintain until the spring following the first growing season.

TREE PLANTING DETAIL B



NOTES

1. The tree pit should be excavated to allow adequate clearance between the perimeter of the root-ball and the side of the pit.
2. The depth of the pit should be a minimum of 700mm and at least 100mm greater than the depth of the root-ball.
3. Fork the bottom and sides of the pit to break up the subsoil.
4. Mix the dug soil with a slow release fertiliser and an approved soil ameliorant.
5. Drive in the stakes so that they are a minimum of 300mm below the bottom of the pit and 650mm above ground level. The stakes and rail are to be sweet chestnut or peeled larch poles, pointed at one end, preserved to resist rot for their intended lifespan, and strong enough to take nails without splitting.
6. Plant the tree, ensuring that the original depth is maintained and the soil is carefully firmed back up to the existing ground level.
7. Secure the rail to the stakes with 2 No. galvanised nails per stake.
8. Secure the tree to the rail as described in the notes above.
9. Spread 75mm depth of medium-grade mulch over an area of 1m diameter around the tree, and maintain it until the spring following the first growing season.
10. Protect the tree base from damage by using a tree guard.
11. The stakes and rail are to be removed as soon as the tree is anchored securely by its own roots (at the start of the third growing season after planting).

landscape design

METHOD STATEMENTS:
ALL WORKS SHALL BE CARRIED
OUT IN ACCORDANCE WITH BS 5837 AND INFORMED BY
NJUG VOLUME 4

PRECAUTION AREA:

EXCAVATIONS FOR PIPEWORK SHOULD NOT BE UNDERTAKEN WITHIN THIS AREA, UNLESS AGREED WITH IRISH WATER.

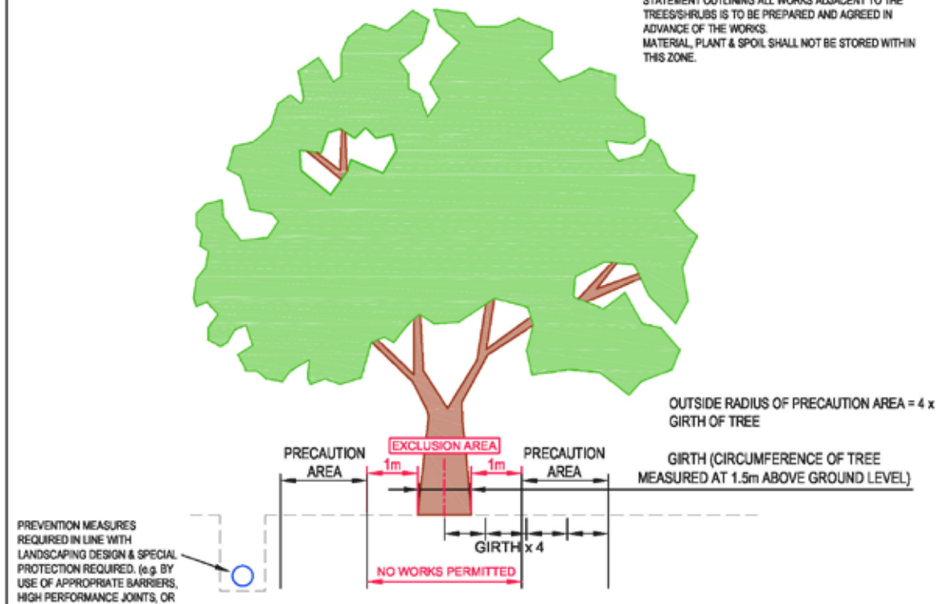
WORKS WITHIN THE PRECAUTION ZONE MUST BE SUPERVISED BY A QUALIFIED ARBORIST. WORKS SHALL BE SUBJECT OF A CLEAR METHOD STATEMENT OUTLINING ALL WORKS ADJACENT TO THE TREES/SHRUBS WHICH IS TO BE PREPARED & AGREED IN ADVANCE OF THE WORKS.

MATERIAL, PLANT & SPOIL SHALL NOT BE STORED WITHIN THIS ZONE.

EXCLUSION AREA:

WORKS IN THIS AREA ARE TO BE AVOIDED, UNLESS ABSOLUTELY NECESSARY & AGREED WITH IRISH WATER.

EXCAVATIONS FOR PIPEWORK SHOULD NOT BE UNDERTAKEN WITHIN THIS AREA, UNLESS NECESSARY AND NO OTHER OPTIONS AVAILABLE. WORKS WITHIN THE EXCLUSION ZONE MUST BE SUPERVISED BY A QUALIFIED ARBORIST AND AGREED WITH IRISH WATER. WORKS SHALL BE SUBJECT OF AN ARBORICULTURAL IMPACT ASSESSMENT AS PER BS 5837 & A CLEAR METHOD STATEMENT OUTLINING ALL WORKS ADJACENT TO THE TREES/SHRUBS IS TO BE PREPARED AND AGREED IN ADVANCE OF THE WORKS.
MATERIAL, PLANT & SPOIL SHALL NOT BE STORED WITHIN THIS ZONE.



EXISTING PLANTING

REFER TO INDEX SHEET FOR NOTES REGARDING DESIGN RESPONSIBILITY & RISK ASSESSMENT

UISCE ÉIREANN : IRISH WATER

No.	Date	Drn	Chk	Description	App
2	11/17	JMC	TOC	Revised to suit IW recommendations & changed drawing title	MCD
1	09/15	JMC	TOC	Added new section & notes	MCD
0	09/15	JMC	TOC	Initial Issue	SL

STANDARD DETAILS - WATER

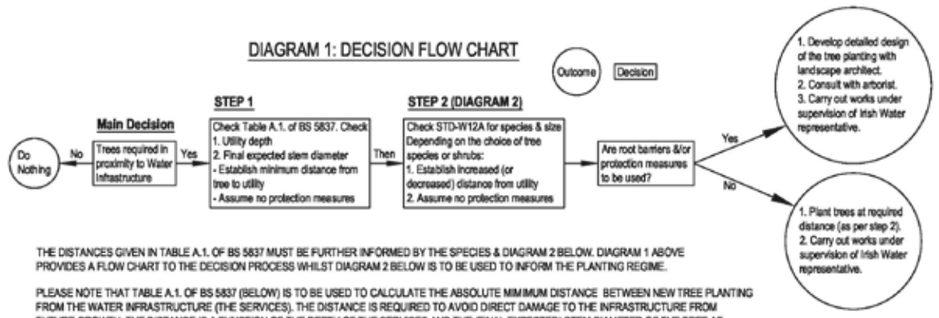
SCALE: NOT TO SCALE
DATE: SEPT. 2015

TITLE: RESTRICTIONS ON WATER INFRASTRUCTURE WORKS ADJACENT TO EXISTING TREES

DRAWING No.: STD-W- 12
REV: 2

Irish Water/Uisce Eireann Typical Retained vegetation protection measures and Planting Details

DIAGRAM 1: DECISION FLOW CHART



THE DISTANCES GIVEN IN TABLE A.1. OF BS 5837 MUST BE FURTHER INFORMED BY THE SPECIES & DIAGRAM 2 BELOW. DIAGRAM 1 ABOVE PROVIDES A FLOW CHART TO THE DECISION PROCESS WHILST DIAGRAM 2 BELOW IS TO BE USED TO INFORM THE PLANTING REGIME.

PLEASE NOTE THAT TABLE A.1. OF BS 5837 (BELOW) IS TO BE USED TO CALCULATE THE ABSOLUTE MIMIMUM DISTANCE BETWEEN NEW TREE PLANTING FROM THE WATER INFRASTRUCTURE (THE SERVICES). THE DISTANCE IS REQUIRED TO AVOID DIRECT DAMAGE TO THE INFRASTRUCTURE FROM FUTURE GROWTH. THE DISTANCE IS A FUNCTION OF THE DEPTH OF THE SERVICES AND THE (FINAL EXPECTED) STEM DIAMETER OF THE TREE AT MATURITY (i.e. FINAL EXPECTED GROWTH).

TABLE A.1. BS 5837	Minimum distance between young trees or new planting & structures, in metres (m)		
	Final stem dia. < 300mm	Final stem dia. 300mm to 600mm	Final stem dia. > 600mm
Services			
< 1m deep	0.5	1.5	3.0
> 1m deep	–	1.0	2.0

THUS FOR EXAMPLE:
- FOR A SERVICE LESS THAN 1 METRE DEEP, THE MINIMUM DISTANCE IS TO BE 1.5m FOR A TREE BETWEEN 300 AND 600mm STEM DIAMETER AT MATURITY.
- FOR A SERVICE GREATER THAN 1 METRE DEEP, THE MINIMUM DISTANCE IS TO BE 1.0m FOR A TREE BETWEEN 300 AND 600mm STEM DIAMETER AT MATURITY.

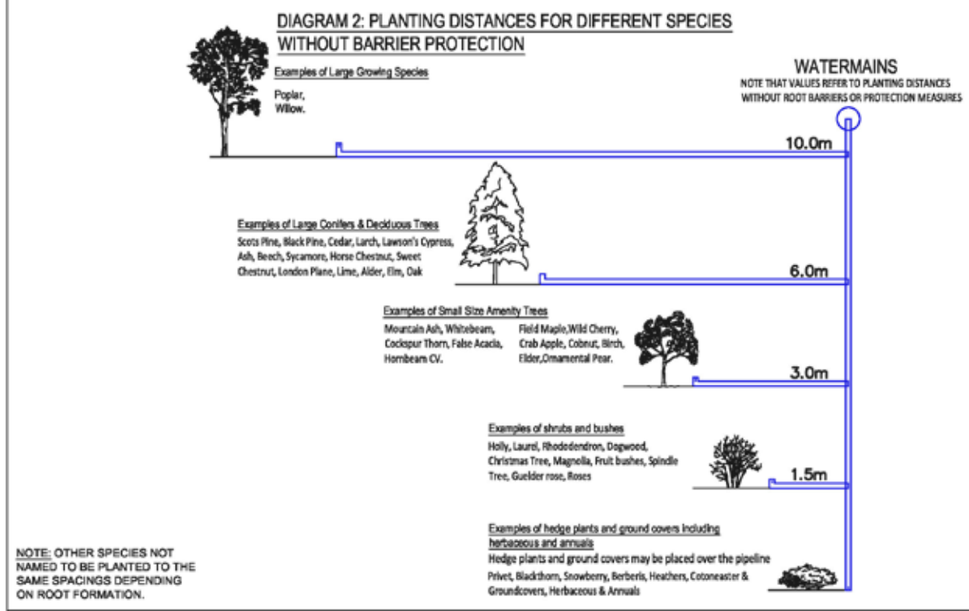
NOTE: RESTRICTIONS RELATE TO INFRASTRUCTURE WITHOUT ROOT INTRUSION PROTECTION.

THE DESIGN OF LANDSCAPING SHALL BE UNDERTAKEN IN CONJUNCTION WITH THE DESIGN OF WATER INFRASTRUCTURE, ETC. THE TREE/BUSH/SHRUB SHALL NOT BE LOCATED CLOSER TO THE WATER INFRASTRUCTURE THAN INDICATED ABOVE, EXCEPT WHERE SPECIAL PROTECTION MEASURES ARE PROVIDED. WHERE THERE IS A RISK OF TREE/ROOT INTRUSION, THE WATER INFRASTRUCTURE SHALL BE RESISTANT TO TREE ROOT INGRESS (e.g. BY USE OF APPROPRIATE BARRIERS, HIGH PERFORMANCE JOINTS, OR BY USE OF POLYETHYLENE WITH WELDED JOINTS). THE LANDSCAPE DESIGN AND DETAILS OF THE SPECIAL PROTECTION MEASURES MUST BE AGREED WITH IRISH WATER

A TREE SHALL NOT BE PLANTED DIRECTLY OVER WATER INFRASTRUCTURE WHERE EXCAVATION OF THE INFRASTRUCTURE WOULD REQUIRE REMOVAL OF THE TREE UNLESS SUCH PLANTING IS AGREED WITH IRISH WATER AND IN GENERAL ONLY SHALLOW ROOTING SHRUBS SHALL BE PLANTED CLOSE TO WATER INFRASTRUCTURE.

PLEASE ENSURE THAT THESE DISTANCES ARE ADHERED TO IN ORDER TO PROTECT THE TREES FROM ANY FUTURE MAINTENANCE. REFERENCE SHOULD ALSO BE MADE TO BS 5837, BS 8545 AND THE NJUG GUIDELINES VOLUME 4 FOR FURTHER INFORMATION.

DIAGRAM 2: PLANTING DISTANCES FOR DIFFERENT SPECIES WITHOUT BARRIER PROTECTION



NOTE: OTHER SPECIES NOT NAMED TO BE PLANTED TO THE SAME SPACINGS DEPENDING ON ROOT FORMATION.

REFER TO INDEX SHEET FOR NOTES REGARDING DESIGN RESPONSIBILITY & RISK ASSESSMENT

UISCE ÉIREANN : IRISH WATER

No.	Date	Drn	Chk	Description	App
0	11/17	JMC	TOC	Initial Issue	MCD

STANDARD DETAILS - WATER

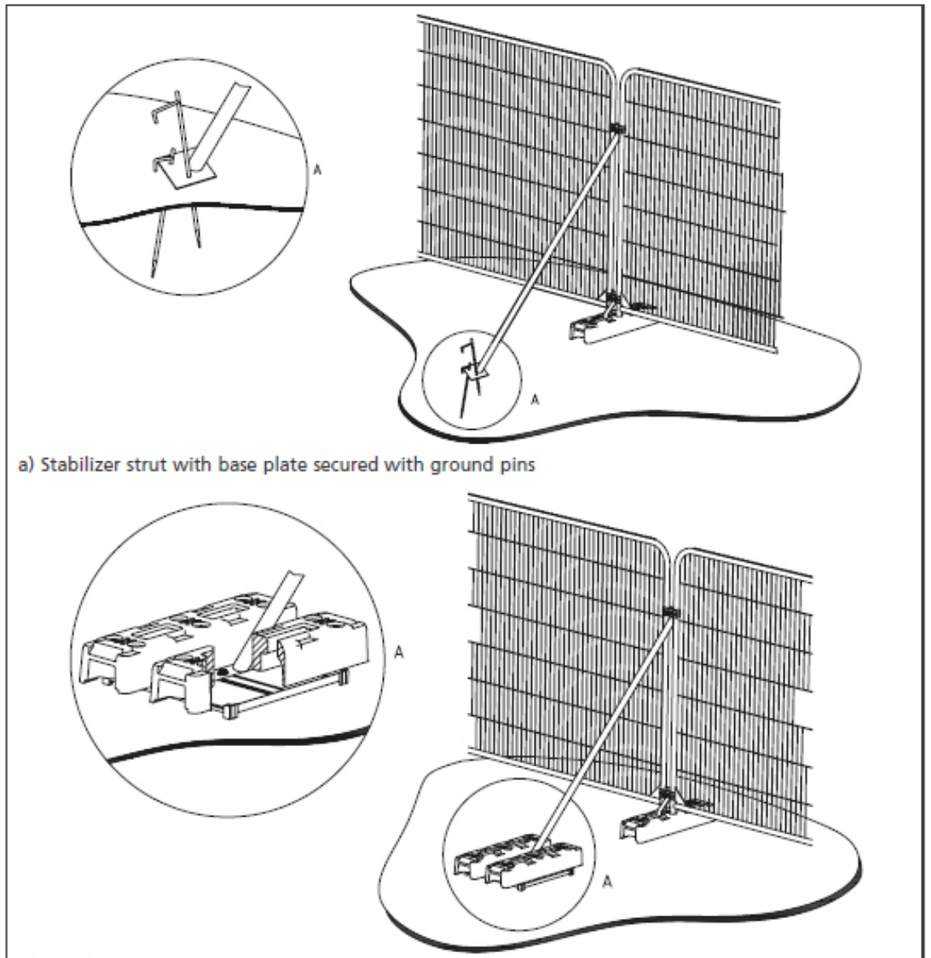
SCALE: NOT TO SCALE
DATE: JUL. 2017

TITLE: RESTRICTIONS ON NEW TREES / SHRUBS PLANTING ADJACENT TO WATER MAINS

DRAWING No.: STD-W-12A
REV: 0

BS 5837 Existing tree and vegetation Protection Measures

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

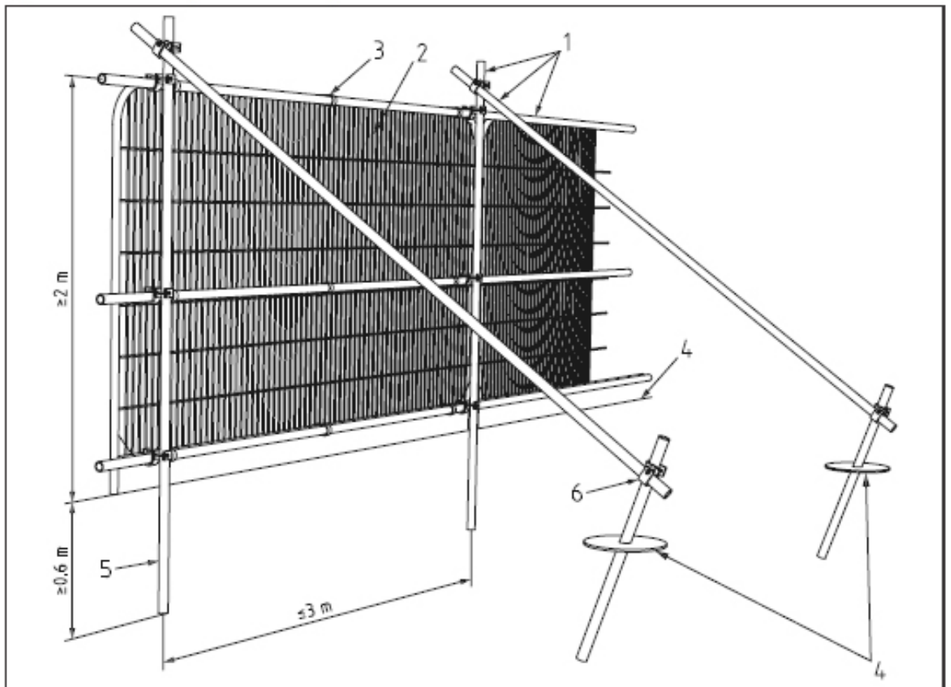
b) Stabilizer strut mounted on block tray

6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Schedule of Maintenance for Soft Landscape Works, Operations for Establishment				20_174 Housing Development, Enniscorthy							12 month Maintenance Schedule - no. visits month by month				
The schedules below list the timing of key annual operations for specific soft landscape types, as shown on drawings 19_430. For required standard, the schedules below should be read in conjunction with the Specification for Soft Landscape Works (Landscape Maintenance) and BS 7370: Part 4 'Grounds Maintenance - Recommendations for maintenance of soft landscape'.															
The contractor shall provide rates for completion of a single operation for the items where spaces are provided. NB Rates may be used to omit items by the CA as deemed appropriate based on prevailing weather and site operational requirements.															
	Tasks														
A	**General (Site Wide)**	**Frequency**	**Rate per Operation**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
1	Litter pick	Monthly		1	1	1	1	1	1	1	1	1	1	1	1
2	Removal of fallen leaves	Monthly from October to January		1									1	1	1
B	**Proposed Specimen Trees**	**Frequency**	**Rate per Operation**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
1	Tree inspection for damage and disease	Annually								1					
2	Assessment of dead/missing trees	Annually										1			
3	Replace dead/missing trees	Annually													1
4	Weed control to all tree surrounds	Monthly from March to October				1	1	1	1	1	1	1	1		
5	Watering	**Twice monthly** from April to October					2	2	2	2	2	2	2		
6	Spray Crown	As instructed in spells of dry weather during the evening (first two years after planting only)					2	2	2	2	2	2	2		
7	Re-firming	Monthly		1	1	1	1	1	1	1	1	1	1	1	1
8	Pest & disease control	When required		1	1	1	1	1	1	1	1	1	1	1	1
9	Check tree support (adjust and replace as required)	Monthly		1	1	1	1	1	1	1	1	1	1	1	1
10	General pruning (subject to species)	As instructed												1	
11	Fertiliser	One application annually (in March or April)				1	1								
12	Mulching - topping up depth	Twice a year					1						1		
C	**Proposed Hedgerows**	**Frequency**	**Rate per Operation**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
1	Assessment of dead/missing plants	Annually										1			
2	Replace dead/missing plants	Annually													1
3	Weed Control to all plants (by hand-weeding, hoeing, or maintaining full thickness of mulch)	Monthly from March to October				1	1	1	1	1	1	1	1		
4	Watering	Twice Monthly from April to October					2	2	2	2	2	2	2		
5	Re-firming	Monthly		1	1	1	1	1	1	1	1	1	1	1	1
6	Pest & disease control	Once during growing season					1	1	1	1	1				
7	Check plant guards (adjust and replace as required)	Quarterly			1			1			1			1	
8	Formative pruning	When required									1			1	
9	Fertiliser	One application annually (in March or April)				1	1								
D	**Proposed Ornamental Shrubs and Grasses (including bulb areas)**	**Frequency**	**Rate per Operation**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
1	Assessment of dead/missing plants	Annually										1			

SCHEDULE FOR LANDSCAPE MAINTENANCE

2	Replace dead/missing plants	Annually												1		
3	Weed Control to all plants (by hand-weeding, hoeing, or maintaining full thickness of mulch)	Monthly from March to October				1	1	1	1	1	1	1	1			
4	Watering	Twice Monthly from April to October					2	2	2	2	2	2	2			
5	Re-firming	Monthly		1	1	1	1	1	1	1	1	1	1	1	1	1
6	Fertiliser	One application annually (in March or April)				1	1									
7	Soil Aeration	Twice a year				1								1		
8	Remove dead/faded flowers throughout season (dependent on species) to prolong flowering period. Leave seedheads of plants which provide winter feeding to birds and insects and visual interest.	Monthly		1	1	1	1	1	1	1	1	1	1	1	1	1
9	Cut dead growth back to ground level/150mm (dependent on species)	Annually (February or March)			1	1										
10	Mulching/topping-up	Twice a year					1							1		
E	**Proposed Amenity Grass (including bulb areas)**	**Frequency**	**Rate per Operation**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	
1	Weed control (by Hand, spot-treat perennial weeds with herbicide)							1				1				
2	Fertiliser application						1					1				
3	Mowing generally	Twice a month from March to October				2	2	2	2	2	2	2	2			
4	Mowing for bulb areas after end of bulb flowering period (typically during July-October)	Twice a month from July to October								2	2	2	2			
5	Trim/re-form edges	Monthly from March to October				1	1	1	1	1	1	1	1			
6	Re-cultivation and seeding of any failed or worn areas	When required										1				
7	Rolling (consolidating turf)	Annually			1	1										
8	Spiking (aeration)	Annually			1	1										
9	Scarifying (aeration)	Annually											1	1		
10	Top Dressing	Annually											1	1		
11	Harrowing	Annually											1	1		
12	Thatch/moss removal	Annually				1										

Q35 Landscape maintenance

To be read with Preliminaries/ General conditions.

GENERALLY

110 NOTICE
- Give notice before:
  - Application of herbicide.
  - Application of fertilizer.
  - Watering.
  - Each site maintenance visit.
- Period of notice: 2 weeks.

130 REINSTATEMENT
- Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition.

155 WATERING
- Supply: Potable mains water.
- Quantity: Wet to field capacity .
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As necessary for the continued thriving of all planting.

160 WATER RESTRICTIONS
- General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding

170 DISPOSAL OF ARISINGS
- General: Unless specified otherwise, dispose of arisings as follows:
  - Biodegradable arisings: Remove to recycling facility.
  - Grass cuttings: Leave for two to three days after cutting then remove to recycling facility.
  - Tree roots and stumps: Remove from site.
  - Shrub and tree prunings: Remove to recycling facility.
  - Litter and nonbiodegradable arisings: Remove from site.

180 CHIPPING OR SHREDDING
- General: Not permitted on site.

181 MECHANICAL EQUIPMENT
- General: Minimize.
- Prohibited equipment: Chippers.
- Timing: Use of mechanical equipment allowed between the hours of 10:00 am and 4:00 pm only.

190 LITTER
- Extraneous rubbish not arising from the contract work: Collect and remove from site.

195 PROTECTION OF EXISTING GRASS
- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

GRASSED AREAS

211 MAINTENANCE OF GRASSED AREAS
- Standard: To BS 7370-3. Carry out maintenance appropriate to each category of turf, as follows:
  - Objectives: To BS 7370-3, table 6.
  - Programme: To BS 7370-3, clause 11.
  - Mowing methods: To BS 7370-3, table 3.

220 GRASS CUTTING GENERALLY
- Before mowing: Remove litter, rubbish and debris.
- Finish: Neat and even, without surface rutting, compaction or damage to grass.
- Edges: Leave neat and well defined. Neatly trim around obstructions.
- Adjoining hard areas: Sweep clear and remove arisings.
- Drought or wet conditions: Obtain instructions.

225 TREE STEMS
- Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

235 BULBS AND CORMS IN GRASSED AREAS
- Before flowering: Do not cut.
- Interval between end of flowering and start of grass cutting (minimum): 6 weeks.

250 LEAF REMOVAL
- Operations: Collect fallen leaves.
- Special requirements: Remove by hand raking.
- Disposal: Remove from site for recycling.

255 FIRST CUT OF ALL GRASSED AREAS
- Height of initial growth: 75 mm.
- Preparation:
  - Debris and litter: Remove.
  - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 50 mm.
- Mower type: Contractor's choice.
- Arisings: Remove for composting at recycling facility.

260 MOWING LAWNS
- Grass height: Maintain between 25 and 50 mm.
- Arisings: Remove for composting at recycling facility.

265 MOWING GENERAL AREAS
- Grass height: Maintain between 50 and 75 mm.
- Arisings: Remove for composting at recycling facility.

270 MOWING ROUGH GRASSED AREAS
- Grass height: 300mm maximum.
- Arisings: Remove for composting at recycling facility.

272 MAINTAINING GRASSED AREAS WITH PERENNIAL WILD FLOWERS
- Preparation: Before each cut remove litter and debris.
- Height and frequency of cut in first growing season:
  - Time of first cut: March/ April.
  - Height of first cut: 100 mm .
  - Frequency of subsequent cutting (minimum): Every 6–8 weeks until autumn.
  - Height of growth permitted (maximum): 500mm.
- Height and frequency of cut in second growing season:
  - Time of cut: Single cut in October.
  - Height of cut: 100 mm.
- Trimming: All edges.
  - Arisings: Remove.
- Watering: Contractor's choice.

285 TOP DRESSING
- Location: All lawns.
- Timing: Following scarification and aeration.
- Material: Compost/ sand/ loam mix.
- Supplier: Contractor's choice.
  - Product reference: Submit proposals.
- Declaration of analysis: Submit.
- Additional analyses: Not required.
- Samples: Supply 5 kg sample before ordering.
- Application rate: 5-6 mm depth.

290 ROLLING
- Location: All lawns.
- Timing: February or March, after first mowing.
- Roller: 100 kg (2 cwt).
- Operations: Consolidate turf and reduce frost heave.

295 SPIKING
- Location: All lawns.
- Timing: February or March, after rolling.
- Operations: Aerate the soil and improve surface water penetration.
- Depth (minimum): 100 mm into soil.

300 SCARIFYING
- Location: All lawns.
- Timing: October or November, before top dressing.
- Operations: Relieve thatch conditions and remove dead grass.
- Depth (maximum): 25 mm into soil.
- Arisings: Remove for composting to recycling facility.

307 HOLLOW TINING
- Location: All lawns.
- Timing: As necessary to relieve compaction.
- Depth: 75 mm.

309 EDGES TO SEEDED AREAS
- Location: Planting beds and around newly planted trees.
- Timing: After seeded areas are well established.
- Edges: Cut to clean straight lines or smooth curves. Draw back soil to permit edging.
- Arisings: Remove.

311 RE-FORMING GRASS EDGES
- Location:
  - All edges;
  - Paths;
  - Planting beds;
  - Service access covers; and
  - Where damage occurs.
- Standard: To BS 7370-3.
- Finishing: Damaged parts of turned turf top dressed with suitable soil and seed mix matching the sward.
  - Support: Not required.

320 LEVELLING HOLLOWS AND BUMPS IN TURF
- Standard: To BS 7370-3, clauses 12.4 and 12.5.

330 SELECTIVE HERBICIDE
- Location: Spot treat all broad-leaved weeds, docks, Japanese knotweed, and willowherb.
- Herbicide: Non glyphosate herbicide suitable for suppressing perennial weeds.
- Areas not to be sprayed: Care to be taken when spraying adjacent to planting not to be treated, e.g. to avoid spray drift, in windy conditions; close to watercourses ; soon after or before cutting; when rain is imminent or during drought conditions. Do not spray bulb and corm areas when in leaf; desirable herbaceous plantings and wildflower areas .

345 CONTROL OF JAPANESE KNOTWEED
- Operations: Spot treat in June and September during suitable weather conditions and when plants are growing vigorously.
- Herbicide: Contractor's choice.
- Application: Contractor's choice.
- Arisings: Remove.

350 FERTILIZER - SPRING APPLICATION
- Type: Slow release.
- Application rate: 100 g/m².

360 FERTILIZER - AUTUMN APPLICATION
- Type: Slow release.
- Application rate: 60 g/m².

381 REINSTATEMENT OF WORN OR DAMAGED LAWNS
- Worn or damaged areas: Make good by returfing or reseeding:
  - Returfing standard: To BS 7370-3, Clause 12.2.
  - Reseeding standard: To BS 7370-3, Clause 12.6.
- Turf or seed: To match existing in appearance and quality.
- Protection and watering: Provide as necessary to promote successful germination and/ or establishment.

FLOWER BEDS/ SEASONAL BEDDINGS

470 FLOWER BEDS GENERALLY
- Operations:
  - Remove: Dead flower heads, fallen leaves, litter and debris.
  - Weeds: Thoroughly hand weed.
  - Cultivate: Lightly hoe.
  - Trim: Clip grass edges.
- Fungicide: Not required.
- Insecticide: Not required.

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING
- Duration: 1 year.
- Weed control:
  - Method: Keep planting beds clear of weeds by hoeing and screefing ad maintaining full thickness of mulch.
  - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Watering: When instructed.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER
- Time of year: March or April.
- Type: Slow release.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
  - Application rate: 250 g per feathered, standard or larger tree.

510 TREE STAKES AND TIES
- Inspection/ Maintenance times: As scheduled and immediately after strong winds.
- Stakes:
  - Replace loose, broken or decayed stakes to original specification.
  - If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
- Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
  - Where chafing has occurred, reposition or replace ties to prevent further chafing.
- Removal of stakes and ties: 2 years after planting.
  - Fill stake holes with lightly compacted soil.

520 REFIRMING OF TREES AND SHRUBS
- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

535 TREE GRILLES
- Operations: Lift grilles, remove weeds, adjust levels as necessary and lightly compact. Refit grilles, refill interstices and lightly compact to correct level.
- - Material for making up levels and refilling: Horticultural grit.

540 PRUNING GENERALLY
- Pruning: In accordance with good horticultural and arboricultural practice.
  - Removing branches: Do not damage or tear the stem or bark.
  - Wounds: Keep as small as possible and cut cleanly back to sound wood.
  - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
  - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or infection: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

545 PRUNING OF EXCESSIVE OVERHANG
- Timing: Annually.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: Allow ground cover plants to partially overlap paths and lawns.

575 PRUNING ORNAMENTAL SHRUBS
- General: Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
- Suckers: Remove by cutting back level with the source stem or root.

580 PRUNING FLOWERING SPECIES OF SHRUBS AND ROSES
- Time of year:
  - Winter flowering shrubs: Spring.
  - Shrubs flowering between March and July: Immediately after the flowering period.
  - Shrubs flowering between July and October: Back to old wood in winter.
  - Rose bushes: Early spring to encourage basal growths and a balanced, compact habit.

600 TRIMMING RAPIDLY ESTABLISHING HEDGES
- General: Allow to reach planned height as rapidly as possible.
  - Form: Trim back lateral branches moderately.

605 TRIMMING SLOWLY ESTABLISHING HEDGES
- Operations:
  - Timing: Cut back hard in June and September to encourage bushy growth down to ground level.
  - Form: Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

610 TRIMMING TAPERING ESTABLISHED HEDGES
- Time of year: Trim once in July or August.
- Operations:
  - Form: Trim carefully and neatly to regular line and shape, with the width at the top less than that at the base.
  - Trim: Remove current growth rather than old wood.
- Tools/ Cutting: Shears.

311 TRIMMING NONTAPERING ESTABLISHED HEDGES
- Time of year: Regular trimming from June to September.
- Operations:
  - Form: Trim carefully and neatly to regular line and shape with vertical sides.
  - Trim: Remove current growth rather than old wood.
- Tools/ Cutting: Shears.

315 TRIMMING FIELD HEDGES
- Operations: Trim to specified height and profile using suitable mechanical cutters.

320 REMOVAL OF DEAD PLANT MATERIAL
- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

325 CLIMBING PLANTS
- Pruning: Remove excess growth, to ensure that signs, light fittings, doors and windows are kept clear at all times.
- Insecure growth: Attach to supporting wires or structures using Stainless steel wire.
- Supporting structures: Check and repair as necessary.

330 DEAD AND DISEASED PLANTS
- Removal: Within 1 week of notification.
- Replacement: Within 2 weeks.

335 REINSTATEMENT OF SHRUB/ HERBACEOUS AREAS
- Dead and damaged plants: Remove.
- Mulch/ matting materials:
  - Carefully move to one side and dig over the soil, leaving it fit for replanting.
- - Do not disturb roots of adjacent plants.
- Replacement plants:
  - Use pits and plants: To original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
  - Additional requirements: Submit details and cost of plants before ordering.
- Dressing: Slow release fertilizer:
  - Type: Organic.
  - Application rate: 70 g/m².

345 WEED CONTROL GENERALLY
- Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 100 mm high.
- Adjacent plants, trees and grass: Do not damage.

350 HAND WEEDING
- General: Remove weeds entirely, including roots.
- Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Completion: Rake area to a neat, clean condition.
- Mulch: Reinstate to original depth.

355 WEED CUTTING BY HAND OR MACHINE
- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 75 mm.
- Herbicides: Remove arisings before application.

675 DIGGING OVER
- General: Dig over beds. Do not damage existing plants, bulbs and roots.
  - Depth of dig (minimum): 100 mm.

680 SOIL AERATION
- Compacted soil surfaces:
  - Prick up: To aerate the soil of root areas and break surface crust.
  - Size of lumps: Reduce to crumb and level off.
  - Damage: Do not damage plants and their roots.

685 SOIL LEVEL ADJUSTMENT
- Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
  - Arisings (if any): Spread evenly over the bed.

690 MAINTENANCE OF LOOSE MULCH
- Thickness (minimum): 75 mm.
  - Top up: Every 6 weeks.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

695 FERTILIZING ESTABLISHED TREES AND SHRUBS
- Time of year: After flowering.
- Type of fertilizer: Slow release.
- Application: Spread evenly.
  - Rate: As manufacturer's recommendations.

705 WINTER LEAF REMOVAL
- Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
- Arisings: Distribute evenly over all planting beds.

710 WOODLAND PLANTING MAINTENANCE
- Watering: In exceptional circumstances to prevent plants dying.
- Loose plants: Refirm surrounding soil, without compacting.
- Vegetation: Except trees and coppice shoots to be retained, cut down to 200 mm above ground level within the plantation area.
  - Arisings: Leave between rows.
- Ditches and drains: Keep clear.

TREE WORK

810 TREE WORK GENERALLY
- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

820 PREVENTION OF WOUND BLEEDING
- Standard: To BS 3998.

825 PREVENTION OF DISEASE TRANSMISSION
- Standard: To BS 3998.

830 CLEANING OUT AND DEADWOODING
- Remove:
  - Dead, dying, or diseased wood, broken branches and stubs.
  - Fungal growths and fruiting bodies.
  - Rubbish, wind blown or accumulated in branch forks.
  - Wires, clamps, boards and metal objects, if removable without causing further damag and not part of a support structure that is to be retained.
  - Other unwanted objects, e.g. tree houses, swings.
  - Climbing plants as planting schedule.

835 CUTTING AND PRUNING GENERALLY
- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
  - Chainsaws: Do not use on branches of less than 50 mm diameter.
  - Hand saws: Form a smooth cut surface.
  - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible. Large branches: Remove only if unavoidable.
  - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail ir adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

855 CUTTING TREE ROOTS
- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
  - The branch spread of the tree.
  - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
  - Cutting: Make clean smooth cuts with a hand saw.
  - Wounds: Minimize. Avoid ragged edges.
  - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
  - Protection: Cover cut roots with clean sharp sand.
  - Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES
- Standards: To BS 3998 and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
  - Treatment: Remove mechanically to a minimum depth of 300 mm below ground level.
  - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
  - Material: Use as-dug material and/ or imported soil as required.
  - Finishing: Consolidate and grade to marry in with surrounding ground level.

HARD LANDSCAPE AREAS/FENCING

910 HARD SURFACES AND GRAVEL AREAS
- Herbicide: Apply a suitable foliar acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
- Repairs to flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
- Stain removal: In accordance with BS 7370-2, table 4.

915 PAVING SEALANT
- Type: Polyurethane.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Application method: As manufacturer's recommendations.
  - Coats: Two coats applied at right angles to each other.
  - Coverage: As manufacturer's recommendations.

920 FENCING
- Fences: Inspect and repair to maintain protection against rabbit.

930 GRAFFITI REMOVAL
- Method: Air abrasion.
- Subsequent treatment: Transparent, two part, anti-graffiti coating.
  - Finish: Matt.