Santry Avenue LRD, Santry, Dublin 9

DMURS Compliance Report

230146-X-90-X-XXX-RP-DBFL-CE-0003

TRANSPORTATION

February 2024

DBFL CONSULTING ENGINEERS

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1 Introduction

1.1 Background

DBFL Consulting Engineers (DBFL) have been commissioned to prepare a Design Manual for Urban Roads and Streets (DMURS – 2019) Compliance Report for a proposed Large-Scale Residential Development (LRD) at a site on the Santry Avenue / Swords Road junction in Santry, Dublin 9.

The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

1.2 Scope

The purpose of this DMURS Compliance Report is to support the planning application for the LRD. This DMURS Compliance Report seeks to outline the specific design features that have been incorporated within the proposed development design with the objective of ensuring an integrated design that is compliant with guidelines as set out by DMURS.

This DMURS Compliance Report should be reviewed in conjunction with the architectural, landscape and engineering site layout drawings in addition to the Traffic and Transport Assessment Report created by DBFL Consulting Engineers.

1.3 Report Structure

As introduced above, this DMURS Compliance Report seeks to outline the specific design features that have been incorporated within the proposed LRD's design with the objective of ensuring an integrated design that is compliant with guidelines as set out by DMURS. The structure of the report responds to the various stages of this exercise including the key tasks.

Chapter 2 of this report provides an understanding of the receiving environment and road network in the vicinity of the proposed development. **Chapter 3** provides a summary of the proposed development and associated characteristics. Following this, **Chapter 4** introduces the

key design principles and overriding objectives of DMURS. Supplementing this is **Chapter 5**, which provides a detailed description of the design attributes of the proposed development and how it aligns with the design principles set out in DMURS. Finally, this Compliance Report is summarised and concluded in **Chapter 6**, which highlights the main findings.

2 Receiving Environment

2.1 Location

The proposed development is located to the south of R104 Santry Avenue Road corridor and west of R132 Swords Road in Santry (approximately 6.5km north of Dublin City Centre). The western boundaries are formed by existing commercial buildings and southern boundary is formed by phase 2 and phase 3 development. The general location of the subject site in relation to the surrounding road network is illustrated in **Figure 2-1** below whilst **Figure 2-2** indicatively shows the full extent of the subject site lands.

Figure 2-1 : Site Location (Source: Google Maps)

Figure 2-2: Indicative Site Boundary (Source: Google Maps)

2.2 Land Use

The subject site is currently being used as a builders' merchant (Chadwicks) comprising 4196.8 m^2 of existing buildings and stores. The site has an approximate area of 1.49 hectares. Refer to **Figure 2-3** which shows the land use associated with the subject site as per the Dublin City Development Plan 2022 – 2028.

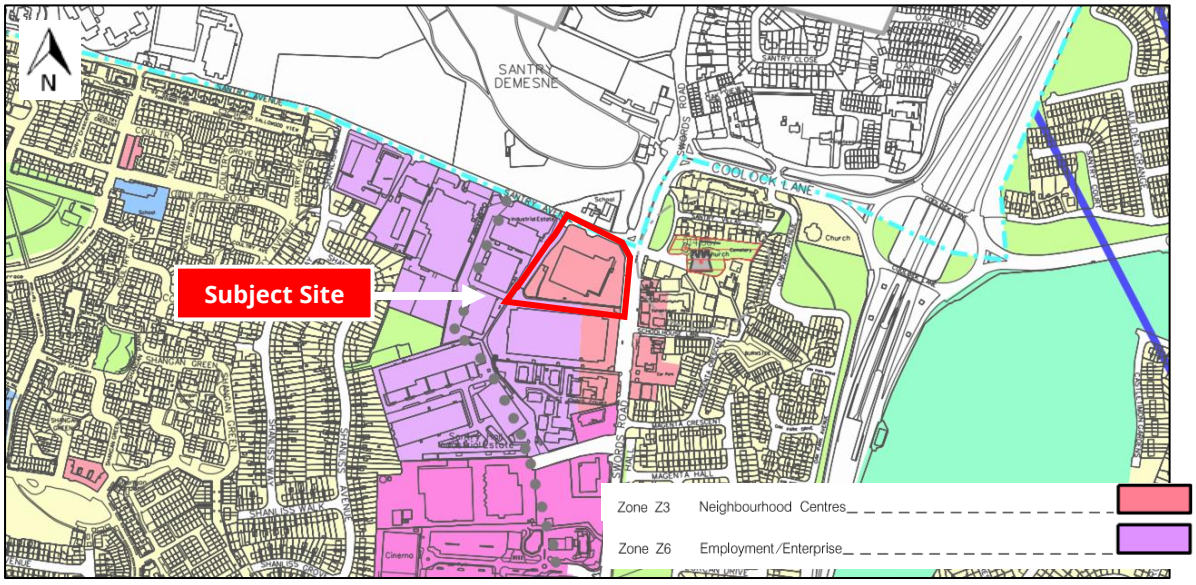


Figure 2-3: Land Use Zoning Objective (Source: Map B 2022-28 Dublin City Dev. Plan)

The site is located within Dublin City Council (DCC) development plan boundary and designated as both land use zoning Objective Z3 – ***"To provide for and improve neighbourhood facilities*** and zoning objective Z6 – ***"To provide for the creation and protection of enterprise and facilitate opportunities for employment creation".***

3 Proposal Characteristics

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Reference 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,483sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

1. Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m2).
2. Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:
    a. Block A is a 7-13 storey block consisting of 52 no. apartments comprised of 22 no. 1 bed, 24 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.
    b. Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c,606sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.

c. Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.

d. Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

3. Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

4. Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces & 664 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

5. Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.3,116sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

6. Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

7. The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

With reference to the Architect's scheme drawings, the site layout of the proposed development is illustrated in **Figure 3-1.**

Figure 3-1: Proposed Site Layout (Extract: Davey + Smith Architect Drawing No. D1809.P03)

4 DMURS Objectives

4.1 Overview

DMURS seeks to balance the needs of all users, creating well-designed streets at the heart of sustainable communities. It states that:

"Well designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling or public transport".

DMURS also seeks to create streets which are attractive places and encourage designs appropriate to context, character and location that can be used safely and enjoyably by the public. The recommended approach includes the adoption of a more integrated model of street design, where barriers (physical and perceived) are removed to promote more equitable interaction between users in a safe and traffic calmed urban environment.

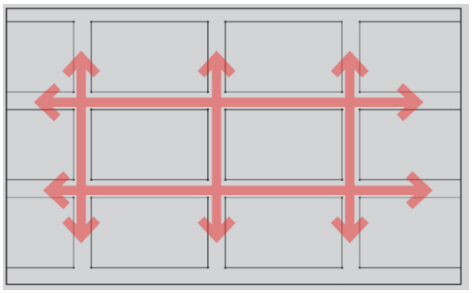
This integrated approach incorporates elements of urban design and landscaping that contribute to positively influence behaviour thereby reducing the necessity for conventional measures (e.g., physical barriers and road geometry) to manage travel behaviour. The recommended approach creates environments where:

- Street Networks are similar in structure (more eligible) with higher levels of connectivity (more permeability) thus reducing travel distances.
- Higher quality street environments attract pedestrians and cyclists, promoting the use of sustainable modes of transport.
- Self-regulating streets proactively manage vehicle driver behaviour and calm traffic, promoting safer streets.
- Street and junctions are more compact, providing better value for money.

4.2 Placemaking

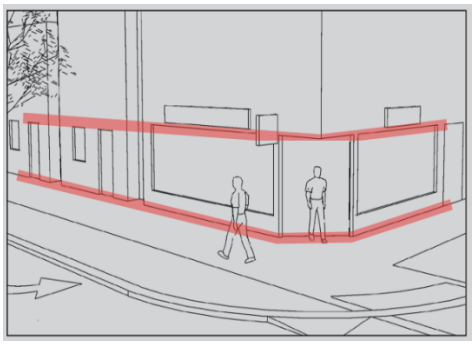
DMURS recommends that whilst the movement of traffic is still a key issue, there are several other factors, including the 'sense of place', which are of core significance to the creation of safe and more integrated street designs. DMURS reveals that place can be difficult to define but can be measured and relate to:

CONNECTIVITY: The creation of a vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected.

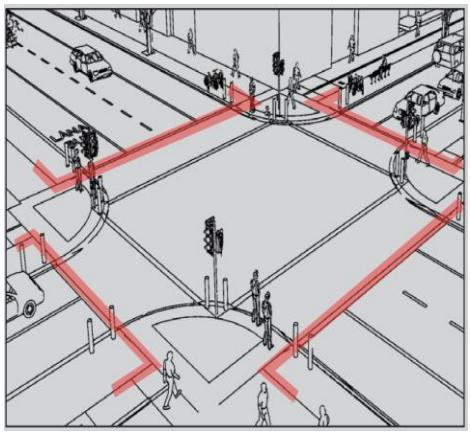


ENCLOSURE: A sense of enclosure spatially defines streets and creates a more intimate and supervised environment. A sense of enclosure is achieved by orientating buildings toward the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.

ACTIVE EDGE: An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings.

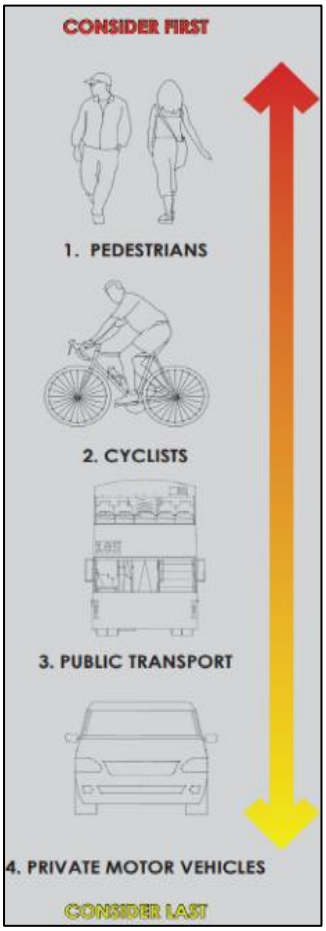


PEDESTRIAN ACTIVITY / FACILITIES: The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well-designed crossings) also make walking a more convenient and pleasurable experience that will further encourage pedestrian activity.



4.3 The DMURS User Hierarchy

DMURS set outs a clear user hierarchy for scheme designers which prioritises sustainable forms of transport. Walking is the most sustainable form of transport with all journeys beginning / ending on foot. By prioritising design for pedestrians, the number of short journeys taken by car can be reduced, public transport made more accessible and the delivery of walkable communities addresses issues of social equity. DMURS reveals that cyclists must be afforded a high priority as trips by bicycle have the potential to replace motor vehicles as an alternative means of transport for short to medium range trips.



The movement of buses should be prioritised over other motorised vehicles according to DMURS whilst the placement of private motor vehicles at the bottom of the user hierarchy is not anti-car but acknowledges that a balanced solution is required with the needs of the car no longer taking priority over (i) the needs of other users or (ii) the value of place within the proposed residential development and across the local receiving environment.

4.4 DMURS Design Principles

At the heart of DMURS is a place-based, integrated approach to road and street design with the following four overarching design principals to be applied to the design of all urban roads and streets.

- **Design Principle 1**: To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.
- **Design Principle 2**: The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.
- **Design Principle 3**: The quality of the street is measured by the quality of the pedestrian environment.

- **Design Principle 4:** Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

Compliance of the proposed development with the design principles of DMURS is described in the following chapter, with details of how these compliances will be met through adherence to recommendations in relation to individual design elements.

5 DMURS Design Attributes

The level of compliance of the proposed Santry Avenue LRD with DMURS guidelines is presented in this Chapter. Only sections within DMURS that relates to the proposed development are assessed. Sections within DMURS that do not relate to the implementation of the proposed development are not discussed. Furthermore, this assessment is done in the form of a Table as it best suits the purpose of this Chapter.

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
Movement Function	**Section 3.2.1**	DMURS encourages designers to consider the movement function of a street / street network and develop a street hierarchy reflective of the levels of connectively required and volumes of traffic.	The internal road network of the proposed residential development forms part of the larger road network across the urban environs of Santry, Dublin 9. As per guidance set out in DMURS, the road network associated with the proposed development falls within the following three-tier hierarchy: • **ARTERIAL STREETS**: The **M50** and **N1** which are situated to the east of the proposed development functions as **ARTERIAL STREETS.** The **M50** provides north/south travel through the Greater Dublin Area within the site's vicinity. The **N1** diverges from the **M50** via offramps at the **M50** interchange with the R104. • **LINK STREETS**: **Santry Avenue** to the north **Swords Road** to the east of the subject site functions as **LINK STREETS** as per the DMURS Road Hierarchy. These Link Streets provide connectivity between Arterial Streets, Local Streets, and residential areas across the environs of the Santry Urban Area. • **LOCAL STREETS**: **Local Streets** includes the development's internal road network while providing access within communities, as well as access to Arterial and Link Streets. The **Local Streets** within the vicinity of the proposed development include the **existing vehicular access (Access 1)** permitted under the adjoining Santry Place development (Ref. 2713/17) to the south-east of the subject site that provides access to/from Swords Road, and the **existing vehicular access (Access 2)** to the north-west of the subject site that is currently a "Private Security" access road. The street hierarchy associated with the proposed residential development is illustrated in **Appendix A1** (larger road network) and **Appendix A2** (local street environs).
Place Context	**Section 3.2.2**	DMURS states that, where densities and land use intensity is greater, place status will be elevated. Considering the 'Context' of a street – as the **Place Value** of a street increases, greater levels of connectivity is required, design quality increases, as well as pedestrian movement and level of integration.	The underlying design philosophy aims to establish a distinctive *'sense of place'* by integrating numerous green open spaces to foster social interaction. Additionally, careful consideration has been given to the selection of surface materials, landscaping, and street furnishings, taking into account both their aesthetic appeal and their compatibility with the surrounding environment. A notable level of enclosure along the proposed Local Street on the western boundary of the subject site within the LRD is achieved through the planting of

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
		Essentially, the '*Place Function*' distinguishes a street from a road, achieved largely by creating a relationship between the street and the buildings and spaces that frame it, ultimately resulting in a richer and more fulfilling environment	trees along the sides of street, contributing to the creation of a more intimate and supervised street atmosphere, which has an indirect yet positive influence on vehicle speeds within the development. As such, the development's place value internally, as per DMURS guidance, would be that of a **Neighbourhood** within the larger context of Santry, Dublin 9**.** Connectivity within the development is maximised with this context and adheres to DMURS principles of maximising permeability and access to sustainable modes of public transport.
Street Layout	**Section 3.3.1**	DMURS looks to encourage street layouts where *"all streets lead to other streets, limiting the number of cul-de-sacs that provide no through access"* and maximise the number of walkable / cyclable routes between destinations. DMURS indicates that connection opportunities should be made via strategic links that provide efficient space for high levels of pedestrian, cyclist, public transport, and private vehicle activity.	The layout of the proposed development's streets has been shaped by various factors including site-specific conditions, topography and adjoining boundaries, existing and future developments, boundary treatment, and input from different members of the multidisciplinary design team. The resulting street configuration associated with the subject site predominantly follows a **Grid (Orthogonal) Layout** wherein the vehicular access road to the south-east of the subject site and the proposed access to the north-west (that is to be included as a local street) connect in an orthogonal manner. This street layout results in visually appealing and easily navigable streetscapes, as well as promotes sustainable transportation. The street layout has been derived from considerations such as the shape of the site and boundary constraints.
Block Sizes	**Section 3.3.2**	DMURS states that block dimensions (for residential developments) of 60-80 m are optimal for pedestrian movement in Centres, whilst block dimensions of up to 100 m enable reasonable levels of pedestrian permeability in Neighbourhoods / Suburbs. Designers should try as best as possible to ensure that Block Dimensions do not exceed 120 m.	The blocks sizes within the proposed development are optimised in line with density, land use, and comply with the requirements of DMURS. The proposed development consists of 7 no. apartment blocks comprising 6 no. blocks that are dually adjoined (Blocks A and B, Blocks C and D, and Blocks E and F are adjoined), and 1 no. singular block (Block G). Individual Block Sizes range from 23 m to 70 m in length and 15 m to 17 m in width. Adjoined Blocks have total lengths as follows: (i) Blocks A/B - c. 70 m (ii) Blocks C/D - c. 85 m, and (iii) Blocks E/F - c. 100m. The singular unit Block G has a length of c. 36 m. The adjoined Apartment Blocks comprise mid-block pedestrian linkages, in line with DMURS design guidance for Larger Blocks. Note that adjoined Blocks A/B and Block G have lengths of less than 80 m which causes these Blocks to be within an optimal block size as per DMURS, which maximises accessibility for pedestrians. The block sizes associated with the proposed development provide for a great level of permeability for pedestrians and cyclists, thereby complying with standards set forth in DMURS.
Wayfinding	**Section 3.3.4**	Wayfinding is centred around the idea of helping individuals navigate through an environment. This aspect holds particular significance for pedestrians and cyclists, as their movement is facilitated when routes are easily discernible. Generally, a street layout with orthogonal characteristics enhances legibility, while also promoting connectivity.	The orthogonal (grid) street pattern adopted for the proposed development is recognised by DMURS as being generally legible in terms of wayfinding. Landscaping, as well as the application of differing surface materials, further defines the street pattern, adding to the legibility of the subject site in terms of wayfinding.

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
Permeability	**Section 3.4.1**	Permeability networks can be categorised into four types: • Dendritic Networks • Open Networks • 3 Way Off-Set Networks • Filtered Permeability	The development approach for the proposed LRD embraces a **Filtered Permeable network** design which allows full permeability throughout the site to pedestrians, with vehicular access restricted to only the existing vehicular access road to the south-east of the site and the proposed north/south road on the western boundary of the subject site. The filtered permeability network therefore prioritises the movement of sustainable modes of transport over private vehicles, which is in line with the guidance provided in DMURS.
Traffic Congestion	**Section 3.4.2**	DMURS states that the outcome of a more connected, traffic-calmed network is reduced car dependency and increased usage of sustainable modes of transport. Higher levels of connectivity will also enable greater vehicle permeability, albeit at slower speeds.	DMURS states that sustainable modes of transport, such as walking, cycling, and using public transport, can accommodate high volumes of movement more efficiently than using private vehicles. As such, great effort has been put into the proposed development's design to ensure that there is provision to allow for the convenient flow of pedestrians and cyclists throughout the development. The incorporation of traffic calming measures such as 2 no. raised flat-top speed ramps as well as a 75 mm raised surface on the proposed road to the west of the subject site delivers a traffic calmed network that can reduce car dependency and promote the convenience and uptake of sustainable travel habits.
Approach to Speed (Geometry)	**Section 4.1.1**	DMURS states that designers should balance speed management, the values of place, and reasonable expectations of appropriate speed according to Context and Function. Where vehicle movement priorities are low, such as on Local Streets, lower speeds limits should be applied.	The proposed development, which has a **Neighbourhood Context** and **Local Streets**, will have a design speed between **10-30 km/h** (not exceeding 30 km/h) with streets designed to ensure they are self-regulating through a combination of 'soft' (landscaping) and 'hard' (street geometry) measures. As such, the Context and Function of the proposed LRD is in line with the guidance provided by DMURS.
Building Height and Street Width	**Section 4.2.1**	DMURS states that *"Enclosing streets with buildings helps to define them as urban places, creates a greater sense of intimacy and promotes them as pedestrian friendly spaces that are overlooked. This sense of intimacy has been found to have a traffic-calming effect as drivers become more aware of their surroundings."*	DMURS states that a sense of enclosure can be obtained with a building height to street-width ratios of 1:1, 1:2 or 1:3 and is difficult to achieve where the total street width exceeds 30 m in width. The width (distance between building frontages as indicated in DMURS Figure 4.7 in Section 4.2.1) of the street to the south of the subject site is **23.1 m**. Within this vicinity, Block A is proposed to have a building height of c. **42.5 m** on its southern elevation. The building to the south of the subject site (the lands at which the mixed-use development under Planning Refs 2713/17 & 2737/19 is permitted) is a 7-storey apartment block (called "The Sycamore" Apartments). It is estimated that this apartment complex has a height on its northern face of **c. 20 m**, which is obtained by comparing the similar Blocks Cand G of the proposed development (which are 7-storey blocks as well). As such, with this c. 20 m existing apartment complex (The Sycamore) creates a **1:1** ratio of building height to street width, which creates a very strong sense of enclosure as per DMURS (which is further emphasised through the height of Block A of c. 42.5 m). Furthermore, the proposed road to the west of the subject site will be on the frontage of the western elevation of Blocks E and F which has a proposed height of c. 25.6 m, which will create a very strong sense of enclosure similar to that associated with the existing road to the south. As such, the building

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
			height and street width associated with the development complies with the guidance set forth in DMURS.
Street Trees, Planting, and Street Furniture	**Section 4.2.2**	DMURS primarily considers street trees in terms of enclosure and suggests that for ratios of building height and street width within this development that supplementary street trees are desirable	A comprehensive landscape masterplan for the proposed development has been prepared by DFLA Landscape Architects. The masterplan reinforces a sense of street enclosure through the addition of street trees with appropriate canopy spreads best suited to the Local Streets within the development for optimal compliance with DMURS.
Active Street Edges	**Section 4.2.3**	DMURS states that Active Street Edges provide passive surveillance of the street environment and promote pedestrian activity. Increased pedestrian activity also has a traffic-calming effect as it causes people to drive more cautiously.	On-street activity is promoted across the layout of Local Streets throughout the proposed LRD through passive surveillance provided by the apartment units looking directly onto the street and associated internal footpaths at street level. This follows best practice guidelines as set out in DMURS.
Signage & Line Marking	**Section 4.2.4**	DMURS notes that designers should use discretion regarding the self-regulating characteristics of streets and the impact of signs / line marking on the value of place.	Acknowledging the low-speed nature of the proposed development's Local Street network, the development design endeavours to limit the use of signage and road markings, deploying such enhancements sensitively throughout and incorporating specific street geometry which offers a degree of self-regulation. Furthermore, 'STOP' signage and line markings are proposed at the junction of the proposed road to the west of the subject site and Santry Avenue to reinforce the requirement for motorists to stop when exiting the site. Furthermore, 'YIELD' signage and line markings are proposed along the raised portion of the proposed road on the west of the subject site (leading up to a 50 mm traffic calming ramp) which will reduce vehicle speeds along this portion of the proposed road.
Materials & Finishes	**Section 4.2.6**	DMURS states that designers should use "*contrasting materials and textures to inform pedestrians of changes to the function of space (i.e., to demarcate verges, footway, strips, cycle paths and driveways) and in particular to guide the visually impaired*"	The range of proposed materials internally is in line with the requirements of DMURS to inform all road users (vehicles and active travellers) of the road priority at locations where different modes intersect in parallel with placemaking benefits. Appropriate surface material treatments are proposed to alert and subsequently influence driver behaviour and vehicle speeds when approaching intersection points with pedestrians and cyclists. Furthermore, appropriate materials are used to assist visually impaired users to navigate safely throughout the development. The use of tactile paving has been applied at key pedestrian crossing points in accordance with the guidance contained within the Traffic Management Guidelines (2003) and the UK Guidance on the use of Tactile Paving Surfaces to ensure a logical and navigable pedestrian environment is delivered for those with visual impairments.
Planting	**Section 4.2.7**	DMURS states that in Neighbourhoods and Suburbs, *"...a greater emphasis may be placed on the use of planted materials to promote 'softer' landscape elements to promote a greener 'living' character".*	The development proposes landscaping and tree planting along the length of the Local Streets surrounding the site. This creates a greater emphasis to promote 'softer' landscape elements, which promotes a greener 'living' character. The tree planting throughout the development provides further enclosure along the streets thereby complying with guidance set forth in DMURS.

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
Footways	**Section 4.3.1**	DMURS notes that well designed footpaths are free of obstacles and wide enough to allow pedestrians to pass each other in comfort.	Clear, unobstructed footpaths are proposed throughout the LRD and along the Local Streets associated with the LRD. These footpaths provide a high level of permeability throughout the proposed development at both the residential apartments as well as at the medical suite and community/arts & culture space, thereby complying with the minimum requirements as set out in DMURS.
Pedestrian Crossings	**Section 4.3.2**	DMURS considers crossings to be "*one of the most important aspects of street design as it is at this location that most interactions between pedestrians, cyclists and motor vehicles occur".*	A raised flat-top pedestrian crossing is proposed along the existing access road to the south of the site (permitted under the adjoining Santry Place development (Ref. 2713/17)). Furthermore, tactile paving for visually impaired users is provided at key junctions along on the local streets of the proposed development. This allows pedestrians to informally assert a degree of priority over vehicles, while simultaneously indicating to vehicle drivers that they need to observe caution when approaching these locations.
Corner Radii	**Section 4.3.3**	Reducing corner radii improves pedestrian and cyclist safety at junctions by lowering vehicle speeds and increasing inter-visibility between users.	Corner radii at junctions throughout the proposed LRD have been designed in accordance with DMURS guidance, namely: • The corner radii at the junctions to the north and south of the proposed road on the western boundary of the site are proposed to be c. 6 m. This is in line with DMURS guidance, as well as associated land uses surrounding the subject site, for corner radii to allow for occasional larger vehicles. • The reduced corner radius of c. 3.5 m at the entrance to the basement parking to the south encourages low vehicle speeds and maximises pedestrian and cyclist safety and convenience. • The current Left-in Left Out access to the southeast of the site (as part of the development to the south of the subject site – Planning Refs 2713/17 & 2737/19) has a radius of c. 12 m. The possible higher vehicle entry speeds that can be associated with this larger corner radius is offset by the midblock buildout and associated road geometry, which ultimately aims to reduce vehicle entry speeds to acceptable levels associated with **Neighbourhood** Place Function. • Corner radii are sufficient to provide enough space for infrequent large vehicles, such as refuse trucks, to access the site. Corner radii throughout the proposed development therefore comply with the standards within DMURS.
Pedestrianised and Shared Surfaces	**Section 4.3.4**	In the context of the proposed development, DMURS recognises the use of shared surfaces as being highly desirable where *"movement priorities are low and there is a high place value in promoting more liveable streets (i.e., home zones) such as on local streets within neighbourhood"*	The LRD has been designed to incorporate features that ensure drivers recognise that they must proceed with caution within a low-speed environment and that they may be sharing the space with non-motorised users. This is made possible with the planting of trees and by applying differing materials and finishes within the design philosophy, all which follow best practices as set out in DMURS guidance.

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
Carriageway Width	**Section 4.4.1**	DMURS states that carriageway widths on Arterial and Link Streets for low to moderate design speeds should lie in the range of 5.5 – 6.5 m, while on Local Streets carriageway widths should be between 5 – 5.5 m and can be increased to 6 m with the presence of on-street parking.	The proposed LRD's Street Network incorporates a typical carriageway width of 6 m. This is in line with DMURS guidance for Local Streets on which on-street car parking is provided as this carriageway width accompanies manoeuvring requirements of vehicles to/from car parking bays. Furthermore, the width of the carriageway is reduced to 4 m at the proposed traffic calming build out along the proposed street on the western boundary of the subject site.
Carriageway Surfaces	**Section 4.4.2**	DMURS states that the material, texture, and colour of the carriageway are important tools for informing drivers of driving conditions. The use of paving, imprinted, or looser materials is one of the clearest ways of reinforcing a low-speed environment and of signalling to all users that the main carriageway is to be shared.	The proposed development's local street network will be primarily formed using standard macadam / asphalt finishes, whilst footpaths will be formed by concrete. Contrasting materials will be applied at the transitional points to assist in alerting drivers to proceed with caution, thereby reinforcing pedestrian/cyclist priority at crossings. Furthermore, the shared surface areas will have a buff tarmac finish to emphasis the shared nature of the environment.
Junction Design	**Section 4.4.3**	DMURS states that junction design is largely determined by traffic volumes. Generally, designers should provide crossings on all arms of a junction, reduce kerb radii (if possible, to reduce entry speed of vehicles), and omit staggered crossings in favour of single-phase crossings.	Internal junctions throughout the proposed LRD will be priority-controlled, which is consistent with the proposed internal traffic flow characteristics and associated geometry that complies with the requirement in DMURS for junctions between Local Streets. Furthermore, tactile paving is provided at all crossings throughout the proposed LRD, in line with guidance provided by DMURS.
Forward Visibility & Visibility Splays	**Sections 4.4.4 and 4.4.5**	DMURS provides Stopping Sight Distance (SSD) Standards in relation to Forward Visibility requirements at junctions to ensure that drivers have sufficient time to perceive and react to their surrounding environment.	Appropriate and clear, unobstructed visibility splays on both the horizontal and vertical planes, as per DMURS requirements, are safeguarded at all junctions associated with the proposed development in response to the corresponding adopted design speed.
Kerbs	**Section 4.4.8**	DMURS provides indicative kerb heights of 125mm on Link Roads for clear segregation, while lower kerb heights of 60mm are appropriate where pedestrian activity is higher & design speeds lower i.e., Local Streets.	The kerbs throughout the proposed development will be designed at the recommended, appropriate heights as per DMURS, to encourage higher pedestrian activity due to lower design speeds being applied. The kerb heights throughout the proposed development will therefore comply with guidelines as set out in DMURS.
On-Street Parking	**Section 4.4.9**	DMURS states that well-designed on-street parking can help calm traffic, although a balance needs to be struck as an over provision will conflict with sustainability objectives and be visually dominant.	In relation to DMURS guidelines, parking at the proposed development is to be provided through a mixture of the following parking types: • **On-Street**: ➢ Kerbside, parallel spaces – These spaces are provided along the main internal site access road. Parallel spaces are limited to at most 2 no. spaces, which is in line with DMURS as this arrangement reduces the visual impact produced by parallel parking spaces. Appropriate, additional width is

Design Element	DMURS Reference	DMURS Guidance	Proposed LRD's Adopted Design Approach
			provided for accessible/disabled parallel parking spaces to allow for sufficient room to access/exit a vehicle parked on these spaces. ➢ Kerbside, perpendicular spaces – These spaces are proposed on both sides of the proposed road to the west of the subject site and on the road to the south. Perpendicular spaces are limited to at most 5 no. spaces, which is in line with DMURS by reducing visual impact, similarly as for parallel parking spaces. Along the site access road from Swords Avenue to the south, perpendicular spaces are limited to one selected location to encourage a greater sense of enclosure and ensures that parking does not dominate the streetscape. • **Off-Street (Basement)**: ➢ Private parking spaces – These spaces are provided within the basement level to future residents of the proposed development. The potential dominance of both on and off-street car park areas are minimised through the provision of landscaped buffers and street trees thereby ensuring that excessive lengths of uninterrupted street car parking does not dominate the internal streets.
Multi-disciplinary Design Team	**Section 5.1**	DMURS encourages multi-disciplinary input into the development of a scheme to ensure that a holistic design approach is implemented.	In accordance with design philosophy of DMURS, the proposed LRD has been prepared by a multi-disciplinary design team. The design team includes members from different firms such as DFLA, Davey and Smith Architects, and DBFL Consulting Engineers.
Road Safety Audit (RSA)	**Section 5.4.1**	RSAs are required to identify potential hazards and how they could affect road users. They should be undertaken in full cognisance of the principles, approaches and standards contained within DMURS	Road Safety Audits (RSA) can be considered across all phases of the proposed LRD's design timeline to ensure adequate and appropriate measures are included to guarantee satisfactory standards associated with traffic safety. A Road Safety Audit (Stage 1) has been undertaken for the proposed LRD and the Auditing Firm will issue a standalone Audit Report.

6 Conclusion

6.1 Summary

The design approach adopted for the proposed Large-Scale Residential Development (LRD) at a site on the Santry Avenue / Swords Road junction in Santry, Dublin 9 has sought to respect best practice guidance presented in DMURS. As detailed in Chapter 5 above, various aspects of the proposed LRD's design have been assessed and follows guidelines set forth in DMURS.

Based on this assessment, certain concluding remarks can be made:

- The proposed LRD has a Place Value associated with Neighbourhoods within the larger context of Santry, Dublin 9.
- The LRD provides a street layout featuring a Grid (Orthogonal) pattern wherein the vehicular access road to the south of the subject site and the proposed road to the west connect in an orthogonal manner, prioritising easy navigation for pedestrians and cyclists whilst simultaneously promoting sustainable transportation.
- The proposed development includes 7 apartment blocks designed to fit density and land use requirements, meeting DMURS regulations. Blocks vary in size, with 6 no. blocks dually adjoined for pedestrian access. The design prioritises pedestrian and cyclist accessibility, complying with DMURS standards.
- The proposed development aligns closely with DMURS regulations by optimizing block sizes according to density, land use, and pedestrian accessibility, achieving a 1:1 ratio of building height to street width which creates a very strong sense of enclosure.
- On-street activity is promoted across the layout of Local Streets throughout the proposed LRD through passive surveillance provided by the apartment units looking directly onto the street and associated internal footpaths at street level. This follows best practice guidelines as set out in DMURS.
- The masterplan reinforces a sense of street enclosure through the addition of street trees with appropriate canopy spreads best suited to the Local Streets within the development for optimal compliance with DMURS.
- The development has been designed to incorporate features that ensure drivers recognise that they must proceed with caution within a low-speed environment and that they are

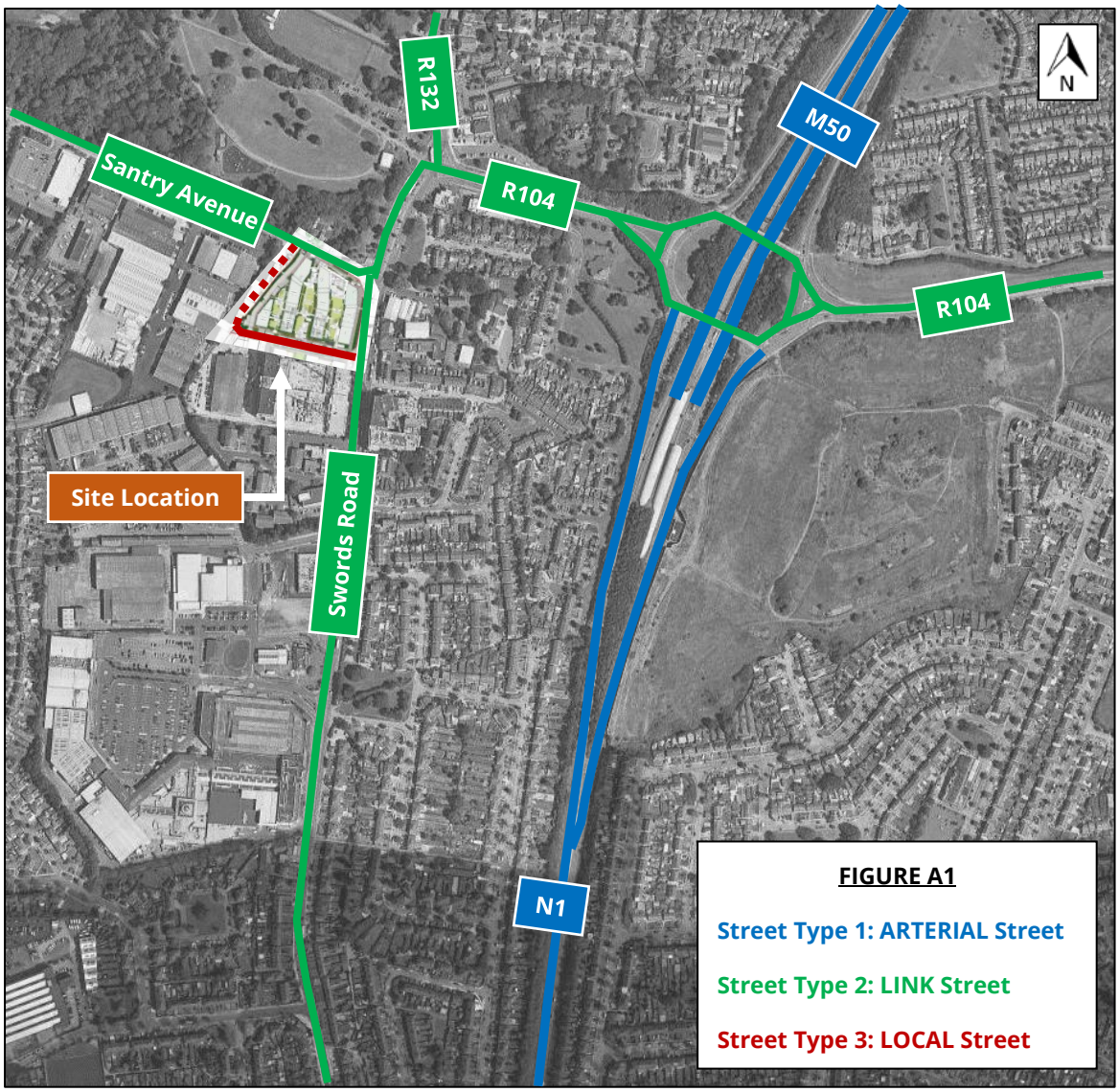
sharing the space with non-motorised users. This is made possible with the planting of trees and by applying differing materials and finishes within the design philosophy.

6.2 Conclusion

The preceding sections of this report outline the specific LRD scheme attributes which contribute to achieving the DMURS design objectives. The overall design approach successfully achieves an appropriate balance between the functional requirements of different network users, whilst also allowing for an enhanced sense of place. The implementation of a self-regulating street network will actively manage movement by offering different modal and route choices in a low speed, high quality environment. Consequently, the proposed LRD is the outcome of an integrated design approach which will ultimately deliver safe, convenient and attractive networks in addition to promoting real and viable alternatives to car-based journeys.

Appendix A : Santry Avenue LRD

Proposed Development Street Hierarchy


R132
M50
Santry Avenue
R104
R104
Site Location
Swords Road
N1
N
FIGURE A1
Street Type 1: ARTERIAL Street
Street Type 2: LINK Street
Street Type 3: LOCAL Street

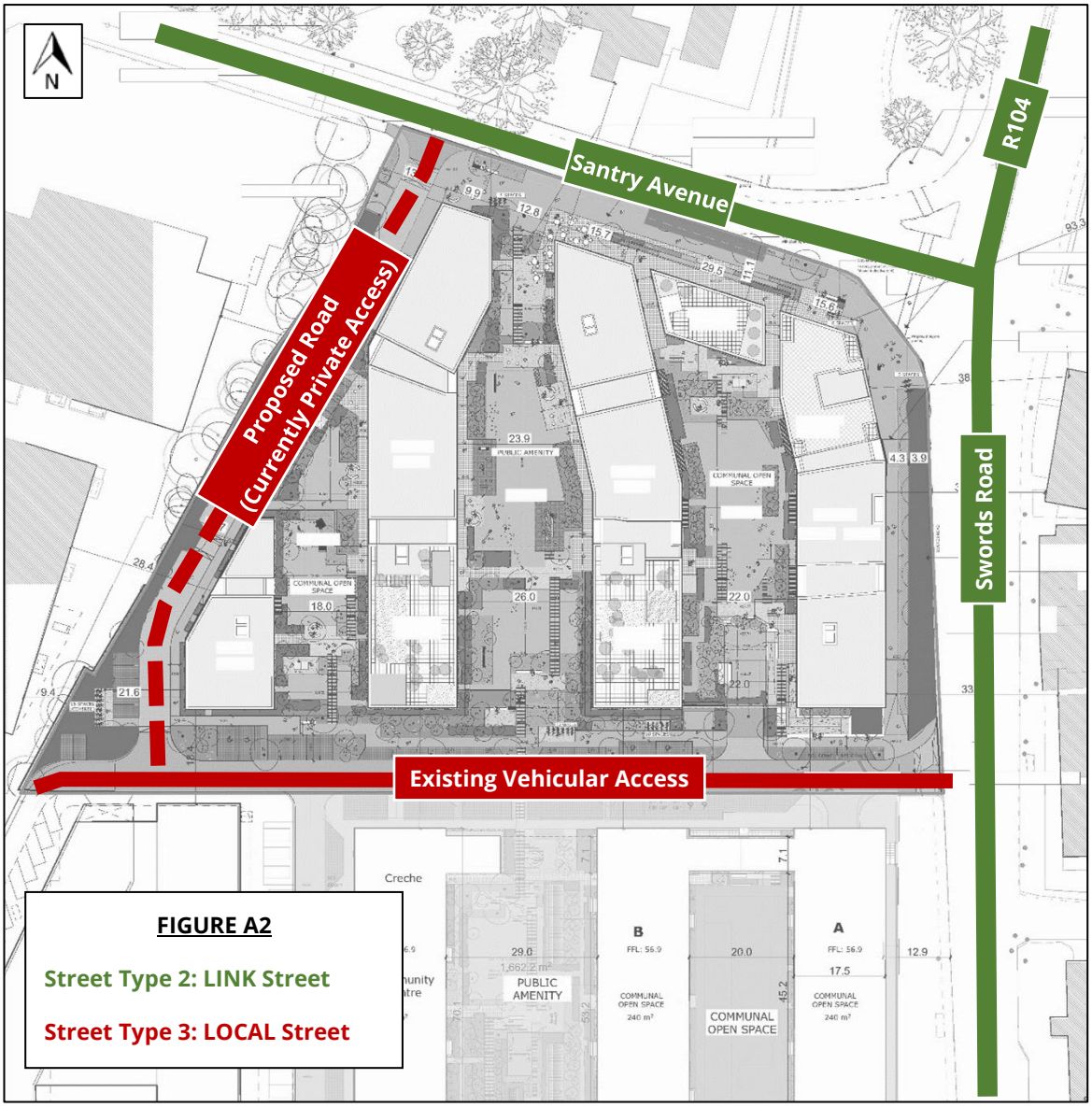


FIGURE A2

Street Type 2: LINK Street

Street Type 3: LOCAL Street

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