

MAYESTON HOUSING PROJECT

GREEN INFRASTRUCTURE REPORT

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Site photo in 2021

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in collaboration with OBB Architects (Main Consultant) and Fingal County Council



I INTRODUCTION

Summary

The development of a green infrastructure network is part of an ongoing design process to improve and strengthen the permeability and functionality of a green/ blue network of spaces throughout Fingal County Council. These spaces permeate urban areas for both nature and people connecting them with the wider landscape (including designated green areas). The delicate balance between amenity and improvement of biodiversity plays a key role in developing resilient, circular systems for climate adaptation and developing healthier cities for people and nature.

Sensitivity screening of the Mayeston site determined it did not contain or impact directly on any protected sites or ecological buffer zones. The main opportunities for developing this type of site within the hierarchy of the green infrastructure network can best be achieved through the optimisation of the following site-based strategies;

1. The provision of a flexible green space for urban residential amenity.
2. The development of a robust sustainable urban drainage system.
3. The provision of different measures to achieve a net biodiversity gain.

These strategies have been worked out into proposals and are described in more detail in the following sections.



Green infrastructure Plan

BIODIVERSITY

- Woodland edge (semi naturalised)
- Mixed species hedgerows (ecologically maintained)
- Pollinator planting
- Nest boxes:

RAINWATER MANAGEMENT

- Waterflow via surface
- Swales for temporary water storage
- Infiltration zone with permeable paving
- Tree pit water storage
- Green roofs
- Existing attenuation tank (outside of project area)

LINKAGES & SUSTAINABLE MOBILITY

- Pedestrian routes
- Pedestrian linkages to external areas
- Cycle routes

OPEN SPACE PROVISION

- Public open space (class 2)
- Communal open space (green courtyard)
- Creche outdoor space
- Food garden
- Private amenity area (see open space diagram)
- Green areas (outside of plan area)

Images of existing situation



Images showing the entrance roads and surrounding green areas to the project area.



Background

The proposed site for the development is located in the townland of Mayeston, Poppintree, Dublin 11. The site is bounded on the north by the M50, to the west by a large public landscaped space, to the south by Mayeston Downs houses and to the south and south-east by Mayeston Green and Mayeston Downs, and to the east by Silloge Green Lane. The proposal is for a residential development of 119 no. residential apartment units and creche, arranged in 5 buildings varying in height from 3 storeys to 6 storeys.

The FCC-owned land on which the proposed buildings are located has an extent of 1.35ha, and falls approximately 2.2m from the north-west towards the south-east. The surrounding context is characterized by perimeter block apartment buildings and terraced 2-3 storey houses. There are no existing buildings on the site apart from ground floor slabs and a road which were partially constructed circa 2008 (FCC Planning Ref: FCC 06A/1348 and F07A/1423), before the works were abandoned. Some soil heaps remain on the site as part of these works. The

main part of the site to the west is fully fenced off and the eastern part of the site is overgrown grass and scrub.

The intent is that the development will improve the amenity of adjoining areas and provide quality housing with a variety of units and communal amenity space. As a larger park and green area is located adjacent to the project area, the focus for the public realm concept will be to provide safe, local spaces for residents, to complement the existing green structure.



Aerial photo with approximate indication of boundary (red line)

Methodology and role

The landscape design for Mayeston was started in November 2021 and was commissioned by O Brian Beary Architects on behalf of the client Fingal County Council. The plan was carried out by REDscape Landscape and Urbanism, a landscape architect led company comprising multidisciplinary teams (of landscape architects, urbanists, ecologists, engineers) with experience in delivering public realm and urban projects in Ireland and internationally. The process was undertaken in close collaboration with Fingal County Council, who managed the interaction with residents and key stakeholders.

The Green Infrastructure report is based on policy objectives for Fingal County Council as well as several reports related to planning application for the Mayeston development, including; the urban and architectural design by O Briain Beary Architects, the Surface Water Management plan, the Flood Risk Assessment report, the Infrastructure design report, Site investigation report, by Downes Associates and the Appropriate Assessment, the Environmental Impact Assessment Screening and Invasive alien species Survey report by planners/ ecologists BSM

Structure of report

The report contains three parts. Part I, the Introduction summarises the definition, policy, objectives, and context of Fingal County council's vision in relation to green infrastructure. Part II sets out the policy requirements for Green Infrastructure, the objectives and provides a summary of the measures applied to the Mayeston site for each criteria. Part III examines three key green infrastructure strategies that have been proposed for the project site to fulfil the criteria. Part IV looks at conclusion and recommendations.

Definition of GI

Green Infrastructure can be understood as a planned network of interconnected natural areas such as parks, rivers and open spaces that help to conserve natural ecosystem functions. Green Infrastructure planning results in environmental, economic and social benefits by providing nature-based solutions to development objectives. This approach results in resilient urban landscapes adapted for and reducing the negative effects of climate change

GI policy

and the Archaeological Impact Assessment. The requirements for green infrastructure are described in Chapter 9, Green Infrastructure and Natural Heritage of the Development Plan for Fingal County Council. See link for more information. <https://www.fingal.ie/development-plan-2023-2029>. These are examined in more detail in part 2.

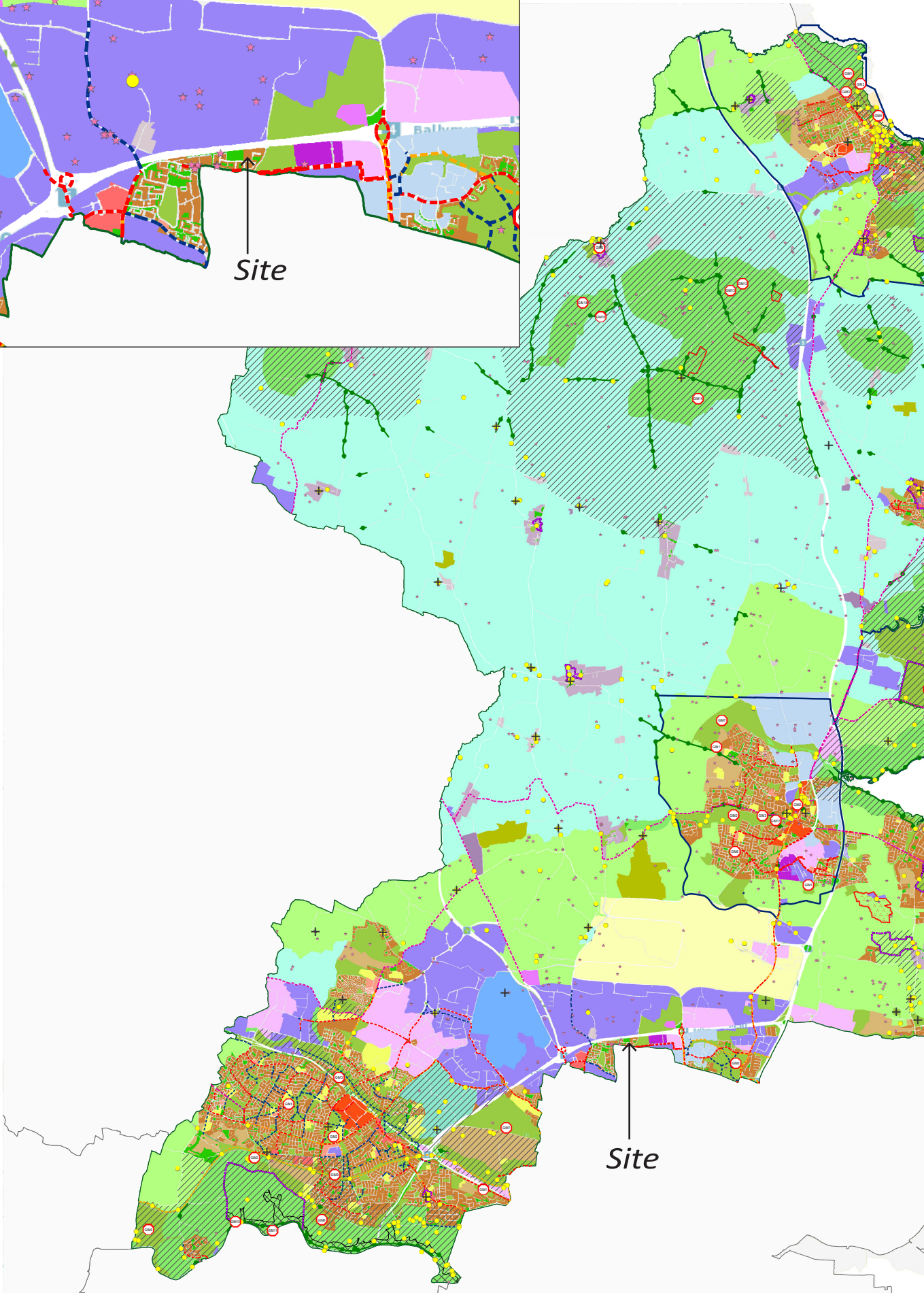
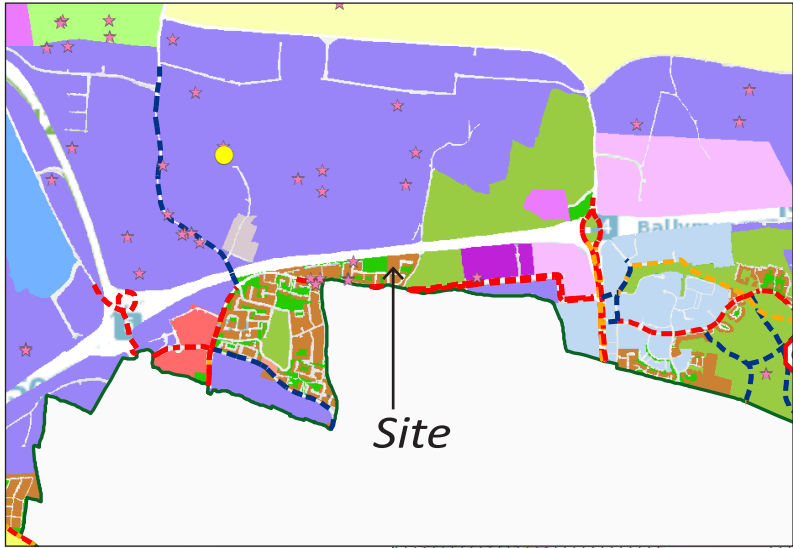
GI objectives

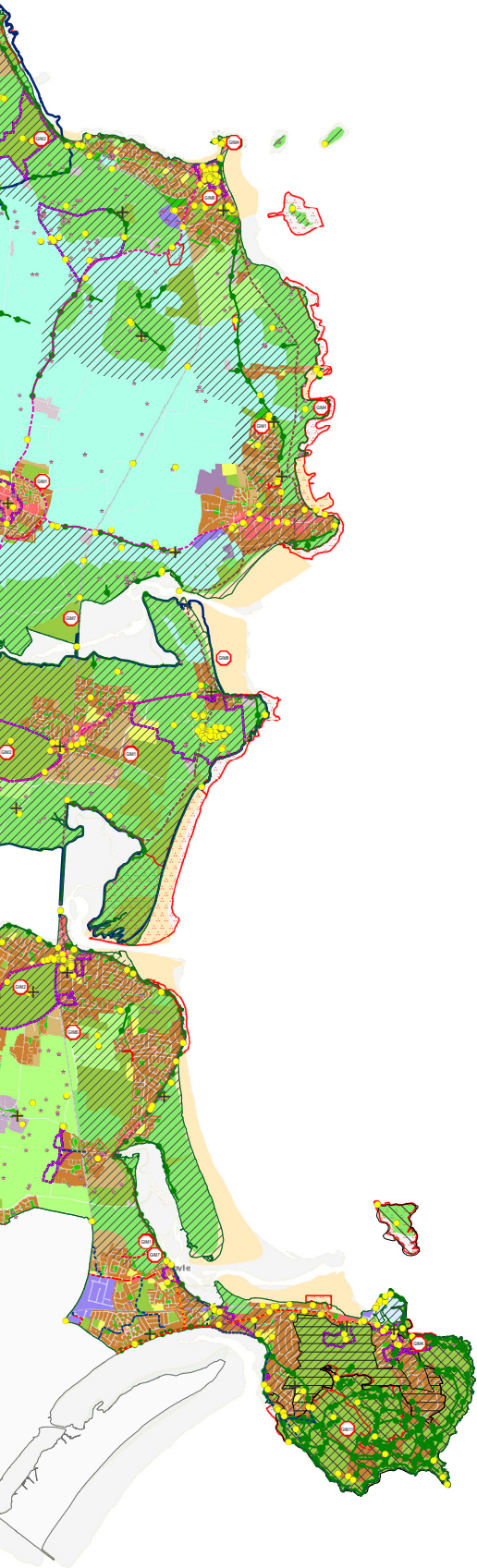
The following objectives are proposed by Fingal County Council.

Policy GINHP2 Protection of Green Infrastructure
Ensure that areas and networks of Green Infrastructure are identified, protected, enhanced, managed and created to provide a wide range of environmental, social and economic benefits to communities.

Policy GINHP1 Resilient Design
Promote an awareness of the benefits of Resilient Design and the multi-functional nature of Green Infrastructure. Apply principles of Green Infrastructure to inform the development management process in terms of design and layout of new residential areas, business/ industrial development and other significant projects while maximizing the multi-functional nature of Green Infrastructure by ensuring the development of synergies between Public Open Space, Biodiversity, SuDS/Water Sensitive Design and Active Travel objectives.

Policy GINHP3 Greening of Developments
Encourage measures for the 'greening' of new developments including the use of green roofs, brown roofs, green walls and water harvesting.

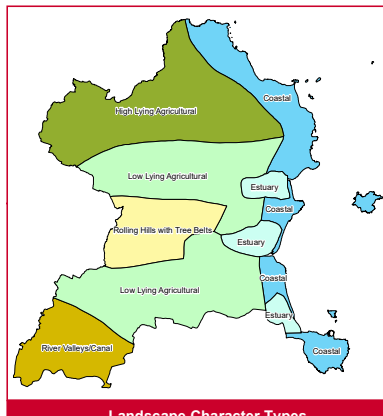




Greater Dublin Area (GDA) Cycle Network 2013

- Rural Routes
- Rural Greenways
- PSG Network
- Feeder Network
- Base Cycle Network

Note: These cycle networks are an extract from www.nationaltransport.ie/publications/transport-planning/gda-cycle-network-plan. (Please see this website for further information)
Alternatively visit www.fingal.ie/interactive maps to view these routes



**Draft
Fingal Development Plan
2023 - 2029
GREEN INFRASTRUCTURE 1
Sheet No. 14**

Zoning Objectives

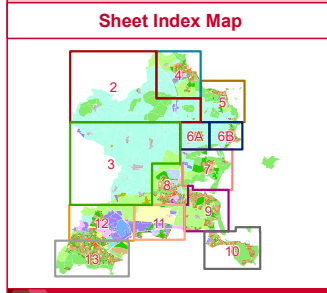
- + Historic Graveyard
- Protected Structures
- Recorded Monuments
- Preserve Views
- Architectural Conservation Area (ACA)
- Highly Sensitive Landscape
- Beach
- County Geological Heritage Site
- Historic Landscape Characterisation (HLC) Area
- Open Space
- Liffey Valley & Howth SAAO (Special Amenity Area Order)
- Howth SAA (Special Amenity Area) Buffer Zone

See County Strategy / Index Map for Zoning Descriptions

Green Infrastructure Mapped Objectives

- ⊖ Provide new Active Recreation Hubs in Brenore Regional Park, St. Catherine's Park (Rush), Lusk, Donabate, Mooretown/Oldtown (Swords), Drinagh, Balboyle Racecourse Park and Phoenix Park Racecourse
- ⊖ Protect the natural and built heritage of the following Fingal County Council owned lands (which include important historic sites, landscapes and gardens), while providing significant public amenities: Brenore Castle and Park, Ardglilan Castle and Demesne, Newbridge House and Demesne, Malahide Castle and Demesne, Swords Castle and Park, Sandy Demesne, Beechpark (Clonsilla) and Ward River Valley Regional Park, Swords.
- ⊖ Upgrade and enhance Brenore Regional Park, Ward Valley Park, Tola Valley Park and Millstream Park, Blanchardstown
- ⊖ Encourage appropriate maintenance and conservation of Howth, Balbriggan, Drumarnagh and Skerries Martello Towers which are in the Council's ownership
- ⊖ Maintain and develop the Seamus Ennis Arts Centre as a significant traditional arts venue
- ⊖ Upgrade existing Active Recreation Hubs in Skerries, Ridgewood (Skerries), Bloomfield (Malahide), Haristown, Portersdown and St. Catherine's Park (Liffey Valley)
- ⊖ Provide new Regional Parks at the following locations: Ballyealy Lane, Mooretown/Oldtown (Swords), Balboyle, and Dunisk subject to Appropriate Assessment screening
- ⊖ Establish a coastal monitoring programme on an ongoing basis to provide information on coastal erosion on an ongoing basis
- ⊖ Seek the development of the Royal Canal as a significant public amenity while protecting its natural and built heritage
- ⊖ Develop Anna Liffey Mills as a significant public amenity within the Liffey Valley while protecting its architectural and industrial heritage values
- ⊖ Implement the Management Plans for the Howth and Liffey Valley Special Amenity Areas and review them as necessary in consultation with all relevant stakeholders
- ⊖ Protect views of the Fingal Uplands area both from within the upland area and distant views towards the upland area of the Naui Hills
- ⊖ Encourage the planting and retention of hedgerows, trees and small woodland groups in the upland area of the Naui Hills
- ⊖ Protect views from within the Fingal Uplands area and also to protect views of this upland area from outside the area
- ⊖ Encourage the planting and retention of hedgerows, trees and small woodland groups where appropriate
- ⊖ Protect views from within the Fingal Uplands area and protect views of this upland area from outside the area.
- ⊖ Develop a 'green necklace' of open spaces which are linked to each other and to the existing town centre of Swords, and to new development areas, promoting enhanced physical and visual connections to the Ward River Valley Regional Park and the Broadmeadow River Valley Park from within the development boundary of Swords. Develop an appropriate entrance to the Ward River Valley and provide for a comprehensive network of pedestrian and cycle ways, linking housing to commercial areas, to the town centre and to MetroLink stops and linking the three water bodies (the Ward River Valley, the Broadmeadow River Valley and the Estuary) to each other and prepare a Landscape and Recreation Strategy for the Ward River Valley

Note:
For further detail please refer to the Draft Written Statement and Draft Written Statement Appendices
To view details of Sites and Monuments Record see: <https://maps.archaeology.ie/HistoricEnvironment/>



**DRAFT
FINGAL DEVELOPMENT PLAN
2023-2029**

Comhairle Contae Fingal
Fingal County Council

An Roinn um Pleanáil agus
Infrastruchtúr
Pleanáil agus Dleacht
Infrastruchtúir

Director of Services: Matthew McAleese Date: Feb 2022
Senior Planner: Róisín Burke Scale @ A0: 1:40,000

Fingal Ecological network

Fingal has a rich biodiversity resource with its coast, countryside, and urban centres. The value of biodiversity extends from the health and well-being benefits to be gained from contact with nature, to the economic gains for local businesses associated with food production and outdoor pursuits. Fingal contains a wealth of natural heritage, but the patterns of loss of this heritage mirrors the global pattern of biodiversity loss as our local habitats are lost and species numbers have declined. The challenge is to develop the County in a way

which maintains and enhances biodiversity for future generations. Fingal’s response to habitat loss and species decline is the development of an Ecological Network that spans the entire County. The Ecological Network is made up of core nature conservation areas, buffer zones, and nature development areas and ecological corridors. The Mayeston site is not part of these key structures. The Fingal Biodiversity Plan 2022-2030 sets out a 100 actions to improve biodiversity.

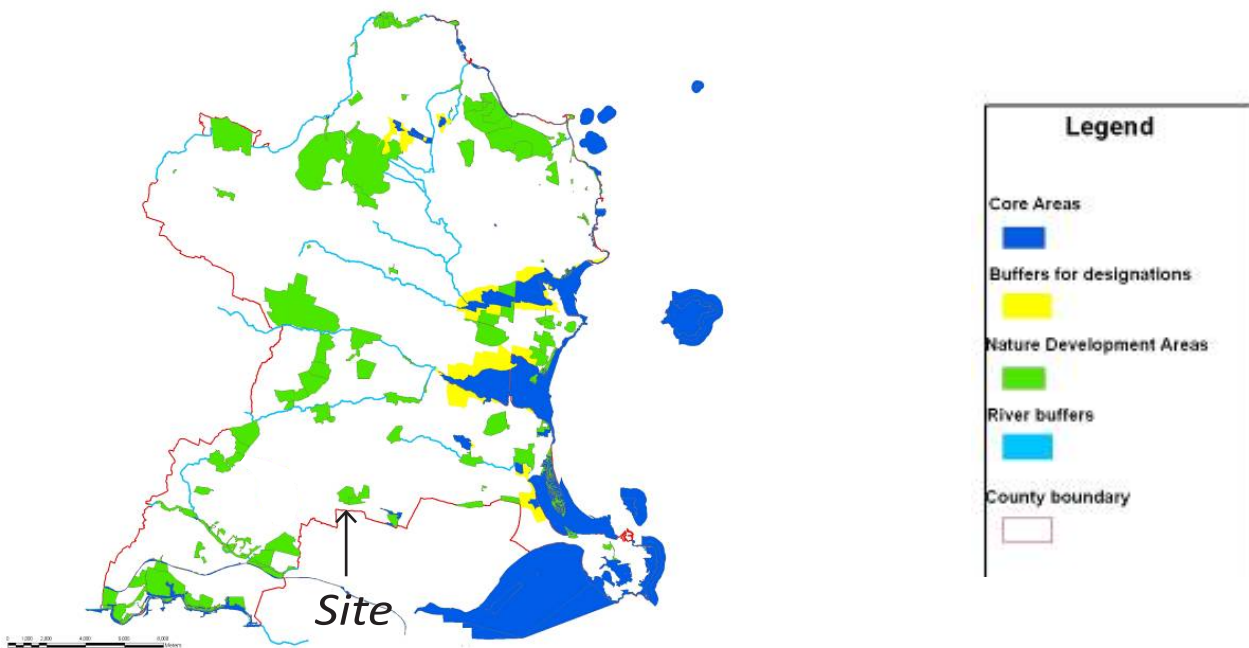


Illustration: Fingal Ecological Network

Impact of development on European and other designated/ protected sites

In view of best scientific knowledge this AA report concludes that the proposed development at the Mayeston site, individually or in combination with another plan or project, will not have a significant effect on any European sites. This conclusion was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.

It is considered that this report provides sufficient relevant information to allow the Competent Authority (Fingal County Council) to carry out an AA Screening under Section 177U of the Planning Acts, and reach a determination that the proposed development will not have any likely significant effects on European sites in light of their conservation objectives.

Land use zoning and landscape character

The land is zoned as residential for proposed use of the site. The Landscape Character of the site is described in general as being low lying Agricultural land. The site is located within the M50 ring and surrounded by residential

areas. No changing impact on the Landscape character of the site is envisaged.

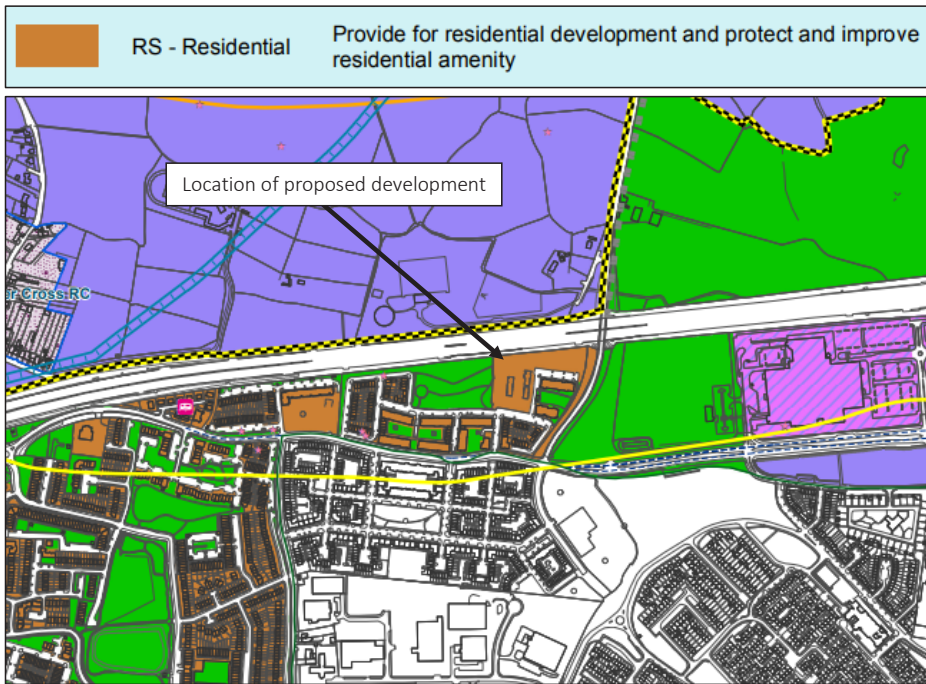


Illustration: Fingal Development plan 2023-2029 (Source FCC)

Landscape design concept

Two existing green areas, Mayeston Park and Mayeston Green are located adjacent to the proposed development and offer significant space for outdoor activities. The principal objectives of the landscape design for the project area are to complement the existing green structure with high quality communal amenity space and a public open space and to contribute to the sustainability of the proposed development with sustainable urban drainage.

The design offers multiple uses to different age groups. It is based on the following design themes; car free amenity, child friendly spaces, natural play, amenity routes, active travel, community based spaces and food production.

1. Communal amenity space

The design includes the following components;

A green courtyard (for all ages)

The main courtyard has been designed as a traffic free, large green space to facilitate excellent sunlight penetration at all times of the year. This is a general space for passive amenity.

Natural Play area and play route (2-7 years)

Within this space a natural play area, stepping stone bridge and natural play equipment (swing bridges, poles) are proposed for this eco informed setting to offer a play route.

Seating (teenagers/ all ages)

Several benches for outdoor seating are located around the central courtyard to enjoy the sunniest spots. Concrete steps are integrated into the grassed slope to offer an informal gathering place for residents in one of the sunniest spots.

Food production (all ages)

A space has been allocated near block B and D as potential sites for community food production. This site is semi enclosed, public, and near an entrance with social supervision and considered suitable for collective initiatives.

Creche outdoor space (children to 4 years)

An outdoor creche space is provided.

Parking for bikes (all users)

A range of parking options for bikes are provided, including indoor parking and outdoor parking. See architect's drawing

Enclosed communal garden (all ages)

A communal enclosed garden with seating and an ornamental tree is provided for block E.

General Description

The main courtyard has been designed as a traffic free, large green space to facilitate excellent sunlight penetration at all times of the year, as demonstrated in the sunlight studies prepared. It is overlooked by the dwellings in the project. Within this space a natural play area with stepping stone bridge and informal seating areas are proposed for this eco informed setting. The setting for the courtyard can be maintained to become more extensive over time, if so desired by the residents and maintenance. Boundary treatments are described in Architect's drawings.

Sustainable urban drainage

The central green area is sunken to provide a dry swales as part of the SUDS strategy. Storm water runs off via pathways and flows to a north south collector located at the centre of the green courtyard. The collector is detailed as a dry stone rill with steel edges, which curves through the inner courtyard. The intention is to raise an awareness of the drainage concept and demonstrate how suds can become a visible, valued feature in the public realm.

The (dry) swale is planted with grass and pollinators and several varieties of trees (some native) for all year round visual interest, biodiversity, and occasional shade. Zones along the centre of the swale areas to be extensively maintained with zones of bioswale vegetation parallel to the collector. This vegetation can tolerate occasional inundation, as the water level can rise to 0.5m height for short periods within the swales. Permeable concrete pavers are proposed in the majority of the hard landscaped areas. Tree pits will also be designed to buffer water in

wet periods and store water in dry ones. The tree pits are proposed with a minimum of 20m³ per tree for all trees planted in hard standing or semi permeable paving.

Edges, privacy and social protection

It is proposed to close off the courtyard with gates and railings but the combination of the clear thresholds to the space and the supervision by ground and upper floor dwellings will assist in creating a safe secure space. Ground level apartments have private gardens or terraces which are enclosed with hedges. These can be privately maintained by the residents with a recommended height of 1.2m. The proposed hedges have a mixed species planting, chosen for biodiversity, security (thorns) and the ability to fix carbon. The crèche garden at the southern end of the site, will be enclosed by a beech hedge in combination with a railing.

Green parking area

The parking area to the north of the site has been designed as a green parking area, with grasscrete parking spaces in combination with porous macadam to slow run off and buffer water. A layer of trees has been proposed for the parking areas to mitigate the effects of particle pollution from the M50 and offer some marginal reduction in noise levels. The green concept is extended to the storage facility for bikes where stacked parking has been proposed in secure buildings with sedum roofs. Runoff from the roof will flow via ground level drain to swale, which flows to an attenuation basin in the nearby park.

Play and pleasure

The recreational needs of children must be considered as part of communal amenity space within apartment schemes. Experience in Ireland and elsewhere has shown that children will play everywhere. Therefore, as far as possible, their safety needs to be taken into consideration and protected throughout the entire site, particularly in terms of safe access to larger communal play spaces.

The central green area has a natural play area consisting of a felled tree, in combination with several wooden play elements that bridge the collector section of the swale. This forms part of a play route through the central space. Several benches for outdoor seating are located around the central courtyard. Concrete steps are integrated into the grassed slope to offer an informal gathering place for residents in one of the sunniest locations.

Paving for flexible spaces

A light-coloured concrete paving with natural stone topping has proposed to form a consistent surface throughout the project area.

2. Public open space - Class 2

The design includes the following components;

Grassed areas with picnic table

The grassed area offers green spaces next to the buffer zone to the M50 and have flexible use.

Informal play for 6 -12 years

Within the grassed area is an informal play area with stepping stones, leading to stacks of stone or concrete flags for informal climbing. These are not to exceed 90cm in height.

Pollinator garden

A pollinator garden is located next to block E.

General Description

This part of the site is a wrap-round grassed area, to block E which offers a green space next to the buffer zone to the M50. It links the existing residential area to the south, with a walking route around the eastern periphery of the residential zone to tie in with Mayeston Green and St Margaret's Road. A pollinator garden, play area are located within the public open space.

Block E offers a level of social supervision to the north, which is to facilitate a play area for older children. The planted tree area along the M50 is to be strengthened with new planting, offering a narrow, habitat corridor along the M50.

3. Private outdoor areas

The design includes the following components;

Private amenity areas

These areas are enclosed with hedges of 1.2m, and are indicated in the GI plan. See open space provision diagram.

Creche outdoor space

An outdoor creche playing area is provided. See open space provision diagram.

Boundary treatments are described in Architect's drawings.

Open space provision

Communal Amenity Space, 1998sqm

The Sustainable Urban Housing: Design Standards for New Apartments 2022 outlines a requirement below for communal amenity space for apartments as set out below:

- 1 bed – 5 sqm
- 2 bed 3 person – 6 sqm
- 2 bed 4 person – 7 sqm
- 3 bed – 9 sqm

Based on the unit count and mix proposed, there is a minimum requirement of 746 sqm for the development, outlined below:

1 bed apartment	39	195 sqm
2 bed 3 person apartment	33	198 sqm
2 bed 4 person apartment	35	245 sqm
3 bed 5 person apartment	12	108 sqm

A total of 1,998 sqm communal amenity space is provided in the project, in two spaces. The main communal amenity space is the central courtyard accessible to all residents including Block E (1,867 sqm), and a secondary communal amenity space is directly to the south of Block E (131 sqm). The total provision is just under 2.5 times the minimum requirement and all the space provided is accessible, secure, sheltered, usable and achieving excellent sunlight standards. Play and seating areas are proposed to cater for all levels of mobility and accessibility. The daylight studies submitted confirm that the courtyard and Block E communal amenity space will receive good sunlight penetration during all seasons. All site curtilage areas will be overlooked by habitable rooms for passive surveillance, and outdoor lighting will ensure a safe and friendly environment.

The grassed areas to the courtyard are shaped to provide natural swales as part of the SUDS strategy. Permeable concrete pavers are proposed in most of the hard landscaped areas and native tree planting is proposed for visual interest, biodiversity and occasional shade. The courtyard will have controlled access via gates, but if the proposal allows the intention is that these will remain open during daytime and that the combination of the clear thresholds to the space and the supervision by ground and upper floor dwellings will assist in creating a safe secure space at these times.

The Communal Amenity Space adjacent Block E is a south-facing space with low noise levels. It is protected by perimeter hedges and a pedestrian gate, with seating and planting for occasional shade. The space has passive surveillance and lighting to create a safe secure space for the residents.



Open space diagram. Source OBB

Public Open Space (P.O.S.), 1658sqm

The FCC Development Plan requires that 12% of the site is provided as Public Open Space. The proposal allows for 1,658 sqm of Class 2 Public Open Space, which is 12.3% of the overall site area. The POS is provided to the centre and north-east of the site, in two connected zones. The central location of the smaller zone will be useful for all local residents, and is designed as an open flexible green space with wildflower planting for visual interest and biodiversity, and with street lighting and with good passive surveillance from roads and apartments. The second larger zone to the north-east of



the site is adjacent Silloge Lane, which has the potential to facilitate a future connection between the subject site and Silloge Lane and to the FCC-owned lands to the east, which have potential to be used as amenity spaces. Natural play provision is included to this area for older children. It is also worth noting the immediate adjacency of the large park to the west, which is a very pleasant, well-maintained, and popular open space.

Play Provision, 482sqm

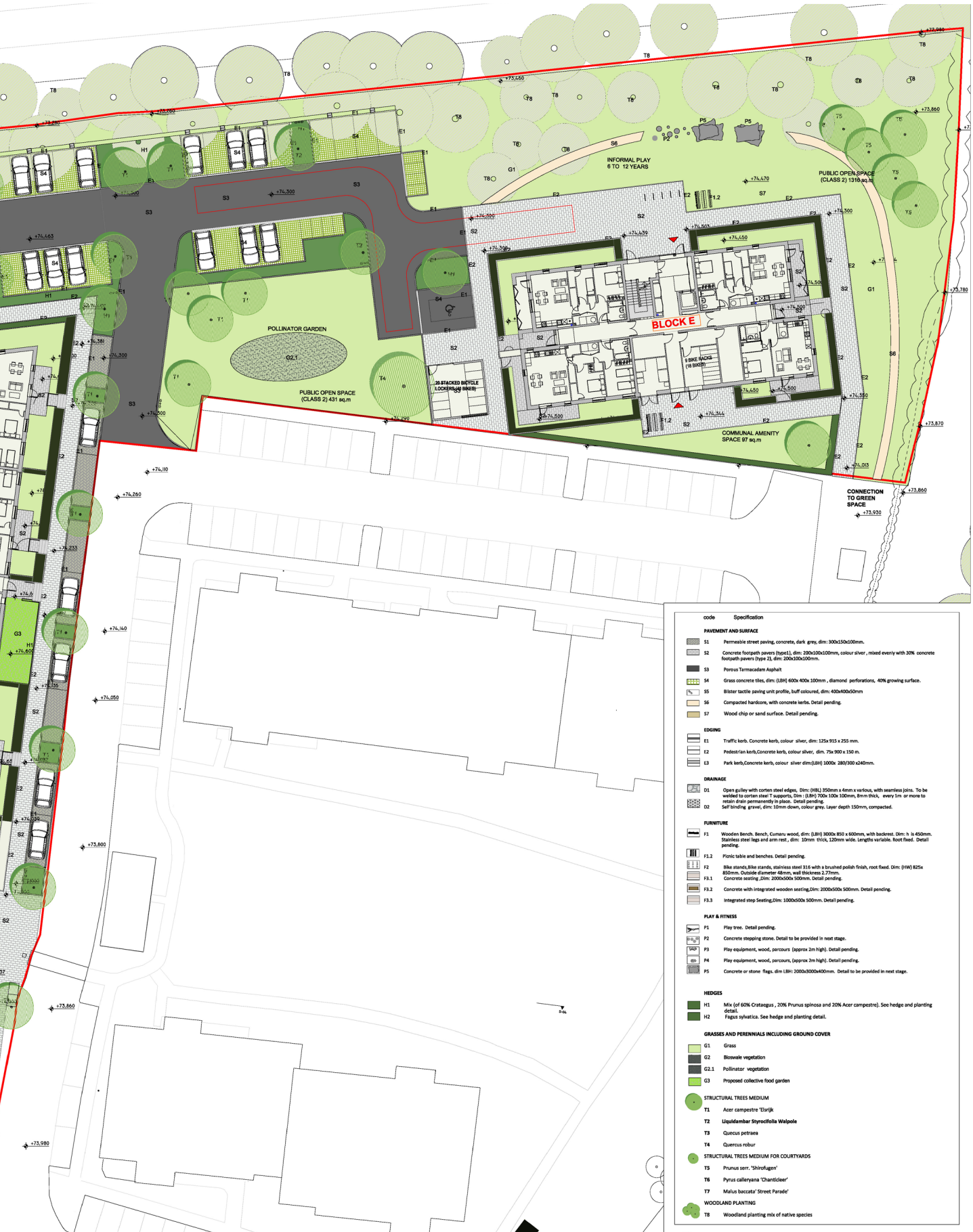
The proposal allows for a play space provision of 482sqm

which is greater than the minimum requirement of 476sqm outlined in Space for Play - a Play Policy for Fingal. The main play space is located centrally in this development in the courtyard, including Natural play elements. The design of the main play area is in line with guidance in Sustainable Urban Housing: Design Standards for New Apartments 2022, which specifically notes that “the perimeter block with a central communal open space is particularly appropriate for children’s play, especially if access from the street is controlled.” Additional natural play provision of 115sqm is located to the north east of the site, for older children. The existing open space directly adjacent the subject site also has a playground, approx. 130m from the site.

Landscape Plan

M50





Strategic approach of site to Green Infrastructure network

Green Infrastructure networks have a sensitivity hierarchy ranging from highly protected areas of high biodiversity (hubs), to primary and secondary connecting spaces (corridors and sub corridors) to an increasingly fine network of spaces (sub hubs) with a lower biodiversity to disconnected sites (stepping stones). All of these spaces are important and contribute to a green / blue structure that can benefit people and nature and develop resilience for climate adaptation. The approach to each part of the hierarchy is different.

As the Mayeston site is not part of the Green Infrastructure Plan for Fingal County, the Fingal Ecological Network or Protected sites and has no open waterways or significant ecological corridors, it can be reasonably described as a 'stepping stone' within the overall Green Infrastructure hierarchy.

The 'Stepping Stone' approach for GI supports site-based strategies to strengthen circular systems, enhance sustainable water management, achieve net gain for biodiversity and develop a flexible green spaces for urban amenity.

The main opportunities for developing green infrastructure for this type of site can best be achieved through the optimisation of the following site-based strategies;

The provision of a flexible green space for urban amenity and nature that is well connected to the surroundings and can be used by people of all ages.

The development of a robust sustainable urban drainage system, including the development of green roofs, vertical green and green parking where possible for city cooling and climate adaptation.

The provision of a net biodiversity gain through the diverse measures including; pollinator planting, nest boxes, provision of temporary wet habitats, tree planting, planting of multispecies hedgerows and sustainable maintenance techniques.

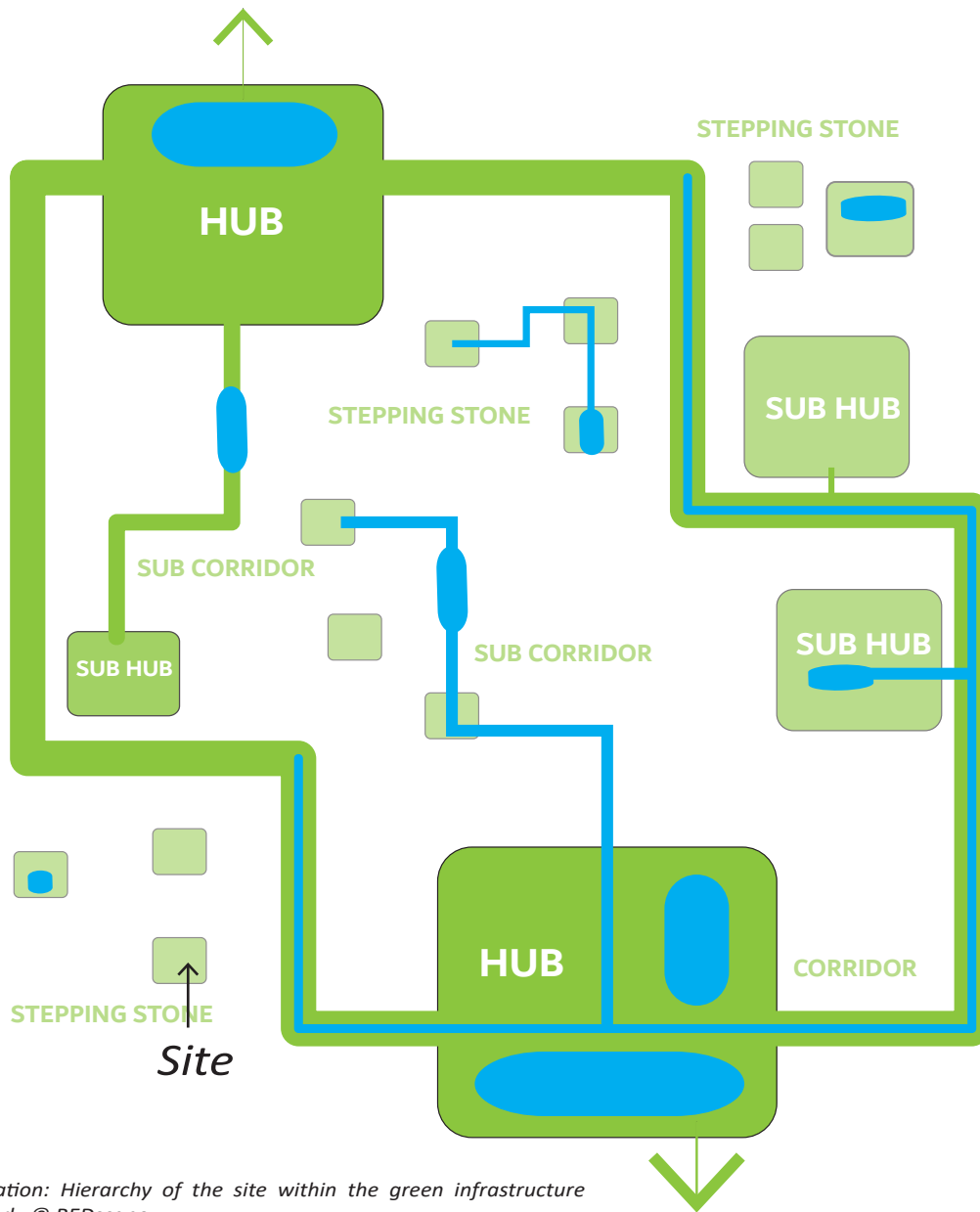


Illustration: Hierarchy of the site within the green infrastructure network, © REDscape.

II GREEN INFRASTRUCTURE CRITERIA

Green infrastructure themes

A list of policy objectives, and the application of measures for the site is listed to pinpoint the response to all green infrastructure criteria.

2.1 Green infrastructure themes

The Council has identified a number of key Green Infrastructure (GI) themes. These are:

- Biodiversity,

- Parks, Open Space and Recreation,
- Sustainable Water Management,
- Archaeological and Heritage Landscapes
- Landscape.

An overview of policy requirements has been summarized here and each policy has been applied, where appropriate to the proposed scheme. The table below indicates a summary of the different measures applied.

	POLICY	STATUS	APPLICATION
1.0	BIODIVERSITY		Biodiversity can be defined as the diversity of plants, animals, insects, birds, fish and micro-organisms and their habitats in which they live and interact, such as grasslands, woodlands, streams, hedgerows, public parks and private gardens. The County's natural heritage is a core component of Fingal's Green Infrastructure. Key elements are
1.1	Policy GINHP5 Green Infrastructure Network	Applicable	New green areas have been provided in line with housing requirements.
1.2	Objective GINHO2 Fragmentation	Applicable	There will be no loss, fragmentation, disruption, disturbance or other change to any element of any European site as a result of the construction or operation of the proposed development, no predicted impact on <i>ex-situ</i> species and no interference with the key relationships that define the structure or function of any European site.
1.3	Objective GINHO3 Biodiversity in Open Space	Applicable	Biodiversity improvement measures are proposed on site.
1.4	Objective GINHO4 Green Infrastructure and Development	Not applicable	The development does not propose to fragment the County's strategic green infrastructure network.
1.5	Objective GINHO5 Pollinator Plan	Applicable	Pollinator planting has been proposed in the margins of the swale and potentially in other parts of the site.
1.6	Objective GINHO6 Agriculture and Horticulture	Not applicable	The lands are not agricultural.
2.0	PARKS, OPEN SPACE AND RECREATION		This theme is defined as lands zoned open space and/or in use as public open space. The Council has established 2,000 hectares of public open space that are increasingly managed in a sustainable manner to ensure that future generations can enjoy the benefits of these amenities for recreation, health and wellbeing.

2.1	Policy GINHP6 Multi-Functionality	Applicable	A new green structure (largely car free) with multiple uses and for different ages has been provided to allow a high level of flexible use by the local community as well as promoting urban nature
2.2	Objective GINHO7 Provision of Open Space	Applicable	A system of open space has been provided in line with housing requirements.
2.3	Objective GINHO8 Routes	Applicable	Connections to existing parks, green areas and destinations have been provided to extend the potential of the newly provided public realm.
2.4	Objective GINHO9 Greenways and Net Gain	Not applicable	There are no greenways present in the project site.
2.5	Objective GINHO10 Food Production	Applicable	Two enclosed collective spaces, adjacent to entrances at Block B and Block D have been earmarked for community allotments, food or herb gardens should residents so choose.
2.6	Objective GINHO11 Donabate Turvey Nature Reserve	Not applicable	The site is not directly related to this initiative.
3.0	SUSTAINABLE WATER MANAGEMENT	The considered management and enhancement of watercourses including rivers and streams; riverine floodplains and wetland areas and coastal areas liable to flooding can provide effective measures to help manage flooding and improve the quality of water.	
3.1	Policy GINHP7 Protection	Not applicable	There are no natural watercourses indicated on site.
3.2	Objective GINHO12 Requirements	Applicable	A sustainable urban drainage system is proposed as part of a sustainable water management design that leads to an underground attenuation tank.
3.3	Objective GINHO13 Wetlands	Not applicable	A wetland system has not been deemed appropriate as there are no outfalls on the site for incoming water to be treated. Ground water is considerably lower than the site. A dry swale with intermittent flooding capacity has been proposed.

	POLICY	STATUS	APPLICATION
1.0	BIODIVERSITY		Biodiversity can be defined as the diversity of plants, animals, insects, birds, fish and micro-organisms and their habitats in which they live and interact, such as grasslands, woodlands, streams, hedgerows, public parks and private gardens. The County's natural heritage is a core component of Fingal's Green Infrastructure. Key elements are
1.1	Policy GINHP5 Green Infrastructure Network	Applicable	New green areas have been provided in line with housing requirements.
1.2	Objective GINHO2 Fragmentation	Applicable	There will be no loss, fragmentation, disruption, disturbance or other change to any element of any European site as a result of the construction or operation of the proposed development, no predicted impact on <i>ex-situ</i> species and no interference with the key relationships that define the structure or function of any European site.
1.3	Objective GINHO3 Biodiversity in Open Space	Applicable	Biodiversity improvement measures are proposed on site.
1.4	Objective GINHO4 Green Infrastructure and Development	Not applicable	The development does not propose to fragment the County's strategic green infrastructure network.
1.5	Objective GINHO5 Pollinator Plan	Applicable	Pollinator planting has been proposed in the margins of the swale and potentially in other parts of the site.
1.6	Objective GINHO6 Agriculture and Horticulture	Not applicable	The lands are not agricultural.
2.0	PARKS, OPEN SPACE AND RECREATION		This theme is defined as lands zoned open space and/or in use as public open space. The Council has established 2,000 hectares of public open space that are increasingly managed in a sustainable manner to ensure that future generations can enjoy the benefits of these amenities for recreation, health and wellbeing.

2.1	Policy GINHP6 Multi-Functionality	Applicable	A new green structure (largely car free) with multiple uses and for different ages has been provided to allow a high level of flexible use by the local community as well as promoting urban nature
2.2	Objective GINHO7 Provision of Open Space	Applicable	A system of open space has been provided in line with housing requirements.
2.3	Objective GINHO8 Routes	Applicable	Connections to existing parks, green areas and destinations have been provided to extend the potential of the newly provided public realm.
2.4	Objective GINHO9 Greenways and Net Gain	Not applicable	There are no greenways present in the project site.
2.5	Objective GINHO10 Food Production	Applicable	Two enclosed collective spaces, adjacent to entrances at Block B and Block D have been earmarked for community allotments, food or herb gardens should residents so choose.
2.6	Objective GINHO11 Donabate Turvey Nature Reserve	Not applicable	The site is not directly related to this initiative.
3.0	SUSTAINABLE WATER MANAGEMENT	The considered management and enhancement of watercourses including rivers and streams; riverine floodplains and wetland areas and coastal areas liable to flooding can provide effective measures to help manage flooding and improve the quality of water.	
3.1	Policy GINHP7 Protection	Not applicable	There are no natural watercourses indicated on site.
3.2	Objective GINHO12 Requirements	Applicable	A sustainable urban drainage system is proposed as part of a sustainable water management design that leads to an underground attenuation tank.
3.3	Objective GINHO13 Wetlands	Not applicable	A wetland system has not been deemed appropriate as there are no outfalls on the site for incoming water to be treated. Ground water is considerably lower than the site. A dry swale with intermittent flooding capacity has been proposed.

3.4	Objective GINHO14 Green Roofs	Applicable	Green rooves have been proposed on bike sheds.
3.5	Objective GINHO15 SuDs	Applicable	Surface water has been decoupled and follows a delay and buffer strategy via a wadi system before flowing to an attenuation tank.
3.6	Objective GINHO16 Coastal	Not applicable	The site is not coastal.
4.0	ARCHAEOLOGICAL AND HERITAGE LANDSCAPES	There is a significant link between our archaeological, built and natural heritage. Historic graveyards, stone structures and ruins are a rich part of not only our cultural but natural heritage and are of significant ecological value while archaeological monuments are often preserved within open space.	
4.1	Policy GINHP8 Archaeology and Green Infrastructure	Applicable	No significant archaeological or heritage features signaled on site.
4.2	Objective GINHO17 Fingal Heritage Plan	Applicable	No archaeological features found.
4.3	Objective GINHO18 Heritage Landscape	Applicable	No archaeological features found.
5.0	LANDSCAPE	This theme includes the Special Amenity Areas on Howth Head and the Liffey Valley; High Amenity Areas; Highly Sensitive Landscapes; and County Geological Sites.	
5.1	Policy GINHP9 Landscape Character	Applicable	The site treatment does not interfere with the Landscape Character of the site.

The protection and development of biodiversity

Plans for the protection and restoration of biodiversity and to develop a Green Infrastructure network at local level and promote the use of nature-based solutions for the delivery of a coherent and integrated network. It is important that all development proposals include measures to protect and enhance biodiversity.

An overview of policy requirements has been summarized here and each policy has been applied, where appropriate to the proposed scheme. The table below indicates a summary of the different measures applied.

	CORE BIODIVERSITY CONSERVATION AREAS	The most important nature conservation sites make up the core biodiversity conservation areas. These include internationally and nationally designated sites, sites hosting habitats listed in Annex I of the Habitats Directive and sites hosting rare and protected flora species and their habitats. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are being or have been, designated to conserve habitats and species of European importance pursuant to the EU Habitats and Birds Directives. These sites are part of a pan-European network known as Natura 2000 (See Table BD01). Article 6 of the Habitats Directive requires that the impacts of any plans or projects likely to affect Natura 2000 sites are assessed by the Planning Authority via Appropriate assessment (see Chapter 14 – Development Management Standards	
	Policy GINHP17 Protection of European and National Sites	Not applicable	No such sites form part of the project area or are impacted on by the project.
	Protected Areas of National Importance	Not applicable	No such sites form part of the project area or are impacted on by the project.
	Habitat Areas Listed on Annex I of the Habitats Directive Located Outside Designated Areas	Not applicable	No such species are found in the project area or are impacted on by the project.
	PROTECTED AREAS OF NATIONAL IMPORTANCE	Under the <i>Wildlife (Amendment) Act, 2000</i> Natural Heritage Areas (NHAs) are being designated to conserve species and habitats of national importance. This includes the Liffey Valley, Royal Canal and wetland sites such as the Sluice River Marsh and the Bog of the Ring. There are also a number of Statutory Nature Reserves and Refuges for Fauna in Fingal. These areas, established under the <i>Wildlife Acts 1976 to 2012</i> , are areas where nature conservation is the primary objective and takes precedence over all other activities. The Council will normally only grant permission where it is clearly demonstrated that a proposal will have no significant adverse impact on the habitats and species of interest in the designated area and its ecological integrity.	
	Rare and Protected Species and their Habitats	Not applicable	No such species are found in the project area or are impacted on by the project.
	Policy GINHP18 Species Protection	Not applicable	No rare species were screened on site.

	Objective GINHO33 Annex I and Annex II	Not applicable	No annex I and II species were screened on site.
	ECOLOGICAL BUFFER ZONES	The Council has identified lands around Malahide/Broadmeadow, Rogerstown and Baldoyle estuaries and around Sluice River Marsh and the Bog of the Ring as ecological buffer zones. These buffer zones protect the ecological integrity of the nationally and internationally designated sites by providing suitable habitat for key species such as birds, by providing for compatible landuses around the designated sites, and in the case of the freshwater wetland areas, by ensuring a steady supply of clean groundwater and surface water.	
	Policy GINHP19 Ecological Buffer Zones	Not applicable	No adverse impacts noted in the screening reports.
	Objective GINHO34 Ecological Management Plans	Not applicable	
	Objective GINHO35 Appropriate Assessment	Not applicable	No adverse impacts noted in the screening reports.
	Objective GINHO36 Biodiversity Gain in Farmland	Not applicable	
	NATURE DEVELOPMENT AREAS	'Nature Development Areas', are locations where nature conservation can be combined with existing activities such as farming, forestry, quarrying and recreation (e.g. golf courses). These areas are reservoirs of biodiversity in the wider countryside and together with the corridors and stepping stones allow species to move through the landscape. Specific objectives have been developed for the Nature Development Areas in the <i>Fingal Biodiversity Action Plan</i> and the Council will work with landowners to achieve benefits for biodiversity in these areas	
	Objective GINHO37 Nature Development Areas	Not applicable	
	Objective GINHO38 Demonstration Sites	Not applicable	
	ECOLOGICAL CORRIDORS AND STEPPING STONES INCLUDING TREES AND HEDGEROWS	Ecological corridors are linear landscape features such as rivers, hedgerows and road verges that facilitate the movement of wildlife through the landscape. Stepping stones are located along these corridors and comprise a series of smaller landscape features such as small woodlands, areas of scrub, wet grassland and marshes. The key corridors in Fingal are along the major rivers, including their floodplains and the adjacent	

		farmland or parkland. The Liffey, Tolka, Pinkeen, Ward, Broadmeadow, Ballyboghil, Corduff, Sluice, Mayne and Delvin rivers and their tributaries, are salmonid systems (designated pursuant to <i>Directive 78/659/EEC</i>) and are therefore of particular significance.	
	Policy GINHP20 Mammal Ledges	Not applicable	No mammal ledges on site
	Objective GINHO39 Ecological Corridor Guidance	Not applicable	No major ecological corridors on site. The (unofficial) green corridor along the M50 has been strengthened where possible.
	Objective GINHO40 Ecological Assessments	Not applicable	No primary ecological corridors on site.
	Objective GINHO41 Protection of Rivers	Not applicable	No rivers on site.
	Objective GINHO42 Inland Fisheries	Not applicable	No waterways on site.
	PROTECTION OF TREES AND HEDGEROWS	There is extensive evidence for the wide range of services and value of trees and hedgerows including establishing a sense of place and providing healthy environments. Trees also contribute to visual amenity in built-up areas and by adding significant visual interest in more rural areas. Hedgerows often mark historic field patterns and townland boundaries and significantly enhance the landscape character of rural areas. Trees and hedgerows also perform a vital role as wildlife habitats, biodiversity corridors and essential green elements in the County's Green Infrastructure network. They have a further crucial role in improving urban air quality and carbon sequestration (capturing and storing carbon), contributing to the mitigation of climate change.	
	Policy GINHP21 Protection of Trees and Hedgerows	Applicable	Existing trees and scrub along the M50 have been protected in the design.
	Policy GINHP22 Tree Planting	Applicable	Existing trees are not on site.
	Objective GINHO43 Hedgerow Categorisation	Not applicable	Existing hedgerows are not present on site.
	Objective GINHO44 Tree Removal	Not applicable	No tree removal required, according to tree survey.
	Objective GINHO45 Woodland Development Schemes	Not applicable	Woodland development in the adjacent park has been proposed, but is not directly part of this project.

	PROTECTED TREES (TREE PRESERVATION ORDERS)	Tree Preservation Orders (TPOs) may be made under Section 205 of the Planning and Development Act 2000. A TPO can be made if it appears to the planning authority to be desirable and appropriate in the interest of amenity or the environment and can apply to a tree, trees, group of trees or woodland. Currently there are three locations where trees are covered by a Tree Preservation Order in Fingal. These are The Vicarage, Church Road, Swords, Santry Demesne and Brackenstown/Brazil, Sword	
	Objective GINHO46 Tree Preservation Order Review	Not applicable	
	Objective GINHO47 Tree Preservation Orders	Not applicable	
	SHELLFISH WATERS	The aim of the Shellfish Waters Directive is to protect or improve shellfish waters by requiring Member States to designate waters that need protection in order to support shellfish life and growth.	
	Objective GINHO48 Protection of Shellfish Waters	Not applicable	
	County Geological Sites	The Geological Survey of Ireland (GSI) has identified 21 County Geological Sites in Fingal which are important geological heritage sites. Some of these sites may be designated, in due course, as National Heritage Areas (NHAs) because of their geological interest from a national perspective.	
	Policy GINHP23 Maintenance of Geological Sites	Not applicable	
	Objective GINHO49 Protection of Geological Sites	Not applicable	
	Objective GINHO50 Access to Geological Sites	Not applicable	
	SOILS	Soil sealing can be defined as the destruction or covering of the ground by an impermeable material. It is one of the main causes of soil degradation and soil sealing often affects fertile agricultural land, puts biodiversity at risk, increases the risk of flooding and water scarcity and contributes to global warming. Urbanisation is an ongoing trend leading to land take and soil	

		sealing at the expense of agricultural land and other open landscapes.	
	Objective GINHO51 Soils	Applicable	The site has had its soli largely removed. Any soil depots present will try to re used soil in a sustainable way.
	LANDSCAPE	Landscapes are living elements that have responded to, and continue to respond to history, culture, natural cycles, weather events, water, climatic change and economic factors with influences spanning land uses such as agriculture, transport, tourism, industry and energy and settlement patterns. Landscapes give us a strong sense of place	
	Policy GINHP24 National Landscape Strategy	Applicable	The character of the existing landscape is to be retained.
	LANDSCAPE CHARACTER	The Development Plan's Landscape Character Assessment (LCA) provides for the classification of Fingal's landscapes into the following (1) types and values and (2) sensitivities. Character Types represent generic areas of distinctive character that makes one landscape different from another such as uplands or the coast, while Sensitivity is evaluated using criteria ranging from high to low.	
	Policy GINHP25 Preservation of Landscape Types	Applicable	The typology of the existing landscape is to be retained.
	Objective GINHO52 Protection of Skylines	Not applicable	The skyline is to be protected where required.
	river valleys and canal type	Not applicable	
	Objective GINHO53 Visual Impact Assessments	Not applicable	
	Objective GINHO54 Development and Landscape	Not applicable	
	Objective GINHO55 Sensitive Areas	Not applicable	
	Objective GINHO56 Development and Sensitive Areas	Not applicable	
	VIEWES AND PROSPECTS	Fingal has many areas of high-quality landscape especially along the coast, the river valleys and the upland area to the north along the border with	

		County Meath. As a result, the County contains many vantage points from which views and prospects of great natural beauty may be obtained over both seascape and rural landscape.	
	Objective GINHO57 Protection of Views and Prospects	Not applicable	
	Policy GINHP26 Preservation of Views and Prospects	Not applicable	
	Objective GINHO58 Landscape/Visual Assessment	Applicable	Assessment provided where required.
	SPECIAL AMENITY AREAS	Special Amenity Area Orders are in place for Howth and the Liffey Valley. The Order for the Liffey Valley between Lucan Bridge and Chapelizod was confirmed by the Minister for the Environment in March 1990 and the Howth Order was confirmed by the Minister in 1999.	
	Policy GINHP27 Howth and Liffey Valley Amenity Orders	Not applicable	
	Objective GINHO59 SAAOs	Not applicable	
	Objective GINHO60 SAAO Management Committees	Not applicable	
	Objective GINHO61 SAAO Management Plans	Not applicable	
	Objective GINHO62 Liffey Valley Regional Park Study	Not applicable	
	High Amenity Zoning	Not applicable	
	Policy GINHP28 Protection of High Amenity Areas	Not applicable	
	Objective GINHO63 Development and High Amenity Areas	Not applicable	
	THE COAST AND COASTAL PROTECTION	Fingal's coastline extends from Kilbarrack Stream in the south of the County to the Delvin River located north of Balbriggan. It is characterised by a series of shallow bays between headlands with a variety of inlets, islands, harbours, beaches and a number of protected areas of national and international importance.	
		Not applicable	

	THE COASTAL TOURISM AND RECREATION	The coast is an established area of leisure and amenity. Coastal areas have great potential for tourist related projects which could generate sustainable employment opportunities. These include land- based activities such as walking and cycling on the Fingal Coastal Way and water-based activities such as bathing, kayaking, surfing, kite-boarding and angling all along the Fingal coast. The infrastructure associated with such activities can conflict with the sensitive nature of the coast.	
		Not applicable	
	THE ISLANDS	There are a number of islands in Fingal, namely Lambay Island, Ireland's Eye, Shenick Island, Colt Island, St. Patrick's Island and Rockabill. Lambay Island is the only inhabited island. All of the islands are zoned as High Amenity Areas and they are all designated nature conservation sites of national or international importance. They are also of importance from an archaeological and architectural heritage viewpoint	
		Not applicable	
	DUBLIN BAY BIOSPHERE	Biosphere Reserves are places where nature and people connect. They are areas which are internationally recognised for their biological diversity yet also actively managed to promote a positive relationship between people and nature. The Dublin Bay Biosphere Reserve is a special designation awarded by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). It is part of a global network of 651 Biosphere Reserves in 120 countries	
		Not applicable	

III GREEN INFRASTRUCTURE PLAN

STRATEGIES

The following strategies have been developed for the site's green infrastructure plan.

- The provision of a flexible green space for urban amenity that is well connected to the surroundings and can be used by people of all ages.
- The development of a robust sustainable urban drainage system, including the development of green roofs, vertical green and green parking where possible for city cooling and climate adaptation.
- The provision of a net biodiversity gain through the diverse measures including; pollinator planting, nest boxes, provision of temporary wet habitats, tree planting, planting of multispecies hedgerows and sustainable maintenance techniques.

A flexible green space for urban amenity

The design of the public realm has been designed to be as inclusive as possible and offer multiple uses to different age groups. It is based on the following design themes; car free amenity, child friendly spaces, natural play, amenity routes, active travel, community based spaces and food production. The design includes the following components;

A green courtyard (all ages)

The main courtyard has been designed as a traffic free, large green space to facilitate excellent sunlight penetration at all times of the year. This is a general space for passive amenity.

Natural Play area and play route (2-7 years)

Within this space a natural play area, stepping stone bridge and natural play elements (swing bridges, poles) are proposed for this eco informed setting to offer a play route.

Seating (teenagers/ all ages)

Several benches for outdoor seating are located around the central courtyard to enjoy the sunniest spots. Concrete steps are integrated into the grassed slope to offer an informal gathering place for residents in one of the sunniest spots.

Food production (all ages)

A space has been allocated near block B and block D as potential sites for community food production. This site is semi enclosed, public, and near an entrance with social supervision and considered suitable for collective initiatives.

Grassed areas

Parts of the area have wrap round grassed area, which offers green spaces next to the buffer zone to the M50 and the access road over the M50. These serve as links to the surrounding green areas.

Creche outdoor space

An outdoor creche space is provided.

Enclosed garden

A communal enclosed garden is provided for block E.

Private amenity areas

These areas are enclosed with hedges of 1.2m, and are indicated in the GI plan.

Parking for bikes

A range of parking options for bikes are provided, including indoor parking and outdoor parking.



Stepping stones



Examples for natural play elements



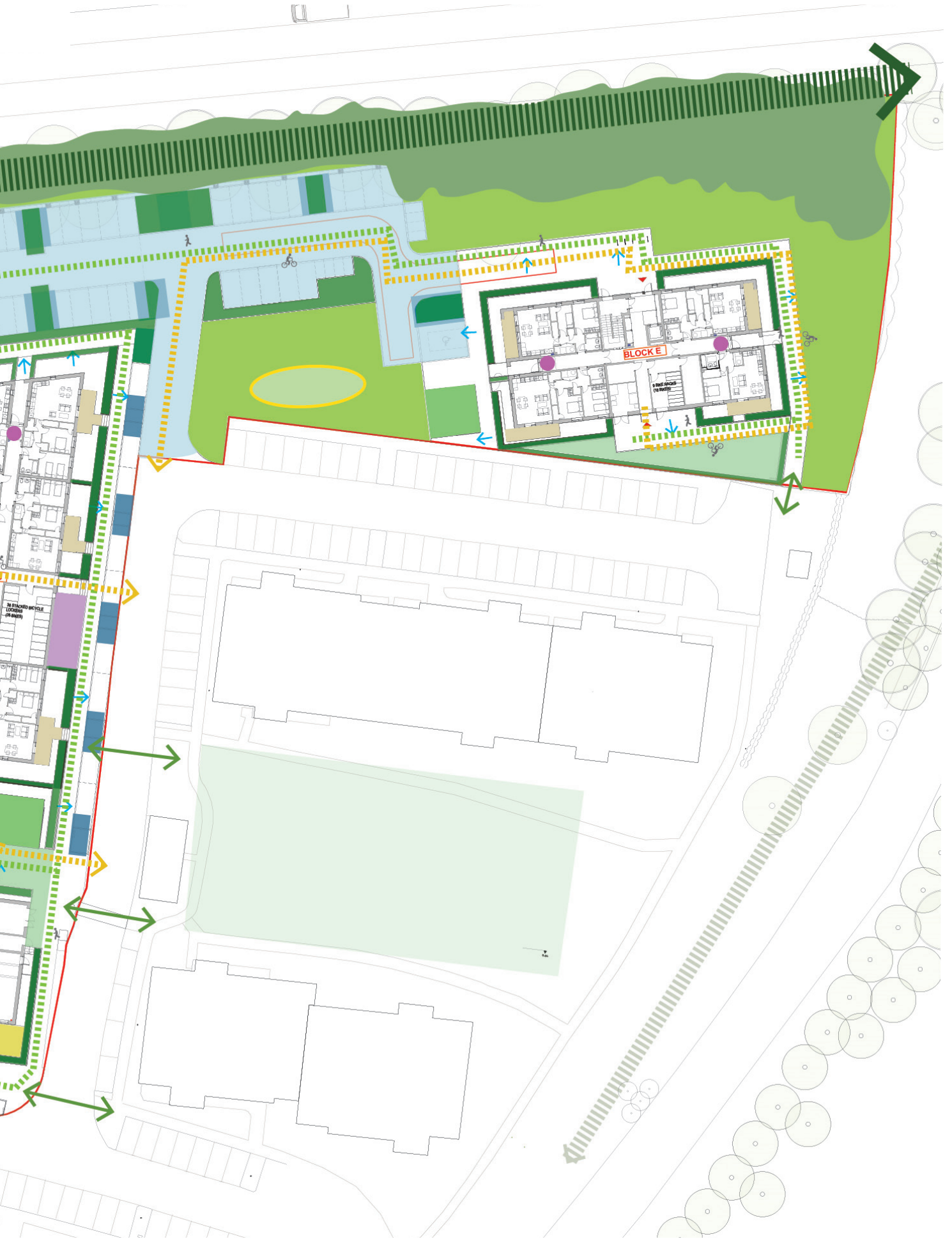
Examples for natural play equipment



Example: Play stack with flagstones

Green infrastructure Plan





Routes and connections to existing green areas

As well as improved connections to existing green areas as cited above, several suggestions are provided for improved linkage to the wider landscape and the provision of additional amenity features. All proposals outside of the plan area are not part of the project and are aspirational only.

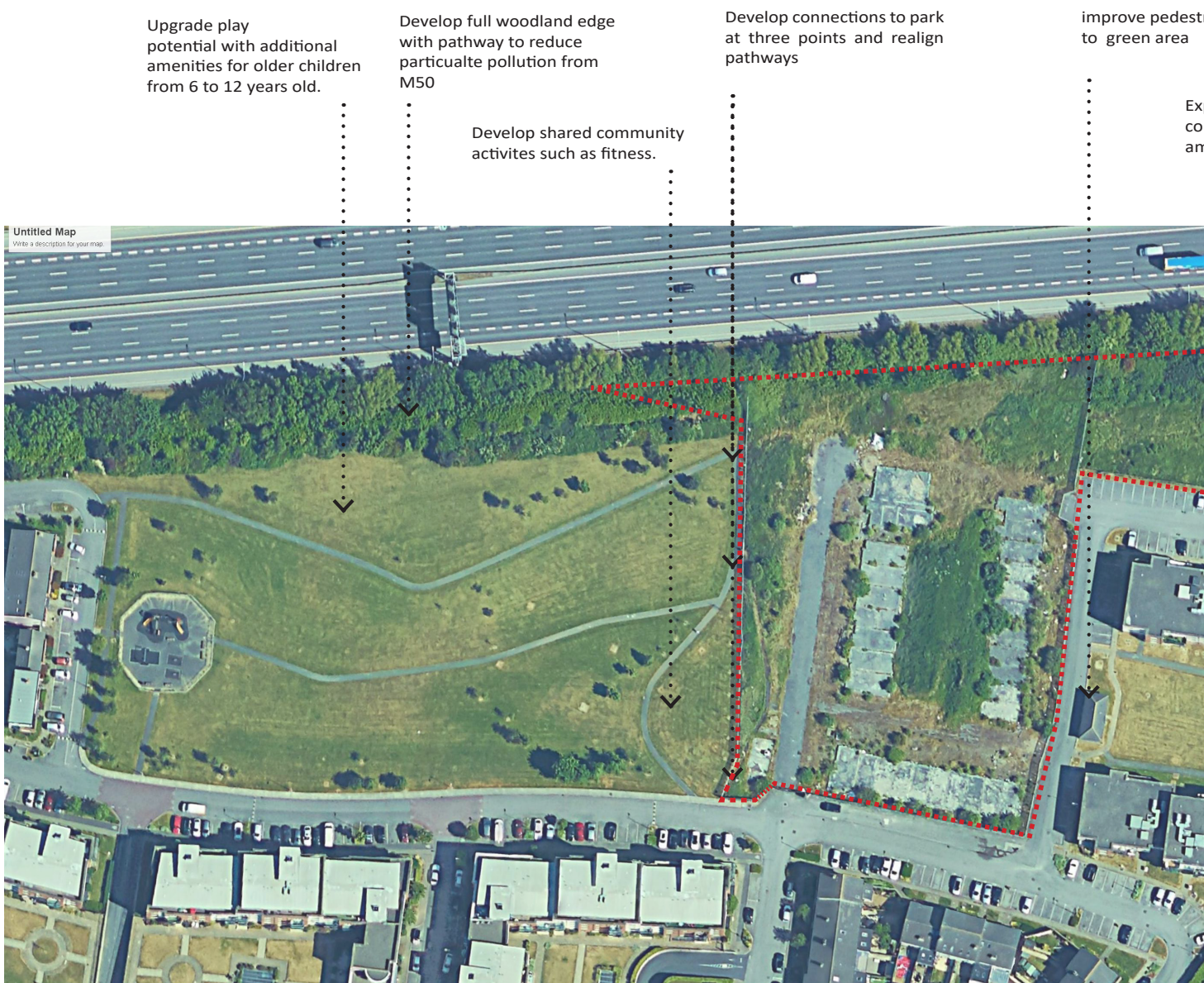


Illustration: Develop an amenity network that links into the surrounding areas

Tripartite linkages

Develop walking route along boundary

Explore possibility to connect path to proposed amenity road over the M50

Develop amenity route to cross the M50



The development of a robust sustainable urban drainage system

Flood risk assessment

On the basis of the flood risk assessment undertaken, the site is elevated relative to and outside the predictive flood extents of any existing watercourses based on current available information. Based on the information, the subject site is considered not at risk of fluvial, ground water or tidal flooding. The site can therefore be considered to be in flood Zone C – where the probability of flooding from rivers and seas is low. Detailed proposals for surface water management SuDS associated with the development to mitigate on and off site pluvial flooding are provided in Downes Associate Infrastructure Design Report.

Existing surface water drainage

Currently, the site is a partly developed brownfield site with a relatively level topography, with a number of concrete slabs and spoil heaps associated with previously granted development. There are known existing “separate” piped water services within and adjacent to the site which were constructed as part of the Mayeston estate, and these are connected to the existing wider drainage infrastructure. Based on available information, the existing surface water drainage system within the adjacent Mayeston Estate is designed in compliance with The Greater Dublin Strategic Drainage Study (GSDSDS) and includes attenuation storage within underground storage tanks located in the public open space area immediately to the west of the Applicant site as indicated in Figure 4.

Ground conditions

As part of the site evaluation, a detailed geotechnical site investigation was carried out by Site Investigations Ltd to establish the characteristics of the natural subsoils. The site ground conditions were found to typically comprise MADE GROUND overlying COHESIVE DEPOSITS comprising brown and brown grey sandy gravelly silty CLAY soils, varying from firm to very stiff, becoming stiffer with depth. The MADE GROUND was encountered across the site typically 1.2m to 1.5m depth, but there are deeper spoil heaps to the north of the site. These spoil heaps will need to be removed as part of site clearance/levelling, along with the existing concrete slabs present on the site. The boreholes extended to 15m

BGL, and no bedrock was encountered. No groundwater was encountered in the boreholes or trial pits. At two locations on the site, soakaway tests were carried out in accordance with BRE Special Digest 365. The soakaway tests failed the specification as the water level did not fall sufficiently enough to complete the test. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The tests were terminated at the end of the first (of a possible three) fill/empty cycle since further testing would give even slower fall rates due to increased soil saturation. The findings indicate that the subsoils are unsuitable for intensive infiltration solutions. However, extensive infiltration systems such as permeable pavements are considered feasible to encourage direct infiltration, subject to adequate measures being put in place for exceedance rainfall events.

Proposed approach to surface water management

Surface water runoff from new development is to be minimised using appropriate Sustainable Urban Drainage Systems (SuDS) techniques as detailed in Downes Associates Infrastructure Design Report and drawings submitted with this application. The Infrastructure Design Report includes a detailed rationale for the selected SuDS components and the management train approach adopted. The SuDS measures to be adopted for the development include:

- Extensive green roofs
- Permeable paving systems
- Swales
- Tree pits
- Existing attenuation storage system

Description of key components

Green roof

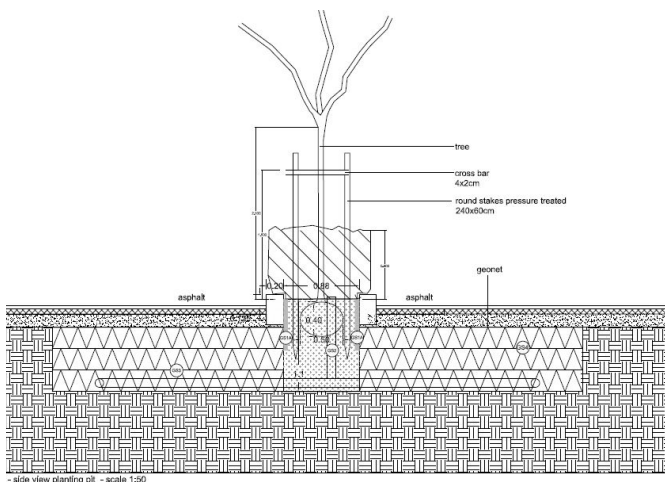
The green concept is extended to the storage facility for bikes where stacked parking has been proposed in a secure transparent building with a sedum roof. Runoff from the roof will flow via ground level drain to swale, which flows to an attenuation basin in the nearby park.

Green parking and permeable paving

The parking area to the north of the site has been designed as a green parking area, with reinforced grass parking spaces in combination with porous macadam to slow run off and buffer water. A layer of trees has been proposed for the parking areas to mitigate the effects of particle pollution from the M50 and offer some marginal reduction in noise levels.

Tree pits

Tree pits with 20m³ of structural soil and at least 1 aeration and water inlet are required for medium trees planted in half open or hardstanding are used as storage volumes for rainwater.



Tree pit detail with 20m³ of structural soil for trees in half open and in hard standing.

Wadi or swale

Storm water runs off via pathways and flows to a north south collector located at the centre of the green courtyard. The central green area are sunken to provide a dry swales as part of the SUDS strategy. The collector is detailed as a dry grit rill with steel edges, which curves through the inner courtyard. The intention it to demonstrate how suds can become a visible, valued feature in the public realm. Surface water levels in the swales can rise up to 0.5m during periods of heavy rainfall.

Proposed Suds components

A full list of the proposed components and their role is summarized in the table below. Source Downes Associates.

Ref	Measure	Suitable	Comment	Adopted
A.1	Green roofs	Yes	<p>Green roofs are proposed to the two external bike sheds to provide visual benefit, ecological value, enhanced building performance, and the reduction of surface water run-off, in line with Section 3.6.7 of FCC's Green/ Blue Infrastructure for Development: Guidance Note, Fingal County Development Plan– April 2023.</p> <p>Green roofs are not proposed to the apartment blocks, and these are considered exempt as outlined in the above guidance document, due to the inclusion of a significant suite of alternative green infrastructure proposals wholly addressing the interception, treatment and attenuation volumes across the site.</p>	Yes

Ref	Measure	Suitable	Comment	Adopted
A.2	Permeable paving	Yes	Permeable paving is to be adopted for all external paved areas of the development. Due to the poor infiltration characteristics of the subsoils, a partial infiltration system is proposed, with exceedance events catered for by provision of a collector drain within the paved areas.	Yes
A.3	Grass	Yes	Extensive green areas are to be provided.	Yes
A.4	Reinforced grass	Yes	A reinforced grass pavement is to be provided for maintenance vehicles along the western boundary of the site.	Yes
A.5	Gravelled areas	No	Not suitable for the end users of this development.	No
A.6	Rainwater harvesting	No	Not suitable for the end users of this development.	No
A.7	Rain Trap	Yes	Not considered for this development.	No
A.8	Water Butt	No	Individual water butts are not suitable for this type of apartment development.	No

Swales and conveyance channels

Ref	Measure	Suitable	Comment	Adopted
B.1	Swales	Yes	Dry conveyance swales are provided within the central courtyard area as part of the landscaping proposals. The swales shall provide conveyance for exceedance runoff from the permeable pavements.	Yes
B.2	Canals and rills	Yes	Swales are preferred as the means of conveyance.	No

Filtration

Ref	Measure	Suitable	Comment	Adopted
C.1	Permeable pavements	Yes	The granular layers of the permeable pavements are considered appropriate to reduce runoff and treat pollutants adjacent to roadways where there is low pollution loading.	Yes
C.2	Bioretention areas	Yes	Tree pits are proposed adjacent to paved areas in the car park and access road to intercept exceedance runoff. Swales are proposed in the courtyard area to intercept exceedance runoff. The tree pits and swales are considered appropriate to reduce runoff rate and to treat pollutants.	Yes

Infiltration

Capture surface water runoff and allow it to infiltrate (soak) and filter through to the subsoil layer, before returning it to the water table below.

Ref	Measure	Suitable	Comment	Adopted
D.1	Soakaways	No	Not suitable for site subsoils.	No
D.2	Infiltration basin	Yes	The granular layers of the proposed permeable paving shall allow for direct infiltration to the subsoils over an extensive area. The swales and tree pits shall also allow natural infiltration.	Yes
D.3	Rain garden	Yes	Permeable paving, tree pits and swales are preferred means of infiltration to suit the landscaping proposals.	No

Retention and Detention

Designed to either provide storage through the retention of surface water runoff, or attenuation through the detention of surface water runoff.

Ref	Measure	Suitable	Comment	Adopted
E.1	Detention basins	Yes	The granular layer under the permeable paving and the swale depressions shall provide temporary detention for exceedance events.	Yes
E.2	Retention ponds/ Wetland	Yes	Suitable, but the permeable paving and swales are preferred for this development.	No
E.3	Attenuation Tank/Oversized Pipes	Yes	The existing Mayeston estate attenuation system shall be used for runoff from the roofs.	Yes
E.4	Throttle device	Yes	Hydrobrake throttle adopted to restrict outflow from SuDS device.	Yes

Proprietary Treatment Systems

Densely vegetated water bodies that use sedimentation and filtration to provide treatment of surface water runoff.

Ref	Measure	Suitable	Comment	Adopted
F.1	Proprietary bioretention system	Yes	Tree pits and swales are adopted as part of bioretention systems (see above).	Yes
F.2	Treatment Channels	No	Not suitable for this development.	No
F.3	Hydrodynamic vortex separators	No	Proprietary system to remove sediments by gravity not deemed necessary. Achieved in tree pits, permeable paving, and swales.	No
F.4	Proprietary filtration system	No	Not suitable for this development.	No
F.5	Oil separator	Yes	Low hydrocarbon pollutant loading. Proprietary system to remove hydrocarbons not deemed necessary. Achieved in permeable paving, bioretention, and swales.	No
F.6	Multi process	No	Complex bespoke system not suitable to this type of development	No

The provision of a net biodiversity gain through the diverse measures

A series of measures are proposed to improve the existing biodiversity. Although these measures have not been measured, each improvement can be determined to offer a net gain as it is an improvement to the existing situation.

Retention of linear green planting

The M50 planting has been retained as a green sub corridor for nature. It is an important route for the migration of smaller animals and as a habitat for some birds in particular as it is largely not accessible to humans and dogs. The corridor has also been strengthened where possible with the planting of additional tree species to extend the corridor. The corridor also offers benefits the fixing of air particulates from the motorway and to a lesser extent the reduction of noise and light pollution.

Additional planting of trees, hedges and pollinators

As the site is a brownfield site, the addition of native trees, multispecies hedgerows and pollinators will lead to a net gain in biodiversity.

Invasive species

None of the plant species recorded on the site during the June 2023 survey, including the buddleia, winter heliotrope and Japanese rose, are listed on the Third Schedule of the Habitats Regulations. There is therefore no legal obligation to deal with them in a formal manner under the regulations.

Trees

A palette of trees have been selected to offer year round colour and diversity as well as biodiversity gains. Larger formal native trees have been selected for the entrance road to match the scale of the buildings. In the internal courtyards, smaller trees, with seasonal colour are proposed. A layer of trees has been proposed for the parking areas to mitigate the effects of particle pollution from the M50 and offer some marginal reduction in noise levels.

Hedges

Ground level apartments have private gardens or terraces which are enclosed with hedges. These will be planted

on publicly owned space, but van privately maintained by the residents with a recommended height of 1.2m. The proposed hedges have a mixed species planting, chosen for biodiversity, security (thorns) and the ability to fix carbon. The crèche garden at the southern end of the site, will be enclosed by a beech hedge in combination with a railing for security.

Pollinators

The (dry) swale is planted with pollinator grasses and several varieties of trees (some native) for all year round visual interest, biodiversity, and occasional shade. Zones along the centre of the swale areas to be extensively maintained with zones of bioswale vegetation parallel to the collector. This vegetation can tolerate occasional inundation, as the water level can rise to 0.5m height for short periods within the swales.

Nest boxes

Several swift boxes have been proposed to be fitted at the eaves of buildings.



Illustration: Image of nestboxes for swifts.

IV CONCLUSION

The green infrastructure measures proposed fit the context of the site 's hierarchy as a 'stepping stone' within the structure of the Green Infrastructure Plan for Fingal County Council. The strategies can be successfully implemented to develop and strengthen green/blue spaces within this hierarchy.

These strategies include;

- The provision of a flexible green space for urban amenity and nature.
- The development of a robust sustainable urban drainage system.
- the provision of different measures to achieve a net biodiversity gain.

The implementation turn will lead to

1. A well connected, multifunctional green structure with a flexible format for inclusive use by residents and visitors of all ages to include, car-free, child friendly amenity areas with a selection of different routes, natural play areas, points for seating, food production/composting areas and general areas for passive enjoyment.
2. A circular-based system for the re-use and management of rainwater with resilience benefits for water quality, climate adaptation and heat stress.
3. A biodiverse approach to planting to promote ecological potentials in the area to strengthen existing green connections, implement native tree selection, multi species hedgerows, pollinator planting and grassed areas to deliver a net biodiversity gain.

Recommendation

The future maintenance of the site's landscape and public realm will determines the effectiveness of these measures over time. Of particular importance is

1. The level of maintenance for pollinator planting, the suds components (as detailed in the surface water management report) and collective areas for local initiatives such as food production, which requires ongoing monitoring. It is recommended to include the green infrastructure objectives in future maintenance plans.
2. The level of participation and interaction between residents and maintenance teams can be optimised. Stakeholders who participate in community initiatives and maintenance of the public realm offers multiple benefits and promote a more socially inclusive public realm. It is recommended to promote interaction with residents (in the form of gardening committees etc.) for future initiatives and maintenance plans.

