

10.0 **Material Assets - Traffic**

10.1 **Introduction**

This Chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the local transport environment as well as identifying proposed mitigation measures to minimise any potential impacts. The purpose of this Chapter is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of any transport impact generated as a result of the proposed residential development. The principal objective is to quantify the potential level of impact across the local road network and subsequently ascertain both the existing and future operational performance of the local road network.

A detailed description of the proposed development can be found in Chapter 3 of this EIAR.

10.2 **Study Methodology**

Our approach to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include:

- 'Traffic and Transport Assessment Guidelines' (May 2014) National Road Authority;
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- 'Guidelines for Traffic Impact Assessments' The Institution of Highways and Transportation;
- 'National Cycle Manual' National Transport Authority;
- Offaly County Development Plan 2014-2020;
- Offaly County Development Plan 2021-2027: Draft Stage and the
- Tullamore Town & Environs Development Plan 2010-2016 (extended to 2020).

Our methodology incorporated a number of key inter-related stages, including:

- **Site Audit:** A site audit was undertaken to quantify existing road network issues and identify local infrastructure characteristics, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed during this stage of the assessment.
- **Traffic Counts:** Junction traffic counts in addition to vehicle queue length surveys were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed residential development.
- **Trip Generation:** A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed residential development.
- **Trip Distribution:** Based upon both the existing and future network characteristics, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.

- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2023, 2028 and 2038 development scenarios.

10.3 Receiving Environment

10.3.1 Location

The subject site is located approximately 2.2km south east of Tullamore Town Centre and is situated on the Clonminch Road in the Gayfield area of Tullamore. The general location of the subject site in relation to the surrounding road network is illustrated in **Figure 10.1** below whilst **Figure 10.2** indicatively shows the extent of the subject site boundary and neighbouring lands. The northern boundary of the subject site is formed by the recently approved Part 8 residential development lands, the Clonminch Wood residential settlement and greenfield lands. The subject site is bounded to the south and east predominantly by greenfield lands both of which are zoned in the Tullamore Town and Environs Development Plan 2010-2016 (extended to 2020). The western boundary is formed by the R443 Clonminch Road corridor.



Figure 10.1 Site Location relative to the Local Road Network



Figure 10.2 Indicative Site Boundary

10.3.2 Existing Transportation Infrastructure

10.3.2.1 Road Network

The R443 operates in a north-south direction along the western boundary of the subject site. Travelling in a northerly direction from the proposed site access provides access to Tullamore Town Centre located approximately 2.2km away. Travelling in a southerly direction along the R443 leads to the N52 national road corridor via the N52 / R443 / N80 roundabout junction.

The N52 forms an outer ring around Tullamore and provides connections with the N80 (Portlaoise – 31km), R421 (Roscrea – 44km), R420 (Portarlinton / Monasterevin / strategic M7 network – 26km / 38km / 44km), and L2025. The N52 continues north of Tullamore providing access to the strategic M6 corridor which subsequently provides access to Dublin to the east (88km – via M4) and Athlone (53km) and Galway (138km) to the west.

The speed regulations along the R443 Clonminch Road corridor is 50kph and begins immediately north of the N52 / Clonminch Road junction.

10.3.2.2 Existing Pedestrian and Cycle Facilities

In the immediate vicinity of the subject site, pedestrians benefit from existing footways on both sides of the R443 Clonminch Road corridor commencing approximately 120m south of the proposed site access location and continue to Tullamore Town Centre to the north. Currently on the Clonminch Road corridor, cyclists must share the road with vehicular traffic. Nevertheless, the Clonminch Road corridor between the subject site and Tullamore Town Centre benefits from sufficient width to accommodate

cycle lanes through the revision of road markings.

Street lighting is provided for the most part on both sides of the R443 road corridor between the subject site and Tullamore Town Centre.

Figure 10.4 below presents the walking and cycling catchments from the subject Clonminch Road site. It illustrates that the site is well located being within an acceptable cycling catchment (15minutes) of the employment opportunities in Central business Park, Spollanstown Industrial Estate, Cloncollig Industrial Estate and Riverview Business Park. Tullamore Town Centre is located within a 15 minute cycle and 30 minute walk from the subject site.



Figure 10.3 Existing Pedestrian Facilities on R443 between the Subject Site and Tullamore Town

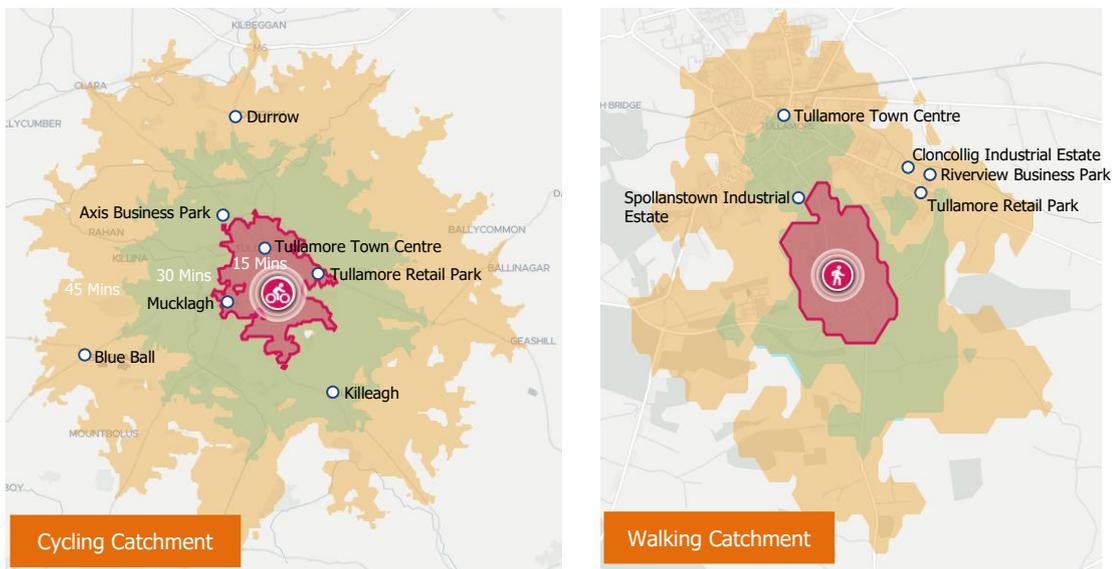


Figure 10.4 Walking & Cycling Catchments

10.3.2.3 Existing Public Transport Accessibility

Bus

Currently the nearest bus interchange to the subject development site is located at the entrance of Clonminch Wood which is approximately 300m north of the proposed site access. This interchange is served by Buggy Coaches which provides a local service within Tullamore.

Bus Eireann services currently connect Tullamore to and from Dublin and are accessible at interchanges at O'Carroll Street (2.6km) and at Tullamore Retail Park (2.5km).

Slieve Bloom Coach Tours also provides services between Tullamore Town and destinations including Mullingar, Mountmellick and Portlaoise via Portarlington. These services are accessible at a number of locations, the nearest of which to the subject site is Tullamore Post Office located approximately 2.1km away.

Bus operator Kearns Transport also operates services between Tullamore and Dublin / Birr. These services are accessible at Tullamore Hospital and the Eye Cinema for services to Birr, William St and Tullamore Hospital for services to Dublin City Centre.

A summary of the aforementioned bus services is presented in **Table 10.1** below and illustrated in **Figure 10.5**.

Bus Operator	Route No.	Route	Weekdays		Sat		Sun & Bank Hol.	
			To City Centre	From City Centre	To City Centre	From City Centre	To City Centre	From City Centre
Bus Éireann	120	Tullamore - Dublin	30	30	-	-	1	1
	121	Tullamore - Dublin	-	-	2	2	-	-
Slieve Bloom Coach	837	Tullamore - Mullingar	20	20	3	3	-	-
	829	Tullamore - Portlaoise	15	15	-	-	-	-
	830	Tullamore - Mountmellick	35	35	30	30	-	-
K Buggy Coaches Ltd	835	Tullamore Town	15	15	-	-	-	-
Kearns Transport	843	Tullamore - Birr	5	10	-	-	-	-
	845	Tullamore - Dublin	35	35	-	-	-	-
	847	Tullamore - Dublin	10	10	10	10	4*	3

*Additional bus from Tullamore Hospital operates during college term only and does not operate on the Sunday of a Bank Holiday weekend - operates Bank Holiday Monday instead.

Table 10.1 Bus Service Frequency from Tullamore Town (No. of services per day)



Figure 10.5 Existing Bus Service Accessibility

Rail

The subject development site is located approximately 2.2km south of Tullamore train station. Tullamore has an established rail infrastructure that provides linkages to Dublin City in the east, and Galway City / Mayo to the west including other intermediate destinations. **Table 10.2** below presents a summary of rail services available at Tullamore Train Station.

Routes	Monday – Friday	Saturday	Sunday
Tullamore to Dublin	15	13	10
Dublin to Tullamore	12	10	9
Tullamore to Galway	8	7	6
Galway to Tullamore	9	8	6
Tullamore to Athlone	12	10	9
Athlone to Tullamore	15	13	10
Tullamore to Kildare	5	3	5
Kildare to Tullamore	3	1	5
Tullamore to Newbridge	5	3	1
Newbridge to Tullamore	3	2	3
Tullamore to Naas	3	1	0
Naas to Tullamore	1	1	0
Tullamore to Athenry	7	7	6
Athenry to Tullamore	9	8	6
Tullamore to Portarlinton	14	12	10
Portarlinton to Tullamore	11	8	8
Tullamore to Clara	7	7	8
Clara to Tullamore	12	10	8

Table 10.2 Rail Services - No. of services per day

10.3.3 Proposed Transport Infrastructure

10.3.3.1 Road Infrastructure Proposals

TII Road Scheme

The TII expenditure programme provides a list of TII's road scheme projects and network improvements. The proposed upgrade to the link road between Tullamore and Kilbeggan is included and the project status is currently specified as being at pre-appraisal stage. The scheme is described on the TII road scheme activity tracker as follows;

"The project appraisal Plan process has been completed. The scheme which comprises 4.6km of standard single carriageway will provide a link from the recently constructed N52 Tullamore Bypass to the recently constructed N6 Kinnegad to Kilbeggan scheme. A route has been selected and preliminary design, EIS and CPO have been completed".

Local Roads Objectives

A total of 17 no. enhancements (**Figure 10.6**) to the local road network are proposed within the development plan which will;

- "Ensure the local area strategies can move forward.*
- Allow alternative local routes around and through the urban fabric.*
- Enable public transport to penetrate the built up area and therefore bring 'bus routes nearer to the people".*

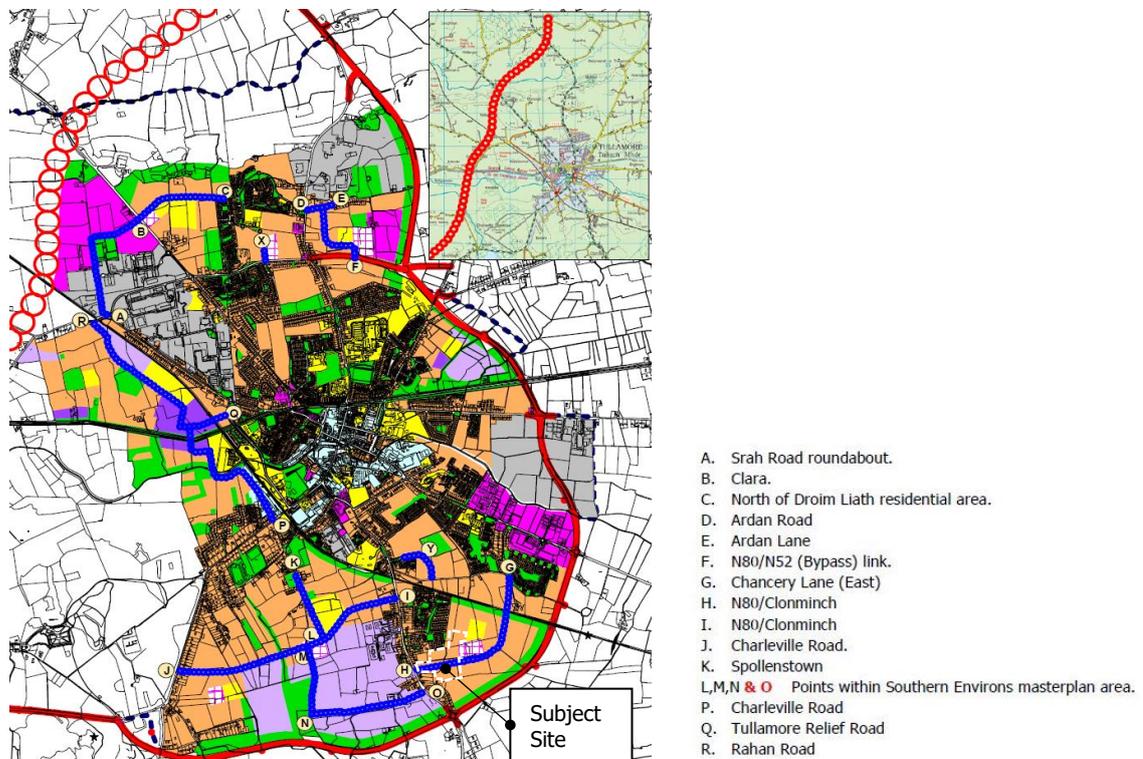


Figure 10.6 Local Roads Objectives

10.3.4 Local Amenities

As illustrated in **Figure 10.7**, the subject development site is well placed in terms of the availability of and access to local amenities. There are 7 number primary schools and 3 no. post primary schools within 3km of the subject site. The subject site benefits from good access to local retail and leisure facilities including Tullamore Retail Park and Aura Tullamore Leisure Centre both located approximately 2.7km to the east along the N52. Furthermore, the subject development site is well placed to benefit from local employment opportunities at Central Business Park located just 450m north of the proposed site access, Spollonstown Industrial estate to the north and Riverview Business Park / Cloncollig Industrial Estate located to the east via the N52.

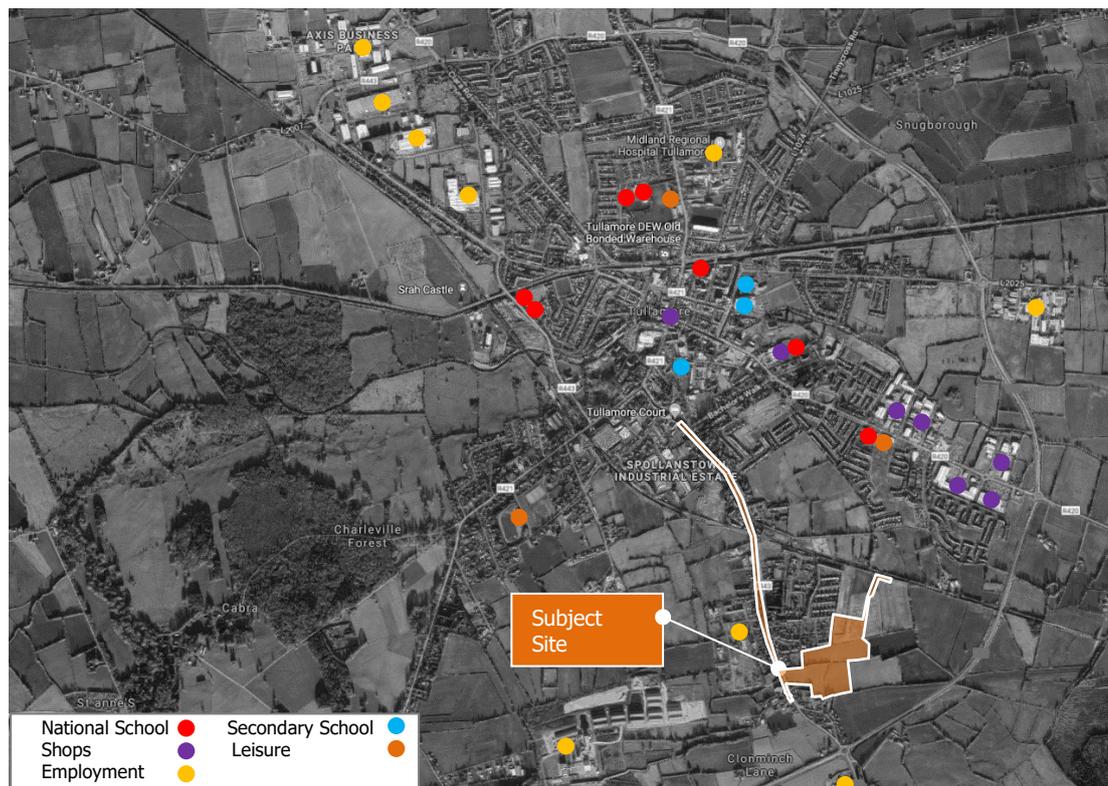


Figure 10.7 Local Amenities

10.3.5 Road Safety Review

With the objective of ascertaining the road safety record of the immediate routes leading to and from the subject site, the collision statistics as detailed on the Road Safety Authority's (RSA) website (www.rsa.ie) have been examined. The RSA website includes basic information relating to reported collisions over the most recent twelve-year period, from 2005 to 2016 inclusive. The RSA database records details where collision events had been officially recorded such as the when the Garda were present to formally record details of the incident. In reference to **Figure 10.8** and **Table 10.3** below, 1 no. serious incident and 3 no. minor incidents were recorded within the vicinity of the subject site.

Incident number 1 whose circumstances were recorded as 'Other' occurred at the N52 / R443 roundabout junction and involved a car, with 3 no. reported serious injuries arising from this incident. Incident number 2 occurred on the R443 Clonminch Road approximately 300m south of the proposed development site access whose circumstances were recorded as 'Single Vehicle Only' and involved a car, with one number reported minor injury arising from this incident. Incident number's 3 and 4 both occurred in the vicinity of a cul-de-sac access / R443 Road junction located approximately 110m south of the proposed development site access. Incident number three's circumstances were recorded as 'Other' and involved a car, with one number reported minor injury arising from this incident whilst incident number four's circumstances were recorded as 'Angle, both straight' and involved a car, with one number reported minor injury arising from this incident.

The review of the RSA data available reveals that there are no apparent trends in collisions which have occurred in the vicinity of the subject site. The analysis demonstrates that there are currently no road safety issues across in the immediate vicinity of the proposed subject site access.



Figure 10.8 Collision Locations

Ref	Severity	Year	Veh	Circumstances	Day	Time	Speed	Casualty
1	Serious	2010	Car	Other	Sun	1000-1600	50 KPH	3
2	Minor	2009	Car	Single vehicle only	Sun	0700-1000	60 KPH	1
3	Minor	2009	Car	Other	Fri	1000-1600	100 KPH	1
4	Minor	2009	Car	Angle, both straight	Mon	1600-1900	50 KPH	1

Table 10.3 Collision Records (Source www.rsa.ie)

10.3.6 Do-Nothing Scenario

In the absence of the proposed development, the overall operational performance of the existing junctions on the surrounding road network will be affected by the impact caused by committed development and forecast background network traffic growth (should that growth arise).

10.3.6.1 Existing Network Traffic

In order to establish the existing up to date local road networks traffic characteristics and subsequently enable the identification of the potential impact of the proposed residential development, a number of traffic surveys were commissioned and undertaken by an independent specialist survey firm IDASO Ltd in June 2019 including Automatic Traffic Counts (ATC) and Junction Turning Counts (JTC).

JTCs were surveyed over a twelve-hour period between 7:00 AM and 7:00 PM on the 18th of June 2019. ATCs were conducted 24 hours a day over a seven-day period which began on 17th of June 2019 and ended on the 23rd of June 2019. The location of the JTC and the ATC surveys are presented in **Figure 10.9**. The analysis of the survey results established that the local weekday AM and PM peak hours occur between 08:45 to 09:45 and 17:00 – 18:00 respectively.

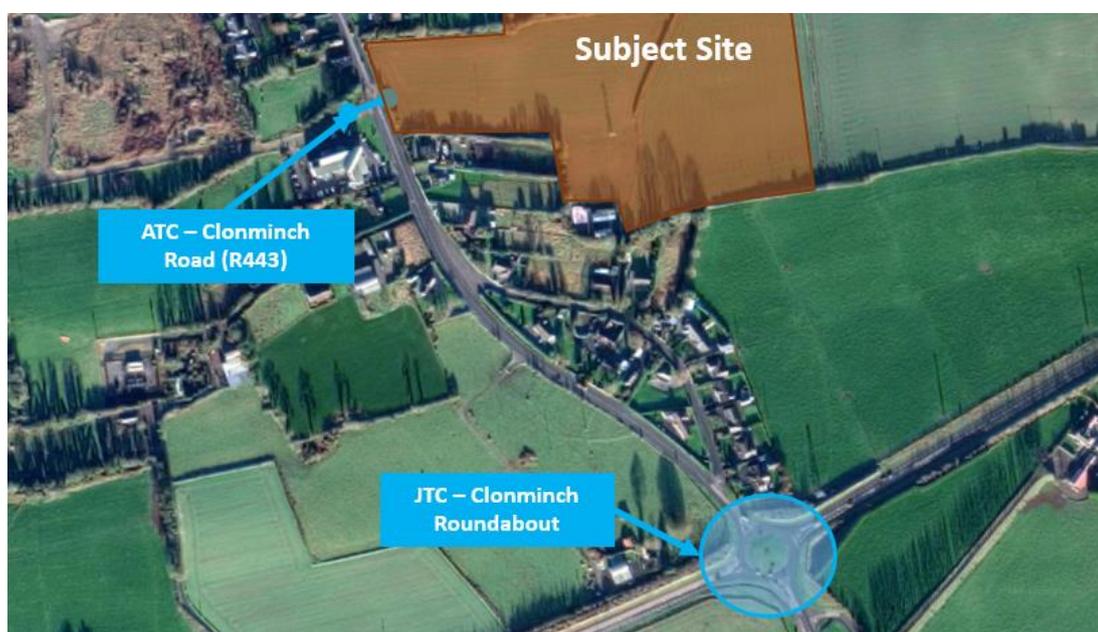


Figure 10.9 Traffic Survey Locations

10.3.6.2 Traffic Growth

The TTA adopts an Opening Design Year of 2023 and accordingly the Future Design Years of 2028 (Opening Year +5 years) and 2038 (Opening Year + 15 years) as per TII guidelines. To ensure a robust analysis of the impact of traffic upon the local road network we have adopted growth rates using the Transport Infrastructure Ireland (TII) traffic projections. Table 6.2 (Unit 5.3 – Travel Demand Projections) within the TII Project Appraisal Guidelines provides Annual Growth Factors for each county within the Republic of Ireland. Applying the annual factors for the adopted Opening Year of 2023 and Future Design Years of 2028 (Opening Year +5 years) and 2038 (Opening Year +15 years), the following growth rates have been adopted:

- 2019-2023 – 4.8%
- 2019-2028 – 11.1%
- 2019-2038 – 16.8%

10.3.6.3 Committed Development

As per TII guidelines, DBFL includes any third party developments that have the potential to generate additional vehicle movements across the local road network above that which has been established by the commissioned traffic surveys.

A third party committed development has been identified and is located in close proximity to the subject Clonminch residential development site. Offaly County Council, in partnership with approved housing body Oaklee, proposes an approved Part 8 planning application to construct a residential development comprising;

- 10 No. 2 Bedroom, Single Storey, Elderly Houses;
- 4 No. 2 Bedroom, Single Storey, Accessible Elderly Houses and
- 5 No. 1 Bedroom, Single Storey, Elderly Houses.

10.3.1.1 Network Analysis (Do-Nothing)

In order to assess the local transport network in the Do Nothing scenario, the existing N52 / N80 / R443 Clonminch Roundabout has been analysed in the following opening and future design years:

- 2023 Opening Year
- 2028 Future Design Year (Opening Year +5 years)
- 2038 Future Design Year (Opening Year +15 years)

The results of the operational assessment of this existing off-site roundabout junction during the weekday morning and evening peaks are summarised in **Tables 10.4 to 10.6** below. The arms were labelled as follows within the ARCADY model:

Arm A: N52 (E)

Arm B: N80

Arm C: N52 (W)

Arm D: R443 Clonminch Road

The 2023 Opening Year ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction will operate with significant reserve capacity in the “Do Nothing” (DN) AM & PM peak hours.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.1	6.05	0.52
	B	N80	1.3	7.02	0.57
	C	N52 (W)	0.7	5.94	0.40
	D	R443	0.3	4.73	0.24
PM Peak Hour	A	N52 (E)	2.1	9.67	0.68
	B	N80	0.8	5.59	0.45
	C	N52 (W)	0.3	4.29	0.25
	D	R443	0.9	6.65	0.48

Table 10.4 2023 Peak Hour ARCADY Analysis

A maximum Ratio of Flow to Capacity (RFC) value of 0.57 and a maximum queue of 1.3 pcu's was recorded during the DN AM peak hour. A RFC value of 0.68 and a maximum queue of 2.1 pcu's was recorded during the DN PM peak hour.

The 2028 Future Design Year ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction will continue to operate with significant reserve capacity in the DN AM & PM peak hours. A maximum RFC value of 0.61 and a maximum queue of 1.5 pcu's was recorded during the DN AM peak hour. A RFC value of 0.73 and a maximum queue of 2.6 pcu's was recorded during the DN PM peak hour.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.2	6.54	0.55
	B	N80	1.5	7.82	0.61
	C	N52 (W)	0.8	6.46	0.43
	D	R443	0.3	4.95	0.26
PM Peak Hour	A	N52 (E)	2.6	11.53	0.73
	B	N80	0.9	6.02	0.48
	C	N52 (W)	0.4	4.49	0.27
	D	R443	1.1	7.29	0.52

Table 10.5 2028 Peak Hour ARCADY Analysis

The 2038 Future Design Year ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction will continue to operate with significant reserve capacity in the DN AM & PM peak hours.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.5	7.33	0.60
	B	N80	1.9	9.22	0.66
	C	N52 (W)	0.9	7.27	0.48
	D	R443	0.4	5.27	0.28
PM Peak Hour	A	N52 (E)	3.7	15.26	0.79
	B	N80	1.1	6.68	0.52
	C	N52 (W)	0.4	4.75	0.30
	D	R443	1.3	8.35	0.57

Table 10.6 2038 Peak Hour ARCADY Analysis

A maximum RFC value of 0.66 and a maximum queue of 1.9 pcu's was recorded during the DN AM peak hour. A RFC value of 0.79 and a maximum queue of 3.7 pcu's was recorded during the DN PM peak hour.

10.4 Characteristics of the Proposed Development

The subject proposals seek permission for the provision of 349 no. residential units comprising 153 no. apartment units, and 196 no. houses, a 100 child neighbourhood crèche facility and two neighbourhood centres (GFA of 3,007 sq.m). A detailed description of the proposed development can be found in Chapter 3 of this EIAR.

10.4.1 Site Access Strategy

10.4.1.1 Vehicular Access

The subject development site is proposed to be accessed via a new signal controlled junction on the R443 Clonminch Road corridor to be implemented as part of the subject development. Initially, the junction will operate as a three arm signal controlled junction but will reserve the capacity for a fourth arm to be implemented at a future date to facilitate the local authority's road objective for a future new road link (O-N-M **Figure 10.6**) should the preferred future route be positioned at this location. Variation No. 1 of the Tullamore Town & Environs Development Plan 2010-2016 includes for the future distributor road that passes through the subject lands to continue westwards via a new 4-arm junction on Clonminch Road in the vicinity of the subject site access. Accordingly, the proposed site access junction will be designed to accommodate this future 4th junction arm with carriageway space reserved on the northern approach to the junction to accommodate a dedicated right turn facility into this future distributor road objective.

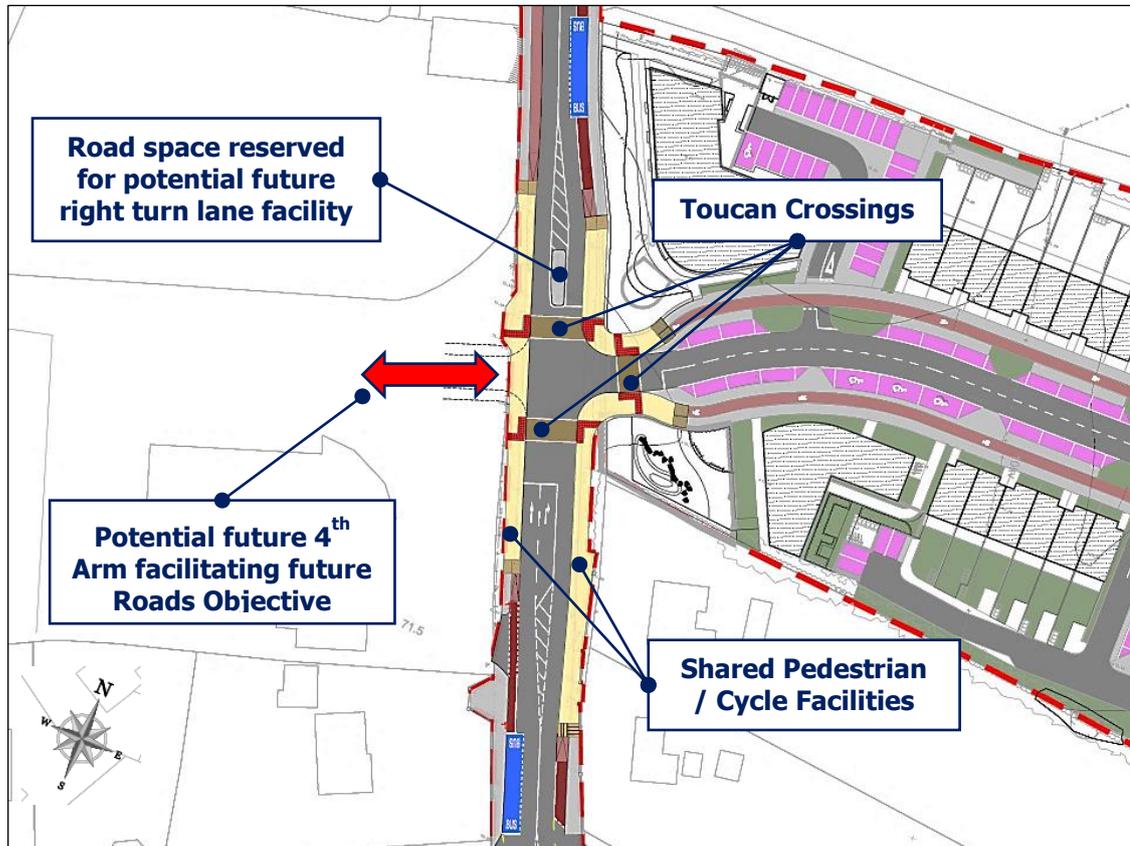


Figure 10.10 Proposed Site Access Junction

10.4.1.2 Pedestrian and Cyclist Access

Pedestrians and cyclists will access the subject site via the aforementioned vehicle access junction. Shared cycle / pedestrian facilities are proposed on all approaches to this new junction thereby ensuring segregation between vehicles and pedestrians / cyclists. Toucan crossings are proposed on all arms of the signal controlled junction.

In addition, future potential cycle / pedestrian connections have been facilitated with the adjoining Clonminch Wood residential development with links constructed up to the subject site boundary allowing for future onward connections to both Clonminch Wood and future development within the Eastern Node.

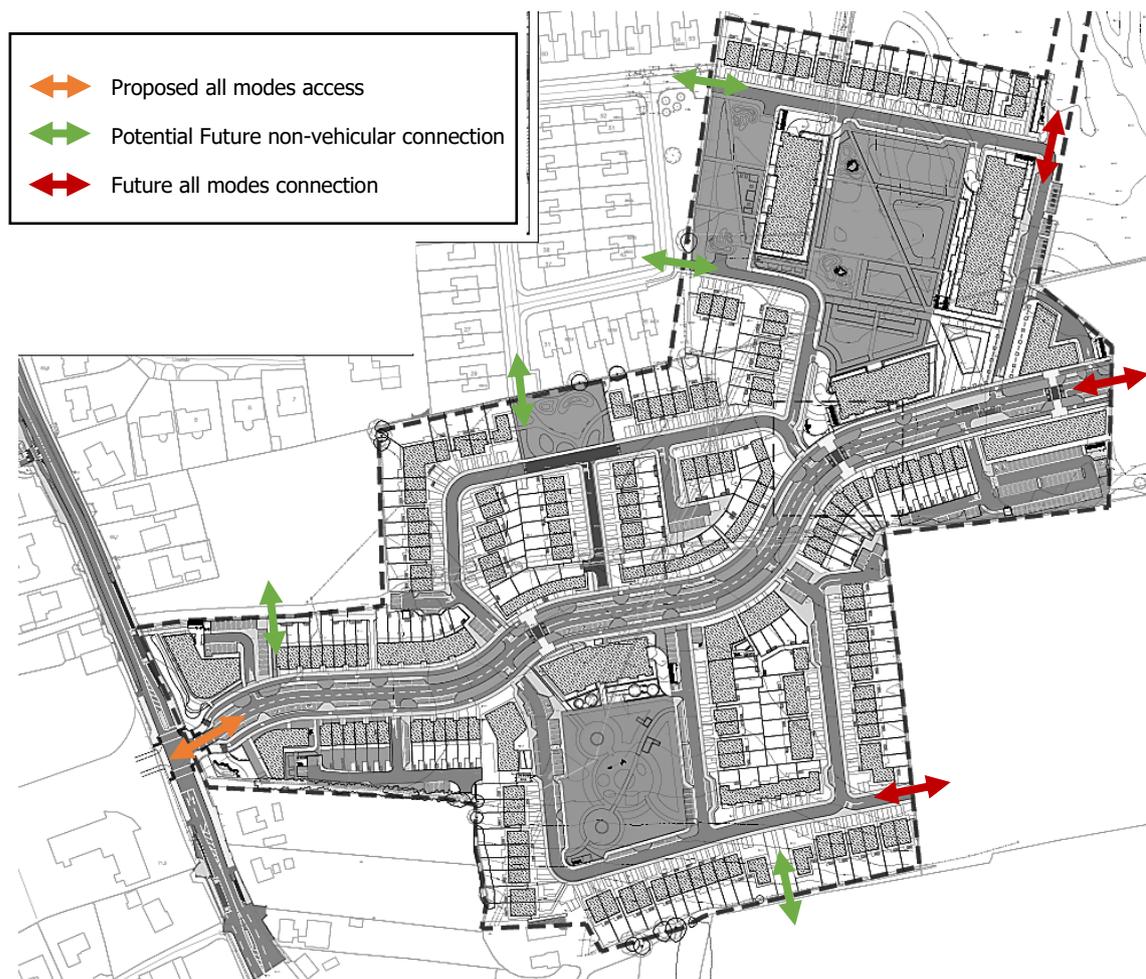


Figure 10.11 Pedestrian / Cycle Site Access and Permeability

10.4.2 Proposed Road Infrastructure

10.4.2.1 Roads Layout

The proposed main site access road introduced above has been designed to perform the function of a 'Link Street'. Accordingly, should the local authority's road objective for a future new road link (H-G in Figure 10.6) between the R443 Clonminch Road corridor to the west and Chancery Close to the east be

implemented at a future date, the proposed access road is expected to have adequate capacity to perform the function of an inner relief road should the need arise.

Nevertheless, it is predicted that this infrastructure will not be required in the short / medium term due to the N52 relief road currently performing a similar function.

The proposed residential scheme is consistent with both the principles and guidance outlined within the Design Manual for Urban Roads and Streets (DMURS) 2013 (updated 2019). The scheme proposals are the outcome of an integrated design approach that seeks to implement a sustainable community connected by well-designed streets which deliver safe, convenient and attractive networks.

The proposed residential scheme incorporates a hierarchy of streets as noted below:

- A 6.5m wide **Link** street between the proposed new signal controlled site access junction and the eastern extents of the subject site. Dedicated cycle tracks / lanes and footways are proposed on both sides of this **Link** street.
- 5.5m '**Primary Local Access**' streets,
- 5.5m '**Secondary Local Access**' streets and
- Raised '**Homezone**' streets.

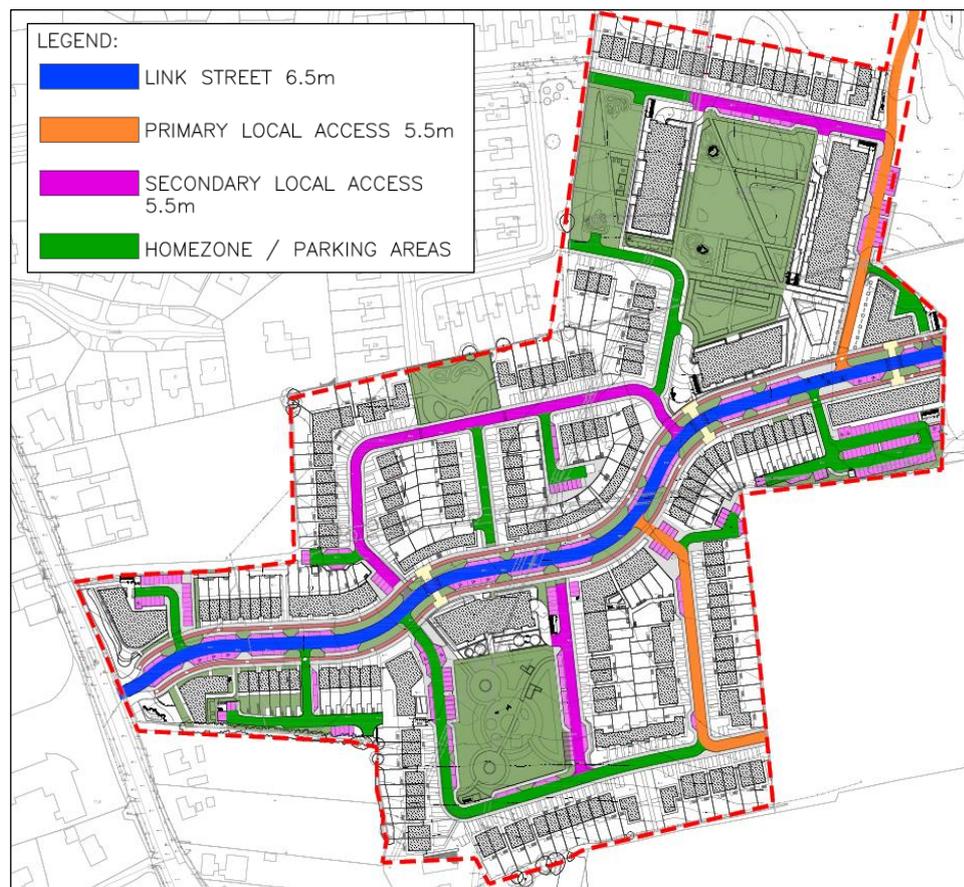


Figure 10.12 Hierarchy of Streets

The implementation of self-regulating streets actively manages movement by offering modal and route choices in a low speed / high quality residential environment. Specific attributes of the schemes design which contribute to achieving this DMURS objective include;

- a) Footpaths (2.0m wide) are provided throughout the scheme and with connections / tie-in to existing external pedestrian networks and constructed up to the subject site boundary facilitation potential future permeability with adjoining residential settlements.
- b) Appropriate clear unobstructed visibility splays, as per DMURS requirements; are provided / safeguarded at all internal nodes.
- c) With the objective of encouraging low vehicle speeds and maximising pedestrian safety and convenience, corner radii at **Local** street nodes have been specified generally as 3.0-4.5m as per DMURS guidance.
- d) Along lightly trafficked internal **Local** streets, cyclists will share the carriageway with other street users as per the NCM guidance for such situations. This **Local** street network connects to the proposed **Link** road which incorporates dedicated cycle lanes / tracks on both sides of the corridor.

10.4.2.2 Bus Infrastructure

The proposals include for the provision of 2 no. new bus stops in the vicinity of the proposed new site access junction as presented in **Figure 10.13** below. The provision of bus interchanges adjacent to the subject site maximises accessibility to bus services which will help encourage future residents to travel to work / school / college by bus as opposed to private car.



Figure 10.13 Proposed New Bus Interchange Locations

In addition, the subject Link Street has been designed to accommodate potential future bus services should the existing bus routes be extended to serve the future demand at the subject development and potential future development on zoned lands within the Eastern Node outside of the subject site boundary. Accordingly, bus stops have been incorporated into the subject scheme proposals in each direction along the proposed Link Street located in the vicinity of the Neighbourhood Centres.

10.4.2.3 Proposed Cycle Infrastructure on Clonminch Road

The proposals include for the provision new dedicated cycle infrastructure along Clonminch Road. The Clonminch Road enhancements commence approximately 100m south of the proposed site access junction and continue along Clonminch Road to tie into the existing road carriageway at a location approximately 80m northwest of the Bachelor's Walk junction. The scheme aims to provide a cycle route between the subject site location and Tullamore Town Centre along Clonminch Road.

The cycle facilities comprise predominantly on-road cycle lanes however, on approach to the town centre where the available carriageway width narrows, a shared cycle / pedestrian facility is proposed in the northbound direction over a distance of approximately 190m. For a short 90m section south of the Bachelor's Walk junction, the narrow carriageway width at this section results in southbound cyclist sharing the road with vehicular traffic.

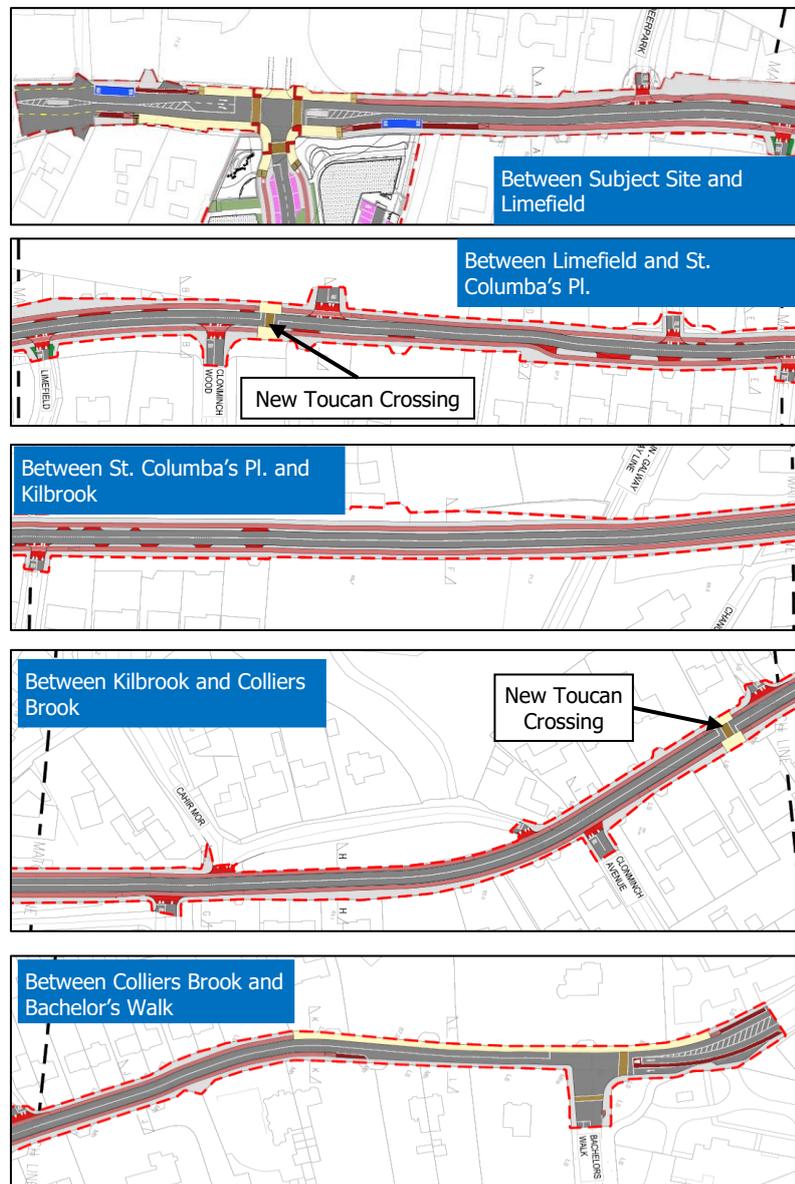


Figure 10.14 Proposed Clonminch Road Cycle Scheme

In order to facilitate the proposed cycle infrastructure proposals, a number of right turn pockets have been removed and the road space reassigned to cycle lanes. Right turn pockets have been removed at Kilbrook, Cahir Mhór, Clonminch Ave and Colliers Brook. It is predicted that the quantum of vehicles availing of these existing right turn facilities is not sufficient to result in a material impact on the capacity of the Clonminch Road corridor once removed. The inclusion of dedicated cycle infrastructure along Clonminch Road will make travel by bicycle a safer option and subsequently increase the likelihood of residents in the local vicinity to consider travel by bicycle as a viable mode of travel and choose cycling over travel by car thereby reducing the number of motorised vehicles on the road network

The guidelines set out in the NTA documents *“Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors”* and *“National Cycle Manual”* have been incorporated into the subject scheme design. Cycle tracks are generally 2m in width (reducing to 1.75m and over a short section 1.5m where available carriageway width is restricted) and segregated vertically and / or horizontally from the vehicular carriageway. Vehicular traffic lanes have been designed to a standard width of 3m in each direction as per the guidelines set out in the Design Manual for Urban Roads and Streets for *“Arterial and Link streets”*.

10.4.3 Parking

10.4.3.1 **General Car Parking**

In order to determine the appropriate quantum of vehicle parking for the proposed residential development, reference was made to the following:-

- Table 8.2 of the Offaly County Development Plan (and Table 14.2 of the Tullamore Town and Environs Development Plan 2010-2016 (extended until 2020); and
- Chapter 4 of Sustainable Urban Housing: Design Standards For New Apartments Guidelines For Planning Authorities, as published by the Department of Housing, Planning and Local Government (DHPLG), March 2018.

Within the DHPLG standards, the location of the subject site can be described as ‘Peripheral and / or Less Accessible Urban Locations’. The DHPLG document states that:

‘As a benchmark guideline for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.’

Table 10.7 below presents both the development plan and DHPLG car parking requirements in addition to the proposed car parking provision for each unit type. The proposed development layout design provides a total of 695 no. car parking spaces comprising 392 no. car parking spaces for the house units (278 in-curtilage spaces, 75 on-street and 19 off-street / courtyard parking), 194 no. car parking spaces

for the apartment units (36 on-street, 19 off-street/courtyards and 139 at basement level, 21 no. crèche car parking spaces (inclusive of 8 no. set down spaces), 5 no. spaces assigned to the shop located within Block F, 68 no. spaces at the proposed neighbourhood centres, 6 no visitor spaces and 9 no. spaces at Clonminch Square.

The proposed residential car parking provision equates to 1.27 no. spaces per apartment unit and 2 no. spaces per house unit. Accordingly, the car parking provision proposed for the house / semi-detached / terraced units comply with the local development management standards. The proposed 194 no. apartment car parking spaces is lower than the local development management standards (306 no.), however this provision complies with the DHPLG guidelines which requires between 191-204 no. apartment car parking spaces for new apartment developments located at sites classified as “Peripheral and/or Less Accessible Urban Locations”.

The proposals included a total of 21 no. car parking spaces for the neighbourhood creche facility comprising 8 no. drop off spaces and 13 no. staff spaces. Whilst this provision accounts for approximately 47% of the development plan requirement, it is expected that a significant proportion of children attending the neighbourhood will be residents within the subject residential units and therefore walking / cycling trips will form the majority of trips by children. The provision of 13 no. staff car parking spaces is slightly lower than the development plan requirement of 20 no. spaces however, the quantum is predicted to be appropriate as the introduction of both the internal and external cycle infrastructure in addition to the potential for car-pooling amongst staff, will reduce the demand for staff car parking spaces.

Description	OCC Requirement	DHPLG Requirement	Proposed
Apartments	306	191-204	194
Houses	392	As OCC	392
Neighbourhood Centres	66	As OCC	68
Crèche	45	As OCC	21
Retail (Block F)	3	As OCC	5
Visitor / Clonminch Sq.	-	-	15
Total	812	652-665 *	695

* Includes OCC's Requirements for Houses and Non-Residential Units

Table 10.7 Proposed Car Parking Provision

10.4.3.2 Mobility Impaired Car Parking

Whilst the OCC development plan does not specify a specific quantum of mobility impaired car parking provision, as introduced previously the mobility impaired parking standard recommended was referenced from Section 1.4.4 of “Buildings for Everyone” which states that disabled parking should be provided at “5% of the total car parking capacity”. The subject development proposes a total of 14 no. mobility impaired car parking spaces for the apartment units and non-residential units.

10.4.3.3 Electric Vehicle Parking

Section 8.16.4 of the County Development Plan requires that developments “shall be constructed to be capable of accommodating future charging points as required - residential space facilities to be coded/metered, slow charging 220-240V, 13A single phase”. It is assumed that housing units with in-curtilage parking spaces will utilise their own power supply therefore the provision of electric charge points has been applied to apartment units and those houses which do not benefit from in curtilage parking only in addition to non-residential uses. The proposals include EV charger facilities at a rate of 10% of these residential car parking spaces and non-residential car parking spaces equating to a total 41 no. electric vehicle spaces comprising 31 for the apartments and houses without in curtilage parking facilities and 10 no. for the non-residential units as indicatively shown in **Figure 10.15** below. Also presented in **Figure 10.15** below are indicative locations for domestic electric vehicle charge points at 23 no. housing units. All car parking spaces will be ducted for future EV charge points.

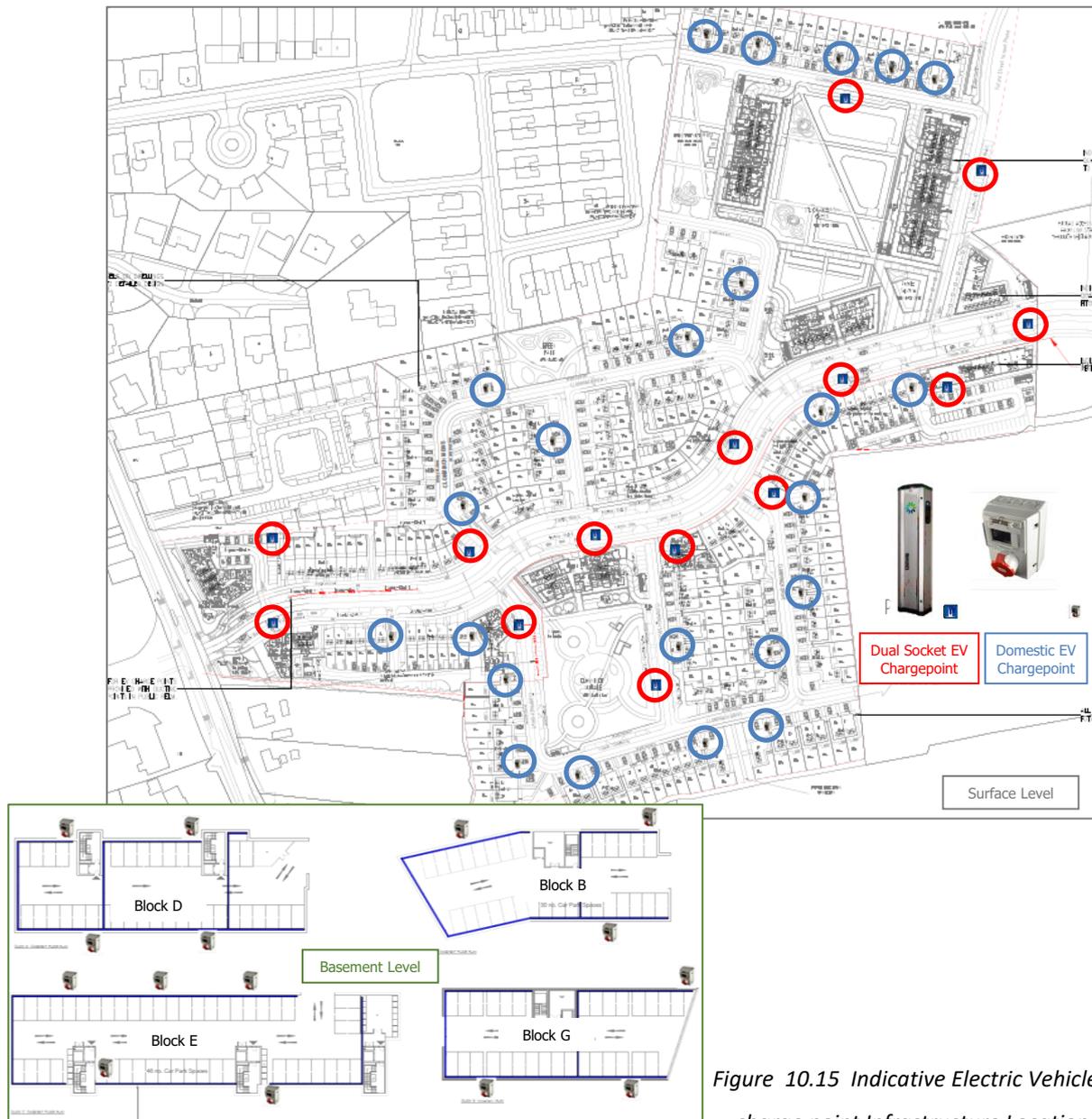


Figure 10.15 Indicative Electric Vehicle charge point Infrastructure Locations

10.4.3.4 Cycle Parking

Reference has been made to Section 8.16.3 of the Offaly County Development Plan and Section 4.17 of the Department of Housing, planning and Local Government (DHPLG) “Sustainable Urban Housing: Design Standards for New Apartments”. The subject development is required to provide cycle parking at a rate of;

- OCC Development Plan – 1 cycle parking space per 3 car parking spaces
- DHPLG guidelines – 1 long term space per bedroom plus 1 short term space per 2 apartments.

Table 10.8 below presents both the development plan and DHPLG cycle parking requirements in addition to the proposed cycle parking provision for each unit type being provided as part of the subject scheme. A total of 315 no. bicycle parking spaces are proposed as part of the development scheme comprising 236 no. apartment cycle parking spaces and 79 no. non-residential cycle parking spaces.

The proposed overall cycle parking provision of 315 no. spaces is 194 spaces (or 160%) higher than the development plan minimum requirement. With reference to the DHPLG apartment guidelines, the development is required to provide 355 no. cycle parking spaces for the apartment units comprising 278 no. long stay spaces and 77 no. short stay apartment cycle parking spaces. The subject site’s provision of 236 no. apartment cycle parking spaces is slightly lower when compared to the apartment guidelines recommendations however represents a good compromise between the development plan and DHPLG requirements leaning towards the DHPLG requirement.

Land Use	OCC Requirement	DHPLG Guidelines		Proposed Development	
		Long Stay	Short Stay	Long Stay	Short Stay
Apartments	92	278	77	161	75
Crèche	14	-	-		14
N.C.	15	-	-		64
Shop (Block F)	1	-	-		1
Total	121	355 (385) *		315	

Table 10.8 Proposed Cycle Parking Provision

10.5 Potential Impacts of the Proposed Development

10.5.1 Construction Phase

The subject development is proposed to be rolled out over a number of years with the initial 100 no. residential houses assumed, for the purposes of this assessment, to be complete by the end of the adopted 2023 Opening Year. The remaining residential and non-residential units are predicted to be complete and occupied sometime before the adopted 2028 Future Design Year.

During the general excavation of the foundations there will be additional HGV movements from the site. All suitable material will be used for construction and fill activities where possible and appropriate.

All spoil material will be removed to a registered landfill site which will be agreed in full with the Local Authority.

In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be outside of peak hours. Such trips would generally be spread out over the full working day and will not be higher than the peak hour predicted volumes for the operational stage.

Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff. On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 18:00. It should be noted that a large proportion of construction workers would arrive in shared transport.
- Excavation plant and dumper trucks involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 18:00. It should be noted that a large proportion of construction workers would arrive in shared transport. Deliveries would arrive at a dispersed rate during the course of the day. It is estimated that peak delivery rates are not expected to exceed 5 vehicles per hour during the busiest period of construction works.

10.5.2 Operational Phase

In order to analyse and assess the predicted traffic generation from the proposed residential development upon the local road network, a traffic model incorporating these local junctions was created by DBFL.

10.5.2.1 **Vehicle Trip Generation**

To estimate the potential level of vehicle trips that could be generated by the subject residential development reference has been made to the TRICS database. TRICS provides trip rate information for a variety of different land uses and development types, which can be applied to the subject development. **Table 10.9** presents the predicted trip generation and the estimated traffic flows arriving and departing the proposed development during the morning and evening peak hour periods.

Based on these trip rates, potential peak hour vehicle traffic flow has been calculated based on the total development quantities. The TTA assumes that 100 houses will be built before the end of the 2023 Opening Year and the entire development will be built before the end of the 2028 Future Design Year.

Land Use		Unit / GFA	Trip Rates					
			AM Peak			PM Peak		
			08:45-09:45			17:00-18:00		
			Arr	Dep	Total	Arr	Dep	Total
Residential	Apartments	Unit	0.111	0.133	0.244	0.220	0.132	0.352
	Houses		0.171	0.280	0.451	0.379	0.241	0.620
Neighbourhood Centre	Café	100m ²	0.428	0.428	0.857	1.274	1.052	2.326
	Shop	100m ²	1.938	1.697	3.635	2.443	2.633	5.076
	Business	100m ²	1.750	0.147	1.897	0.158	2.120	2.278
	Pharmacy	100m ²	1.938	1.697	3.635	2.443	2.633	5.076
	Consulting Rooms	100m ²	3.976	3.117	7.092	1.593	2.990	4.583
Crèche		Per Child	0.217	0.189	0.406	0.200	0.289	0.489

Table 10.9 TRICS derived Trip Rates

The predicted vehicle trips generated by the subject development are presented in **Table 10.10** below. The proposed crèche facility has been included in the vehicle trip generation process; however, it is predicted this facility will predominantly generate 'internal' trips within the boundary of the proposed development due to its location within the site layout removed from the site access location on Clonminch Road. Nevertheless, this crèche facility has been included in the trip generation exercise albeit discounted by a factor of 40%. In addition, a number of trips associated with the proposed Neighbourhood Centre will visit a number of facilities (i.e. dual trips) and also comprise a high volume of walk-in trips due to its location within the subject site. Accordingly, in order to account for predicted dual trips and walk-in trips, the total vehicle 'shop' trips predicted by TRICS have been discounted by 50%.

Land Use		Units / GFA	Trip Rates					
			AM Peak			PM Peak		
			08:45-09:45			17:00-18:00		
			Arr	Dep	Total	Arr	Dep	Total
Apartments		153	17	20	37	34	20	54
Houses		196	33	55	88	74	47	122
Crèche ¹		100 children	13	11	24	12	17	29
Shop Block F		56 sq.m	1	1	2	1	1	3
Neighbourhood Centre	Retail Units ²	531.11 sq.m	5	5	10	6	7	13
	Business	712.12 sq.m	11	1	12	0	9	9
	Gym	442.6 sq.m	6	2	8	7	5	12
	Medical Centre / Consulting Rooms	458.43 sq.m	18	14	33	7	14	21
Total			105	110	214	142	121	263

¹ Crèche vehicle trips discounted by 40%,

² Retail Unit vehicle trips discounted by 50% to account for walk in / dual trips

Table 10.10 Proposed Development Trip Generation

10.5.2.2 Trip Distribution & Assignment

In order to determine the potential trip distribution of future development vehicle trips a local gravity model was developed to evaluate peak hour vehicle origins and destinations reflecting the sites proximity to the Town Centre and both education and employment amenities (i.e. within walking/cycling distances the gravity model focused on longer journeys where the private motor car is more likely to be the mode of choice). The subsequent assignment has been based upon the shortest peak hour journey time which in some cases may not be the shortest route distance. A total of 4 no. origin/destination zones have been incorporated into the trip distribution and assignment exercise as presented in **Table 10.11**.

Zone	Origin/Destination	Development Vehicle Trips (%)
1	North (Athlone, Mullingar, M4)	25%
2	South (Birr, Portlaoise, M7)	25%
3	Town Centre (Schools, Employment)	30%
4	East (Employment opportunities)	20%

Table 10.11 Predicted Trip Distribution

10.5.2.3 Network Impact

The NRA (TII) document entitled Traffic and Transport Assessment Guidelines (2014) states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance.

There are currently no definitive criteria for assessing "significance of effects" for traffic impacts for EIA in Ireland. As introduced above, TII guidance does provide thresholds for determining when to carry out a traffic assessment for a planning application: if a proposed development is likely to increase traffic by 10% (or 5% in traffic sensitive or congested areas), the planning application should be accompanied by a traffic assessment¹. It should be noted that the TII guidance does not provide criteria for assessing significance of impacts for EIA purposes. The UK's Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (2003) recommends a range of indicators for determining the significance of the relief from severance advises that changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes respectively. Additionally, it is generally accepted that traffic flow increases of less than 10% on uncongested roads are generally considered to be 'not significant', given that daily variations in background traffic flow may vary by this amount.

Based on this methodology for determining the significance of changes, the prevailing traffic levels local to the proposed development and professional judgement, a significance effect rating has been assigned to the different levels of potential traffic increases (see **Table 10.13**). To ensure the robustness

of the assessment these ratings are more conservative than outlined in the IEMA guidelines. This is intended to guide the assessment of the likely effects of the proposed development.

Table 10.12 details the specific scale of network impact predicted at each of the key local junctions during the 2023, 2028 and 2038 design years as a result of the subject development proposals.

Table 10.12 reveals that the impact will be sub threshold at the local N52 / R443 / N80 Roundabout with maximum impacts predicted to be below the 10% on normal networks for all design year scenarios.

Design Year	AM Peak Hour	PM Peak Hour
2023	1.5%	2.2%
2028	6.7%	9.0%
2038	6.4%	8.5%

Table 10.12 Network Impact at the N52 / R443 / N80 Roundabout

Significance of Effects	Traffic Increase
Imperceptible	0-2.5%
Not Significant	2.5-5%
Slight	5-10%
Moderate	10-20%
Significant	20-30%
Very Significant	30%-50%
Profound	50%+

Table 10.13 Network Impact at the N52 / R443 / N80 Roundabout

Accordingly, based on the values outlined in **Table 10.13** above, the predicted impacts have been categorised for the 2038 Future Design Year in **Table 10.14** below. This table reveals that, during the AM and PM peak hours, the impact significance of the proposed development on the surrounding road network is categorised as "Slight".

Peak Hour	Impact Scale	Quality of Effects	Significance of Effects
AM Peak Hour	6.4%	Negative	Slight
PM Peak Hour	8.5%	Negative	Slight

Table 10.14 Network Impact Categorisation – 2038 Future Design Year

10.5.2.4 Network Analysis (Do-Something)

In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic model of the key junctions were analysed for the schemes following opening and future design years:

- 2023 Opening Year
- 2028 Future Design Year (Opening Year +5 years)
- 2038 Future Design Year (Opening Year +15 years)

Junction 1: N52 / N80 / R443 Clonminch Roundabout

The results of the operational assessment of this existing roundabout off-site junction during the weekday morning and evening peaks are summarised in **Tables 10.15** to **10.17** below. The arms were labelled as follows within the ARCADY model:

Arm A: N52 (E)

Arm B: N80

Arm C: N52 (W)

Arm D: R443 Clonminch Road

The 2023 Opening Year Do-Something ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction is predicted to operate with significant reserve capacity in both the AM & PM peak hours. A maximum Ratio of Flow to Capacity (RFC) value of 0.59 and a maximum queue of 1.4 pcu's was recorded during the DS AM peak hour. In the 2023 DS PM peak hour scenario, a max RFC value of 0.70 and a maximum queue of 2.3 pcu's is predicted.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.1	6.35	0.54
	B	N80	1.4	7.45	0.59
	C	N52 (W)	0.7	6.21	0.41
	D	R443	0.4	4.94	0.26
PM Peak Hour	A	N52 (E)	2.3	10.66	0.70
	B	N80	0.9	5.98	0.48
	C	N52 (W)	0.4	4.46	0.27
	D	R443	1.0	7.13	0.51

Table 10.15 2023 Peak Hour ARCADY Analysis

Similar to the 2023 opening year assessment, the 2028 Future Design Year Do-Something ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction is predicted to operate with significant reserve capacity in both the AM & PM peak hours. A maximum RFC value of 0.67 and a maximum queue of 2.0 pcu's was recorded during the DS AM peak hour. In the 2028 DS PM peak hour scenario, a max RFC value of 0.79 and a maximum queue of 3.6 pcu's is predicted.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.4	7.44	0.59
	B	N80	2.0	9.47	0.67
	C	N52 (W)	0.9	7.27	0.47
	D	R443	0.5	5.62	0.34
PM Peak Hour	A	N52 (E)	3.6	15.45	0.79
	B	N80	1.3	7.4	0.57
	C	N52 (W)	0.4	4.96	0.31
	D	R443	1.6	9.46	0.63

Table 10.16 2028 Peak Hour ARCADY Analysis

In the 2038 Future Design Year Do-Something ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction is once again predicted to operate with significant reserve capacity in both the AM & PM peak hours. A maximum RFC value of 0.71 and a maximum queue of 2.4 pcu's was recorded during the DS AM peak hour. In the 2038 DS PM peak hour scenario, a max RFC value of 0.84 and a maximum queue of 4.8 pcu's is predicted.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	1.7	8.11	0.63
	B	N80	2.4	10.84	0.71
	C	N52 (W)	1.0	7.98	0.51
	D	R443	0.6	5.90	0.36
PM Peak Hour	A	N52 (E)	4.8	19.88	0.84
	B	N80	1.5	8.11	0.60
	C	N52 (W)	0.5	5.19	0.33
	D	R443	1.9	10.67	0.66

Table 10.17 2038 Peak Hour ARCADY Analysis

Junction 2: Proposed Site Access Signal Controlled Junction

As this junction will not be in place without the proposed development, only a Do-Something assessment has been undertaken. The results of the operational assessment of this proposed signal controlled junction during the weekday morning and evening peaks are summarised in **Tables 10.18** to **10.20** below. The arms were labelled as follows within the TRANSYT model:

Arm A: R443 (N)

Arm B: Site Access

Arm C: R443 (S)

The TRANSYT results indicate that the proposed site access signal controlled junction will operate with significant reserve capacity for both the 2023 AM & PM peak hours. A maximum Degree of Saturation (DoS) value of 38% and a maximum MMQ (mean max queue) of 4.10 pcu's was recorded during the AM peak hour and similarly a DoS value of 39% and a MMQ of 5.90 pcu's was recorded during the PM peak hour.

Peak	Arm	Movement	DoS (%)	Mean Delay per Veh (s)	MMQ (pcu)
AM Peak Hour	R443 (N)	S, L	18	7.17	2.37
	Site Access	L, R	18	40.71	0.67
	R443 (S)	S	38	7.95	4.10
		R	1	7.89	0.08
PM Peak Hour	R443 (N)	S, L	39	8.92	5.90
	Site Access	L, R	16	40.15	0.57
	R443 (S)	S	20	6.89	2.22
		R	6	11.75	0.33

Table 10.18 2023 Peak Hour TRANSYT Analysis

The TRANSYT results indicate that the proposed site access signal controlled junction will continue to operate with significant reserve capacity for both the 2028 AM & PM peak hours. A maximum DoS value of 53% and a maximum MMQ of 4.16 pcu's was recorded during the AM peak hour and a DoS value of 58% and a maximum MMQ of 7.61 pcu's was recorded during the PM peak hour.

Peak	Arm	Movement	DoS (%)	Mean Delay per Veh (s)	MMQ (pcu)
AM Peak Hour	R443 (N)	S, L	23	8.84	3.19
	Site Access	L, R	53	46.45	2.85
	R443 (S)	S	43	8.93	4.16
		R	9	9.69	0.53
PM Peak Hour	R443 (N)	S, L	46	11.23	7.61
	Site Access	L, R	58	48.85	3.24
	R443 (S)	S	22	8.31	2.58
		R	26	17.93	1.44

Table 10.19 2028 Peak Hour TRANSYT Analysis

The TRANSYT results indicate that the proposed site access signal controlled junction will continue to operate with significant reserve capacity for both the 2038 AM & PM peak hours. A maximum DoS value of 53% and a maximum MMQ of 4.18 pcu's was recorded during the AM peak hour and a DoS value of 58% and a maximum MMQ of 8.14 pcu's was recorded during the PM peak hour.

Peak	Arm	Movement	DoS (%)	Mean Delay per Veh (s)	MMQ (pcu)
AM Peak Hour	R443 (N)	S, L	24	8.93	3.41
	Site Access	L, R	53	46.45	2.85
	R443 (S)	S	45	8.87	4.18
		R	9	9.57	0.52
PM Peak Hour	R443 (N)	S, L	48	11.52	8.14
	Site Access	L, R	58	48.85	3.24
	R443 (S)	S	23	8.39	2.71
		R	28	18.92	1.47

Table 10.20 2038 Peak Hour TRANSYT Analysis

In summary, the introduction of the subject development traffic is predicted to result in an 'imperceptible' effect on the local road network. The predicted 'imperceptible' effect on the local road network is characterised as 'direct' and 'negative'.

10.5.3 Potential Cumulative Impacts

10.5.3.1 Construction Stage

It is predicted that the adjacent committed development will be complete by the subject development's adopted 2023 Opening Year. Accordingly, the peak construction stage traffic associated with both the subject development and committed development traffic is not expected to coincide. Similarly,

potential future development on any zoned 3rd Party lands that have yet to be subject to planning applications will likely be developed in phases thereby reducing the potential cumulative construction impact on the local road network at any one time.

10.5.3.2 Operational Stage

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focused upon the key two busiest periods of the day (i.e. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The adjacent committed development has been incorporated into the analysis detailed above and therefore the cumulative impact of both the subject proposals and this committed development have been assessed.

10.5.4 Interactions

10.5.4.1 Noise and Vibration

The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul route. However, such effects will be temporary and slight in nature.

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods however, implementation of the mitigation measures described will prevent and minimize the potential impacts of this interaction.

10.5.4.2 Air Quality

Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, such effects will be temporary and slight in nature.

10.6 Mitigation Measures

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development on the subject zoned lands could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The strategy includes specific measures for both the construction and operational stages of the proposed development.

10.6.1 Construction Stage

The Construction Management Plan and the associated Construction Traffic Management Plan (CTMP) in addition to the applications accompanying Construction and Waste Management Plan will incorporate a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed developments on-site construction activities.

In order to ensure satisfactory operation of the construction stage the following is proposed:

- Provision of sufficient on-site parking and compounding to ensure no potential overflow onto the local network.
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential.
- Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period through the construction of temporary hardstanding areas.
- Finally, truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by the Local Authority will be adhered to.

10.6.2 Operational Stage

With the objective of mitigating the potential impact of the proposed development as predicted during its operational stage, the following initiatives have been identified and subsequently form an integral part of the subject development proposals.

- Management – A Mobility Management (MMP) is to be compiled with the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor. The MMP ultimately seeks to encourage sustainable travel practices for all journeys to and from the proposed development.
- Infrastructure - The proposed scheme design incorporates the cycle facilities along the 'Link Street' and on all approaches to the proposed new signal controlled junction. In addition, permeable links with adjacent residential areas are proposed thereby maximising connectivity for walking and cycle trips.
- Infrastructure – Two new bus stops are proposed in the vicinity of the subject site access which will not only benefit future residents of the subject development but also existing residents in the surrounding area.
- Infrastructure – New cycle infrastructure is proposed along Clonminch Road, as part of the subject scheme, which will provide dedicated cycle lanes between the subject site and Tullamore Town Centre. Accordingly, following the implementation of the proposed cycle infrastructure, the subject development will be more accessible by bicycle with the potential for future residents to choose cycling as a mode of travel increased significantly.

10.7 **Predicted Impact of the Proposed Development**

10.7.1 Construction Phase

Implementation of the measures outlined in Section 10.6.1 will ensure that the potential impacts of the proposed development on the local transport network are minimised during the construction phase and that any residual impacts will be short term.

10.7.2 Operational Phase

Implementation of the measures outlined in Section 10.6.2 will ensure that the potential impacts of the proposed development on the local transport network are minimised during the operational phase.

10.7.3 Sensitivity Analysis - 'Worst Case' Scenario

An additional sensitivity assessment ('worst case' scenario) has been undertaken which involves the assumption that the entire Eastern Node masterplan lands are developed. According to the Tullamore Town and Environs Development Plan 2010-2016 (extended until 2020), *"the northern and eastern portions of the Eastern Node will be developed for medium density residential development prior to the development of the western and south sections of this node for medium and low density housing"*. For the purposes of this 'worst case' assessment, it has been assumed that there will be an additional 1000 residential units comprising 600 houses and 400 apartments in addition to a 400 pupil primary school. In this worst case scenario, it has been assumed that the entire masterplan lands will be developed by the 2038 Future Design Year. The trip rates identified for the proposed development have been adopted and applied to the Eastern Node masterplan lands residential units. Accordingly, an assessment of the existing N80 / N52 / R443 Clonminch Roundabout and proposed site access signal controlled junction has been undertaken incorporating the potential additional traffic flows associated with the overall masterplan lands.

10.7.3.1 **Junction 1: N52 / N80 / R443 Clonminch Roundabout**

The results of the sensitivity assessment of this existing roundabout off-site junction during the weekday morning and evening peaks are summarised in **Table 10.21** below. The arms were labelled as follows within the ARCADY model:

Arm A: N52 (E)

Arm B: N80

Arm C: N52 (W)

Arm D: R443 Clonminch Road

The 2038 Future Design Year ARCADY results indicate that the existing N52 / N80 / R443 four arm roundabout junction will operate within capacity in the "worst case" (DS) scenario AM & PM peak hours. A maximum RFC value of 0.82 and a maximum queue of 4.4 pcu's was recorded during the DS AM peak hour. A RFC value of 0.95 and a maximum queue of 12.4 pcu's was recorded during the "Worst Case" DS PM peak hour.

It is noted that this eastern approach road to the junction is operating close to capacity over a 30 minute period only within the PM peak hour and outside of this 30 minute period, all approaches to this existing roundabout junction are predicted to operate with significant reserve capacity.

Scenario	Arm	Arm Name	Queue (PCU)	Delay (s)	RFC
AM Peak Hour	A	N52 (E)	2.3	10.98	0.70
	B	N80	4.4	18.04	0.82
	C	N52 (W)	1.4	10.17	0.58
	D	R443	1.2	8.51	0.56
PM Peak Hour	A	N52 (E)	12.4	48.82	0.95
	B	N80	3.8	16.48	0.79
	C	N52 (W)	0.7	6.73	0.41
	D	R443	5.7	25.11	0.86

Table 10.21 2038 Peak Hour 'Worst Case' ARCADY Analysis

10.7.3.2 Junction 2: Proposed Site Access Signal Controlled Junction

The results of the 'worst case' sensitivity assessment of this proposed signal controlled junction during the weekday morning and evening peaks are summarised in **Table 10.22** below. The arms were labelled as follows within the TRANSYT model:

Arm A: R443 (N)

Arm B: Site Access

Arm C: R443 (S)

The TRANSYT results indicate that the proposed site access signal controlled junction will again operate with significant reserve capacity for both the 2038 AM & PM peak hours. A maximum DoS value of 75% and a maximum MMQ of 11.86 pcu's was recorded during the AM peak hour. A DoS value of 94% and a MMQ of 22.54 pcu's was recorded during the PM peak hour.

Peak	Arm	Movement	DoS (%)	Mean Delay per Veh (s)	MMQ (pcu)
AM Peak Hour	R443 (N)	S, L	39	14.97	6.54
	Site Access	L, R	75	38.99	11.86
	R443 (S)	S	55	12.52	4.33
		R	50	21.72	3.11
PM Peak Hour	R443 (N)	S, L	88	49.07	22.54
	Site Access	L, R	94	83.56	16.63
	R443 (S)	S	25	10.68	3.21
		R	92	73.31	8.01

Table 10.22 2038 Peak Hour 'Worst Case' TRANSYT Analysis

10.8 **Residual Impacts**

10.8.1 **Construction Phase**

Provided the above mitigation measures and management procedures are incorporated during the construction phase, the residual impact on the local receiving environment will be 'short-term' in nature and 'negative' in terms of quality of effects. The potential residual impact of construction stage activities is predicted to be 'Slight' as there will be a small increase in HGV's on the surrounding road network due to excavation plant and dumper trucks involved in site development works and material delivery vehicles.

10.8.2 **Operational Phase**

The implementation of the mitigation measures outlined above, including the MMP, will ensure that the residual effect on the local receiving environment is both managed and minimised. Accordingly, the potential residual impact can be described as 'Negative' but 'Not Significant' and will be 'permanent'.

10.9 **Monitoring**

10.9.1 **Construction Phase**

During the construction stage, the following monitoring exercises are proposed;

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and External road conditions; and
- Timings of construction activities in terms of start / finish times.

10.9.2 **Operational Phase**

As part of the MMP process, bi-annual post occupancy surveys are recommended to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

10.10 **Difficulties Encountered**

There were no material difficulties encountered in compiling and assessing the data for this EIAR sufficient to prevent modelling of the likely transportation effects of the proposed development.

10.11 References

TII (NRA) Traffic & Transportation Assessment Guidelines; (May 2014)

TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (PE-PAG-02017); TII (May 2019)

‘Traffic Management Guidelines’ Dublin Transportation Office & Department of the Environment and Local Government (May 2003)

Offaly Development Plan 2014-2020

Draft Offaly Development Plan 2021-2027

Tullamore Town & Environs Development Plan 2010-2016 (Extended to 2020)

Bus Eireann Website; www.buseireann.ie

Irish Rail Website; www.irishrail.ie

Transport Infrastructure Ireland; www.tii.ie

Transport for Ireland; www.transportforireland.ie