Clifton Scannell Emerson Associates

Mobility Strategy

Barnhill Garden Village

Client: Alanna Homes and Alcove Ireland Four Ltd

Date: 11th July 2022

Job Number: 19_121

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

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Table of Contents

1 Introduction

1.1 Overview

CSEA has been commissioned to prepare a Traffic and Transport Assessment (TTA) for a proposed mixed-use development at Site located in the Barnhill area South of Ongar Village, Clonsilla, Dublin 15. This Mobility Strategy is submitted as support to a Traffic and Transport Assessment undertaken for the proposal, contained within a separate document, and included in the planning pack.

1.2 Site Location

The proposed development site is located within the Barnhill Lands, approximately 4km west of Blanchardstown. Figure 1.1 and Figure 1.2, below, sets out the site's location in relation to the local road network. The subject site is currently, for the most part, in agricultural use.

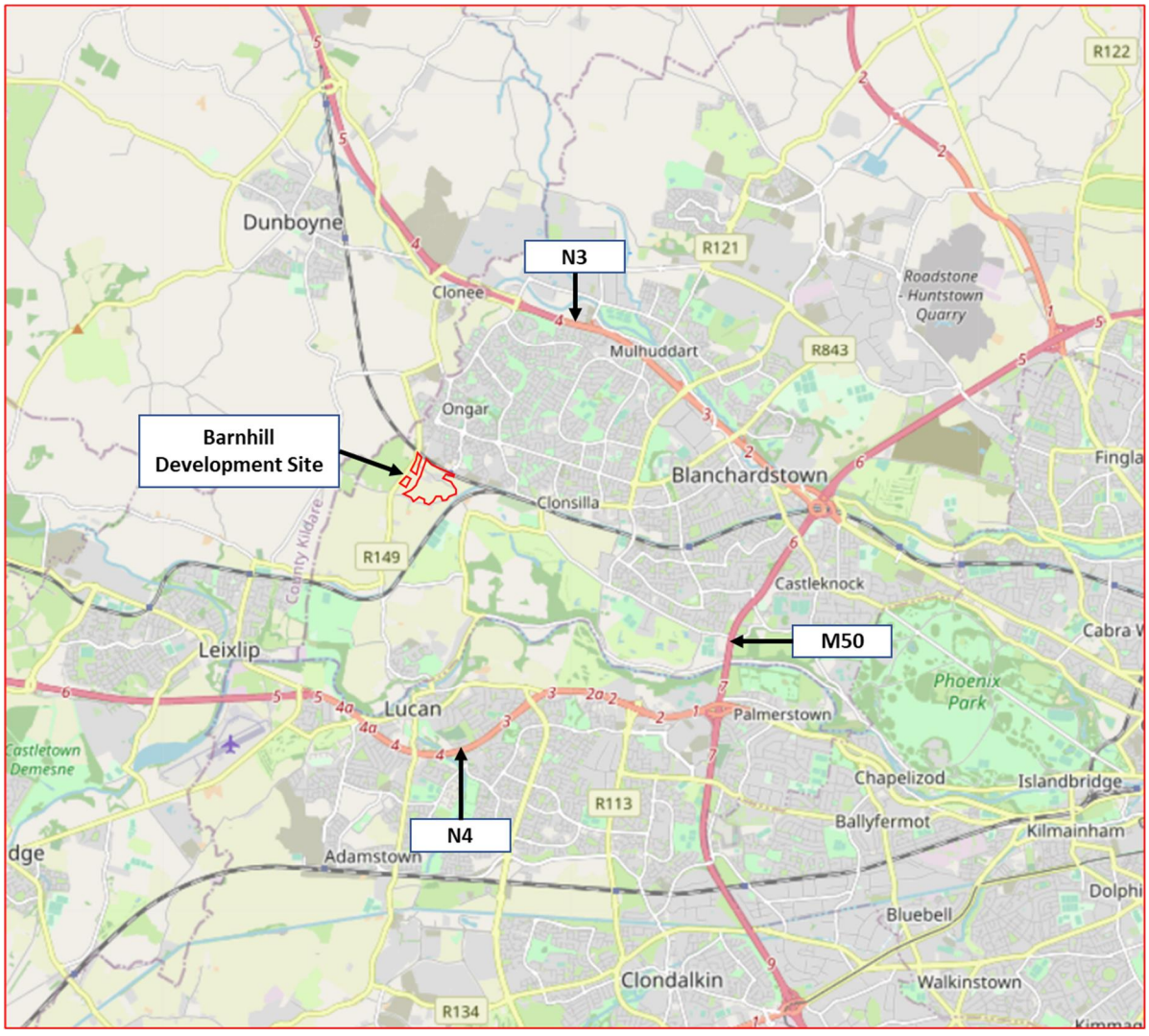

Figure 1.1 *Strategic Site Location (indicative Red Line Boundary)*

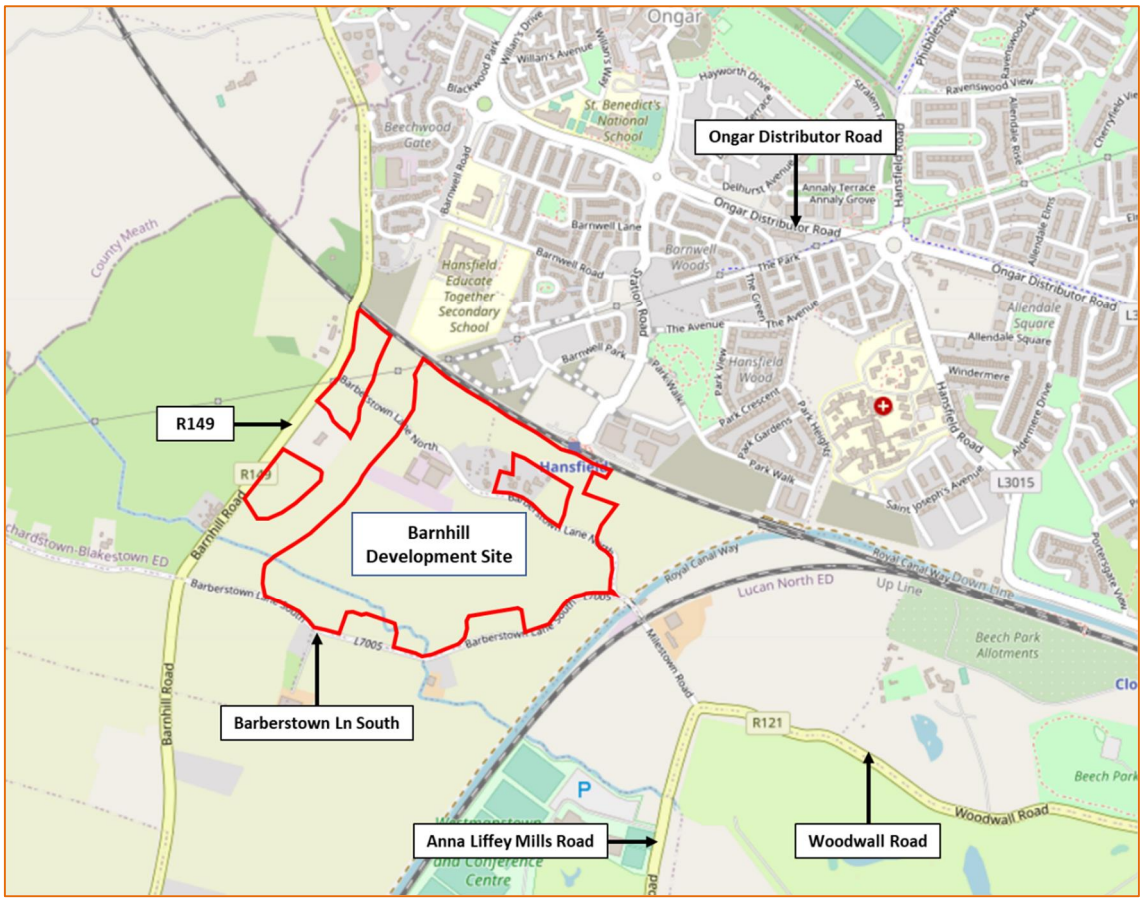

Figure 1.2 *Site Location in Relation to Local Road Network (indicative Red Line Boundary)*

1.3 Overview of Proposed development

The proposed development will consist of the demolition of the existing vacant industrial buildings and the construction of 1,243 residential units, approximately 3,174 m2 of commercial and community facilities, and ancillary development. The commercial and community development will include:

- Creche of 942 m2 with capacity for approximately 210 children.
- Medical centre (GP / Dental practice) of approximately 344 m2 with 8 no. consulting rooms.
- Convenience retail unit of 370 m2
- Five independent retail / retail service units ranging in size from 57 m2 to 127 m2 sqm, with capacity to amalgamate some of the units, if required.
- A Café of 158 m2
- A Community Space of 359 m2. This multi-use space will be able to accommodate a range of activities, including for example multi-denominational worship, fitness classes, community meetings etc.
- An Office Hub of 501 m2. The office hub is designed to provide hot-desk and office support facilities to facilitate hybrid working.
- Provision of an access Plaza to Hansfield Train Station, including provision for a commuting bike storage area.

- Providing for pedestrianisation / cycle way along Barberstown Lane North (L-7010-0), with vehicle use restricted to local access only.
- Land set aside for a primary school to accommodate a minimum of 16 classrooms, to be delivered by the department of education.

The residential units consist of a mix of unit types as detailed in Table 1.1. Buildings range in height from 2-storeys to 12-storeys.

Unit Type	No. of Units
1-bed Apartment	148
2-bed Apartment	589
3-bed Apartment	63
4-bed Apartment	4
1-bed Duplex	5
2-bed Duplex	20
3-bed Duplex	92
3-bed House	286
4-bed House	36
TOTAL:	1,243

Table 1.1 *Proposed Residential Units Mix*

A detail description of the proposal, including unitsô breakdown, proposed road network, and parking provision is presented within section 4 of this Report.

The proposed development has been designed in accordance with national best practice, namely the *Design Manual for Urban Roads and Streets* (*DMURS*) and the *Design Standards for New Apartment, Guidelines for Planning Authorities,* and the *Climate Action Plan*.

1.4 Mobility Strategy Objectives

The objective of the Mobility Strategy, also known as a Mobility Management Plan, is to promote more sustainable travel options, thus reducing the need for residents to travel alone by car as single occupancy car users. As the site is not yet developed, the Mobility Strategy is being developed in ôframeworkô format and would be updated and implemented following the developments occupation (guided by a travel survey of the development).

2 Existing Conditions

2.1 Introduction

This section of the Plan describes the existing site access arrangements and the local road network. The existing conditions presented here represents an evidence-based review and have been informed by a review of the study area and its surrounding transport

network, including general traffic road infrastructure, facilities for pedestrians and cyclists and public transport infrastructure and service provision.

2.2 Local Road Network

R149

R141 Barnhill Road is a two-carriageway regional road located to the west of the proposed development site. Near the site, this road accommodates one lane for general traffic in each direction. The road connects the development site to the northern developments and bus stops. No pedestrian or cycle facilities are available in this stretch of the road along the development side.

R121

R121 is a regional road and is located to the east of the development site. The road is bifurcated into R121 Woodwall Road in the North and Anna Liffey Mills Road in the South. Both the roads can accommodate two-way traffic and have two lanes. No pedestrian or cyclistsô facilities are present on the stretch of the road close to development site. Woodwall road connects the development site to the Clonsilla train station, which is the second closest train station to the development site after Hansfield.

Barberstown Lane North

Barberstown Lane North is a local road which marks the north boundary of the development site. It branchôs from R149 towards East. The road is open to two-way traffic, and it does not have any road markings.There are some private properties and agricultural land on the roadsides

Barberstown Lane South

Barberstown Lane South is a local road which marks the sorth boundary of the development site. It branches from R149 towards East. The road is open to two-way traffic, and it does not have any road markings. There are some private properties and agricultural land on the roadsides. The road meets Barberstown Lane North via a three-leg junction to the east. The third leg further diverges into R121 North and South.

Ongar Distribution Road

Ongar Distribution Road is a local road located to the North of Hansfield train station.It passes through the residential development to the north of Barnhill Site. The stretch of the road has four roundabouts and a few junctions. The road has dual carriageways to accommodate for two-way traffic. It has bus lanes all along, and a few bus stops are located on the road. It is verged alongside both the carriageways followed by footpaths and cycle lanes.

2.3 Existing Public Transport Services

The Hansfiled Train Station is roughly 350 m from the centre of the site. It connects Barnhill to Dublin City Centre and Longford via M3 Parkway. There are several bus stops towards the north of the site. The nearest bus stop is approximately 1.2 km from the centre of the development to the north of the site. Figure 2.1 illustrates the location of the train station and bus stops in the vicinity of the proposed development site.

Figure 2.1 *Public Transport stops in the Vicinity of the Site* (indicative Red Line Boundary)

Table 2.1, below, summarises the train routes and bus routes available and their frequency.

Stop Name	Route No.	Route	Peak Hour Frequency
Hansfield		Dublin ï M3 Parkway ï Longford	30 minutes
Barnwell Green	39	Burlington Road ï Ongar Road	30 minutes
	39A	Delhurst Estate-UCD	10 minutes
	39X	Burlington Road-Ongar Road	Twice in 30 minutes (operates only in evenings on weekdays)
	139	Naas Hospital - Blanchardstown	2 hours

Table 2.1 *Existing Public Transport Services*

2.4 Amenities in the Vicinity of the Site

The proposed development will include the space for the provision of Retail, Commercial, Creche, Medical, and education facilities. These facilities will be primarily located within

the Village Centre Area, the creche is to be located in Station Plaza with direct pedestrian access to the Village Centre.

The proposed development site will also benefit from the amenities located within the Hansfield/ Ongar area and the partially developed/under construction Hansfield Village. Figure 2.2 shows the location of the different amenities, such as restaurants, supermarket, pharmacies, and medical facilities available within Hansfield/Ongar over a 1.5 km radius from the centre of the Barnhill Site.

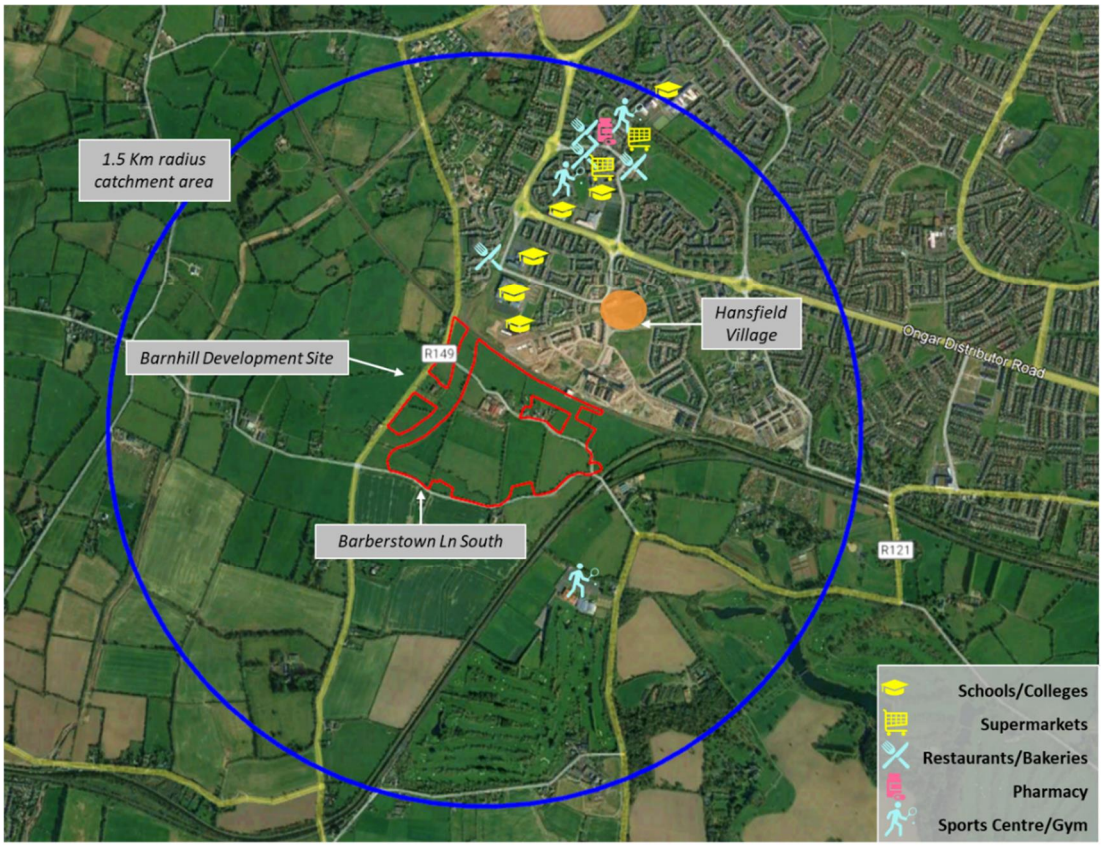

Figure 2.2: *Amenities Within Hansfield/Ongar Area (indicative Red Line Boundary)*

2.5 Car Ownership Levels in Local Area

A review of the car ownership levels on the areas in the vicinity of the site has been undertaken. Census 2016 data on Car ownership for Hansfield, which is located directly to the north of the proposed development site, has been used for the assessment. Table 2.2 presents the results of the analysis. Figure 2.3 (overleaf) highlights in yellow the small areas taken in consideration for the assessment.

Local Area	Number of Cars Category	No. Households	Total No. Cars
Hansfield	1 motor car	110	-
	2 motor cars	692	692
	3 motor cars	499	998
	4 or more motor cars	47	141
Total		1,348	1,831
Overall Car Ownership Rate		1.4	

Table 2.2 *Car Ownership Rate*

As shown in the Table 4.2, the areas included in the analysis had a total of 1,831 no. cars distributed across 1,348 no. households. This indicates a car ownership rate of 1.4.

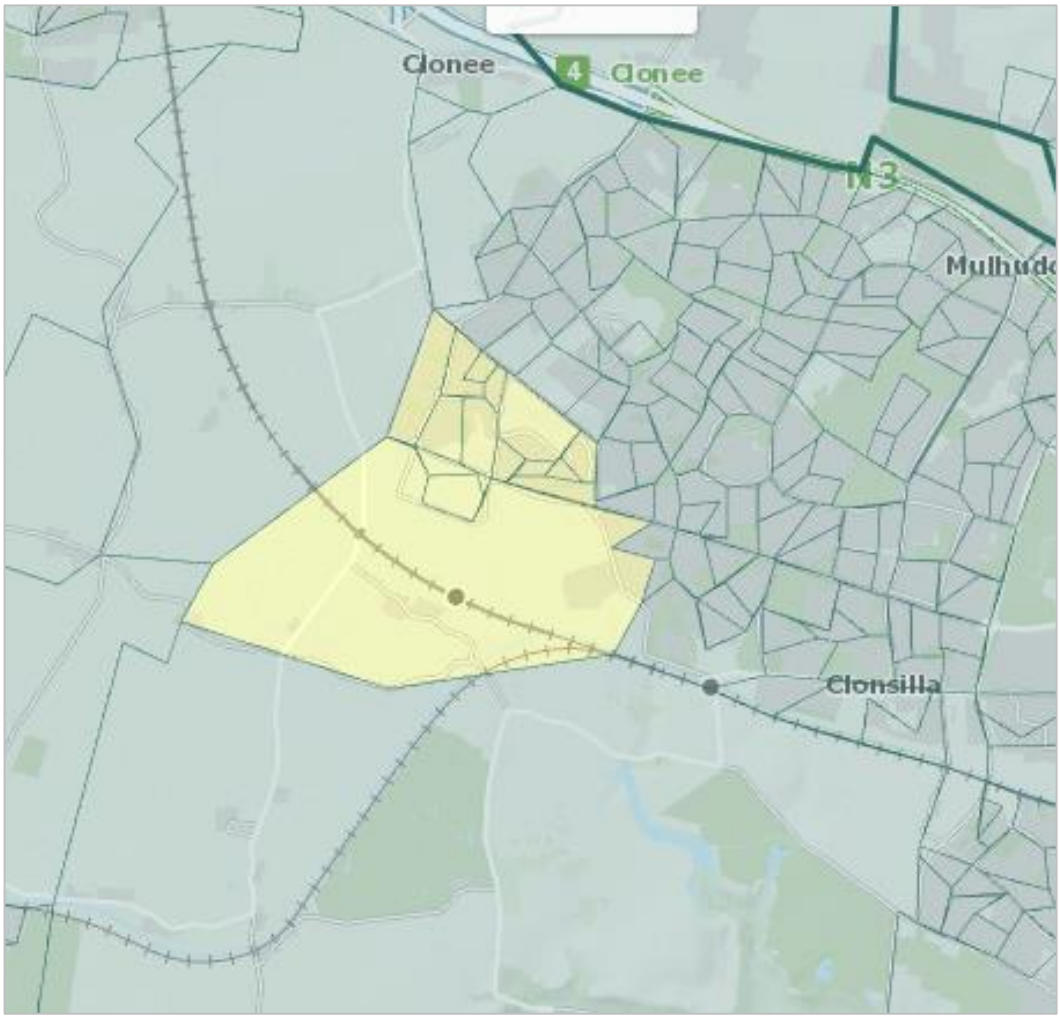

Figure 2.3 *Small Areas used in the Car Ownership Assessment*

3 Future Receiving Environment

3.1 Road Network

The following road schemes are planned in the vicinity of the development site:

- **Ongar-Barnhill Road scheme**, which is included in the Barnhill LAP and is to be delivered by FCC as part of their Section 48 programme. This Road link is expected to be Tender in Q3/4 2022 and to be completed by Q2/3 2024. This road is required in order to provide for a coherent sustainable movement and transport strategy and to maximise development capacity within the Barnhill LAP lands.
- **Kellystown Link Road**, this road is not required for the delivery of the proposed development, however it has been included to be able to take into account the traffic generation associated with Kellystown LAP (to establish a worst-case scenario for traffic flows in local network). Pre-draft phase was initiated by Fingal County Council in mid-2019, and this road scheme has been presented to elected councillorswhich is included in the draft Kellystown LAP.

Figure 2.1 below, sets out the location of these roads in relation to the proposed development site.

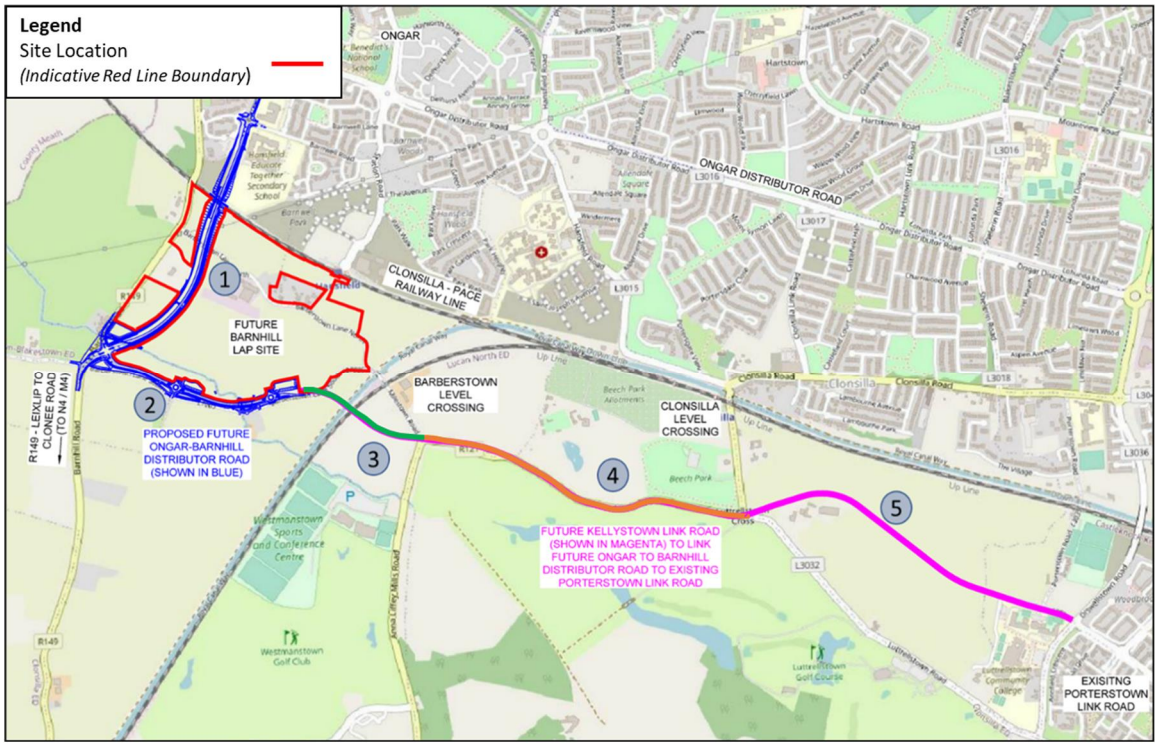

Figure 3.1: *Future Road Network* (indicative Red Line Boundary)

The main components of these two road schemes, as numbered in Figure 3.1, are outlined below.

1. **Ongar - Barnhill North-South Link Road** ï a dual carriageway distributor road approximately 1.16km long extending from the Ongar Road roundabout in a south-westerly direction to tie into the existing R149 just south of Barberstown Lane South.

This road will be delivered by Fingal County Council and is due to be tendered in Q3 2022 with view to start construction in Q1 2023 and finalise in Q2/Q3 2024.

2. **Upgrade of existing Barberstown Lane South** ï Barberstown Lane South will link to the proposed Ongar-Barnhill North-South Link Road via a proposed new signalised junction, to replace the existing crossroads at the R149/Barberstown Lane junction. Upgrade of 650 metres to a single carriageway is proposed in an easterly direction along the existing link between the R149 & the R121 towards Pakenham Bridge.
3. **Barberstown Bridge** - located adjacent to the existing Barberstown railway level crossing and provides a grade separated crossing over the Royal Canal and Railway line when the existing level crossing at Barberstown is closed as part of the DART Expansion Programme. The bridge connects to the Part 8 approved ôBarberstown Lane South Upgradeõ on the west side and to the ôKellystown Road proposal ï West of Clonsilla Stationõ on its east side. This scheme is to be delivered by Irish Rail under Dart + west and is due to be lodged with An Bord Pleannala in the coming months and funded by NTA.
4. **Kellystown Road –** West of Clonsilla Station. This road would connect to the road leading from the Barberstown level crossing/ the proposed new Barberstown Bridge at its west end at a point where the existing R121 turns through a 90 degree angle to change alignment from north-south to east-west. It would connect to the ôKellystown Road- East of Clonsilla Stationõ at its east end. The proposed Kellystown Road ï West of Clonsilla Station would run parallel to the existing R121. The R121 is not suitable for high volumes of traffic due to its winding alignment and the proposed new road would provide a safer alternative route inluding pedestrain and cyclist facilities.
5. **Kellystown Road** ï East of Clonsilla Station ï road proposal is shown on the FCC development plan and Kellystown LAP. It connects to the north-south section of the R121 (at a point approximately 100 south of the Clonsilla Level crossing)/ future proposed Kellystown Road ï West of Clonsilla Station at its west end. From here it continues east and runs approximately parallel to the Porterstown Road and connects to the recently completed Porterstown Link Road at a point adjacent to and north of Scoil Choilm Community National School at its east end. This section of road is expected to accommodate the Kellystown LAP traffic. Figure 3.1 (overleaf) shows the location of these road proposal in relation to the proposed development site. of these road proposal in relation to the proposed development site.

3.2 Public Transport

3.2.1 Rail

The key piece of strategic transport infrastructure to be delivered in furture adjacent to ~~impacting~~ the development site is the DART + West Programme. This project aims ñ*to deliver frequent, modern, electrified services within the Greater Dublin Area, helping to achieve government climate change targets by reducing greenhouse gas emissions and facilitating a societal shift away from private car use and on to public transport. It will*

facilitate sustainable mobility and development, promote multi-modal transit, active transport and boost regional connectivity, helping make public transport the preferred option for more and more people."

The DART + West will be the first infrastructural projects of the DART+ Programme to be delivered, improving capacity on Maynooth and M3 Parkway to city centre rail corridors. The development site will benefit from the improvements of this programme as it is directly adjacent to the Hansfield Train station (on the M3 Parkway Line).

The project will bring the following improvements to the Line:

- *Increase train capacity from the current 6 trains per hour per direction up to 12 trains per hour per direction subject to demand. Passenger capacity will increase from 5,000 in 2019 to 13,200 passengers in 2025.*
- *Electrification and re-signalling of the Maynooth and M3 Parkway lines (approximately 40km in length). Reduce carbon emissions through the deployment of new electric trains.*
- *Support growing communities, businesses, and future development by providing high-quality integrated public transport service in line with Government policy including the National Planning Framework and Climate Action Plan.*
- *Closure of level crossings and provision of replacement bridges where required, including the level crossings at Clonsnsilla and Barberstown.*

The 2nd round of Public Consultation on the preferred option for the DART+ West project has now concluded it is expected to that an application to An Bord Pleanála will be lodged in 2022. Figure 3.2 below, illustrates the DART+ West Route Map.

Figure 3.2: DART+ West Route Map

Based on the above, it can be stated that the proposed development will continue to have a very frequent and high-quality public transport connectivity, improving the opportunities for sustainable travel. The changes to be delivered with Dart+ West will further improve the already frequent service available at Hansfield Station.

3.2.2 Bus

BusConnects: Bus Network Redesign and Core Bus Corridors Project

The 'BusConnects' programme was launched by the National Transport Authority (NTA) in May 2017 and is described as *"a plan to fundamentally transform Dublin's bus system, so that journeys by bus will be fast, reliable, punctual, convenient and affordable. It will enable more people to travel by bus than ever before and allow bus commuting to become a viable and attractive choice for employees, students, shoppers and visitors."*

The BusConnects programme contains three key elements:

- Dublin Area Bus Network Redesign Project;
- fare and ticketing enhancements; and
- better quality bus infrastructure, including the Core Bus Corridors Project.

The revised proposed bus network plan emerging from the Dublin Area Bus Network Redesign Project was published by the NTA in September 2020. Figure 3.3 presents the proposed bus network in the application site's surrounding.

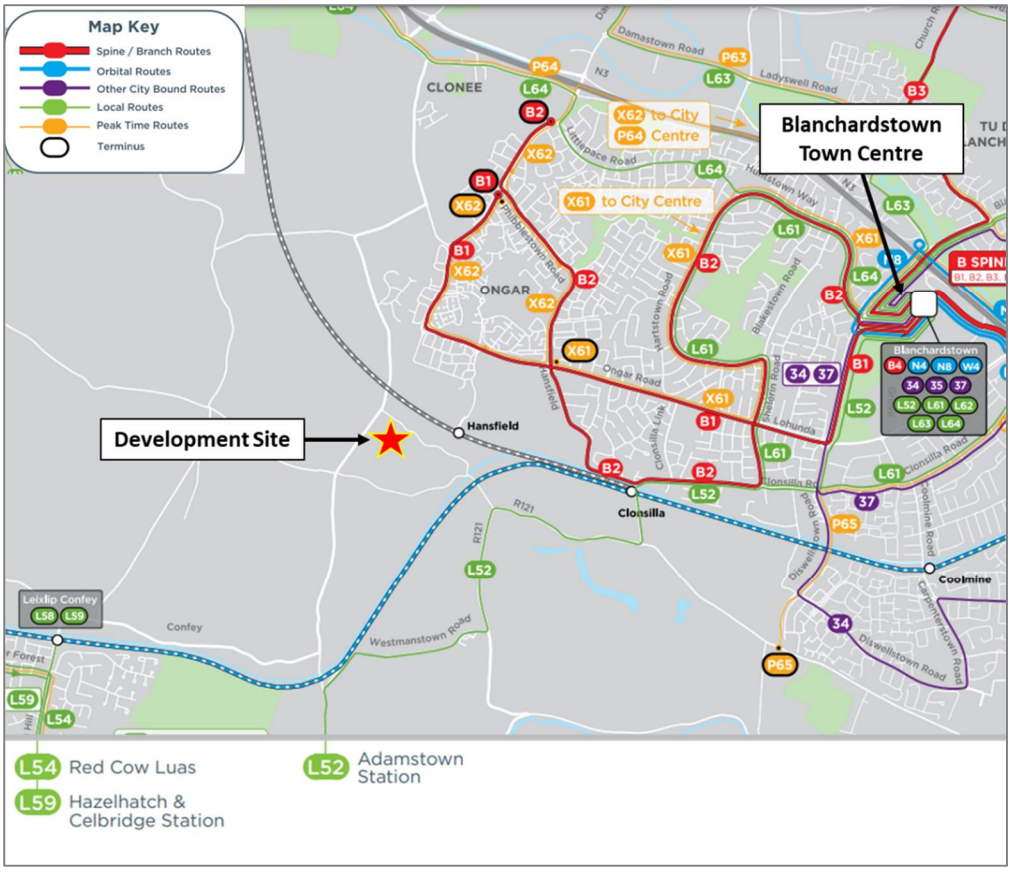

Figure 3.3 *Proposed BusConnects network in vicinity to the site (Source: Blanchardstown Area Network Map)*

As shown in Figure , the development site is located in close proximity to branches B1 and B2 of the proposed BusConnects B-Spine. These branches will be serviced every 8 minutes throughout the day, with a 15-minutes bus frequency. These services will connect the site with Blanchardstown Town Centre, Dublin City Centre and several areas within north and south-west Dublin.

In addition to the B-Spine branches discussed above, the proposed development will be service by Local Routes L52, connecting to Adamstown Station, and Peak Time routes X61/X62, connecting to the city centre.

The Blanchardstown CBC project is programmed to be lodged with An Bord Pleanála in Q3 2022. When implemented, this project will provide significantly enhanced bus priority on the B-Spine corridor, reducing journey times and further enhancing capacity. The bus network in the vicinity of the site will therefore be high frequency in nature following implementation of the proposals contained within the Dublin Area Bus Network Redesign Project.

3.3 Cycle Network- Greater Dublin Area Cycle Network Plan (2013)

The *Greater Dublin Area Cycle Network Plan* was published by the NTA in December 2013 and sets out proposals to develop a cycle network within the region to achieve the national 10% cycle mode share target. It proposes a comprehensive and integrated network of infrastructure comprising primary, secondary, greenway and inter-urban components. The network within the development site's vicinity is presented in Figure 3.4.

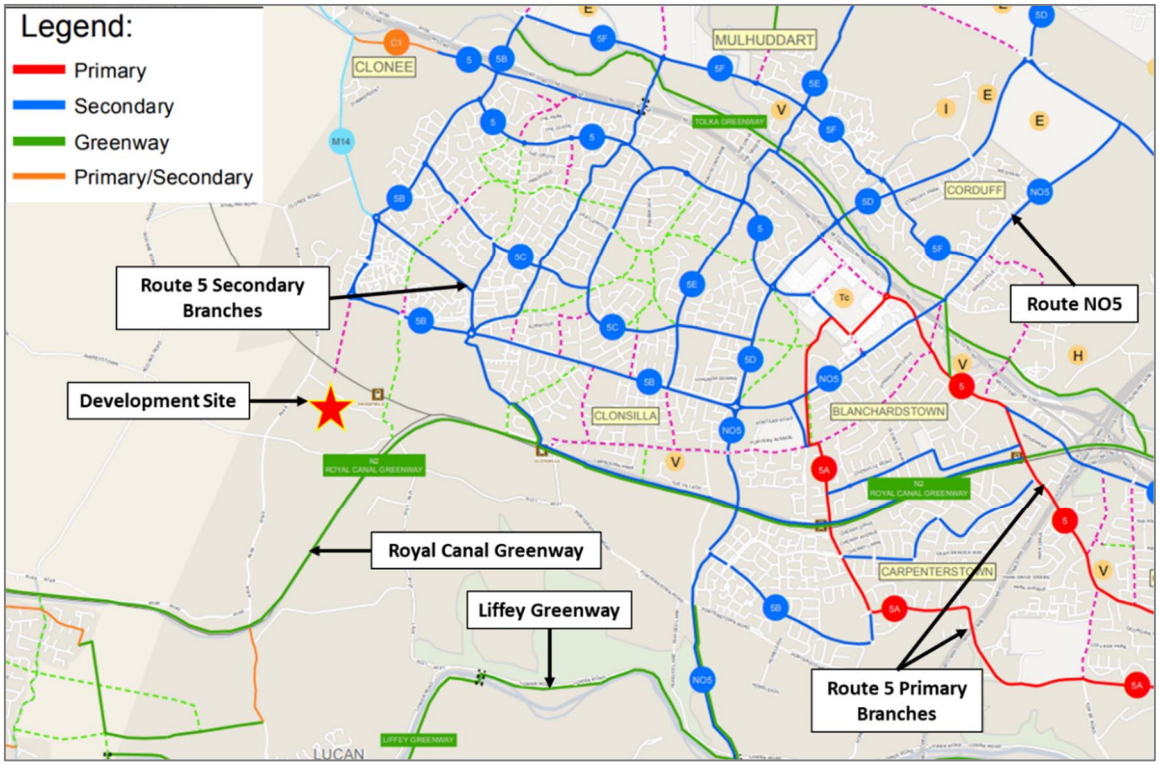

Figure 3.4 Cycle Network Plan in the Vicinity of the Site (Source: Greater Dublin Area Cycle Network Plan, 2013)

As shown in Figure 3.4 the development site is located in closed proximity to the the following Cycle Routes:

- Royal Cannal Greenway: from the city centre via Cabra, Ashtown, Castleknock, Coolmine and Clonsilla. Some or all of this greenway will form part of National Cycle Route 2 between Dublin and Galway
- Liffey Valley Greenway: along the southern edge of this sector between Chapelizod and Leixlip.
- Route 5 Primary and Secondary: Liffey Quays to Heuston Station, and then through the Phoenix Park to Castleknock and Blanchardstown.
- Route NO5: from the coast at Kilbarrack to Donaghmede, Coolock, Santry and Finglas

At present, there are existing cycleways within the Hansfield SDZ that link from Hansfield Train Station to secondary routes north and east of the SDZ.

3.4 Walking Network

The planned pedestrian network is similar to the planned cycle network, as discussed in preceding Section 3.3, including the Royal Canal Greenway and the Liffey Valley Greenway. The internal pedestrian routes within the development and how they tie into the existing and proposed pedestrian path in the vicinity of the site are discussed in section 4 of this Report.

4 Proposed Development

4.1 Proposed Development Description

4.1.1 Development Summary

The proposed development will consist of the demolition of the existing vacant industrial buildings and the construction of 1,243 residential units, approximately 3,174 m2 of commercial and community facilities, and ancillary development. The commercial and community development will include:

- Creche of 942 m2 with capacity for approximately 210 children.
- Medical centre (GP / Dental practice) of approximately 344 m2 with 8 no. consulting rooms.
- Convenience retail unit of 370 m2
- Five independent retail / retail service units ranging in size from 57 m2 to 127 m2 sqm, with capacity to amalgamate some of the units, if required.
- A Café of 158 m2
- A Community Space of 359 m2. This multi-use space will be able to accommodate a range of activities, including for example multi-denominational worship, fitness classes, community meetings etc.
- An Office Hub of 501 m2. The office hub is designed to provide hot-desk and office support facilities to facilitate hybrid working.

- Provision of an access Plaza to Hansfield Train Station, including provision for a commuting bike storage area.
- Development of a cycle / pedestrian priority route along Barberstown Lane North (L-7010-0), with vehicle use restricted to local access only.
- Land set aside for a primary school to accommodate a minimum of 16 classrooms.

The residential units consist of a mix of unit types as detailed in Table 4.1. Buildings range in height from 2-storeys to 12-storeys.

Unit Type	No. of Units
1-bed Apartment	148
2-bed Apartment	589
3-bed Apartment	63
4-bed Apartment	4
1-bed Duplex	5
2-bed Duplex	20
3-bed Duplex	92
3-bed House	286
4-bed House	36
TOTAL:	1,243

Table 4.1 *Proposed Residential Units Mix*

4.1.2 Proposed Character Areas

The proposed development will spread over 10 different character areas, namely:

- Link Road West
- Link Road East
- Railway Quarter
- Station Plaza
- Station Quarter South
- Village Centre Residential
- Barnhill Cross
- Barnhill Crescent
- Barnhill Stream
- Parkside

Figure 4.1, below, illustrates the location of each of these character areas within the site. A detail description of the proposal for each area is provided within the remainder of this chapter.

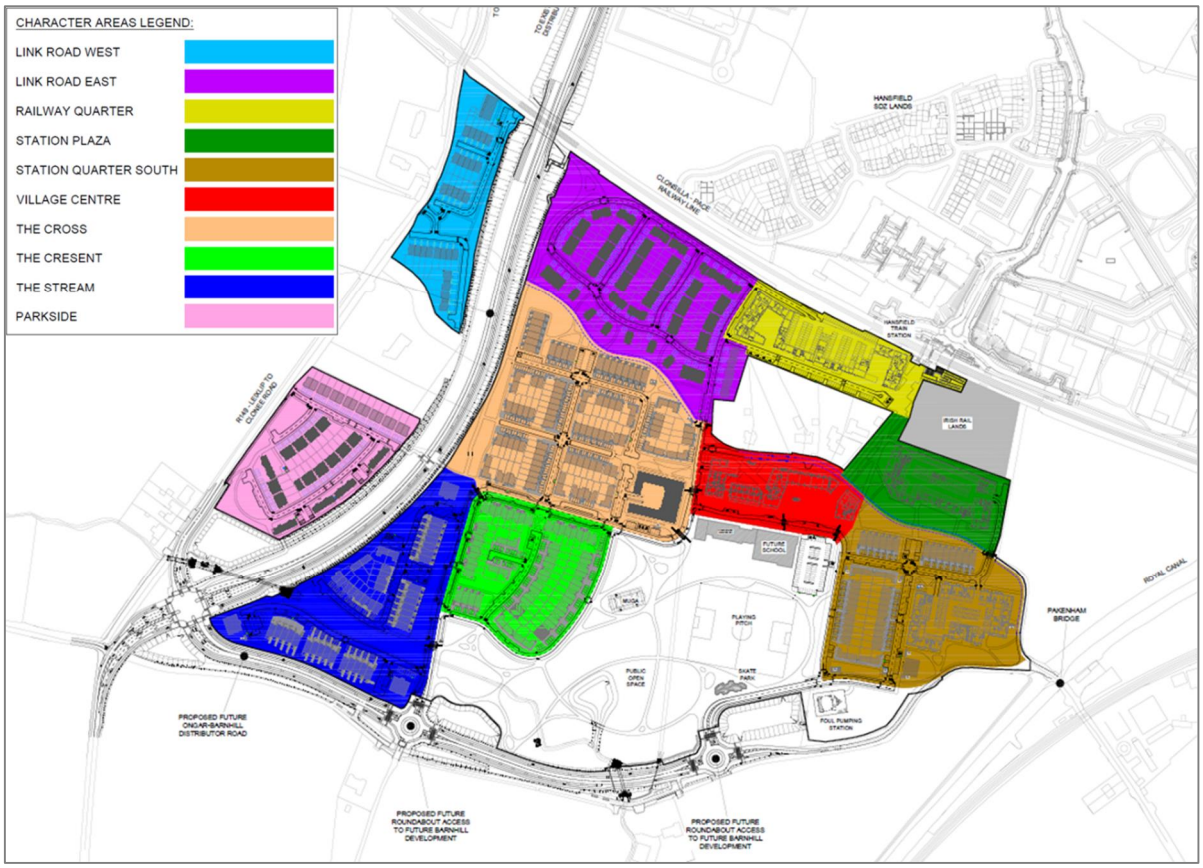

Figure 4.1 *Proposed Character Areas*

Detail layouts for each character areas, illustrating the provision for all users have been provided within the Planning Package.

4.2 Link Road West

4.2.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Link Road West is located in the northwest corner of the site, on the western side of the Ongar Barnhill Road. This character Area will include a total of 33 no. residential properties comprising the following:

- 3 no. 2-Bed Duplex
- 3 No. 3-Bed Duplex
- 27 no. 3-Bed Houses

This character area will be accessed from the R149. A pedestrian/ cyclist's link across the Ongar- Barnhill Road will be available in the northern side of the area to access Link Road East and the eastern side of the development side.

4.2.2 Link Road West Parking

The proposed car parking and cycle parking provision for Link Road West is summarised in Table 4.2.

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
3 no. 2-Bed Duplex	-	3	6
3 no. 3-Bed Duplex	-	3	9
27 no. 3-Bed Houses	54	-	108*
Visitors	-	5	10
Total	**65**		**133**

Table 4.2 *Proposed Link Road West Parking*

**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 65 no. car parking spaces will be provided within Link Road West, of which 5 will be EV and 1 will be disable. All Houses will have ducting for EV Charging. 10% will be provided with charging points.

In terms of cycle parking, a total of 133 no. spaces will be provided of which, 4 will be equipped for electric bikes and 4 will be cargo bikes.

4.3 Link Road East

4.3.1 Layout and Residential Units Breakdown

As shown on Figure 4.1, Link Road East is located in the northern edge of the site, to the east of the Ongar Barnhill Road. This character area will be accessed via primary link roads inside the Barnhill site and will include a total of 91 no. residential properties comprising the following:

- 6 no. 2-Bed Duplex
- 6 No. 3-Bed Duplex
- 69 no. 3-Bed Houses
- 10 no. 4-Bed Houses

4.3.2 Link Road East Parking

The proposed car parking and cycle parking provision for Link Road West is summarised in Table 4.3.

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
6 no. 2-Bed Duplex	-	12	14
6 no. 3-Bed Duplex	-	12	18
69 no. 3-Bed Houses	138	-	207*
10 no. 4-Bed Houses	20	-	40*
Visitors	-	4	24
Total	**186**		**303**

Table 4.3 *Proposed Link Road East Parking*

**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 186 no. car parking spaces will be provided within Link Road East, of which 20 will be EV and 2 will be disable. All Houses will have ducting for EV Charging. 10% will be provided with charging points.

A total of 303 no. cycle parking spaces will be available in this Character area, of which, 9 will be equipped for electric bikes and 9 will be cargo bikes.

4.4 Railway Quater

4.4.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Railway Quater is located in the northern edge of the site. This character Area will include a total of 211 no. residential properties within 4 no. buildings. ranging in height from 2-storeys to 12-storeys. The following no. unit types will be available in this area:

- 58 no. 1-Bed Apartments
- 151 no. 2-Bed Apartments
- 2 No. 2-Bed Duplex

4.4.2 Railway Quarter Parking

The proposed car parking and cycle parking for this Character Area will be accommodated at surface and basement level, summarised in Table 4.4.

Proposed Units by Type	Car Parking		Cycle Parking
	Podium/ Basement	Surface	
58 no. 1-Bed Apartments	48	-	58*
151 no. 2-Bed Apartments	75	45	304*
2 no. 2-Bed Duplex	2	-	4
Visitors	-	-	39
Total	**170**		**405**

Table 4.4 *Proposed Railway Quarter Parking*
**Dedicated Space at surface level*

A total of 170 no. car parking spaces will be provided for Railway Quarter, of which 18 will be EV and 9 will be disable.

In terms of cycle parking, a total of 405 no. spaces will be provided, of which, 366 spaces will be in the basement to accommodate residents and 39 will be at surface level to accommodate visitors. A total of 13 spaces will be equipped for electric bikes and 20 will be for cargo bikes.

Detail layouts of the basement car park has been submitted with the Planning Package.

4.4.3 Hansfield Station Commuter Cycle Parking

A total of 82 no. cycle parking spaces, of which 8 are for cargo bikes, are proposed directly adjacent to Hansfield Train Station. These spaces are anticipated to accommodate the cycle parking demand associate with commuter.

4.5 Station Plaza

4.5.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Station Plaza is located in the north-eastern edge of the site. This Character Area will include a total of 166 no. residential properties within 4 no. buildings, ranging in height from 2-storeys to 12-storeys. The following no. unit types will be available in this area:

- 24 no. 1-Bed Apartments
- 117 no. 2-Bed Apartments
- 9 No. 2-Bed Duplex
- 16 no. 3-Bed Apartments

This character area will be directly adjacent to the Hansfield Train Station, which will be connected to the site via a pedestrian plaza. This Plaza will include seating and landscaping areas, in addition to Public Realm cycle parking right outside the Dart Station.

4.5.2 Station Plaza Parking

The proposed car parking and cycle parking for this Character Area will be accommodated at surface and basement level, summarised in Table 4.5.

Proposed Units by Type	Car Parking		Cycle Parking	
	Podium/ Basement	Surface	Podium/ Basement	Surface
24 no. 1-Bed Apartments	10	-	24	-
117 no. 2-Bed Apartments	70	-	234	-
9 no. 2-Bed Duplex	6	-	18	-
16 no. 3-Bed Apartments	10	-	48	-
Visitors	-	4	20	-
Creche Phase 1	4	-	14	-
Total	**104**		**358**	

Table 4.5 *Proposed Station Plaza Parking*

A total of 104 no. car parking spaces will be provided for Station Plaza, of which 11 will be EV and 6 will be disable.

In terms of cycle parking, a total of 358 no. spaces will be provided, all within the basement compound. A total of 18 spaces will be for cargo bikes.

Most parking provision for this character area will be accommodated at basement level (detail layouts provided with the planning package.)

4.6 Station Quarter South

4.6.1 Layout and Residential Units Breakdown

As shown on Figure 4.1, Station Quarter South is located in the eastern edge of the site. This character Area will include a total of 201 no. residential properties comprising the following:

- 3 no. 1-Bed Apartments
- 127 no. 2-Bed Apartments
- 25 no. 3-Bed Apartments
- 14 no. 3-Bed Duplex
- 24 no. 3-Bed Houses
- 4 no. 4-Bed Apartments
- 4 no. 4-Bed Houses

4.6.2 Station Quarter South Parking

The proposed car parking and cycle parking provision for Station Quarter South is summarised in Table 4.6.

Proposed Units by Type	Car Parking			Cycle Parking	
	Curtilage	Podium/ Basement	Surface	Podium/ Basement	Surface
3 no. 1-Bed Apartments	-	-	1	5	-
127 no. 2-Bed Apartments	14	47	6	230	28
25 no. 3-Bed Apartments	-	24	1	90	-
14 no. 3-Bed Duplex	14	-	-	-	42
24 no. 3-Bed Houses	40	-	8	-	72*
4 no. 4-Bed Apartments	-	4	-	19	-
4-Bed Houses	-	-	8	-	16*
Visitors	-	4	27	-	42
Total	**198**			**544**	

Table 4.6 *Proposed Station Quarter South Parking*
**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 198 no. car parking spaces will be provided within Station Quarter South, of which 13 will be EV and 6 will be disable.

In terms of cycle parking, a total of 544 no. spaces will be provided, of which 18 will be cargo bikes spaces. Detail Basement Car park layout is provided with the drawings in the planning package.

4.7 Village Centre

4.7.1 Layout and Residential Units Breakdown

As shown on Figure 4.1, Village Centre is located in the centre of the site. This character area will include a total of 118 no. residential properties and several non-residential units comprising the following:

- 24 no. 1-Bed Apartments
- 73 no. 2-Bed Apartments
- 8 no. 3-Bed Apartments
- 13 no. 3-Bed Duplex
- 157.5 sqm Café
- 343.8 sqm Medical Centre
- 127.3 sqm Remote Working Hub
- 6 no. Commercial/ Retail Units (870.5 sqm in total)
- 359.2 sqm Community Centre

These will be provided over 5 no. buildings. ranging in height from 2-storeys to 12-storeys.

4.7.2 Village Centre Parking

The proposed car parking and cycle parking provision for Village Centre is summarised in Table 4.7.

Proposed Units by Type	Car Parking		Cycle Parking	
	Podium/ Basement	Surface	Podium/ Basement	Surface
24 no. 1-Bed Apartments	25	-	30	-
73 no. 2-Bed Apartments	80	-	150	-
8 no. 3-Bed Apartments	8	-	26	-
13 no. 3-Bed Duplex	15	-	39	-
Visitors Residential	5	5	25	-
Commercial/ Park Visitors	10	17		52
Medical Centre	8	5		30
School	-	48		30
Go Spaces	-	2		
Total	228		382	

Table 4.7 *Proposed Village Centre Parking*

A total of 228 no. car parking spaces will be provided within Village Centre, of which 23 will be EV and 13 will be disable.

A car park will be provided directly adjacent to the school lands, which is expected to accommodate 77 no. dedicated car parking spaces, of which, 48 will be dedicated for

the school, 2 will be dedicated ôGo-Carôspaces, and the remaining will be for commercial and park visitors.

In terms of cycle parking, a total of 382 no. spaces will be provided, of which 25 will be equipped for electric bikes and 19 will be cargo bike spaces.

4.8 Barnhill Cross

4.8.1 Layout and Residential Units Breakdown

As shown on Figure 4.1, Barnhill Cross is located in the centre of the site. This character area and will include a total of 118 no. residential properties comprising the following:

- 21 no. 1-Bed Apartments
- 65 no. 2-Bed Apartments
- 11 no. 3-Bed Apartments
- 18 no. 3-Bed Duplex
- 70 no. 3-Bed Houses
- 10 no. 4-Bed Houses

4.8.2 Barnhill Cross Parking

The proposed car parking and cycle parking provision for Barnhill Cross is summarised in Table 4.8.

Proposed Units by Type	Car Parking			Cycle Parking	
	Curtilage	Podium/ Basement	Surface	Podium/ Basement	Surface
21 no. 1-Bed Apartments	-	-	-	22	-
65 no. 2-Bed Apartments	12	32	6	99	36*
11 no. 3-Bed Apartments		11		35	-
18 no. 3-Bed Duplex	12	-	6		54*
70 no. 3-Bed Houses	108		24	-	210*
10 no. 4-Bed Houses	10	-	9	-	40*
Visitors Residential	4	-	39		41
Total	273			537	

Table 4.8 *Proposed Barnhill Cross Parking*

**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 273 no. car parking spaces will be provided within Barnhill Cross, of which 22 will be EV and 5 will be disable. In terms of cycle parking, a total of 537 no. spaces will be provided, of which 9 will be cargo bike spaces.

4.9 Barnhill Crescent

4.9.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Barnhill Crescent is located in the southern side of the site. This character area and will include a total of 77 no. residential properties comprising the following:

- 15 no. 1-Bed Apartments
- 4 No. 2-Bed Apartments
- 4 no. 3-Bed Duplex
- 50 no. 3-Bed House
- 4 no. 4-Bed House

4.9.2 Barnhill Crescent Parking

The proposed car parking and cycle parking provision for Barnhill Crescent is summarised in Table 4.9.

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
15 no. 1-Bed Apartments	-	15	20
4 no. 2-Bed Apartments	4	-	8*
4 no. 3-Bed Duplex	4	-	12*
50 no. 3-Bed House	56	24	150*
4 no. 3-Bed House	6	2	16*
Residential Visitors	6	13	18
Total	**130**		**224**

Table 4.9 *Proposed Barnhill Crescent Parking*

**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 130 no. car parking spaces will be provided within Barnhill Crescent, of which 13 will be EV and 4 will be disable.

A total of 224 no. cycle parking spaces will be provided, of which 3 will be cargo bikes spaces.

4.10 Barnhill Stream

4.10.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Barnhill Stream is located in the southwestern side of the site. This character area and will include a total of 98 no. residential properties comprising the following:

- 3 no. 1-Bed Apartments
- 47 No. 2-Bed Apartments
- 3 No. 3-Bed Apartments
- 29 no. 3-Bed Duplex

- 14 no. 3-Bed House
- 2 no. 4-Bed House

4.10.2 Barnhill Stream Parking

The proposed car parking and cycle parking provision for Barnhill Stream is summarised in Table 4.10.

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
3 no. 1-Bed Apartments	-	3	4
47 no. 2-Bed Apartments	23	24	98
3 no. 3-Bed Apartments	-	3	12
29 no. 3-Bed Duplex	24	5	87*
14 no. 3-Bed House	16	12	42*
2 no. 4-Bed House	-	4	8*
Visitors	-	23	21
Total	**137**		**272**

Table 4.10 *Proposed Barnhill Stream Parking*
**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 137 no. car parking spaces will be provided within Barnhill Stream, of which 16 will be EV and 7 will be disable.

In terms of cycle parking, a total of 272 no. spaces will be provided, of which 5 will be cargo bikes spaces.

4.11 Parkside

4.11.1 Layout and Residential Units Breakdown

As Shown on Figure 4.1, Parkside is located in the western side of the site (west of the Ongar-Barnhill Road). This character area and will include a total of 53 no. residential properties comprising the following:

- 5 no. 1-Bed Duplex
- 5 No. 2-Bed Apartments
- 5 no. 3-Bed Duplex
- 32 no. 3-Bed House
- 6 no. 4-Bed House

4.11.2 Parkside Parking

The proposed car parking and cycle parking provision for Parkside is summarised in Table 4.11.

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
5 no. 1-Bed Duplex	-	5	5

Proposed Units by Type	Car Parking		Cycle Parking
	Curtilage	Surface	
5 no. 2-Bed Apartments	-	8	10
5 no. 3-Bed Duplex	-	14	15
33 no. 3-Bed House	64	-	99*
6 no. 4-Bed House	12	-	24*
Visitors	-	3	22
Total	**102**		**179**

Table 4.11 *Proposed Parkside Parking*
**Dedicated Space (e.g., front of terraced house) or Assumed Capacity (Rear Garden)*

A total of 104 no. car parking spaces will be provided within Parkside, of which 12 will be EV and 2 will be disable.

In terms of cycle parking, a total of 179 no. spaces will be provided, of which 126 will be equipped for electric bikes and 4 will be cargo bikes spaces.

4.12 Proposed Development Movement Strategy

4.12.1 Internal Pedestrian/Cyclist Network and Circulation

Figure 4.2 below, illustrates the proposed pedestrian/cyclist network inside the Site.

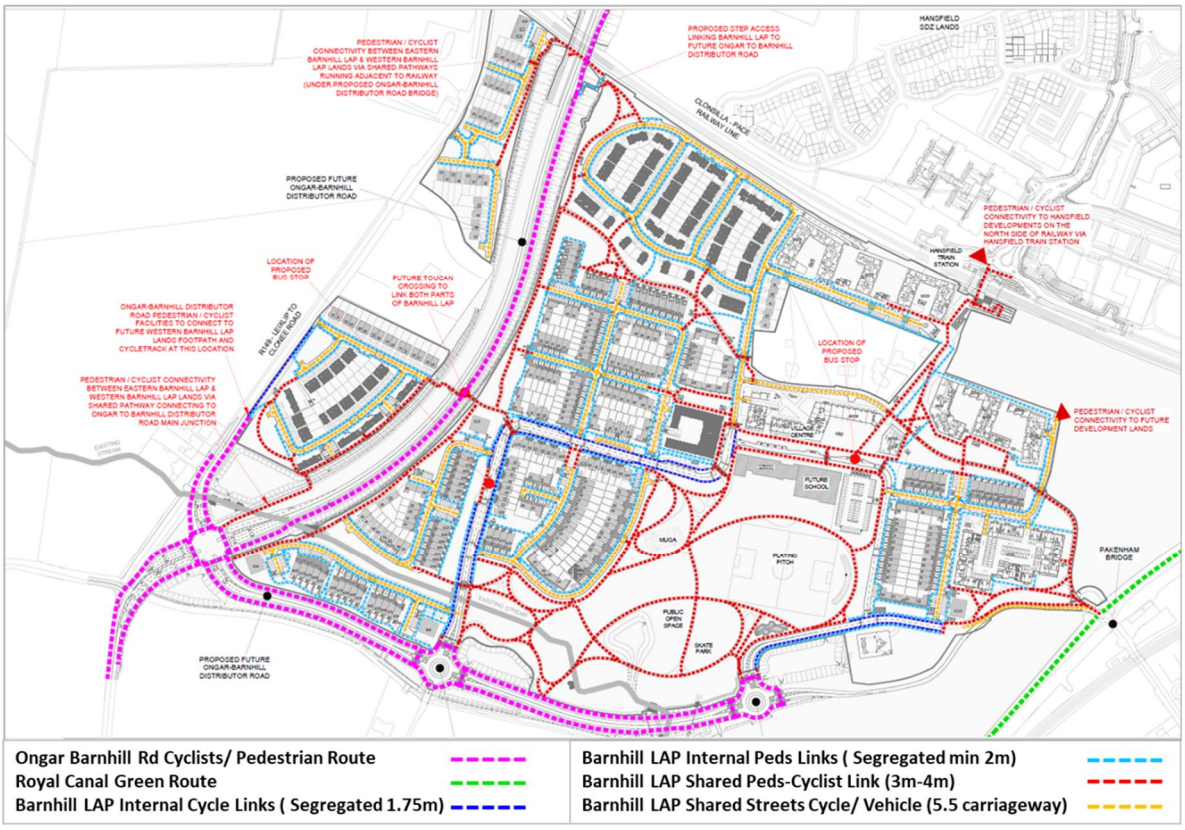

Figure 4.2 *Proposed Pedestrian/Cyclist Network*

As shown above, the network accommodating pedestrians and cyclists extends through the entire development, along all road and parks. Footpaths have been designed to have a minimum width of 2.0 metres. The cycle tracks proposed will be 1.75 metres wide. The areas where pedestrians and cyclists will be accommodated within a shared spaces will measure 3-4 metres wide. Two pedestrian/cycle link will be provided across the Ongar-Barnhill Road, one connecting õParksideô Character Area to the õBarnhill Streamôand the second connecting õLink Road Westôto õLink Road Eastô

Mid-block crossings have been provided where the distance between junctions is greater than 120m.

Drawings have been prepared illustrating the most convenient walking/cycling routes from each character areas to following key destinations inside the development:

- The Railway Station
- The Village Centre
- The School
- The Main Park

These drawings have been included in the CSEA Drawing Pack (no. 16_053_001 to no. 16_053_007).

4.12.2 Pedestrian/Cyclists Connection to Hansfield and Royal Canal Greenway

A Pedestrian/Cyclists link between the Barnhill Site and Hansfield area will be available via the proposed Ongar-Barnill Link Road and through a link across the Hansfield Train Station. Figure 4.3, below Illustrates the Layout of this connection.

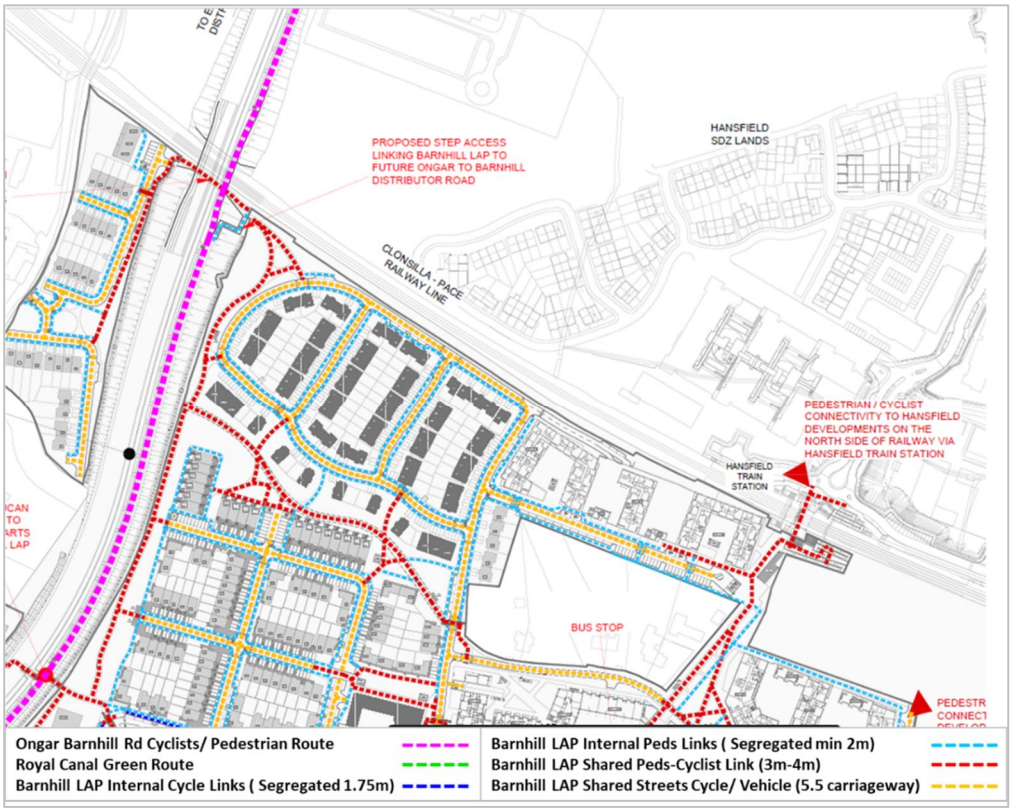

Figure 4.3 *Proposed Pedestrian/Cyclist Connection to Hansfield Area*

The proposal also will have a direct connection to the Royal Canal Greenway. Figure 4.4 (overleaf) illustrates the layout of this connection.

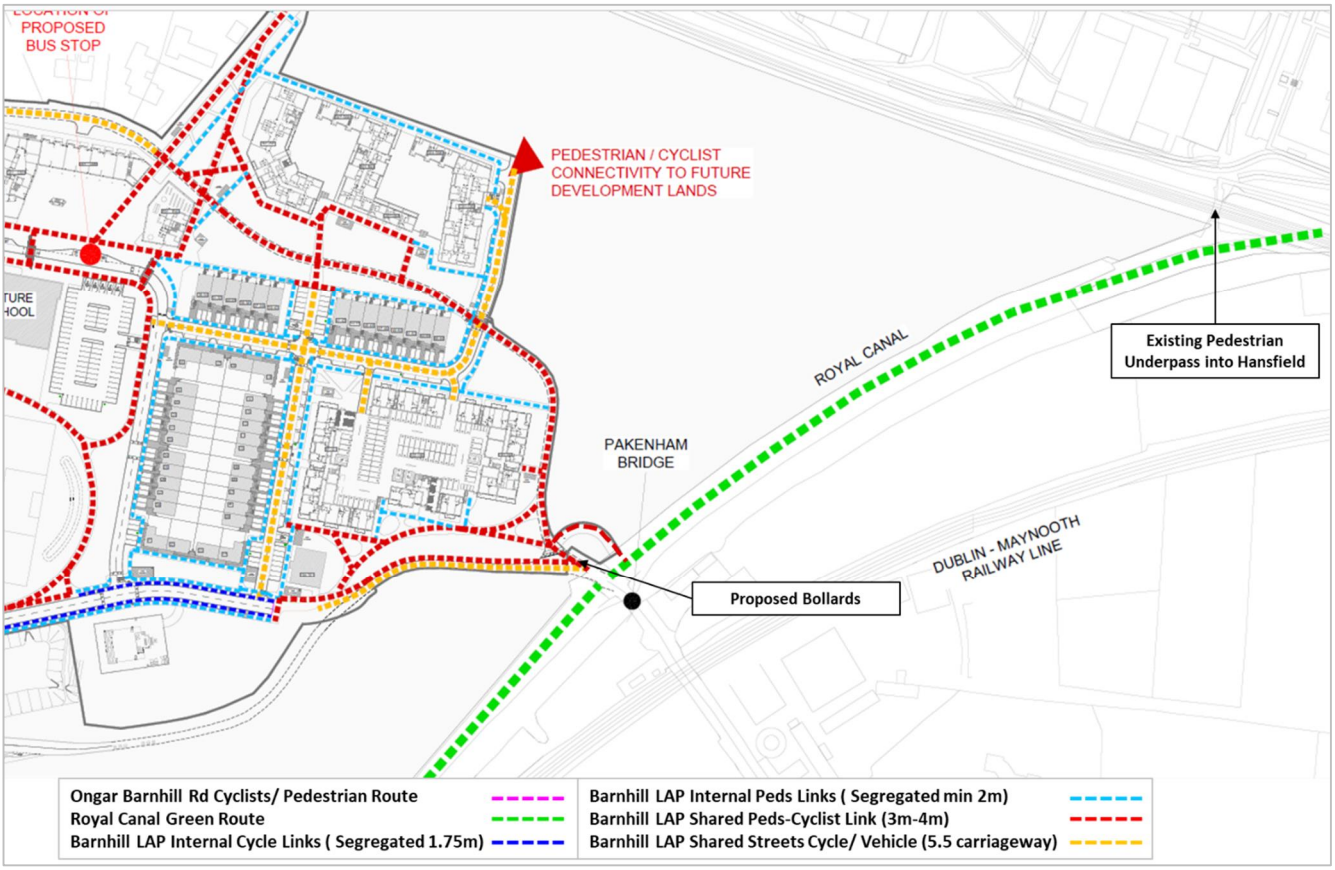

Figure 4.4 *Proposed Pedestrian/Cyclist Connection to Royal Canal*

As shown above, a pedestrian underpass connecting the Royal Canal to Hansfield is currently available. This will provide direct connectivity from the development to amenities available in Future Hansfield Village.

Vehicle movements along Barberstown Lane North will be limited as this will be predominately a pedestrian/cyclists link, with the exception of the access to existing houses. Bollards will be put in place where this road meets Barberstown Lane South and Milestown Road to restrict vehicle movement.

4.12.3 Proposed Pedestrian Crossings and Traffic Calming

Following the guidelines recommended by DMURS in relation to traffic calming, series of horizontal and vertical deflections have been included in the development design. Raised tables, zebra crossings and curves are provided in the road network in order to ensure that a low-speed environment for pedestrians and cyclists.

Raised tables have been provided at the following locations:

- On longer straights where there is more than 70m between junctions.
- At all equal priority junctions

- At all pedestrian crossings
  The provision of on-street car parking also promotes a low-speed environment

Figure 4.5 illustrates the location of the raised tables and zebra crossings throughout the development.

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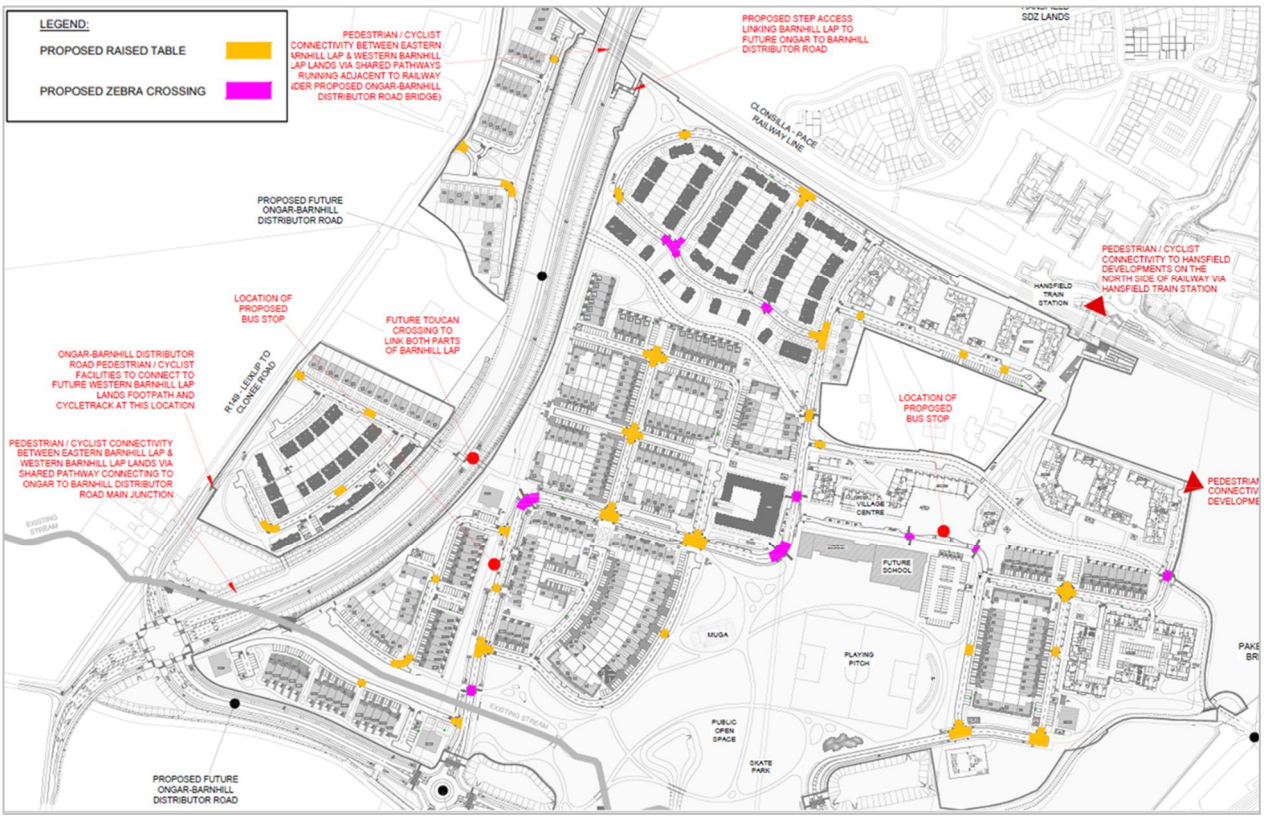

Figure 4.5 *Proposed Traffic Calming and Zebra Crossings*

4.12.4 Internal Vehicular Circulation

Vehicular access to the development site will be via 2 no. access points into Barberstown Lane South. Roundabouts will be available at this access points, which will be delivered by Fingal County Council with the upgrades proposed on this stretch of road.

The proposed Primary Link will have a carriageway of 6.0 metres wide and the proposed secondary roads will have a carriageway of 5.5 metres.

Figure 4.6, illustrate the developmentôs proposed road network.

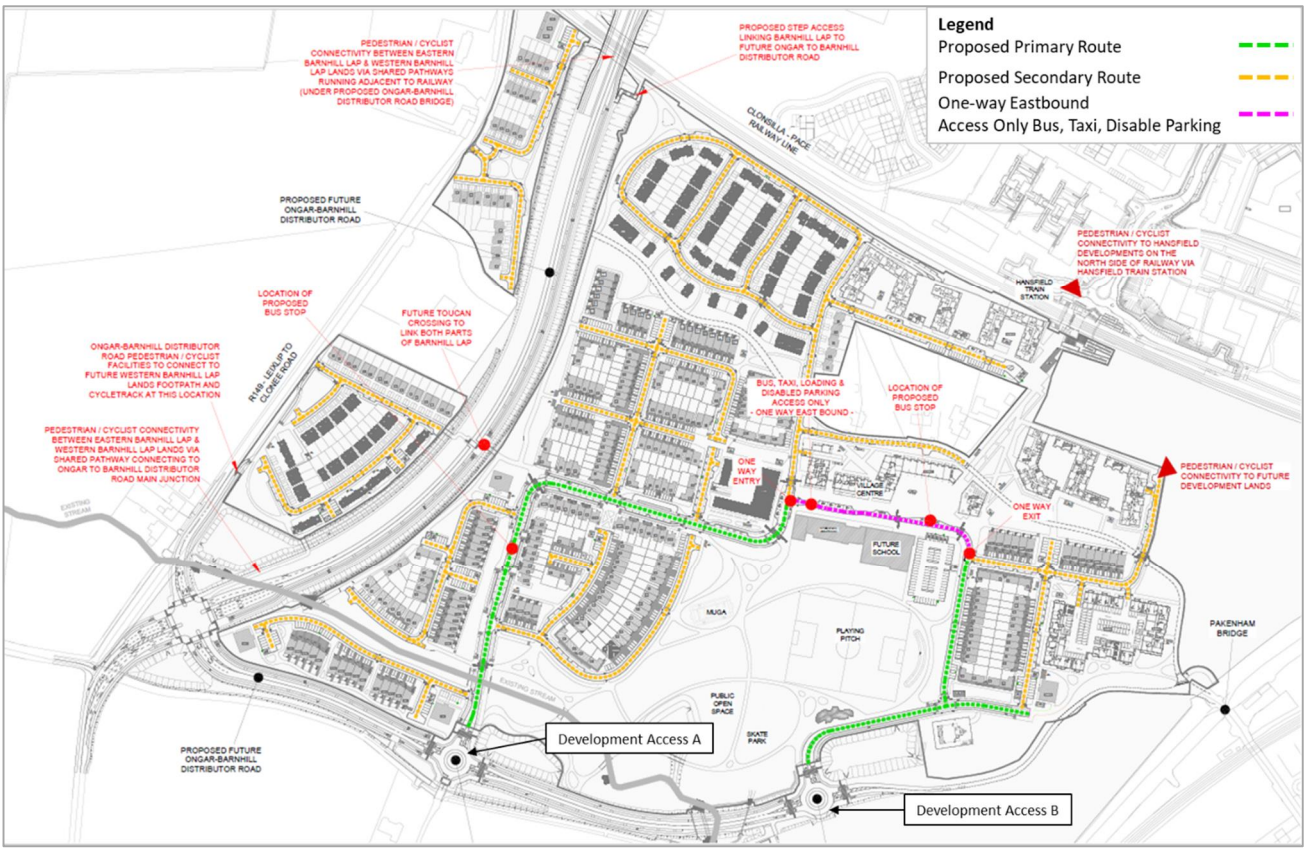

Figure 4.6 *Proposed Road Network*

4.13 Proposed Barberstown Lane North Layout

For most sections of Baberstown Lane North, vehicle movements will not be allowed as this will be turned into a pedestrian/cyclistôs link. The only section of road that will retain vehicle movements will be the access to existing properties within the site.

The pedestrianisation of Barberstown Lane North (east of the existing properties) will be implemented at a later phase in the development, subject to agreement on implementation with Fingal County Council.

The creation of a cul-de-sac will be required on the western end of the road for the delivery of the Ongar-Barnhill Road by Fingal County Council; Bollards will be put in place where this road meets Barberstown Lane South and Milestown Road to restrict vehicle movement (eastern end).

The drawings illustrating the existing and proposed cross-sections for this road have been included in the CSEA Drawing Pack.

4.13.1 Access to Existing Houses Within the Site

The stretch of road currently providing access to the existing properties inside the site will remain as existing. ôAccess Onlyôsignage will be put in place in order to limit the number of vehicle movements in and out the retained section of road. Bollards will be put in place

on the approach eastern side of this access road in order to ensure vehicular movements restrictions into the plaza leading to the train station.

Cyclists will be expected to share the road with the vehicles and a 2.8 metres wide footpath will be available accommodate pedestrians. Figure 4.7 illustrates the proposed layout of this stretch of road and its interaction with surrounding network. Figure 4.8 illustrates the existing and proposed cross section for this access road.

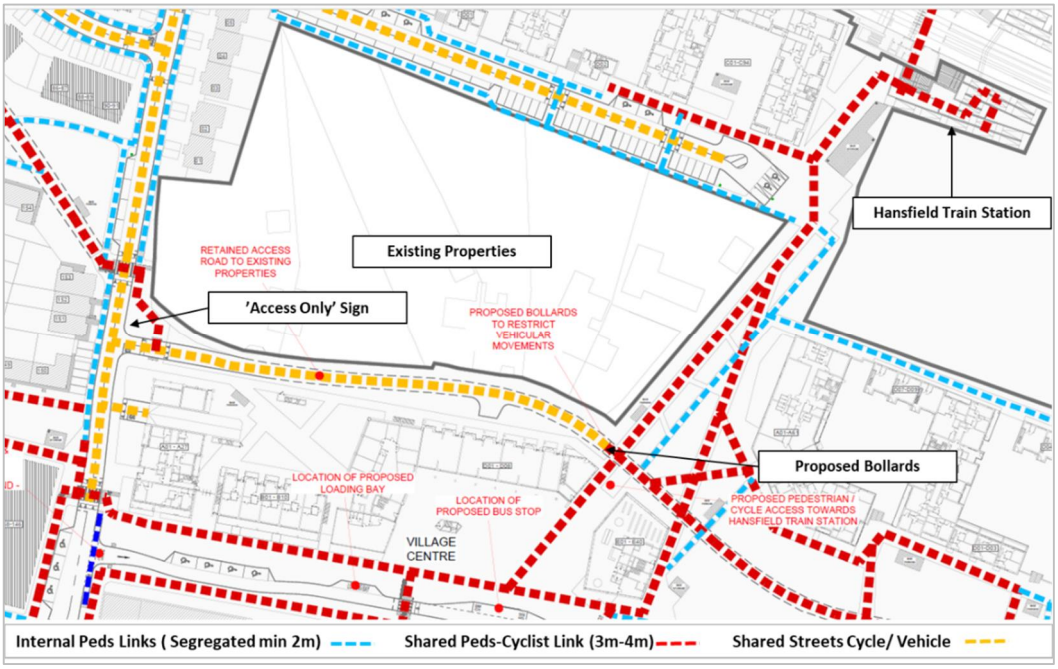

Figure 4.7 *Proposed Access Arrangements to Existing Properties in the Site*

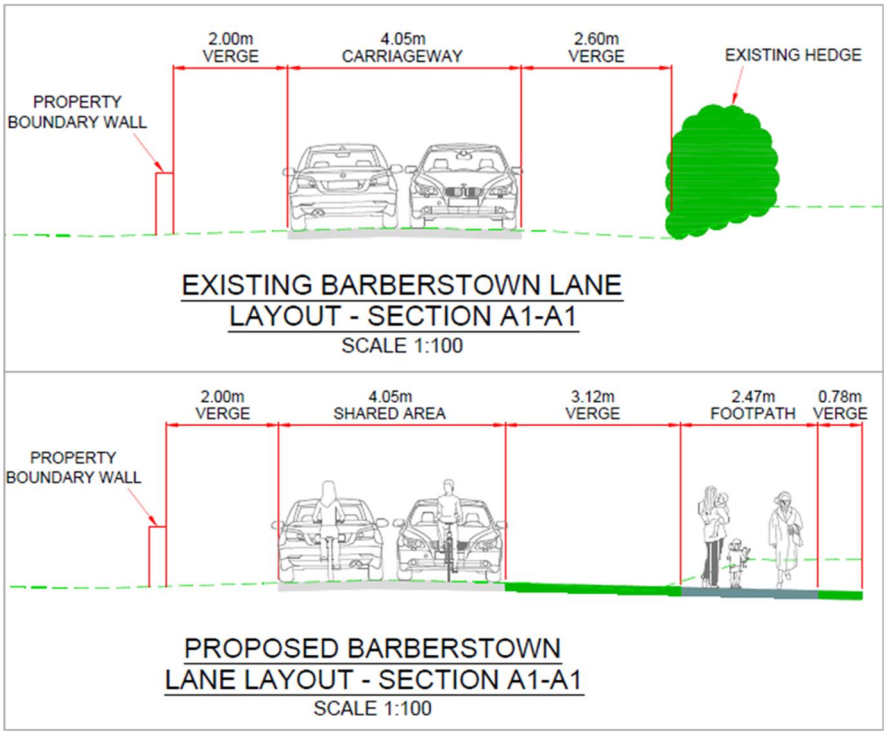

Figure 4.8 *Existing and Proposed Cross Section Barberstown Lane North Access Road*

4.14 School/Creche Access

It is proposed that the road directly to the north of the school will be a One-Way(westbound). General vehicle movement will be restricted, allowing access only for disabled parking users attempting to reach the disabled parking spaces on this road, vehicles to use the loading bay, and buses.

The car park to the east of the school will provide park-and-stride for the school/creche. It is anticipated that this car park will accommodate the car parking demand for the school and the public park.

Designated creche car parking is provided within the basement car park of Station Plaza character area, where the creche is located. The provision for pedestrian/cyclists in the local area is presented in Figure 4.7.

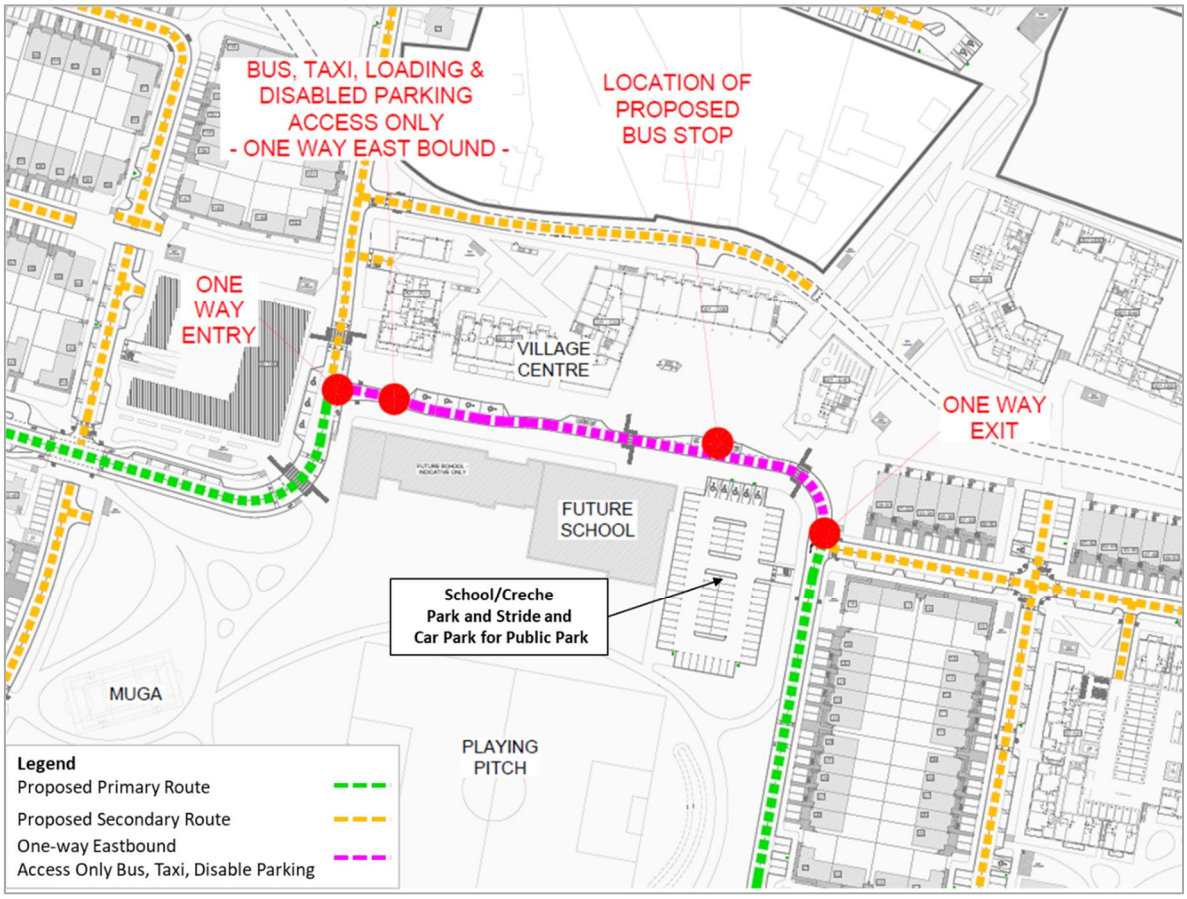

Figure 4.9 *Proposed School/Creche Access Arrangements*

The access arrangements provided for this area have been designed in accordance with *NTA's Safe Routes to School guidance document, March 2022.*

4.15 Proposed Car Parking and Cycle Parking Strategy

4.15.1 Car Parking

Details for the car parking layout is provided individually for each character areas within subsection 4.2-4.11 in this chapter. Figure 4.10, below, illustrates the location of all car parking spaces proposed with the development. Detail layouts for each character areas and the basement car park have been submitted with the planning package.

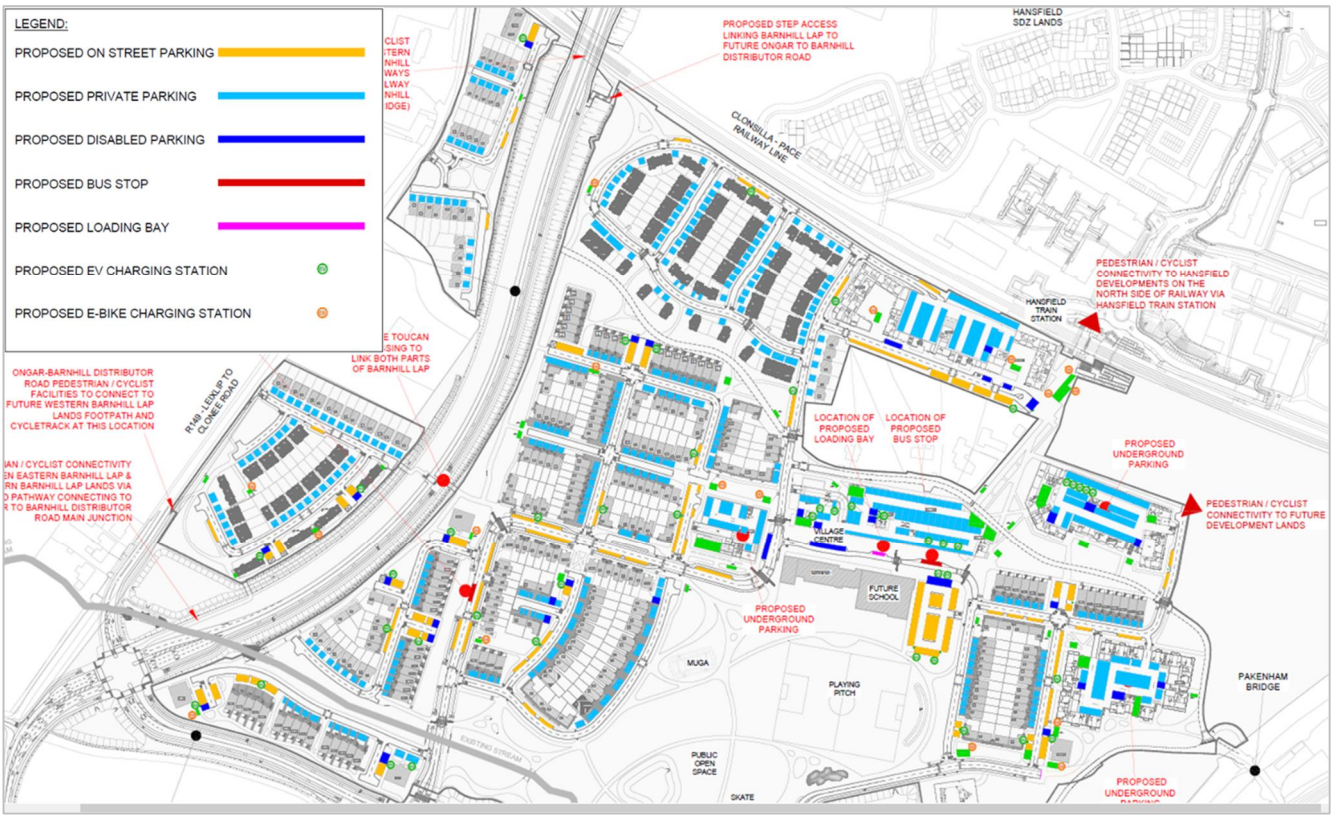

Figure 4.10 *Proposed Development Car Parking Locations*

Table 4.12 summarises the proposed car parking provision for each character area.

Character Area	Curtilage	Podium or Basement	Surface	Total Car Parking Provision
Link Road West	54	-	11	**65**
Link Road East	158		28	**186**
Railway Quarter	-	125	45	**170**
Station Plaza	-	100	4	**104**
Station Quarter South	68	79	51	**198**
Village Centre Residential	-	151	77	**228**
Barnhill Cross	146	43	84	**273**

Character Area	Curtilage	Podium or Basement	Surface	Total Car Parking Provision
Barnhill Crescent	76	-	54	**130**
Barnhill Stream	63	-	74	**137**
Parkside	76	-	26	**102**
Total	**641**	**498**	**454**	**1,593**

Table 4.12 *Summary Proposed Car Parking Provision*

Table 4.13, below provides details about the proposed EV, disabled, and visitorûs car parking provision for each character area.

Character Area	Total Proposed EV	Total Proposed Disable	Total Designated for Visitors	Total Commercial/Creche/ Medical Centres	School Parking
Link Road West	5	1	5		
Link Road East	20	2	4		
Railway Quarter	18	9			
Station Plaza	11	6	4	4	
Station Quarter South	13	6	31		
Village Centre Residential	23	13	10	42	48
Barnhill Cross	22	5	43		
Barnhill Crescent	13	4	19		
Barnhill Stream	16	7	23	-	-
Parkside	12	2	3		
Total	**153**	**55**	**142**	**46**	**48**

Table 4.13 *Summary Proposed EV, Disable, and Visitors Car Parking Provision*

4.15.2 Cycle Parking

Details for the cycle parking layout is provided individually for each character areas within subsection 4.2-4.11 in this chapter. Detail layouts for each character areas, indicating the cycle parking locations, have been submitted within the planning package. Figure 4.9 (overleaf) illustrate the location of the proposed cycle parking for E-bikes. Table 4.14 summarises the proposed cycle parking provision for each character area.

Character Area	Podium or Basement		Surface		Dedicated Space (e.g., front of terraced house or Assumed Capacity Rear Garden)		Total Proposed Cycle Parking
	Residential	Visitors	Residential	Visitors	Residential	Visitors	
Link Road West	-	-	123	10	-	-	133
Link Road East	-	-	279	24	-	-	303
Railway Quarter	-	-	-	39	366	-	405
Station Plaza	324	-	14	20	-	-	358
Station Quarter South	158	-	-	42	344	-	544
Village Centre Residential	245	-	112	25	-	-	382
Barnhill Cross	195	-	-	41	301	-	537
Barnhill Crescent	186	-	20	18	-	-	224
Barnhill Stream	56	-	-	21	195	-	272
Parkside	-	-	157	22	-	-	179
Total	**1,164**	**0**	**701**	**262**	**1,206**	**0**	**3,337**

Table 4.14 *Summary Proposed Cycle Parking Provision*

Table 4.15 provides details about the proposed cycle parking for E-Bikes and cargo bikes on each character area.

Character Area	Total Proposed Cargo Bikes	Total Proposed EV Bikes
Link Road West	4	4
Link Road East	9	9
Railway Quarter	20	13
Station Plaza	18	
Station Quarter South	18	
Village Centre Residential	19	25
Barnhill Cross	9	-
Barnhill Crescent	3	
Barnhill Stream	5	-
Parkside	4	126
Total	**111**	**177**

Table 4.15 *Summary Proposed Cargo and EV Cycle Parking Provision*

4.16 Shared Driving Scheme (Go-Car)

A total of 2 no. Go-Car Car Parking Spaces will be provided in the Village Centre. These spaces will be located in the car park adjacent to the school and will be dedicated for the use of this share driving scheme.

The provision for ó Go-Carô can be increased in the future based on demand.

4.17 Proposed Development Traffic Generation

The total number of trips that will access/egress the development during the peak hours have been estimated using a combination of the NTAôs National Demand Forecasting Model (NDFM) and the East Regional Model (ERM). Further details on the assumptions and methodology are provided in section **Error! Reference source not found.** of this Report. The expected trip generation for the Proposed development is summarised in Table 4.16.

Assessment Year	AM Peak (08:00-09:00hrs)		PM Peak (17:00-18:00hrs)	
	IN	OUT	IN	OUT
Year of Opening 2025	262	471	351	266
Year of Opening +5 2030	260	449	335	262
Year of Opening + 15 2040	50	321	236	108

Table 4.16 *Proposed Development Peak Hour Trips Generation*

It can be observed that trip generation for the year 2040 is less than the preceding years. The traffic modelling for the assessment years 2025 and 2030 have been performed using East Regional Model, whereas for the year 2040, the assessment has been done using the destination and mode choice data contained within the Greater Dublin Area (GDA) Strategy. This strategy takes in consideration the changes in mode share expected as a result of major public transport and infrastructure projects to be delivered within the GDA area by 2040. Some of these projects are a BusConnects, DART Expansion Programme, and the Greater Dublin Area Cycle Network Plan. The inclusion of such projects has resulted in a modal shift towards more sustainable modes of transport, and hence, a reduction in traffic flow is captured in the assessment year 2040.

5 Mode Share Targets and Action Plan

5.1 Mode Share Targets

Data from the *NTA's National Demand Forecasting Model (NDFM)*, the *East Regional Model (ERM) and Greater Dublin Area (GDA) Strategy* have been used a basis to estimate the local area mode share with the proposed Public Transport improvements discussed in section 3 .

The *NDFM* is a single national system that provides estimates of the total quantity of daily travel demand produced by, and attracted to, each of the Census Small Areas. This model estimate trip generations and attractions, related to zonal attributes such as population, number of employees and other land-use data.

The *NDFM* provides input into the regional models/ Greater Dublin Area (GDA) Strategy and interacts with a number of key components and utilises planning data to output levels of travel demand by transport mode at the smallest available spatial aggregation (Census Small Area) for input into each of the Regional Models.

It has been deemed appropriate to use the approach presented above, instead of Census Data 2016, due to the public transport improvements proposed as part of BusConnects and Dart+West. It is estimated that such improvements will significantly impact the mode share in the local area by increasing the number of trips made by Bus/Rail.

The estimated targets for residents of the proposed development, compared to the NDFM mode share estimation mode share, are set out in the following Table 5.1.

Mode	Walking	Cycling	Public Transport	Car Driver/ Passenger
***NDFM* Mode Share Estimation**	19%	1%	26%	54%
Proposed Development Target Year of Opening 2025	22%	5%	26%	47%
Proposed Development Target Year of Opening +15, 2040	25%	6%	30%	39%

Table 5.1 *Mode Share Targets*

As presented in the above table, a walking mode share of 22% has been set for the proposed development in the year of opening. This target has been considered appropriate due to the amenities proposed within the development, this includes school, creche, retail, medical centre, and remote working hub. Furthermore, the proposed development will also be served by the amenities and shops available in the Hansfield/Ongar are.

A target of 26% has been assigned to public transport due to the sites proximity to high frequency existing train services (see section 2.3). The available public transport services are expected to further improve with the implementation of BusConnects and the full implementation of Dart+ West.

A target of 5% has been set for the cyclists. The high-quality cycling infrastructure that will be available throughout the development and the local area will influence the use of this mode, particularly for local trips.

A 47% has been assigned for drivers, staying within the same ranges than what is estimated for the local area.

The mode share targets for the sustainable transport modes have been set to increase by 2040, as the full implementation of bus connects and Dart +west should be in place. This will enable the reduction of ó Car Driver/ Passengerô mode share to 39%.

5.2 Action Plan to Reach Targets

The following Action Plan measures have been set to meet the specified mode share targets set out in Table 5.1:

- Appointment of a part-time Travel Plan Coordinator for the site. Permanent office space will be set aside for the coordinator inside the development. (location to be confirmed)
- Provision of 3,337 no. cycle parking spaces to accommodate residents and visitors of the proposed development.
- Provision of bike lockers and maintenance stands at the park and the train station.
- Arrange tours of cycling facilities for new residents.
- Provide cycle maps for the local area to points of interest and transport hubs for residents.
- Provision of ú100 voucher for every property to be used at a bike shop. Pop-Up shop to be arrange with Stagg Cycles.
- Provision of 2 designated car parking spaces for car sharing clubs, such Go-Car and Yuko. Number of spaces to be increased based on demand.
- Provision of information to the residents about location of additional nearby bases for car sharing schemes and how to sign up.
- Provide information about the stores and facilities available inside in the Local Area.
- Provision of information about the public transport facilities available within 1km radius from the site.
- Incentivise car sharing between residents who work/study around the similar areas, by organising social events that would allow them to socialise and share this type of information.
- The travel coordinator should ensure the maintenance and security of cycle parking, including the spaces occupancy monitoring.
- Travel coordinator should monitor the changing needs of cyclist in terms of cycle parking requirements, i.e., include electric bike charging points.

It is recommended that the Action Plan be further developed following occupation of the development, and appointment of a Travel Plan Coordinator. The Action Plan will remain a ólivingô document thereafter and should be updated periodically.

5.3 Monitoring Strategy

It is important to monitor and update the Action Plan to ensure the actions are being implemented and that action is sustained over time. It also provides an opportunity for the effectiveness of actions to be assessed, and if required, new actions identified. The following steps are recommended to monitor progress:

- A travel survey should be administered for all residents to fully understand the travel behaviours of those travelling to and from the site.
- Informed by the resident travel survey, the Action Plan should be updated following site occupation and tailored to meet the specific requirements of residents.
- The resident travel survey should be repeated every 1-2 years (at the same time of year for accurate comparisons) and should form the baseline from which future performance is measured and Action Plan modified.

A quarterly review of the actions undertaken, and that will be undertaken, should be carried out by the Travel Plan Coordinator. This should take the form of a memo, to include images at events or activities run, documenting changes to facilities, levels of parking usage, etc.

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