LANDSCAPE ARCHITECTURE DESIGN RATIONALE + STATEMENT OF RESPONSE

Project: Firhouse Inn SHD
Client: Bluemont Developments (Firhouse) Ltd
Project no: 21_477
Stage Issued: Planning
Document No: 21_477-006
Date: 09/06/2022

1. Introduction:

This document has been prepared by **studioAULA** landscape architects as supplementary information to accompany an application for planning permission by the design team retained by Bluemont Developments (Firhouse) Ltd., for a proposed development at lands at the former Morton's Firhouse Inn in the townland of Knocklyon, South Dublin, at the junction of the R114 Firhouse Road and Mount Carmel Park (Eircode location D24 YYR4).

This report outlines the site in its current condition, outlines the relevant national and local policies which apply to landscape issues, outlines the issues raised by the local authority and An Bord Pleanála at Pre-App submission stage, and describes the landscape design approach taken, and the landscape design proposals in response to the above.

This report should be read together with drawings and documents issued and included in the submission by OMP Architects, Tom Phillips Associates Planning Consultants, Charles McCorkell Arboricultural Consultancy, Transport Insights transport and transport planning consultants and engineers, PHM Consulting Engineers, OCSC Consulting Engineers, Allegro Acoustics, Digital Dimensions, Flynn Furney Environmental Consultants, AHC Ltd., Mesh Conservation Architects, Hooke and MacDonald, AWN Consulting and Doyle O'Troithigh Landscape Architecture (VIA).

The following drawings and documents have been issued by studioAULA as part of the submission, in addition to this report:

Drawing No.	Drawing Title	Scale	Prepared By	Dwg/Doc Size
21_477-PD-001	Landscape Plan – Level -01 Lower Ground	1:500	studioAULA	A1
21_477-PD-002	Landscape Plan – Level 00 Podium + Ground Level	1:200,	studioAULA	A1
21_477-PD-003	Landscape Plan – Level 00 Podium Courtyard + Level 02 Roof Garden	1:200	studioAULA	A1
21_477-PD-004	Landscape Plan – Level 03 Roof Garden + Level 04 Playspace	1:200	studioAULA	A1
21_477-PD-005	Planting Plan + Planting Schedule	1:200	studioAULA	A1
21_477-PD-006	Landscape Architecture Design Rationale + Statement of Response	nts	studioAULA	A4
21_477-PD-007	Soft Landscape Works Preliminaries and Outline Maintenance Specification	nts	studioAULA	A4
21_477-PD-008	Landscape Management Schedule	nts	studioAULA	A3

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21_477-PD-009	Landscape Sections A-AA' and B-BB'	nts	studioAULA	A1
21_477-PD-010	Play Plan	1:500	studioAULA	A3
21_477-PD-011	Planting Details and General Specification Notes	nts	studioAULA	A3
21_477-PD-012	SuDS Tree Pit Details + Specification Notes	1:500, 1:50, 1:20	studioAULA	A3
21_477-PD-013	General Specification Notes - Hedgerow Reinstatement + Management Plan from Practical Completion	nts	studioAULA	A3
21_477-PD-014	Green Infrastructure Plan	1:500	studioAULA	A3
21_477-PD-015	Detail 1_2 Landscape Plan – Level 00 Podium + Ground Level	1:100	studioAULA	A1
21_477-PD-016	Detail 2_2 Landscape Plan – Level 00 Podium + Ground Level	1:100	studioAULA	A1

STUDIO AULA
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1.1 Development Description

Bluemont Developments (Firhouse) Limited intend to apply to An Bord Pleanála (the Board) for a Strategic Housing Development with a total site area of c.0.46 ha, on lands located at No. 2 Firhouse Road and the former 'Morton's The Firhouse Inn', Firhouse Road, Dublin 24.

The development will consist of the demolition of all existing structures on site (c. 1,326 sq m), including:

- Two storey building formally used as public house, ancillary off-licence and associated structures (c. 972 sq m);
- Two storey building comprising an existing barber shop and betting office (c. 260 sq m);
- Single storey cottage building and associated structures (c. 94 sq m); and
- Eastern boundary wall and gated entrance from Mount Carmel Park.

The development with a total gross floor area of c. 11,638 sq m, will also consist of 100 no. residential units arranged in 2 blocks (Blocks 01 and 02) ranging between 3 and 5 storeys in height, over lower ground floor and basement levels, comprising:

- 96 no. apartments (consisting of 2 no. studio units; 45 no. one bedroom units; 10 no. two bedroom (3 person) units; 34 no. two bedroom (4 person) units; and 5 no. three bedroom units), together with private (balconies and private terraces) and communal amenity open space provision at podium and roof levels; and
- 4 no. duplex apartments (consisting of 2 no. one bedroom units and 2 no. two bedroom units (4 person) located within Block B01, together with private balconies and terraces.

The development will also consist of non-residential uses (c. 355 sq m), including:

- 1 no. café (c. 58 sq m) and 1 no. office (c. 30 sq m) located at ground floor level of Block B01;
- 1 no. medical unit (c. 59 sq m) and 1 no. betting office (c. 66 sq m) located at ground floor level of Block B02;
- 1 no barber shop (c. 28 sq m) located at ground floor level between Blocks 01 and 02; and
- 1 no. crèche (c. 114 sq m) located at lower ground floor level of Block B01 and associated outdoor play area to the rear.

Vehicular access to the site will be from the existing access off Firhouse Road. The proposal includes minor alterations to the existing access, including the provision of new and enhanced pedestrian infrastructure.

The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, pathways and boundary treatments, street furniture, basement car parking (80 no. spaces in total, including accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections to existing public services, (including relocation of existing surface water sewer and water main from within the application site onto the public roads area along Firhouse Road and Mount Carmel Park); ducting; plant; waste management provision; SuDS measures; stormwater management and attenuation; sustainability measures; signage; changes in levels; public lighting; and all ancillary site development and excavation works above and below ground.

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1.2 Relevant National Authority Policies

- 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages)', DoELHG, 2009
- 'Design Manual for Urban Roads and Streets', DoTTS and DoHPLG, 2019
- 'Building for Everyone, A Universal Design Approach', Centre for Excellence in Universal Design, 2012
- 'Urban Design Manual: A Best Practice Guide', DoEHLG, 2009
- 'Permeability: A Best Practice Guide', National Transport Authority, 2012
- 'National Landscape Strategy for Ireland 2015-2025', DoCHG, 2015
- 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)' DoHLGH, 2020
- 'Quality Housing for Sustainable Communities – Best Practice Guidelines for Delivering Homes Sustaining Communities', D0EHLG, 2007
- 'National Biodiversity Action Plan 2017-2021'
- 'All-Ireland Pollinator Plan 2021-2025'

1.3 Relevant Design Standards for the built environment:

- I.S. EN 17210:2021&LC:2021: 'Accessibility and usability of the built environment - Functional requirement'
- S.R. CEN/TR 17621:2021: 'Accessibility and usability of the built environment - Technical performance criteria and specifications'
- ISO 21542:2021: 'Building construction — Accessibility and usability of the built environment'
- IS EN 1176 :2017 'Playground Equipment and Surfacing'
- IS EN 1177: 2018 'Impact attenuating playground surfacing. Methods of test for determination of impact attenuation'
- CEN/TR 16467: 2013 'Playground Equipment Accessible for all Children'
- BS8300:2018 'Design of an accessible and inclusive built environment', BSI, 2018

1.4 Relevant Local Authority Policies (green infrastructure, biodiversity, trees, and vegetation)

- 'South Dublin County Council's Draft Development Plan, 2022-2028', SDCC 2022
- 'Sustainable Drainage Explanatory Design & Evaluation Guide, SDCC 2022
- 'South Dublin County Council's Development Plan, 2016-2022', SDCC 2016
- 'Surface Water Drainage Pre-Planning Guidelines', SDCC 2019 update
- 'Biodiversity and Ecology Pre-Planning Guidance', SDCC 2017
- 'Open Space and Landscaping Pre-Planning Guidance', SDCC 2017
- 'Urban Design Pre-Planning Guidance', SDCC 2017
- 'Public Realm Pre-Planning Guidance', SDCC 2017
- 'South Dublin County Council's Corporate Plan (2020-2024)', 2020 SDCC
- 'Climate Action Plan' 2019-2024, SDCC 2019
- 'Tree Management Policy - Living with Trees 2021-2026', SDCC 2021
- 'Parks and Open Space Strategy', SDCC 2021
- 'Biodiversity Action Plan 2020-2026', SDCC 2020
- 'Play Space Programme 2014-2020', SDCC 2014
- 'Teenspace' programme, SDCC 2017-2018

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Landscape Assessment

2.1 General:

The subject site, approximately 0.46 hectares in area, 'No. 2 Firhouse Road and the former 'Morton's, The Firhouse Inn', is located at a corner of Dodder Valley Park, 507.00m south of Balrothery Weir on the Dodder. The subject site is located at the north-west of the crossroads of the R114 Firhouse Road, Ballycullen Road and Mount Carmel Park, 503.00m due west of the R114's bridge over the M50 motorway. There are no trees located within the Application site, and very limited vegetation. It is laid out as buildings and an extensive impermeable car-park.

Figure 1. *Aerial view of site and local receiving environment 2022, © Infoterra and Maxar Technologies,subject site highlighted in red. symbol highlights the location of the subject site*

The subject site occupies a prominent location near the junction of Firhouse Road, Mount Carmel Park and Ballycullen Road. The existing site comprises a pub at the south-eastern corner of the site (the Firhouse Inn), with an adjoining off-licence, and a two-storey mixed-use residential and commercial building at the south-western corner of the subject site.

Figure 2*. Detailed aerial view of site and local receiving environment 2022, © Infoterra and Maxar Technologies, subject site highlighted in red. symbol highlights the location of the subject site*

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A coursed random rubble stone wall with portions of concrete blockwork forms the north-western boundary of the site with Dodder Valley Park. Balrothery Weir (also known as the Firhouse Waterfalls), the River Dodder and Dodder Valley Park (a high amenity area) are located to the north of the subject site.

The subject site has a relatively gently sloping topography, falling from spot levels surveyed at +73.400 at the existing site entrance off the R114 down to +70.910 in the northern corner of the site at the junction of Mount Carmel Park and the existing wall to Dodder Valley Park. Adjacent to the north-western boundary of the site, formed by an existing stone- and concrete block-built wall, is a group of mature trees standing in the adjacent site, Dodder Valley Park, including Leyland Cypress, Ash, Beech, and Sycamore species. Mount Carmel Park is located to the north-east of the subject site and comprises a housing estate of two-storey dwellings.

Appendix 9 of the 'Draft Landscape Character Assessment (LCA)'[1] illustrates the under-lying bedrock geology of the subject site as 'Visean basinal limestone (Calp)', within the topographical zone of 10-150m contours. Landcover in the receiving environment of the subject site has been observed in the Draft LCA as 'Airports, Industrial/Commercial Min Extraction' and 'Discontinuous Urban Fabric & Residential'.

2.2 Landscape Character Baseline Study

The 'Landscape Character Assessment' of the proposed development and its environs are described in this section.[2]

2.2.1 Landscape Character Type

The Landscape Character Types (LCT) of South Dublin County are listed as follows: river valley, canal, limestone farmlands, foothills, hills, mountains, transport corridors, green spaces, urban fringe/peri-urban and historic urban.

The proposed development lies within the LCT 'Urban Fringe/Peri Urban'**. '**Urban fringe' is described in the draft assessment report as 'Transitional Lands' that were largely rural, transforming into suburban or urban derived land use. Radiate from established settlements and close to transport, retail/ business parks, quarries, and urban derived housing. The Sensitivity of the LCT 'Urban fringe/Peri Urban' is assessed by the Local Authority as N/A meaning it is less sensitive than 'Low to Medium'. This suggests that the capacity for change within this LCT is High, meaning that the key characteristics of the landscape are robust and would not be adversely affected by development. The landscape is likely to be able to accommodate development without a significant change in landscape character.

Summary of conditions in 'Urban Fringe/Peri Urban':

- Includes built land and historic settlements within the larger urban areas.
- Primarily composed of established nucleated villages and towns that have developed historically, many of which saw significant improvements in the 19th century in terms of streetscapes
- These are surrounded by residential development of various ages but primarily 20th century with significant recent development in the past two decades

Summary of pressures on the LCT 'Urban Fringe/Peri Urban':

- Loss of green space and poor ecological connectively
- Increased soil sealing

[1] Figure 1 'Bedrock Geology of South Dublin County', 'Appendix 9 'Draft Landscape Character Assessment (LCA)', Draft South Dublin County Development plan 2022-2028
[2] 'Appendix 9: Draft Landscape Character Assessment' of the Draft South Dublin County Development Plan, 2022-2028.

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- Over-reliance on private transport
- Challenge of providing sufficient and appropriate green space within the urban environment.
- Poor reference to built heritage of historic core
- Development pressures associated with road schemes including residential, business and retail parks
- Poor boundary treatment and lack of clear identity reinforced by transitional/dynamic character

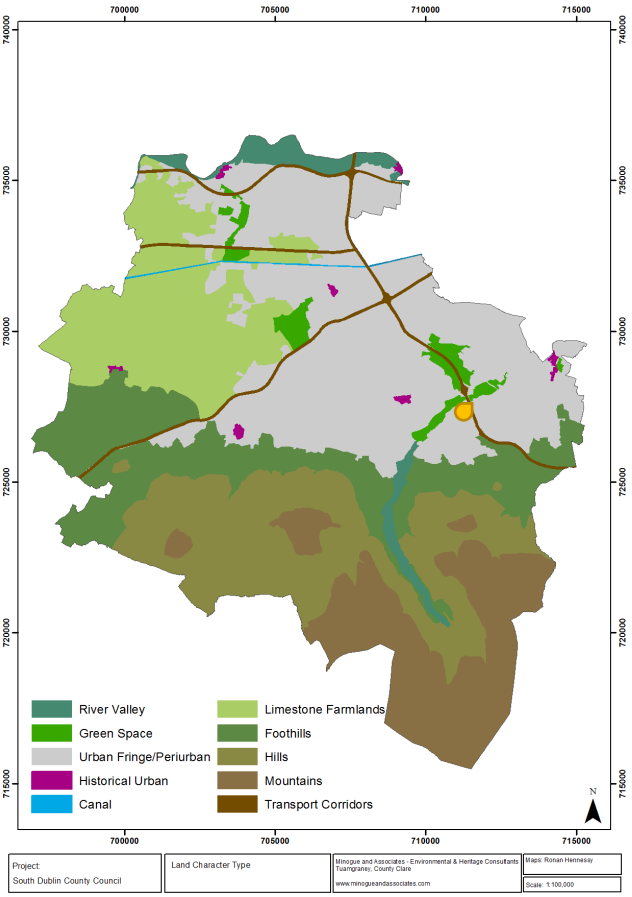

Figure 3. *Ref: Figure 9 'Landscape Character Types of South Dublin County', Appendix 9 Draft Landscape Character Assessment, Draft SDCC Development Plan. symbol indicates the approximate location of the subject site*

The Principles for Development for LCT 'Urban Fringe/Peri Urban' identified in the report are:

- Coherent approach to siting and boundary treatments and design of new residential developments.
- Prepare plans to integrate transitional lands into landscape through appropriate planting and boundary treatments with stronger use of hedgerows and trees as a visual screening. Screening through appropriate native broadleaf planting to provide a stronger visual boundary and definition as well as enhancing ecological connectivity.
- Demonstrate through design statement /masterplan/planting plan how it relates to historic core where present.

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2.2.2 Historic Landscape Character Areas of South Dublin County

The Historic Landscape character of South Dublin County, as identified in the maps included the draft report, are listed as follows: None, Post Medieval, Medieval, Early Medieval, Prehistoric.

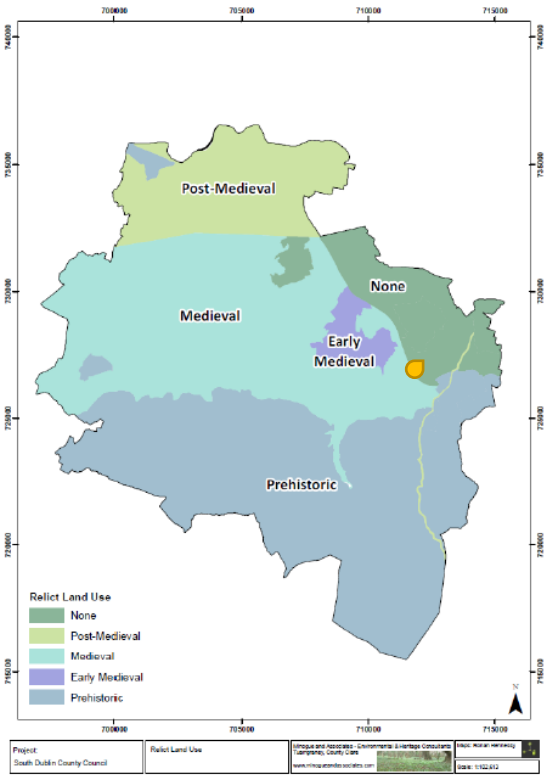

FIGURE 20 RELICT LANDUSE TYPES OF SOUTH DUBLIN COUNTY

Figure 4. *Ref: Figure 20 'Relict Land Use Types of South Dublin County', Appendix 9 Draft Landscape Character Assessment, Draft SDCC Development Plan. symbol indicates the approximate location of the subject site*

The proposed development lies within the Historic character 'None' identified on the map. These kinds of areas are designated as such because it is recognised that relict land use has also been affected by modern land use. These areas in the LCT are now defined by developments of large-scale high-density housing and industrial estates.

2.2.3 Landscape Character Areas of South Dublin County

The proposed development is within the 'LCA 5 Urban / Suburban South Dublin', in the LCA Maps of the draft report. The key characteristics of LCA 5, which extends east from Tallaght/Oldbawn to Rathfarnham, and north/ north- west along the county boundary to Clondalkin, are as follows:

- Built–up urban area with extensive housing estates and industrial /commercial parks.
- Variety of house styles and layouts dating from the late 19th century to late 20th century
- Settlements of Rathfarnham, Templeogue and Clondalkin with important historical legacy and remnants
- Major traffic corridors with M50 traversing north- south through the area, and LUAS line travelling north from Tallaght, parallel to the M50, to the city centre
- Corridors of natural and semi-natural vegetation, notably along the River Dodder (a linear park) and the Camac River

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- Grass open spaces in gardens, industrial parks, golf courses, school playing fields, and miscellaneous spaces in housing areas
- Street tree planting
- Recreational facilities (public parks and golf courses) provide amenities and ecological resources

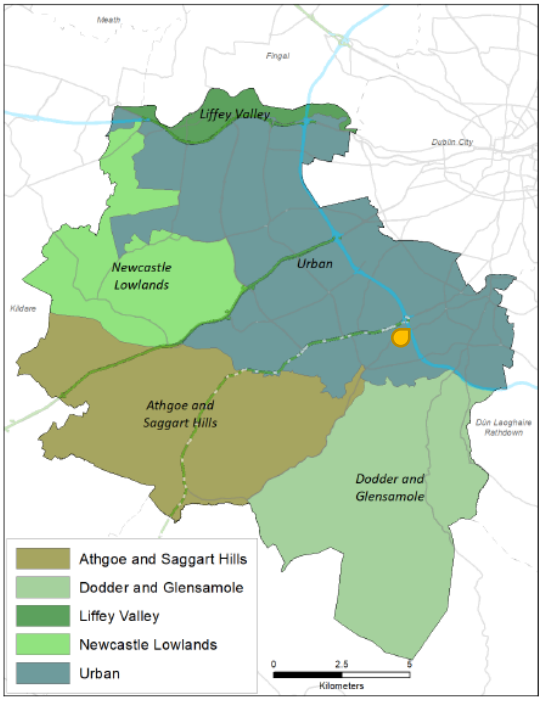

Figure 5. *'Landscape Character Areas' of South Dublin County Appendix 9 Draft Landscape Character Assessment, Draft SDCC Development Plan. symbol indicates the approximate location of the subject site*

The 'Landscape Values' of LCA 5, as identified in the draft report, are as follows:

- Public Parks with recreational and ecological resources
- Dodder River Valley
- 19th century industrial heritage
- Views out to Dublin Mountains and agricultural hinterland

The principles for development for LCA 5 are listed as follows in the draft report:

- Grassland and other amenity area open spaces should be managed for the dual benefits of public access and biodiversity
- Tree and shrub planting should be an integral component of amenity grasslands (schools, recreational grounds, golf courses and playing fields)
- The development of green infrastructure to connect different habitats within the urban context
- Tree planting on streets and open spaces – particularly on 'miscellaneous 'open space in housing areas- to improve their character
- Enhance connectivity between open spaces as a means of enhancing biodiversity while providing off road connections for pedestrian and cyclists
- Proposed developments should be audited for their impact on views particularly of the county

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2.2.4 Scenic Routes

The scenic route nearest to the proposed development is Junction 11, M50 and Tallaght. There is a scenic view of the Dodder River valley as you exit the M50 on junction 11, however it is considered that the proposed development would not interfere with the direction of the scenic view.

2.3 Public Open Space Policy

Chapter 8 of the SDCC Draft Development Plan, 'Community Infrastructure and Open Space' has as its vision '*the creation of healthy, inclusive and sustainable communities where all generations have local access to social, community and recreational facilities, and parks and green spaces, to suit their needs'*. A quality public realm and open space are crucial elements of this, as well as access to parks such as the Dodder Valley Park to the north of the site and recreational facilities such as the café, roof gardens and playspaces contained within the subject scheme. Essential services such as childcare, which is provided within the subject scheme, are identified in the draft plan as having a significant role to play in quality of life and should be located within neighbourhoods to provide easy access and optimise the opportunity for people to walk or cycle to them.

Public Open Space is defined in the draft CDP as 'open space which has been purposefully designed and laid out for the use of the public' and may include smaller open spaces in residential areas or larger spaces at local or regional level within the open space hierarchy.[3] The Draft CDP states that open space is generally owned and maintained by the Council but in some instances, typically smaller spaces in residential areas, it may be managed or owned by a management company but accessible to the public.

Public Open Space Standards are set out in Table 8.2 of the draft CDP and state that new residential development on lands in other zones than RES-N including mixed use should provide a minimum of 10% of the site area.

The CDP also outlines specific policies and objectives in relation to Parks and Public Open Space, considered as one of 'South Dublin County's most precious resources' in Chapter 8 of the Draft Plan, central to the delivery of sustainable communities and the promotion of biodiversity. Standards and criteria in relation to parks and open space provision are also set out in Chapter 13 of the plan, 'Implementation and Monitoring'.

[3] '8.7.2 Public Open Space Hierarchy', Draft County Development Plan for South County Dublin, 2022-2028, SDCC 2022

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Table 8.2: Public Open Space Standards

Land Use	Public Open Space Standards (minimum)
Overall Standard	2.4 Ha per 1,000 Population
New Residential Development on Lands Zone RES-N	Minimum 15% of site area
New Residential Development on Lands in Other Zones including mixed use	Minimum 10% of site area
Institutional Lands / 'Windfall' Sites	Minimum 20% of site area

Figure 6. *Table 8.2 'Public Open Space Standards', Draft CDP 2022*

'Quality of Public Open Space' is dealt with in section 8.7.5 of the draft CDP, which states that high quality public open space '*is a key element of placemaking…should have active and passive recreational value and should enhance the identity and amenity of an area'*. We consider that the public open space provision contained in the revised and current design has considered and is aligned with the objectives and policies as set out in 8.7 of the Draft CDP in relation to the following:

- Access:
- Range of formal and informal spaces for amenity, recreation, sports, and play
- Spaces designed and located to be publicly accessible by means such as walking, cycling and public transport
- Usable by all residents of the County
- Adequate access points
- Open spaces linked to one another
- Continuous walls and other barriers between public open spaces avoided
- Recreation Facilities
- Variety of both active and passive recreation accessible to all, irrespective of age or ability
- Incidental areas of open space are not accepted as part of functional open space for the purposes of calculations
- Provision of play
- Green Infrastructure
- Open spaces should be located to connect with each other to create green corridors and optimise GI functions
- Existing trees, hedgerows and watercourses should be retained
- Planting should comprise native and pollinator friendly species
- SuDS systems should be incorporated within POS and add to the amenity and biodiversity value of the spaces
- Accessibility
- Age-friendly and disability-friendly measures should be incorporated, including appropriate path surfacing, seating at appropriate intervals etc
- Safety
- Should feel safe to the user and have adequate supervision by way of passive surveillance

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- Smaller open spaces should be visible from and accessible to the maximum number of residential units

Boundary treatments, public lighting and planting should be designed carefully to create a sense of security and to avoid opportunities for anti-social activities.

2.3.1 Public Open Space Hierarchy

Table 8.1 of the draft CDP, 'Public Open Space Hierarchy' sets out park types, features, and green infrastructure appropriate to each type of public open space. The Public Open Space provided in this scheme (described below) can be identified in this table as 'Smaller Residential Open Spaces', which has an area of up to 2000m^2 in size and 'Civic Spaces/Squares'. Such areas are also defined in the 'Parks and Open Space' strategy document by SDCC as 'Amenity Green Spaces'.

Such spaces '*do not include grass verges, narrow strips of planting or incidental or 'left over' open space'*; can provide informal play/recreation activities usually for smaller children; and have a visual and social function. In Green Infrastructure (GI) terms, these spaces should serve as 'stepping-stones' within the wider GI network and present opportunities to strengthen GI and biodiversity through SuDS features, and the provision of tree and pollinator-friendly planting. Hard-scaped spaces in such areas serve a 'neighbourhood function and area designed for pedestrian movement and social interaction in urban settings.'

Smaller Residential Open Spaces	These smaller open spaces are up to 0.2ha (2000sq m) in size. They are usually provided as the smaller areas of public open space within a residential development but do not include grass verges, narrow strips of planting or incidental or 'left over' open space. They provide informal play/ recreation activities usually for smaller children and have a visual and social function also. 'Amenity Green Spaces' as defined in the Parks and Open Space include smaller residential open spaces. All homes should be within 100m of this or another type of accessible open space. No contributions in lieu will be acceptable.	Smaller open spaces serve as stepping stones within the wider GI network.
Civic Spaces/ Squares	These important spaces vary in size (mostly less than 0.2ha) and include civic areas and market squares and other hard surfaced and soft areas. They serve a neighbourhood function and are designed for pedestrian movement and social interaction in urban settings.	There are opportunities to strengthen the GI and biodiversity value of these spaces through SuDS features and native tree and pollinator-friendly planting.

Figure 7. *Extract from Table 8.1 'Public Open Space Hierarchy', Chapter 8 of the Draft CDP*

2.3.2 Public Open Space in the Subject Site

The subject site area measures 0.46 hectares (4605.60m^2) in size, and POS has been provided in the order of approx. 1347.40m^2 (excluding 'peripheral open space' such as the 3.30m wide vegetated strip provided between the building and the north-western existing site boundary for GI reasons and separation of the development from the existing trees in the adjacent site, which must be excluded from POS calcs). The development scheme as submitted now provides

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29.3% public open space expressed as a percentage of the overall site, and the hierarchy of this area is characterised as ‘Smaller Residential Open Space’, ‘Civic Space/Square’ and stepping stone ‘Amenity Green Space’ according to the CDP.

Public Open Space % of Site Area Schedule		
Name	Area	% Percentage of Site Area
PUBLIC OPEN SPACE	1347.4 m²	29.3
TOTAL SITE AREA	4605.6 m²	100

Figure 8. *Detail of 'Public Open Space' table, prepared by OMP Architects*

Public Open Space has been provided in the developed scheme design in a mainly south-oriented area fronting onto Firhouse Road and Mount Carmel Park and comprises a 2.00m width path along the road frontages of the two streets; planted landscape buffers; improved biodiversity; amenity tree, shrub, ornamental grass, bulb, and perennial planting; a 3.00 width path to the front of the development’s elevations; natural SuDS stormwater attenuation; and play-along-the-way provisions for all ages and abilities. The existing area is currently laid out as an asphalt-surfaced car park and the design proposals envisage turning it into a heavily planted space with improved legibility and universal access for the public. The current scheme’s planting proposals in the Public Open Space represent a significant increase in ‘greening’ of the space from the existing site appearance (car park) and from the previously submitted Pre-App layout.

Figure 9. *Detail of 'Taken In Charge Plan', prepared by OMP Architects, illustrating the area to be taken in charge by the local authority with a blue hatch*

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2.3.3 Quality of Public Open Space

We confirm that the revised design has had cognisance to the Draft CDP of SDCC. The detailed scheme design for the public open space has had regard to the provisions of the National Disability Authority's document 'Building for Everyone: A Universal Design Approach – Planning and Policy' (2012), to adopt a universal design approach across the site, taking account of location, layout, and design to ensure maximum accessibility and connectivity to the surrounding area, as well as DMURS.[4]

Figure 10. *Detail of 'Open Space Plan', prepared by OMP Architects, illustrating the area of Public Open Space in Green, and the area of Peripheral Open Space (3.30m width planted buffer) in yellow*

Key objectives of Chapter 8 of the Draft CDP including clustering of childcare facilities and open space, universal and inclusive design, climate adaptation and mitigation, prioritising the pedestrian and cyclist, and additional tree planting have all been considered in the delivery of the detailed design at this stage by the design team.

[4] 'Policy CoS2: Social/Community Infrastructure', COS Objectives 1, 2, 4, 5, 6 and 9, Draft CPD, SDCC, 2022

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Figure 11. *Extract from the current landscape plan indicating public open space provision at the developed scheme.*

The public open space has been designed as a multi-functional space, providing play, nature-based solutions, wayfinding, a stepping stone for nature and pleasant landscape aesthetics, where residents and locals are welcome to dwell. We have borne in mind the results of research conducted by SDCC such as the 'Teenspace' programme 2017-2018, which revealed that teenagers feel excluded from many public places and report being unwelcome, feeling unsafe. Teenagers report wanting areas for hanging out and unstructured physical activity, and we have considered this in the detail design of the public open space.

We consider that the submitted design for the public open space is fully aligned with the council's objectives to 'encourage the development of a well-connected and integrated public open space' as expressed in Chapter 8 at 8.7; *vis* improving community, health and wellbeing; enhancing visual amenity; promoting sustainable development; promoting climate change adaptation and mitigation; reinforcing Green Infrastructure; promotion of biodiversity, supporting culture and heritage; and supporting the local economy (café, amenity planting, playful 3.00m with route etc).

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2.4 Green Infrastructure Policy

The policy intent of Chapter 4 of the CDP 'Green Infrastructure' is to apply GI strategies in relation to G12 'Biodiversity', G13 'Sustainable Water Management', G14 'Sustainable Urnan Drainage Systems', G15 'Climate Resilience', G16 'Human Health and Well-being' and G17 'Landscape, Natural Cultural and Built Heritage'.

We have prepared a 'Green Infrastructure Plan' as part of our drawing submission package to assist reviewers in assessing the compliance of the development with local authority policy. The draft CDP calls for the establishment of a GSF (Green Space Factor) for certain qualifying developments in addition to a GI Plan and a Landscape Plan. The CDP envisages a score-based GSF which establishes minimum standards for landscaping and GI provision in new developments, using a filled-in worksheet and relying on a Green Space Factor Guidance Note to be provided on the SDCC website. Developers will be required to reach the minimum GSF established by their land use zoning, and '*can improve their score by both retaining and enhancing existing landscape features and incorporating new features*.'

There is no extant vegetation on the site as it is currently laid out as an impermeable asphalt-paved car park and buildings, with no extant planting on the site (refer to arboricultural impact assessment documentation, submitted separately, summary below). However, along the northern/ north-western site boundary of the subject site, a group of mature trees is established in the adjacent site of Dodder Valley Park, comprising a visually prominent of high public amenity value.

***Figure 12**. Extract from 'Green Infrastructure Plan'*

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Section 4.2.3 'Climate Resilience' - GI 5 Objective 4 states as follows: '*To implement the Green Space Factor (GSF) for all qualifying development comprising 2 or more residential units and any development with a floor area in excess of 500 sq. metres. Developers will be required to demonstrate how they can achieve a minimum Green Space Factor (GSF) scoring requirements based on best international standards and the unique features of the County's GI network. Compliance will be demonstrated through the submission of a Green Space Factor (GSF) Worksheet (see Chapter 13 Implementation and Monitoring, Section 13.3.2.'*

Minimum scoring factors are based on the land-use zoning of a site (GIS Objective 4). From Table 13.2 'Land-Use Zoning Objectives' of the CDP, the applicable land use zoning for the purpose of this application on the subject site is 'Local Centre', LC – 'To protect, improve and provide for the future development of Local Centres'.

The 'Southampton City Council Green Space Factor Guidance Notes' provides a worksheet tool which can be filled in with areas and volumes by design teams to come up with an applicable GSF for the site area and design measures. Measures with corresponding value factors identified in the Southampton worked spreadsheet tool which have been incorporated in the submitted design proposals for this scheme include extensive and intensive green roofs, permeable paving, semi-permeable surfaces, long grassland, shrubs, trees with SuDS tree pits, trees in deeper soil etc, as outlined in the design proposals below. Substantive measures have been taken in the design proposals to protect and retain the existing trees on the adjacent site, including providing a planted buffer between them and the elevation walls of the proposed building.

2.5 Existing Vegetation on Subject Site:

Please refer to the tree survey drawing and report[5], tree protection measures and arboricultural impact assessment documentation prepared by Charles McCorkell Arboricultural Consultancy in accordance with BS 5837 for details of existing vegetation on or adjacent to the site (submitted separately), and the arboricultural value categories assigned to it, as well as details of vegetation protection measures, proposed felled and retained existing vegetation if any.

There are no trees located within the subject site, however adjacent to the north-western boundary of the site is a group of mature trees standing in the adjacent site (Dodder Valley Park) on the other side of the boundary wall, including Leyland Cypress, Ash, Beech, Holly, and Sycamore species. The arborist has assessed this tree group as being 'visually prominent and of high public amenity value' and forming a significant landscape feature within the local surrounding area.

Our design team's approach has been informed by the arborist's survey and comments to retain certain trees and groups of vegetation on or adjacent to the site because of characteristics like the nature of the species, the maturity of a tree or tree group, the ecological contribution of the vegetation.

CMCAC has assessed that the proposed development does not require the removal of any trees but has recommended some pruning works to these trees to facilitate the development works, and as part of maintenance to ensure sufficient clearance between tree canopies and the proposed development and its balconies.

Pruning works to the trees, as described in the arborist's report, will only be conducted at a time of the year that complies with the Wildlife (Amendment) Act 2000, which prohibits the cutting of hedgerows during the critical bird-nesting period in spring and summer (1st March to 31st August). Along the north-eastern boundary of the subject site where these pruning works are

[5] 'Arboricultural Report – Tree Survey, Arboricultural Impact Assessment & Arboricultural Method Statement in relation to the development proposal at Firhouse Inn', Charles McCorkell Arboricultural Consultancy

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planned to happen, our team's mitigation measures include planting with new native hedgerow transplant species, aligned with the Heritage Council's guidance on hedgerows[6].

Tree felling and tree work where it occurs should be performed by reputable contractors prior to project commencement, in accordance with BS 3998:2010 and current best practice. Protective fencing (barriers) to existing trees and stands of vegetation identified for retention should be erected in positions and alignments as set out by a consulting arborist on a Tree Protection Plan. Fencing in accordance with BS 5837:2012, unless otherwise agreed with the local authority. Commencement of development should not be permitted without adequate protective fencing being in place. This fencing, enclosing the minimum tree protection areas indicated, must be installed prior to any plant, vehicle, or machinery access on site.

No excavation, plant or vehicle movement, materials handling, or soil storage is to be permitted within the fenced tree protection areas indicated on plan. Proposed landscape works including new planting shall be undertaken in compliance with BS 5837:2012. During these works, the ground around retained trees must not be compacted by vehicles, nor be mechanically excavated for planting, nor be significantly altered in terms of ground levels.

[6] 'Conserving Hedgerows', prepared by the Heritage Council and Local Authority Heritage Officers, 2016

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3.0 Landscape Design Development since Pre-App submission

3.1 SDCC's opinion – related landscape issues

Our team's design has evolved to consider and incorporate concerns that the local authority had raised (Local Authority's submission to ABP, received October 2021) in relation to the following landscape issues in previously submitted versions of this scheme, as below:

- insufficient share of uses other than residential at ground level
- potential issues with daylight/sunlight in relation to the existing trees in Dodder Valley Park along the northern/north-west site boundaries
- separation distances between the proposed building elevations and the northern-north-west boundary
- potential issues with pruning and proximity to these trees growing on the far side of the existing boundary wall to Dodder Valley Park along the northern/north-west boundary
- lack of strong frontage to Firhouse Road or the public open space
- need to provide natural suds features as part of amenity space such as swales, more green/blue roofs, detention basis, filter drains, rainwater harvesting in addition to blue roofs, tree pits and permeable paving
- 'desire-line' link to Dodder Valley running up Mount Carmel Park
- need for 'own door' units at ground floor level along Mount Carmel Park
- requirement for a Japanese knotweed survey
- active travel routes particularly along Cycle South Dublin Route 34 (along Mount Carmel Park)
- accessibility of podium open space and clarification of its character as public or communal amenity open space
- roof terraces and their relationship to existing housing along Mount Carmel Park
- details of play provision within the development
- greater detail to be provided in relation to landscaping, the public realm and open space
- strong and legible hierarchy of open space in the proposed development to align with policies H12, objective 2 of the County Development Plan 2016-2022
- layout to clarify the type of open space and access routes (defined as public or communal for residents)
- all access points to have active frontage throughout and passive surveillance to provide welcoming functioning access routes
- demonstrate that the development is inclusive to people of all abilities

3.2 ABP's Pre-Application Consultation Opinion - landscape-related issues

ABP requested that further consideration be paid to issues such as visual impact, material finishes and hard and soft landscaping. It was also requested that further justification and consideration be paid to address the character, identity, and creation of an inclusive people-friendly neighbourhood (considering issues such as architectural treatment, landscaping, quality public and communal open spaces, pedestrian wayfinding, and connectivity).

ABP also requested clarification on location, hierarchy, and quanta of open space provision (public and communal amenity open space); clarity on compliance with development plan standards; and clarity on 'taking-in-charge' proposals. OMP have prepared detailed tables and plan diagrams to clarify these issues in their site strategy layout, which are reproduced below for the convenience of the reader.

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Our team's design has evolved to consider and incorporate concerns that ABP's Pre-Application Opinion and Inspector's Report (February 2022) has raised in relation to the following landscape issues in the previously submitted 'Pre-App' version of this scheme, as listed below:

- more non-residential uses at ground level
- detailed Urban Design Statement and an Architectural Statement
- clarification on architectural design approach in terms of place-making
- further consideration of landscape materials and character including inclusive people-friendly neighbourhoods, pedestrian wayfinding, and connectivity
- high quality and sustainable materials, finishes and details
- visual impact considerations related to the above
- daylight and sunlight access to communal courtyards and shadow impact assessment of same
- response to potential impacts on tree roots and the possible impact of the building on trees to the north of the site, outside the red line boundary of the subject site
- justification of location, hierarchy, and quantum of open space provision, both public open space (POS) and communal amenity open space (CAOS)
- clarification of the above in relation to compliance with development plan standards and what is designated POS and CAOS
- life cycle report which bears regard to landscaping, paving, child-friendly spaces, pathways, and boundary treatments
- importance that the new streetscape and public realm be designed to a very high standard in relation to layout, design, materials, and finishes, and that a sense of place is greater – more details required in relation to the streetscape along the public road
- details of public lighting
- maintenance costs, access, and liabilities report to set out responsibility for open space areas
- further consideration of access and parking arrangements
- ecology issues

3.3 Landscape Design Development Following Pre-App Consultations/ABP Opinion

The following extracts from drawings illustrate substantial changes and design evolutions from the pre-application stage to the revised and current planning submission. These revisions have been made in response to the issues and concerns raised above by SDCC and ABP. For further details, please refer to the suite of landscape drawings which accompany this submission.

In the extract from the pre-app submission illustrated below, approximately half of the surface area of the public open space addressing Firhouse Road had been given over to vehicular circulation and parking.

- An underground attenuation tank (illustrated in cyan) occupied a substantial part of the remainder of the area, limiting tree planting in the design proposals
- Two pedestrian paths, one along Firhouse Road of 2.00m width and another 'desire-line' one along the front of the building elevations of 2.30m width, are provided
- Street 'activation' in terms of commercial mix is provided at the western end of the public open space, with a café at lower ground floor level
- A gently sloping path and steps provide access to the communal open space for residents.
- Play-along-the-way sculptural interactive sensory elements are placed along the desire-line route, with small gathering spaces and seating

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3.3.1 Landscape buffer along Firhouse Road and Mount Carmel Park

Figure 13. *Detail of previous public open space arrangement at the Pre-App submission stage.*

Open Space Area Schedule		
Name	Level	Area
CRECHE PLAY SPACE	B1	216.3 m²
PUBLIC OPEN SPACE	B1	53.9 m²
PERIPHERAL AREA	B1	29 m²
PERIPHERAL AREA	B1	11.3 m²
PUBLIC OPEN SPACE	G2	1293.5 m²
PERIPHERAL AREA	G2	218.3 m²
PRIVATE COMMUNAL AMENITY SPACE	01	467.6 m²
PRIVATE COMMUNAL AMENITY SPACE	02	30.9 m²
PRIVATE COMMUNAL AMENITY SPACE	03	168.5 m²
PRIVATE COMMUNAL AMENITY SPACE	04	295.9 m²

Figure 14*. 'Open Space Area Schedule', prepared by OMP Architects, to illustrate the categories of open space in the proposed development, current layout*

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Figure 15. *Detail of public open space arrangement at this stage, showing significant increase in pathway widths and green areas, more tree planting, and a significant reduction in surface area in public open space that was given over to the vehicle*

In the extract from current submission illustrated above, the primacy of the pedestrian has been underlined in the design revisions, and the proportion of planted area to paved area has substantially increased.

- The footpath/vehicular circulation area in the revised layout has been made 'flush' with guidance from the transport consultants, and a 'crossover' detail provided at the site entrance so that pedestrians walking along the 2.00m width path along Firhouse Road do not have to 'drop down', but cars must 'rise up', and slow
- The previously proposed 2.00m width path has been retained along the roadside of Firhouse Road/Mount Carmel Park in line with DMURS, however we have increased the width of the 'desire line' path through the site to 3.00m width in line with child-friendly planning principles
- The proportion of the area given over to the vehicle has been greatly reduced.
- The underground attenuation tank has been removed from the public open space entirely, and the proportion of 'natural' SuDS substantially increased with the inclusion of 4 large proprietary stormwater attenuation tree pits in the public open space, designed with the civil engineers

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Figure 16. *Detail of current landscape plan at western site corner near the Dublin Bus (Ballycullen Road, Stop 2520) stop illustrating starting point of 3.00m width path and cross over detail at vehicular site entrance. 2.50m ht playful stone sculpture waymarks the beginning of the playful route through the site*

- Planted in these is an avenue of street trees which will help settle the development into the receiving environment and substantially improve biodiversity and aesthetics at the site. This treatment wraps around the south-eastern building corner to address Mount Carmel Park
- Hornbeam hedgerows maintained to 1.20m height and estate railings have been placed to the north of the pedestrian path along Firhouse Road, to protect the planting and the character of the open space
- The architects have substantially increased the commercial mix at ground floor level in the development to improve street activation
- Directly engaging with the central 'gathering space' at street level is a green-roofed café with south-facing amphitheatre-style wooden seating perches replacing the long ramp
- A new south-facing arcade has been provided by the architects to extend the 3.00m width path and provide year-round shelter at the commercial units
- The amount of 'play along the way' offers have been increased to engage children of all ages and abilities from 2-92, including a gently swaying hammock near the café[7]

[7] Research shows that such measures (sunny amphitheatre like perch seating, seats facing each other, hammocks etc) are recommended particularly to encourage young females to use and occupy public open space, 'What Does Better Look Like?', Make Space for Girls, 2020

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Figure 17. *Detail of current landscape plan illustrating public open space to the south of the building, with wider 3.00m path, sheltered arcade under the building, increased play provision along the playful route and increased tree and amenity landscape planting*

- ‘Own door’ duplex units have been provided by the architects along Mount Carmel Park to directly engage with and activate the streetscape, provide passive surveillance, and respond to the landscape character of two-storey residential housing there. These have been provided with a landscape privacy buffer at street level of 1.50-2.00m width.[8]
- The transport consultants engaged directly with the local authority to discuss the character of Mount Carmel Park, particularly in relation to planned cycling links along Cycle South Dublin Route 34 (along Mount Carmel Park). The transport consultants and architects liaised to agree a strategy in relation to optimum design for the street

[8] landscape ‘privacy strips’ of 1.50m width to be provided to ground floor apartments located adjoining the back of a public footpath, 3.4.2 ‘Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)’, DoHLGH, December 2020

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Figure 18. *Public open space amenity planting bed wrapping around the south-eastern corner of the building, 2.00m width footpath and landscape privacy buffers to new own door duplex units along Mount Carmel Park*

- Although the proportion of natural SuDS proposals (blue-green roofs, SuDS tree pits, permeable paving) has been substantially increased in the submitted proposals, a smaller and shallower attenuation tank is still required to cope with 1:100-year floods. This has been located by PHM to the northern corner of the subject site, underneath the cycle parking shelters and the access path to the creche for staff, which is secure from the public open space path along Mount Carmel Park.

Figure 19. *Landscape plan at LG level showing streetscape of 2.00m width footpath along Mount Carmel Park; location of mesh fencing and gate to secure creche site; location of creche staff cycle shelters; and of shallower attenuation tank under cycle shelters*

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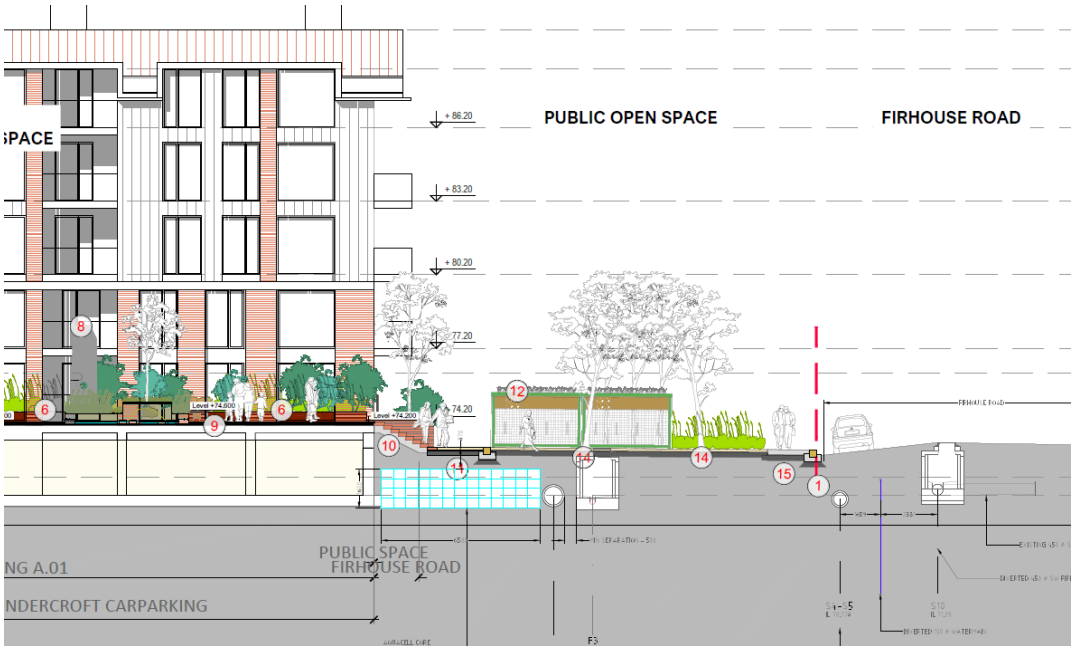

Figure 20. *Detail of site section taken through the public open space, looking east at Pre-App submission stage, illustrating extent of underground attenuation tank in the area, which was limiting tree planting*

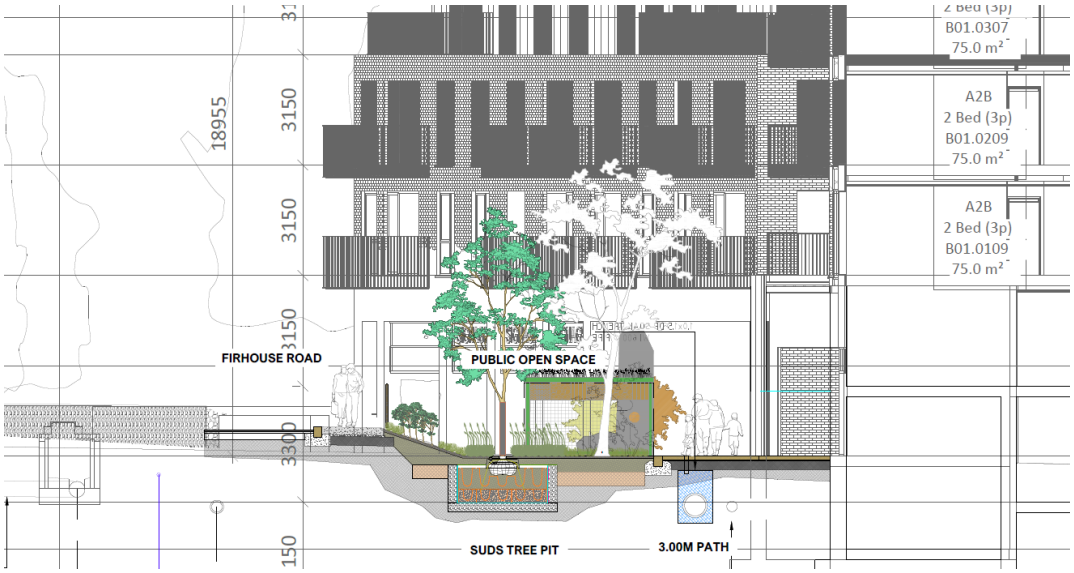

Figure 21. *Detail of site section taken through the public open space in the current layout, looking west. The underground attenuation tank has been removed from the public open space allowing much more tree planting to be provided; the amount of the area given over to the vehicle has been reduced; the amount of SuDS tree pits has been greatly increased, and a 3.0m path along the base of the building as well as a 2.50m depth colonnaded arcade has been provided, enjoying a southerly aspect over the much greener public open space.*

4.0 General Landscape Strategy:

The landscape design proposes a simple, resilient, and legible streetscape and sequence of open spaces with a clear hierarchy to settle the two buildings into the receiving environment. The site layout is logical and responsive to the site conditions at the development site. Nature-based

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solutions have been considered, and the pedestrian has been given primacy in the site plan layout. Child-friendly planning principles have been adopted in the revised design.

Our opinion is that the architects' and engineers' site layout has created an attractive public realm; the arrangement of buildings, car-parking and access routes, open spaces, and streetscape is an efficient use of the site shape; and is an informed response to the surrounding suburban verge form and context, the gently sloping topography, aspect, traffic, and streetscape. OMP Architects have prepared a clear explanatory diagram and supporting table indicating the quanta and typologies of open space at the subject site.

***Figure 22**. Landscape plan at roof level*

The site layout and strategy at ground floor level and streetscape has evolved positively in response to comments and issues raised by the local authority and An Bord Pleanála, to significantly increase the portion of 'green' area to the south of the building, to include much more street tree planting in the form of a distinctive avenue, to incorporate child-friendly planning principles, and to increase the amount of natural SuDS. This has significantly improved the multi-functionality and the aesthetics of the space.

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4.1 Sequence of Amenity Open Spaces in Landscape

In landscape terms, the design intends to provide a usable and enjoyable sequence of open spaces appropriate for the residents and locals. Public Open Space (POS) has been located by the architects to the south of the proposed building, directly engaging with Firhouse Road/Mount Carmel Park. Communal Amenity Open Space (CAOS) has been located within the development itself, at a main podium courtyard and in several roof podium gardens dispersed through the scheme.

The site layout proposals available for proposed landscaping have been arranged by the design team as follows:

- A 'crossover' detail at the 'vehicle' site entrance along the Firhouse Road 2.00m width path to ensure that pedestrian priority is highlighted to vehicles entering the site, and that active travel and universal design principles have high importance
- New minimum 2.00m width public footpath along Firhouse Road/Mount Carmel Park
- New 'estate railing' boundary treatment along the public realm footpath, backed by a clipped Hornbeam hedgerow
- A landscape buffer between the proposed building's elevation and the public roads; a generous green strip which will be planted with evergreen ornamental grasses, ferns, and spring-flowering bulbs, multi-stemmed shrubs, and street trees (an avenue of *Liquidambar styraciflua* 'Fastigiata' (Sweetgum), *Pinus sylvestris* (native large evergreen Scot's Pine) and a *Salix babylonica* (Willow)
- 'Stepped' wooden amphitheatre to support informal gathering in the sunny southern facing amenity open space
- New 3.00m footpath following the 'desire line' through the site in front of the new building along the south facing elevation, to encourage informal activity to spill out from the commercial units, and support child-friendly planning principles. This area has been conceptualised in landscape terms as a 'hall', populated with picnic tables, benches, playable sculptures and even a hammock to encourage residents and locals to meet and socialise together. This path overlooks the heavily planted beds to Firhouse Road/Mount Carmel Park
- A 'front porch' layout provided at the stepped entrance to the podium courtyard of the proposed development, enlivened with a 'pause point' patio, benches, cycle parking and planting to support residents to gather their thoughts and welcome them into their home
- Universal design and inclusive design principles have been considered as a key design factor, and that the sequence of amenity open spaces is appropriate for function as a 'therapeutic landscape[9][10]' to best serve the needs of the residents and locals. Incorporating details and principles of child-friendly neighbourhoods such as pedestrian priority, regular seating, illumination, and generous amenity planting, make a neighbourhood suitable for all ages and abilities
- The site boundary to the north and north-west with the adjacent public amenity space of Dodder Valley Park will be planted with native species hedging plants to improve the biodiversity at the site and provide a 'green' and verdant character to this site boundary. This new planting is contained in an approx. 3.30m wide buffer strip between the building and the existing boundary wall, which creates a significant contribution to green infrastructure provision when compared to the existing (asphalt surfacing). Such hedges will mature to screen views of the development from adjacent sites and act as a new wildlife corridor for commuting wildlife

[9] 'Therapeutic Landscapes: An Evidence Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces', Naomi Sachs and Clare Cooper-Marcus, 2013
[10] 'Therapeutic Landscapes' Alison Williams and Susan Elliott, 2007

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- Secure creche staff, resident, and visitor cycle parking in green-roofed shelters with wildlife panels and bird boxes; short-stay cycle parking area surfaced in permeable gravel with Sheffield-type cycle stands
- A 'passive' themed communal amenity open space garden (triangular) has been placed by the architects in the heart of the development, so that it can 'borrow' the verdant landscape view over the adjacent Dodder Valley Park site, as well as the new green public open space to the south. Heavily planted, it will provide a green view from above, which will be therapeutic for people living here[11] [12]
- More 'active' communal amenity open space gardens have been located on upper floors by the architects to support gatherings and play
- Combined 295.9m^2 playspace at upper podium roof garden containing a 200m^2 playspace for older children and 95.9m^2 playspace for younger children. Naturalistic high quality wooden and steel play equipment specified, to support children of all abilities
- Mini piazzas provided at each of the development entrances, enhanced with landscape amenity planting, to create 'pause points' aligned with inclusive design principles, to allow people to sit and gather their thoughts before they enter the development
- A generous provision of planting or greenery throughout the scheme, which has been proven to have a positive and significant indirect effect on self-perceived health. Greenery in developments appears to affect our health positively by enhancing a sense of 'being away', affording possibilities to experience the outdoors as interesting, and encouraging more frequent visitation by families.[13]
- 'Blue and Green' living roofs to the cycle shelters at ground floor level, and to the podium roofs of the buildings themselves

4.2 Site Strategies (landscape)

The site strategy has evolved positively from the version previously submitted in response to the comments made by the local authority and by An Bord Pleanála. The overall site strategy has been formulated by OMP Architects with input from TPA, Transport Insights, PHM Consulting Engineers, OCSC Consulting Engineers, Charles McCorkell Arborist, and studioAULA, and comprises the following elements in landscape terms:

- **Clear and legible 'streetscape' strategy** to address Firhouse Road and Mount Carmel Park by creating a lively new activated streetscape at ground floor level and providing a new green landscape buffer between the building and the vehicular carriageway. Pocket gathering spaces dotted along the (newly increased to 3.00m width) desire-line path act as 'welcome mats' to the new development, supporting people meeting together, playing informally and reducing stress levels in general with provision of increased 'greening'
- **Permeability and wayfinding** have been created in the site design through the specification of a clear hierarchy of landscape 'hard' materials and 'soft' planted elements, and the provision of generous 3.00m width footpaths linking from the site entrances into the heart of the subject site, cycle parking, and the building entrances. The traffic environment has been designed by the team to put the pedestrian first at the top of the pyramid. Walking clearly comes first in the proposed site layout.

[11] 'Therapeutic Landscapes: An Evidence Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces', Naomi Sachs and Clare Cooper-Marcus, 2013
[12] 'Therapeutic Landscapes' Alison Williams and Susan Elliott, 2007
[13] 'Garden greenery and the health of older people in residential care facilities: a multi-level cross sectional study', published in JAN Leading Global Nursing Research Journal Volume 72, Issue 9, by Hartig, Nilsson, Hogherg, Skovdahl and Engstrom, September 2016.

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- **Child-friendly neighbourhood** planning principles have been adopted, which support public realm planning principles for people aged from 2 to 92, including generous provision for seating, sensory play equipment and sculptures
- **Consideration of universal design access** has been provided with a 3.00m width level access route through the site from the R114 linking along a desire line to Mount Carmel Park and the existing pedestrian crossing there, with regularly placed seating elements provides a gently sloped pathway route, ensuring people of all ages and abilities can access the site with comfort
- **Flexibility in use** has been provided in the public open space, with a sequence of intimate gathering spaces arranged along the 3.00m width path to the front of the subject development's elevations; in addition to a 2.00m width path addressing Firhouse Road and Mount Carmel Park. All of these gathering spaces have been provided with seating, lighting, playful sculptures, and amenity planting. To the communal amenity open spaces, with the shadier character of the triangular space courtyard being designed as a 'quiet' or reflective space, pleasant and green when viewed from above, and the character of the sunny roof gardens designed as more 'active' spaces where residents are encouraged and supported to socialise and play
- **Space, aspect, and orientation** has been considered in the design of the site planning and arrangement of building form to ensure the sequence of external amenity spaces benefits best from solar gain, especially the public open space. As the design progressed, it evolved to open the communal amenity open space to allow south-westerly sunlight directly into the heart of the development to the main space
- **Functionality** such as cycle parking, universal design, and well-passively surveilled spaces by ground floor units, as well as vegetative buffer screening to sensitive spaces such as own door duplex units and ground floor apartments. The sequence of approach spaces is designed and detailed to serve aesthetic and active landscape, biodiversity, natural SuDS, and natural view screening functions.
- **Screening to views** with new hedgerows and tree planting along the site boundaries and of 'naturalised' clipped and formal hedgerows such as Hornbeam and 'natural' or 'loose' native species hedgerows will mature to screen views of the development site. Evergreen native trees and shrubs such as Scot's Pine, Holly and Arbutus will provide year-round screening to views. Hornbeam holds its leaf foliage year-round, ensuring a planted appearance to the approaches.
- **Natural daylight:** The 'Sustainable Urban Housing: Design Standards for New Apartments'[14] states the following concerning the provision of adequate levels of sunlight to communal amenity space: '*Communal amenity space may be provided as a garden within the courtyard of a perimeter block or adjoining a linear apartment block. Designers must ensure that the heights and orientation of adjoining blocks permit adequate levels of sunlight to reach communal amenity open space throughout the year.'*
- A **daylight analysis** has been conducted by OCSC to ensure that adequate levels of daylight illumination are available in the communal amenity open spaces and landscape generally.[15] We have provided a range of aspect and solar comfort within the communal amenity open spaces for residents to choose where they wish to gather; full sun and

[14] 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)' Department of Housing, Local Government and Heritage, December 2020

[15] Our team's submission includes a report concerning sunlight and daylight and an overshadowing analysis prepared by OCSC, conducted in accordance with 'Site Layout Planning for Daylight and Sunlight' by the BRE and BS 8206-2:2008 'Lighting for Buildings Part 2: Code of Practice for Day Lighting'.

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partial shade in the main amenity garden is available, as per the Daylight Assessment, which forms part of this submission. The Public Open Space is located to the south of the development and will enjoy a sunny aspect. Studies demonstrate that the role of exercise and vitamin D in maintaining bone and muscle quality, and access to natural light are necessary to regulate our circadian rhythms

- **activation** to proposed new building edges and frontages, such as to the proposed cafe and commercial units directly addressing the amenity open space to the south; and the creche addressing Mount Carmel Park. Generally, the site design has created generous width streetscape enlivened with trees, sculpture, and seating along the street. and seating along the street. The proposed 'village square' gathering space at the heart of the development, in front of the café, acts as a 'welcome mat' for people into the site and directly addresses the raised podium courtyard through steps and amphitheatre-like seating. The sequence of approach spaces has been designed and detailed to serve multiple functions such as aesthetic and active landscape, biodiversity, natural SuDS, and natural view screening.

4.3 12 Design Criteria

We have assessed and described the scheme in a design statement below to include the 12 Design Criteria highlighted in per 'Sustainable Residential Development in Urban Areas, Guidelines for Planning Authorities', and the 'Urban Design Manual', DOEHLG.

4.3.1 Sense of Place

The subject site is located at the prominent corner of Firhouse Road and Mount Carmel Park and is bounded to the north-west by a visually significant stand of mature tree planting growing in Dodder Valley Park, a public park amenity which contains a beautiful weir.

Public Open Space has been provided to the south and east of the proposed development, to enjoy a sunny aspect and to engage directly with Firhouse Road and Mount Carmel. This area has been designed as a heavily landscaped amenity, with a wide 'desire line' 3.00m path provided along the base of the building's elevation and engaging in certain areas with an arcaded element designed by the architects. A DMURS compliant 2.00m width path is proposed parallel to Firhouse Road/Mount Carmel Park, set out by the architects and traffic consultants, with a 'cross over' type detail at the vehicular site entrance to reinforce the sense of priority of the pedestrian and cyclist.

The 'Firs' of the name have been recalled in the planting of several of our only large native evergreen, the Scot's Pine, in the Public Open Space and on the triangular-shaped podium in the main Communal Amenity Open Space. The reorganisation of the site strategy occasioned by the ABP comments has freed up the Public Open Space for significantly increased tree planting thanks to the relocation of car parking for the development to the basement, and the removal of the attenuation tank from this area.

Now an avenue of attractive *Liquidambar styraciflua* 'Fastigiata' settles the development into the receiving environment and leads around the corner to Mount Carmel Park to hint at the link to Dodder Valley Park. Amenity planting in this area has been selected and specified to recall high steppe grasslands, with a high proportion of swaying ornamental grasses. Pollinator-friendliness and resilience to climate change has been taken as a point of departure in the selection of the soft landscape palette.

Playful and interactive natural stone sculptures waymark and signal the entrances to the generous child-friendly route, with gathering spaces provided with seating and a hammock dispersed along the pathway to support the proposed commercial activities. A high-quality durable palette of hard landscape materials such as stone (to connote the areas being

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maintained and managed by the development), concrete (to connote the 2.00m width path to be taken-in-charge by the local authority), wooden seating elements picnic sets and benches, and attractive play equipment will lend the developed scheme with an immediate sense of permanence and appropriateness. Cycle shelters located in public open space have been provided with green roofs to improve biodiversity and mesh sides to allow people to see clearly across the amenity space and move through it safely.

4.3.2 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'. We consider that the design development of this proposal has resulted in a scheme which provides well in landscape terms for families, young children, teenagers and older children, young adults, and older people.

The quality and quantity of Public Open Space has significantly increased, and the pedestrian and cyclist have clearly been prioritised in the developed design at street level. The amount of soft landscaping has also increased significantly in the Public Open Space areas, with accessibility, inclusion and all-age friendly design taken as a point of departure by the design team who have engaged together to improve these areas in the submitted design. Both the Public Open Space and the Communal Amenity Open Spaces have been designed and detailed using the principles of universal design to ensure that people of all ages and abilities can gain access to and move through comfortably and safely.

Designated recreation spaces have been provided at roof garden level for children's play; with the main triangular shaped podium courtyard for communal amenity open space heavily planted to appear as a verdant green carpet when viewed from above.

Our landscape action plan for sustainable design has considered the following targets and issues:

- 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 an environment that is healthy, accessible, inclusive, and visually attractive
- SuDS design and NBS (nature-based solutions)

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. The hard landscape palette comprises durable quality materials - larch, oak, stone (public open space), concrete, steel etc. Where new concrete paving units (podium roof gardens, pathways inside development) 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). In-situ concrete paving (2.00m width path along Firhouse Road/Mount

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Carmel Park) will be specified with a high proportion of local aggregates in the mix, eco-cement and GGBS (recycled ground granulated blast-furnace slag).

4.3.3 Connections

Our design team has proposed a 3.00m width path 'through' the site, aligned with the standards suggested in Rotterdam's Child-Friendly City strategies document. This path runs along the base of the building's elevations and has a sunny southerly aspect. We chose to increase the width of this path, rather than the 2.00m width one parallel to Firhouse Road/Mount Carmel Park, because of the landscape buffer available between it and the busy road. This should make people walking along this route short-cut across the space, as well as want to linger in a heavily planted area, shelter in the arcaded element provided by the architects, rest a while on the seats, and play together on the play equipment dispersed along the path. Placing a 3.00m width path here will also activate the streetscape outside the commercial units proposed in the development, ensuring that locals feel welcome to dwell and linger here.

The 2.00m width public footpath wraps around Firhouse Road and Mount Carmel Park, will connect people comfortably into Dodder Valley Park, located immediately north of the subject site. These measures will create safe access routes for pedestrians, cyclists and road-users of all ages and abilities.

4.3.4 Inclusivity

We have provided direct pedestrian connections from the public realm to the footpaths within the development, as well as a proposed new 3.00m width footpath in the public realm along the front of the development's elevations to Firhouse Road. The vehicular entrance to the development is provided with a 'cross over' type detail where the car rises to cross the pedestrian footpath rather than the pedestrian dropping down to meet the road surface. Our team's transport engineer has been involved in the detailed review and design particularly of the public open space and how it could be improved to consider inclusion. Measures like these will assist in creating a safe and legible 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 generous seating areas at intervals to linger, and paving which is suitable for trafficking by wheelchairs and buggies. Wooden, stone and steel play equipment and natural loose impact safety attenuating surfacing (to the hammock) has been selected with sustainability, ease of maintenance and universal access prioritised. These sculptural items have been placed through the public open space to assist in wayfinding and legibility, as well as to encourage people to linger in certain spots.

The landscape scheme has been designed with a clear hierarchy and palette of quality hard and soft materials, which is easy to way-find through in terms of legibility for residents and for visitors.

4.3.5 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 public open space, to promote a good mix of activities and to support South Dublin County Council's role and policies to improve physical and mental well-being. As much planting as possible has been provided, with the engineer routing all underground services

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and attenuation tanks out of the public amenity open space to free it up for increased tree planting and amenity perennials and shrubs.

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

The design enhancements of the submitted scheme to reduce the dominance of the car and to include elements such as increased proportion of commercial units and an arcaded area to provide shelter further supports this theme and will help activate the streetscape. The inclusion of a creche is key to facilitating early learning policies, creating a child-friendly community, and supporting families to work and learn.

4.3.6 Efficiency

We consider that the design revisions made to the previously submitted scheme have evolved the project to become more efficient in terms of SuDS, hierarchy of open space, hardscape detailing, peripheral open space. The architect's and engineer's site layout has resulted in the creation of an attractive and well-detailed public realm. The arrangement of new housing, public open space, communal open space, and peripheral open space is an efficient use of the site topography, shape, and aspect. It now responds to the surrounding peri-urban form and context and provides a 4.00m width planted buffer between it and the Dodder Valley Park amenity to the north, substantially improving the response of the site as an ecological corridor for wildlife.

4.3.7 Distinctiveness

We consider that the site layout and scheme design, as they have evolved, have resulted in a distinctive and site-specific design. The form of the housing developed by the architects is intended to recall the vernacular form of mills along the route of the Dodder River. In landscape terms, we have tried to incorporate this principle in the hard and soft materials palettes, the planting of Scot's Pine trees to recall the placename, and the design of a child-friendly environment at street level.

A simple orthogonal layout makes a space easy to understand and move through. The introduction of planted elements such as street trees, hedging, and perennial planting presents 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 stone, wood steel and concrete will reduce the maintenance requirements of the housing scheme, as will the specification of a high proportion of native and naturalised plants, which should establish easily under the maintenance regime.

4.3.8 Layout

We consider in landscape terms that the site layout developed by the design team is logical, and responsive to the conditions and receiving environment at the subject site. Retention of the existing stand of mature trees on the adjacent site has been a touchstone for the detail development of the scheme, as they provide the site with a distinctive sylvan setting and an immediate sense of place. A planted buffer zone between the development's elevation and the boundary wall will enable wildlife to move across the site as it hasn't before (the site is currently laid out as an asphalted carparking zone in this area).

The sunny south facing part of the site has been reserved for public open space, directly addressing the 'main road' of Firhouse Road, and wrapping around the corner to address Mount Carmel Park. The architects have provided 'own door' duplex units to respond to the scale and

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character of the two-storey housing of Mount Carmel Park itself, and to provide enhanced passive supervision of the street. The podium courtyard providing Communal Amenity Open Space for residents has been more heavily planted in this revision to the scheme, creating a lush green carpet for residents to gaze down upon.

The proposed café has been relocated by the architects from a lower-ground position to a sheltered universally accessible position in the new arcade in the revised design. Now located in the heart of the scheme, it can act as a 'knuckle' and is accessed by a wide 3.00m path and provided with a 'spill-out' area in front of it, where people are welcome and comfortable to gather. Another small gathering space 'grounds' the development near the existing pedestrian crossing at the south-eastern corner (crossing south-east to head towards the M50 bridge and Mount Carmel Park).

The site layout has been reconsidered to move all car-parking from the street level down to the basement. This move has supported the primacy of the pedestrian and the cyclist in public open space and underlines the hierarchy of importance of these users over the car. Key details created by the transport consultants such as a 'crossover' at the vehicular site entrance further support this. The transport consultants have also engaged in detail with the architects in relation to the layout of the streetscape along Mount Carmel Park itself.

In this revision, universal design and response to existing levels was taken as a starting point, as it meant we could consider and detail the design to promote accessibility for people with disabilities and those with reduced mobility. Design for children is by itself, inherently design for people of all ages and abilities, and we took child-friendly planning principles as a point of departure when we began to critically review the previously submitted scheme in response to the ABP Opinion.

The relocation by the consulting engineers of the attenuation tank out of the previous location (in the Public Open Space) into the lowest part of the site at the northern corner, its reduction in size and depth, and the increased number of green-blue roofs, SuDS tree pits and permeable paving, have been a key move in positively improving the site layout design in landscape terms. We consider that the revised design will create a high-quality living environment for residents and locals in terms of the overall appearance and layout of the development.

4.3.9 Streets and Movement

The key generators for improved landscape design at street level have been revisions by the transport consultant which has resulted in reducing the dominance of the car at street level and in the public open space area, as well as enhancing the streetscape of Mount Carmel Park in line with the council's policies; the redesign by the architects of the ground floor level units to respond to the comments made by ABP and the introduction of a revised design to Mount Carmel Park incorporating 'own door' duplex units; and the work by the civil engineers to increase the proportion of nature-based solutions for drainage at the site, at the expense of traditional solutions such as a large attenuation tank.

The transport consultants reviewed design proposals to check them for compliance with DMURS, and the site design at street level evolved in response to this. Details such as a 'cross over' at the vehicular site entrance have helped increase the sense of primacy of the pedestrian over the vehicle. The substantial reduction of vehicular circulation and parking at the ground floor level (all car parking has been relocated to the basement), combined with the NBS solutions by the engineers, has meant that the quality of amenity of the public open space area is greatly enhanced in the revised design, now allowing substantial tree planting, both as focal elements (Scot's Pine) and avenues (Sweetgum).

The transport consultants also advised that a 3.00m width path would significantly improve the amenity of the public open space. We decided to provide a route of this width, in addition to a

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2.00m width path beside the 'roads', as it meant people would be able to move quickly and comfortably through the site. This would have the added benefit of activating the streetscape at the commercial units which form part of the development.

4.3.10 Open Space and Amenities

Specific objectives of SDCC's development plans concern open space, and the creation of a clear hierarchy and network of high-quality open spaces that cater for active and passive recreation and enhance the visual character, identity, and amenity of an area. Car parking has been located by the architects at basement levels of the revised development proposals, and cycle parking has been provided both at basement level and at 'street level' in green-roofed shelters and open Sheffield-type cycle racks, dispersed along the 3.00m width route.

The new 3.00m width route provided through the public realm is a strong positive contribution to promoting active travel and pedestrian connections. Such measures 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 primarily indigenous species plants in the 3.30m width buffer between the development and the existing boundary wall to Dodder Valley Park and its stand of retained mature vegetation. Linking open spaces and recreational areas with planted buffer areas can contribute to extending a 'green network' of mosaic spaces, stepping-stones and ecological corridors for wildlife habitat and commuting animals.

In relation to the provision for play and recreation in the amenity open spaces, we took guidance from policies like the National Children's Play Policy 'Ready Steady Play', the Guidelines on 'Quality Housing for Sustainable Communities', the Apartment Standards and 'Sustainable Urban Housing' by the DoHPLG, as well as SDCC's policies, and have provided suitable play opportunities for the future child population within the proposed development, both at street level in the Public Open Space, in the creche garden and in Communal Amenity Open Space provided at roof garden level.

4.3.11 Public Realm

We feel that, in consultation with the project architects and various contributing engineers on the design team, that we have designed a safe, secure, and enjoyable public realm. Quality materials and generous amenity planting can help to create an instantly attractive and welcoming public open space. Making way finding easy helps settle a new housing development into an existing receiving environment more comfortable, as well as to settle in new residents.

Measures taken by the architects such as providing 'own door' units along Mount Carmel Park and increasing the activation of the south-facing public amenity open space through the detailed design of the commercial units and cafe, have helped evolve the site layout design positively. The relocation of the attenuation tank and car parking out of the public open space freed up a significant amount of area for amenity tree planting where it wasn't possible in the previous layout.

The new 3.00m width route and the prioritisation of inclusive design principles and wayfinding measures have resulted in the site opening positively for nature-based solutions, views, aspect, wayfinding, and playful features, as well as the retention of the key existing trees in the adjacent park site.

4.3.12 Privacy/Amenity

We can confirm that the amenity spaces have been designed and detailed by the architectural team to ensure passive surveillance, overlooking and activation. We have provided appropriate planting and landscaping measures to support this, as well as specific landscape privacy buffers

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to dwellings at ground floor level. Car parking has been placed in basement levels, with parking restricted to cycles only in 'the landscape'.

On balance, we consider that the scheme design has been well-developed by the design team in relation to addressing 'landscape' issues such as public realm, ecology, amenity, universal and inclusive design, climate resilience and biodiversity.

4.4 Public Open Space

Public Open Space (POS) has been located by the design team to the south of the building itself, addressing directly Firhouse Road and Mount Carmel Park. This space has the benefit of a sunny aspect and can act as a 'stepping stone' for pedestrians, cyclists and wildlife commuting along the Firhouse Road.

4.5 Communal Amenity Open Space

Communal Amenity Open Space (CAOS) has been provided within the building footprint, for use by residents of the scheme, at the main triangular shaped podium courtyard at Level 01 and dispersed through the development by the architects at various roof gardens. This includes children's play provision, which has been located at a dedicated roof garden.

4.6 Cycle parking provision

Sufficient space for comfortable circulation of users and manoeuvrability of cycles has been provided to the front of all cycle parking spaces located in public open space, min. 2.00m clear width to the front of each one. In addition to the covered, green-roofed shelters, short-stay Sheffield-type steel cycle stands have been provided in accordance with SDCC policies, with 6 no. stands located near the western end of the public open space.

The mobility report prepared by the team's transport consultants advises several covered cycle parking spaces total is to be provided of which some have been accommodated across the public open space and the secure creche external space, dispersed as follows:

- 16 no. covered cycle spaces in the public open space to the south of the development (2 green-roofed shelters, each containing 4 no. Sheffield type stands and 8 no. parking spaces)

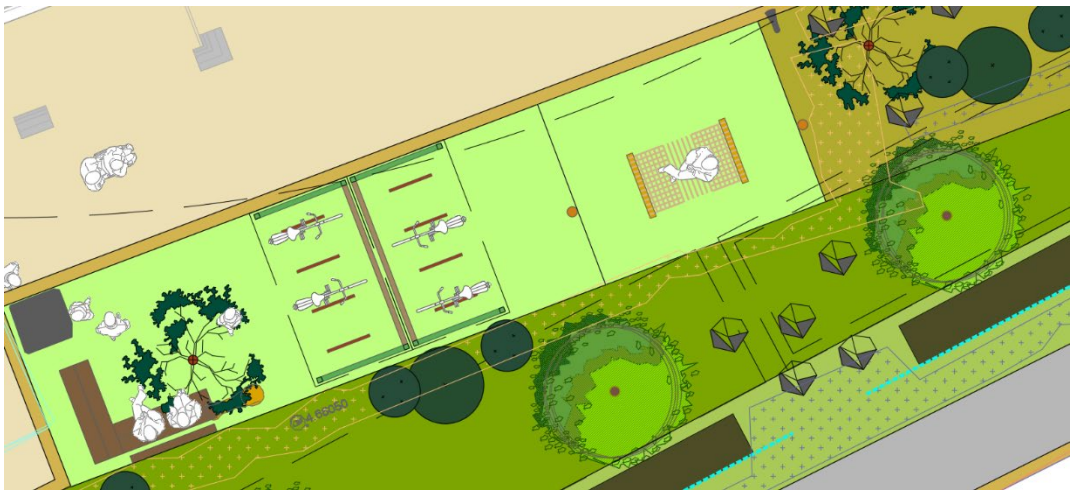

Figure 23. *Detail of cycle parking green roofed shelters at public open space*

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- 16 no. covered cycle spaces in the secure creche external space for creche staff (2 green-roofed shelters, each containing 4 no. Sheffield type stands and 8 no. parking spaces)

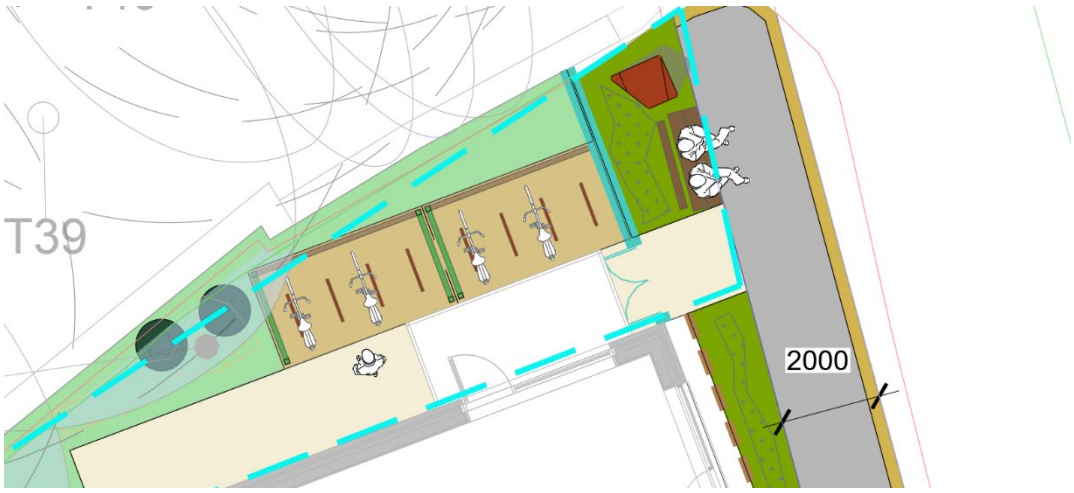

Figure 24. *Detail of landscape plan illustrating location of cycle parking in green-roofed shelters for creche staff at northern corner of site*

- 6 no. short-stay Sheffield type cycle stands near south-western corner of public open space, providing 12 no. cycle parking spaces

Figure 25. *Detail of landscape plan illustrating location of short-stay cycle parking at south-western corner of site*

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5.0 Landscape Principles in the Design

The site setting, located at a corner of Dodder Valley Park 507.00m south of Balrothery Weir on the Dodder, and bounded by the R114 Firhouse Road and Mount Carmel Park, has a mature peri-urban landscape character, and the proposed site layout and landscape scheme needs to settle the new development appropriately into the receiving environment.

Arup's guidance document for residential housing '10 Priorities for Health and Well-being'[16] identifies several actions that can support biodiversity and health and well-being issues within residential developments. We have taken these priorities and used them as the touchstone for the development of our landscape design.

1. Focus on air quality
2. Design for user comfort
3. Understand the impact of materials
4. Maximise the use of data
5. Design for healthy streets and active travel
6. Incorporate blue and green infrastructure (nature-based solutions)
7. Take evidence-based planning decisions
8. Create neighbourhoods for all ages and abilities
9. Optimise operations, behaviour, and the built environment
10. Improve evaluation of health and well-being outcomes

5.1 Sense of Place:

We have proposed a landscape design which is distinctive and easily legible by the visitor and responds to the site setting, responding to the architectural treatment of the building with a palette of contemporary aesthetics and quality hard and soft landscape materials. A high-quality durable palette of hard landscape materials such as stone and pre-cast concrete paving and kerbing, wooden seating elements and benches, green-roofed cycle parking shelters and playable sculptures lends the site an immediate sense of welcoming, permanence, and appropriateness.

Tree and transplant planting in the amenity open space sequences will been selected from a primarily indigenous palette suitable for the site setting, and supplemented with appropriate exotic pollinator-friendly trees, shrubs, and flowering perennials.

The planting proposals within the subject site addressing Firhouse Road and Mount Carmel Park will significantly ‘green’ the appearance of these streets. Tree and transplant planting in the amenity open space sequences will be selected from a palette suitable for the site setting and streetscape, and supplemented with appropriate pollinator-friendly trees, shrubs, and flowering perennials. All landscape boundaries have been significantly greened in the design proposals.

The origin of the placename 'Firhouse' originates from the Gaelic phrase '*Teach an Giúise*', meaning the 'House of the Fir'. To recall the upland Fir woodland of old, we propose to plant ground floor area with evergreen native Scot's Pine and multi-stemmed Birch, set amongst rocky granite boulder outcrops.

5.2 Landscape Character in Subject Site Open Space:

Passive recreation has helpfully been defined in an Irish context by Sligo County Council in their development plan as ‘*more passive activities such as strolling, dog-walking and bird-watching*’[17], with active recreation being defined as ‘*active pursuits such as football, basketball,*

[16] ’10 Priorities for Health & Wellbeing’, Arup, October 2018
[17] Pg 102, ‘Sligo and Environs Development Plan’, Section 2: Policies and Objectives

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athletics', etc. CIRIA Open Space states that[18] *'Open space specialists will refer to the recreation of passive and active open space when discussing how spaces are used. Passive spaces refer to elements such as sitting places and areas for enjoying views of scenery and can also include for example places for young people to meet. Active uses encourage physical activities including walking, running, cycling, skating and playing*.'

At this site the approach has been to provide Public Open Space at street level and to provide Communal Amenity Open Space in a sequence of podium roof gardens arranged throughout the development by the architects.

Although each individual site has its own character, aspect, opportunities, and constraints, successful and inclusive landscape design for residential settings should consider and integrate certain key principles in relation to Access, Movement, and Orientation in open space design[19] at an early stage, such as:

- level access to garden areas from communal rooms or private patios, with safe generous balconies at upper floors so that residents can access fresh air, sunlight, and views
- routes through external areas to be laid out in a legible manner, level, and barrier free to promote confidence and independence. Footpaths should be immediately obvious and sign-posted to reduce potential anxiety
- Views of garden spaces, landscape, and green views in general should be maximised
- Clear legible routes and entrances should be provided
- Circular or loop walking routes should be provided that return the resident to their starting point (which do not terminate at 'dead ends')
- Clear navigational markers around the garden and at building margins such as strongly scented plants or garden features; consider including sculptures or memory features to aid wayfinding
- Design external space based on themes and colours which follow an overall design concept to aid orientation
- Introduce paths wide enough for two people to facilitate accompanied access and wheelchair use, with plenty of opportunities to sit and pause along the routes

Design for children and design for the elderly is in essence, design for all. Helpful guidelines which outline appropriate landscape design treatments for the elderly in residential settings have been given consideration in the design here, such as from 'Landscape Design for Dementia Care', which notes that '*the therapeutic benefits of a safe, attractive and carefully planned living environment are well recognised. Access and proximity to external space will enable an older person to maintain an active lifestyle which supports their physical and emotional well-being*.'[20]

The development's block plan arrangement has evolved through a series of design revisions by the architects to open the podium courtyard containing the communal amenity open space to the southerly aspect. This design revision admitted south-westerly sunlight to be admitted into the heart of the development, which will create a comfortable micro-climate for plants and humans. This also meant that the podium level communal amenity open space engages directly with the public amenity open space immediately to the south addressing Firhouse Road. The character and design of the Public Open Space has already been described above.

The sequence of open spaces suitable for landscape amenity design and gathering in the site layout have been outlined and described as below:

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[18] CIRIA (Construction Industry Research and Information Association, a neutral independent and not-for-profit body) Open Space, http://www.opengreenspace.com/opportunities-and-challenges/societal/recreation-space/, accessed September 2021.
[19] 'Factsheet 35 'Landscape Design for Dementia Care', produced for the Housing and Learning Network by Tom Delanty, Associate Director, PRP Architects, July 2013
[20] 'Factsheet 35 'Landscape Design for Dementia Care', produced for the Housing and Learning Network by Tom Delanty, Associate Director, PRP Architects, July 2013

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A. Public Open Space: landscape buffer at lower ground level along Firhouse Road/Mount Carmel Park (public open space, natural SuDS functions, planting privacy buffer, street tree planting and greening)
B. Peripheral open space along the north and north-western boundary, planted with a native species boundary hedge and pollinator-friendly ground cover plants
C. Creche Playspace at ground level, landscaped 'naturally'
D. Communal Amenity Open Space: triangular-shaped courtyard communal amenity open space, designed and detailed to support a 'passive' therapeutic function as a wander route, a place for gathering and socialising, a green view when looked down on from above. Shadier in character than the other garden spaces, so evergreen planting has been specified to the ground cover amenity planting, with feature Scot's Pine trees arranged in a central planter, and Birches and multi-stemmed decorative trees arranged as the perimeter tree planting to evoke the sense of a small forest
E. Communal Amenity Open Space: sequence of roof gardens at different levels throughout the development providing smaller gathering spaces, with pergolas, raised planters and tree planting
F. Communal Amenity Open Space roof garden dedicated to children's play

5.2.1 Communal Amenity Open Space

The 'Sustainable Urban Housing: Design Standards for New Apartments'[21] states the following concerning the provision and maintenance of well-designed communal amenity space: '*The provision and proper future maintenance of well-designed communal amenity space will contribute to meeting the amenity needs of residents. In particular, accessible, secure and usable outdoor space is a high priority for families with young children and for less mobile older people'.*

The Apartment Design Standards go on to state that '*…communal amenity open space may be provided as a garden within the courtyard of a perimeter block or adjoining a linear apartment block…Regard must also be had to the future maintenance of communal amenity areas in order to ensure that this is commensurate with the scale of the development and does not become a burden on residents.'*

The site boundaries have been made secure, and the combination of physical barrier and 'defensive' planting (hedgerows, trees) further screens and secures the boundaries. No access to 'open' water has been provided. The cycle shelters have been specified with an open side to the public open space so that clear views are possible across this area to ensure that people feel safe in the evenings traversing the space.

5.2.1.1 Communal Amenity Open Space – main courtyard Level 01

The central amenity courtyard space in this proposed development should have a gentle and welcoming atmosphere; quiet enough so that intimate conversations can be comfortably had. The courtyard has a nice intimate scale, and the southern half of the courtyard space will have a sunny aspect, making it suitable as a communal gathering space and a green space to be viewed from above. This area is reserved for the use of the residents of the development, however there is a stepped access provided by the architects beside the new café building directly from the public open space for use if required. Boundary treatments to this area have been designed by the architects to control access to the podium.

The communal amenity open space at main podium level is roughly divided into halves; the northern half of the open space being assigned to 'passive' recreation, or as a sequence of

[21] 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)' Department of Housing, Local Government and Heritage, December 2020

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intimate gathering spaces provided with seating to encourage residents outdoors in all weathers. This space is located over the car-park basement roof, and in this area all ornamental planting will be contained in raised planters edged in durable weathering steel.

The podium space also overlooks the lush Dodder Valley Park which forms the north-western site boundary of the subject site, but the views from the park will be substantially screened into the development by the existing mature tree stand, when in leaf.

The remainder of the open space planting is planted strategically with large shrubs and small trees to create a sense of intimacy in the open spaces and to screen views into dwellings with a mix of small multi-stems/large shrubs such as *Amelanchier canadensis* (Serviceberry), *Prunus serrulata* (Birch-Bark Cherry), *Hamamelis intermedia* (Witch Hazel) and *Arbutus unedo*, which will come into flower at different times of the year.

The courtyard garden is landscaped with lush, raised planter beds planted with *Betula nigra* (River Birch) trees, redolent of the upland scrub planting which would have characterised the original landscape of the 'Firhouse' locality. River Birch is more upright than our native Silver Birch, with brown bark and triangular shaped leaves; as a species it has been determined to have resilience in the event of increased temperatures in the next 20-50 years. Birch has a light, open canopy, providing the perfect conditions for grasses, mosses, wood anemones, bluebells, and violets to grow.

Figure 26. *Landscape plan detail of communal amenity open space provided in the podium courtyard.*

The landscape provisions include permeable paving, lighting, raised planter beds edged in weathering steel, an automated drip-fed irrigation system, intensive-type green roof planting and provided with an FLL-compliant build-up. Seating is provided at podium courtyard level at building entrances and in the flexible communal gathering space. We have also provided a fire pit and an external kitchen where barbeques can be accommodated as a focal hub to the function of the communal amenity open space at the main podium level.

Seats have been provided with several options, differing lengths and widths to accommodate different needs, and with back-rests and armrests to ensure that people of the user group can get up and down from the seating easily. L-shaped and straight seats have been provided, to enable

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people to have different types of conversations (women show a preference to sit in an L-shaped arrangement, men in a linear fashion) as well as single seats in case a person wants to signal their desire for solitude.

5.2.1.2 Communal Amenity Open Space – roof gardens at other levels

The landscape design intent for these spaces is to provide 'passive' amenity for residents; and to support that we have provided modular pergolas to each roof garden with retractable awnings for people to enjoy and use the roof gardens year-round. Ornamental multi-trunk evergreen trees (Japanese White Pine), suitable for use on exposed roof gardens will be planted in raised weathering steel boxes to accommodate the growing medium depth they need. Seating has been provided to these roof gardens, enclosed by the biodiverse planting.

Figure 27. *Detail landscape plan of roof gardens and public open space*

Chunky wooden seating elements will warm the texture of the space and introduce sensory appeal into the courtyards. A mix of evergreen and deciduous ornamental grasses and flowering perennials in a 70:30 ratio will encourage people to come outside to the courtyard space and

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socialise. Raised planters edged in warm-coloured weathering steel will bring planting up to people's faces when sitting, so that they feel comfortable and immersed in 'green'. Providing as much verdant green planting as possible will make the space restful and restorative, even when viewed from above.

5.2.3 Young Children's Play

The draft SDCC CDP states that '*children should have access to safe and secure outdoor play opportunities that are accessible from their homes'*, and the Council requires that children's play areas are provided as an integral part of the design and deliver of new residential and mixed-use developments, addressed as part of a landscape plan.[22] Providing consideration in design of issues such as children's 'everyday freedoms', opportunities to play, to meet and make friends, and to support children's[23] independence in choice for their free time has been described as 'children's infrastructure' in 'Designing for Urban Childhoods' by Arup.[24] Children will play everywhere.

Figure 28. *Hammock located along the 3.00m width path in the public open space to encourage children of all ages and abilities to dwell in the public open space area; along with sensory Dog Stroking Stone formed out of concrete*

The National Children's Strategy has as a national goal that '*children will benefit from a built and natural environment that supports their physical and emotional wellbeing'*.[25] It further states that '*a high quality residential environment can facilitate children's play and learning opportunities in a way which goes beyond the facilities offered by playgrounds and other dedicated recreational facilities'*. Things that support children, like sociable streets, squares, good walkability, low levels of traffic - are things we all want in our home neighbourhoods.[26] 'Play Along the Way' makes varied offers of play in the public realm, to create more free open space, and to

[22] '8.7.6 Play Facilities', Chapter 8 'Community Infrastructure and Open Space' and Chapter 13, 'Implementation and Monitoring' of the Draft County Development Plan 2022-2028, SDCC 2022
[23] Kerins (2011) defines children as people aged up to 18 years, and 'young people' as those aged between 12-18 years. All around the garden: a review of Irish Local Government policy on the built environment for children and young people in social housing', Kerins et al, Combat Poverty Agency Working Paper 11/08, August 2011
[24] 'Cities Alive: Designing for Urban Childhoods', Arup, 2017
[25] National Children's Strategy, NCS, Government of Ireland, 2000
[26] Kerins (2011) states that the public built environment for children and young people can encompass: designated public play and recreational places like playgrounds, play areas, parks, community centres, youth cafes and sports grounds and amenities; corridors of activity such as streets, footpaths, cycle paths, open green spaces in housing estates and neighbourhoods; outdoor semi-public space in apartment complexes; public greenways and walkways; and civic spaces like town squares and commercial amenities. 'All around the garden: a review of Irish Local Government policy on the built environment for children and young people in social housing', Kerins et al, Combat Poverty Agency Working Paper 11/08, August 2011

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encourage and support people of all ages and abilities to stay longer. The arrangement of playful features is as follows:

- 'Play-along-the-way' in the public open realm, with sensory interactive contemporary stone sculptures located at nodal points, and concrete 'phones' along the footpath. Wider footpaths and gathering spaces with seating help support and create a playable public open space
- Creche playspace with age, activity and curriculum appropriate play equipment and surfacing at lower ground level
- Dedicated communal amenity open space play for younger and older children located on a dedicated podium roof with age-appropriate high quality play equipment to act as an art feature when unoccupied

5.2.3.1 Play Along the Way in the Public Open Space

Generally, the revised site design approach to the public open space at ground floor or streetscape level has been to detail the 3.00m route through the POS as ‘play along the way’, suitable for people of all ages and abilities. In the public open space addressing Firhouse Road, to the south of the proposed building, we have proposed a sequence of sculptural sensory play features along the new 3.00m width pedestrian footpath through the landscape (in addition to the 2.00m width path along Firhouse Road/Mount Carmel Park). Pedestrians have been given priority in the public open space, co-designed by the transport consultants, the civil engineers, the architects, and the landscape architects.

Figure 29. *'Play Along the Way' sculptural interactive and sensory elements located along the 3.00m width path, to engage and stimulate children of all ages and abilities, as well as giving a strong sense of place. Stainless steel ‘Telephones’ allow people to communicate through underground pipes in the amenity landscape.*

We consider that this pathway route aligns with COS5 Objective 25 of the Draft CDP, ‘to continue to provide innovative play spaces, including sensory play areas and play trails’ in open spaces throughout the county. This 3.00m width playful route contains a range of nature-based play opportunities (amenity planting, boulders) in addition to things like interactive sensory sculptures of natural stone, communication devices which can multi-function as bollards, seating, and hammocks, aligned with COS5 Objective 19 of the Draft CDP.

Our team’s transport consultants have reviewed the detail design of the Public Open Space to align with DMURS and with COS5 Objective 28 in relation to universal design.

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Figure 30. *'Play Along the Way' sculptural interactive and sensory elements located along the 3.00m width path, to engage and stimulate children of all ages and abilities, as well as giving a strong sense of place*

5.2.3.2 Creche dedicated playspace

We have designed a creche amenity open space suitable for children's play ages 0-5, landscaped with high quality wooden toddler table and stools, multi-user 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 curriculum. The area of amenity open space assigned by the project architects to the creche aligns with the standards set out in 'Childcare Facilities Guidelines for Planning Authorities (2001) and the objectives set out in Policy COS7 'Childcare Facilities' of the Draft SDCC CDP.

Figure 31. Play provision in creche playspace, tailored to toddlers and the Montessori curriculum

5.2.3.3 Residential playspace for children in Communal Amenity Open Space

Amenity play provision to meet the Apartment Standards and COS Objective 20 of the Draft CDP has been provided for at upper podium level to ensure a large enough open space to meet the area quanta set out in the Standards.

The provision of play in communal amenity open space has been designed to meet the standards set out in 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities' (Department of Housing, Local Government and Heritage,

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2020). There it is stated that a small (85-100m^2) playspace for younger children, defined as toddlers and children up to the age of six, should be provided in residential developments of this size and scale, as well as a playspace for older children of area 200-400m^2. Such playspaces should have '*suitable play equipment, seating for parents/guardians, and within sight of the apartment building*'. The design standards note 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. The landscape design and orientation of play areas can contribute significantly to their amenity value…'*.[27]

Our team has provided a podium roof area to support younger and older children's play, aligned with the requirements for areas in the Standards. We have selected an 'all-in-one' high-quality play element in natural wood (larch with steel feet) designed to meet EN1176 and EN 1177, suitable for 'multi-user' play simultaneously for the younger children from 3 and above rather than 'single-user' play elements such as swings. We have added inclusive features to a standard catalogue element to ensure that there is playability at ground level for babies and children with disabilities. Seating has been provided in this space so that parents can gather near their children's play offer for passive surveillance.

Figure 32. *Multi-user play equipment for younger children*

Play for older children has been incorporated in a free-form wooden 'Climbing Structure' made of larch posts on steel feet, with a rope nest. This allows older children to clamber, climb or simply lay recumbent. Other play provisions include a telescope and kaleidoscope where children can survey the trees of the Dodder Valley Park bounding the site to the north-west.

[27] 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)' Department of Housing, Local Government and Heritage, December 2020

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Figure 33. *'Climbing Structure 09' for older children, 'Stroking Stone' sculpture for children who don't have a dog*

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6.0 Creating a Child-Friendly Neighbourhood

Urbanist Jan Gehl says that 'First life, then spaces, then buildings - the other way around never works'.[28] Gehl's ideas and work have influenced many towns and cities in how they think about their streets and public spaces. Gehl considers the impact of the car on our public spaces as an 'invasion - filling the voids of our cities' and expresses concerns about the speed of cars and their impact on open space.

Deaths from road traffic accidents are much more prevalent amongst people under 25 than other causes of death in the UK[29]; and air pollution is a major cause of ill-health in our children[30]. Obesity and inactivity levels are increasing in many towns and cities, which may be a side-effect of an increasingly sedentary and car-dependent lifestyles.

The trend in urban design and planning which gave the vehicle priority over the pedestrian and cyclists has resulted in children 'disappearing' from our streetscapes. Research shows that there has been a significant reduction in the amount of time children are playing outdoors and how they independently access their neighbourhoods.

This trend may be caused by a combination of factors such as increasing traffic, perceptions of 'stranger danger', an increased reliance on 'screen-time', and reductions in the quanta of natural and informal places for play. This has had impacts on informal gatherings of older siblings, relatives, and carers, where friendships can begin, and relationships can be nurtured. Efforts were made by groups during the pandemic for 'play streets' to try and address this.[31]

The '95cm City'[32] theory developed by the BvL Foundation's Urban 95 initiative asks urban leaders, planners, designers, and managers to ask themselves: '*If you could experience the city from an elevation of 95cm - the height of a 3-year-old - what would you do differently?*' If a place is safe, clean, and interesting for babies, toddlers, and their caregivers, it likely will work for everyone.

Enrique Peñalosa, former mayor of Bogotá, has said that *'Children are a kind of indicator species. If we can build a successful city for children, we will have a successful city for all people.'*[33] Sam Williams, co-author of Arup study 'Cities Alive: Designing for Urban Childhoods', develops this observation further to express how designing for children can help design successfully for people of all ages and abilities:

'*Children are a great indicator species for urban problems, because they are more vulnerable to traffic pollution, to car accidents. They have less range because they have shorter legs. They don't have any money or income and they can't drive. By designing well for children, what you're really doing is designing well for the most vulnerable in society, whether that the elderly or disabled, or the less wealthy. It's a very equitable approach to design that can fall by the wayside if your focus is on getting 30-year-old commuters from A to B as quickly as possible*.'

Why should we do this? Well, if we can design space that works for children, it's likely that we have designed a space that works for people of all ages and abilities. Being a child-friendly neighbourhood does not simply mean that children are allotted specific places in the area to play and move around in; rather it means that children form a part of the fabric of a place and should be allowed space everywhere to 'be'. It is of vital importance to focus on the needs, features, and

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28 'Life Between Buildings: Using Public Space', Jan Gehl, 1972 and Cities for People', Jan Gehl, 2010

29 'Mortality statistics and road traffic accidents in the UK, AN RAC Foundation Briefing Note for the UN Decade of Action for Road Safety', RAC Foundation, 2017

30 'Air pollution a cause in girl's death, coroner rules in landmark case' https://www.theguardian.com/environment/2020/dec/16/girls-death-contributed-to-by-air-pollution-coroner-rules-in-landmark-case

31 https://playingout.net/play-streets/what-are-play-streets/

32 'Urban 95' initiative developed by the Bernard van Leer Foundation

33 "Cities debate: teenagers talk London, New York, Johannesburg and Rio" by Carlene Thomas-Bailey, www.theguardian.com. January 29, 2014.

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interests of different ages and abilities of people from ages 2-92. Encouraging ‘dialogue’ between spaces and routes is key for successful inter-generational interaction.

We must do our best to help expand children and young people's everyday freedoms, their opportunities to play, to make and meet friends. We must also support them to have independent choices about what they do in their free time, and how they move through the landscape from home to school to play.

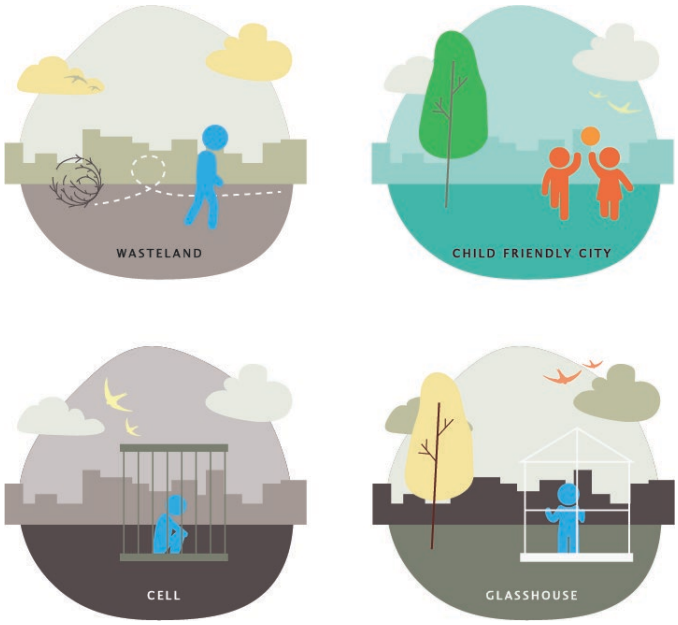

Figure 34. *Characteristics of a child-friendly neighbourhood and quadrant (after Tim Gill)*

6.1 Toolkits for Child-Friendly Planning Principles

Child-friendly planning principles design supports design-for-all, from ages 2-92. Our team’s evolved design for the hierarchy of public and communal amenity open space at the subject site has been influenced and informed by the findings and recommendations of the Rotterdam project and in particular Tim Gill’s recent book on child-friendly cities. Recently towns and cities have begun to try and make their streets and open spaces more welcoming and supportive to children and families. This can mean something as simple as putting in at least 3.00m width paths on the sunny side of the street or integrating slides and hammocks into a streetscape. We took this measure as a point of departure for the evolved design. Researcher Natalia Krysiak notes that at '*the heart of a child-friendly neighbourhood lies the desire to provide children with opportunities to create meaning and a sense of belonging'*. [34] Krysiak identifies six factors that positively contribute to children's health and well-being, including:

1. Access to Nature
2. Social Connectedness
3. Playability
4. Active Mobility
5. Sense of Ownership
6. Agency & Decision-Making

We are happy that the evolved design for the development at Firhouse will achieve these factors and support themes of child-friendliness. Providing consideration in design of these issues has been described as 'children's infrastructure' in the publication 'Designing for Urban

[34] 'Exploring Best Practice for High Density, Child Friendly Neighborhoods', Natalia Krysiak, Cities for Play, May 2020

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Childhoods' by Arup. These are things like compact neighbourhoods, safe and sociable streets, squares, good walkability, low levels of traffic; in short, things we would all want in our home areas.[35]

Play advocate Tim Gill expands on these principles in his 2021 book 'Urban Playground', identifying the 'green' suburb of Vauban in the city of Freiburg, Germany as 'the ultimate child friendly neighbourhood'.[36] Gill believes that by putting children first, we can make better places for everyone. Krysiak identifies a series of design interventions that can be made at the building and neighbourhood scales to positively support child-friendly design. These include measures like playful lobbies and courtyards, consideration for outdoor covered play at the building level; and interventions like car-free neighbourhoods, child-friendly travel routes, playable streets, communal toy boxes, play yards with 'parent salons', communal maker spaces, inter-generational play, and nature play. She notes that access to schools is key, and that childcare should be integrated into neighbourhood designs.[37]

The urban planning method of 'Building Blocks for a Child Friendly Rotterdam'[38], express practical child-friendly planning principles to assist local authorities, housing corporations and project developers in the design of housing neighbourhoods.

- Child Friendly Housing
- Public Space
- Facilities
- Safe Traffic Routes

Pilot studies conducted in neighbourhoods in Rotterdam showed that a focus on child-friendly development was helping keep families in the city. Simple but effective details such as providing a pavement for playing of 3.00 to 5.00m width, preferably on the sunny side of the street, can help support child-friendliness, children's independence, and safe and active traffic routes. Trees in play areas should have seasonal variation and allow potential for climbing. Including details like low walls for sitting, considering front porch or garden areas, can all help support 'liminal' space child-friendliness so that children and adults can meet informally and make friends.

Author and play advocate Tim Gill states that only where you have high levels of children's mobility and a lot of choice of things for them to do, are you in the desired 'quadrant' of a child-friendly neighbourhood.[39] Children's 'mobility' means their ability to get to spaces and facilities, especially independently. Play 'affordances' means the number and type of playable spaces and facilities in a neighbourhood; these don't have to be formal 'playgrounds'.

Gill identifies 10 strategic indicators for a child-friendly neighbourhood

1. I walk to school/local shops without an adult (from age 8).
2. I cycle to school/local shops without an adult (from age 8).
3. I go outside and play within sight of my home (up to age 11).
4. I feel welcome and safe outside, during the day and after dark.
5. I have access to natural green space in my neighbourhood.
6. I have access to an outdoor place in my neighbourhood that is peaceful and quiet.
7. My neighbourhood has lots of trees.
8. I have access to a choice of outdoor places in my neighbourhood where I can meet and spend time with friends and there are fun things for us to do, including places where I can test myself and take some risks.

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[35] 'Cities Alive - Designing for urban childhoods', Arup, 2017
[36] 'Urban Playground: How Child-Friendly Planning and Design Can Save Cities', Tim Gill, RIBA 2021
[37] 'Exploring Best Practice for High Density, Child Friendly Neighborhoods', Natalia Krysiak, Cities for Play, May 2020
[38] 'Rotterdam, city with a future. How to build a Child Friendly City', City of Rotterdam, Youth, Education and Society Department, 2010
[39] 'Urban Playground: How Child-Friendly Planning and Design Can Save Cities', Tim Gill, RIBA 2021

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9. I have access to an outdoor place in my neighbourhood where my extended family and friends can have a picnic.
10. I travel from my own neighbourhood to downtown areas on foot, by bike or by public transport (from age 11).

As a design team we have taken cognisance of the above principles, indicators, and interventions in the revised design for the public open space, and for the communal amenity open spaces contained within the development. The provision of a crèche for younger children contained within the development with a naturalistic curriculum oriented external playspace further supports this. Child-friendly measures such as the new south-facing arcade in the building at ground level, more trees and wider paths (3.00-5.00m width) with seating and play along the way elements have substantially improved the design measures for children of all ages and abilities.

6.2 Recreation and Play for All Ages and Abilities, from 2-92

It's important that we support access and enjoyment of our open spaces for the residents and for people visiting the development, and it's equally important that we support meetings, light exercise, amusement and play of people themselves in landscape design, where we can. 'Play Along the Way' makes varied offers of play in the public realm, to create more free open space, and to encourage and support people of all ages and abilities to stay outside longer.

In the landscape design of the amenity open spaces at this development, we have taken the principle of a 'playable landscape' as a key driver in the layout and sequence of the hierarchy of open space, particularly on the multi-functional 3.00m width 'desire line' path provided at the base of the building in the Public Open Space. This is a place where 'play along the way' happens, where children are welcome to loiter and observe, and which is heavily planted for visual and wildlife amenity as a buffer from the public road. Children will be at home to perch and observe on the south-facing wooden amphitheatre seating located beside the café, overlooking the public open space.

Figure 35. *Interactive playful sculptures located along the playful 3.00m width route through the public open space. Illustrated are a basalt 'Singing Stone' 2.50m in height, to mark the gathering space at the heart of the site at the café, and a granite 'Turning Stone' at the western corner of the site at the entrance to the 3.00m path. Also illustrated is a stainless steel 'Conference', which allows people to communicate via 'ship's telephone' over distances when installed in pairs.*

This area has been occupied with high-quality wooden play equipment like a gently swaying Hammock in addition to more durable interactive stone sculptures and steel and concrete communication play elements. As such, sensory sculptures and exercise equipment are not

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within the scope of the harmonised normative standard EN 1176 ‘Playground Equipment and Surfacing’, it is not subject to the requirement of that standard, however, where appropriate, it should be complied with in design and detail of equipment. The equipment for this project has been selected with inclusive design and 'play-along-the-way' principles as a priority to encourage the elderly or people with rehabilitation issues to engage in gentle exercise, and to provide play opportunities to encourage young children to dwell longer and feel welcome.

Figure 36. *Playful public realm: tree trunk logs purposed as informal seats, boulders, and hammocks in vegetated strips on the streetscape. MUF/Studio Falaj, King’s Crescent housing development, Hackney, London*

It is important that we design our external environments to support gentle exercise such as walking in green environments, observation of nature and green space and consequent reduction of stress. Providing outdoor furniture such as seats, benches and picnic sets supports meeting outdoors and the reduction in transmission of viruses such as Covid-19.

Play can also encompass meeting friends. To that end we have dedicated the main communal amenity gathering space at the podium level for this function, with an outdoor kitchen provided there for the use of the residents. A dedicated play space for the site creche is located within the site, to support and enhance the functions of the creche. This area is secured by a security mesh post-and-panel fence and provided with high-quality wooden play equipment for children aged 1-5 to meet EN 1176, surfaced with natural loose-impact attenuating safety surfacing to EN 1177 such as bark, which has inherent play value. Dedicated play spaces for younger and older children to meet the requirements of the Apartment Standards are provided at upper podium roof gardens.

6.3 Inclusivity and Universal Design

We have designed a landscape scheme with a clear hierarchy of quality materials, easy to way-find through in terms of legibility 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, ‘Building for Everyone’[40], BS8300:2018 ‘Design of an accessible and inclusive built environment’[41], and the new EN standards on inclusive design in the built environment.[42]

[40] ‘Building for Everyone, A Universal Design Approach’, Centre for Excellence in Universal Design, 2012
[41] BS8300:2018 ‘Design of an accessible and inclusive built environment’, BSI, 2018

[42] I.S. EN 17210:2021&LC:2021: ‘Accessibility and usability of the built environment - Functional requirement’

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A universal design approach has been used in terms of the landscape design, with clear legible routes provided in and through the open spaces, generous seating areas and wider paths suitable for trafficking by wheelchairs and buggies. 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 people.

Materials have been chosen with a consideration for people with health issues and disabilities. Elderly people in particular show a preference for partial shade conditions to relax in because of visual acuity difficulties inherent with aging, and because of common skin sensitivities to sunlight often brought on by medications. Such skin sensitivities are particularly endemic in those undergoing treatments such as chemotherapy and radiation.

We have also avoided strong tonal contrast in surface finishes as the elderly especially are often particularly sensitive to bright light and glare from shiny surfaces and may mistake a change in tone or colour for a step. This issue also presents a difficulty for children with visual impairments in play areas (sharp colour contrasts in surfacing for instance, glare from highly polished surfaces). We have specified recessed paving covers in pedestrianised areas rather than standard utility access covers which can often be mistaken by people with visual difficulties as holes in the ground.

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7.0 'Hard' Landscape Materials

The use of durable, hard-wearing quality materials such as natural stone and pre-cast concrete will reduce the maintenance requirements of the development, as will the specification of a high proportion of indigenous and naturalised plants, which establish easily. The selection of 'hard' landscape materials (boundary treatments, paving, seating and picnic sets, architectural street lighting, cycle parking and shelters) has been determined by reasons such as aesthetics; clear hierarchy of materials; legibility and wayfinding; quality and durability; functionality (such as requirement for permeability in paving materials); sustainable sourcing, fabrication, and life-cycle functions.

7.1 Boundary Treatments

7.1.1 Podium Screen & Gate

To create a distinct separation between the public open space at street level and the communal amenity open space at first floor podium level, and to control access to that area, the architects have designed a screen at the top of the amphitheatre-seating near the café and a gate system to the top of the stairs access.

7.1.2 Ground Floor Residential Landscape Privacy Buffers

The 'Sustainable Urban Housing: Design Standards for New Apartments' states the following concerning privacy strips '*where private and communal amenity open space may adjoin each other, there should generally be a clear distinction with an appropriate boundary treatment and/or a 'privacy strip' between the two'*.

'Own door' duplex dwellings have been provided at ground floor level along Mount Carmel Park in the revised architectural design. These have been provided with a landscape privacy buffer between their windows, private amenity patio spaces and the 2.00m width public footpath provided along the street.[43] Comprising a planter of amenity ornamental planting, such a landscape buffer can mature to screen views into the dwellings' windows and patios and create a sense of privacy.

7.1.3 Estate Railing and Hedgerow to define Public Open Space

We have proposed a simple estate railing type steel fence to define the edge of the public open space to the south and west of the new development's elevations to the R114 (Firhouse Road) and Mount Carmel Park, along the 2.00m public path. Backed by a formally clipped Hornbeam hedgerow, this estate railing boundary treatment will create an attractive border to the public realm. Hornbeam holds its foliage during the winter months and is a hardy hedging plant.

[43] landscape 'privacy strips' of 1.50m width to be provided to ground floor apartments located adjoining the back of a public footpath, 3.4.1 'Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act, 2000 (as amended)', DoHLGH, December 2020

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Figure 37. *Painted estate type railing to 1.20m ht, with a clipped formal hedgerow of naturalised Hornbeam behind it, to buffer the amenity space from the noisy public road*

7.1.3 Creche and peripheral open space security fencing

To secure the creche site and the peripheral open space buffer along the north-eastern boundary we have specified a proprietary mesh post-and-panel fencing system (min. 2.00m height). This fence will be planted on the creche side with native and naturalised transplant hedgerows, which will mature to form a dense screen and can be clipped in this location to 2.00m height to match that of the fence. The boundary fences will be detailed with regular 130x130mm gaps to ensure nocturnal commuting animals such as hedgehogs can pass through and along the new wildlife corridors of the hedgerows on the subject site.

Figure 38. *Mesh post and panel fencing, with native species hedgerow to secure the creche external areas and the peripheral open space. Proprietary gates available with this system, 'Kilbarry' v-crimped security fence by Irish Fencing Services. North and north-western site boundaries to be planted with a shade-tolerant mixed native transplant hedgerow which can be clipped to a neat form but will provide food and habitat for commuting wildlife. Hedgehog doors (130x130mm) to be provided in fencing at regular intervals.*

7.2 'Hard' Landscape Palette:

Hard materials specified include durable in-situ concrete treated with an exposed aggregate retarder, granite paving in random widths and gauged length slabs and textured setts, pre-cast

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concrete slabs, golden-coloured self-binding gravel, chunky wooden seating elements with a variety of widths and provided with occasional backrests and armrests for comfort.

Permeably sub-based paving has been specified to pedestrian areas and the public open space in general by the consulting project engineer. Durable SMA macadams and granite paving have been specified to vehicular access areas, with entrances or footpaths in those areas highlighted with a granite sett channel, and coloured aggregates used in the mix laid in pedestrian areas to highlight to vehicle-users the primacy of the pedestrian and cyclist.

***Figure 39**. In situ concrete paving treated with an exposed aggregate retarder to 2.00m width path along the public road; durable picnic sets, benches and seats provided through the public and communal amenity open space*

***Figure 40.** Permeable paving of grass-pave ('Redes' by Escofet) and golden coloured self-binding golden gravel*

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Figure 41. *HRA asphalt used to distinguish vehicular surfaces at ground floor level; permeably detailed golden coloured granite elsewhere in the public open space, including to tactile hazard warning surfaces, kerbs, footpaths, and shared space circulation areas*

Lighting elements to illuminate the communal amenity open space have been selected from the 'City Elements' and 'Residenza' family of lighting furniture by Hess, which with their simple cylindrical forms integrate well into a wide variety of 'pedestrian-scale' environments. This lighting post can be combined with CCTV, water and power points, and WiFi provision. When used near a dwelling, the luminaire can be fitted with a directional 'house-guard'.

Figure 42. *Hess 'Residenza' and 'City Elements' system used to illuminate Communal Amenity Open Space. Lighting to the public realm has been designed and detailed to meet the relevant standards by the consulting project electrical engineer.*

Artistic and sensory-rich 'play-along-the-way' playable features have been accommodated as a key theme in the landscape design to support local and national policies on play[44] to develop a 'child-friendly community'. 'Signal' distinctive and attractive sculptural elements have been located at nodal points throughout the sequence of open spaces to help people way-find, e.g.,

[44] 'All around the garden: a review of Irish Local Government policy on the built environment for children and young people in social housing', Kerins et al, Combat Poverty Agency Working Paper 11/08, August 2011

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with a 2.50m height basalt ‘Singing Stone’ and a complementary granite ‘Turning Stone’ located to landmark the eastern and western pedestrian site entrances of the proposed development.

7.3 Green-Roofed Cycle Shelters:

We have provided 4 green-roofed cycle shelters '8x Bike Shelter' by Green Roof Cycle Shelters UK in the public open space, and in the creche external area, which can accommodate 8 no. cycles parked in each. In total this provides 48 no. secure and covered cycle parking spaces in the landscape at ground floor level (in addition to the short-stay cycle parking provided in the public open space). Each cycle shelter has dimensions of 3.70x2.25x2.00x2.078m LxHxWxD and provides cycle parking for 8 no. cycles on 4 no. Sheffield-type cycle stands.

The chosen cycle shelters with green roofs and wildlife panels have been selected to provide substantial greening at the site, reduce the impact of stormwater, and present an attractive appearance. Details like a min. 150mm depth green roof growing substrate to create a substantial ‘bio-diverse’ type green roof; pollinator-friendly planting suitable for a roof; external wildlife panels for solitary bees and invertebrates; and bird nesting boxes are provided in these unique cycle shelters.

We propose to provide FSC timber cladding to three sides of the shelters in the secure creche space and have open sided shelters in the public open space to ensure clear views so that people, especially women, feel safe and comfortable traversing the public open space at night.[45]

Figure 43. *Open sided green roof cycle shelters with Sheffield type locking stands provided in the public amenity open space and in the creche secure external area*

The green roof planting will be visible to residents at head-height and will present a green planter bed when viewed from above. The shelters themselves are robustly detailed galvanised structural steel with an average of 55% recycled steel content, incorporating reused and recycled materials, and arrive planted and complete to site, ready for immediate installation on a pre-prepared base. Optional extras such as LED lighting, provision for mobility scooters and cargo bikes, or amendments to the shelter to be used as a rain shelter are possible. These cycle shelters are easily convertible to provide storage for mobility scooters, seating or as use as a visitor's rain shelter, should the cycle parking not be required in future by the end-user.

[45] Ref ‘Safety’ in public open spaces, objectives and policies as set out in 8.7 of the Draft SDCC CDP

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8.0 'Soft' Landscape Materials:

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. We have prepared a detailed Planting Plan and Planting Schedule which indicate species, varieties, quantities, sizes, root-ball presentation of trees, and plant spacings. The planting hierarchy and planting palette uses both native planting and non-native plants to create a resilient planting palette which will establish easily, requiring reduced maintenance and management; absorbs rainwater run-off; is visually appealing; stimulates the senses; compensates for felled or removed existing vegetation; enhances biodiversity, creates wildlife corridors and is pollinator friendly.

The origin of the placename 'Firhouse' originates from the Gaelic phrase '*Teach an Giúise*', meaning the 'House of the Fir'. To recall the forest of old, we propose to plant groves of evergreen native Scot's Pine, and multi-stemmed Birch, set amongst rocky granite boulder outcrops. This should support the creation of a distinctive sense of place at the subject site.

Landscape planting has been used to bridge one landscape 'character area' to another, creating another layer to the sequence using focal element trees such as Scot's Pine and Sweetgum, ornamental multi-stemmed trees such as Arbutus and Amelanchier, dense groundcovers of ornamental grasses and ferns, and herbaceous flowering perennials and bulbs.

Generally, planting has been used to:

- respond to relevant policy and objectives of the development plan create and structure open space in the landscape plan
- to improve the ecological provision at the site, and for screening to views
- to create an attractive appearance to the open spaces
- to provide a planted privacy buffer to dwellings at ground floor level; to create a 'defensible' backdrop to seating and open spaces
- to support a multi-functional green infrastructure network and biodiversity policies and to supplement natural SuDS elements[46]
- to support pollinators
- and to guide and direct the movement of people with a mix of trees, bulbs, herbaceous planting, ornamental grasses, clipped and loose hedgerows.

We have prepared a detailed Planting Plan and Planting Schedule which indicate species, varieties, quantities, sizes, root-ball presentation of trees, and plant spacings. We have also prepared a supporting Green Infrastructure plan diagram which identifies GI measures we have taken as part of the landscape design.[47]

The planting hierarchy and planting palette uses both native planting and non-native plants to create a resilient planting palette which will establish easily, requiring reduced maintenance and management; absorbs rainwater run-off; is visually appealing; stimulates the senses; enhances biodiversity, and is pollinator friendly. Native planting has been prioritised in the planting palette and schedule, with exotic species chosen for their habit, form, aesthetic qualities, appropriateness, and pollinator friendly characteristics.

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[46] Overarching policy objective of 'Green Infrastructure', Chapter 4 of the Draft SDCC CDP, 2022-2028, to 'protect, enhance and further develop a multifunctional GI network, using an ecosystem services approach, protecting, enhancing and further developing the identified interconnected network of parks, open spaces, natural features, protected areas, and rivers and streams that provide a shared space for amenity and recreation, biodiversity protection, water quality, flood management and adaptation to climate change'

[47] GI1 Objective 4, Chapter 4 'Green Infrastructure' of the draft CDP, 'to require development to incorporate GI as an integral part of the design and layout concept for all development in the County including but not restricted to residential, commercial and mixed use through the explicit identification of GI as part of a landscape plan, identifying environmental assets and including proposals which protect, manage and enhance GI resources providing links to local and countywide GI networks'

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Forestry 'transplants' and 'whips', and feathered trees other than evergreens, may be planted between November and March inclusive. Root-balled evergreens may be planted in October or in April/May. Planting shall normally be carried out during the period from November to March inclusive, called the 'planting season', in suitable open weather. Containerised plants may be planted throughout the year provided the weather is considered suitable, the soil is sufficiently moist, and each plant is watered following planting. Planting outside the specified planting period will only be permitted in exceptional circumstances at the discretion of the Landscape Architect. To ensure development of the visual screen planting to the boundaries it is intended to plant prepared beds at the first available planting season.

It is intended to complete the planting works at the start of the first available planting season following the development works. The landscape contractor will be responsible for all maintenance and replacements during the first two years after the completion of planting to ensure that plants are replaced if failure occurs, is removed, dies, or becomes seriously damaged or diseased. The planting shall be maintained and managed until successful establishment occurs. Thereafter a landscape contractor will be appointed to carry out annual maintenance of the soft landscape.

At EU level, regulation is changing to try and reduce the use of glyphosate and other herbicides in areas frequented by the public, with recent decisions by the European Commission stating that herbicides should be minimised in public spaces for hygiene, public health, and biodiversity reasons.[48] Landscape management should be undertaken in an herbicide- and pesticide-free approach, excluding all use of glyphosate, e.g., by 'leaving space for wildlife', mechanical methods or hand-weeding, suppressing weeds by the maintenance of mulch toppings in planter beds (e.g., sand, gravel, bark mulch), mowing and strimming, thermal control with hot water or foam on paving. Hot water and foam have also been shown to be effective on controlling invasive species such as Japanese Knotweed and Giant Hogweed.[49]

8.1 Trees in the Landscape

The Design Manual for Urban Roads and Streets (2019) outlines how street trees are an integral part of street design as they can contribute to a sense of place, provide enclosure, act as a buffer to traffic noise and pollution, and help calm traffic. DMURS considers tree planting an integral part of street design.

- Larger trees, with a canopy spread of greater than 6.00m, should be proportionate to the street reserve, and are best suited for wider streets such as Arterial and Link Streets
- Smaller trees, with a canopy spread of 2.00-6.00m, are best suited to Local Streets
- Smaller species may be more appropriate where buildings are near a street edge carriageway
- Larger species may be desirable within suburbs, to enhance the greener character associated with these places

In selecting trees, we have had cognisance of the following publications:

- British Standard 5837:2012 'Trees in relation to Design, Demolition and Construction – Recommendations', 2012 BSI
- British Standard 8545:2014 'Trees: From nursery to independence in the landscape – Recommendations', 2014 BSI
- 'The Risk Limitation Strategy for Tree Root Claims', 2008 London Tree Officers Association

[48] GI Objective 10, Chapter 4 'Green Infrastructure' of the Draft CDP 2020, states that 'To enhance biodiversity and the health of pollinator species by banning the use of glyphosate in or close to public parks, public playgrounds, community gardens/allotments and within residential estates, whether by directly employed Local Authority staff or private contractors.'
[49] 'Alternatives to Herbicides: A Guide for the Amenity Sector', Pesticide Action Network UK, January 2021.

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- 'Trees, Forests and the Law in Ireland' 2004, McHugh, D and Gallagher, G, COFORD
- 'Common Sense Risk Management of Trees. Guidelines on trees and public safety in the UK for owners, managers, and advisers', 2011, National Tree Safety Group, Forestry Commission, Edinburgh
- 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees National Joint Utilities Group', 2007 NJUG Publications Volume 4
- 'Trees in Hard Landscape – A Guide for Delivery', 2014, Trees and Design Action Group
- 'Trees in the Townscape: A Guide for Decision Makers', 2012, Trees and Design Action Group
- 'Amenity Trees and Woodlands, A Guide to their Management in Ireland', 2010 Tree Council of Ireland

Tree species have been selected with the aim of supporting and enhancing the somewhat sylvan landscape character of the subject site setting. Tree species in general have been selected based on their appropriateness for local soil, conditions and microclimate, longevity, and biodiversity. Individual trees as well as copses are proposed to mitigate for the removal of existing trees and vegetation, improving species mix, and the proportion of indigenous species.

Street or roadside tree planting has been shown to absorb pollutants, converting toxic air from vehicle emissions (carbon monoxide, volatile organic compounds, nitrogen oxides and particulate matter) into oxygen and other useful gases. Studies show that a barrier created by street trees and other lower-level planting such as hedgerows can more than halve the level of pollutants on the other side of a barrier, protecting areas of open space. Different species of tree have different net effects on air quality. Tree planting can also help flood protection measures, with studies indicating that they can absorb the first 30% of precipitation through leaves, and a further 30% absorbed into the ground and taken in by their root structure.

8.1.1 Tree planting proposals at the subject site

We have specified a resilient tree planting palette which responds to a clear hierarchy of open space within the development, as well as relevant green infrastructure and biodiversity policy. Our palette contains a mix of native and non-native trees to best respond to predicted temperature increases because of climate change over the next 50 years as well as 'Right Tree, Right Place':

- Feature trees such as native Scot's Pine are found near the site and such trees create instant impact and provide year-round greening and habitat for wildlife. The location of proposed trees has been considered to avoid underground services and attenuation tanks. Pines provide suitable locations for bird boxes to be affixed.
- Semi-mature trees such as *Liquidambar styraciflua* 'Fastigiata' are planted as street avenue trees at 7.50m centres in the public realm areas of the development along Firhouse Road and Mount Carmel Park, provided with constructed SuDS tree pits where services permit. This tree species has been identified by Sheffield University as having particularly strong resilience to predicted temperature increases over the next 50 years caused by climate change.
- In the communal amenity open space of the central courtyard, we have specified *Betula nigra* (River Birch). Birch has a light, open canopy, providing the perfect conditions for grasses, mosses, wood anemones, bluebells, and violets to grow. It can provide food and habitat for more than 300 insect species.
- 'Privacy buffer' planting of large shrubs and small trees, such as to the planter beds in the amenity open space; create a sense of intimacy in the open spaces; and to screen views into dwellings with a mix of small multi-stems/large shrubs such as *Amelanchier canadensis* (Serviceberry), *Prunus serrulata* (Birch Bark Cherry), *Hamamelis intermedia*

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(Witch Hazel) and *Arbutus unedo* (Strawberry Tree, native), which will come into flower at different times of the year. These trees and shrubs are mixed native/exotic for aesthetic, wildlife, and climate resilience reasons.

Figure 44. *Liquidambar styraciflua 'Fastigiata', planted as an avenue along Firhouse Road/Mount Carmel Park; Pinus sylvestris planted as a focal native evergreen large tree, to imbue a sense of place; River Birch for its climate resilience*

Figure 45. *Multi-stemmed varieties of Amelanchier, Hamamelis and Arbutus unedo to enliven planter beds*

As per 'SDCC Open Space and Landscaping Pre-Planning Guidance'[50], the electrical engineering consultants OCSC have paid consideration to the positioning of lighting standards and the finalised locations of trees and lighting poles in the public realm are shown on the landscape plan. Street trees are narrow crowned or fastigiate species, and tree trunks have been located 5.00m away from proposed streetlights in accordance with SDCC's Management Tree Policy.

[50] 'SDCC Open Space and Landscaping Pre-Planning Guidance', SDCC, September 2017

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8.2 Hedgerows in the Landscape:

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. The landscape management and maintenance schedules and specifications accompanying this report outline planting, establishment, and maintenance principles for hedgerows, and include guidance from Kilkenny County Council's excellent guidance document 'Managing Your Hedgerows'[51], Teagasc's information leaflets on hedgerows and hedgerow management[52], and the Heritage Council's 'Conserving Hedgerows' advice on hedgerows[53].

The 3.30m vegetated strip between the building and the north-eastern boundary has been planted with a mixed primarily native species hedgerow transplant, to develop as a small urban 'Miyawaki' native mini woodland measuring approx 193.00m^2 in area to align with policy objectives.[54] This 'peripheral' open space area does not form part of the formal open space calculations but has been provided to create a distance from the existing trees on the adjacent Dodder Valley site.

Figure 46. *Desired character of 3.30m vegetated strip with native hedgerow, ferns, and bulbs; non-native species like Lilac have been added into the mix for their positive impact for wildlife and for stimulating the sense of smell*

Some 'non-native' but naturalised transplants have been added into the hedgerow transplant mix such as Lilac *Syringa vulgaris* and Field Maple *Acer campestre* because of their proven benefits for wildlife. Climbing plants often found in hedgerows such as Bramble, Ivy, Honeysuckle, and Rose have been added into the quantified Planting Schedule mix as these plants are key nectar and pollen sources in summer and autumn.

[51] 'Managing Hedgerows', Derbhala Ledwidge Heritage Officer, Kilkenny County Council, 2014.
[52] https://www.teagasc.ie/environment/biodiversity--countryside/farmland-habitats/
[53] 'Conserving Hedgerows', prepared by the Heritage Council and Local Authority Heritage Officers
[54] GI1 Objective 1 of Chapter 4 'Green Infrastructure' of the Draft CDP, 'to establish a coherent, integrated and evolving GI Network across South Dublin County with parks, open spaces, hedgerows, trees including public street trees and native mini woodlands (Miyawaki-Style), grasslands, protected areas and rivers and streams and other green and blue assets forming strategic links and to integrate and incorporate the objectives of the GI Strategy throughout all relevant land use plans and development in the County'

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8.3 Amenity Landscape Planting:

The planting hierarchy and planting palette will use both native planting and non-native plants to create a resilient planting palette which will establish easily, require reduced maintenance and management; absorb rainwater run-off; has good visual aesthetic appeal; stimulates the senses; enhances biodiversity, and is pollinator friendly. We have specified container-grown plants to the amenity planter beds with a diverse mix of ornamental grasses, bulbs, corms, ferns, ground-cover plants, sedums and flowering perennials of both native cultivars and exotic species to ensure a pollinator-friendly planting mix in line with the 'National Pollinator Plan' and SDCC's 'Biodiversity Action Plan'. Such plants should establish quickly requiring minimised maintenance.

Figure 47. *Stepping stone playful route through natural SuDS design, Mellenrummet, Denmark, and Skt Kjeld's Park, Copenhagen (BOGL and SLA)*

'Low' planting has been used to create 'sub-spaces' within the landscape, for visual screening, for defensible buffer spaces, visual and amenity interest, ecological and SuDS reasons. Planting is layered in bulb, groundcover, and clipped hedge arrangements such as Hornbeam, as well as loose native species hedgerows along the north-eastern site boundary.

Ornamental grasses and their cultivars are excellent at stormwater 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.

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Figure 48. *Skt Kjeld's Park in Copenhagen is a multi-functional public open space that combines recreation and natural SuDS. The space used to be entirely surfaced in road and car parking and now provides a valuable green resource for people and wildlife*

Figure 49*. Green roof plantings at the Barbican, London*

We have proposed ecologically supportive and pollinator-friendly mixes of evergreen and deciduous perennial plants and shrubs, groundcovers, 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 development 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.

8.4 'Green-Blue' Roofs:

Each 'green' roof can introduce a piece of nature and a recreational space for people (and wildlife!) to enjoy. A significant design evolution from the originally submitted Pre-App scheme, as informed by SDCC's comments and the ABP opinion, is that all roofs have now been detailed by PHM Consulting as 'green-blue', to attenuate stormwater. Green roofs can:

- Help reduce urban heat island effects
- Create habitat for flora and fauna in an area that could otherwise be empty
- Aid biodiversity, encouraging a wider spread of species

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- Reduce the risk of flooding by soft landscaping retaining large proportions of rainfall and reducing rainwater run-off (SuDS); and store it in 'blue' roof layers
- Blend a building into its surrounding and partly replace a permeable land surface lost to building works
- Remove or reduce pollutants by vegetation reducing gaseous pollutants and dust particles.
- Protect waterproofing layers from UV damage and thermal movement

A 'blue roof' is a sustainable drainage method designed to attenuate and manage stormwater on a flat roof over a 24-hour period via a restrictive flow outlet. Such a roof is designed to slow the release of rainwater into the drainage system and to discharge the water completely over a 24-hour period. A blue roof typically attenuates up to 120mm of stormwater, and the outlets give predicted rainwater discharge rates.

Green roofs have been provided at several levels in the design; to the covered cycle shelters in the streetscape at Level 00 and to the café directly addressing this space; to the 'intensive' type raised planters in the podium courtyard at Level 01 which contain trees, multi-stemmed shrubs, grasses, groundcover, and flowering perennials; and to the roof gardens at upper levels which support ‘extensive' and 'intensive' type bio-diverse roof plantings.

***Figure 50**. Biodiverse roof with mounded topography, deadwood piles, gravel areas and larger-depth substrate amenity planting*

8.4.1 Intensive Green Blue Roof to Podium Courtyard CAOS

An 'intensive' type of green-blue roof is specified for landscape reasons at the main podium courtyard roof. Such a roof often comprises a mix of lawn, perennial plants, shrubs, and trees. It requires regular watering and often a drip-fed irrigation system, and the depth of the substrate usually varies between 150-400mm, with greater depth or mounding required for trees. The weight of the roof varies between 180-500kg/m depending on the depth of substrate. Such intensive green-blue roofs should have the following properties

- Fully FLL and GRO compliant system
- System weight, typically 400 kg/m²
- Height of system typically 400mm depth
- Plant selection is bespoke to the project and can include native species vegetation.

The build-up to intensive green-blue roofs is as follows:

1. **Vegetation**: ornamental grasses, flowering perennials, shrubs, and trees

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2. **Biodiverse Substrate:** Lightweight growing medium intensive type substrate by Bauder or equivalent approved manufactured to FLL guidelines, min. 300mm deep.
3. **Filter fleece**: polypropylene fleece to prevent substrate fines from entering the drainage layer
4. **Drainage Layer: '**DSE60' or equivalent approved water storage and drainage layer infilled with Mineral Drain
5. **Protection Layer:** 'FSM 1100' by Bauder or equivalent approved to prevent mechanical damage to the waterproofing system.
6. **Waterproofing:** to architect's design detail and specification, to be specified with root-resistant properties

Each green roof space shall have a water connection for a drip-fed automated irrigation system and mains tap connection for watering during droughts. Main contractor to supply 20mm ø water supply, 20mm ø water supply location and tank to M&E consulting engineer's design detail and specification.

8.4.2 Biodiverse green roof over Blue Roof System

This type of biodiverse green-blue roof is designed to incorporate as many types of habitats as possible giving a home and food source to invertebrates and pollinators which are in turn food for many birds and bat species. Sufficient depth to accommodate occasional dwarf Pine trees on the upper roof gardens, *Pinus parviflora* 'Glauca', has been provided in weathering steel boxes to contain the trees, their roof anchoring systems, and the greater depth of growing medium they require.

Biodiverse green-blue roofs have the following properties:

- Fully FLL and GRO compliant system, to comply with BS 6229:2018
- Overflow outlets designed in accordance with BS EN 12056-3:2000
- Plant selection is bespoke to the project and can include native species vegetation. The roof is typically sown or plug-planted with a broad range of plant species.
- Build-up (excluding waterproofing and vegetation) typically 295mm
- Fully saturated (excluding waterproofing and vegetation) weight 207kg/m²
- Growing medium substrate to BS 8616
- Additional habitat features such as dead wood piles, stone/sand piles and dewponds can be incorporated into the design
- Provide 2 no. external taps per roof for watering during times of drought

Figure 51*. Pinus parviflora 'Glauca' is particularly suitable for high roof gardens*

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The build up to bio-diverse extensive green-blue roofs is as follows:

1. **Vegetation**: native seed and plug mixes used in combination with other habitat features
2. **Biodiverse Substrate:** Lightweight growing medium extensive type substrate by Bauder or equivalent approved manufactured to FLL guidelines, typically 150mm deep.
3. **Filter fleece**: polypropylene fleece to prevent substrate fines from entering the drainage layer - 1mm deep
4. **Drainage Layer: '**DSE40' or equivalent approved water storage and drainage layer infilled with Bauder Mineral Drain
5. **Drainage Void Former:** 'Attenuation Cell 100' 100mm thick multi-directional drainage layer by Bauder, which can hold 95L/m² (95% void space)
6. **Protection Layer:** 'FSM 1100' by Bauder or equivalent approved to prevent mechanical damage to the waterproofing system.
7. **Flow Restrictor:** 'Bitumen Blue Roof Flow Restrictor and 'ALY 250' Inspection Chamber
8. **Emergency Overflow:** 'Parapet Emergency Overflow DN 70' fitted through parapet wall to drain perimeter vegetation barrier of pea gravel to act as a 'tell-tale' of the level of water on the roof
9. **Waterproofing:** to architect's design detail and specification, to be specified with root-resistant properties

Figure 52. *Biodiverse green-blue roofs. All roof penetrations such as rooflights or AOVs, as well as roof perimeters, should have a 300-500mm wide gravel strip to act as a firebreak*

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9.0 Sustainability and Biodiversity

Sustainable development has been defined by the UN as development which 'meets the needs of the present without compromising the ability of future generations to meet their own needs'.[55] The work of landscape professionals is intended to connect people, place and nature so can help contribute to reducing built environment impacts on climate change and biodiversity loss.

The project consulting ecologist (Billy Flynn, Flynn Furney Environmental Consultants) and an arborist (Charles McCorkell Arboricultural Consultancy) have been appointed to prepare reports which describe the existing flora and fauna at the site and have been consulted at length on the project development, so to ensure that the optimum advice has been obtained from them and incorporated in the submitted team design.

As noted by the project ecologist and arborist in their individual reports, there is little extant planting in the red line boundary of the subject site as it is mostly paved with an extensive carpark. We have considered the impacts for biodiversity at the earliest possible stage of the design of this project, to limit and avoid negative impacts on adjacent sites, particularly the stand of existing vegetation outside the north-eastern site boundary in Dodder Valley Park.

Our landscape design approach in relation to biodiversity at the subject site has been to adopt the nature-based solutions and approaches outlined below to provide substantial 'Positive Impacts' as suggested by the SDCC 'Biodiversity Action Plan', meaning where new development offers '*the potential to create, restore or enhance habitats within a particular area or site'*.[56]

The word biodiversity itself is an amalgamation of the words 'biological' and 'diversity'. The local biodiversity action plan for South Dublin County Council identifies several issues which can impact on biodiversity in relation to the subject site, such as:

- Loss of habitats
- Habitat fragmentation
- Loss of ecological connectivity
- Disturbance to species
- Impacts on air and water quality
- Spread of alien invasive plant and animal species
- Cumulative impacts of the above
- Positive Impacts.[57]

9.1 Nature Based Landscape Solutions at the Subject Site

There is a difference between 'adaptation to climate change' and 'climate resilience'. Adaptation refers to any action that responds directly to climate change; resilience refers to a system's internal potential to adapt. As such, climate 'interventions' typically fall into one or two strategic categories: mitigation and adaptation. We have adopted the following strategies in the design of the landscape solutions at the subject site:

- Employing nature-based solutions (green and blue infrastructure) rather than engineered solutions
- Specifying materials in the design stage to shift the construction to more sustainable, low-carbon materials and practices and locally sourced products where possible
- Using recycled, salvaged, or sustainably manufactured and procured materials
- Specifying plant species that are grown locally, reducing air miles on plant inputs

[55] 'Our Common Future', Brundtland Commission Report for World Commission on Environment and Development (WCED), 1987
[56] 'Biodiversity Action Plan 2020-2026, 'Connecting with Nature', South Dublin County Council, 2020
[57] 'Biodiversity and the Planning Process – Guidance for Developers on the Management of Biodiversity Issues in the Planning Process', South Dublin County Council, 2017

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- Enabling non-vehicular 'active transport' such as walking and cycling
- Designing for accessibility and inclusivity, ensuring ease of active transport
- Specifying 'living' (green, blue and/or brown) roofs
- Managing soils and ground-cover vegetation as 'carbon sinks' – avoiding soil-sealing with hard surfaces where possible
- Planning, planting, and managing forest, woodlands, and street trees to support nature-based carbon sequestration, and urban green infrastructure
- Using natural sustainable urban drainage systems
- Planting and managing appropriate, drought-tolerant plant species
- Considering biosecurity issues in adopting responsible practices in the specification and sourcing of plant materials
- Designing urban public realm to include green infrastructure, water-sensitive design and reduce excessive heat

All these considerations and relevant policy objectives have been integrated with the proposed natural SuDS design for the subject site, which has evolved as an iterative process between the project landscape architect and the civils engineer.[58] New planting of native species hedges, particularly along the north-eastern boundary of the site at the base of the existing wall with Dodder Valley Park, will act as a mini-linear woodland and ecological corridor for wildlife, supporting their food, habitat, and commuting. More and larger-sized SuDS tree pits have been provided in the amenity planter beds which address Firhouse Road/Mount Carmel Park by the consulting civil engineers and landscape architect. Intensive and extensive type bio-diverse 'green blue' roofs have been provided by the architects and consulting engineers through the development at different levels.

We hope that the SuDS spaces will act as biodiverse islands or 'service stations' as envisaged in the SDCC Design and Evaluation Guide. We have detailed the ornamental planting palette, plan and supporting schedule to mimic natural vegetation by 'developing a complex vertical structure of trees, shrubs and herbaceous cover' as envisaged in the Guide. [59] We hope that the planting will support the development of connectivity inside and outside the site for both animals on the ground and bats which might like to use individual trees and woodland edges to commute from one place to the next, and use planting for food.

The consulting electrical engineer has paid consideration to biodiversity in the design of their illumination layout to avoid unnecessary lighting and to consider nocturnal commuters. Bird boxes have been provided in the landscape design in each amenity open space to encourage birds to breed on the site. In the public amenity open space and at the upper podia levels we will provide insect and invertebrate habitats.[60]

Our landscape plan and design principles for sustainable design and biodiversity support 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
- Minimise energy use

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[58] Policy 'GI4 Objective 1' of the draft CDP 2022, vis 'To limit surface water run-off from new developments through the use of Sustainable Urban Drainage Systems (SuDS) using surface water and nature- based solutions and ensure that SuDS is integrated into all new development in the County and designed in accordance with South Dublin County Council's Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide.'

[59] 'SDCC SuDS Explanatory, Design and Evaluation Guide', McCloy Consulting and Robert Bray Associates, 2022

[60] Policy GI6 'Human Health and Wellbeing', Policy Objective 6, 'to minimise the environmental impact of external lighting within the GI network to achieve a sustainable balance between the recreational needs of an area, the safety of walking and cycling routes and the protection of light sensitive species such as bats (See Chapter 3 Natural, Cultural and Built Heritage).

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- Reduce pollution
- Improve Biodiversity by measures such as those outlined in the 'National Pollinator Plan' and in the local biodiversity action plans
- Durability
- Cost-effective design and maintenance
- Non-herbicidal landscape management
- Conserve water resources
- Landscape design that is easily managed and maintained
- Respect people and their local environment
- Provide residents with an environment that is healthy, accessible, and visually attractive
- SuDS design
- Provide wildlife panels for solitary bee nesting and invertebrates, bird, and bat boxes

Biodiverse green roofs, as provided throughout the proposed development, can become important refuges for flora and fauna, providing habitat for wild bees, butterflies, and ground beetles, with integrated 'landscape element' features such as:

- undulating mounds in the substrate surface encourage the development of different habitats, which extend the range of species available in the planting areas
- sand pockets and coarse gravel beds, free of plants, are used by insects and other roof inhabitants as a hideaway, breeding ground and as a suntrap
- temporary water bodies such as rainwater pools formed in a boulder after a rain event, or formed using borders and sheeting, can retain stormwater on the roof for an extended period, improving the amount of water available for insects and birds
- pollinator-friendly or foraging plants can encourage insects and birds to the roof
- nesting aids such as bird boxes or insect hotels encourage wildlife to come to the space
- deadwood log piles formed of dead branches and tree trunks are used as a habitat by moss, lichens, fungi, and invertebrates such as beetles, flies, midges, ants, and wild bees

9.2 'Natural' SuDS elements – blue roofs and SuDS tree pits

Landscape architectural design can help support civil engineering drainage design by incorporating elements such as permeable paving, blue roofs, rain gardens and SuDS tree pits in a landscape plan for example. Sustainable Urban Drainage Systems (SuDS) are mandated requirements for all new developments in SDCC and include the following: green roofs, infiltration systems, filter drains and strops, tree pits, swales, ponds and wetlands, detention basins, bioretention systems, permeable pavements, rain gardens, channel rills and rainwater harvesting systems. [61] Early SuDS design tended to create dedicated SuDS corridors which were often fenced off from the development they served, but the updated SDCC guidance on same envisages SuDS design integrated multi-functionally with the use of the development by people.

The design of natural SuDS in the evolved scheme integrates natural SuDS with amenity and biodiversity, particularly so in the public open space, and this design development has resulted in a more efficient use of space through multi-functionality; an increased 'green' area addressing Firhouse Road; improved usability through integrating landscape space and child-friendly neighbourhood planning principles; and improved visual and biodiversity solutions. [62]

[61] 'SDCC Greater Dublin Regional Drainage Code of Practice Pre-Planning Guidance', SDCC, 2019

[62] 'GI4 Objective 3', Chapter 4 'Green Infrastructure' of the Draft CDP, 'to require multifunctional open space provision within new developments to include provision for ecology and sustainable water management.'

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Our natural SuDS design, an iterative process developed with the consulting engineer, takes cognisance of the recently published interim guidance document on same prepared by the DOHLGH[63]; 'SuDS, the SDCC 'Greater Dublin Regional Drainage Code of Practice Pre-Planning Guidance', the Draft CDP for SDCC 2022-2028, and the 'SDCC SuDS Explanatory, Design and Evaluation Guide'[64] and has been designed to maximise the opportunities and benefits we can secure from surface water management.

'Natural' SuDS elements and landscape features such as permeable paving, green-blue roofs and SuDS tree pits can help, according to CIRIA[65]:

- improve public health and well being
- increase amenity space
- provide aesthetic improvements
- improve air quality
- reduce urban heat island effect
- enhance wildlife habitat for biodiversity
- reduce flood risk
- filter pollution and improve water quality

In relation to safety, the current SDCC guidance sets out that all parts of a SuDS design should be fully accessible to people.

Figure 53. *Details such as kerb cuts and check-dams can deal with a gently sloping site and still provide 'rain garden' type functions; providing flat-topped boulders in a rain garden provides an informal opportunity for play as stepping stones*

9.2.1 SuDS Tree Pits

Four no. SuDS tree pits (TP-01, TP-02, TP-03 and TP-04, all located in the public open space to the south and west of the proposed building, as detailed on the landscape plans) have been specified in co-ordination with the consulting civils engineer to attenuate and slow surface water run-off in the streetscape and open spaces[66]. These tree pits have been planted with a fastigiate or columnar shaped tree, *Liquidambar styraciflua* 'Fastigiata', which has been identified by

[63] 'Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Water Sensitive Urban Design, Best Practice Interim Guidance Document', prepared by the Department of Housing, Local Government and Heritage, December 2021.
[64] 'SDCC SuDS Explanatory, Design and Evaluation Guide', McCloy Consulting and Robert Bray Associates, 2022
[65] CIRIA C753, 'The SuDS Manual', published by CIRIA, 2015
[66] Policy G14 'Sustainable Urban Drainage Systems', GI objectives 1, 2, 3, 4, 5; Policy G15 'Climate Resilience', GI Objectives 1 and 3, Draft CDP for SDCC, 2022-2028

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Sheffield University as having good resilience in our climate to predicted temperature increases over the next 50 years.

Figure 54. *Landscape Plan with SuDS tree Pits illustrated with orange hatch in public open space*

Such tree pits can attenuate surface water run-off underneath by utilising the void within the rootzone of each tree. Collecting rainwater and diverting it into a tree pit can help to passively sustain an urban tree's water supply. Research shows that urban trees that have access to stormwater have increased growth rates during the establishment period.[67] The surface of the SuDS tree pits illustrated on the drawings have an 'open' permeable surfacing (permeable paving, topsoil) over the whole of the pits to ensure rainwater and air to reach the soil directly from above, with the addition of supplementary inlets to ensure that rainwater and air reach the lower levels of the pits. The engineered SuDS tree pits all have drainage included as part of their design to prevent the soil from becoming waterlogged and has been designed so that rainwater passes through the soil before it drains out of the tree pit.

[67] Denman, L. (2006, September). Are street trees and their soils an effective stormwater treatment measure? *Treenet: Proceedings of the 7th National Street Tree Symposium, 2006*, Adelaide, SA. and Grey, V., Livesley, S. J., Fletcher, T. D., and Szota, C. (2018). Establishing street trees in stormwater control measures can double tree growth when extended waterlogging is avoided. *Landscape and Urban Planning*, *178*, 122–129.

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Proprietary tree pit details and specification such as 'Arborflow' by GreenBlue Urban incorporate details and principles such as proprietary soil cells and root management membranes, soil and rootball aeration, proprietary stormwater panels, ground preparation, permeable paving, silt trap chambers, etc.

SuDS tree pits are ideal for use in urban streetscapes particularly where space is at a premium, and they can reduce the velocity and flow rate of surface water run-off. When designed for a given catchment area, they can contribute to meeting stormwater discharge rates. Surface water is discharged into surrounding subsoil and absorbed by tree roots. Details such as drainage channels can trap silt and other organic material such as leaves, filtering out harmful pollutants. Modular systems such as the 'Arborflow' can be filled underground with good quality soil, increasing the chances of the street tree to reach its full growth potential.

9.2.2 Green-Blue Living Roofs

We have described the provision and amenity value of living roofs elsewhere in this document. The SuDS Manual published by CIRIA in 2015[68] defines a blue roof as: 'A roof construction that stores water, can include open water surfaces, storage within or beneath a porous media or modular surface or below a raised decking surface or cover.' It is designed to provide temporary water storage and then gradual release of stored water, typically rainfall or stormwater, and the attenuation layer is provided above the waterproofing element of the roof.

The drainage design has evolved to provide blue roofs at all podium roof garden levels now, to effectively respond to the concerns raised by the local authority and by the ABP opinion in relation to natural SuDS.

9.2.3 Permeable paving

Permeable paving is an example of 'multi-functionality' in that the surface is always available for managing rainfall and can also allow vehicle access, parking, and pedestrian use. In the developed site plan at ground floor level, we have substantially reduced the area of paving given over to the vehicle in favour of increased planted areas which has allowed for the planting of an avenue of trees along the street frontage. Permeable paving has been provided using proprietary spacers between natural stone paving setts and slabs at the ground floor level with a permeable sub-base to the consulting engineer's design detail and specification.

[68] 'The SuDS Manual C753', CIRIA, 2015

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