



DMURS Report and Statement of Design Consistency

Proposed Strategic Housing Development at Belcamp, Dublin 17

April 2022

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Comments

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Contents

- 1. Introduction1**
 - 1.1 Background of Report1
 - 1.2 Site Location and Description1
 - 1.3 Wider Development Area2
 - 1.4 Proposed Development2
 - 1.5 DMURS Background.....4

- 2. Road and Transport Network5**
 - 2.1 Existing Transport Network5
 - 2.1.1 Existing Road Infrastructure5
 - 2.1.2 Existing Pedestrian Infrastructure6
 - 2.1.3 Existing Cycle Infrastructure.....6
 - 2.1.4 Existing Bus Network.....6
 - 2.1.5 Existing Rail Network.....7
 - 2.2 Proposed Transport Network7
 - 2.2.1 Proposed Road Infrastructure7
 - 2.2.2 Proposed Pedestrian Infrastructure.....8
 - 2.2.3 Proposed Cycle Infrastructure8
 - 2.2.4 Future Bus Network.....9
 - 2.3 Development Phasing12
 - 2.4 Related Reports13
 - 2.4.1 Engineering Assessment Report13
 - 2.4.2 Traffic and Transport Assessment13
 - 2.4.3 Travel Plan13
 - 2.4.4 Car Parking Strategy13
 - 2.4.5 Sustainable Transport Strategy Study.....13
 - 2.4.6 Public Transport Capacity Assessment of Belcamp Site13

- 3. Design Manual for Urban Roads and Streets14**
 - 3.1 Background14
 - 3.2 Urban Design Quality Indicators14
 - 3.3 Creating a Sense of Place15
 - 3.3.1 Connectivity15
 - 3.3.2 Enclosure.....16
 - 3.3.3 Active Edge17
 - 3.3.4 Pedestrian Activities/Facilities17
 - 3.4 Key Design Principles18
 - 3.4.1 Design Principle 1: Pedestrian Activity/Facilities18
 - 3.4.2 Design Principle 2: Multi-Functional Streets19

3.4.3	Design Principle 3: Pedestrian Focus	20
3.4.4	Design Principle 4: Multi-Disciplinary Approach	20
3.5	External Quality Audit.....	21
3.6	Statement of Design Consistency	24

Figures

Figure 1	Site Location (Source: Google Maps)	1
Figure 2	Existing Roads	5
Figure 3	Current N8 Route and Proposed N8 Route through Belcamp	10
Figure 4	Proposed Bus Gate through Belcamp.....	10
Figure 5	Possible Future D Route through Belcamp.....	11
Figure 6	SHD Phasing Plan.....	12
Figure 7	Typical Proposed Cycle Lanes.....	15
Figure 8	Section of Belcamp Parkway Between Blocks 1 and 2.....	17
Figure 9	Typical Pedestrian Crossing.....	18
Figure 10	Proposed Bus Gate with Pedestrian and Cycle Facilities	19
Figure 11	Pedestrian Focus at Block 3	20

Tables

Table 1	Schedule of Accommodation.....	2
Table 2	Road Safety Audit Issues Identified and Remedial Actions	22
Table 3	Access Audit Issues Identified and Remedial Actions	22
Table 4	Walking Audit Issues Identified and Remedial Actions	22
Table 5	Cycling Audit Issues Identified and Remedial Actions	23
Table 6	Parking Audit Issues Identified and Remedial Actions	24

Appendices

- A. External Quality Audit

1. Introduction

1.1 Background of Report

This DMURS Statement of Design Consistency has been prepared by Waterman Moylan with input from other members of the Design Team as part of the planning documentation for a proposed Strategic Housing Development (SHD) planning submission in Belcamp, Dublin 17.

This report assesses the proposed road and transportation network throughout site in relation to the standards set out in the Design Manual for Urban Roads and Streets (DMURS).

1.2 Site Location and Description

The Belcamp lands are located centrally in the Dublin Fringe area, north of the Northern Cross Route, R139, to the east of the IDA lands zoned HT, and to the west of the Malahide Road (R107). The total site area is c.67.2 hectares.

The subject site is bounded to the north and to the west by agricultural lands, to the south by the R139 Regional Road and to the east by an existing mixed-use development, by Phase 1 of the Belcamp development, which is currently under construction by the Applicant, and by the Malahide Road (R107).

The Mayne River flows from west to east through the site. The northern portion of the subject site is within Fingal County Council's jurisdiction, while the southern portion of the site is within Dublin City Council's jurisdiction, with the Mayne River forming the border between the two Local Authorities.

The site location is shown in the Figure below:

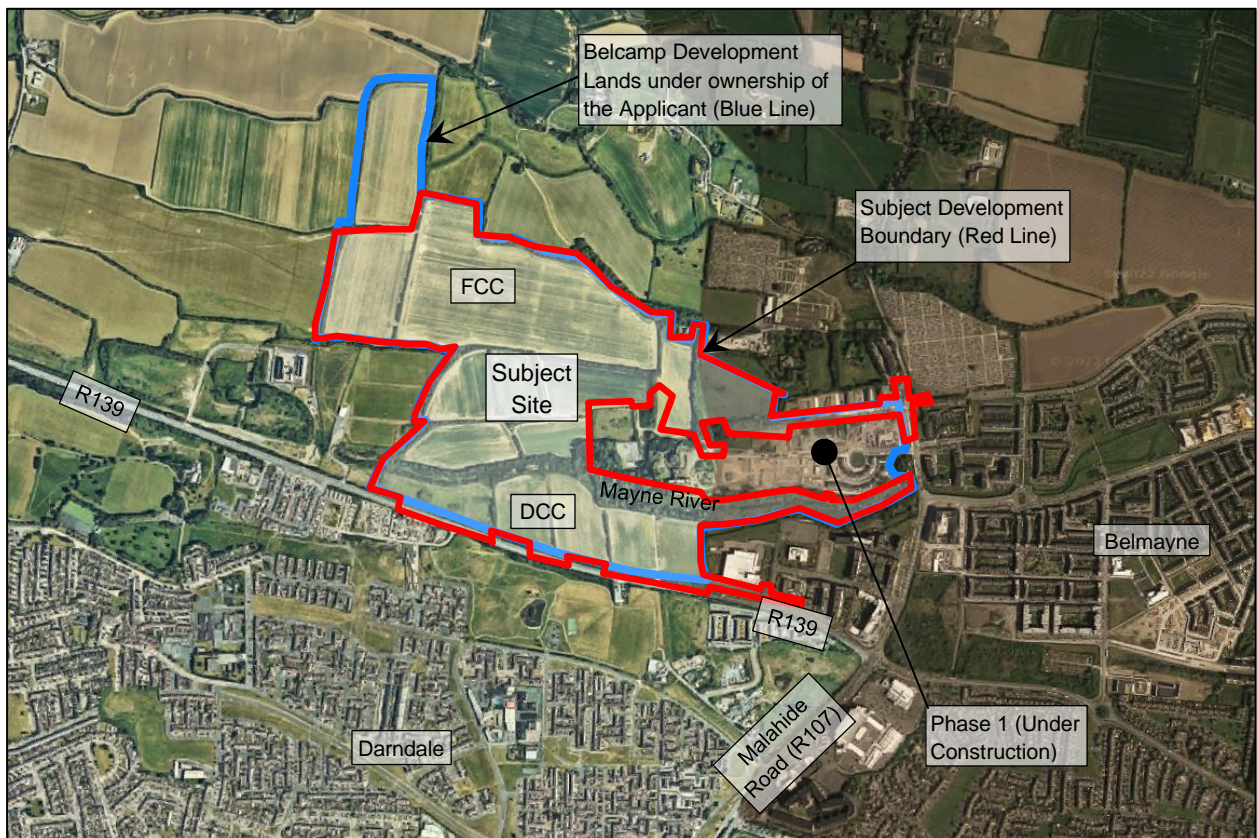


Figure 1 | Site Location (Source: Google Maps)

Topographic survey data shows that the southern portion of the site falls generally from south-west to north-east, towards the Mayne River, with a high point of c.35.5m OD Malin at the south-west of the site and a low point of c.26.5m OD Malin at the north-east of the main development area. The strip of land proposed as a greenway continues to fall to a low point of c.17m OD Malin close to the Malahide Road.

The northern portion of the site falls generally from north-west to south-east towards the Mayne River, though some of the lands at the north-east of the site fall to the north-east, away from the river and towards a ditch and culvert at the north-eastern boundary of the site.

1.3 Wider Development Area

The subject site is part of a larger proposed multi-phased development which includes lands to the east of the site, which are also under the ownership of the Applicant. Phase 1 of the Belcamp development was approved and is currently under construction under Planning Reference F15A/0609, F19A/0220 and F19A/0221. Phase 1B of the development, immediately north of the Phase 1 lands and south of the Crosswaithe development (which is under construction by others under Planning Reference F18A/0092), is currently on appeal under Planning Reference F21A-0401. Planning submissions have been made for Blocks 1, 2 and 3, located immediately east and north of the old Belcamp College building complex. Proposals to conserve the existing walled garden and provide for amenities within the enclosure are included as part of the Block 3 application, ref. F22A/0136.

Future development is proposed at the remainder of the Belcamp lands subject to future planning approvals.

In addition to the development of the Applicant's Belcamp lands, there is development proposed and underway by others in the vicinity of the site, including development of the Belmayne – Belcamp Lane Masterplan area, located to the south and to the east of the subject lands.

1.4 Proposed Development

The proposed development comprises a total of 473 houses, 274 duplexes and 1,780 apartment units in 18 no. blocks, all on a c.67.8 Ha site. All of the proposed houses/duplexes are in the northern portion of the site, within Fingal County Council, and there are 550 apartment units proposed in this portion of the site, with 1,230 apartment units proposed in the southern portion of the site, within Dublin City Council. The schedule of accommodation is set out in the Table below:

Description		1-Bed	2-Bed	3-Bed	4-Bed	Total Residential	Commercial Space
Dublin City Council	Block 1	94	139	40	-	273	-
	Block 2	71	73	16	-	160	-
	Block 3	96	176	25	-	297	925.8m ² Retail/Café and Childcare
	Block 4	70	178	37	-	285	-
	Block 5	37	51	8	-	96	-
	Block 6	19	80	20	-	119	-
	DCC Subtotal	387	697	146	0	1,230	925.8m²
Fingal County Council	Houses	-	16	385	72	473	-
	Duplexes	24	40	210	-	274	-
	Block A	8	15	-	-	23	-
	Block B	8	15	-	-	23	-

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total Residential	Commercial Space
Block C	7	20	-	-	27	-
Block D	22	15	5	-	42	1,020.5m ² Pub/Restaurant & Retail
Block F	44	56	3	-	103	1,162.0m ² Café/Bar/Restaurant & Retail
Block G	29	36	-	-	65	140.0m ² Retail
Block H	20	26	-	-	46	-
Block J	16	24	-	-	40	472.0m ² Retail
Block L	20	26	-	-	46	-
Block M	24	32	-	-	56	-
Block N	26	25	5	-	56	-
Block P	5	18	-	-	23	-
Crèche	-	-	-	-	-	606.7m ² Childcare
Clubhouse	-	-	-	-	-	97.0m ² Changing Rooms
FCC Subtotal	253	364	608	72	1,297	3,498.2m²
TOTAL	640	1,061	754	72	2,527	4,424.0m²

Table 1 | Schedule of Accommodation

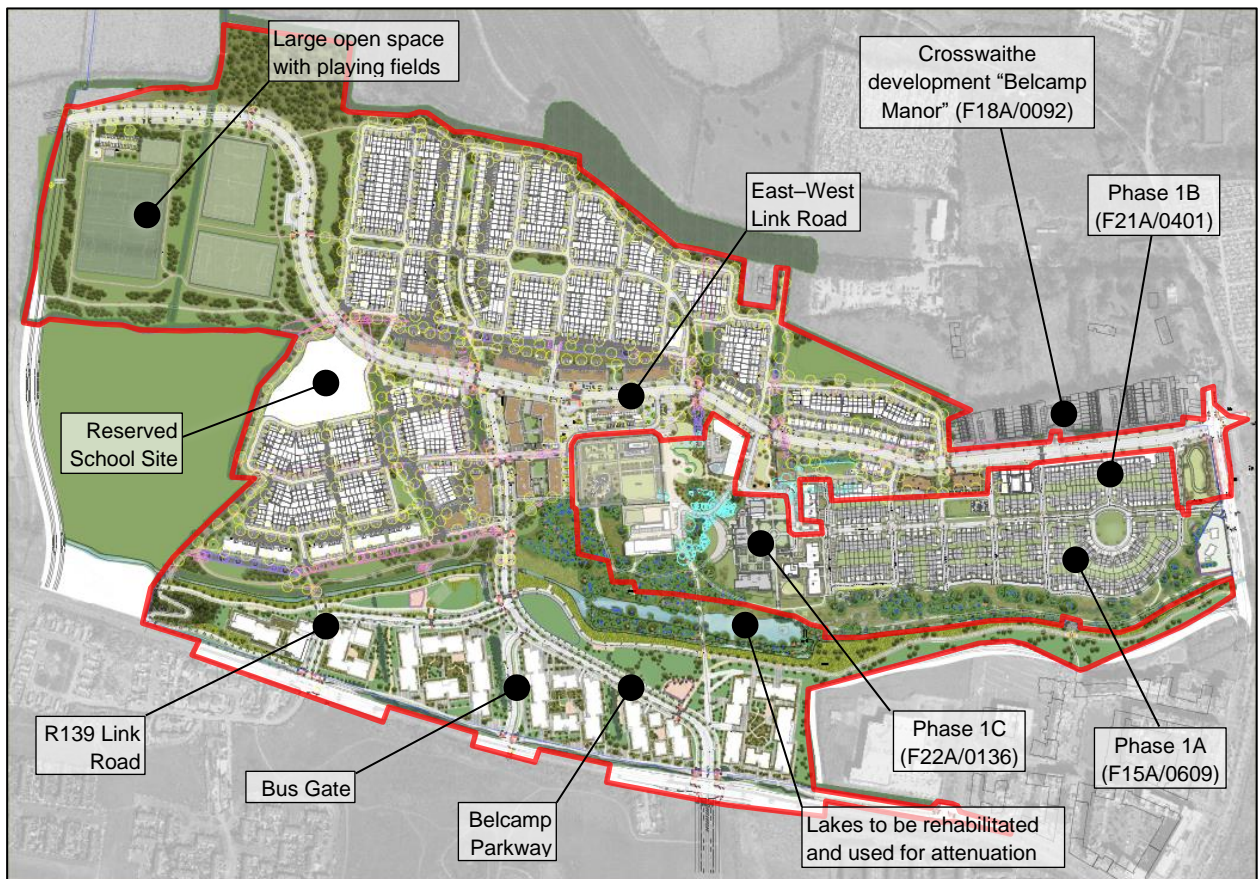


Figure 2 | Proposed Site and Context

The eastern portion of the site, between the Mayne River to the north and existing development to the south, is proposed to be used as a greenway. It will serve as a connection for pedestrians and cyclists between the subject site and the Malahide Road (R107).

There is a large open space proposed at the north-west of the site, in addition to several smaller open spaces throughout the development.

1.5 DMURS Background

The Design Manual for Urban Roads & Streets (DMURS) has been prepared for the Department of Transport, Tourism and Sport and the Department of Housing, Planning and Local Government and is the acknowledged best practice design guide for the urban environment of roads and streets.

The stated objective of DMURS is to achieve better street design in urban areas. This will encourage more people to choose to walk, cycle or use public transport by making the experience safer and more pleasant. It will lower traffic speeds, reduce unnecessary car use and create a built environment that promotes healthy lifestyles and responds more sympathetically to the distinctive nature of individual communities and places. The implementation of DMURS is intended to enhance how we go about our business, enhance how we interact with each other, and have a positive impact on our enjoyment of the places to and through which we travel.

Section 2, below, outlines the existing and proposed road and transportation network within the site and in the surrounding area. Section 3 outlines the specific design features that have been incorporated within the proposed scheme with the objective of delivering a design that is in compliance with DMURS.

2. Road and Transport Network

2.1 Existing Transport Network

2.1.1 Existing Road Infrastructure

The Belcamp development site is bounded by the R139 to the south and extends into Fingal to the north, with access onto the Malahide Road (R107).

R139 is a regional road running east–west along the southern boundary of the subject site. Approximately 3.2km west of the junction with Malahide Road (R107), the R139 provides connection to M1 and M50 motorways (M1 Exit 1 and M50 Exit 3). Along this section, R139 comprises two lanes on both sides with dedicated right-turning pocket lanes, which currently facilitate access to some residential and commercial developments. There is an existing right turning lane into the development site, and there is a signal-controlled pedestrian crossing adjacent to the site.

The Malahide Road (R107) is a regional road running south–north to the east of the site, at the boundary of the proposed greenway. This road extends from Fairview, approximately 6km south of the subject site, to Malahide, approximately 4.5km north of the subject site. The carriageway of the Malahide Road adjacent to the proposed development site (between Belmayne and R123 Balgriffin Road) is approximately 9.0m wide.

The Balgriffin Road (R123) forms a junction with the Malahide Road immediately east of the subject site and continues east towards Baldoyle Bay.

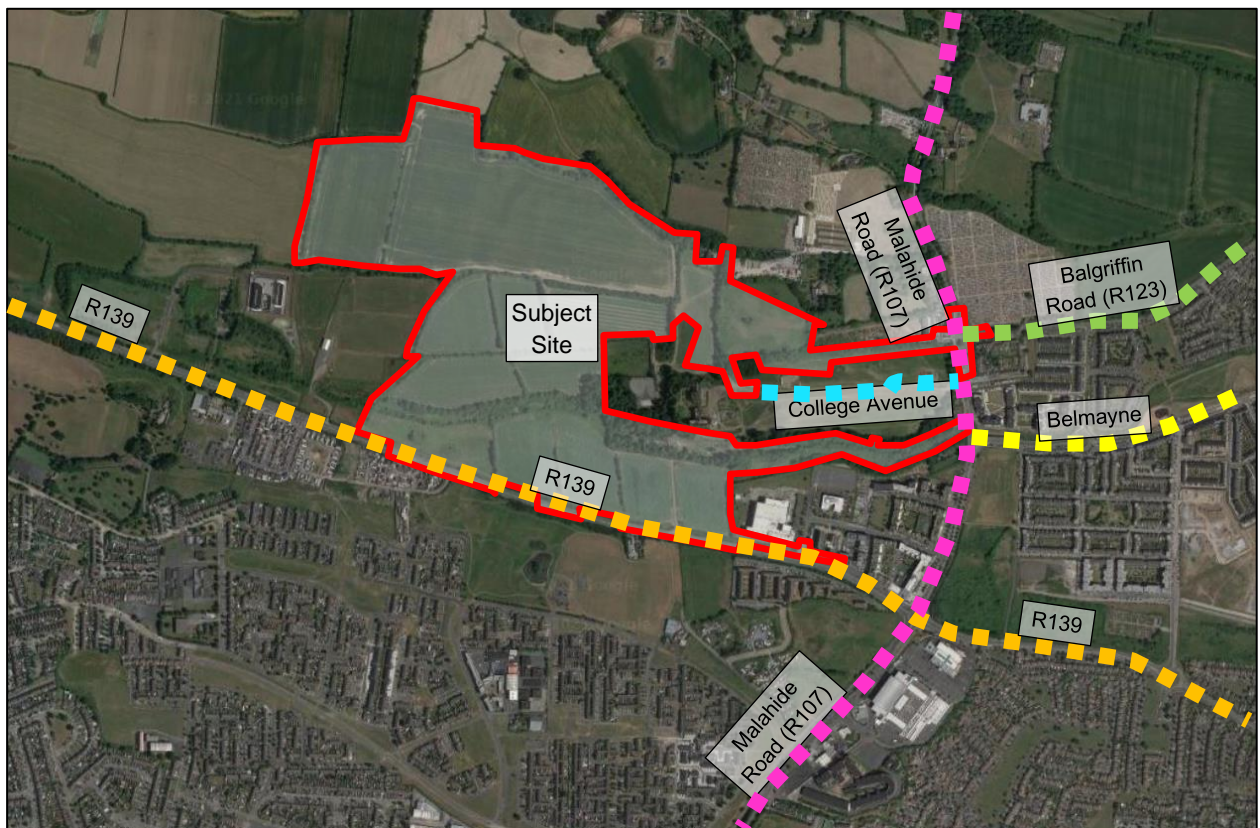


Figure 3 | Existing Roads

A portion of the Malahide Road is currently being upgraded as part of the Phase 1 works. The upgrades extend from the Parkside Boulevard/Belmayne Junction and continue north approximately 170m. The upgrades include a new entrance to serve the Phase 1 site, new footway construction, planning and relaying of a portion of the carriageway, wearing course and base course replacement and new landscaping. Access to Phase 1, which is currently under construction, is provided via College Avenue, a new east–west road accessed via a new junction with the Malahide Road.

2.1.2 Existing Pedestrian Infrastructure

The existing pedestrian facilities in the surrounding area comprise an inter-connected network of footways linking the various neighbourhoods to each other, to the existing schools, to the Clongriffin train station, to public parks and to the surrounding public pedestrian network.

2.1.3 Existing Cycle Infrastructure

Cyclists benefit from the provision of dedicated cycle lanes along both sides of the carriageway on Belmayne, Hole in the Wall Road and Main Street (Clongriffin). Belmayne includes cycle lanes along both sides of the road up until Marrsfield Avenue. These cycle lanes are separated from the carriageway by a grass verge.

Although there isn't a continuous cycle lane on the Malahide Road, there are sporadic stretches with cycle lanes. There **is** continuous cycle lane marking on R139 from site into city. Parts of Artane and the approach to Fairview share with the bus lane. D-Spine upgrades likely to further improve conditions. Cycle lanes (shared with the bus lane) are only provided on the R139 to the east of the Malahide Road (R107), continuing along Temple View Avenue, with no cycle lanes along the R139 south of the subject site.

These cycle lanes facilitate access to Clongriffin train station, Malahide Road Industrial Park and Dublin City Centre. The cycle journey from the site to Clongriffin train station takes approximately 15 minutes, and the cycle journey from the site to Malahide Road Industrial Park takes approximately 12 minutes. The cycle journey from the site to the GPO on O'Connell Street in Dublin City Centre takes approximately 33 minutes.

Covered public cycle parking with 112 stands is provided in Clongriffin at Station Square. This public cycle parking currently provides the opportunity for residents living in the surrounding area to commute to their final destination (place of work, school, college, etc.) by cycle-train combined travel.

Refer also to Section 6 of the Traffic and Transport Assessment, which accompanies this submission under separate cover, for and assessment of the Site Accessibility.

2.1.4 Existing Bus Network

The subject site is directly served by public bus services. The closest bus stops are located on Malahide Road (R107) immediately east of the proposed development site. These bus stops are served by Dublin Bus Routes 42 and Route 43. Route 42 operates between Talbot Street in Dublin City Centre and Sand's Hotel in Portmarnock. Route 43 operates between Talbot Street in Dublin City Centre and Swords Business Park.

Travel time from the bus stop on Malahide Road (R107) to Talbot Street in Dublin City Centre is approximately 16 minutes. In the opposite direction, the travel time from the subject bus stop on Malahide Road (R107) to Malahide is approximately 16 minutes, and to Swords Business Park is approx. 20 minutes.

In addition to the aforementioned Bus Routes 42 and 43, the surrounding area is also served by Dublin Bus Routes 15 and 27. The closest bus stops served by these routes are located on the R139, south-east of the proposed development site, east of the Malahide Road junction.

Access from the subject site to the bus stops on R139 is via Malahide Road (R107). The walking time varies from approximately 12 minutes from the portion of the site within DCC to 25 minutes from the units at the north-west of the development. A network of footpaths is provided on both sides of Malahide Road (R107) and the R139, with dedicated pedestrian crossings at each road crossing point along the route to the bus stops. These footpaths are separated from the carriageway by a grass verge for the majority of the route, with all pedestrian crossings including dropped kerbs and tactile pavement.

2.1.5 Existing Rail Network

The closest train station is Clongriffin Station, located approximately 2.5km (31-minute walk; 15-minute cycle) east of Belcamp Town Square, near the centre of the subject site. Walking and cycling access from the subject site to the Clongriffin Station is via Belmayne/Marrsfield Avenue. A good network of footpaths is provided on Belmayne and Marrsfield Avenue along the route to the station. Belmayne includes cycle lanes along both sides of the road up until Marrsfield Avenue. These cycle lanes are separated from the carriageway by a grass verge. While no cycle lanes are provided along Marrsfield Avenue, there is a cycle route within Fr. Collins Park linking to the 'Panhandle Park' in Clongriffin providing an off road link directly to Clongriffin Square cycleparking and Dart Station.

The Clongriffin Station is served by Commuter Rail and DART services. The Commuter Rail service through Clongriffin Station serves all stations from Dundalk through Dublin City Centre to Gorey. The service operates at 3–4 trains per hour in both direction on weekdays.

The DART service through Clongriffin Station serves all stations from Malahide through Dublin City Centre to Bray and Greystones. On weekdays, this service operates at a 20-minute frequency in both directions.

For further assessment of the existing rail network, including analysis of frequency and capacity of service, please refer to the accompanying Traffic and Transport Assessment.

2.2 Proposed Transport Network

2.2.1 Proposed Road Infrastructure

The proposed road network provides a legible road hierarchy and has been designed to closely align with the Fingal County Council and Dublin City Council Development Plans, the South Fingal Transportation Study (SFTS) and DCC Draft Belmayne Belcamp Masterplan, to meet the emerging transportation demand.

The proposed road hierarchy will comprise of two new arterial roads (the East–West Link Road and the Belcamp Parkway), several new link streets, and a series of new local access roads, including shared surface/homezones.

The East–West Link Road (EWLR) traverses the portion of the Belcamp lands within FCC's jurisdiction, extending from the Malahide Road (R107) at the east as far as the western boundary of the Applicant's lands.

The Phase 1B submission, which has received a decision to grant planning permission, includes the first c.350m of the East–West Link Road and upgrade works at the Malahide Road/Balgriffin Cottages junction. The junction is proposed to be upgraded to form a new 4-way signalised junction, with the EWLR forming the western arm of the new junction. The proposed junction includes new right-turning lanes and cycle facilities. The upgrade works will extend south on the Malahide Road to connect with the upgrades currently being carried out as part of the Phase 1 development. The Phase 1C application, which has been submitted to Fingal County Council for planning (Reg. Ref. F22A/0136), includes portions of the EWLR to provide access to the Phase 1C Blocks.

Although these portions of the EWLR have already been applied for, the subject application includes the entire length of the East–West Link Road from the Malahide Road junction at the east of the site as far as the IDA Lands to the west, and includes the proposed upgrade works at the junction with Malahide Road. The works proposed under this subject application are in accordance with those already applied for under Phases 1B and 1C, but are nonetheless included as part of this submission to ensure this application can stand alone with connections from the site to the Malahide Road.

The EWLR is designed to facilitate continuation west beyond Belcamp, in accordance with the Fingal Development Plan and the South Fingal Transportation Study. This street has been designed to incorporate high quality public transport facilities including a dedicated bus lane in both directions and high-quality bus stops strategically located to serve the proposed development. The road also includes provision for active forms of transport, with separated cycle tracks on both sides of the carriageway and continuous footpaths with pedestrian crossings provided at anticipated desire lines.

Belcamp Parkway is an extension of the DCC Belcamp/Belmayne Master Plan, linking the R107 Malahide Road to the R139 and forming a Boulevard style street through the DCC development linking to the Belcamp SHD development. It is a north-south arterial road and will form a new junction with the R139, in DCC, where there is currently a private gated access. The proposed alignment of Belcamp Parkway follows the Dublin City Council Development Plan and the South Fingal Transportation Study alignment.

2.2.2 Proposed Pedestrian Infrastructure

The proposed development will include a network of footpaths throughout the site and connecting with the surrounding infrastructure providing efficient, high-quality routes along desire lines to destinations within and surrounding the development area.

An active frontage along routes within the development is achieved with frequent entrances and openings that ensure the street is overlooked and that generate pedestrian activity as people come and go from buildings.

High quality pedestrian linkages will be provided to connect to Malahide Road (R107), the Mayne River, City Junction and to the R139, linking the development with the existing Clarehall Junction shopping and commercial area and to the future Belmayne Square.

Particular attention will be paid at detail design stage to the quality of the pedestrian routes and to the facilities at pedestrian destinations. These destinations include the Belcamp Town Square, the Walled Garden, Belcamp Square, local school and crèche facilities, connections to the public bus network, the green route along the Mayne River and the route along the R139 to Clarehall Junction.

Junctions will be designed with raised pedestrian tables/crossings at main pedestrian desire lines, allowing pedestrians to cross at grade. In addition to pedestrian and toucan facilities at signal-controlled junctions, on-call pedestrian signals will be provided at key desire lines.

2.2.3 Proposed Cycle Infrastructure

The proposed development will include dedicated cycle facilities, including an off road cycle track along the East–West Link Road and along the R139, separated from the vehicular carriageway by a verge. The proposed junction upgrade at the site entrance from Malahide Road includes new cycle stopping areas and new cycle lanes along the Malahide Road.

High quality cycle linkages will be provided to connect to Malahide Road (R107), the Mayne River, City Junction and to the R139 linking the development the existing Clarehall Junction shopping and commercial area and to the future Belmayne Square.

Particular attention will be paid at detail design stage to the quality of the cycle routes and to the facilities at cycle destinations. These destinations include the Belcamp Town Square, the Walled Garden, Belcamp Square, local school and crèche facilities, connections to the public bus network, the green route along the Mayne River and the route along the R139 to Clarehall Junction.

2.2.4 Future Bus Network

Waterman Moylan met with representatives from the NTA, FCC and DCC in March 2022 to discuss the transport requirements of the proposed Belcamp SHD development.

The current N8 BusConnects route departs from Clongriffin train station, continuing along Main Street before turning south onto the Hole in the Wall Road and then continuing west along the R139. At the meeting, the NTA advised that they require the N8 BusConnects Route to be altered to run through the subject development along the East–West Link Road (EWLR) into Belcamp town square and then, preferably, directly south onto the R139.

The proposed road layout was adjusted following this meeting, to ensure that the requirements of the NTA are met, with the introduction of a Bus Gate directly south from Belcamp Town Square onto the R139. This will assist with the legibility of the route through the site while also giving buses priority over cars. As advised by the NTA, the new route proposed will still depart from Clongriffin train station, but will continue westwards to the Malahide Road along Main Street rather than turning south at Hole in the Wall Road. The bus route will then turn north onto Malahide Road and then turn west at the proposed junction between Malahide Road, Balgriffin Road and the proposed EWLR.

The N8 route will continue westwards passing through Belcamp town square before turning southwards on to Belcamp Parkway. The N8 route will then benefit from a newly proposed bus gate providing a bus-only route onto the R139, with signal control on demand. The N8 will then continue westwards along the R139 as per its current alignment.

The proposed road layout was amended following this meeting, to ensure that the requirements of the NTA are met. As noted above, the amended proposal provides a bus gate linking directly southwards from the EWLR onto the R139. The proposed bus gate will give bus priority over cars and to provide a direct south link from the EWLR onto the R139, as discussed with the NTA in March 2022. We do note however, Belcamp Parkway and the R139 Link Road have both also been designed to accommodate bus routes. This provides a robust, flexible design with options for future bus routes.

The removal of the bus gate and the use of the R139 link Road as a bus route can therefore be accommodated without compromise to the proposed submission, if that is ultimately the NTA's preference for the N8 BusConnects route.

The current N8 BusConnects route and the proposed altered route are shown in the Figure below:

N8 provides Belcamp with a through bus route to the employment zones to the west and a connection to both the D Spine on the R139 and Clongriffin Dart beyond.

The D Spine is the among the first Bus Connects routes to be provided. It is located on the R139 east of the proposed development and within 1000m of much of the proposed development. Journey time to the city centre is anticipated to be 25minutes with buses every 15 minutes. The D1 will run with N8 on Main Street and into Belmayne Square)

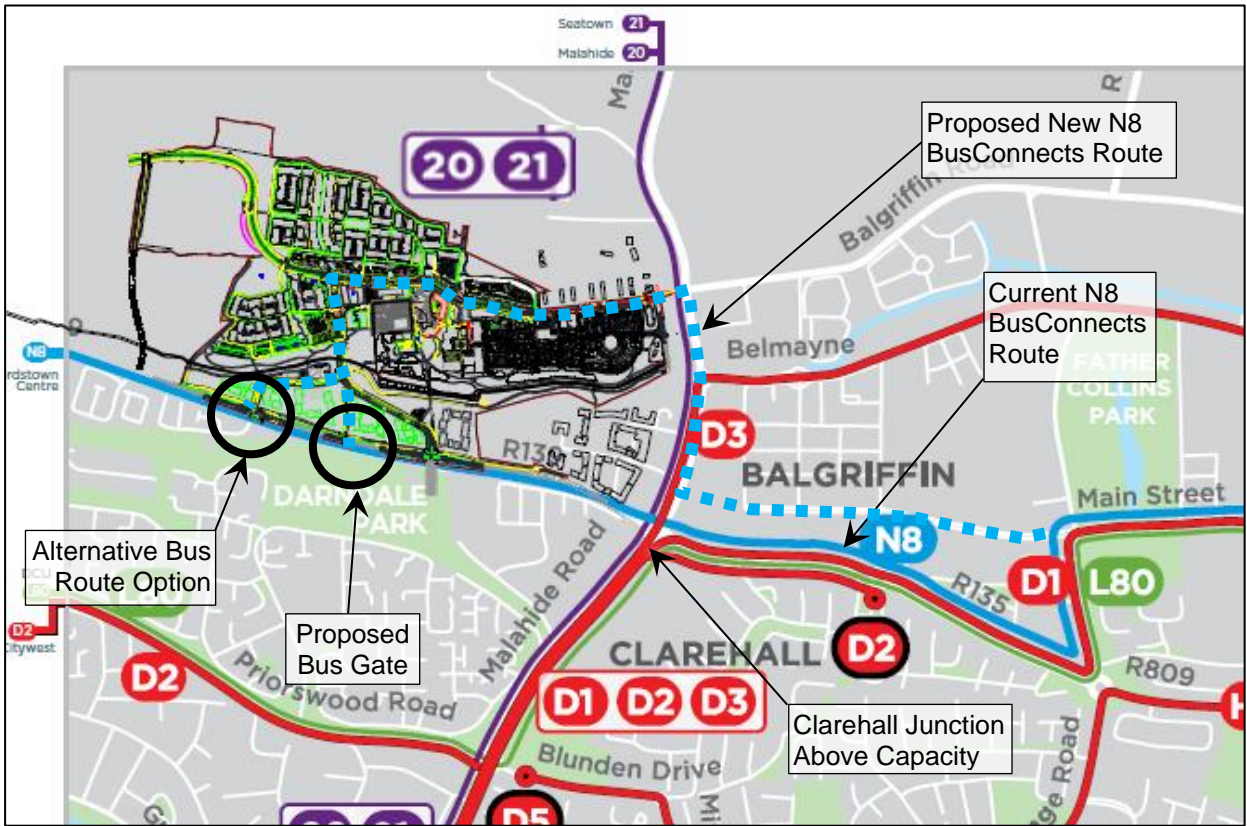


Figure 4 | Current N8 Route and Proposed N8 Route through Belcamp

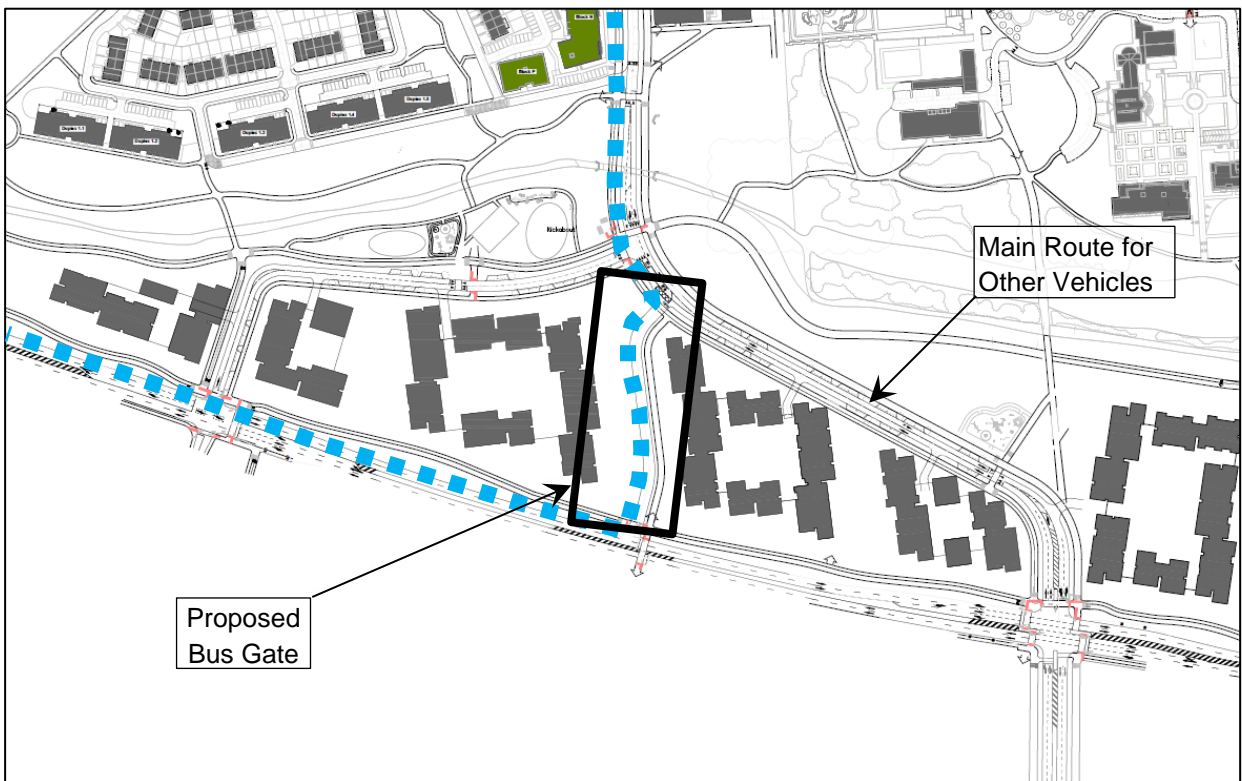


Figure 5 | Proposed Bus Gate through Belcamp

During the meeting with the NTA, FCC and DCC, the NTA noted that they would welcome the use of bus gates to prioritise public transport ahead of cars and to ensure that buses do not get stuck in traffic.

This proposed altered route provides several benefits:

- The new route would avoid the Clarehall junction between R107 and R139, which is currently above capacity and suffers from long queues and delays.
- The East–West Link Road is envisaged as a core bus route, and accordingly, this road is designed to comply with the principles of a Core Bus Corridor, including dedicated bus lanes, new bus stops, and segregated cycle lanes.
- The inclusion of a Bus Gate at the south of the site ensures that the bus route will follow a direct path and will avoid a meandering route through the site.
- The Bus Gate also avoids any traffic, given that it provides bus-only access, and on-demand signal controls will ensure efficient wait times before turning onto the R139.
- The new route will serve a large population in Belcamp.

The NTA advised that there are currently no proposals to bring one of the D routes through the Belcamp development. However, BusConnects routes are subject to future change depending on demand and future development. As such, emphasis has been placed on providing a robust design that can facilitate various future bus routes through the site.

Belcamp Parkway has therefore been designed to accommodate a possible future route for one of the D routes and has been designed with a 3.25m wide verge that can facilitate future bus lanes. This route would divert buses from the Malahide Road onto Belcamp Lane through the DCC Masterplan lands, south of the R139, through a signalised junction on the R139. This D route would not use the proposed Bus Gate, which is part of the N8 route. This will ensure a straight-through crossing of the R139, as shown in the Figure below.

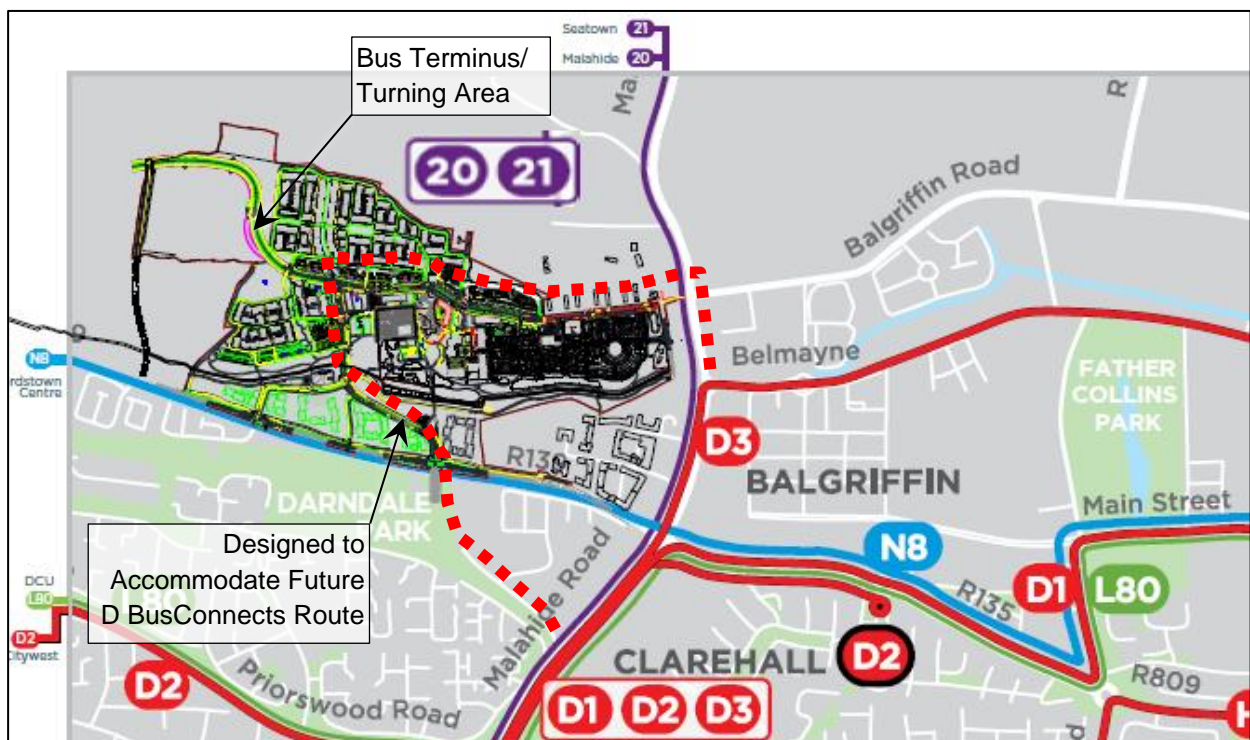


Figure 6 | Possible Future D Route through Belcamp

This proposed bus route through the subject lands can also facilitate possible future routes from DCC to the Airport, while avoiding the congested Clarehall junction. The Belcamp Parkway route from the Malahide Road to the EWLR follows the alignment provided in FCC / DCC Development Plans, the Belcamp / Belmayne Masterplan and the South Fingal Transportation Study.

A bus terminus/turning area is provided along the EWLR, within the open space at the west of the proposed Belcamp Development. This again allows for a robust design of bus routes that can come into Belcamp, turn around and travel back along the same route alignment.

Proposed routes and associated junctions have been auto-tracked using the same bus type used for the N8 and D routes, as provided by the NTA – refer to drawing 19-114-P1135 for swept path analysis of each of these bus routes.

2.3 Development Phasing

It is proposed to include the main internal transportation infrastructure as part of the first phase of development, including the EWLR, Belcamp Parkway and the Bus Gate. This will ensure that there is adequate transportation provision in place before the development is occupied.

This will also ensure the Belcamp Phasing will align with the BusConnects Phasing and immediately provide public transport to the Belcamp Development via the N8 service.

The proposed Phasing Plan is shown in the Figure below.

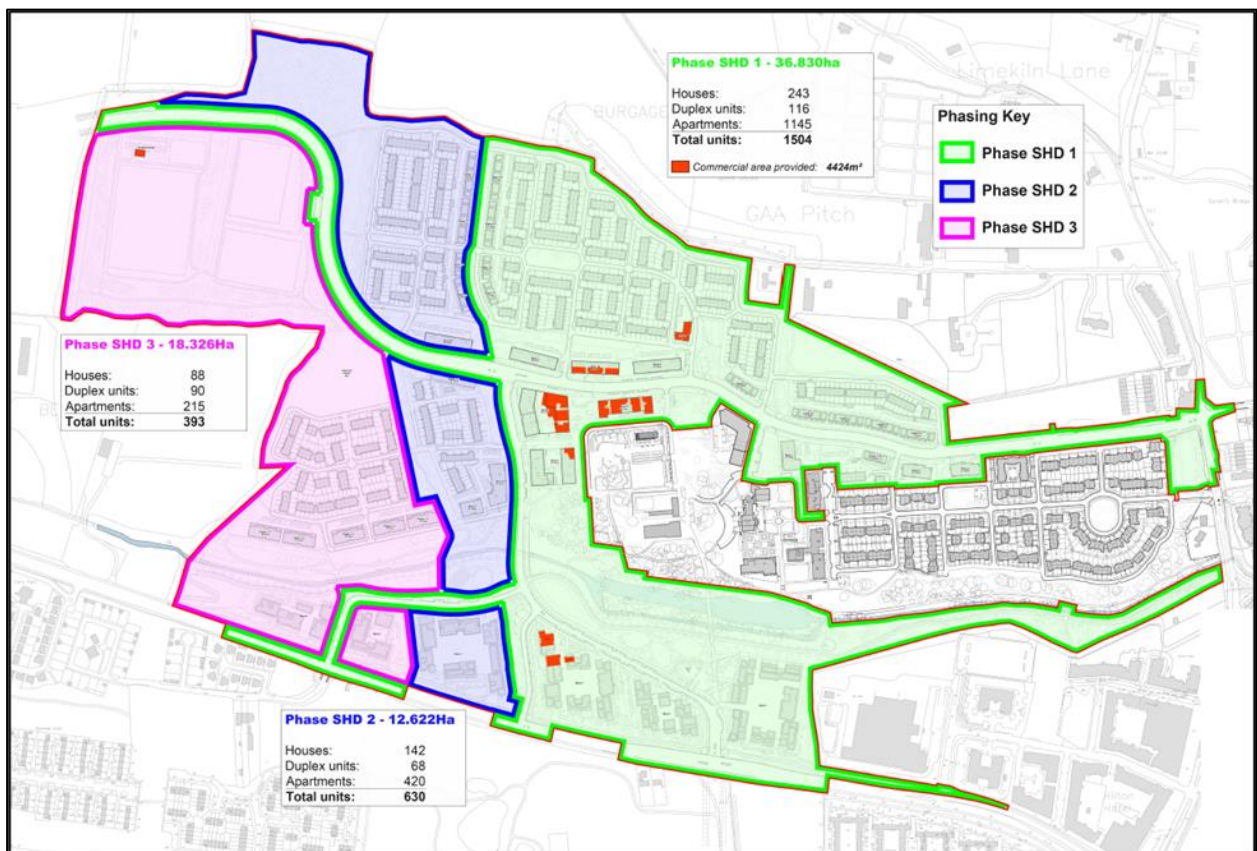


Figure 7 | SHD Phasing Plan

2.4 Related Reports

2.4.1 Engineering Assessment Report

Section 5 of the accompanying Engineering Assessment Report, prepared by Waterman Moylan, assesses the existing and the proposed road and transportation networks in the vicinity of the site and through the site itself.

2.4.2 Traffic and Transport Assessment

A comprehensive Traffic and Transport Assessment has been prepared by Waterman Moylan and accompanies this submission under separate cover. The Traffic and Transport Assessment provides a comprehensive review of all the potential transport impacts of the development, including a detailed assessment of the transportation systems provided and the impact of the proposed development on the surrounding environment and transportation network.

2.4.3 Travel Plan

A Travel Plan has been prepared by Waterman Moylan and accompanies this submission under separate cover. This Travel Plan is intended to deal with the typical day-to-day operational conditions at the site to assess, examine and manage the typical traffic that will be generated by the residential units during the operational phase of the development, and to propose measures to encourage residents to avail of public transport by improving awareness of public transport options and providing information on bus and train routes and frequencies.

2.4.4 Car Parking Strategy

A Car Parking Strategy has been prepared by Waterman Moylan and accompanies this submission under separate cover. This report assesses the car parking requirements for the development and sets out the car parking rationale and strategy to be employed at the site.

2.4.5 Sustainable Transport Strategy Study

A Sustainable Transport Strategy Study has been prepared by SYSTRA and accompanies this submission under separate cover. This report develops the principles and suggested measures for the Sustainable Transport Strategy. It includes strategic transport modelling and analysis using information gathered from desktop research, previous studies and planning applications, and data extracted from the National Transport Authority's Eastern Regional Model. The Sustainable Transport Strategy is intended to support and inform the Traffic and Transport Assessment prepared by Waterman Moylan.

2.4.6 Public Transport Capacity Assessment of Belcamp Site

A public transport capacity assessment has been carried out by traffic consultant Derry O'Leary, and accompanies this submission under separate cover.

3. Design Manual for Urban Roads and Streets

3.1 Background

The stated objective of DMURS is to achieve better street design in urban areas. This will encourage more people to choose to walk, cycle or use public transport by making the experience safer and more pleasant. It will lower traffic speeds, reduce unnecessary car use and create a built environment that promotes healthy lifestyles and responds more sympathetically to the distinctive nature of individual communities and places. The implementation of DMURS is intended to enhance how we go about our business, enhance how we interact with each other, and have a positive impact on our enjoyment of the places to and through which we travel.

Outlined below are some of the specific design features that have been incorporated within the proposed scheme with the objective of delivering a design that is in compliance with DMURS.

3.2 Urban Design Quality Indicators

In line with best practice, the concept and design of the scheme was developed with key urban guidelines in mind. Within the DCC lands, the design approach is a typology of perimeter blocks of between 6 and 9 storeys surrounding internal podium courtyards with parking contained underneath. All residential Blocks contain amenity facilities at ground level with Block 3 providing retail units facing the river Mayne linear park and a crèche. Buildings are used throughout the site to enclose streets and spaces, to provide edges to parks and to ensure passive supervision of public places. Landmark corners and architectural features aid orientation and way finding, while scale and height inform the hierarchy of spaces.

The layout of these blocks has been designed with the following Key Urban Design Quality Principles in mind:

1. Movement Systems should ensure permeability in the form of a continuous web.
2. To best facilitate pedestrian permeability, layouts should follow perimeter block principles and be appropriately sized (100m maximum).
3. The highest number of dwellings permissible should be delivered on the site.
4. A variety of tenures and dwelling types should be facilitated, in particular on larger schemes.
5. The public streets and spaces should have a good sense of enclosure: the ratio of facade height to street width should preferably not exceed 1:3. Almost continuous facade (>75%) and suitable street trees should be provided.
6. The quality of the public realm should be delivered by: i. providing active frontages ii. ensuring front doors face the street at close intervals and there are frequent ground floor windows, minimising blank walls, ensuring back gardens back onto other back gardens and not public spaces, roads or footpaths iii. ensuring built fabric forms as continuous an edge as possible around the perimeter of the block iv. providing fine grain and property widths of 5-7m v. promoting security by maximising activity.
7. Ensure streets are self-regulating in accordance with DMURS by providing: appropriate street ratio, on-street parking, and on-street trees.
8. Improve residential privacy by ensuring that: i. A minimum 20-22m separation between directly opposing rear-facing, upper-floor windows is provided ii. overlooking of rear gardens by other properties is minimised iii. a small privacy strip is provided to distance ground-floor windows from the public footpath.

9. Apartment layouts should avoid pavillion or linear-type blocks. Ground floor units should have private open space should be backed onto other back gardens or secured open space.
10. Public open space should be a regular shaped portion of land and fully faced with active frontage.

3.3 Creating a Sense of Place

Four characteristics represent the basic measures that should be established in order to create people friendly streets that facilitate more sustainable neighbourhoods. These characteristics are connectivity, enclosure, active edge and pedestrian activities/facilities.

3.3.1 Connectivity

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

In order of importance, DMURS prioritises pedestrians, cyclists, public transport and private cars, and notes that the number of walkable/cyclable routes between destinations should be maximised.

The Belcamp Lands will be developed specifically to avoid a car dominated environment and to optimise pedestrian and cyclist links. The proposed development has been designed with pedestrians and cyclists taking precedence over other modes of transport. In this regard, footpaths are provided throughout the development with regular pedestrian crossings along anticipated desire lines. There is a dedicated pedestrian/cyclist green route proposed between the DCC portion of the site and the Malahide Road, parallel to the Mayne River. There are several access points to the DCC portion of the site from the R139 reserved exclusively for pedestrians and cyclists.

As noted above, high quality pedestrian linkages will be provided to connect to Malahide Road (R107), the Mayne River, City Junction and to the R139, linking the development with the existing Clarehall Junction shopping and commercial area and to the future Belmayne Square. Junctions will be designed with raised pedestrian tables/crossings at main pedestrian desire lines, allowing pedestrians to cross at grade. In addition to pedestrian and toucan facilities at signal-controlled junctions, on-call pedestrian signals will be provided at key desire lines.

The proposed development will include dedicated cycle facilities, including an off-road cycle track along the East-West Link Road and along the R139, separated from the vehicular carriageway by a verge. The proposed junction upgrade at the site entrance from Malahide Road includes new cycle stopping areas and new cycle lanes along the Malahide Road. High quality cycle linkages will be provided to connect to Malahide Road (R107), the Mayne River, City Junction and to the R139 linking the development the existing Clarehall Junction shopping and commercial area and to the future Belmayne Square.



Figure 8 | Typical Proposed Cycle Lanes

It is proposed to provide a transport hub at Belcamp Town Square, where most of the commercial units will be centred. This Transport Hub will have new bus stops for the N8 BusConnects route, as discussed with the NTA. E-Bike charging stations and bicycle racks are to be provided at the transport hub, to encourage active travel to the town square. Waterman Moylan have engaged with Fingal County Council's Active Travel section regarding their requirements for E-Bike charging stations, who confirmed that there is no particular preference for any specific E-Bike charging station, but that FCC welcomes the approach in design with regard to the provision of bike parking in the public areas and E-Bike charging. The Transport Hub will include E-Car charging points and multiple designated car-share fleet parking spaces.

Section 4.4.4 of DMURS notes that while reduced forward visibility increases driver caution and reduces vehicle speeds, adequate Stopping Sight Distances (SSDs) are required at junctions to ensure vehicles pulling onto a road have a sufficient sightline of oncoming traffic. The relevant standards are set out in Table 4.2 of DMURS, which is extracted below:

SSD STANDARDS			
Design Speed (km/h)	SSD Standard (metres)	Design Speed (km/h)	SSD Standard (metres)
10	7	10	8
20	14	20	15
30	23	30	24
40	33	40	36
50	45	50	49
60	59	60	65
Forward Visibility		Forward Visibility on Bus Routes	

Figure 9 | Extract of DMURS Stopping Sight Distances Standards

Appropriate SSDs are provided at each junction throughout the proposed development – refer to the accompanying Sightline Layout drawing no. 19-114-P1150.

3.3.2 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 towards the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.”

The proposed development has been designed with residential units overlooking streets and pedestrian routes. High quality landscaping and tree planting are proposed throughout the scheme which creates a definitive sense of place. Road widths of generally 5.5m throughout the development ensure that a strong sense of enclosure is achieved on residential roads.

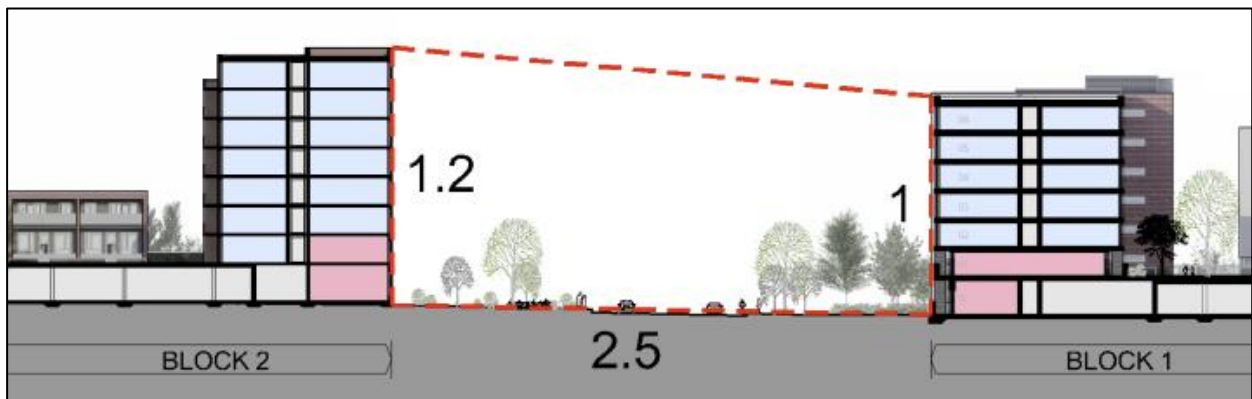


Figure 10 | Section of Belcamp Parkway Between Blocks 1 and 2

The façade to street ratio for the proposed residential blocks and access roads are kept below the 1:3 maximum, with additional trees to help provide a sense of enclosure.

3.3.3 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.”

As stated in Section 2.2.1 of DMURS, an active frontage enlivens the edge of the street, creating a more interesting and engaging environment. Section 3.4.1 of DMURS further notes that designers should avoid the creation of Dendritic networks, which place heavy restrictions on movement.

An active frontage along routes within the development is achieved with frequent entrances and openings that ensure the street is overlooked and that generate pedestrian activity as people come and go from buildings.

The road layout is highly interconnected, with few cul-de-sacs. DMURS notes that cul-de-sacs should not dominate residential layouts, and their use should be limited. In particular, the number of walkable/cyclable routes between destinations should be maximised. In the few locations where cul-de-sacs are proposed, they are short roads serving a small number of dwellings, and in all instances pedestrian and cyclist connectivity are provided to the wider public realm, with connectivity only limited for road vehicles. The proposed cul-de-sacs are safe, with clear, open sightlines and passive surveillance.

There are a number of advantages to more permeable networks in regard to the management of traffic and vehicle speeds. Drivers are more likely to maintain lower speeds over shorter distances than over longer ones. Since drivers are able to access individual properties more directly from Access/Link streets (where speeds are more moderate), they are more likely to comply with lower speed limits on Local streets, as stated in Section 3.4.1 of DMURS.

Suitable sightlines have been provided throughout the development, as set out above, ensuring that localised planting does not obscure visibility as cars make turning manoeuvres, improving the pedestrian safety at crossing points. In accordance with section 4.3.3 of the DMURS, turning radii throughout the site are between 3m and 6m.

3.3.4 Pedestrian Activities/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 makes walking a more convenient and pleasurable experience that will further encourage pedestrian activity.”

The proposed development has been designed to provide excellent pedestrian connectivity, with a network of inter-connecting footpaths providing permeability throughout the site and to the surrounding area.

Throughout the site, pedestrian routes are generally 2m wide or greater which provides adequate space for two wheelchairs to pass one another. Section 4.3.1 of DMURS identifies a 1.8m wide footpath as being suitable for areas of low pedestrian activity and a 2.5m footpath as being suitable for low to moderate pedestrian activity. It is considered that a 2m wide footpath is appropriate for the majority of the proposed development. Regular pedestrian crossings are proposed throughout the development along anticipated desire lines.



Figure 11 | Typical Pedestrian Crossing

3.4 Key Design Principles

DMURS sets out four core design principles which designers must have regard to when designing roads and streets. These four core principles are set out below together with a commentary establishing how these design principles have been incorporated into the design of the proposed development.

3.4.1 Design Principle 1: Pedestrian Activity/Facilities

“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.”

Streets have been designed in accordance with the alignment and curvature recommendations set out in DMURS Section 4.4.6. The road layout is generally orthogonal. Section 3.3.1 of DMURS notes that street networks that are generally orthogonal in nature are the most effective in terms of permeability (and legibility). Regular junctions along with raised pedestrian tables/crossings at main pedestrian desire lines will encourage reduced driving speeds.

3.4.2 Design Principle 2: Multi-Functional Streets

“The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.”

The proposed road hierarchy will comprise of two new arterial roads (the East-West Link Road and the Belcamp Parkway), several new link streets, and a series of new local access roads, including shared surface/homezones. It is also proposed to introduce a bus gate between Belcamp Parkway and the R139, to facilitate the NTA’s preferred route for the N8 BusConnects route (refer to Section 5 of the accompanying Engineering Assessment Report for further information on the proposed bus gate). The development will include residential units as well as a town square with commercial elements. This mix of street types and uses is in accordance with the objectives of DMURS.



Figure 12 | Proposed Bus Gate with Pedestrian and Cycle Facilities

There is also a transport hub proposed at Belcamp Town Square, where most of the commercial units will be centred. This Transport Hub will be a multi-functional transport node with commercial and sustainable transport options. There are to be new bus stops for the N8 BusConnects route, as discussed with the NTA. As noted above, E-Bike charging stations and bicycle racks are to be provided at the transport hub, to encourage active travel to the town square, and the hub will include E-Car charging points and multiple designated car-share fleet parking spaces. A new bus terminus/turning area is provided along the East-West Link Road, within the open space at the west of the proposed Belcamp Development. This allows for a robust design of bus routes that can come into Belcamp Town Square, turn around and travel back along the same route alignment.

The proposed “home-zones” are designed primarily to meet the needs of pedestrians, cyclists, children and residents and where the speed and dominance of cars will be reduced. The home-zone comprises of a shared-surface carriageway. Entry treatment to the home-zones is provided in the form of a ramp up, which helps announce that a driver is entering into a home-zone, and it is proposed to utilise a buff coloured chipping / macadam at the home-zones, subject to Roads and Transportation approval from the relevant

Local Authority. The ramp up and narrowing of the road width is to be in accordance with Figure 4.44 in Section 4.3.3 of DMURS.

It is stated in Section 4.3.4 of DMURS that shared surface streets and junctions are 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 and Suburbs.

3.4.3 Design Principle 3: Pedestrian Focus

“The quality of the street is measured by the quality of the pedestrian environment.”

The design of the scheme has placed a particular focus on the pedestrian. Connectivity throughout the scheme is heavily weighted towards the pedestrian. There are excellent pedestrian links to the surrounding road networks, public transport services and amenities for both residents of the development and the wider public.



Figure 13 | Pedestrian Focus at Block 3

Raised tables are provided at several junctions, which allow pedestrians to continue at grade. Raised tables also promotes lower vehicle speeds. Stop signs and road markings are provided prior to the raised tables.

3.4.4 Design Principle 4: Multi-Disciplinary Approach

“Greater communication and co-operation between design professionals through promotion plan led multidisciplinary approach to design.”

The design of the proposed scheme has been developed through the design team working closely together. The proposed development design is led by Conroy Crowe Kelly Architects working together with multiple disciplines including Wilson Architecture, Waterman Moylan Consulting Engineers, SYSTRA Ireland Consulting Engineers, Ronan Mac Diarmada & Associates Landscape Architects, The Big Space Landscape Architects, Derry O’Leary Transport Consultant, and Downey Planning Consultants.

Public areas fronting and within the proposed development have been designed by a multidisciplinary design team to accommodate pedestrians and cyclists in accordance with the appropriate principles and guidelines set out in DMURS. In particular the vehicular access and public footways within the remit of the development will incorporate the relevant DMURS requirements and guidelines as set out above. Landscaping has formed a critical part of the design, and the engineers, landscape architects and architects have worked closely together to provide functional and attractive public spaces.

High quality landscaping, including significant tree planting, is proposed throughout the scheme. This offers a range of benefits, including creating a definitive sense of place with attractive planting features, improved air quality, increased biodiversity, helping to ensure adaptation to climate change, providing surface water interception and treatment, and ensuring that a strong sense of enclosure is achieved on residential roads.

The design team has engaged with various relevant sections of Fingal County Council and Dublin City Council as part of Section 247 consultations prior to the pre-application consultation with An Bord Pleanála, including consultations with FCC and DCC Transport Divisions. Furthermore, Waterman Moylan engaged with Breen Doris from the Active Travel section of FCC, who stated that FCC welcome the design team’s approach to specifically avoid a car dominated environment.

3.5 External Quality Audit

Section 5.4.2 of DMURS states that A Quality Audit should be undertaken to demonstrate that appropriate consideration has been given to all of the relevant aspects of the design.

A Quality Audit has been carried out by Bruton Consulting Engineers. The Quality Audit includes a Stage 1 Road Safety Audit, an Access Audit, a Walking Audit, a Cycling Audit and a Parking Audit. The full report is included in Appendix A. Note that the Quality Audit is intended to be a preliminary design tool to assess the early-stage proposals. The auditor’s recommendations have been reviewed and, where appropriate, have subsequently been taken on board by the design team, with the development proposals revised to address any of the issues identified.

The issues identified by the Road Safety Audit are set out in the table below, alongside the remedial measures taken to address each of the issues identified:

Section	Issue Identified	Measure Proposed
A1.1	The provision of two new junctions, three main pedestrian routes and three main cycle routes will change the nature of the R139 from its existing outer relief road character. Without adequate design features this could remain a high-speed link to the M50 for frustrated drivers that have been delayed at Clarehall Junction.	The section of the R139 adjacent to the subject site is to be intentionally urbanised, with an active frontage and three signalised junctions. This is in accordance with requests by An Bord Pleanála to provide an active urban frontage. The proposed signals will be linked with traffic ducting and telemetry to the Clarehall junction and to the junction at Bewleys Head Office to the east, to ensure they work in sync with one another to avoid further delays.

A1.2	<p>There is a risk that the proposed road network within the development may lead to rat-running as a Clarehall Junction avoidance measure not just using the arterial routes but also using the link streets. This would lead to higher speeds in the area where vulnerable road users would not be segregated as much from general traffic and increase the risk of collisions.</p>	<p>It was previously proposed to provide a new vehicular route linking from the Malahide Road, south of the Mayne River and adjacent to Belmayne, as far as Belcamp Parkway. However, at a meeting held on 4 February 2022, DCC Transportation Department advised that this inner relief road is no longer part of the strategic road network in the area.</p> <p>The EWLRL, the R139 Link Road and Belcamp Parkway are designed to account for the phasing of the development and for use by vehicles from other schemes in the vicinity, and this route is expected to relieve some of the capacity constraints at Clarehall junction.</p>
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Table 2 | Road Safety Audit Issues Identified and Remedial Actions

The issues identified by the Access Audit are set out in the table below, alongside the remedial measures taken to address each of the issues identified:

Section	Issue Identified	Measure Proposed
A2.1	Effective width of Pedestrian Routes: the widths of pedestrian routes should take into account future reduction of the effective width due to street furniture, lighting, bus stops, etc. to ensure enough space is allowed for at this design stage.	The effective widths of pedestrian routes have been considered in the design. Sufficient space has been provided for additional design elements to be added. Arterial streets are designed with verge areas in which street furniture, public lighting and ESB mini-pillars can be placed. The roads that are intended as bus routes have been designed to incorporate bus stops as a design feature, with cycle lanes and footpaths maintaining their full widths adjacent to the bus stops.
A2.2	Parking: The issues identified in the parking audit could lead to accessibility issues.	Refer to the Parking Audit responses below.
A2.3	Topography: Steep gradients and steps can lead to inaccessibility for some individuals who are mobility impaired.	The development has been designed in accordance with Technical Guidance Document M (Access and Use) of the Building Regulations. Levels and gradients have been designed to ensure usability and accessibility for all users.

Table 3 | Access Audit Issues Identified and Remedial Actions

The issues identified by the Walking Audit are set out in the table below, alongside the remedial measures taken to address each of the issues identified:

Section	Issue Identified	Measure Proposed
A3.1	Minor Pedestrian Routes: the drawing showing the proposed minor pedestrian routes shows a small number of discontinuities in the network. These discontinuities could prevent proper integration and accessibility to all areas.	Discontinuities in the pedestrian network have been removed. Even in those locations where vehicular cul-de-sacs are proposed, pedestrian and cyclist through-routes have been provided in accordance with the objectives of DMURS.

Table 4 | Walking Audit Issues Identified and Remedial Actions

The issues identified by the Cycling Audit are set out in the table below, alongside the remedial measures taken to address each of the issues identified:

Section	Issue Identified	Measure Proposed
A4.1	R107 Malahide Road: the existing cycle facilities on the Malahide Road north of Clarehall Junction are not continuous and vary in quality. The lack of connectivity from the proposed development to the higher quality cycling facilities south of Clarehall junction may lead to an increased use of cars to transport younger or less confident cyclists.	High quality cycle facilities are provided throughout the proposed site and connecting to the existing surrounding road and cycle network. This includes cycle facilities on the Malahide Road at the proposed Malahide Road/EWLR junction and along the frontage of the R139. The proposal includes significant upgrade works to the adjacent network, with new cycle lanes proposed along R139 providing safe cycle connections to Clarehall junction. It is also noted that cycle facilities are being improved on the Malahide Road under approved Belcamp Phase 1.
A4.2	R139 Cycle Track: it is proposed to provide a cycle track along the northern side of the R139. It is unclear if this is going to be a two-way cycle track as another one is not proposed in the southern verge. It is also unclear how or where the cycle track will terminate and if cyclists will be able to transition safely from off road to on-road.	The cycle track on the northern side of the R139 is to be a 5m wide 2-way cycle track and footpath, extending from the western boundary of the site and continuing to the east to the wide footpath that links to Clarehall junction.
A4.3	Cycling Routes to School Site: there are two proposed walking routes from the northern side of the East-West Link Road to the school site but there are no corresponding cycling routes. It is important that children from all areas of the development have safe direct cycle routes to the school site. A lack of a cycle route may lead to cyclists sharing too narrow of a space with pedestrians leading to collisions.	The alignment of the EWLR has been adjusted to bend the north of the proposed open space at the north-west of the site rather than bisecting it. This proposed alignment maximises the open space lands for playing fields and for locating dressing rooms and associated parking. The 'S' bend in the road will act as a speed-reducing measure for vehicles travelling from the west as it approaches the Belcamp school site and Town Square. The realignment of the road means that the open space and playing fields are now connected to the future school site, ensuring that the school can use these facilities without the need to directly cross the EWLR. There are north/south green routes linking the development north of the EWLR to the cycle facilities on the EWLR, which has several signalised Toucan crossing points along desire lines to the school. This ensures that appropriate cycle access is provided to the school site.

Table 5 | Cycling Audit Issues Identified and Remedial Actions

The issues identified by the Parking Audit are set out in the table below, alongside the remedial measures taken to address each of the issues identified:

Section	Issue Identified	Measure Proposed
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A5.1	<p>Perpendicular Parking: perpendicular parking may be provided in some Local Streets. There is a risk that parked vehicles will overhang the pedestrian routes in front or behind the parking spaces and thereby reduce the effective width of the footpath and leaving it unsuitable for two mobility impaired users to pass.</p>	<p>Perpendicular parking spaces are proposed at several locations throughout the site. Most are proposed at homezones, where the entire carriageway is designed to be shared by pedestrians, cyclist and vehicles. Elsewhere, footpaths are separated from parking spaces by a verge, or 0.5m clearance space is provided at the front or back of the parking space to ensure vehicles will not overhang the footpath.</p>
A5.2	<p>Disabled Parking Spaces: disabled parking spaces will be provided throughout the development. It is important that the location and space for disabled parking spaces are thought about in the early stages of the design process. If these spaces are 'squeezed' in as an after thought then they may be located too far away from the destination of the disabled driver/passenger.</p>	<p>Accessible parking spaces are provided throughout the development. Each residential block is provided with accessible parking to ensure residents who require an accessible space are provided with parking in close proximity to their dwelling. Accessible spaces are also provided at the Belcamp Town Square to provide access to commercial elements of the development.</p>
A5.3	<p>Electric Vehicle Parking Spaces: electric vehicle parking spaces are regularly provided the same size as ordinary car parking spaces. This does not give enough space for users to charge their vehicles with cables, especially if they have side charging points. A lack of space can lead to trips on cables and possible inaccessibility to adjacent parking spaces.</p>	<p>Provision has been made for Electric Vehicle charging points, with adequate space to facilitate charging cables.</p>

Table 6 | Parking Audit Issues Identified and Remedial Actions

3.6 Statement of Design Consistency

The multidisciplinary design team considers that the proposed road and street design is consistent with the principles and guidance outlined in the Design Manual for Urban Roads and Streets (DMURS), as set out in the sections above.

Appendices

A. External Quality Audit

Title: **Quality Audit Individual Quality Assessments
A1 to A5
For;
Proposed Strategic Housing Development, Belcamp
Dublin 17.**

Client: **Gannon Homes/Waterman Moylan.**

Date: **August 2021**

Report reference: **1100R02 Rev 1**

VERSION: **FINAL**

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CONTENTS SHEET

Contents

1.0	Introduction	3
2.0	Background	4
2.1	General.....	4
2.2	Overall Design & Compliance with DMURS	6
	Appendix A1 – Stage 1 Road Safety Audit	7
	Issues Raised in This Stage 1 Road Safety Audit	7
	A1.1 Problem.....	7
	A1.2 Problem.....	8
	Appendix A1.1	9
	Appendix A1.2 Road Safety Audit Feedback Form	10
	Appendix A1.3	11
	Appendix A2 – Access Audit	12
	Issue A2.1 – Effective width of Pedestrian Routes.....	12
	Issue A2.2 – Parking.....	12
	Issue A2.3 – Topography	12
	Appendix A3 – Walking Audit	13
	Issue A4.1 Minor Pedestrian Routes.....	13
	Appendix A4 – Cycling Audit.....	13
	Issue A4.1 R107 Malahide Road	13
	Issue A4.2 R139 Cycle Track.	14
	Issue A4.3 Cycling Routes to School Site.....	14
	Appendix A5 – Parking Audit	15
	Issue A5.1 – Perpendicular Parking	15
	Issue A5.2 – Disabled Parking Spaces.....	15
	Issue A5.3 – Electric Vehicle Parking Spaces	16
	Quality Audit Statement	16

1.0 Introduction

This report was prepared in response to a request from Mr. Mark Duignan of Waterman Moylan Consulting Engineers Ltd for the individual assessments aspects of the Quality Audit for the proposed strategic housing development at Belcamp, Dublin 17 on behalf of Gannon Homes.

These assessments have been carried out by an independent team to the design team.

This portion of the Quality Audit includes

- **Appendix A1** a road safety audit (Stage 1),
- **Appendix A2** an access audit,
- **Appendix A3** a walking audit,
- **Appendix A4** a cycle audit,
- **Appendix A5** a parking audit.

The Overall Quality Audit has been prepared by the Design Team and it has been prepared in accordance with Section 5.4.2 of DMURS and aligns with DMURS Advice Note 4- Quality Audits.

The five individual assessments listed above were carried out by the following team;

Team Leader: **Norman Bruton**, BE CEng FIEI, Cert Comp RSA

TII Auditor Approval no. NB 168446

Team Member: **Owen O'Reilly** B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil.Eng CEng MIEI

TII Auditor Approval no. OO1291756

The process involved the examination of drawings and other material provided by Waterman Moylan and a site visit by the Audit Team on the 22nd July 2021. The weather at the time of the site visit was dry and the road surface was dry.

Appendix A1 – Road Safety Audit has been carried out in accordance with TII Road Safety Audit GE-STY-01024 and Road Safety Audit Guidelines GE-STY-01027 (both dated December 2017). Ultimately as the design process develops a Stage 2 Road Safety Audit will be carried out however at the early stage the level of detail is not sufficient for a Stage 2 audit to be carried out the audit therefore is a Stage 1 Road Safety Audit. To ensure that the Audit process as outlined in the standard is followed a feedback Form has been provided for the Design Team to complete.

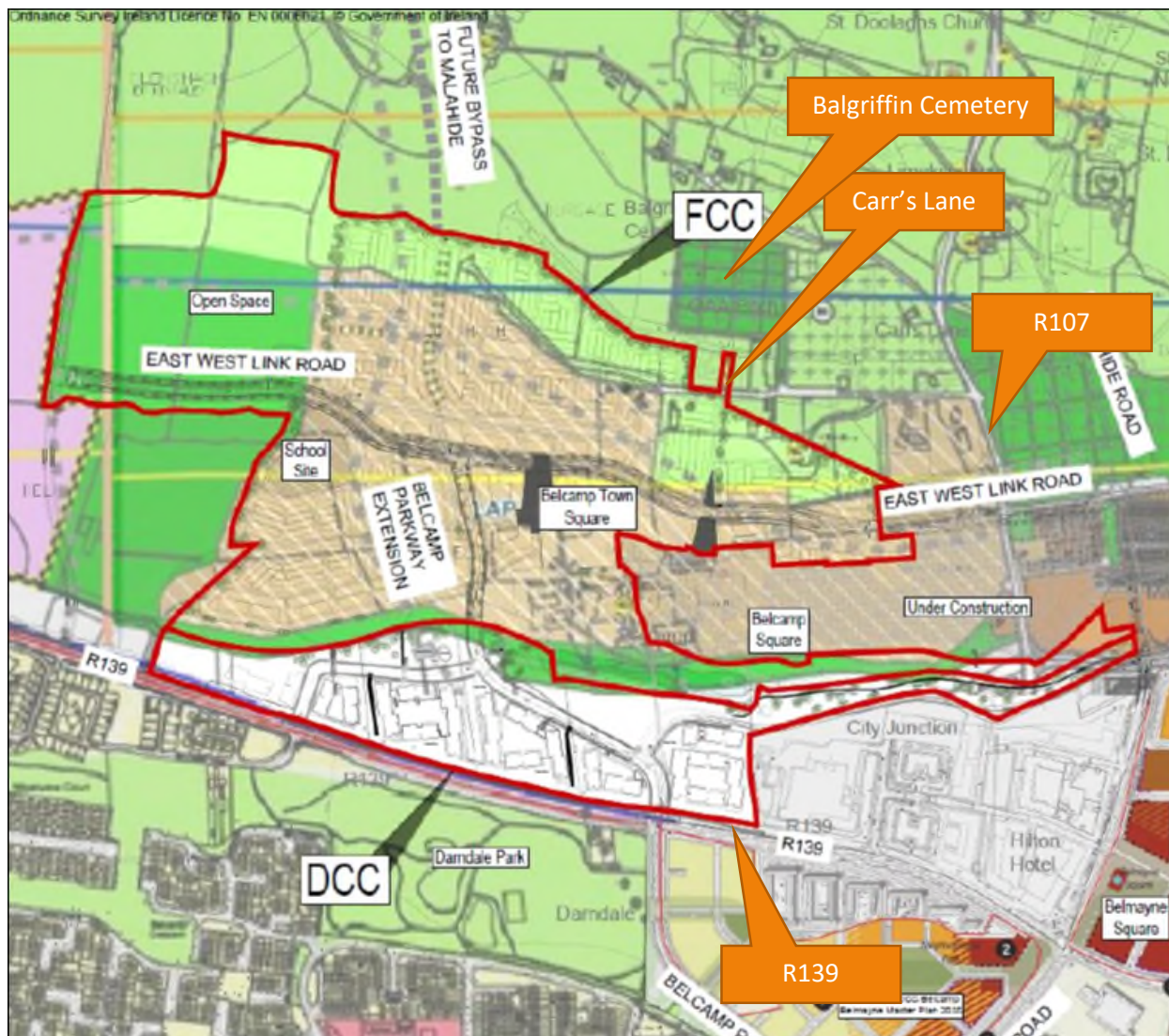
Appendices A2 to A5 follow a similar format to the road safety audit in that issues are raised and recommendations for improvement are provided however a feedback form is not provided for these aspects. A Quality Review summarising the results of the individual audits is contained in Section 5 of the Overall Quality Audit.

2.0 Background

2.1 General

It is proposed to construct a strategic housing development in Belcamp Dublin 17. The subject site is located north of the Northern Cross Route, R139, and to the west of the Malahide Road (R107). It spans both Fingal County Council and Dublin City Council jurisdictions, with the River Mayne forming the border between the two.

The site location is shown below.



The proposed development would seek to provide portions of two arterial (DMURS defined route type) routes known as the East-West Link Road (EWLR) and the Belcamp Parkway (Clarehall Junction Relief Road).

The EWLR would extend from the western boundary of the site to the R107. The Belcamp Parkway commence with a new junction on the R139 and meet with the EWLR in the middle of the subject site. Both of these arterial routes would be designed in accordance with DMURS. In addition, the EWLR would be a high quality bus route with bus lanes in both directions.

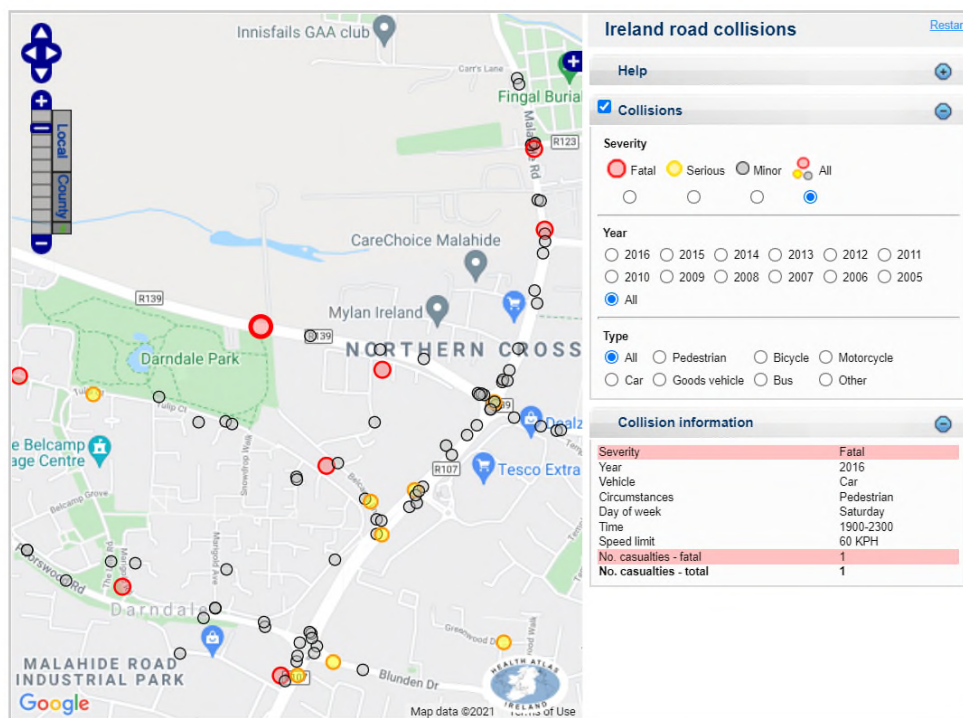
A number of link streets would also be provided linking the Belcamp Parkway to the R139 at a second junction and linking the Belcamp Parkway to Parkside Boulevard (being constructed by others).

Pedestrian routes would be provided throughout the development and would include linkages to the existing residential areas (Belcamp Square & Phase 1B works area, northern Cross residential area) and commercial/retail areas (the Hilton Hotel & Clarehall Junction shopping and commercial area).

Cycle routes would be provided throughout the development. These would include an off road cycle route along the EWL and along the R139. Cycle facilities on the R107 would be improved locally at the proposed junction with the EWL however continuous cycle facilities do not exist and are not planned as part of this development along the R107.

The main junctions within the development and at the boundaries will be at-grade signalised junctions with crossing pedestrian and cycle facilities.

The Road Safety Authority's website www.rsa.ie shows the collisions that occurred in the vicinity of the proposed development site in the 12 year period 2005-2016. There was a pedestrian fatality on the R139 in 2016.



2.2 Overall Design & Compliance with DMURS

The overall design of the SHD with regard to street design and layout seeks to embrace the design principles laid out in DMURS i.e.

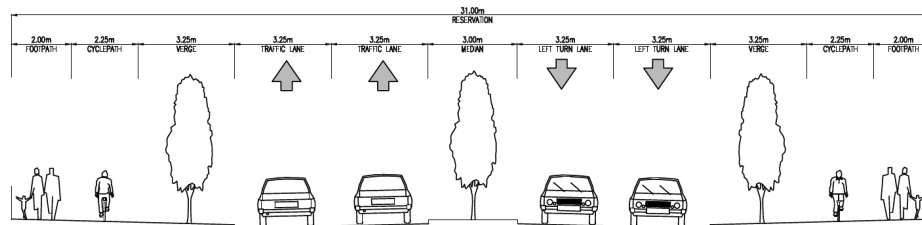
- Connectivity
- Self-Regulating Street Environment
- Pedestrian and Cycling Environment
- Visual Quality

Connectivity is evident through the use of the EWLAR arterial route which runs parallel to the R139 and connects with it via another arterial route, Belcamp Parkway and which connects with the Malahide road directly. The dual access approach will lead to balanced flows and direct access to the centre of the development.

The overall design and layout places priority on the pedestrian and cycling environment to ensure that cycling and walking will be used as means of transport and to less use of the private car. The network of cycle and pedestrian routes leaves each area accessible and desire lines are met such that journey times on foot or by bike can be minimised. The design shows three pedestrian crossing points of the R139 which demonstrates the emphasis in ensuring that this development is connected to Darndale Park and the Darndale residential area and that the R139 does not form a physical barrier to such connectivity. The same connectivity is proposed for cyclists.

The cross sections of the various arterial routes provide wide segregated facilities for cyclists and pedestrians with buffer zones to vehicular traffic.

The cycle and pedestrian networks also consider the connectivity with the adjacent developments through the existing and planned future links.



Belcamp Parkway Section C-C

The use of trees and planting in the verges will create a sense of place and will lead to slower driving and self-regulating speeds to match the intended use for each street. It is expected that landscaping will be developed at later stages of the design to further enhance this aspect and to ensure that the character of each street type will be different for each hierarchical road type and that the driver will be given visual aids as to the environment in which they are driving from Arterial route to home zone and school zone.

All the major junction have proposed controlled crossing facilities for pedestrians and cyclists. This will ensure that the ease of movement of vehicles will not be dominant over vulnerable road users.

The issues raised in the following appendices lead to recommendations on possible tweaks/improvements to a design that has already embraced the principles of DMURS.

Appendix A1 – Stage 1 Road Safety Audit

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety. It has not been examined or verified for compliance with any other standards or criteria.

The problems identified in this report are considered to require action in order to improve the safety of the scheme for road users.

If any of the recommendations within this safety audit report are not accepted, a written response is required, stating reasons for non-acceptance.

A location map showing where each problem occurs is provided in **Appendix A1-1**.

A list of the documents provided to the Audit Team is provided in **Appendix A1-2**.

The feedback form to be completed by the Design Team Leader is provided in **Appendix A1-3**.

Issues Raised in This Stage 1 Road Safety Audit

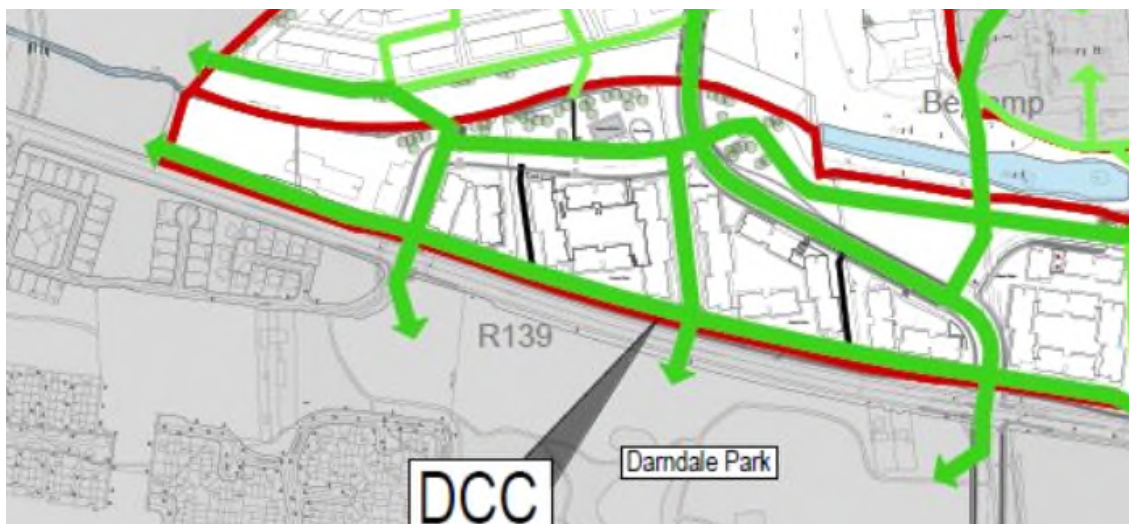
A1.1 Problem

LOCATION

R139

PROBLEM

The provision of two new junctions, three main pedestrian routes and three main cycle routes will change the nature of the R139 from its existing outer relief road character. Without adequate design features this could remain a high speed link into the M50 for frustrated drivers that have been delayed at Clarehall Junction.



RECOMMENDATION

It is recommended that the R139 be treated as a DMURS road and additional features (landscaping, etc.) be added to make the driver feel that they are travelling along such a road. The straight horizontal and relatively flat vertical alignment will remain but do not support this change. A gateway treatment and transition zone would be appropriate at the start of the development site.

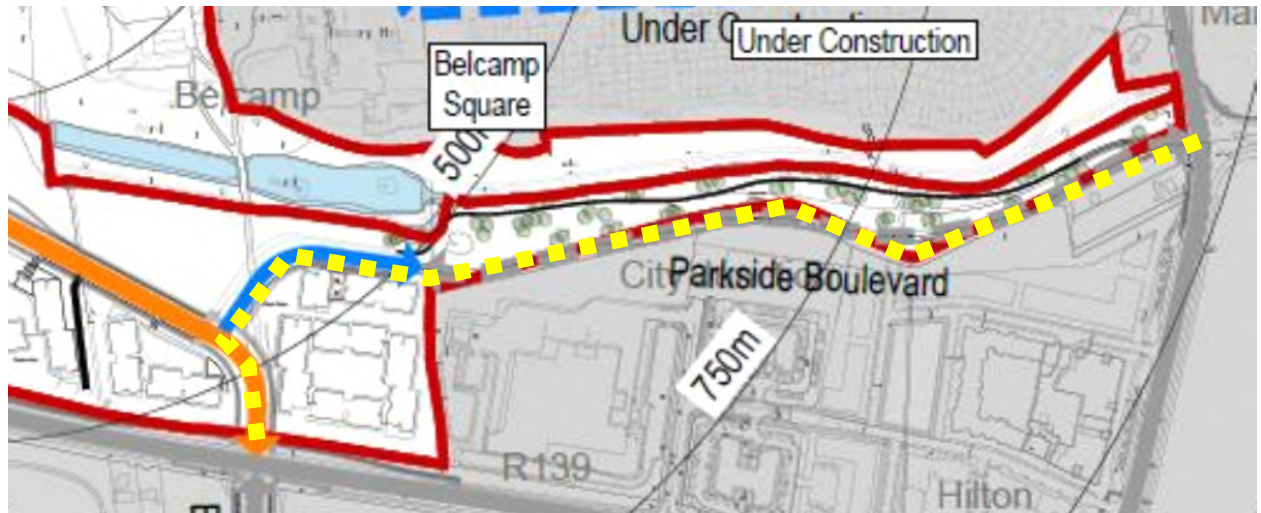
A1.2 Problem

LOCATION

R107 to R139 Link

PROBLEM

There is a risk that the proposed road network within the development may lead to rat-running as a Clarehall Junction avoidance measure not just using the arterial routes but also using the link streets. This would lead to higher speeds in the area where vulnerable road users would not be segregated as much from general traffic and increase the risk of collisions.



RECOMMENDATION

It is recommended that the road layout and strategy takes into account the phasing of the development and other schemes and the journey times using the proposed links. This should take into account future links that may be designed by others.

Appendix A1.1

List of Material Supplied for this Quality Audit;

Engineering Design Strategy – Transport , Waterman Moylan June 2021.

Belmayne and Belcamp Lane Masterplan Sustainable Transport Strategy, Information Note, Systra Ltd.

Belcamp Masterplan Public Transport Strategy- Update and Modelling Findings, June 2021, Systra Ltd.

- Drawing19-114-P1005 Pedestrian Routes
- Drawing19-114-P1006 Cycle Routes
- Drawing19-114-P1007 Long Sections
- Drawing19-114-P1008 Road Cross Sections
- Drawing19-114-P1009 Main Junction Details
- Drawing19-114-P1100 Roads Layout GA
- Drawing19-114-P1000 Site Location
- Drawing19-114-P1001 Site Survey
- Drawing19-114-P1002 Site Constraints & Water Courses
- Drawing19-114-P1003 Transportation Network
- Drawing19-114-P1004 Road Network

Appendix A1.2 Road Safety Audit Feedback Form

Scheme: SHD Belcamp

Quality Audit- Planning

Date Audit(site visit) Completed: 22nd July 2021.

No. in Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measures (describe)	Alternative measures accepted by Auditors (Yes/No)
A1.1	Yes	Yes	<p>A gateway treatment and transition zone will be implemented at the boundary of the development site to ensure safe and controlled access is provided to the R139.</p> <p>Specific entry treatments will be discussed and reviewed with the Road Authority at detail design Stage.</p>	Yes
A1.2	Yes	Yes	<p>The proposed road layout will account for the phasing of the development and for other schemes in the vicinity, and will account for journey times using the proposed links.</p> <p>The future road along the south of the Mayne will be designed to accommodate an increase in traffic and facilities will be provided to accommodate vulnerable road users in the detail design of this road.</p>	Yes

Signed: *Mark Deignan*
Design Team Leader

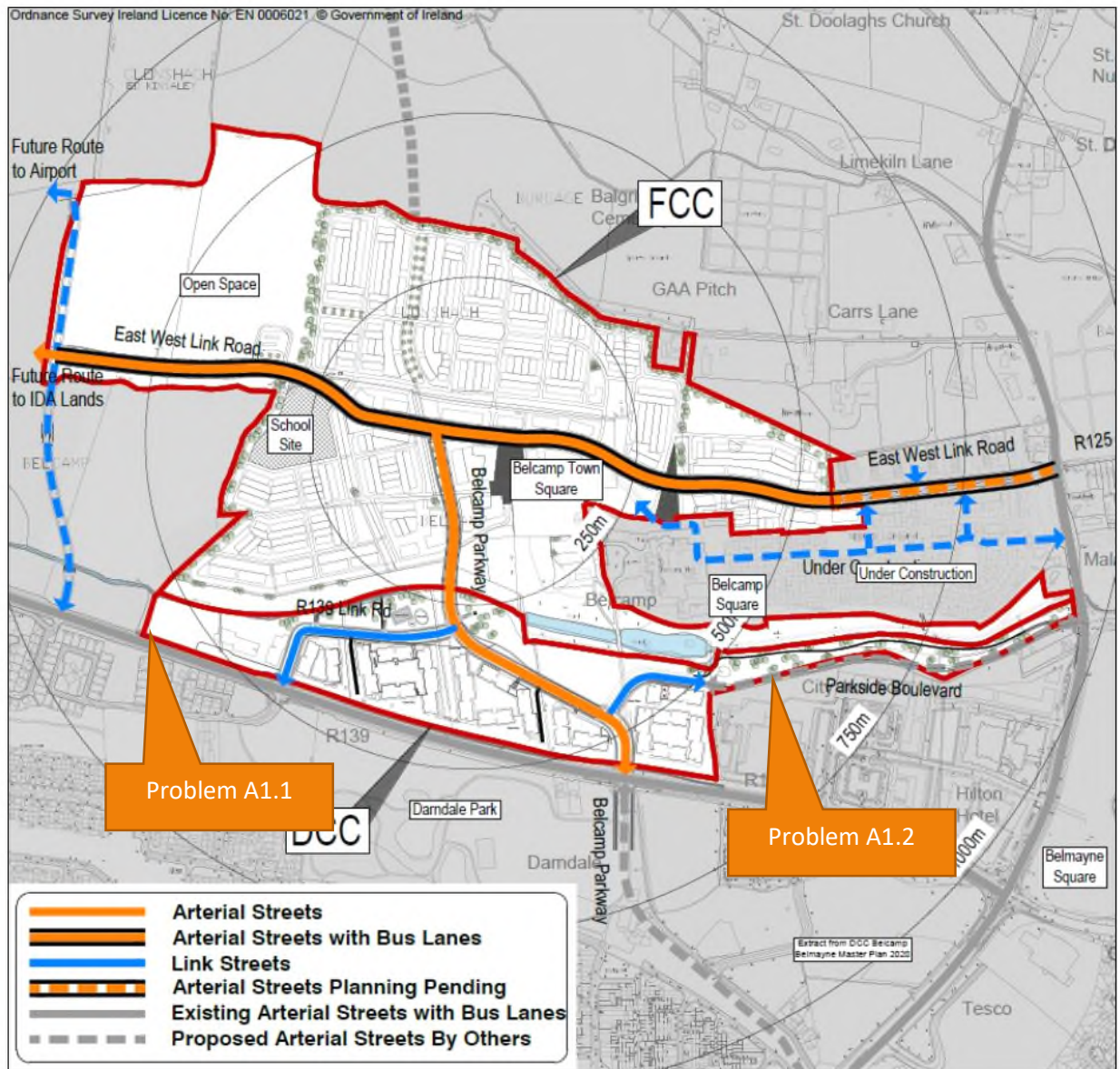
Date: 27/08/2021

Signed: *Norman Bawton*
Audit Team Leader

Date: 26/8/2021

Appendix A1.3

Problem Location Plan.



Appendix A2 – Access Audit

This access audit examines the accessibility of the proposed development from the existing surrounding environment and the future built environment for all users including vulnerable road users and the mobility impaired.

At this early stage of the design development details such as the use of dropped kerbs and tactile paving have not been provided. This is a high level review of the accessibility for all. The issues raised below are to be considered by the Design team.

Issue A2.1 – Effective width of Pedestrian Routes

There is a tendency at the early stages of scheme design to look at the minimum widths of footpaths provided in the design standards. This can lead to issues in the future design stages where additional design elements are added such as street furniture, public lighting, ESB mini-pillars, boundary walls, bus and fences, bus stops, advertising etc. which reduce the effective width of footpaths and leave them too narrow for the comfortable use by pedestrians when the full development is complete and occupied.

RECOMMENDATION

It is recommended that the widths of pedestrian routes takes into account future reduction of the effective width and that enough space is allowed for at this early design phase.

Issue A2.2 – Parking

Appendix A5- Parking Audit raises some issues with parking as the scheme design develops. The result of failure to deal with those issues would lead to accessibility issues for pedestrians. The issues have not been repeated in this section.

Issue A2.3 – Topography

Steep gradients and steps can lead to inaccessibility for some individuals who are mobility impaired. It is important at early stages of the design to ensure that all areas are accessible. Green and leisure areas are sometimes inaccessible due to steps or excessively long alternative ramped routes. Footpaths with excessive gradients can lead to inaccessibility from visitor car parking spaces to residential units or commercial units.

It appears from the long sections of the arterial roads provided that gradients of steeper than 5% have are generally not applied.

RECOMMENDATION

Ensure the finished levels of the site allow for accessibility for all.

Appendix A3 – Walking Audit

Issue A4.1 Minor Pedestrian Routes

The drawing showing the proposed minor pedestrian routes shows a small number of discontinuities in the network. These discontinuities could prevent proper integration and accessibility to all areas.



RECOMMENDATION

Ensure each route links to another without dead-ends/discontinuities.

Appendix A4 – Cycling Audit

Issue A4.1 R107 Malahide Road

PROBLEM

The existing cycle facilities on the Malahide Road north of Clarehall Junction are not continuous and vary in quality. The lack of connectivity from the proposed development to the higher quality cycling facilities south of Clarehall junction may lead to an increased use of cars to transport younger or less confident cyclists.



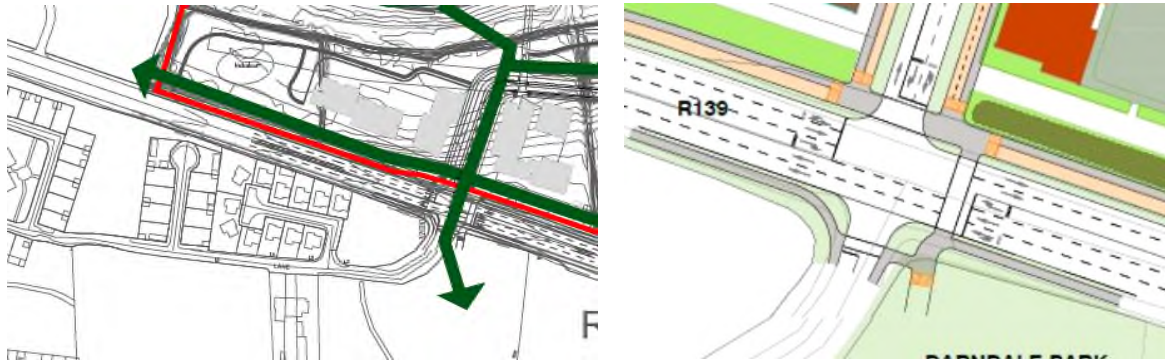
RECOMMENDATION

It is recommended that the R107 cycle route 'by others' is designed and implemented prior to full occupation of the development. If the applicant has no control of the elements to be 'designed by others' then temporary alternatives may need to be developed for the shorter and medium term to ensure that from first occupation that high quality cycle facilities are provided. It is noted that works are ongoing in this area and committed works are planned so the environment will improve from that observed during the site visit which included much temporary traffic management.

Issue A4.2 R139 Cycle Track.

PROBLEM

It is proposed to provide a cycle track along the northern side of the R139. It is unclear if this is going to be a two-way cycle track as another one is not proposed in the southern verge. It is also unclear how or where the cycle track will terminate and if cyclists will be able to transition safely from off-road to on-road.



RECOMMENDATION

It is recommended that the cycle track on the R139 be developed to have a starting point to the West. Crossing facilities and transition facilities should be provided as necessary.

Issue A4.3 Cycling Routes to School Site.

PROBLEM

There are two proposed walking routes from the northern side of the East West Link Road to the school site but there are no corresponding cycling routes. It is important that children from all areas of the development have safe direct cycle routes to the school site. A lack of a cycle route may lead to cyclists sharing too narrow of a space with pedestrians leading to collisions.



RECOMMENDATION

Provide a corresponding cycle route to the school from north of the EWLR

Appendix A5 – Parking Audit

It is noted that the parking ratio is intended to be reduced due to the high level of modal connectivity. This is to be welcomed including the proposed use of a shuttle bus system connecting key destinations.

At this early stage of the design process individual parking spaces have not been identified however some issues have been raised below to aid with the developing design process.

Issue A5.1 – Perpendicular Parking

Perpendicular parking may be provided in some Local Streets. There is a risk that parked vehicles will overhand the pedestrian routes in front of behind the parking spaces and thereby reduce the effective width of the footpath and leaving it unsuitable for two mobility impaired users to pass.



RECOMMENDATION

It is recommended that sufficient width be provided in the typical cross sections of Local Streets with perpendicular parking to ensure that vehicle overhang does not reduce the effective width of footpaths below an acceptable level.

Issue A5.2 – Disabled Parking Spaces

Disabled parking spaces will be provided throughout the development. It is important that the location and space for disabled parking spaces are thought about in the early stages of the design process. If these spaces are 'squeezed' in as an after thought then they may be located too far away from the destination of the disabled driver/passenger. This could lead to those users being unable to access such facilities. It may also lead to parking at inappropriate locations where the vehicle might be a hazard to other road users. The buffer zones around disabled parking bays should not be part of the carriageway as this space is needed for the users to get into/out of the vehicle and should be free from any other obstacles.

RECOMMENDATION

It is recommended that the location of disabled parking spaces be identified at an early stage and that sufficient space be provided.

Issue A5.3 – Electric Vehicle Parking Spaces

Electric vehicle parking spaces are regularly provided the same size as ordinary car parking spaces. This does not give enough space for users to charge their vehicles with cables, especially if they have side charging points. A lack of space can lead to trips on cables and possible inaccessibility to adjacent parking spaces.

RECOMMENDATION


It is recommended that electric vehicle charging spaces in public areas have buffer zones similar to disabled parking spaces and as outlined in the Traffic Signs Manual.

Quality Audit Statement

The individual appendices of the Quality Audit (A1 to A5) have been carried out in accordance with the guidance given in DMURS and takes into consideration the principles approaches and standards of that Manual.

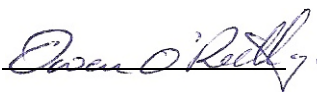
This report has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

Norman Bruton

Signed: 

(Quality Audit Team Leader) Dated: 27/8/2021

Owen O'Reilly

Signed: 

(Quality Audit Team Member) Dated: 27/8/2021

UK and Ireland Office Locations

