



Transport Assessment

Mixed Use Development at Clongriffin, Dublin 13

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1. Introduction

1.1 Introduction

This Transport Assessment (TA) has been prepared by Waterman Moylan to accompany a planning application to An Bord Pleanála for a further phase of development at Clongriffin, Dublin 13.

1.2 Background

The development of Clongriffin commenced about 2002 and is expected to be complete by 2025.

The overall development will comprise 4,220 dwelling units and 45,464 sqm non-residential floorspace on a 53.2 ha (133 acre) site.

At the time of writing in June 2019, approx. 40% of the residential units and 30% of the non-residential floorspace have been completed.

Since 2002, major transportation infrastructure improvements in the surrounding area have been completed including the

- Clongriffin Train Station on the Northern Line.
- Station Square
- Park and Ride car park under Station Square.
- Main Street, Park Avenue, Station Street and Marrsfield Avenue.
- Signalised junction between Hole in the Wall Road and Main Street.

The owners of Clongriffin have contributed both technically and financially to all of these projects.

1.3 Scope

This Transport Assessment is a comprehensive review of all the potential transport impacts of the overall development, both existing and proposed, including a detailed assessment of the transportation systems provided and the impact of the proposed development on the surrounding environment and transportation network.

The TA is accompanied by a Travel Plan/Mobility Management Plan to implement the mobility management policies for the development and achieve the sustainable travel targets.

1.4 Standards

This Transport Assessment has been prepared in accordance with the requirements of Section 8.5.5 of the Dublin City Development Plan 2016 – 2022.

1.5 Threshold for Transport Assessment

Section 4.1.3 of Appendix 4 of the Dublin City Development Plan 2016 – 2022 requires the submission of a Transport Assessment where a proposed development meets one or more of the following criteria: -

- Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.

- Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive.
- Residential development in excess of 200 dwellings
- Retail and leisure development in excess of 1,000 sqm.

In the case of the subject development, a number of these thresholds are exceeded.

1.6 Contents of the Transport Assessment

In compliance with Section 4.1.4 of Appendix 4 of the Dublin City Development Plan 2016 – 2022, the contents of this TA include: -

- A Non-Technical Summary
- A description of the existing development and traffic/transportation conditions including information on the existing and proposed public transport facilities.
- A description of the proposed development.
- The traffic / transportation implications of the development including consideration of
 - (1) Trip attraction / mode choice
 - (2) Trip distribution
- The time periods applicable to the TA.
- The impact(s) of the development on the local and surrounding street network including on-street car parking
- The effect(s) of the development on the environment (natural and man-made) and urban fabric.
- Road and traffic considerations

1.7 Project Timescale

Development of Clongriffin commenced about 2002 and final completion is programmed for 2025.

The various milestone dates for the development are:

- Commencement : 2002
- Phase 1 completion : 2008
- Phase 2 completion : 2020
- Overall Completion : 2025

1.8 Location of Development

The location of the overall development at Clongriffin, Dublin 13 is illustrated in Figure 1.



Figure 1 Location Map for Clongriffin

1.9 Methodology

The methodology for the preparation of this Transport Assessment included: -

- Descriptions of the existing, future and overall development.
- Descriptions of the receiving environment including roads and junctions, public transport, parking and servicing, cycle facilities and pedestrian facilities.
- Description of existing travel characteristics including traffic and public transport surveys.
- Descriptions of proposed transportation improvements to roads, junctions. public transport, cycle and pedestrian facilities.
- Review of travel characteristics and determination of future modal split.
- Calculation of trip generation and distribution for new and contiguous developments.
- Determination of future traffic movements and public transport demand in 2025.
- Determination of transportation impact on roads, junctions. public transport, cycle and pedestrian facilities.
- Development of strategies for servicing and car parking.
- Development of internal road layout and traffic management.
- Preparation of mitigation measures principally the Travel Plan/Mobility Management Plan.

2. Receiving Environment

2.1 Roads and Junctions - Existing

Access

Access to the subject development is from The Hole in the Wall Road via the R123 Balgriffin Road to the north and the Grange Road to the south.

The road layout in the area of the development is illustrated in Figure 2.

Roads – External

The Hole in the Wall Road links the R139 Grange Road to the south with Marrsfield Avenue to the north. The three junctions on this road are: -

- The four arm Hole in the Wall Roundabout at Grange Road
- Signalised cross-roads at Main Street
- A priority T-junction with Marrsfield Avenue (future signalised crossroads).

The Hole in the Wall Road has a four-lane carriageway with a traffic lane and a bus lane in each direction, Off-road cycle tracks and footpaths are provided on both sides of the road.

Roads – Internal

Main Street is the main access to Clongriffin. It links Hole in the Wall Road to the west with Station Square in the Clongriffin Town Centre to the east.

The western section of Main Street along Fr Collin's Park is a two-lane dual carriageway with a traffic lane and a bus lane in each direction on either side of a central median. Off-road cycle tracks and footpaths are provided on both sides.

The eastern section of Main Street is a single carriageway road with a 3.0 metre wide traffic lane and a 3.0 metre wide bus lane in each direction. The carriageway is flanked by parallel parking and 2.0 metre wide footpaths on both sides.

No off-road cycling facilities are provided along Main Street to the east of Fr Collin's Park. In this area, cyclists share the bus lane with buses for circa 400 metres to Station Square.

Marrsfield Avenue is the second access to Clongriffin from Hole in the Wall Road. Marrsfield Avenue is a two-lane single carriageway road with parking, grass verge and footpath on both sides.

Park Avenue is a two-lane single carriageway road along the east side of Fr. Collin's Park.

Junctions

The primary junctions which provide access to Clongriffin are -

- Hole in the Wall Road / Main Street: Signalised crossroads
- Hole in the Wall Road / Marrsfield Avenue: Priority T-junction (future signalised crossroads).



Figure 2 Layout of Road Network

2.2 Public Transport – Existing

Commuter Rail

The Commuter Rail service through Clongriffin Station serves all stations from Dundalk through the City Centre to Gorey. The service operates at 2 – 3 services per hour in both directions on weekdays.

DART

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



Figure 3 Southbound DART Service at Clongriffin Station

Dublin Bus

Dublin Bus Stage Route 15 links Clongriffin through the City Centre to Ballycullen Road. On weekdays, this service is operated by a fleet of double deck buses at a frequency of 10 minutes in both directions.



Figure 4 Dublin Bus Route 15 in Station Square

Car Sharing

Car sharing at Clongriffin is facilitated by the on-site GoCar service. The service operates from designated GoCar parking spaces at Station Square.

At the time of writing in June 2019, 4 No. vehicles are provided at Station Square, 2 No. standard cars and 2 No. van. In addition, there are three other GoCar vehicles based at Clongriffin.



Figure 5 GoCar at Station Square

2.3 Cycle Parking – Existing

Covered public cycle parking with 112 stands is provided in Clongriffin at Station Square adjoining the Park & Ride car park. See Figure 6.



Figure 6 Cycle Parking at Station Square

2.4 Cycle Infrastructure - Existing

Within the Clongriffin area, the cycle infrastructure generally consists of cycle tracks along with new main roads or bus lanes with some facilities provided through Fr. Collin's Park.

Externally, cycle lanes are provided along the Hole in the Wall Road linking to the cycle network developed by Dublin City Council in the surrounding area. The Green Route also links Belmayne Avenue and Hole in the Wall Road.

Figure 7 following is an extract of the Cycle Network Plan for the Greater Dublin Area illustrating the existing cycling infrastructure within the subject area.

The map shows the extent of the Cycle Facilities Type C1 (Cycle tracks separate from the road) in the area around the proposed development.



Figure 7 Extract from Cycle Network Plan for the North Dublin Area

2.5 Pedestrian – Existing

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

The Green Route provides an important walking and cycling corridor connecting Belmayne with Clongriffin Station Square via Father Collin's Park. The Route is partly complete and provides a 3m wide cycle and pedestrian route within a 7m reservation.

3. Transportation Improvements

3.1 Roads and Junctions - Proposed

Belmayne Main Street – Belmayne Avenue

The primary road improvement project in the surrounding area is the Belmayne Main Street – Belmayne Avenue roadway, which includes:

- Signalised junctions at Belmayne Avenue/Belmayne Main Street and at Belmayne Main Street/Malahaide Road with dedicated pedestrian crossings;
- Bus lane facilities, including a bus lane in both directions and a new bus-gate link to the Malahaide Road;
- Construction of carriageway with central median island, footpaths and cycleways along the Belmayne Main Street;

Dublin City Council is proposing to undertake the works, which are estimated to be complete in Q4 of 2020.

Currently, Main Street extends some 140 metres to the west of the signalised junction with Hole in the Wall Road. As part of the Clongriffin – Belmayne Local Area Plan, it is intended to extend the road infrastructure further west, connecting with Belmayne Avenue as per the above project.

The Hole in the Wall Road Roundabout, Donaghmede, Dublin 13.

This Scheme is being undertaken by Dublin City Council and will comprise the

- Installation of dedicated signalised pedestrian and cyclist crossings on The Hole in the Wall Road and Clarehall Avenue arms of the roundabout,
- Extension of The Hole in the Wall Road's inbound bus lane to the roundabout.
- Improvements to the existing pedestrian crossing at the entrance to Grange Abbey,
- Improvements to cycle facilities on the Hole in the Wall Road and Clarehall Avenue arms of the roundabout, and,
- Improvements to the existing traffic signal operational Infrastructure.

These improvements are ongoing; however, the traffic modelling conservatively assume that the roundabout operates as per the existing arrangement.

Mayne Road / Hole in The Wall Road Junction Upgrade Scheme

The secondary road improvement projected in the surrounding area, north of the subject site, is the *Mayne Road / Hole in the Wall Road Junction Upgrade Scheme* being undertaken by Fingal County Council.

The Scheme will comprise

- Construction of a new road linking the recently upgraded section of Hole in the Wall Road, within the administrative area of Dublin City Council, to a new four-arm signalised junction with the Drumnigh Road (R124) and Mayne Road (R123). Also included is the upgrading of portions of the Mayne Road (R123) and Drumnigh Road (R124).
- Reconfiguration of the existing Hole in the Wall Road/Mayne Road priority junction to allow for "left-out" one-way west bound vehicular traffic movement only on the immediate approach to

Mayne Road. Two-way traffic flow will be retained to access the properties and business along the section of the Hole in the Wall Road north of Belmayne Boulevard.

- Provision of upgraded footpaths, cycle tracks, pedestrian crossing facilities, street furniture, road signage & markings, landscaping & planting and agreed accommodation works as required.

The tendering process is ongoing with an estimated construction period of 15 months. The anticipated completion date is Q1/Q2 of 2021.

3.2 Public Transport

DART

The DART Expansion Project is included within the 10-year horizon for the National Development Plan 2018 – 2027. It includes for an extension of the DART service to Balbriggan and an increased weekday frequency of 15 minutes in each direction.

Bus Connects

The Bus Connects project currently being implemented by the National Transport Authority aims to deliver a much enhanced bus service to the Greater Dublin Area (GDA). It includes for the replacement of the existing Dublin Bus Route 15 with a high frequency radial service linking Clongriffin DART Station to the City Centre at a service frequency of 4 – 8 minutes and a series of Orbital Routes linking Clongriffin to the west and north. See Figure 8.

Bus Connects have proposed improvement works to the bus facilities at Clongriffin as shown in Figure 9.



Figure 8 Proposed Route Map - Bus Connects

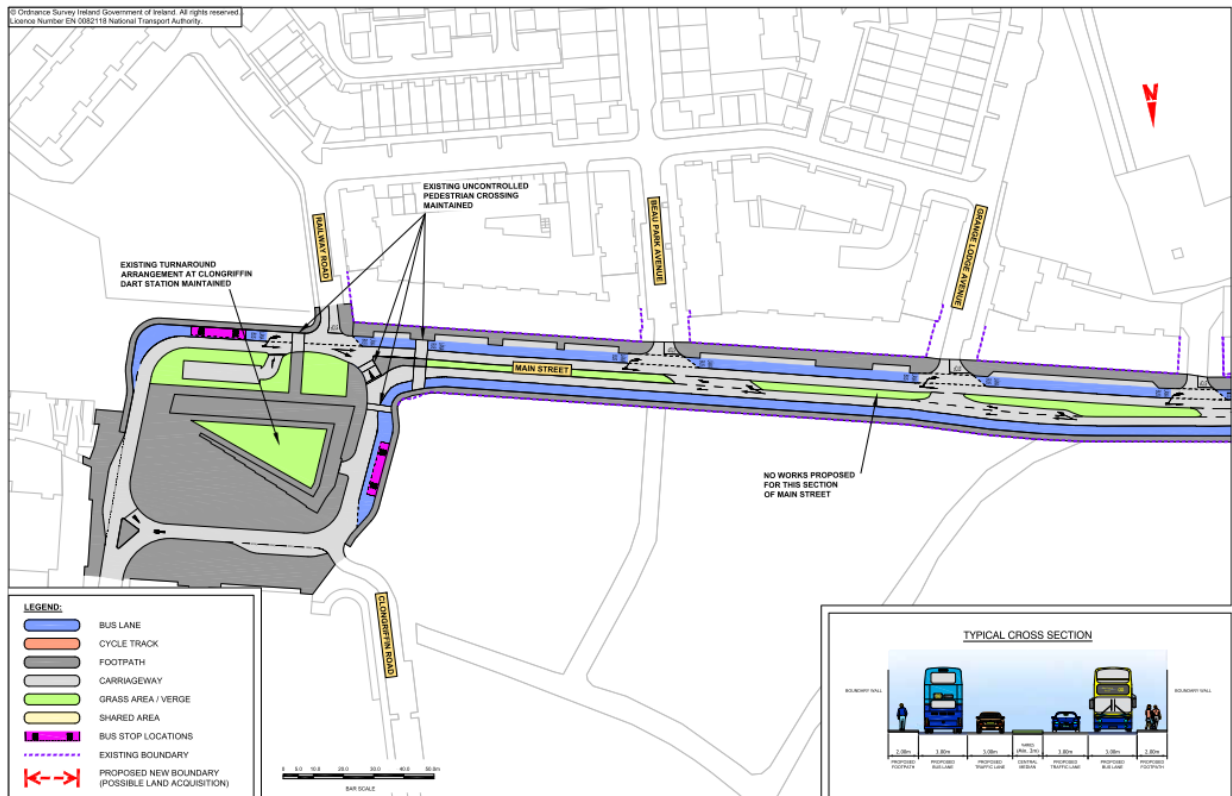


Figure 9 Bus Connects Proposals for Clongriffin

3.3 GoCar

It is expected that the GoCar provision at Clongriffin will increase from 7 vehicles to 13 vehicles as the development is completed.

3.4 Pedestrian

Additional pedestrian facilities will be provided at Clongriffin as the development progresses, such as footpaths, dedicated pedestrian crossings and the green route.

3.5 Cycle

Proposals for the Greater Dublin Area Cycle Network Plan were published by the National Transport Authority in December 2013. The plan sets out a vision and a strategy for the construction and / or designation of a comprehensive network of cycling routes throughout the Greater Dublin Area (Counties Dublin, Meath, Kildare and Wicklow).

An extract from Sheet N2 for Dublin North East is reproduced in Figure 10.

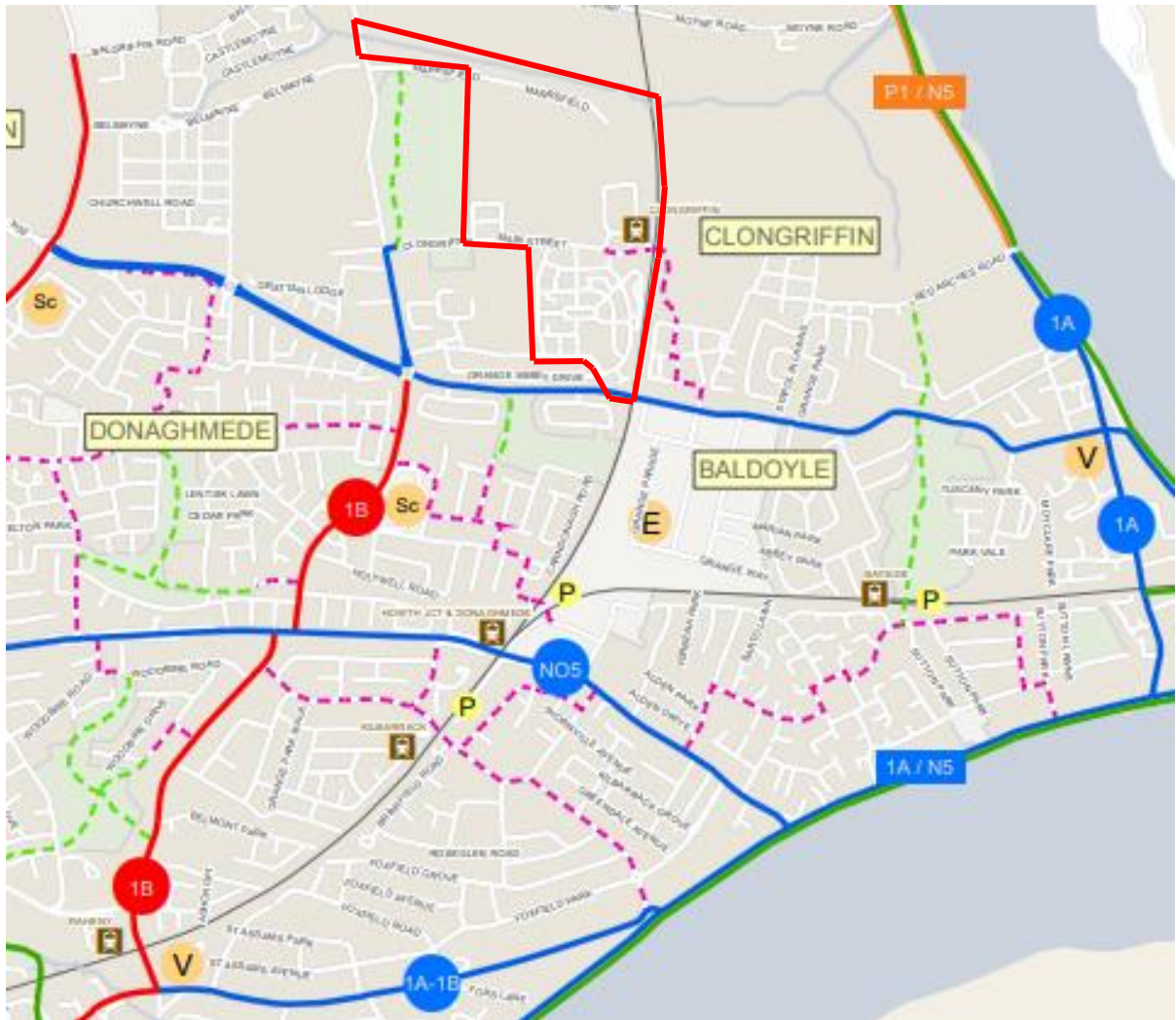


Figure 10 Extract from Sheet N2 Cycle Network Plan for the GDA.

4. Description of Development

4.1 Neighbourhoods

Clongriffin comprises four neighbourhoods at different stages of development. They are supported by Station Square, a Town Centre, a public park and a railway station with an intensive commuter service.

The four neighbourhoods illustrated in Figure 11 are: -

- Marrsfield to the north of Marrsfield Avenue with 553 residential apartments including Blocks 34, 35 and 36 (partly developed).
- Belltree in the west with 473 residential units (partly developed).
- The Town Centre Including Station Square, Main Street and Station Street. This neighbourhood, which is partly developed comprises multi-storey, residential apartments and non-residential floorspace in Blocks 1 –17 and 19 – 27. The Town Square also includes a multi-storey car park with a Park & Ride section.
- Beau Park to the southeast with 604 low rise residential housing units and Block 18 (completed).

4.2 Overall Development

The overall development at Clongriffin which is expected to be completed in 2025 is summarised in Table 1.

Table 1 Overall Development

Area	Houses	Apartments	Total Residential	Non-Residential
Marrsfield	-	553	553	708
Belltree	443	30	473	-
Town Centre	-	2,590	2,590	44,533
Beaupark	506	98	604	223
Total	949	3,271	4,220	45,464 sqm

4.3 Population 2025

During the 2016 Census, the resident population of Clongriffin was 3,832 persons in 1,372 housing units equivalent to 2.79 persons per unit.

On this basis, the resident population of Clongriffin when completed about 2025 is expected to be 11,774 persons based on 4,220 residential units at a density of 2.79 persons per unit.

At the same time, the staff numbers working at Clongriffin are expected to increase to 1,228 persons based on the following floorspace and densities: -

• Offices	:	8,468 sqm x 1 person per 15 sqm	:	565 persons
• Retail	:	6,171 sqm x 1 person per 50 sqm	:	124 persons
• Leisure	:	7,565* sqm x 1 person per 180 sqm	:	42 persons
• Hotel	:	8,080 sqm x 1 person per 100 sqm	:	80 persons
• Crèche	:	1,230 sqm x 1 person per 50 sqm	:	25 persons
Total New Developments:		31,514 sqm x 1 person per 37 sqm		836 persons
Existing Development :		13,950 sqm x 1 person per 37 sqm		377 persons
Overall Development :		45,464** sqm x 1 person per 37 sqm		1,228 persons.

*7,565 sqm of leisure area includes: 5,507sqm of leisure, 1,641sqm of café/restaurant and 417sqm of community use

**At the time of writing, some 706 sqm of retail were under construction on Blocks 2, 32 and 33 (Planning Ref's 3776/15 and 2478/17) and 8,080 sqm of hotel were permitted on Block 19 but not yet under construction (Planning Ref. 2569/17).



Figure 11 Location Map for Neighbourhoods

5. Planning Background

5.1 Parent Application 2002

The parent planning permission for Clongriffin was granted by An Bord Pleanála in June 2003 subject to 46 conditions (Reg Ref: 0132/02).

The permission provided for

- 3,576 dwelling units comprising 838 houses, 428 duplex and 2,310 apartments.
- 85,000 sqm of mixed retail, commercial, leisure and community use.
- Clongriffin Railway Station.
- An underground town car park including 420 park and ride spaces.
- Taxi rank, drop-off and bus interchange
- Main Street, Park Avenue, Station Street and Marrisfield Avenue
- An overpass linking Station Square with the lands to the east of the railway.
- Cycle route through Panhandle Park linking Station Square with Father Collin's Park.

5.2 Amending Applications 2003 - 2016

In the period following the parent permission, there have been a number of amending applications between 2003 and 2016, the effects of which were to increase the number of residential units and the amount of non-residential floorspace.

5.3 Current Applications 2019

The proposed development comprises 15 blocks in the Town Centre neighbourhood.

The development comprises 1,950 residential units, 22,728 sqm of non-residential floorspace and 1,358 car parking spaces.

The proposed development is divided into three applications, Strategic Housing Development Application No. 1 (SHD 1), which refers to blocks 6, 8, 11, 17, 25, 26, 27, 28 and 29; Strategic Housing Development Application No. 2 (SHD 2), which refers to blocks 4, 5 and 14 and one application to be submitted to Dublin City Council (DCC) which refers to blocks 3, 13 and 15.

Table 2 Current Planning Applications

Block	Residential	Commercial	Car Parking	Cycle Parking
SHD 1	1,030	2,286	673	1,883
SHD 2	500	3,125	357	1,007
DCC	420	17,317	328	635
Total	1,950 units	22,728 sqm	1,358	3,525

6. Phasing of Development

6.1 Parent Permission 2002

Condition 3 of the parent permission required the submission of a phasing programme including the appropriate and timely provision of infrastructure in tandem with the provision of residential development. At the time of writing in 2019, all of the headline infrastructure including the railway station, roads, junctions and the multi-storey Park and Ride at Station Square have been completed.

6.2 Existing Development

The existing development completed at the end of 2018 is summarised in Table 3.

Table 3 Development – Existing

Area	Houses	Apartments	Total Residential	Non-residential
Marrsfield	-	179	179	368
Belltree	366	-	366	-
Town Centre	-	536	536	13,359
Beaupark	506	98	604	223
Total	872	813	1,685 units	13,950 sqm

6.3 New Development

The new development to be completed by 2025 will comprise 2,535 residential units (585 permitted/under construction and 1,950 units proposed as part of the subject applications) and 31,514 sqm of non-residential floorspace (8,786 sqm permitted/under construction and 22,728 sqm as part of the subject applications).

The new non-residential floorspace at Clongriffin amounting to 31,514 sqm will comprise: -

- Retail : **6,171 sqm** (706 sqm under construction & 5,465 sqm part of the subject applications)
 - Offices : **8,468 sqm** (part of the subject applications)
 - Leisure : **7,565* sqm** (part of the subject applications)
 - Hotel : **8,080 sqm** (permitted)
 - Crèche : **1,230 sqm** (part of the subject applications)
- Total : **31,514 sqm**

*7,565 sqm of leisure area includes: 5,507sqm of leisure, 1,641sqm of café/restaurant and 417sqm of community use.

6.4 Overall Development 2025

The overall development to be completed at Clongriffin by 2025 is summarised in Table 4.

Table 4 Completed Development 2025

Area	Houses	Apartments	Total Residential	Non-residential
Marrsfield	-	553	553	708
Belltree	443	30	473	-
Town Centre	-	2,590	2,590	44,533
Beaupark	506	98	604	223
Total	949	3,271	4,220	45,464 sqm

7. Travel Characteristics

7.1 Road Traffic Surveys

Traffic surveys carried out by Tracsis in May 2018 recorded the traffic movements at six junctions in the surrounding area at the locations shown in Figure 12.

The surveys were carried out over a period of 24 hours between 00h00 and 00h00 on Tuesday 22nd May 2018.

The full results of the survey are included in Appendix B of this report.

The surveys identified the AM peak hour as 08h00-09h00 and the PM peak hour as 18h00 – 19h00 for all six junctions.



Figure 12 Location of Traffic Counts

7.2 Road Traffic Flows – Existing

The recorded two-way link flows on the roads at Clongriffin are presented in Table 5.

No significant delays or queuing were identified during the survey.

Table 5 Recorded Link Flows on Surrounding Road (two-way)

Location	AM Peak 8 - 9	PM Peak 6 - 7	24 Hour
Grange Road	1,489	1,406	21,438
Hole in the Wall Road (north of Main Street)	589	673	7,701
Hole in the Wall Road (south of Main Street)	1,067	1,347	16,530
Main Street	516	777	8,184
Marrsfield Avenue	218	180	1,844
Park Avenue	111	94	964

7.3 Arrivals and Departures – Car

The arrivals and departures by car at Clongriffin on 22nd May 2018 are summarised in Table 6.

Table 6 Arrivals and Departures - AM Peak Hour and PM Peak Hour

Location	AM Peak Hour 8 - 9		PM Peak Hour 6 - 7		24-hour	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Marrsfield Avenue	76	142	104	76	1,009	1,017
Main Street	198	318	416	361	4,107	4,087
Total	274	460	520	437	5,116	5,104

7.4 Park and Ride

Usage of the 420 Park and Ride car parking spaces under Station Square is currently 50%.

7.5 Car Sharing

The 7 No. GoCar vehicles based at Clongriffin are currently well used and some new GoCar spaces are proposed for the area as the development progresses.

7.6 Census 2016

Census 2016 was carried out by the Central Statistics Office on 24th April 2016.

For the purpose of the survey, Clongriffin was divided into 12 zones as shown in Figure 13.



Figure 13 Zones for Census 2016

7.7 Car Ownership

The results of the census for car ownership in Clongriffin Zones 1 – 12 are presented in Table 7.

The survey recorded that the population of 3,832 persons at Clongriffin had a car ownership of 1,407 vehicles equivalent to 1 car per 2.7 persons or 0.98 car per unit.

Table 7 Surveyed Car Ownership at Clongriffin 2016

CAR OWNERSHIP										
CLONGRIFFIN										
ZONE	POPULATION	HOUSING	0	1	2	3	4+	NO STATED	TOTAL	T/H
1	283	105	19	60	18	3	0	5	105	1.00
			18.10	57.14	17.14	2.86	0.00	4.76		
2	328	112	31	62	18	0	1	0	102	0.91
			27.68	55.36	16.07	0.00	0.89	0.00		
3	263	97	12	51	25	3	4	2	126	1.30
			12.37	52.58	25.77	3.09	4.12	2.06		
4	366	128	36	62	17	6	3	4	126	0.98
			28.13	48.44	13.28	4.69	2.34	3.13		
5	343	117	26	64	19	3	1	4	115	0.98
			22.22	54.70	16.24	2.56	0.85	3.42		
6	328	139	26	76	26	0	0	11	128	0.92
			18.71	54.68	18.71	0.00	0.00	7.91		
7	236	106	31	52	16	0	0	7	84	0.79
			29.25	49.06	15.09	0.00	0.00	6.60		
8	328	105	22	46	27	3	1	6	113	1.08
			20.95	43.81	25.71	2.86	0.95	5.71		
9	408	138	17	77	36	1	1	6	156	1.13
			12.32	55.80	26.09	0.72	0.72	4.35		
10	200	85	18	57	9	0	0	1	75	0.88
			21.18	67.06	10.59	0.00	0.00	1.18		
11	327	106	11	62	27	3	0	3	125	1.18
			10.38	58.49	25.47	2.83	0.00	2.83		
12	422	134	28	55	42	3	1	5	152	1.13
			20.90	41.04	31.34	2.24	0.75	3.73		
TOTAL	3832	1372	277	724	280	25	12	54	1407	1.03
			20.19	52.77	20.41	1.82	0.87	3.94		

7.8 Rail Travel Census

The National Heavy Rail Census was carried out by Iarnród Éireann in 2017 on behalf of the National Transport Authority (NTA).

The Final Report published in July 2018 recorded ongoing significant annual increases in passenger numbers at Clongriffin Railway Station.

These increases are likely to continue for a number of years into the future.

The results of the Census for passenger numbers per day at Clongriffin Station are presented in Tables 8 and 9.

Table 8 Passenger Numbers at Clongriffin Station 2012 – 2017

Activity	2017	2016	2015	2014	2013	2012
Boarding's	1,296	1,256	1,013	830	767	674
Alighting's	1,219	985	875	726	567	640
Total	2,515	2,241	1,888	1,556	1,334	1,314

Table 9 Boarding's and Alighting's at Clongriffin Railway Station 2017

Activity	Northbound	Southbound	Total
Boardings	70	1,226	1,296
Alighting's	1,162	57	1,219
Total	1,232	1,283	2,515

7.9 Rail Passenger Forecasts 2019 and 2025

For the purpose of forecasting future rail passenger numbers at Clongriffin, the methodology described below was used.

- Extraction of surveyed daily numbers from Rail Census 2017 published in 2018.
- Calculation of growth rate from the survey results for 2012 – 2017.
- Application of the growth rate to the 2017 survey results to generate the 2019 numbers (existing).
- Calculation of passenger numbers that will be generated by the proposed new developments at Clongriffin.
- Addition of the new passenger numbers to the 2019 passenger numbers to forecast the 2025 passenger numbers (completed development).

7.10 Daily Rail Passenger Numbers 2019

The surveyed passenger numbers for Clongriffin Station show an average year on year increase of 14% per annum over the five years between 2012 and 2017.

This rate of increase was applied to the 2017 surveyed numbers to estimate the future numbers in 2019 (+ 30%). The results are presented in Table 10.

Table 10 Boarding's and Alighting's at Clongriffin Railway Station 2019 (Existing)

Activity	Northbound	Southbound	Total
Boardings	91	1,594	1,685
Alighting's	1,511	74	1,585
Total	1,602	1,668	3,270

7.11 Peak Hour Rail Boardings and Alightings 2019

The hourly profile surveyed during the Census recorded that overall 17% of daily passenger demand occurred during the AM Peak Hour and 15% of daily passenger demand occurred during the PM Peak Hour.

The proportion of passenger numbers during the AM Peak Hour and the PM Peak Hour varies significantly with the location of the rail station whether in the City Centre or the suburbs.

In the case of Clongriffin, outbound passenger numbers in the AM Peak Hour and inbound passenger numbers during the PM Peak Hour will be greater than the corresponding more balanced numbers in the City Centre. Similarly, inbound passenger numbers in the AM Peak Hour and outbound passenger numbers during the PM Peak Hour will be greater than the corresponding more balanced numbers in the City Centre.

For the purpose of this TA, it was assumed that 20% of the daily boardings occur during the AM Peak Hour and 10% during the PM Peak Hour.

It was also assumed that 10% of the alightings occur during the AM Peak Hour and 20% during the PM Peak Hour.

The Peak Hour passenger numbers for Clongriffin in 2019 are presented in Table 11.

Table 11 Peak Hour Boardings and Alightings 2019 (existing)

Year	Period	Activity	Northbound	Southbound	Total
2019 (Existing)	AM Peak hour	Boarding	18	319	337
		Alighting	151	7	158
	PM Peak hour	Boarding	9	159	168
		Alighting	302	15	317

7.12 Surveyed Modal Split – Residents

The surveyed modal split for the journey to work by the residents at Clongriffin as surveyed in Census 2016 is presented in Table 12.

The Census recorded that 52% of 3,832 population generated 1,985 trips for the journey to work.

Some 45.3% of trips were by car, 38.5% by public transport and the remaining 16.2% by cycle or on foot.

Table 12 Surveyed Modal Split for Residents at Clongriffin – Census 2016

MODAL SPLIT									
CLONGRIFFIN									
Zone	Housing	Trip Attactor	Total Trips	Car Driver	Car Passenger	Train	Bus	Bycycle	Others
1	105	Work	145	59	5	37	21	7	16
				40.7	3.4	25.5	14.5	4.8	11.0
2	112	Work	125	61	7	33	15	3	6
				48.8	5.6	26.4	12	2.4	4.8
3	97	Work	157	81	5	34	19	5	13
				51.59	3.18	21.66	12.10	3.18	8.28
4	128	Work	230	72	8	95	27	10	18
				31.30	3.48	41.30	11.74	4.35	7.83
5	117	Work	140	68	5	13	22	5	27
				48.57	3.57	9.29	15.71	3.57	19.29
6	139	Work	196	86	2	65	16	2	25
				43.88	1.02	33.16	8.16	1.02	12.76
7	106	Work	152	49	5	51	18	10	19
				32.24	3.29	33.55	11.84	6.58	12.50
8	105	Work	150	60	6	39	15	2	28
				40	4.0	26.0	10.0	1.3	18.7
9	138	Work	213	89	2	71	14	5	32
				41.78	0.94	33.33	6.57	2.35	15.02
10	85	Work	109	51	2	24	8	8	16
				46.79	1.83	22.02	7.34	7.34	14.68
11	106	Work	168	74	2	44	20	8	20
				44.05	1.19	26.19	11.90	4.76	11.90
12	134	Work	200	95	4	36	27	5	33
				47.50	2.00	18.00	13.50	2.50	16.50
TOTAL	1372		1985	845	53	542	222	70	253
%			1985	42.6	2.7	27.3	11.2	3.5	12.7

7.13 Target Modal Split for Residents

The target proposals for modal split for residents engaged on the journey to and from work outside Clongriffin in 2025 are presented in Table 13.

On the basis of 4,220 units and an average of 2.79 persons per unit as recorded by Census 2016, it is estimated that Clongriffin will have a resident population of 11,774 persons when fully completed and occupied.

Table 13 Modal Split for Residents Journey to Work from Clongriffin in 2025

Mode	Census 2016	Target 2025
Car (Driver)	42.6%	30%
Car (Passenger)	2.7%	
Train	27.3%	30%
Bus	11.2%	30%
Cycle	3.5%	10%
Other	12.7%	
Total	100%	100%

7.14 Target Modal Split for Staff Travelling to Work at Clongriffin

The target proposals for modal split at Clongriffin staff engaged on the journey to work in the AM and from work to home in the PM Peak Hour in 2025 are presented in Table 14.

On the basis of commercial floor space extending to 45,464 sqm and an average staff provision of 1 person per 37 sqm, it is estimated that some 1,228 persons will work at Clongriffin when fully completed and occupied.

Table 14 Modal Split for Staff Journey to Work at Clongriffin in 2025

Mode	Target 2025
Car (Driver)	33%
Car (Passenger)	
Train	28%
Bus	28%
Cycle / Walking	11%
Total	100%

8. Person Trip Generation

8.1 Parent Permission

Trip generation rates were included in Section 6.0: *Transportation Impacts* of the Environmental Impact Statement (EIS) prepared by Brian Meehan and Associates on behalf of Gannon Homes for the parent planning application in January 2002 (Reg Ref: 0132/02, PL29N.131058).

The person trip rates which were based on the TRICS database are reproduced in Table 15.

The corresponding breakdown between Inbound and Outbound trips were also extracted from the EIS. These are reproduced in Table 16.

Table 15 Daily Person Trip Rates from 2002 EIS.

Land Use Category	Daily Trip Rate (Two-way)	Daily Trip Rate (One-way)	Calculation Factor
Residential	9	-	Per unit
Office	-	9	Per 100sqm
Retail	-	150	Per 100sqm
Leisure	-	150	Per 100sqm
Hotel	-	10	Per 100sqm
Crèche	-	62	Per 100sqm

Table 16 Breakdown of Inbound and Outbound Person Trips from 2002 EIS.

Land Use Category	AM (08:00 – 09:00)		PM (18:00 – 19:00)	
	% Trips In	% Trips Out	% Trips In	% Trips Out
Residential	5	12	12	10
Office	80	5	5	70
Retail	8	5	7	8
Leisure	5	5	8	8
Hotel	10	10	10	30
Crèche	19	13	12	13

8.2 Person Trips

The calculated person trips for the completed Clongriffin development in 2025 are presented in Table 17.

These have been based on

- An assessment year of 2025.
- An existing development of 1,685 residential units and 13,950 sqm non-residential floorspace.
- New development (developments under construction, permitted developments and subject applications) comprising 2,535 residential units and 31,514 sqm non-residential floorspace.
- A total of 4,220 residential units with a residential population of 11,774 persons.
- A total of 45,464 sqm non-residential development with a working population of 1,228 persons.
- The person trip rates from Table 15.
- The breakdown between internal and external trips from Table 16.
- An AM Peak Hour of 08h00 – 09h00 and PM Peak Hour of 18h00 – 19h00

From Table 17, it will be seen that the proposed new developments at Clongriffin are expected to generate a total of 34,344 daily person trips with 5,330 trips (2,713 inbound and 2,617 outbound) during the AM peak hour and 6,794 trips (3,133 inbound and 3,661 outbound) during the PM peak hour.

Table 17 Daily and Peak Hour Person Trips 2025.

Land Use	Units or Area (sqm)	Daily Person Trips (One-way)	AM Person Trips		PM Person Trips	
			In	Out	In	Out
Residential	2,535	11,408	570	1,369	1,369	1,141
Office	8,468	762	610	38	38	534
Retail*	6,171	9,256	740	463	648	740
Leisure**	7,565	11,347	567	567	905	905
Hotel	8,080	808	81	81	81	242
Crèche	1,230	763	145	99	92	99
Sub-total (New dev.)	2,535 units 31,514 sqm	34,344	2,713	2,617	3,133	3,661
Existing dev.	1,685 units 13,950 sqm		Existing trips included in travel surveys			
Total	4,220 units 45,464 sqm		Total trips included in Table 24.			

*6,171sqm of retail area includes: 5,465 sqm part of the subject applications and 706sqm under construction.

**7,565 sqm of leisure area includes: 5,507 sqm of leisure, 1,641sqm of café/restaurant and 417sqm of community use.

9. Trip Assignment and Distribution

9.1 Residential

From Table 17, it will be seen that the 2,535 new residential units permitted + proposed for Clongriffin are expected to generate a total of 1,939 person trips during the AM peak hour (570 Inbound and 1,369 outbound) and a total of 2,510 person trips during the PM peak hour (1,369 Inbound and 1,141 outbound).

From Section 7.10 of this TA, it will be seen that the existing modal split for the journey to work by residents living within the Clongriffin Electoral Area is 45% by car, 28% by rail, 11% by bus and the remaining 16% by cycle or on foot.

These figures differ somewhat from those used in the EIS prepared for the parent permission which predicted 30% by car, 30% by rail, 30% by bus and the remaining 10% by cycle or on foot.

For the purpose of this TA, it has been assumed that the modal split for the journey to work by residents will be 45% by car, 28% by rail, 11% by bus and the remaining 16% by cycle or on foot (Table 13).

This reduction in the use of private car and the increase in the use of public transport has been based on a number of inter-related factors including

- The proposed local improvements on the public transport in the Clongriffin area, such as Bus Connects and DART Expansion Programme.
- The variety of commercial/office elements proposed for Clongriffin and the potential of these developments to create new job opportunities in the local area.
- The overall size of the development and the mix of land uses.

This reduction in the use of private car and the increase in the use of public transport are based on the variety of retail / commercial / office facilities proposed for Clongriffin and the potential of these developments to create new job opportunities in the local area. As a consequence, some Clongriffin residents are likely to travel to/from these facilities during the AM & PM peak hours, primarily as customers but also as workers. Therefore, for the purpose of this analysis, the all mode trips predicted to be generated by the Clongriffin residents have also split into internal and external trips. The split assumes that

- 80% of the car trips will be external and 20% internal.
- 100% of the rail trips will be external.
- 100% of the bus trips will be external.
- 50% of the pedestrians and cycle trips will be external and 50% internal.

The trips expected to be generated by the new residential units are summarised in Table 18 below.

Table 18 has been based on the modal split and the internal / external split described above.

Table 18 Summary of Peak Hour Residential Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Residents										
Car	6%	24%	34	82	82	68	137	329	329	274
Bus	-	30%	-	-	-	-	171	411	411	342
Rail	-	30%	-	-	-	-	171	411	411	342
Pedestrians	5%	5%	29	68	68	57	29	68	68	57
Cyclists										
Total	100%		63	150	150	125	508	1,219	1,219	1,015

9.2 Retail

As presented in Table 17 the new retail units to be developed in Clongriffin are expected to attract/generate a total of 1,203 person trips during the AM peak (740 inbound and 463 outbound) and a total of 1,388 person trips during the PM (648 inbound and 740 outbound). These trips are assumed to be generated only by customers.

Based on the location of the proposed retail units (in a high-density residential area and in close proximity to offices and leisure developments), it was assumed that 70% of the retail customer trips to/from these amenities will be generated by walking/cycling whilst 10% will be generated by car, by residents and workers from Clongriffin (Internal). The remaining 20% of the customer trips were considered to be generated by external population, 10% by car and 10% by walking/cycling.

In addition to customer trips, the new retail units are also expected to attract/generate staff trips, people traveling to their place of work in Clongriffin each morning and departing home each evening.

On the basis of the total retail floor space of 6,171sqm (706sqm under construction on Blocks 2, 32 and 33 (Planning Ref's 3776/15 and 2478/17 and 5,465sqm proposed as part of the subject applications) and an average staff provision assumption of 1 person per 50 sqm, it was calculated that some 124 persons will work at the retail units in Clongriffin.

Based on the large number of residential units proposed for overall Clongriffin, it was assumed that 40% of the retail staff population will be Clongriffin residents (internal), who will travel to/from work by walking or cycling, and the other 60% will be external. For the purpose of the analysis, it was considered that all the external trips will be generated by cars (20%) and public transport (20% by bus and 20% by rail).

The inbound and outbound trips expected to be generated by the new retail units are presented in Table 19 below.

Table 19 has been based on the modal split and the internal / external split described above.

Table 19 Summary of Peak Hour Retail Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Customers										
Car	10%	10%	74	46	65	74	74	46	65	74
Bus	-	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-	-
Pedestrians Cyclists	70%	10%	518	324	454	518	74	46	65	74
Sub-total	100%		592	370	519	592	148	92	130	148
Staff										
Car	-	20%	-	-	-	-	25	-	-	25
Bus	-	20%	-	-	-	-	25	-	-	25
Rail	-	20%	-	-	-	-	25	-	-	25
Pedestrians Cyclists	40%	-	49	-	-	49	-	-	-	-
Sub-total	100%		49	-	-	49	75	-	-	75
Total	100%		641	370	519	641	223	92	130	223

9.3 Offices

As can be seen in Table 17, the new office units proposed for Clongriffin are expected to generate a total of 648 person trips during the AM peak (610 inbound and 38 outbound) and a total of 572 person trips during the PM (38 inbound and 534 outbound). All the trips are assumed to be generated by the staff population.

Based on the large number of residential units proposed for overall Clongriffin, it was assumed that 20% of the office staff population will reside in Clongriffin (internal) and will travel to/from work by walk or cycling. The other 80% are assumed to be external.

On the basis of the total office floor space of 8,468 sqm and an average staff provision assumption of 1 person per 15 sqm, it was calculated that some 565 persons will work at the offices in Clongriffin.

Founded on the proposed local improvements on the public transport in the Clongriffin area, in 2025, the 80% of external office staff trips are assumed to be split into 25% by car 25% by bus, 25% by rail and the remaining 5% by walking/cycling.

The all mode staff, internal and external, inbound and outbound trips for the new office units are presented in Table 20 below.

Table 20 has been based on the modal split and the internal / external split described above.

Table 20 Summary of Peak Hour Office Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Staff										
Car	-	25%	-	-	-	-	152	10	10	133
Bus	-	25%	-	-	-	-	152	10	10	133
Rail	-	25%	-	-	-	-	152	10	10	133
Pedestrians Cyclists	20%	5%	122	8	8	107	31	2	2	27
Total	100%		122	8	8	107	487	32	32	426

9.4 Leisure

As presented in Table 17, the new leisure units proposed for Clongriffin, which include leisure, café, restaurant and community uses, are expected to generate a total of 1,134 person trips during the AM peak (567 inbound and 567 outbound) and a total of 1,810 person trips during the PM (905 inbound and 905 outbound). These trips are assumed to be generated only by customers.

Based on the location in a high-density residential area and in close proximity to offices and retail developments) and the typology of the new leisure units, it was assumed that an average of 50% of the leisure customers trips to/from these amenities will be internal, generated by residents and workers of Clongriffin, by walking or cycling. The other 50% of the new leisure customers trips was considered to be external, generated by car (15%), bus (15%), rail (15%) and walking/cycling (5%).

In addition to customers trips, the new leisure units are also expected to attract/generate staff trips, people traveling to their place of work in Clongriffin each morning and departing home each evening.

On the basis of the type and the total leisure floor space of 7,565 sqm (5,507sqm of leisure, 1,641sqm of café/restaurant and 417sqm of community use) and an average staff provision assumption of 1 person per 180 sqm, it was calculated that some 42 persons will work at the leisure units in Clongriffin.

Based on the large number of residential units proposed for the overall Clongriffin, it was assumed that 40% of the leisure staff population will be Clongriffin residents (internal), who will travel to/from work by walking or cycling whilst the other 60% will be external. For the purpose of the analysis, it was considered that 30% of the external staff trips will be generated by public transport (15% by bus and 15% by rail) followed by 15% by car and 15% by walking/cycling.

The trips expected to be generated by the new leisure units in Clongriffin are presented in Table 21 below. Table 21 has been based on the modal split and the internal / external split described above.

Table 21 Summary of Peak Hour Leisure Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Customers										
Car	-	15%	-	-	-	-	85	85	136	136
Bus	-	15%	-	-	-	-	85	85	136	136
Rail	-	15%	-	-	-	-	85	85	136	136
Pedestrians	50%	5%	284	284	453	453	28	28	45	45
Cyclists										
Sub-total	100%		284	284	453	453	283	283	453	453
Staff										
Car	-	15%	-	-	-	-	6	-	-	6
Bus	-	15%	-	-	-	-	6	-	-	6
Rail	-	15%	-	-	-	-	6	-	-	6
Pedestrians	40%	15%	18	-	-	18	6	-	-	6
Cyclists										
Sub-total	100%		18	-	-	18	24	-	-	24
Total	100%		302	284	453	471	307	283	453	477

9.5 Hotel

As presented in Table 17, the hotel permitted to be developed in Clongriffin (Planning Reference 2569/17) is expected to generate a total of 162 person trips during the AM peak (81 inbound and 81 outbound) and a total of 323 person trips during the PM (81 inbound and 242 outbound). These trips are assumed to be generated only by guests.

Based on the land use category of the development, it was assumed that 100% of the hotel guest trips will be external, generated primarily by cars (70%) followed by bus (15%) and rail (15%). No pedestrians or cyclist trips were considered to be generated by hotel guest.

In addition to guest trips, the hotel units are also expected to attract/generate staff trips, people traveling to their place of work in Clongriffin each morning and departing home each evening.

On the basis of the total hotel floor space of 8,080 sqm and an average staff provision assumption of 1 person per 100 sqm, it was calculated that some 80 persons will work at the hotel units in Clongriffin.

Based on the large number of habitational units proposed for Clongriffin, it was assumed that 40% of the hotel staff population will be Clongriffin residents (internal), who will travel to/from work by walking or cycling and the other 60% will be external. For the purpose of the analysis, it was considered that the external staff trips will be split into 30% by public transport (15% by bus and 15% by rail), 15% by car and 15% by cycling/walking.

The trips expected to be generated by the permitted hotel in Clongriffin are presented in Table 22 below.

Table 22 has been based on the modal split and the internal / external split described above.

Table 22 Summary of Peak Hour Hotel Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Guests										
Car	-	70%	-	-	-	-	57	57	57	170
Bus	-	15%	-	-	-	-	12	12	12	36
Rail	-	15%	-	-	-	-	12	12	12	36
Pedestrians Cyclists	-	-	-	-	-	-	-	-	-	-
Sub-total		100%	-	-	-	-	81	81	81	242
Staff										
Car	-	15%	-	-	-	-	12	-	-	12
Bus	-	15%	-	-	-	-	12	-	-	12
Rail	-	15%	-	-	-	-	12	-	-	12
Pedestrians Cyclists	40%	15%	32	-	-	32	12	-	-	12
Sub-total		100%	32	-	-	32	48	-	-	48
Total		100%	32	-	-	32	129	81	81	290

9.6 Crèche

As can be seen in Table 17, the new crèche units proposed for Clongriffin are expected to generate a total of 244 person trips during the AM peak (145 inbound and 99 outbound) and a total of 191 person trips during the PM (92 inbound and 99 outbound). These trips are assumed to be generated only by children attending the crèche.

Based on the large number of residential units proposed for the overall Clongriffin development, it was assumed that 100% of the crèche trips will be internal, generated primarily by cars (70%) followed by walking (30%).

In addition to the trips generated by the children, the crèche units are also expected to attract/generate staff trips, people traveling to their place of work in Clongriffin each morning and departing home each evening.

On the basis of the total crèche floor space of 1,230 sqm and an average staff provision assumption of 1 person per 50 sqm, it was calculated that some 25 persons will work at the crèche units in Clongriffin.

Based on the large number of habitational units proposed for Clongriffin, it was assumed that 40% of the crèche staff population will be Clongriffin residents (internal), who will travel to/from work by walking or cycling and the other 60% will be external. For the purpose of the analysis, it was considered that the external staff trips will be split into 30% by public transport (15% by bus and 15% by rail), 15% by car and 15% by cycling/walking.

The trips expected to be generated by the new crèche units in Clongriffin are presented in Table 23 below. Table 23 has been based on the modal split and the internal / external split described above.

Table 23 Summary of Peak Hour Crèche Trips 2025

Mode	Internal Modal Split	External Modal Split	Internal Trips				External Trips			
			AM		PM		AM		PM	
			In	Out	In	Out	In	Out	In	Out
Children										
Car	70%	-	102	69	64	69	-	-	-	-
Bus	-	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-	-
Pedestrians Cyclists	30%	-	43	30	28	30	-	-	-	-
Sub-total	100%		145	99	92	99	-	-	-	-
Staff										
Car	-	15%	-	-	-	-	4	-	-	4
Bus	-	15%	-	-	-	-	4	-	-	4
Rail	-	15%	-	-	-	-	4	-	-	4
Pedestrians Cyclists	40%	15%	10	-	-	10	4	-	-	4
Sub-total	100%		10	-	-	10	16	-	-	16
Total	100%		155	99	92	109	16	-	-	16

9.7 Distribution of Peak Hour Rail Trips

For the purpose of this TA, it was assumed that 20% of the daily boardings occur during the AM Peak Hour and 10% during the PM Peak Hour.

It was also assumed that 10% of the alightings occur during the AM Peak Hour and 20% during the PM Peak Hour.

9.8 Summary of Peak Hour Trips 2025

Table 24 below shows a summary of the all mode, customer, guest, children and staff, external and internal, inbound and outbound trips expected to be generated by the new developments in Clongriffin during the AM and PM peak periods.

As presented in Table 24, the future residential and commercial developments are expected to generate a total of 1,079 external car trips (552 inbound and 527 outbound) during the AM and a total of 1,431 external car trips (597 inbound and 834 outbound) during the PM.

Table 24 Summary of Peak Hour Trips 2025

Mode	Internal Trips				External Trips			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	In	Out	In	Out	In	Out	In	Out
Residents								
Car	34	82	82	68	137	329	329	274
Bus	-	-	-	-	171	411	411	342
Rail	-	-	-	-	171	411	411	342
Pedestrians Cyclists	29	68	68	57	29	68	68	57
Sub-total	63	150	150	125	508	1,219	1,219	1,015
Customers / Guests / Children								
Car	176	115	129	143	216	188	258	380
Bus	-	-	-	-	97	97	148	172
Rail	-	-	-	-	97	97	148	172
Pedestrians Cyclists	845	638	935	1,001	102	74	110	119
Sub-total	1,021	753	1,064	1,144	512	456	664	843
Staff								
Car	-	-	-	-	199	10	10	180
Bus	-	-	-	-	199	10	10	180
Rail	-	-	-	-	199	10	10	180
Pedestrians Cyclists	231	8	8	216	53	2	2	49
Sub-total	231	8	8	216	650	32	32	589
Total								
Car	210	197	211	211	552	527	597	834
Bus	-	-	-	-	467	518	569	694
Rail	-	-	-	-	467	518	569	694
Pedestrians Cyclists	1,105	714	1,011	1,274	184	144	180	225
Total	1,315	911	1,222	1,485	1,670	1,707	1,915	2,447

9.9 Distribution of Peak Hour Car trips

In order to determine the amount of new car trips expected to travel through each main junction in the vicinity of the site, these external car trips have been distributed. The distribution percentage of the external car trips for the AM and PM peak hour is detailed in Figure 14 and the corresponding AM & PM peak hour traffic flows, based on the assumed distribution, are presented in Figure 16.

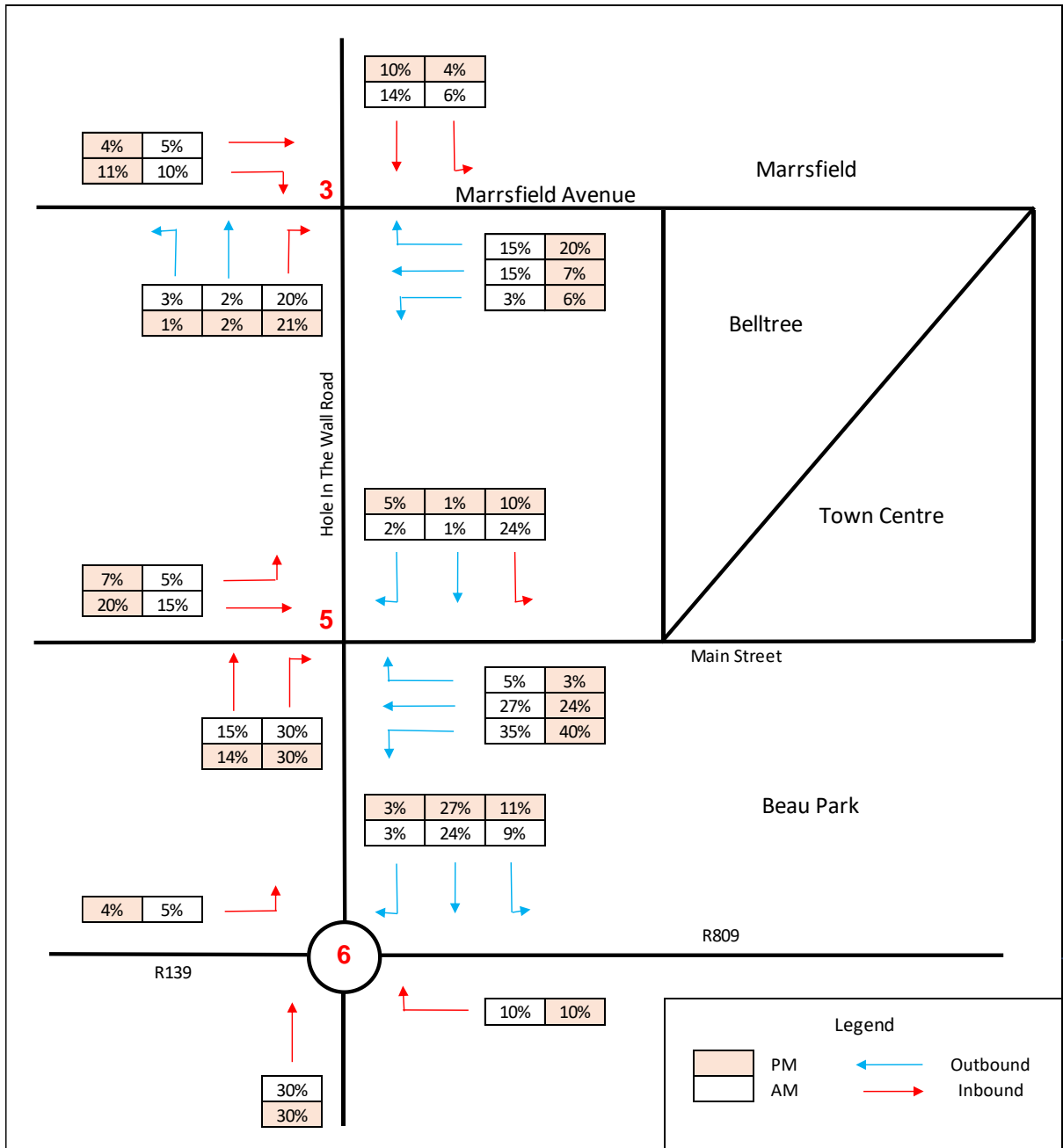


Figure 14 Vehicle Trip Distribution for AM Peak Hour and PM Peak Hour 2025

10. Traffic Forecasting

10.1 Existing Traffic 2018

The existing road traffic movements in the area of Clongriffin taken from the classified survey undertaken by Tracsis in May 2018 are presented in Figure 15.

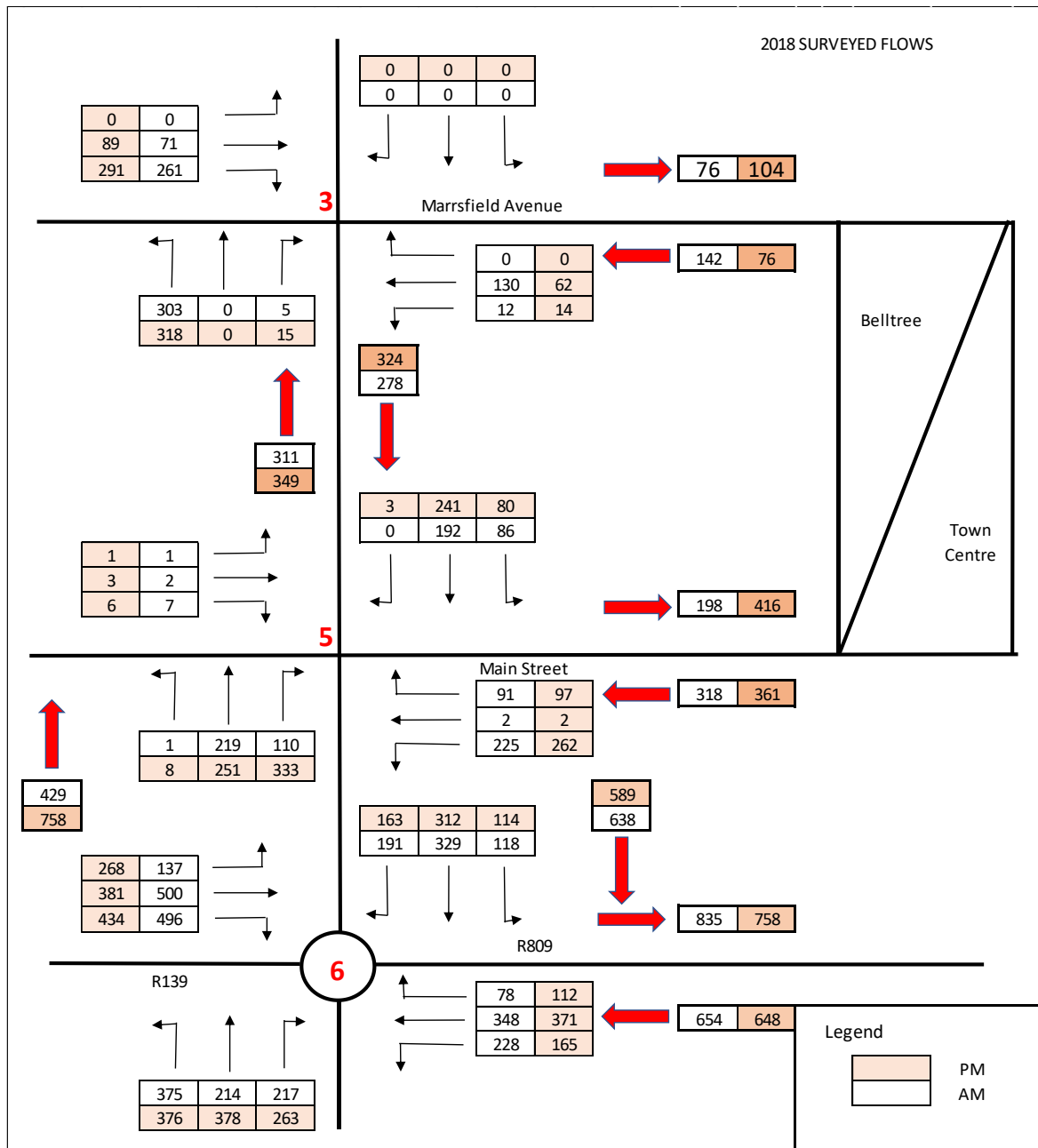


Figure 15 Existing Traffic 2018

10.2 New Developments at Clongriffin

Road traffic movements from the new developments at Clongriffin are presented in Figure 16.

These movements have been based on the trips from Table 24 and the trip distribution from Figure 14.

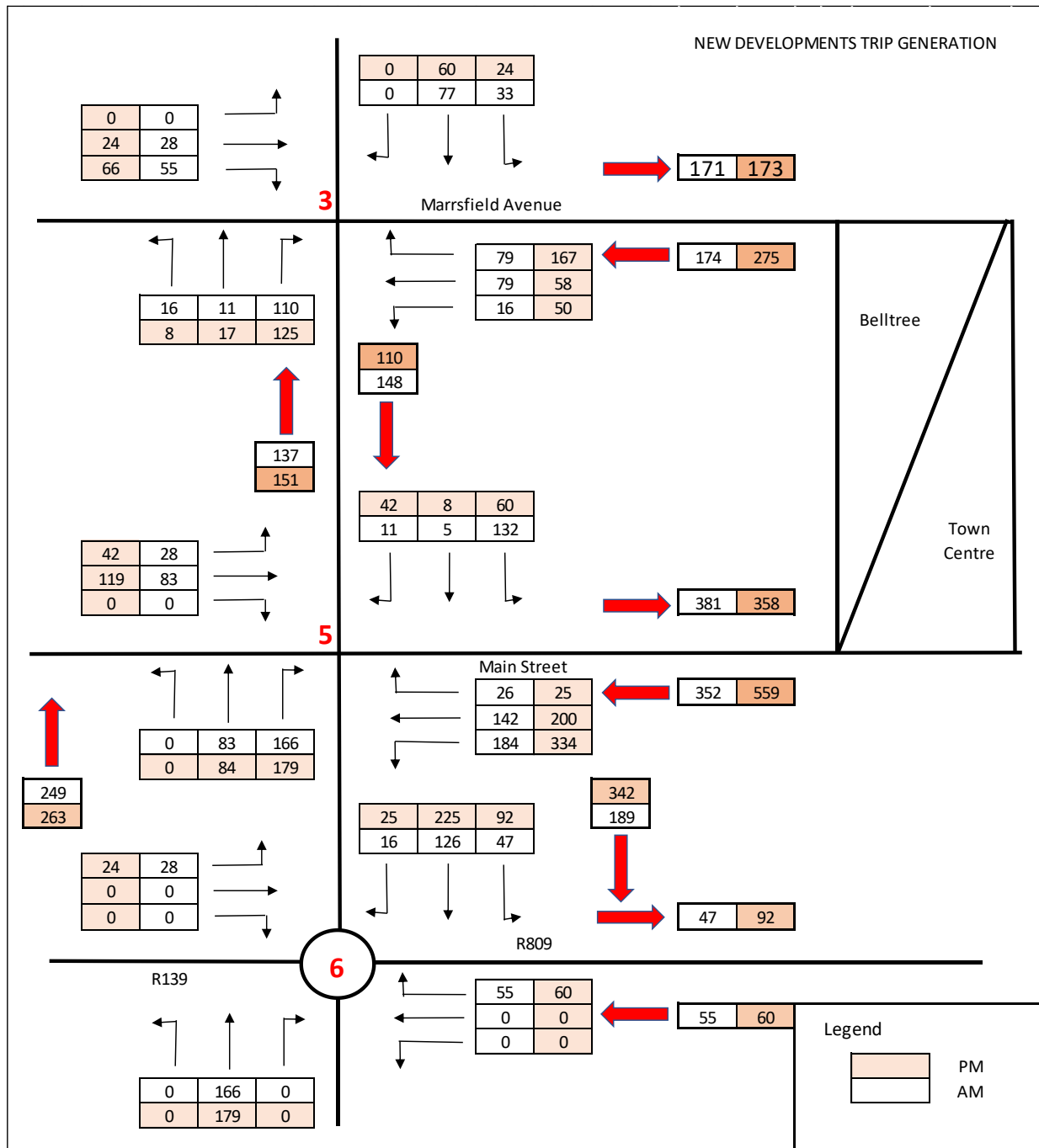


Figure 16 Traffic from New Developments at Clongriffin

10.3 Contiguous Developments

Contiguous development in the surrounding area will be the 600 house development at Belmayne.

The road traffic movements expected to be generated by this development are presented in Figure 17.

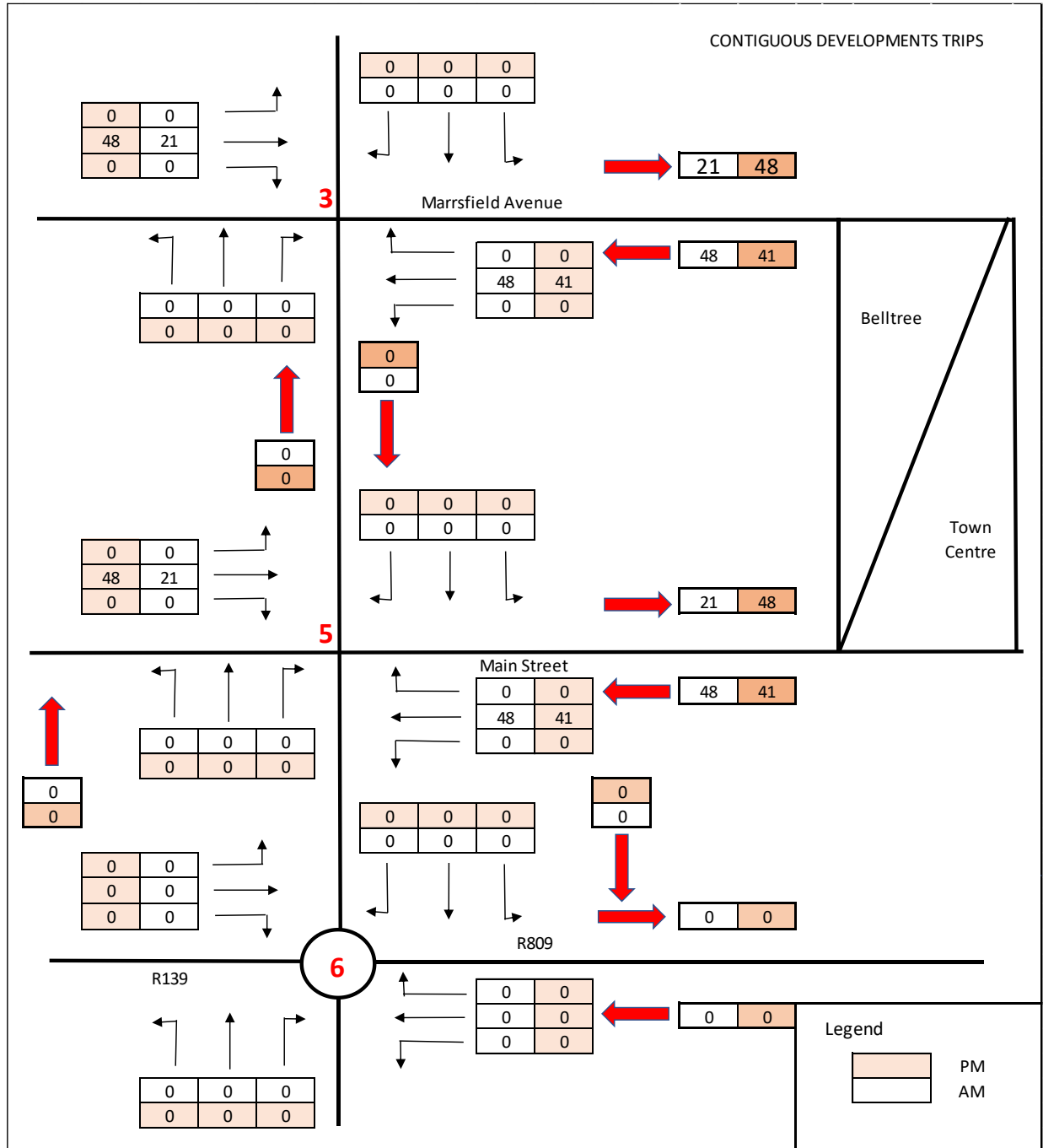


Figure 17 Traffic from Contiguous Developments

10.4 Future Traffic 2025

The future traffic in the area of Clongriffin in 2025 is presented in Figure 18.

These movements were obtained by adding the movements from new developments in Figure 16 and the contiguous developments in Figure 17 to the surveyed existing movements in Figure 15.

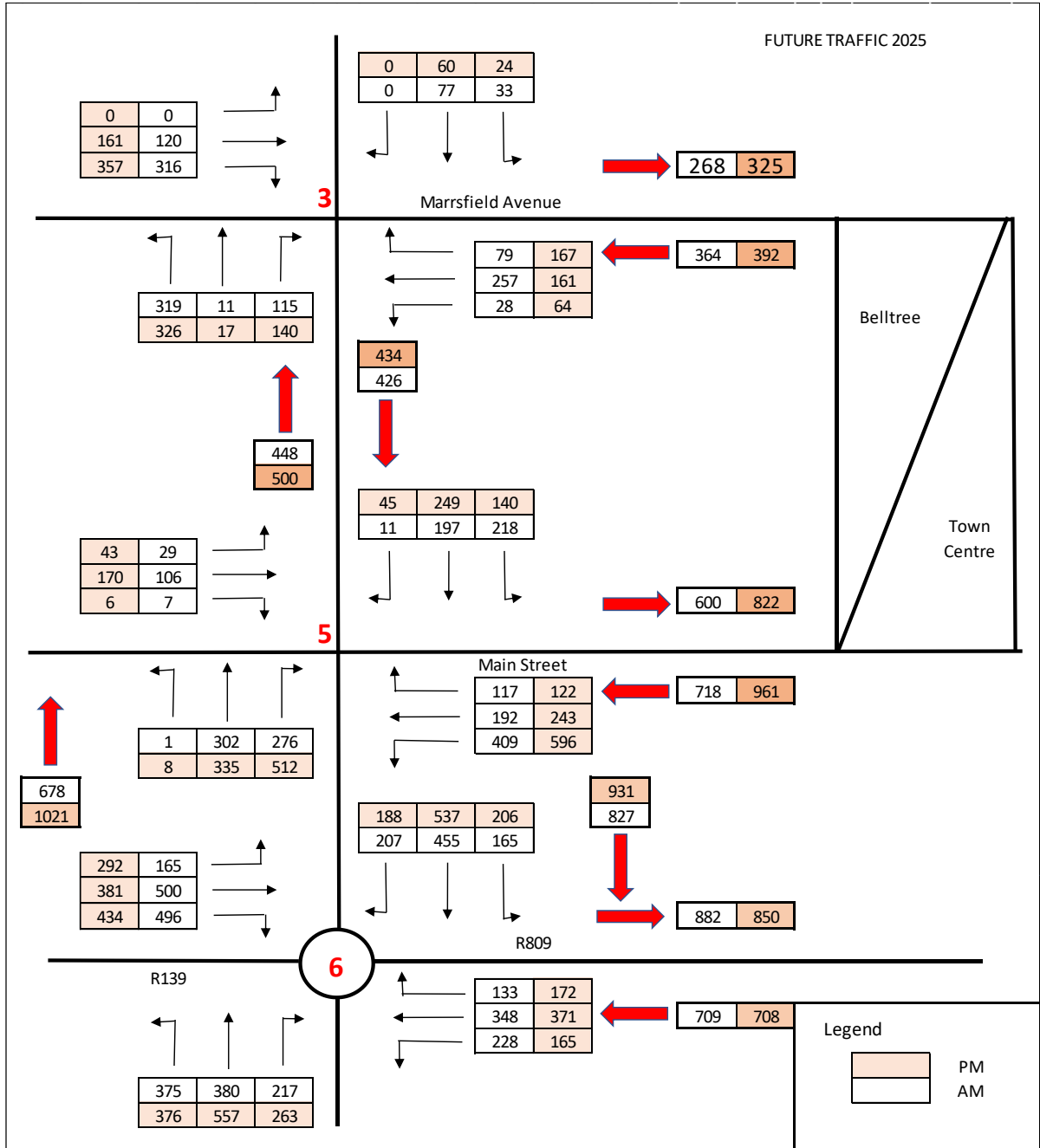


Figure 18 Future Traffic 2025

11. Road and Junction Assessment

11.1 Junctions Assessed – Existing 2018

The assessment for 2018 was based on the existing junction layouts which comprise: -

- **Junction 3:** Hole in The Wall Road / Marrsfield Avenue (Priority t- junction);
- **Junction 5:** Hole in The Wall Road / Main Street (Signalised crossroads);
- **Junction 6:** Hole in The Wall Road / R139 / R809 (Four-armed roundabout).

The junction movements for these assessments are illustrated in Figure 15.

11.2 Junctions Assessed – Future 2025

For the 2025 assessment, it was assumed that road improvements and junction upgrades described earlier in this TA had been completed and that the network comprised: -

- **Junction 3:** Hole in The Wall Road / Marrsfield Avenue (Signalised Crossroads);
- **Junction 5:** Hole in The Wall Road / Main Street (Signalised crossroads);
- **Junction 6:** Hole in The Wall Road / R139 / R809 (Upgraded four-armed roundabout).

The junction movements for these assessments are illustrated in Figure 18.

11.3 Modelling Background

There are various modelling software packages available to assess every type of junction. Waterman Moylan uses ARCADY, TRANSYT and PICADY to analyse roundabouts, signalised and priority junctions, respectively.

ARCADY is a software for modelling roundabouts. This programme utilises roundabouts geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the roundabout.

TRANSYT (Traffic Network Study Tool) software is a widely accepted software for modelling signalised controlled junctions. This programme utilises the phases input by the user and optimises their timings over a cycle time. The outputs of a TRANSYT assessment include a Degree of Saturation percentage (DOS%) figure and queue length for each link on the road network.

PICADY is a software for modelling priority-controlled junctions. This programme utilises junction's geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the junction.

Typically, a junction is said to be working satisfactorily when the DOS% or RFC of each link does not exceed 90%/0.9. Acceptable DOS% or RFC values are considered to be in the range of 80%/0.8 to 100%/1.0 with higher values indicating restrained movements.

11.4 Assessment Scenarios

The performance of the junctions has been analysed for the critical AM Peak Hour and PM Peak Hour (08:00 – 09:00 and 17:00 – 19:00) for the following scenarios:

- **2018:** Existing road network with surveyed flows.
- **2025:** Proposed road network with existing traffic flows + traffic from the proposed new developments at Clongriffin + traffic flows from Belmayne.

11.5 Roads and Junctions Assessment Results 2018 - 2025

11.5.1 Junction 3 (Hole in The Wall Road / Marrsfield Avenue)

Junction 3 is an existing three-armed priority-controlled junction located west of the proposed site. As described in Section 3.1 of this TA, a road improvement project is being undertaken by Fingal County Council in order to upgrade this junction to a signalised crossroads. This proposed road upgrade will be in place for the opening year of 2025.

The analysis results for 2018 and for the opening year of 2025 are presented in Table 25 and 26.

2018

The arms of the three-armed priority-controlled junction were labelled as follows within the PICADY model:

- Arm A: Marrsfield Avenue (E)
- Arm B: Hole in The Wall Road (S)
- Arm C: Marrsfield Avenue (W)

The analysis results in Table 25 indicate that the Junction 3 is currently working well within capacity during both peak periods, with the highest RFC at 0.52 and a corresponding queue of 1.10 vehicles during the AM peak period and a maximum RFC at 0.53 with a corresponding queue of 1.10 vehicles recorded for the PM.

Table 25 Hole in The Wall Road / Marrsfield Avenue PICADY Analysis Results 2018.

Junction 3	Stream B-C		Stream B-A		Stream C-AB	
	RFC	Queue	RFC	Queue	RFC	Queue
AM	0.52	1.10	0.01	0.00	0.48	0.90
PM	0.53	1.10	0.04	0.00	0.53	1.10

2025

The arms of the proposed signalised crossroads were labelled as follows within the TRANSYT model:

- Arm A: Marrsfield Avenue (E)
- Arm B: Hole in The Wall Road (S)
- Arm C: Marrsfield Avenue (W)
- Arm D: Hole in The Wall Road (N) – Proposed road extension

The analysis results in Table 26 indicate that the Junction 3, with the proposed improvements and the addition of the generated trips, will continue to work within capacity during both peak periods, with the highest DOS at 71% and a corresponding queue of 11.69 vehicles during the AM peak period and a maximum DOS at 77% with a corresponding queue of 13.10 vehicles recorded for the PM.

Table 26 Hole in The Wall Road / Marrsfield Avenue TRANSYT Analysis Results 2025.

Junction 5	Arm A		Arm B		Arm C		Arm D	
	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue
AM	71	11.69	62	13.97	69	13.12	61	3.98
PM	77	13.10	70	15.83	75	15.93	62	3.20

11.5.2 Junction 5 (Hole in The Wall Road / Main Street)

Junction 5 is an existing crossroads signal-controlled junction located west of the proposed site. As presented in Section 3 of this TA, as part of the Clongriffin-Belmayne Local Area Plan 2012-2018, Main Street is projected to be extended further west connecting with Belmayne Avenue. This proposed road extension will be in place for the opening year of 2025.

The analysis results for 2018 and for the opening year of 2025 are presented in Table 27 and 28.

2018

The arms of the signal-controlled junction were labelled as follows within the TRANSYT model:

- Arm A: Main Street (E)
- Arm B: Hole in The Wall Road (S)
- Arm C: Main Street (W)
- Arm D: Hole in The Wall Road (N)

The analysis results in Table 27 indicate that the Junction 5 is currently working well within capacity during both peak periods, with the highest DOS at 34% and a corresponding queue of 7.81 vehicles during the AM peak period and a maximum DOS at 54% with a corresponding queue of 10.13 vehicles recorded for the PM.

Table 27 Hole in The Wall Road / Main Street TRANSYT Analysis Results 2018.

Junction 5	Arm A		Arm B		Arm C		Arm D	
	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue
AM	25	7.55	30	8.4	6	0.32	34	7.81
PM	31	8.97	41	14.29	6	0.32	54	10.13

2025

The analysis results in Table 28 indicate that the Junction 5, with the proposed improvements and the addition of the generated trips, will continue to work within capacity during both peak period, with the highest DOS at 62% and a corresponding queue of 13.51 vehicles during the AM, and with a maximum DOS at 77% with a corresponding queue of 26.92 vehicles recorded for the PM.

Table 28 Hole in The Wall Road / Main Street TRANSYT Analysis Results 2025.

Junction 5	Arm A		Arm B		Arm C		Arm D	
	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue	DOS (%)	Queue
AM	50	18.00	58	16.98	59	5.00	62	13.51
PM	70	27.49	77	26.92	73	8.07	76	14.92

11.5.3 Junction 6 (Hole in the Wall Road / R809 /R139)

Junction 6 is an existing four-armed roundabout located southwest of the proposed site. As described in Section 3 of this report, a new scheme for this roundabout is being undertaken by Dublin City Council. However, the junction modelling conservatively assumes that the roundabout will operate as per the existing the existing arrangement during the opening year of 2025.

The analysis results for 2018 and for the opening year of 2025 are presented in Table 29 and 30.

2018

The arms of the roundabout were labelled as follows within the ARCADY model:

- Arm 1: R809 (E)
- Arm 2: R809 (S)
- Arm 3: R139 (W)
- Arm 4: Hole in The Wall Road (N)

The analysis results in Table 29 indicate that the Junction 6 is currently working well within capacity during both peak periods, with the highest RFC at 0.65 and a corresponding queue of 1.8 vehicles during the AM peak period and a maximum RFC at 0.78 with a corresponding queue of 3.5 vehicles recorded for the PM.

Table 29 Hole in The Wall Road / R809 / R139 ARCADY Analysis Results 2018.

Junction 6	Arm 1		Arm 2		Arm 3		Arm 4	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
AM	0.51	1.0	0.61	1.6	0.65	1.8	0.50	1.0
PM	0.48	0.9	0.78	3.5	0.69	2.2	0.43	0.8

2025

The analysis results in Table 30 indicate that the Junction 6, with the proposed improvements and the addition of the generated trips, will continue to work within capacity during the AM peak period, with the highest RFC at 0.76 and a corresponding queue of 3.2 vehicles and with satisfactory capacity during the PM, with a maximum RFC at 0.96 with a corresponding queue of 17.3 vehicles recorded.

Table 30 Hole in The Wall Road / R809 / R139 ARCADY Analysis Results 2025.

Junction 6	Arm 1		Arm 2		Arm 3		Arm 4	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
AM	0.59	1.5	0.76	3.2	0.73	2.6	0.65	1.9
PM	0.59	1.5	0.96	17.3	0.78	3.5	0.68	2.1

11.6 Summary of Road Junction Assessment

The results of the road junction assessment are summarised in Table 31.

The results indicate that all of the junctions assessed will operate satisfactorily in 2018 and in 2025.

Details of the analysis are contained in Appendix D.

Table 31 Summary of Junctions Analysis 2018 and 2025.

Scenario	Junction 3				Junction 5				Junction 6			
	AM		PM		AM		PM		AM		PM	
2018 (Existing Road Network with Surveyed Flows)	Max RFC	Max Queue	Max RFC	Max Queue	Max DOS %	Max Queue	Max DOS %	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue
		0.52	1.10	0.53	1.10	34	7.81	54	10.13	0.65	1.80	0.78
2025 (Proposed Road Improvements with Surveyed Flows + Generated Flows)	Max DOS %	Max Queue	Max DOS %	Max Queue	Max DOS %	Max Queue	Max DOS %	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue
	71	11.69	77	13.1	62	13.51	77	26.92	0.76	3.2	0.96	17.3

12. Public Transport Assessment

12.1 Additional Rail Passengers – New Developments

The additional rail passengers that will be generated by new developments at Clongriffin are presented in Table 32.

Table 32 Rail Passengers - Proposed New Developments at Clongriffin

Year	Period	Activity	Northbound	Southbound	Total
2025 (Future developments)	AM Peak hour	Boarding	26 (5%)	492 (95%)	518
		Alighting	444 (95%)	23 (5%)	467
	PM Peak hour	Boarding	35 (5%)	659 (95%)	694
		Alighting	541 (95%)	28 (5%)	569

12.2 Rail Services

Details of train capacity by type are set out in Appendix C of the National Rail Census 2017.

The commuter train capacity table from Appendix C of the Census Report is reproduced below.

Train Type		Capacity	
4-DART	(4 Car DART Set)	700	Seats + Standing Accommodation
6-DART	(6 Car DART Set)	1050	Seats + Standing Accommodation
8-DART	(8 Car DART Set)	1400	Seats + Standing Accommodation
2 x 2600	(2 Car Commuter Rail Car)	206	Seats + Standing Accommodation
2 x 2800	(2 Car Commuter Rail Car)	221	Seats + Standing Accommodation
4 x 29000	(4 Car Commuter Rail Car)	640	Seats + Standing Accommodation
8 x 29000	(8 Car Commuter Rail Car)	1280	Seats + Standing Accommodation

From Sections 2.2 and 3.2 of this TA, it will be seen that the peak hour weekday rail service at Clongriffin will provide capacity for 6,760 – 9,440 passengers in each direction.

This capacity will be provided by 2 – 3 x 8-car Commuter Rail services per hour (2,560 – 3,840 capacity) and 4 x 6 – 8 car DART services per hour (4,200 - 5,600 capacity).

These services will be more than adequate to cater for the expected peak single train demand of 694 passengers which is predicted to occur in the PM Peak Hour (Table 24).

12.3 Bus Services

Services to and from Clongriffin will continue to be operated by double deck buses into the future.

The passenger capacity of the double deck buses in the current Dublin Bus fleet in May 2019 is shown on the table below reproduced from Wikipedia.

For the purpose of this TA, the capacity of each bus has been assumed to be 85 passengers.

Following implementation of Bus Connects, the weekday peak hour service to and from Clongriffin will comprise 7 – 15 services per direction per hour.

These services will provide capacity for 595 – 1,275 passengers per hour in each direction and will be more than adequate to cater for the for the expected peak hourly demand of 694 passengers which is predicted to occur in the PM Peak Hour (Table 24).

Quantity	Manufacturer	Type	Fleet Code	Passengers
76	Volvo	B7TL with ALX400 bodywork	AV	91
70	Volvo	B9TLT (Euro 4) with Enviro500 bodywork	VT	119–124
192	Volvo	B7TL (Mk. II) with ALX400 bodywork	AX	91
97	Volvo	B9TL (Euro 4) with Enviro400 bodywork	EV	94
50	Volvo	B9TL (Euro 4) with Eclipse Gemini bodywork	VG	88
160	Volvo	B9TL (Euro 5) with Eclipse Gemini bodywork	GT	78–81
369	Volvo	B5TL (Euro 6) with Gemini 3 bodywork	SG	95
2	Wrightbus	StreetLite DF integral	WS	37

12.4 Go Car

The provision of GoCar vehicles at Clongriffin is expected to increase from 7 to 13 vehicles before 2025.

13. Transportation Impact

13.1 Roads and Junctions

The results of the road and junction assessment in Section 11 indicate that all of the junctions assessed are operating satisfactorily in 2018 and will continue to do so in the future year of 2025.

13.2 Public Transport

The results of the public transport assessment in Section 12 indicate that capacity, both rail and bus will considerably exceed the forecast demand at Clongriffin.

13.3 Comparison with Parent Permission (EIS)

Section 6.7 of the Environmental Impact Statement (EIS) which accompanied the parent planning application in 2002 set out the projected travel demand in Tables 6.9 – 6.18

These movements are reproduced in Tables 33 and 34 below.

Table 33 Comparison of AM Peak Hour External Trips

	EIS 2002		TA 2019	
	Inbound	Outbound	Inbound	Outbound
Car	763	762	552	527
Bus	847	694	467	518
Rail	847	694	467	518
Cycle	198	162	184	144
Walk	85	69		

Table 34 Comparison of PM Peak Hour External Trips

	EIS 2002		TA 2019	
	Inbound	Outbound	Inbound	Outbound
Car	766	1,575	597	834
Bus	823	1,724	569	694
Rail	823	1,724	569	694
Cycle	192	402	180	225
Walk	82	172		

14. Servicing

14.1 Servicing Strategy

The completed development at Clongriffin will include a number of commercial units which will receive regular deliveries.

The retail units in Blocks 3, 5, 13, 14, 15, 17, 28 together with the Café / Restaurant in Blocks 4, 13, 14 and 15 falls into this category.

To accommodate these deliveries, it is proposed to provide a network of loading bays on the streets close to these units.

The locations of the proposed loading bays are shown on Waterman Moylan Drg No. 18-059-FIG. 12 included in Appendix A.

The locations of the nine loading bays include

- Main Street (1 No)
- Market Street (2 No)
- Dargan Street (1 No)
- Friars' Street (1 No)
- Lake Street (2 No)
- Park Street (1 No)
- Station Street (1 No)

Each loading bay would be 15.6 metres long (3 x car parking spaces) and signed for dual usage 00h00 – 00h00 Monday – Sunday.

The operational hours for loading would be 08h00 – 18h00 Monday – Friday.

Outside these hours between 18h00 and 08h00, the loading bays could be used for car parking by residents with Residents Parking Permits, commercial, visitors, etc. thereby adding an additional 27 spaces to the evening parking stock.

Pay and Display tickets would not be valid at the loading bays in Clongriffin.

14.2 Waste Collection

All of the proposed developments at Clongriffin will be accessible for refuse vehicles/fire tenders. Turning path layout are shown on the Waterman Moylan Drg No. 18-059-P1140 (SHD 1), Drg. No. 18-059-P2140 (SHD 2) and Drg. No. 18-059-P3140 (DCC Application) included in Appendix A.

15. Car Parking

15.1 Dublin City Development Plan 2016 - 2022

Standards for car parking in new developments are set out in Table 16.1 of the Dublin City Development Plan 2016 – 2022 and Parking Areas in Map J.

As shown on Map J, Clongriffin is located within Parking Area 2 which occurs along transport corridors.

The maximum car parking standards for Clongriffin based on a location in Area 2 are reproduced in Table 35.

Table 35 Dublin City Development Plan 2016 - 2022, Maximum Car Parking Standards

Land Use	Standard
Offices	1 space per 200 sqm GFA
Retail	1 space per 100 sqm GFA
Residential - Apartments	1 space per dwelling
Cinema	1 per 25 seats
Restaurant / Cafe	1 space per 150 sqm seating area
Cultural	space per 250 sqm GFA

15.2 Pre-Planning Discussions with Dublin City Council

During the pre-planning stage in 2018 and 2019, various pre-planning meetings have been held with Dublin City Council and the reduced parking standards in Table 36 have been agreed due to the nature of the development (high residential and commercial density) and due to the proximity to public transportation as described previously.

In particular, the maximum standard for residential has been reduced from 1 space per unit to 0.75 space per unit due to: -

- The proximity to the existing railway station
- The proximity to the existing bus terminal
- The Intended rail service improvements
- The Intended BusConnects bus service improvements
- The availability of surplus on street car parking spaces
- The provision of on-site GoCar parking spaces.

The agreed car parking standards for Clongriffin are shown in Table 36.

Table 36 Agreed Car Parking Standards for Clongriffin

Land Use	Standard
Offices	1 space per 200 sqm GFA
Retail	1 space per 275 sqm GFA
Apartments	0.75 space per dwelling
Cinema	1 per 25 seats
Restaurant / Cafe	1 space per 150 sqm seating area
Cultural	1 space per 250 sqm GFA
Creche	1 space per classroom

15.3 Car Parking Required - Residential

Based on the agreed car parking standard of 0.75 space per unit, the quantum of car parking required for the residential land use in the Town Centre is 1,466 spaces as calculated in Table 37 below.

Table 37 Car Parking Required – Residential in Town Centre

Block	No of Units	Standard	Spaces
Block 3	141	0.75 space per unit	106
Block 4	74	0.75 space per unit	56
Block 5	138	0.75 space per unit	104
Block 6	270	0.75 space per unit	203
Block 8	114	0.75 space per unit	86
Block 11	96	0.75 space per unit	72
Block 13	187	0.75 space per unit	140
Block 14	288	0.75 space per unit	216
Block 15	92	0.75 space per unit	69
Block 17	210	0.75 space per unit	158
Block 25	63	0.75 space per unit	47
Block 26	78	0.75 space per unit	59
Block 27	57	0.75 space per unit	43
Block 28	122	0.75 space per unit	92
Block 29	20	0.75 space per unit	15
Overall Total	1,950	0.75 space per unit	1,466

15.4 Car Parking Required - Commercial

Based on the car parking standard set out in the Dublin City Development Plan, the maximum quantum of car parking for the commercial land use in the Town Centre is 138 spaces as calculated in Table 38.

Table 38 Maximum Car Parking for Commercial in Town Centre

Block	Land Use	Size	Standard	Spaces
3	Retail	791 sqm	1 per 275 sqm GFA	3
	Offices	3,732 sqm	1 per 200 sqm GFA	19
4	Café / Restaurant	78 sqm	1 per 150 sqm seating area	1
	Creche	304 sqm	1 per room	4
	Community Hall	417 sqm	1 per 250 sqm GFA	2
5	Retail	393 sqm	1 per 275 sqm GFA	1
6	Creche	418 sqm	1 per room	4
8	-	-	-	-
11	-	-	-	-
13	Retail	1,142 sqm	1 per 275 sqm GFA	4
	Cafe	230 sqm	1 per 275 sqm GFA	1
	Offices	4,736 sqm	1 per 200 sqm GFA	24
14	Retail	1,127 sqm	1 per 275 sqm GFA	4
	Café / Restaurant	806 sqm	1 per 150 sqm seating area	5
15	Retail	906 sqm	1 per 275 sqm GFA	3
	Café / Restaurant	527 sqm	1 per 150 sqm seating area	4
	Cinema (1,232 seats)	5,253 sqm	1 per 25 seats	49
17	Retail	431 sqm	1 per 275 sqm GFA	2
25	-	-	-	-
26	-	-	-	-
27	Creche	508	1 per room	5
28	Retail	675 sqm	1 per 275 sqm GFA	2
	Leisure	254 sqm	1 per 250 sqm GFA	1
29	-	-	-	-
Total		22,728 sqm		138

15.5 Park and Ride

A total of 397 spaces were described in the EIS which accompanied the parent planning application in 2002.

This number was increased to 420 spaces in the parent planning application issued by An Bord Pleanála in 2003.



Figure 19 VMA Sign at Clongriffin Park & Ride

15.6 Car Parking Proposed

The proposed car parking in the Town Centre is set out in Table 39.

The locations of the proposed parking spaces are shown on the Waterman Moylan drawings accompanying the planning application.

Table 39 Proposed Car Parking in Town Centre

Location	Pre-Assigned Residential	Residential	Park & Ride	Shared Public	Total
On-street Parking	-	-	-	371	371
Off-street	-	987	-	-	987
Multi-Storey Car Park	46	479	420	252	1,197
Total	46	1,466	420	623	2,555

15.7 Operation and Management

Some 58% of the car parking spaces at Clongriffin will be allocated to and reserved for residents. The remaining 42% will operate on a shared basis serving residents, visitors, staff, customers and rail passengers.

Access to residents parking will be through lifting barriers operated by fob pre-issued by the Management Company.

The on-street shared spaces will be controlled on a *'Pay and Display'* basis. The time of operation will vary from location to location depending on demand, but the core operational hours are expected to be 07h00 – 19h00 Monday – Friday. Tickets will be available from parking meters on payment of the appropriate fee.

Residents may have the option of applying for a Dublin City Council Residents Parking Permit should this be deemed necessary.

In order to ensure parking for visitors, staff and customers, the number of Residents Parking Permits to be issued by the parking operators will be limited.

The Park and Ride spaces will be controlled by the requirement to have a valid rail ticket for exit, and/or through a daily, weekly or annual fee, which can be pay and display, through a mobile phone app, on-line payment or telephone payment.

16. Cycle

16.1 Dublin City Development Plan 2016 - 2022

Standards for cycle parking in new developments are set out in Table 16.2 of the Dublin City Development Plan 2016 – 2022.

The cycle parking standards for the proposed development at Clongriffin are reproduced in Table 40.

Table 40 Cycle Parking Standards Dublin City Development Plan 2016 -2022

Land Uses	DCC Standards
Residential	1 stand per unit
Retail	1 stand per 150sqm
Employment	1 stand per 100sqm
Restaurant / Cafe	1 stand per 150sqm
Cinema	1 stand per 20 seats
Crèche	1 stand per 3 students
Recreational Buildings	1 stand per 150sqm

16.2 Private Cycle Parking Required in Town Centre

Based on the cycle parking standard set out in the Dublin City Development Plan, the quantum of cycle parking required for the proposed development is 2,220 stands as calculated in Table 41 below.

Table 41 Cycle Parking Required in Town Centre

Land Uses	No. Units/GFA	DCC Standards	Parking Required
Residential	1,950 Units	1 per unit	1,950
Retail	5,465 sqm	1 per 150sqm	36
Employment	8,468 sqm	1 per 100sqm	85
Restaurant/Café	1,641 sqm	1 per 150sqm	11
Cinema	5,253 sqm (1,232 seats)	1 per 20 seats	62
Leisure	254 sqm	1 per 250sqm	1
Crèche	1,230 sqm	1 per 3 students	72
Recreational Buildings	417 sqm	1 per 150sqm	3
Total			2,220

16.3 Public Cycle Parking

Public cycle parking is provided at Station Square in accordance with the requirements of Section 16.39 of the Dublin City Development Plan 2016 – 2022.

The required number of stands has been calculated in accordance with Table 16.2 of the Plan which for Train Stations requires 7 spaces per number of trains in the two-hour peak period AM with a minimum of 100 spaces.

In the case of Clongriffin Station, the current number of trains is 16 per two-hour in the AM. This expected to increase to 20 trains per two-hour after completion of the DART Expansion Project.

These volumes will create a cycle parking requirement of 112 stands in 2019 increasing to 140 stands after DART Expansion.

The current provision is 112 stands at Station Square.

The additional 28 stands are part of the proposed development works and will be also provided at Station Square.

17. Internal Road Layout

17.1 Roads

The internal road layout as shown on the Waterman Moylan drawings accompanying the planning application includes provision for

- Access and Circulation.
- Car Parking (On-street).
- Disabled Car Parking (5%).
- Electric Car Parking.
- Motorcycle Parking (4% of car spaces).
- Loading Bay (9 No).
- Cycle Parking.

17.2 Station Square

Similarly, the layout of Station Square as shown on the Waterman Moylan Drg No 18-059-Fig11 accompanying the planning application includes provision for

- Access and Circulation.
- Traffic Management.
- Bus Stop (2 No bus stops).
- Taxi Rank (3 No taxis).
- Park & Ride (420 spaces).
- Loading Bay (1 No).
- Cycle Parking (140 stands).

17.3 Traffic Management

Proposals for traffic management are also shown on the Waterman Moylan drawings accompanying the planning application.

18. Road Safety

18.1 Accidents

At the time of writing, Waterman Moylan are not aware of any accidents at Clongriffin which would require improvement or remedial measures to the existing transportation infrastructure.

18.2 Speed Reduction

The existing speed limit at Clongriffin is 30 kph. The road layout has been designed to promote low speeds and includes a number of speed tables.

The applicants keep the operation of the road network under review and will introduce further speed calming measures as required.



Figure 20 Speed Limit at Main Street

19. Mitigation Measures

19.1 Construction Management Plan

This TA is accompanied by a Construction Management Plan (CMP) prepared in accordance with the requirements of Section 8.5.5 of the Dublin City Development Plan 2016 – 2022.

This Plan describes the proposed development and specifies the measures to be adopted to mitigate the impacts of construction including traffic management, hours of working, delivery times, the reduction of noise and dust, the reinstatement of roadways, the repair of damage to footways and the accommodation of worker parking.

19.2 Travel Plan/Mobility Management Plan

This TA is also accompanied by a Travel Plan/Mobility Management Plan prepared in accordance with the requirements of Section 8.5.5 of the Dublin City Development Plan 2016 – 2022.

The scope of the Travel Plan/Mobility Management Plan is to promote best practise mobility management and travel planning at Clongriffin, to balance car use to capacity and to provide for the necessary mobility via sustainable transport modes.

Travel management is a key operational feature in the provision of sustainable travel Infrastructure at Clongriffin. The management will implement the Travel Plan/Mobility Management Plan on an ongoing basis as the successor to the Mobility Management Plan, with the triple objectives of promoting sustainability, enhancing public transport and reducing dependency on the use of the private car for the journey to and from Clongriffin.

The targets set in the Travel Plan/Mobility Management Plan will be achieved against the background of expanding public transport capacity in the surrounding catchment.

19.3 Rail Services

Station Square at Clongriffin is located at key transport interchange between rail and bus services.

Clongriffin Railway Station was financed by the applicants and opened in 2010.

The station supports intensive electric and diesel services both of which will be enhanced in the near future.

Passenger numbers through the station have been growing steadily with a 50% increase between 2012 and 2017.

In 2011, it was suggested by Iarnod Eireann that Clongriffin station could become a new junction station on the proposed Dublin Airport railway line extension. In the 'Rail Vision 2030' strategic network review document, this line extension was recommended as a long-term goal.

19.4 Bus Services

Dublin Bus run a frequent bus service from Clongriffin to the City Centre. This service will be significantly enhanced when the new Bus Connects project currently being implemented by the National Transport

Authority provides a high frequency radial service linking Clongriffin DART Station to the City Centre at a service frequency of 4 – 8 minutes and a series of Orbital Routes linking Clongriffin to the west and north.

19.5 GoCar

GoCar has been operating successfully from Station Square in Clongriffin since 2013.

GoCar members book cars online or via the app, then unlock the car with their phone or GoCard; the keys are in the car, with fuel, insurance and city parking all Included.

Carsharing contributes to sustainable transport and can reduce car ownership at an estimated rate of one rental car replacing 15 owned vehicles.

19.6 Servicing Strategy

The completed development at Clongriffin will include a number of commercial units which will receive regular deliveries.

To accommodate these deliveries, it is proposed to provide a network of loading bays on the streets close to these units.

Each loading bay would be 15.6 metres long (3 x car parking spaces) and signed for dual usage 00h00 – 00h00 Monday – Sunday.

The operational hours for loading would be 08h00 – 18h00 Monday – Friday.

Outside these hours between 18h00 and 08h00, the loading bays could be used for car parking by residents with Residents Parking Permits, commercial, visitors, etc. thereby adding an additional 27 spaces to the evening parking stock.

Pay and Display tickets would not be valid at the loading bays in Clongriffin.

20. Non-Technical Summary

Background

This Transport Assessment (TA) is a comprehensive review of all the potential transport impacts of the overall development, both existing and proposed, including a detailed assessment of the transportation systems provided and the impact of the proposed development on the surrounding environment and transportation network.

The TA is accompanied by a Travel Plan/Mobility Management Plan to implement the mobility management policies for the development and achieve the sustainable travel targets.

Location

The overall Clongriffin site is bounded to the north by the Mayne River, to the east by the Dublin-Belfast railway line, to the west by Fr. Collin's Park and to the south by the Grange Road.

Planning History

The subject site forms part of a parent planning permission which was previously granted by Dublin City Council (Reg. Ref. 0132/02) and An Bord Pleanála (Ref. PL29N.131058) as part of the overall Clongriffin residential and commercial development.

The subject applications represent an amendment to those areas of the parent planning permission previously granted by Dublin City Council and An Bord Pleanála as part of the overall Clongriffin residential and commercial development and which have yet to be completed on site.

Neighbourhoods

Clongriffin comprises four neighbourhoods at different stages of development and a DART railway station.

The four neighbourhoods which when completed will have a total of 4,220 residential units and 45,464 sqm of non-residential floorspace are: -

- Beau Park to the southeast with 604 residential units comprising 506 low rise housing units and 98 apartments (Block 18).
This neighbourhood was largely complete at the end of 2018 and no further units are under construction in 2019.
- Belltree in the northeast west with 443 low rise residential housing units and 30 apartments
At the end of 2018, 366 units (77%) were complete with the penultimate phase of 45 units, 30 houses and 15 apartments under construction in 2019.
A further 62 units, 47 houses and 15 apartments have been approved but have not proceeded to the construction stage.
- Marrsfield to the north of Marrsfield Avenue with 553 residential apartments.
The apartments are 33% complete with the remaining 67% under construction with the remaining 374 units are due for completion in 2020.
- Town Centre including Main Street and Station Street. This neighbourhood will comprise 2,590 residential units and 44,533 sqm of commercial area.

The transport hub of the Town Centre is Station Square. This area has a multi-storey car park with 777 car parking spaces, an underground Park and Ride with 420 spaces, a terminus for Dublin Bus Route 15 and a GoCar station.

Construction of the overall development commenced about 2002 and is expected to be complete about 2025.

Public Transport

The Dart service through Clongriffin Station serves all stations from Malahide through the City Centre to Bray and Greystones. The existing service operates at a 20-minute frequency in both directions. The DART Expansion Project provides for an extension of the DART service to Balbriggan and an Increased frequency of 15 minutes in each direction.

The DART Expansion Project also provides for major alterations to the suburban rail network in the area of the City Centre

The Commuter Rail service through Clongriffin Station serves all stations from Dundalk through the City Centre to Gorey. The existing service operates at 2 – 3 services per hour in both directions.

Dublin Bus stage route 15 links Clongriffin via Clare Hall and Malahide Road through the City Centre to Ballycullen Road. This existing service operates at a frequency of 10 minutes in both directions.

The Bus Connects project currently being implemented by the National Transport Authority provides for the replacement of the existing Dublin Bus Route 15 with a high frequency radial service linking Clongriffin DART Station to the City Centre at a service frequency of 4 – 8 minutes and a series of Orbital Routes linking Clongriffin to the west and north.

The project also provides for an enhanced bus Infrastructure on the radial routes.

Car sharing at Clongriffin is facilitated by the on-site GoCar service. The service operates from designated GoCar parking spaces. At present, 7 No. vehicles are provided, generally 5 No. standard cars and 2 No. van. As demand increases, it is expected that the provision of car sharing vehicles at Clongriffin will be increased to 13 vehicles.

The existing Park and Ride facility with 420 car parking spaces in the multi-storey car park is open from 05h30 to 21h30. The car park is available to travellers half an hour before the DART starts in the morning.

Planning Applications

The proposed development comprises 15 blocks in the Town Centre neighbourhood with 1,950 residential units, 22,728 sqm of non-residential spaces and 1,358 car parking spaces.

The application is divided into three applications, Strategic Housing Development 1 (SHD1), Strategic Housing Development 2 (SHD2) and Dublin City Council (DCC).

Pre-Planning Discussions

Pre-planning discussions were held with Dublin City Council, Planning Department during preparation of the applications. The major item to emerge from these discussions was a reduced parking standard of 0.75 space per apartment arising from the low level of car ownership at Clongriffin and the high provision of public transport, both existing and future.

Car Parking for Town Centre

Based on the agreed car parking standard of 0.75 space per residential unit the Dublin City Development Plan, the total car parking required for the three subject applications is 1,604 spaces, being 1,466 spaces for residential and a maximum of 138 spaces for commercial.

Car Parking Provided in Town Centre

A total of 2,555 spaces will be provided at Clongriffin including 1,466 reserved spaces for residents, 623 shared spaces for visitors, staff, customers and 420 spaces for Park & Ride. The remaining 46 are pre-assigned for residents.

Operation and Management of Car Parking

Some 58% of the car parking spaces at Clongriffin will be allocated to and reserved for residents. The remaining 42% will operate on a shared basis serving residents, visitors, staff, customers and rail passengers.

Access to residents parking will be through lifting barriers operated by fob pre-issued by the Management Company.

The on-street shared spaces will be controlled on a *'Pay and Display'* basis. The time of operation will vary from location to location depending on demand, but the core operational hours are expected to be 07h00 – 19h00 Monday – Friday. Tickets will be available from parking meters on payment of the appropriate fee.

Residents may have the option of applying for a Dublin City Council Residents Parking Permit should this be deemed necessary.

In order to ensure parking for visitors, staff and customers, the number of Residents Parking Permits to be issued by the parking operators will be limited.

The Park and Ride spaces will be controlled by the requirement to have a valid rail ticket for exit.

Servicing

The completed development will include a number of commercial units which will receive regular deliveries.

To accommodate these deliveries, it is proposed to provide a network of nine loading bays on the streets close to these units.

Each loading bay would occupy 3 x car parking spaces and would be signed for dual usage 00h00 – 00h00 Monday – Sunday. The operational hours for loading would be 08h00 – 18h00 Monday – Friday.

Outside these hours between 18h00 and 08h00, the loading bays could be used for car parking by residents with Residents Parking Permits, commercial, visitors, etc. thereby adding an additional 27 spaces to the evening parking stock.

Pay and Display tickets would not be valid at the loading bays in Clongriffin.

Public Cycle Parking

The current provision of public cycle parking at Station Square is 112 stands to be increased to 140 stands as the frequency of train services increases after DART Expansion.

Roads and Junction Assessment

The results of the road and junction assessments indicate that all of the junctions assessed are operating satisfactorily in 2018 and will continue to do so in 2025.

Public Transport Assessment

The results of the public transport assessment indicate that capacity, both rail and bus, is operating satisfactorily in 2019 and that service capacity will considerably exceed the forecast demand at Clongriffin in 2025.

Mitigation Measures

The mitigation measures at Clongriffin include a Travel Plan/Mobility Management Plan, a Construction Management Plan, a Parking Strategy, a Servicing Strategy together with regular and ongoing increases in the public transport capacity, both road and rail.

Transportation Impact

The overall impact of the proposed development on the transportation infrastructure surrounding Clongriffin will be neutral.

APPENDICES

A. Drawings

B. Traffic Survey, Tracsis May 2018

C. Rail Travel Census 2017

D. Junction Modelling

UK and Ireland Office Locations

