Appendices

Appendix A:
Glossary of Terms

In these Guidelines, the references below are taken to have the general meaning set out in this section.

Active Travel:
Travel by transport modes that require physical exertion such as walking, cycling or scooting.

Apartment:
A self-contained residential unit that forms part of a multi-unit building with horizontal divisions(s) between it and at least one other unit that is an apartment or other non-residential use. Access to individual apartments is generally via grouped access or communal areas. However, ground floor units may have direct 'own door' access from public or semi-public areas.

Architectural language:
The architectural detailing of a building. These details include the buildings form, shape, materials and finishes, façade details and fenestration.

Backland Site:
Sites to the rear of existing property with no or limited street frontage.

Brownfield:
Land which has been subjected to building, engineering or other operations, excluding temporary uses or urban green spaces, generally comprising of redundant industrial lands or docks but may also include former barracks, hospitals or even occasionally, obsolete housing areas.

Building Height:
A measure of the vertical distance from the ground to the top of a building. Different methods are used to calculate and describe building height, such as natural ground level to roof ridge, parapet or wall height.

Car Club:
A club where a group of people have an arrangement for sharing a car or cars. Cars are usually stored within a development or on street, and members of the club can book access to the cars for a fee.

Community Gardens and Allotments:
Plots of land which are made available (usually by a local authority) to community groups or individuals for the cultivation of vegetables and plants.

Dwellings per hectare (dph):
A measure of residential density and refers to the number of residential units within a defined geographic area. It is used to compare the intensity of development and the efficiency of the land use. Gross density is a general measure of the number of residential units within a defined geographic area that includes all land. Net residential density is a more refined measure of the number of residential units within a defined geographic area that includes the areas to be developed for housing and ancillary uses only. Appendix B 'Measuring Residential Density' details the methodology that should be used in the calculation of residential density.

Duplex:
A building divided into two residential units. The units or apartments may be stacked one on top of the other on separate floors. Access to duplex units is generally direct 'own door' access from public or semi-public areas. However, access to an upper floor duplex unit may be via grouped access or communal areas.

Existing Built-Up Footprint:
Existing built up footprint refers to the built up area of a settlement i.e. lands that are subject to urban development.

Greenfield:
Lands that have never been intensively developed and are (or were last used for) agricultural purposes. Greenfield lands are generally located on the periphery of cities, towns and villages. Development will generally require the provision of new infrastructure, roads and sewers; and for larger areas ancillary social and commercial facilities, schools, shops, employment and community facilities.

Habitable Room:
Primary living spaces such as living rooms, dining rooms, studies and bedrooms.

Infill:
Serviced lands that are located within the existing built up footprint of settlements. May consist of *Brownfield Sites* or *Greenfield Sites*.

Massing:
The general shape, form and size of a building in three dimensions.

Masterplan:
A masterplan is a detailed plan that sets out area specific and detailed design guidance. Masterplans will generally address land use and built form, public realm, movement and green and blue infrastructure. Masterplans have no legal status in their own right under the Planning and Development Act 2000 (as amended) but do have legal status when integrated as part of a statutory development plan.

Neighbourhood:
A neighbourhood is a geographically localised area where people live and interact with each other, within a larger city, town, suburb or rural area. The concept of the neighbourhood as an integral building block in the development of urban structure underpins these Guidelines.

Non-Habitable Room:
Service rooms such as bathrooms, WCs, utility rooms, storerooms and circulation spaces. A kitchen is not a habitable room unless it provides space for dining.

Passive Surveillance:
Overlooking of the public realm from buildings and active frontages so as to limit the opportunity for crime and anti-social behaviour.

Permeability:
The degree to which an area has a variety of direct, pleasant, convenient and safe routes through it.

Placemaking:
A multi-faceted and holistic approach to the planning, design and management of the built environment to ensure that a location is accessible, diverse, attractive and positively perceived. Good placemaking contributes to people's health, happiness, well-being and cultural experience.

Plot Ratio:
Expresses the proportionate relationship between the area of a site and the total gross floor area of a building(s). It is a measure of the intensity of land use and is calculated by dividing the gross floor area of a building(s) (sum of floorspace within the external walls of the building) by the site area.

Private Open Space:
An outdoor open area that is exclusively for use by the occupants of a residential unit (and their visitors). Does not include areas used exclusively for access (e.g. side passages) or storage (including car parking).

Public open space:
Public open space refers to open spaces that form part of the public realm and are accessible to the public for the purposes of active and passive recreation. This includes:

- Parks
- Squares or plazas
- Large areas of landscaping including Nature-based Drainage Solutions.
- Green corridors or linear parks connecting different areas where a high environmental quality and active modes of travel are promoted.

For the purposes of calculating public open space provision, it can include areas used for Nature-based Urban Drainage and other attenuation areas where they form part of an integrated open space network. It would not generally include large retention ponds where they are fenced or separate to the open space network, but may include smaller retention basins that are integrated into and form part of the open space and landscaping scheme. Incidental areas of open space that do not form part of an interconnected network of hard and soft landscaped areas should not be included in the calculation of public open space provision.

Public Realm:
Public realm refers to all the areas to which the public has access such as roads, streets, footpaths, lanes, parks, squares, open spaces and building façades.

Scale:
The size of a building and how it is perceived in relation to its surroundings (based on its *height* and *massing*).

Semi-Private Open Space:
An outdoor open area that is exclusively for use by the occupants of a number of residential units (and their visitors). Does not include areas used exclusively for access (e.g. passages) or storage (including bicycle or car parking). Semi-private open space is not part of the public realm.

Site Coverage:
The percentage of the site covered by building structures excluding public roads and footpaths. It is a control for preventing the adverse effects of overdevelopment.

Statutory Development Plan:
References to statutory plans within these Guidelines refers to all statutory land uses plans at a local authority level with legal status under the Planning and Development Act 2000 (as amended) or any future Planning and Development Act, and includes City and County Development Plans, Local Area Plans and SDZ Planning Schemes.

Strategic and Sustainable Development Locations:
Strategic and sustainable development locations are as described in detail in section 4.4.4 of the S28 Development Plans Guidelines for Planning Authorities, 2022.

Streetscape:
The visual appearance of the linear elements along a street such as buildings, spaces and landscape elements that line a street from a particular viewpoint.

Sustainable Travel:
Travel using transport modes that have a lower impact on the environment including walking, cycling and public transport.

Transport Node or Interchange:

Places of convergence and interchange between different forms of transportation.

Transport Orientated Development:
A plan-led form of urban development that seeks to maximise the provision of housing, employment, public services and leisure space in close proximity to and accessible to existing or proposed high quality public transport services.

Universal Design:
Universal Design involves the design of the built environment so that it is accessible to everybody regardless of age, size, ability, or disability.

Urban Character:
A distinct pattern or combination of elements that occurs consistently in a particular landscape or built environment (see also *urban form* and *urban fabric*).

Urban Design Framework:
Urban Design Frameworks (UDF) set out a design vision at a neighbourhood or site level focused on urban design and defining the urban structure informed by technical appraisal. UDFs generally address parameters for development such as street hierarchy and transport accessibility, open space, land use and patterns of built form and their application at a neighbourhood or site level.

Urban Design Statement:
A statement that provides a rationale and justification for a development proposal and the design approach taken, from the process of analysis, appraisal and visualisation to detailed design. They are an important communication tool that enable developers to make a case for a development, assists planning authorities in the assessment of the development proposal and inform interested parties as to how the best design solution for the site has been arrived upon.

Urban Fabric:
A more specific reference to the urban form, that centres on more finite details or features of the areas character like the proportion of buildings, the width of buildings along a street, architectural details.

Urban Form:
A general reference to the various elements that make up an urban area, such as its streets, blocks, individual buildings, open space etc. Understanding the urban form (and urban fabric) of a particular area (such as via an analysis process) can identify an areas unique characteristics and can inform a responsive design approach that enhances its placemaking qualities.

Urban Grain:
A pattern of building plots, building widths and streets in urban areas. Older parts of a city, town or village tend to have a fine grain with many narrow streets/lanes, smaller blocks and smaller plots sizes.

Urban Landmark:
A building or element of the landscape that visually stands out from its surrounds and acts as a marker for navigation. Statutory development plans may identify suitable locations for urban landmarks based on an analysis led/ masterplanned approach to urban design and placemaking.

Urban Legibility:
Good urban legibility refers to an urban environment that is easy to navigate because of a relatively straightforward layout of streets and spaces and the integration of visual cues (such as landmarks, landscape elements and building forms).

Urban Structure:
The design of routes, spaces and buildings that make up an urban area and the relationship between them. The creation of a coherent urban structure is a holistic approach to design where there is a clear hierarchy of streets and spaces around which movement, lands uses and buildings are framed.

Vulnerable Road Users:
Road users who are most at risk from injury by motor vehicle traffic, including pedestrians, cyclists, children, the elderly and people with mobility impairments.

Water Sensitive Urban Design (integrating Nature-based Solutions and Sustainable Drainage Systems):

This refers to a move away from engineered solutions to the management of rainwater and surface water in urban environments towards a more systematic approach to planning and designing to integrate water cycle management into the built environment. This involves the replacement of impermeable surfacing with nature-based planted areas that are designed to absorb, retain, store, and treat urban runoff prior to discharge back to the environment. The DHLGH document Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas, Water Sensitive Urban Design Best Practice Interim Guidance Document, published in March 2022 sets out further detail in this regard.

Appendix B:
Measuring Residential Density

- While the principle of calculating density is straightforward (a site area multiplied by a density assumption to produce an estimate of site capacity)- the practical application is more complicated and is dependent in particular on the appropriate definitions of the site and development areas, as well as to a lesser extent, on using the correct density measure.
- Selecting the appropriate definition of the site and the development area is important.
- In forecasting the capacity of lands for housing delivery where non-residential uses, such as main roads, retail, employment and major open spaces are being planned in conjunction with housing, an allowance needs to be made in the density assumption for the land that will be occupied by such uses, which may be upwards of 25% when forecasting the capacity of a land area at the neighbourhood or district scale.
- At the site-specific level, if density controls are to produce the expected results, a density standard must be carefully related to the area accommodating the development. At different stages in the planning of a new development area, standards and measurement can be refined from an overall density that embraces the full range of uses down to one that includes only the residential component of an individual site. As the focus narrows and the area becomes smaller, the residential density assumption in terms of the number of dwellings per hectare will rise.

Gross and net densities

- A gross density measure is best applied to estimating overall land areas required for mixed-use developments or for Local Area Plans and Planning Schemes.
- A net site density measure is a more refined estimate than a gross site density measure and includes only those areas that will be developed for housing and directly associated uses as detailed in Table 1 below:

Table 1

Net Site Area Includes	Net Site Area Excludes
• Local Streets as defined by Section 3.2.1 DMURS. • Private and semi-private open space. • Car parking, bicycle parking and other storage areas. • Local parks such as neighbourhood and pocket parks or squares and plaza's • All areas of incidental open space and landscaping.	• Major road/streets such as Arterial Streets and Link Streets as defined by Section 3.2.1 DMURS. • Lands used for commercial development (inc. retail, leisure and entertainment). • Lands for primary schools, churches and other community services and facilities. • Larger, Regional or District Parks, Wayleaves or rights of way. Other areas of land that cannot be developed due to environmental sensitives, topographical constraints (i.e. steepness) and/or are subject to flooding.

A net density is the most commonly used approach in allocating housing land within Local Area Plans and Planning Schemes and is appropriate for development on infill sites where the boundaries of the site are clearly defined and where only residential uses are proposed. It is also appropriate where phased development is taking place in a major development area (perhaps spanning different plan periods) and individual housing areas have been identified. All densities quoted in these Guidelines are net densities.

When calculating residential densities within mixed use schemes, planning authorities shall exclude the % of non-residential uses in proportion to the net site area, i.e.

- Calculate Net Site Area
- Calculate the overall GFA
- Differentiate between the % of residential and non-residential GFA
- Reduce net site area by the percentage of non-residential GFA
- Divide number of dwelling by reduced site area.

Worked Example

Required Information

- Net Site Area = 1.7 ha
- Overall GFA = 31,400 sq. metres
- Residential GFA = 24,600 sq. metres
- Non-residential GFA = 6,800 sq. metres
- Number of residential units = 188

Calculation

- Residential GFA as a portion of development = 24,600/31,400 = 78.3%
- Site area for density purposes = (1.7ha*78.3%) = 1.33ha
- Residential density = 188/1.33 = 141 dph (net)

Appendix C:
Supplemental Information for Planning Applications

The table below provides a reference for planning authorities and prospective applicants in relation to supplemental information that may assist in the consideration of planning applications and the suggested thresholds at which the need for supplemental information should be considered. Where a report or assessment is required under the Planning and Development Act, 2000 (as amended) the Planning and Development Regulations 2001 (as amended) or under an EU Directive this is noted. This list is not exhaustive, and it is recommended that all prospective applicants engage with planning authorities prior to the submission of a planning application to confirm submission requirements for any given development[18].

Design and Landscape

Report	Suggested Threshold	Notes
Landscape Design Report/Masterplan	30 or more residential units or 3000 sq. metres of mixed-use development.	
Landscape and Visual Impact Assessment (LVIA).	Large development proposals. The threshold for LVIA will vary depending on the receiving environment and the nature and scale of the development. In the case of proposals incorporating buildings of scale and increased building height and proposals in areas of landscape sensitivity (including architecturally sensitive areas), the threshold for submission of a LVIA will be lower.	
Micro-climate Assessment	Development proposals involving taller buildings.	Refer to Section 3.2 of Urban Development and Building Heights (2020).
Quality Audit	Applications involving the creation of new streets and street networks or significant changes to existing streets	Refer also to the Design Manual for Urban Roads and Streets – Advice Note 4.
Urban Design Statement / Architectural Design Report	50 or more residential units 5,000 sq. metres of mixed use development	Statements may also be for developments within sensitive locations (such as Architectural Conservation Areas) or in areas of civic importance (i.e. prominent sites)

18 The recommendations in this section may be addressed as part of a general planning or technical report and should not be construed as a requirement to submit individual assessments in each instance.

Universal Design Statement	10 or more residential units or mixed use development over 1,000 sq. metres	Refer also to Building for Everyone, a Universal Design Approach and Universal Design Guidelines for Homes in Ireland (National Disability Authority)

Heritage, Conservation and Environmental Protection

Report	Recommended Threshold	Notes
Appropriate Assessment Screening and NIS	An Appropriate Assessment Screening must be undertaken in respect of all developments. A Natura Impact Statement is required where the potential for likely significant effects on a European Site(s), either alone or in combination with any other plan or project, cannot be excluded at Screening Stage.	Refer to Office of the Planning Regulator Practice Note PN01
Arboricultural Impact Assessment (tree Survey)	Sites where there are significant trees.	As identified/requested by the Planning Authority.
Archaeological Impact Assessments	As required	Refer to Office of the Planning Regulator Planning Leaflet 13
Conservation Report	Any development relating to a protected structure, or within a sensitive historic environment.	Planning authorities may require that the Urban Design Statement include a further statement on the impact of a proposal on impact on the historic built environment. See also Section 2.9 of the Urban Development and Building Heights (2020).
Ecological Impact Assessment	All developments that are located within or adjacent to any sensitive habitat, on sites that could contain protected species or in a quality landscape environment.	May be subsumed into an Environmental Impact Assessment, where required.
Environmental Impact Assessment	All developments within the threshold set out in Planning and Development Act 2000 (as amended) or any sub-threshold development where the need for EIA is not screened out.	Refer also to Office of the Planning Regulator Practice Note PN02
Site Specific Flood Risk Assessment	Any developments within Flood Risk Zones A and B.	See also The Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009).

Housing and Community

Report	Recommended Threshold	Notes
Community, Social and Cultural Infrastructure Audit	To be submitted in support of a Large-scale Residential Development application (in excess of 100 homes) where such an audit has not been undertaken as part of the statutory plan making process.	Refer to Section 7.3 of Development Plan Guidelines (2022).
Daylight and Sunlight Assessment	In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary.	Refers to a full technical assessment.
Housing Quality Assessment	10 or more residential units	May be addressed as part of a general Planning Report addressing issues relating to housing mix (i.e. the local Housing Need Demands Assessment has been responded to) and application of housing standards.
Noise Assessment	Residential development within close proximity to noise generating activities.	Examples will include major transport infrastructure such as airports, ports, arterial streets/roads and railways. May also be required for residential development within centres in close proximity to activities associated with the night-time economy.
Operational Management Plan /Report (inc. Lifecycle Report)	All developments consisting of housing units with communal access, facilities and areas open space areas.	

Servicing

Report	Recommended Threshold	Notes
Engineering Services Report (Civil and Structural)	All developments consisting of new residential/mixed use development.	For developments of 30 homes or less may be addressed as part of a general planning or engineering report addressing connections to services.
Lighting Report	30 or more residential units or 3,000 sq. metres of mixed-use development.	
Construction and Environmental Management Plan	All developments consisting of new residential/mixed use development.	

Construction Demolition Waste Management Plan	30 or more residential units, 1,000 sq. metres of mixed-use development.	
Operational Waste Management Plan	30 or more residential units, 1,000 sq. metres of mixed-use development.	
Surface Water Management Plan	30 or more residential units, 3000 sq. metres of mixed-use development and/or where public realm improvements are proposed (i.e. via Part 8).	For larger developments or proposals which include public realm works, the Surface Water management Plan should be developed in combination with the Landscape Report/Masterplan to include Nature-based Solutions to drainage.
Climate Action and Energy Statement	30 or more residential units 1,000 sq. metres or more.	

Travel and Transport

Report	Recommended Threshold	Notes
Mobility Management Plan/ Travel Plan	100 or more residential units or mixed use development with over 100 employees	Statements may also be required for sub-threshold developments with a particular need for mobility management (e.g. to support reduced car parking provision).
Road Safety Audit	See Road Safety Audit Guidelines, Transport Infrastructure Ireland, 2017.	As noted in Section 5.4 of the Design Manual for Urban Roads and Streets, within urban context the findings of a Road Safety Audit should be considered in combination with a Quality Audit.
Traffic and Transport Assessment (TIA)	See Table 2.1 of the Transport Infrastructure Ireland, Traffic and Transport Assessment Guidelines (2014).	

Appendix D:
Design Checklist - Key Indicators of Quality Urban Design and Placemaking

The Design Checklist below has been developed to assist in the application of Section 4.3 - Key Indicators of Quality Urban Design and Placemaking of these Guidelines. The checklist presents a series of questions that are intended as helpful prompts that can be used in the refinement and review of detailed plans (such as masterplans or urban design frameworks) and in the consideration of individual planning applications. Plans and development proposals may perform better against some indicators than others, and it will be a matter for the planning authority (or An Bord Pleanála in the case of an appeal or direct application) to determine whether the proposal overall is acceptable from a design perspective.

1. Sustainable and Efficient Movement

(i) Will the plan or development proposal establish a highly permeable and legible network of streets and spaces within the site that optimises movement for sustainable modes of transport (walking, cycling and public transport)?

(ii) Have opportunities to improve connections with and between established communities been identified and responded to with particular regard to strategic connections between homes, shops, employment opportunities, public transport, local services and amenities?

(iii) Are streets designed (including the retrofitting of existing streets adjacent to or on-route to the site, where appropriate) in accordance with DMURS to calm traffic and enable the safe and comfortable movement of vulnerable users?

(iv) Has the quantum of parking been minimised (in accordance with SPPR4 where relevant) and designed and located in a way that seeks to reduce the demand for private car use, promote sustainable modes of transport and ensure that the public realm is not dominated by parked vehicles?

2. Mix of Land Uses (Vibrant Centres and Communities)

(i) Is the mix and intensity of land uses appropriate to the site and its location and have land uses been distributed in a complementary manner that optimises access to public transport, amenities and local services via walking or cycling?

(ii) Have a diverse and varied range of housing types been provided to meet local and projected needs (having regard to the Housing Need Demand Assessment), supplemented by an innovative range of housing typologies that support greater housing affordability and choice?

(iii) Will the plan or development proposal supplement and/or support the regeneration and revitalisation of an existing centre or neighbourhood, including the adaption and re-use of the existing building stock in order to reduce vacancy and dereliction (where applicable) and promote town centre living (where applicable)?

(iv) Is the regeneration and revitalisation of an existing centre or neighbourhood supported by the enhancement of the public realm so as to create a more liveable environment, attract investment and encourage a greater number of visitors (where applicable)?

3. Green and Blue Infrastructure (Open Space, Landscape and Heritage)

(i) Has the plan or development proposal positively responded to natural features and landscape character, with particular regard to biodiversity, vistas and landmarks and the setting of protected structures, conservation areas and historic landscapes?

(ii) Have a complementary and interconnected range of open spaces, corridors and planted/landscaped areas been provided, that create and conserve ecological links and promotes active travel and healthier lifestyles?

(iii) Are public open spaces universally accessible and designed to cater for a range of active and passive recreational uses (taking account of the function of other spaces within the network)?

(iv) Does the plan or development proposal include integrated nature-based solutions for the management of urban drainage to promote biodiversity, urban greening, improved water quality and flood mitigation?

4. Responsive Built Form

(i) Does the layout, orientation and scale of development support the formation of a coherent and legible urban structure in terms of block layouts and building heights with particular regard to the location of gateways and landmarks, the hierarchy of streets and spaces and access to daylight and sunlight?

(ii) Do buildings address streets and spaces in a manner that will ensure they clearly define public and private spaces, generate activity, maximise passive surveillance and provide an attractive and animated interface?

(iii) Does the layout, scale and design features of new development respond to prevailing development patterns (where relevant), integrate well within its context and provide appropriate transitions with adjacent buildings and established communities so as to safeguard their amenities to a reasonable extent?

(iv) Has a coherent architectural and urban design strategy been presented that will ensure the development is sustainable, distinctive, complements the urban structure and promotes a strong sense of identity?

Appendix E:
Sample Housing Images, Plans and Layouts

The Gables, Liverpool

DK-Architects

Density 44 dph

14 x 4 bed houses
12 x 3 bed houses
4 x 2 bed units

Low Rise Medium Density Test Models

O'Mahony Pike Architects

50-66 dph

O' Devaney Gardens (Phase 1), Dublin

Dublin City Council - City Architects Division

Density 77 dph

56 units, 65% Own Door

Knights Park, Cambridge

Pollard Thomas Edwards Architects, Alison Brookes Architects

Density 92 dph

69 Houses (3-6 beds)
8 x duplex units
107 apartments

The Residences, Sandford Lodge, Dublin

Shay Cleary Architects

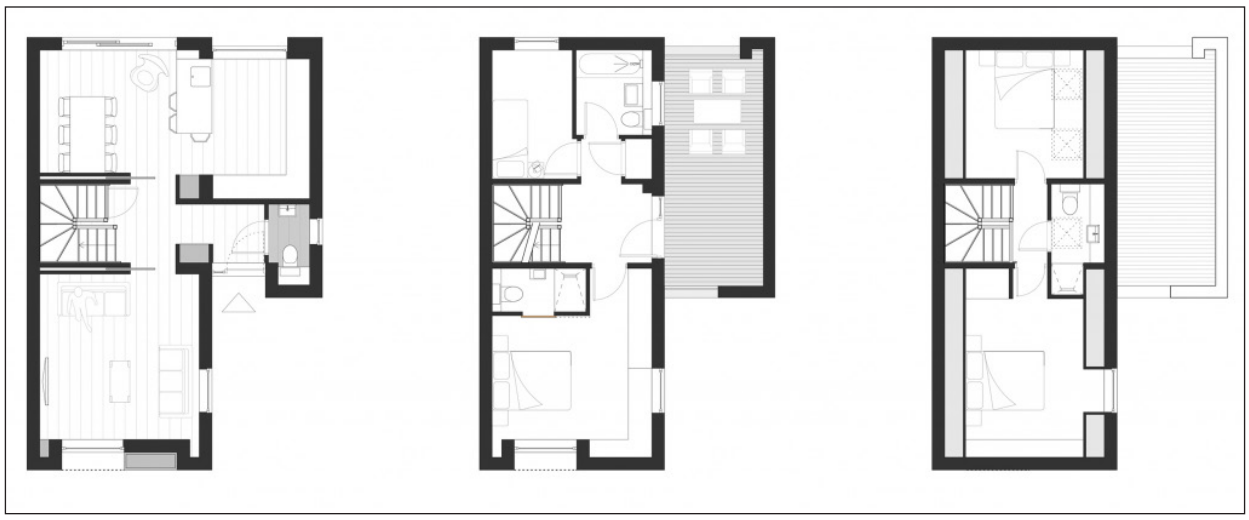
100 dph

24 x 1 bed duplex units
12 x 2 bed duplex units

The Gables, Liverpool (DK-Architects)

3D Cross Section

Cross Section

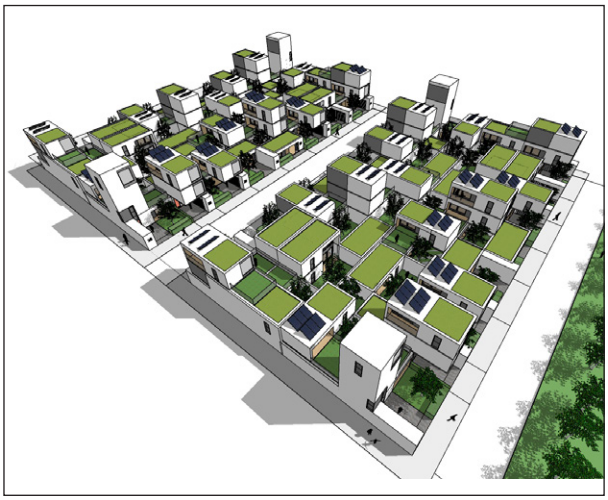


4 Bed House Plan

4 Bed House Plan

Low Rise Medium Density Test Models (O'Mahony Pike Architects)

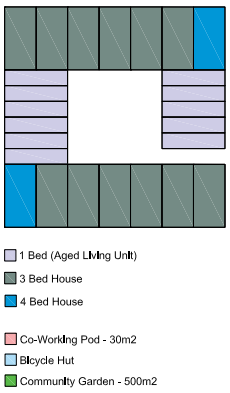
Courtyard Model

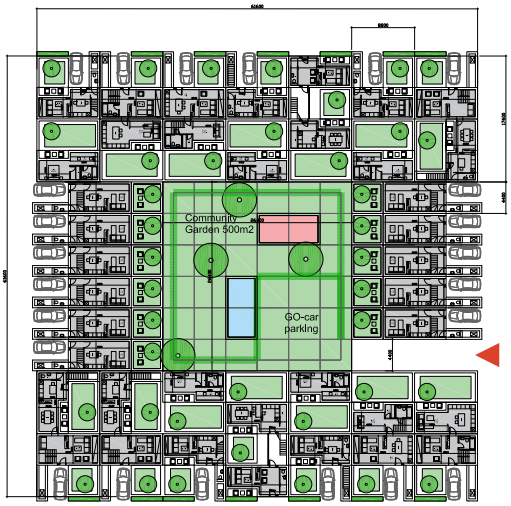


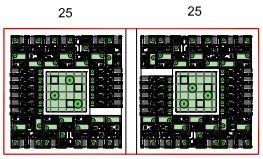
Back to Back Model

CGI Images

The additional benefit of this model is the provision of a central communal open space or community garden which residents can access directly from their homes. This is a direct result of the tight knit layout and compact housing form whereby private amenity space is cleverly redistribution and stacked within the individual plots. This in turn provides a community gain to all resident's whereby additional land is utilized for shared communal amenity and facilities.





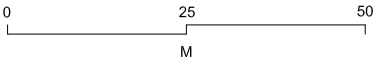


Typical Cell - 25 HOUSES
Area: 5,000m2 (0.5 Ha)
Density: 50 dph
Population: 125 persons

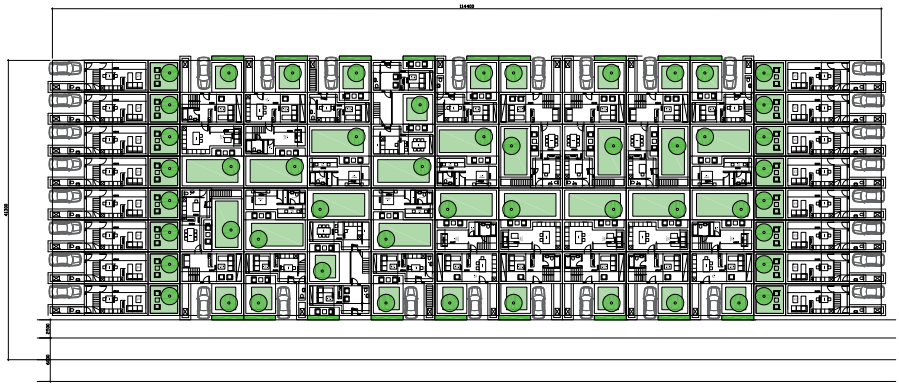
COURTYARD MODEL
(private off-street parking)

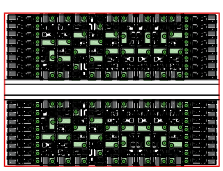
LEVEL 0 (Ground Floor)

Jan 2023



In addition to the typical 160sq.m plot, we also tested a more compact version of 121sq.m using the same house typology. In this scenario, we provided on-street parking only located in a 'Home Zone' type arrangement as illustrated below. The resultant density is similar at 68 dph as illustrated below.



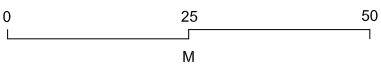


Typical Cell - 34 HOUSES
Area: 5,000m2 (0.5 Ha)
Density: 68 dph
Population: 170 persons

BACK TO BACK MODEL-1
(private off-street parking)

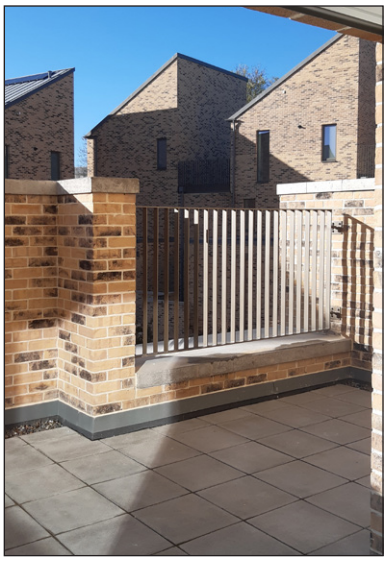
LEVEL 0 (Ground Floor)

Jan 2023



O'Devaney Gardens Phase 1 (Dublin City Council - City Architects Division)

3D Site Plan



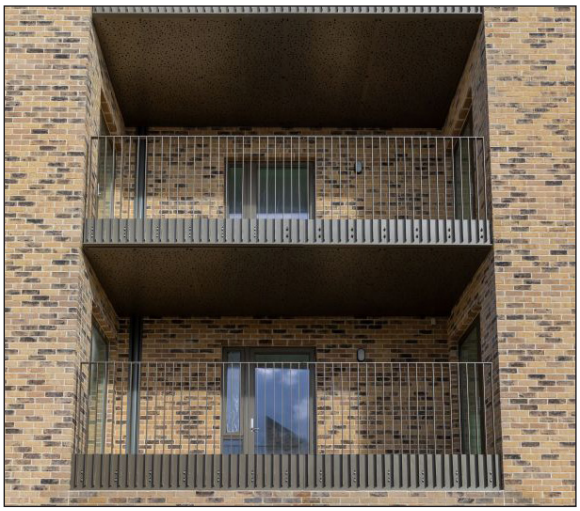


Photo Images: Niall O'Connell and Donal Murphy

Knights Park, Cambridge (Pollard Thomas Edwards architects, Alison Brooks Architects)

3D Site Plan

Primary Street House and Mews

Terrace House

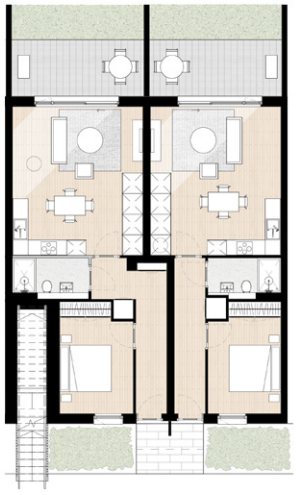
Corner Block Apartments

The Residences, Sandford Lodge, Dublin (Shay Cleary Architects)

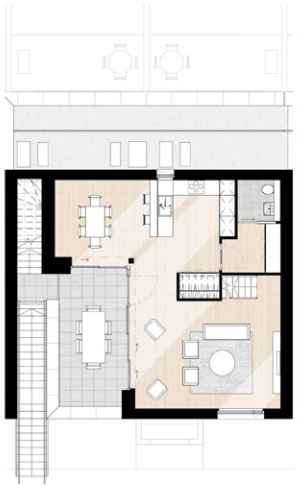
Concept Drawing

3D Site Plan

CGI Images



Ground Floor Plan



First Floor Plan

Second Floor Plan

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