

Ballinacurra Mill LRD



Traffic and Transport Assessment

November 2025



MHL & Associates Ltd.  
Consulting Engineers



### Document Control Sheet

<b>Client</b>	Ballinacurra Project Limited Partnership
<b>Project Title</b>	Ballinacurra Mill LRD
<b>Document Title</b>	Traffic and Transport Assessment
<b>Document No.</b>	23072HD-MHL-Doc02-TTA_Traffic & Transport Assessment
<b>Job No.</b>	23072HD

Revision	Status	Author	Reviewed By	Approved By	Date
01	Client Issue	D. Archer	K. Manley	K. Manley	28/05/2024
02	DRAFT Issue	D. Archer	K. Manley	K. Manley	21/11/2024
03	External Issue	D. Archer	K. Manley	K. Manley	27/01/2025
04	Client Issue	D. Archer	K. Manley	K. Manley	09/04/2025
05	Client Issue	D. Archer	K. Manley	K. Manley	18/11/2025

**M.H.L. & Associates Ltd.  
Consulting Engineers**

Unit 1B,  
The Atrium,  
Blackpool,  
Cork.

Tel 021-4840214 Fax: 021-4840215  
E-Mail: [info@mhl.ie](mailto:info@mhl.ie)

November 2025

## Table of Contents

<b>1. NON – TECHNICAL SUMMARY.....</b>	<b>3</b>
<b>2. EXISTING CONDITIONS .....</b>	<b>4</b>
<b>2.1 LOCAL ROAD NETWORK.....</b>	<b>4</b>
<b>2.2 RECORDED TRAFFIC FLOWS .....</b>	<b>5</b>
<b>3. PROPOSED DEVELOPMENT .....</b>	<b>7</b>
<b>4. TRAFFIC GENERATION .....</b>	<b>8</b>
<b>4.1 EXISTING TRAFFIC FLOWS .....</b>	<b>8</b>
<b>4.2 MODAL CHOICE .....</b>	<b>8</b>
<b>4.3 PROPOSED DEVELOPMENT TRAFFIC GENERATION .....</b>	<b>9</b>
<b>5. ASSIGNMENT OF DEVELOPMENT TRAFFIC.....</b>	<b>11</b>
<b>5.1 DISTRIBUTION OF DEVELOPMENT TRAFFIC BASED ON EXISTING TRAFFIC FLOWS.....</b>	<b>11</b>
<b>6. ASSESSMENT YEARS .....</b>	<b>13</b>
<b>6.1 JUNCTION 1 TRAFFIC MATRICES.....</b>	<b>14</b>
<b>6.2 JUNCTION 2 TRAFFIC MATRICES.....</b>	<b>15</b>
<b>7. TRAFFIC MODELLING RESULTS.....</b>	<b>17</b>
<b>7.1 JUNCTION 10 ANALYSIS – JUNCTION 1 .....</b>	<b>17</b>
<b>7.2 JUNCTION 10 ANALYSIS-JUNCTION 2.....</b>	<b>19</b>
<b>7.2 ROAD IMPACT CONCLUSIONS.....</b>	<b>20</b>
<b>8. CUMULATIVE IMPACTS.....</b>	<b>21</b>
<b>9. ROAD SAFETY.....</b>	<b>22</b>
<b>9.1 ROAD COLLISION DATABASE .....</b>	<b>22</b>
<b>10. ENVIRONMENTAL IMPACT.....</b>	<b>22</b>
<b>11. INTERNAL LAYOUT &amp; PARKING PROVISIONS.....</b>	<b>23</b>
<b>12. PEDESTRIANS / CYCLISTS / PEOPLE WITH DISABILITIES .....</b>	<b>23</b>
<b>13. PUBLIC TRANSPORT.....</b>	<b>23</b>
<b>14. REFERENCES.....</b>	<b>24</b>
<b>APPENDICES.....</b>	<b>25</b>
<b>APPENDIX A – TRAFFIC MODEL OUTPUTS – JUNCTIONS 10.....</b>	<b>26</b>

## 1. NON – TECHNICAL SUMMARY

MHL Consulting Engineers have been engaged by Ballinacurra Project Limited Partnership to prepare a Traffic Impact Assessment (TIA) as part of an LRD application to Cork County Council for planning permission to develop the Ballinacurra Mill LRD Scheme, Ballynacorra, Midleton, Co. Cork.

The scope of this study has been agreed with Cork County Council's Traffic & Transportation Department and includes two junctions, Junction 01: 'The R630-Church Road' and Junction 02: The Proposed Signalised Junction of the R630 through a previously granted scheme (Planning ref: 21/7428 and 22/4753. The R630-Church Road Junction traffic count was carried out on the 15<sup>th</sup> of May 2024 during the peak hour times of 08:00-09:00 and 17:00-18:00. The traffic count for Junction 2 'The Grotto' was carried out in 2022 and the same peak hours were highlighted for this analysis.

The proposed development will consist of the construction of 128 no. residential units, 1 no. single storey creche, 1 no. single storey café, 2 no. ground floor retail units, 1 no. ground floor commercial office unit, 1 no. ground floor medical centre unit, and all associated development works including footpaths, parking, drainage, bicycle and bin stores and landscaping/amenity areas to be accessed from the R629 and Upper Road/Rose Lane.

A review of the traffic count information confirms that the N25/Midleton Town is the main desire line for residents exiting the development during the morning peak (70% versus 30%). Connectivity in this direction is paramount for all modes of travel. As part of this assessment both Junctions were analysed using Junction 10 Software, for future year scenarios both with and without development traffic.

The opening year is the year of expected completion for the development and is taken to be 2028. In accordance with the NRA's "Traffic and Transport Assessment Guidelines", a traffic analysis is required to be undertaken for the **Base Year – 2024, Opening Year – 2028, Opening Year +5 – 2030 and Opening Year +15 – 2040 (each year analysed with and without development traffic where appropriate)**.

The traffic modelling results show that Junction 1, The R630-Church Road Junction is currently operating as it should during peak periods on certain approaches but with the introduction of the proposed development, the junction will degrade in performance. As a result, the proposed scheme will primarily impact AM peak performance as a result of the additional traffic generated.

An assessment of Junction 2: The 'Grotto Junction' with/without development traffic shows a degrading in performance as a result of the additional development generated traffic. The resulting delay to development traffic increases from 262 s/pcu to 526 s/pcu during the AM peak and increases from 85 s/pcu to 239 s/pcu during the PM peak in the Design Year 2040. The resultant queue forming towards the Lakeview Roundabout does not extend so as to interfere with the operation of the National Primary Route.

This report has been prepared in accordance with the NRA's 2014 publication "Traffic and Transport Assessment Guidelines" and the "Guidelines for Traffic Impact Assessments" as published by the Institution of Highways & Transportation U.K. in 1994. The purpose of a TTA is to assess the traffic impact of a development on the existing road network and propose any necessary mitigation measures to best accommodate the expected traffic volumes generated by the proposed development.

## 2. EXISTING CONDITIONS

The N25 Lakeview Roundabout is an at-grade junction on the busy National Primary Route linking Cork City to Waterford City and provides an important role for commuter traffic travelling East/West. The R630 and the R629 are important regional links to the National Primary Network serving significant population centres in Villages such as Cloyne and Whitegate.

Figure 2.1 presents the proposed site with reference to the identified critical junctions (Junction 01 & 02) the subject of the traffic modelling.



Figure 2.1: Site Location Map

### 2.1 LOCAL ROAD NETWORK

The Lakeview Roundabout is a 60m diameter roundabout on the N25 with a dual-carriageway approach from the west (Cork City side). The roundabout serves as the principal eastern access to the town of Midleton as well as

providing a link to the R630 Regional Road (Whitegate & Cloyne). A recently completed bypass lane heading west on the N25 from the R630 has improved the capacity on this approach.

To the south of this roundabout a significant level of development has occurred in the past 10 years. A secondary road (L3621) known locally as the Ballick Road provides a secondary link to the Market Town of Midleton but is unsuitable for heavy traffic. Cork County Council wish to upgrade this secondary road for both pedestrian and cycle traffic.

Junction 2 is a Priority Junction between the R630 and the R629 and is the main link between Cloyne and Midleton. The upgrade of the R630, including Junction 2, forms part of the Midleton to Whitegate R630 Traffic Management Study carried out by WSP. This study, which was adopted by the Midleton Area Committee in 2009, presents proposals to improve the R630 for all road users through the provision of footpaths, cycle lanes and junction improvement works.

Junction 1 is less of a Priority Junction than Junction 2, but it still provides an access point to Midleton/N25. This junction is used as another option to get onto the R630 from Ballinacurra/Cloyne direction instead of using Junction 2 'The Grotto'.

## 2.2 RECORDED TRAFFIC FLOWS

The following figures present the recorded traffic flows at Junction 2 over a 12-hour time period (Thursday 11<sup>th</sup> January). Evident from these graphs are the recorded peak hours for both morning and afternoon. The morning peak hour extends from 07:30-09:00 with the evening peak hours ranging from 15:45 to 18:30. These peak periods are mirrored at both junctions. When both junctions are considered, the refined peak hours are 08:00-09:00 and 17:00-18:00. These periods will be used to assess the impact of development traffic at these locations.

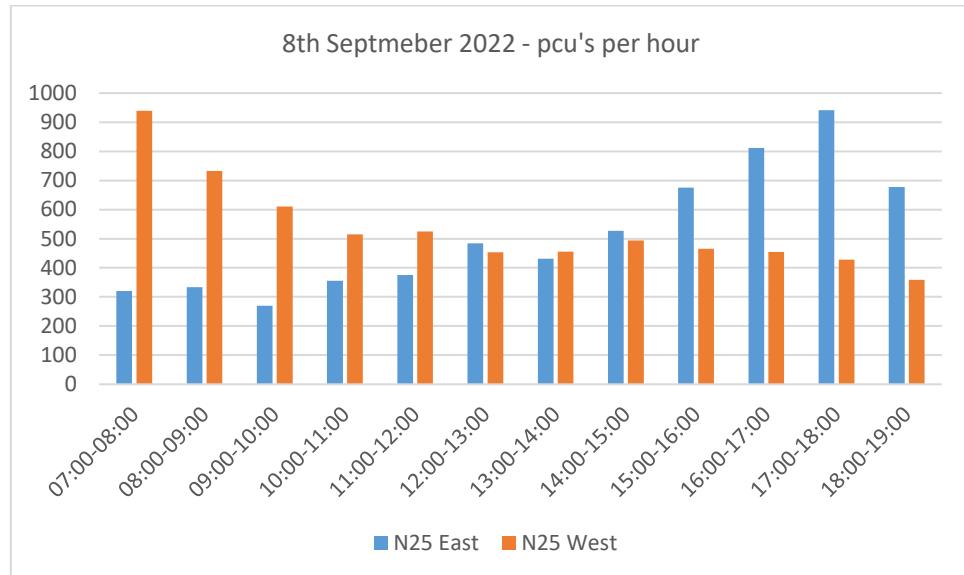


Figure 2.2: 12 Hour traffic profile for N25.

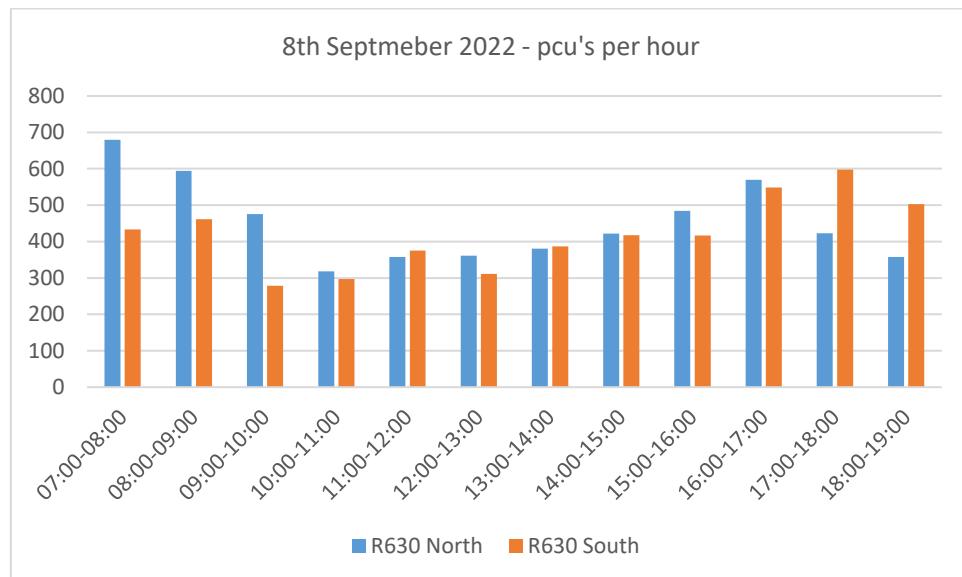


Figure 2.3: 12 Hour traffic profile for junction 2.

The following graphics present the morning and evening traffic peak turning movements at each of the junctions being assessed.



Fig 2.4: Junction 01: Arm Designation

AM	Destination					PM	Destination				
	A	B	C	Total			A	B	C	Total	
Origin	A	0	4	447	451	Origin	A	0	6	790	796
	B	208	0	3	211		B	59	0	7	66
	C	810	1	0	811		C	519	7	0	526
	Total	1018	5	450			Total	578	13	797	

AM (08:00-09:00)

PM (17:00-18:00)

Fig 2.5: Junction 01 - Base year 2024 Peak Hour Flows

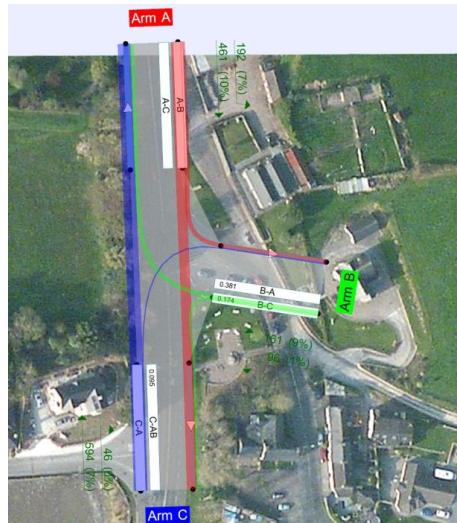


Fig 2.6: Junction 02: Arm Designation

AM	Destination					PM	Destination				
	A	B	C	Total			A	B	C	Total	
Origin	A	0	192	461	653	Origin	A	0	405	598	1003
	B	161	0	96	257		B	121	0	12	133
	C	594	46	0	640		C	423	82	0	505
	Total	755	238	557			Total	544	487	610	

AM (08:00-09:00)

PM (17:00-18:00)

Fig 2.7: Junction 02 - Base year 2022 Peak Hour Flows

### 3. PROPOSED DEVELOPMENT

The following figure presents the proposed development of 128 no. residential units, 1 no. single storey creche, 1 no. single storey café, 2 no. ground floor retail units, 1 no. ground floor commercial office unit, and 1 no. ground floor medical centre unit using the existing development entrance as the main point of access onto the R630. The proposed layout has been developed using the principals as outlined in DMURS.



Figure 3.1: Proposed Site Plan

## 4. TRAFFIC GENERATION

### 4.1 EXISTING TRAFFIC FLOWS

Traffic flows were analysed over the AM and PM peaks at each of the two junctions previously identified. In addition to vehicular turning movements, queue length surveys and pedestrian movements at each junction were also observed.

### 4.2 MODAL CHOICE

To predict the level of traffic that will be generated by the proposed development, the means of transport (modal choice) and quantity of traffic generated (trip attraction) must be considered. In this instance the traffic generated by the proposed development will be based on the results from Junction 1 counts. The TRICS database will be consulted to stress test the generation figures.

Sustainable transport usage in the Cloyne area was determined from 2022 Census Data. Figure 4.5 shows the number of people living in the Electoral Division of Cloyne who commute to work, school or college by various modes. This data would indicate that 16.98% use sustainable travel modes in 2016. The most recent census results are not available. No significant improvements to the R630 have been made in the intervening years hence the recorded 2022 figures will be taken as the current level of modal split.

It is noted that Part 8 planning has been approved on the Midleton- Ballinacurra Cycleway Scheme which encompasses the R630 located . These works began in 2023. Phase 1 of this scheme has been completed which connects Ballinacurra, Midleton and Water Rock. Based on the completion of this scheme a future target year modal shift of 30% was agreed with the Council Transport Department. The extent of this scheme is shown below. This scheme will tie in with the Cork to Youghal Greenway which will allow for greater use of sustainable forms of transport.

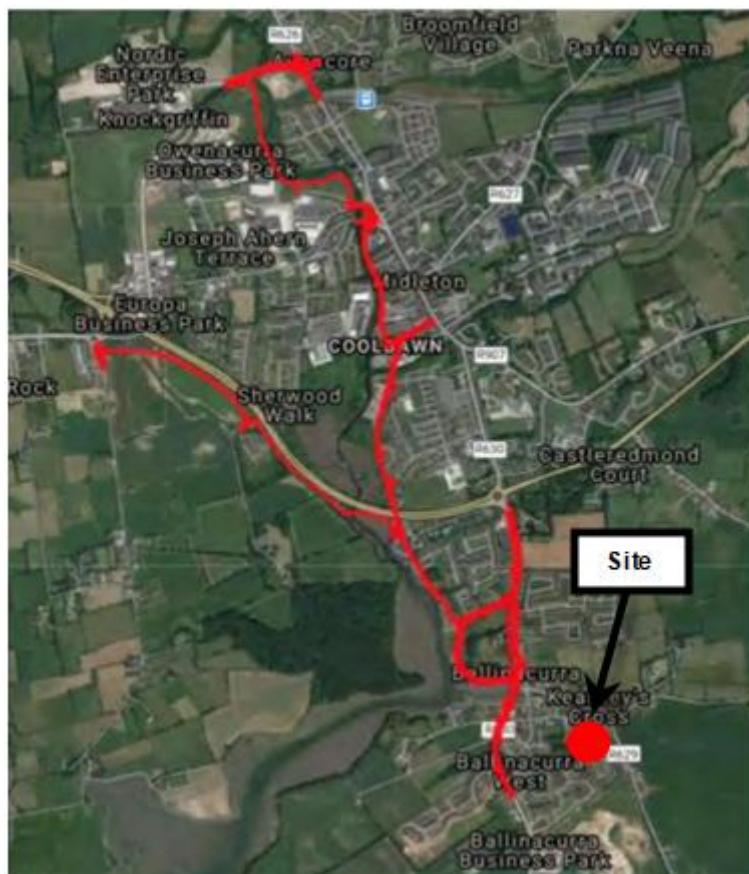


Fig 4.4: Midleton to Ballinacurra Pedestrian Cycle Scheme



Fig 4.5: Electoral Division based on the 2022 census

Means of Travel	Usually resident by means of travel to work (Number)	Usually resident by means of travel to school, college or childcare (Number)	Usually resident by means of travel to work, school, college or childcare (total) (Number)
On Foot	8	5	13
Bicycle	0	0	0
Bus, minibus or coach	1	11	12
Train, DART or LUAS	4	9	13
Motorcycle or scooter	0	0	0
Car Driver	87	8	95
Car passenger	1	57	58
Van	10	0	10
Other (incl. lorry)	0	0	0
Work mainly at or from home	14	0	14
Not stated	5	7	12
Total	130	97	227

Fig 4.6: 2022 - Modal split for commuters to school, college or work

#### 4.3 PROPOSED DEVELOPMENT TRAFFIC GENERATION

The following table presents the expected increase in site generated traffic when the residential development is complete. Table 4.2 presents the expected future traffic generation based on an increase in modal shift of 13% over and above of the 2022 recorded levels. Note: This increase in modal shift has not been applied to background recorded traffic flows.

Current Modal Shift of 17%	AM PEAK		PM PEAK			
	Arrivals	Departures	Arrivals	Departures		
<b>Residential Estate: Complete Construction (2025)</b>						
Peak Trics Trip Rates <i>(per Residential Unit)</i>	0.25	0.70	0.47	0.26		
Peak Trips <i>for 128 Residential Units</i>	32	89	61	34		
<b>Total Trips Generated</b>	<b>121</b>		<b>94</b>			
<b>New Creche Trip Generation - Based on TRIC's Database</b>						
Peak Trics Trip Rates <i>(per Pupil)</i>	0.29	0.34	0.24	0.37		
Peak Trips <i>for 128 Residential Units</i>	38	43	31	48		
<b>Total Trips Generated</b>	<b>81</b>		<b>79</b>			
<b>New Creche Trip Generation - Based on TRIC's Database</b>						
Factor of Creche traffic external to dev.	0.50					
Peak Trips for 128 Residential Units	19	21	16	24		
<b>Total Trips Generated</b>	<b>40</b>		<b>39</b>			

Table 4.1: Traffic Generation for proposed 128 residential units (current modal shift 17%)

Future Modal Shift of 30%	AM PEAK		PM PEAK			
	Arrivals	Departures	Arrivals	Departures		
<b>Residential Estate: Complete Construction (2025)</b>						
Peak Trics Trip Rates <i>(per Residential Unit)</i>	0.22	0.61	0.41	0.22		
Peak Trips <i>for 128 Residential Units</i>	28	78	52	28		
<b>Total Trips Generated</b>	<b>106</b>		<b>81</b>			
<b>New Creche Trip Generation - Based on TRIC's Database</b>						
Peak Trics Trip Rates <i>(per Pupil)</i>	0.29	0.34	0.24	0.37		
Peak Trips <i>for 128 Residential Units</i>	38	43	31	48		
<b>Total Trips Generated</b>	<b>81</b>		<b>79</b>			
<b>New Creche Trip Generation - Based on TRIC's Database</b>						
Factor of Creche traffic external to dev.	0.50					
Peak Trips for 128 Residential Units	19	21	16	24		
<b>Total Trips Generated</b>	<b>40</b>		<b>39</b>			

Table 4.2: Traffic Generation for proposed 128 residential units (Future Modal shift of 30%)

## 5. ASSIGNMENT OF DEVELOPMENT TRAFFIC

### 5.1 DISTRIBUTION OF DEVELOPMENT TRAFFIC BASED ON EXISTING TRAFFIC FLOWS

The proposed development will generate traffic as outlined in Section 4, Traffic Generation. The following figure shows the distribution of traffic to and from the scheme for both morning and evening peak periods. Proposed Development Traffic is highlighted in **RED**.

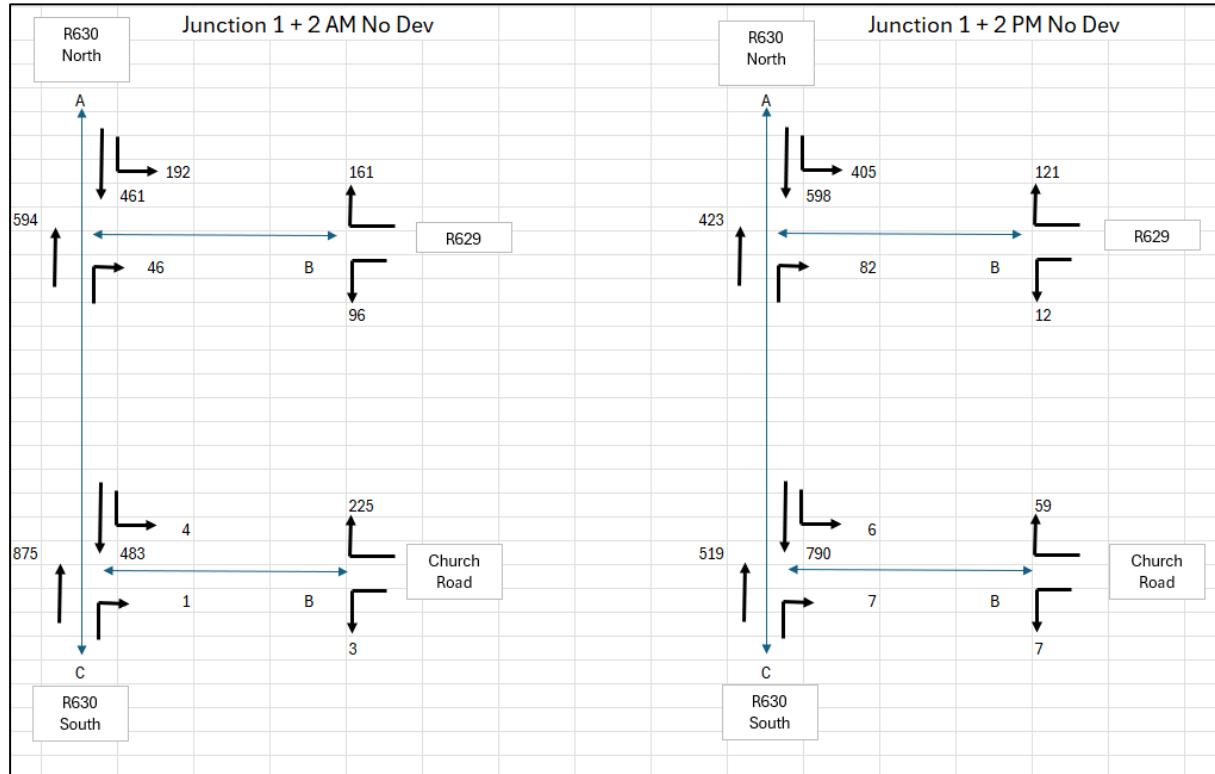


Fig 5.1: AM/PM Distribution of traffic to/from the development

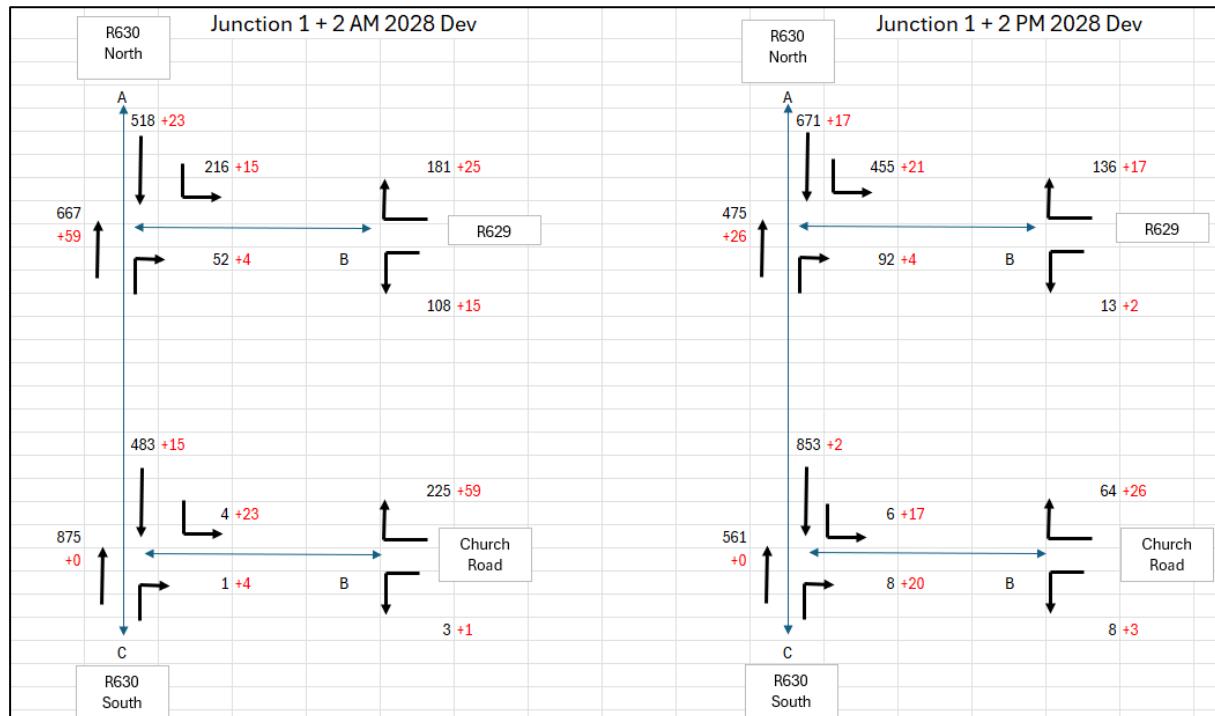


Fig 5.2:2028 AM/PM Distribution of traffic to/from the development

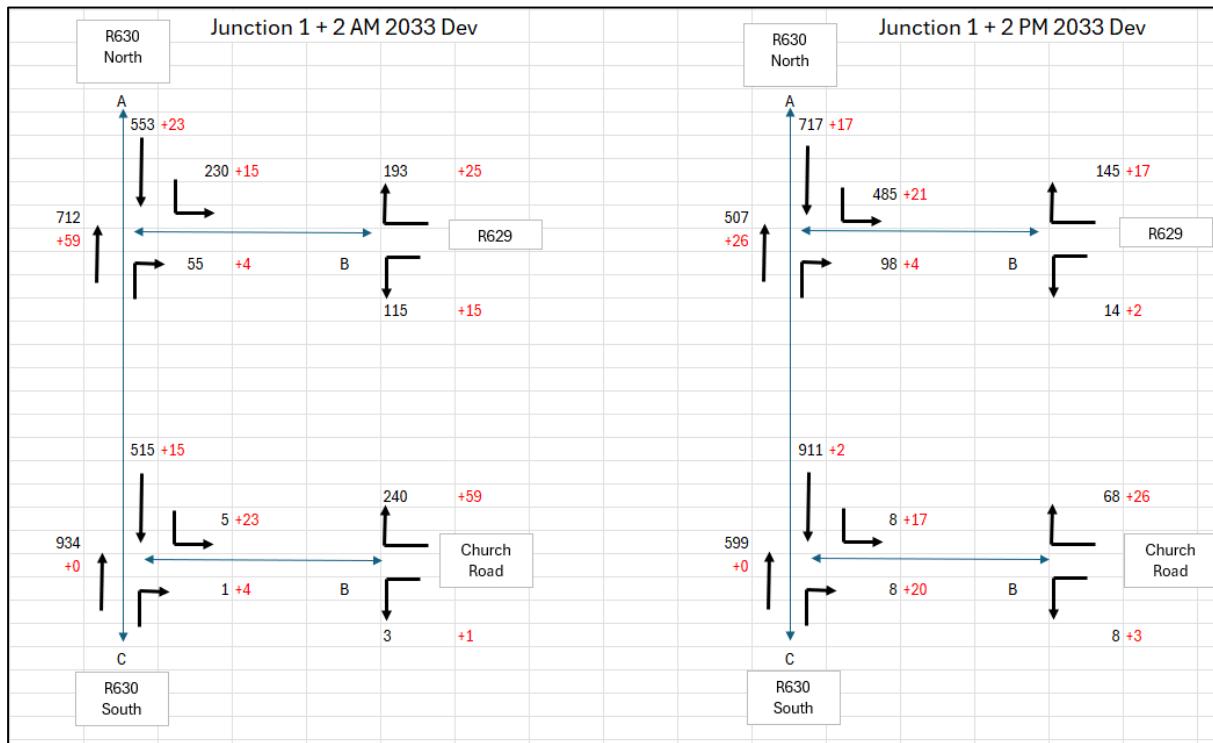


Fig 5.2:2033 AM/PM Distribution of traffic to/from the development

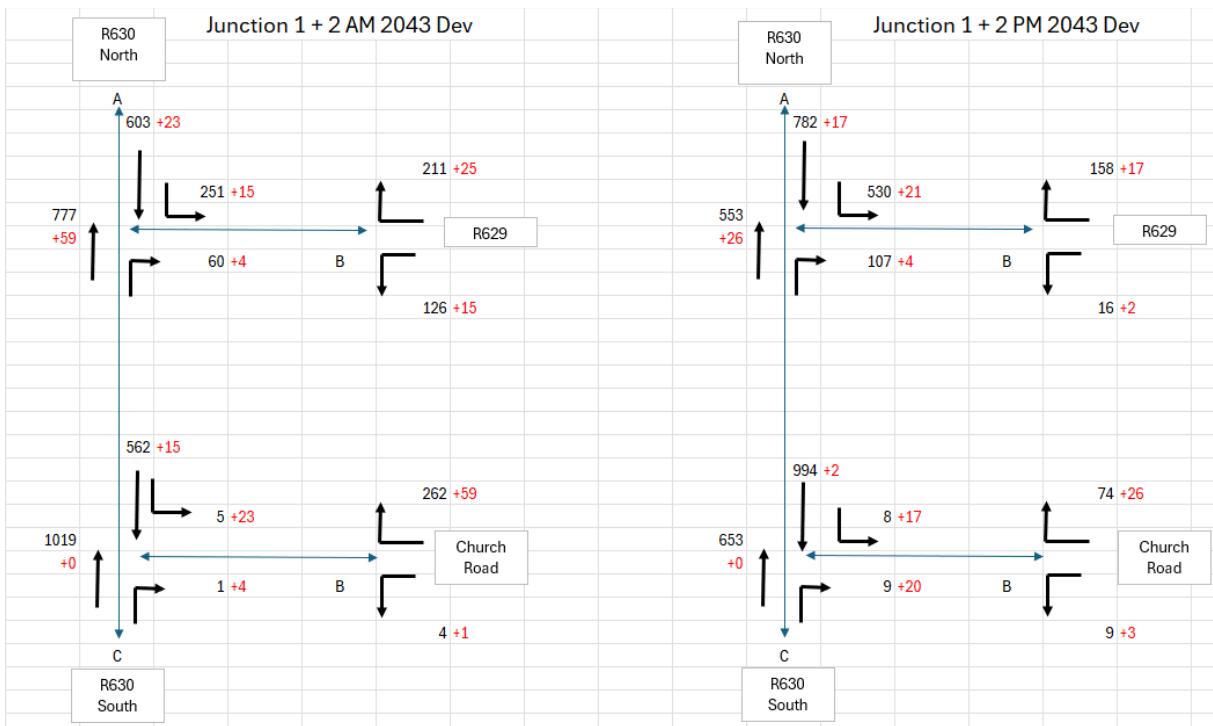


Fig 5.3:2043 AM/PM Distribution of traffic to/from the development

## 6. ASSESSMENT YEARS

The opening year is the year of expected completion for the development and is taken to be 2028. In accordance with the Guidelines for Traffic and Transportation Assessments as published by TII, a traffic analysis is required to be undertaken for the Opening Year – 2028 plus five and fifteen years from this date i.e., Opening year +5 – 2033 and Opening year +15 - 2043.

The growth of traffic from within the development will be expected to remain stagnant over the period 2022 to 2043. This is assumed because no new development will take place within the site.

The Transport Infrastructure Ireland “Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections – PE-PAG-02017, October 2021” was used to calculate growth factors for the existing road network traffic. Table 6.1 below shows the calculated growth factors to convert from 2022 to 2028, 2033 to 2043.

		Cars/LGV	HGV	Combined			Cars/LGV	HGV	Combined
Count %		97%	3%	100%	Count %		97%	3%	100%
2022 to	2028	1.119	1.249	1.123	2024 to	2028	1.078	1.160	1.080
2022 to	2033	1.192	1.410	1.199	2024 to	2033	1.148	1.310	1.153
2022 to	2043	1.297	1.672	1.308	2024 to	2043	1.249	1.553	1.258
TII Project Appraisal Guidelines for National Roads Unit 5.3					TII Project Appraisal Guidelines for National Roads Unit 5.3				
Travel Demand Projections (PE-PAG-0217)					Travel Demand Projections (PE-PAG-0217)				

Table 6.1: Future Growth Rates for Base Year, Opening year, Opening year +5 (2028 to 2033) & Opening Year +15 (2028 to 2043)

The effects of traffic growth on the existing network plus the additional traffic generated by the proposed development have been compiled to build junction diagrams of the two affected junctions. The purpose of this Traffic and Transport Assessment is to determine if the capacity of the existing road network is sufficient to cater for the traffic generated by the proposed development.

## 6.1 JUNCTION 1 TRAFFIC MATRICES

		No Dev											
Site 1	AM	Destination					PM	Destination					
			A	B	C	Total			A	B	C	Total	
2024	Origin	A	0	4	447	451	Origin	A	0	6	790	796	
		B	208	0	3	211		B	59	0	7	66	
		C	810	1	0	811		C	519	7	0	526	
		Total	1018	5	450			Total	578	13	797		
2028	AM	Destination					PM	Destination					
			A	B	C	Total			A	B	C	Total	
		A	0	4	483	487		A	0	6	853	860	
		B	225	0	3	228		B	64	0	8	71	
2033	Origin	C	875	1	0	876		C	561	8	0	568	
		Total	1100	5	486			Total	624	14	861		
		Destination					Origin	Destination					
			A	B	C	Total			A	B	C	Total	
1.15	Origin	A	0	5	515	520		A	0	7	911	918	
		B	240	0	3	243		B	68	0	8	76	
		C	934	1	0	935		C	599	8	0	607	
		Total	1174	6	519			Total	667	15	919		
2043	AM	Destination					PM	Destination					
			A	B	C	Total			A	B	C	Total	
		A	0	5	562	567		A	0	8	994	1001	
		B	262	0	4	265		B	74	0	9	83	
		C	1019	1	0	1020		C	653	9	0	662	
		Total	1281	6	566			Total	727	16	1003		

Fig 6.1: Junction 1 Church Road – R630 – No Development Traffic Matrices

		With Dev										
2028	AM	Destination					PM	Destination				
			A	B	C	Total			A	B	C	Total
2028	Origin	A	0	27	483	510	Origin	A	0	24	853	877
		B	284	0	4	288		B	90	0	11	101
		C	875	7	0	882		C	561	28	0	589
		Total	1159	34	487			Total	651	52	864	
2033	AM	Destination					PM	Destination				
			A	B	C	Total			A	B	C	Total
		A	0	27	515	543		A	0	24	911	935
		B	299	0	4	303		B	94	0	11	106
		C	934	7	0	941		C	599	28	0	627
		Total	1233	34	520			Total	693	53	922	
2043	AM	Destination					PM	Destination				
			A	B	C	Total			A	B	C	Total
		A	0	28	562	590		A	0	25	994	1019
		B	321	0	5	325		B	101	0	12	112
		C	1019	7	0	1026		C	653	29	0	682
		Total	1340	34	567			Total	753	54	1006	

Fig 6.2: Junction 1 Church Road – R630 – With Development Traffic Matrices

## 6.2 JUNCTION 2 TRAFFIC MATRICES

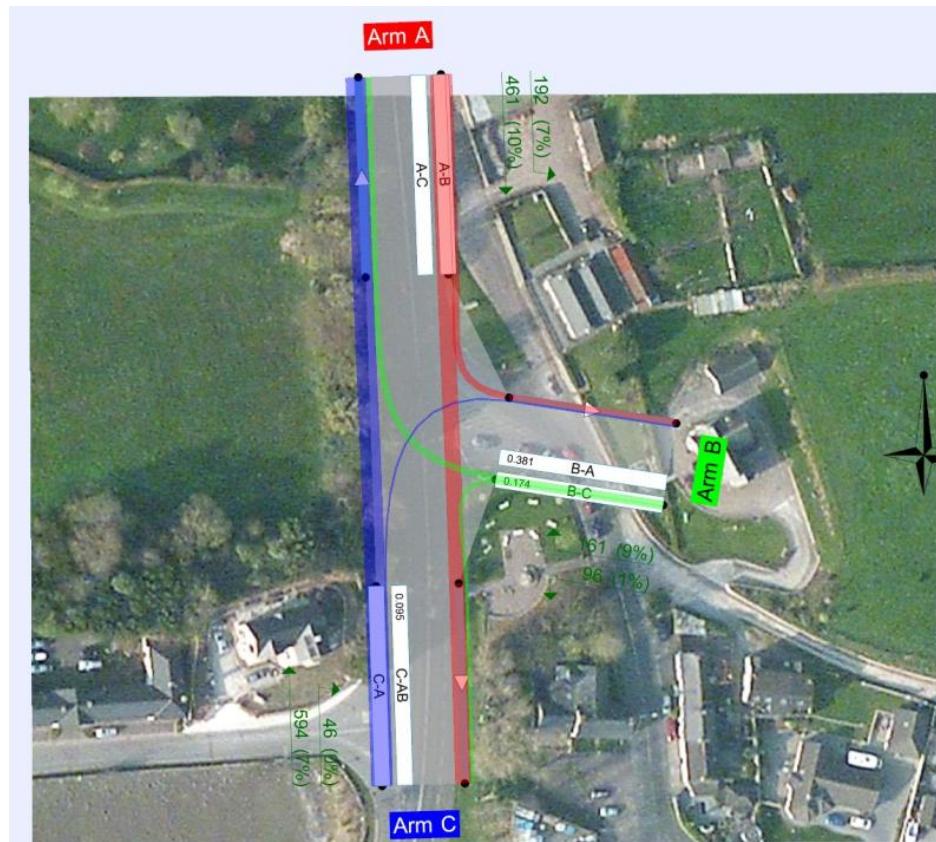


Fig 6.3: Junction 2 The Grotto – Arm Designation

		No Dev						Destination						Destination			
		AM		PM				AM		PM				AM		PM	
Site 2	2022	Origin		Origin		Origin		Origin		Origin		Origin		Origin		Origin	
		A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
		0	192	461	653					0	405	598	1003				
		B	161	0	257					121	0	12	133				
		C	594	46	640					423	82	0	505				
		Total	755	238	557					544	487	610					
Site 2	2028	AM		PM				AM		PM				AM		PM	
		Origin		Origin		Origin		Origin		Origin		Origin		Origin		Origin	
		A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
		0	216	518	733					0	455	671	1126				
		B	181	0	289					136	0	13	149				
		C	667	52	719					475	92	0	567				
		Total	848	267	625					611	547	685					
Site 2	2033	AM		PM				AM		PM				AM		PM	
		Origin		Origin		Origin		Origin		Origin		Origin		Origin		Origin	
		A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
		0	230	553	783					0	485	717	1202				
		B	193	0	308					145	0	14	159				
		C	712	55	767					507	98	0	605				
		Total	905	285	668					652	584	731					
Site 2	2043	AM		PM				AM		PM				AM		PM	
		Origin		Origin		Origin		Origin		Origin		Origin		Origin		Origin	
		A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
		0	251	603	854					0	530	782	1312				
		B	211	0	336					158	0	16	174				
		C	777	60	837					553	107	0	660				
		Total	987	311	728					711	637	798					

Fig 6.4: Junction 2 The Grotto – Without Development Traffic Matrices

		With Dev						Destination						Destination									
2028	AM	Destination				PM	Destination				PM	Destination				PM	Destination						
		Origin	A	B	C	Total	Origin	A	B	C	Total	Origin	A	B	C	Total							
			A	0	207	461		A	0	426	598	1024	A	0	426	598	1024						
			B	186	0	111		B	138	0	14	152	B	138	0	14	152						
			C	594	50	0		C	423	86	0	509	C	423	86	0	509						
			Total	780	257	572		Total	561	512	612		Total	561	512	612							
		Origin	Destination				Origin	Destination				Origin	Destination				Origin	Destination					
			A	B	C	Total		A	B	C	Total		A	B	C	Total		A	B	C	Total		
			A	0	245	553		A	0	506	717	1223	A	0	506	717	1223						
			B	218	0	130		B	163	0	16	179	B	163	0	16	179						
			C	712	59	0		C	507	103	0	610	C	507	103	0	610						
			Total	930	304	683		Total	670	609	733		Total	670	609	733							
		Origin	Destination				Origin	Destination				Origin	Destination				Origin	Destination					
			A	B	C	Total		A	B	C	Total		A	B	C	Total		A	B	C	Total		
			A	0	266	603		A	0	551	782	1333	A	0	551	782	1333						
			B	236	0	140		B	176	0	17	193	B	176	0	17	193						
			C	777	64	0		C	553	111	0	665	C	553	111	0	665						
			Total	1012	330	743		Total	729	662	800		Total	729	662	800							
		Origin	Destination				Origin	Destination				Origin	Destination				Origin	Destination					
			A	B	C	Total		A	B	C	Total		A	B	C	Total		A	B	C	Total		
			A	0	207	461		A	0	426	598	1024	A	0	426	598	1024	A	0	426	598	1024	
			B	186	0	111		B	138	0	14	152	B	138	0	14	152	B	138	0	14	152	
			C	594	50	0		C	423	86	0	509	C	423	86	0	509	C	423	86	0	509	
			Total	780	257	572		Total	561	512	612		Total	561	512	612		Total	561	512	612		
		Origin	Destination				Origin	Destination				Origin	Destination				Origin	Destination					
			A	B	C	Total		A	B	C	Total		A	B	C	Total		A	B	C	Total		
			A	0	245	553		A	0	506	717	1223	A	0	506	717	1223	A	0	506	717	1223	
			B	218	0	130		B	163	0	16	179	B	163	0	16	179	B	163	0	16	179	
			C	712	59	0		C	507	103	0	610	C	507	103	0	610	C	507	103	0	610	
			Total	930	304	683		Total	670	609	733		Total	670	609	733		Total	670	609	733		
		Origin	Destination				Origin	Destination				Origin	Destination				Origin	Destination					
			A	B	C	Total		A	B	C	Total		A	B	C	Total		A	B	C	Total		
			A	0	266	603		A	0	551	782	1333	A	0	551	782	1333	A	0	551	782	1333	
			B	236	0	140		B	176	0	17	193	B	176	0	17	193	B	176	0	17	193	
			C	777	64	0		C	553	111	0	665	C	553	111	0	665	C	553	111	0	665	
			Total	1012	330	743		Total	729	662	800		Total	729	662	800		Total	729	662	800		

Fig 6.5: Junction 2 The Grotto – With Development Traffic Matrices

## 7. TRAFFIC MODELLING RESULTS

The Junction 10 traffic modelling software package was used to assess the existing two priority 'T' junction for the following scenarios;

- 2022 – Base year Junction 2 (AM & PM)
- 2024 – Base Year Junction 1 (AM&PM)
- 2025 – Opening year (with / without development) (AM & PM)
- 2030 – Opening year +5 (with / without development) (AM & PM)
- 2040 – Opening year +15 (with / without development) (AM & PM)

The following table describes the different LOS and the implications for the junction being assessed.

Level of Service A	Free-Flow
Level of Service B	Reasonably Free-Flow (no delay incurred)
Level of Service C	Stable Operation (busy but operational with acceptable delay incurred)
Level of Service D	Borderline Unstable (Junctions reaching capacity – but still operational-delay incurred)
Level of Service E	Extremely Unstable (Junctions at capacity or over, any incident will cause a grid-lock situation- significant delay incurred)
Level of Service F	Breakdown (Junctions over capacity, unacceptable delay traffic at a standstill)

Table 7.1 Level of Service

### 7.1 JUNCTION 10 ANALYSIS – JUNCTION 1

The output results sheets from Junction 10 consist of tables of demand flow, capacities, queues and delays for each 15-minute time segment of the peak hour analysis. These tables contain start and finish times for each arm, traffic demand, 'Ratio of Flow to Capacity' (RFC), start queue length and queuing delay.

The RFC provides the basis for judging the acceptability of the junction design and the capacity of the existing junction. For roundabout controlled junctions, an RFC of 0.85 or less is considered acceptable during the peak period. An RFC of this value would indicate that at peak times the junction is at 85% of its operational capacity and therefore has a practical reserve capacity of 15%.

The current year model was validated by comparing the traffic count information to the modelled flows from PICADY, in this case as there is no route choice, we will get a 100% match. The calibration of the current year model involved comparing on-site measurement of queue lengths and delay to model results. As expected, on site observations included some minor fluctuations in queue lengths but in general were broadly in-line over the peak hour periods.



Fig 7.1: Church Road – R630 Junction

Table 7.1 presents the results of the traffic model analysis for the peak hours 08:00 – 09:00 & 17.00-18.00 for the base year (2024), opening year (2028), opening year +5 (2033) and opening year +15 (2043) for the junction modelled both with and without the development in place.

The results indicate that the R630-Church Road Junction currently operates at a Level of Service (LOS) C for the morning peak and LOS B in the evening peak. With the application of a growth rates on background traffic and development traffic, the right turn approach from Church Rd is seen to deteriorate to LOS F with significant delay being incurred (approx. 157s secs AM peak). A maximum RFC of 102% is experienced during this peak hour with the development which is an increase of 20% from the “without Dev” scenario.

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
<b>2024 - Junction 1</b>										
Stream B-AC	D1	1.1	17.45	0.52	C	D2	0.2	11.24	0.18	B
Stream C-AB		0.0	3.60	0.00	A		0.0	4.47	0.02	A
<b>2028 - Junction 1- No Dev</b>										
Stream B-AC	D3	0.5	10.27	0.32	B	D4	0.3	12.96	0.22	B
Stream C-AB		0.0	3.51	0.00	A		0.0	4.41	0.01	A
<b>2028 - Junction 1- With Dev</b>										
Stream B-AC	D9	3.3	39.70	0.78	E	D10	0.5	15.24	0.31	C
Stream C-AB		0.0	3.57	0.03	A		0.1	4.59	0.05	A
<b>2033 - Junction 1- No Dev</b>										
Stream B-AC	D5	2.1	28.88	0.68	D	D6	0.3	14.58	0.25	B
Stream C-AB		0.0	3.43	0.00	A		0.0	4.35	0.02	A
<b>2033 - Junction 1- With Dev</b>										
Stream B-AC	D11	5.5	63.57	0.87	F	D12	0.6	17.50	0.35	C
Stream C-AB		0.0	3.48	0.03	A		0.1	4.53	0.05	A
<b>2043 - Junction 1- No Dev</b>										
Stream B-AC	D8	3.9	50.87	0.81	F	D7	0.4	17.89	0.31	C
Stream C-AB		0.0	3.32	0.01	A		0.0	4.28	0.02	A
<b>2043 - Junction 1- With Dev</b>										
Stream B-AC	D13	15.7	157.13	1.02	F	D14	0.8	22.39	0.43	C
Stream C-AB		0.1	3.37	0.04	A		0.3	4.48	0.12	A

Table 7.1: Junction 01: 2024, 2028, 2033 & 2043

## 7.2 JUNCTION 10 ANALYSIS-JUNCTION 2

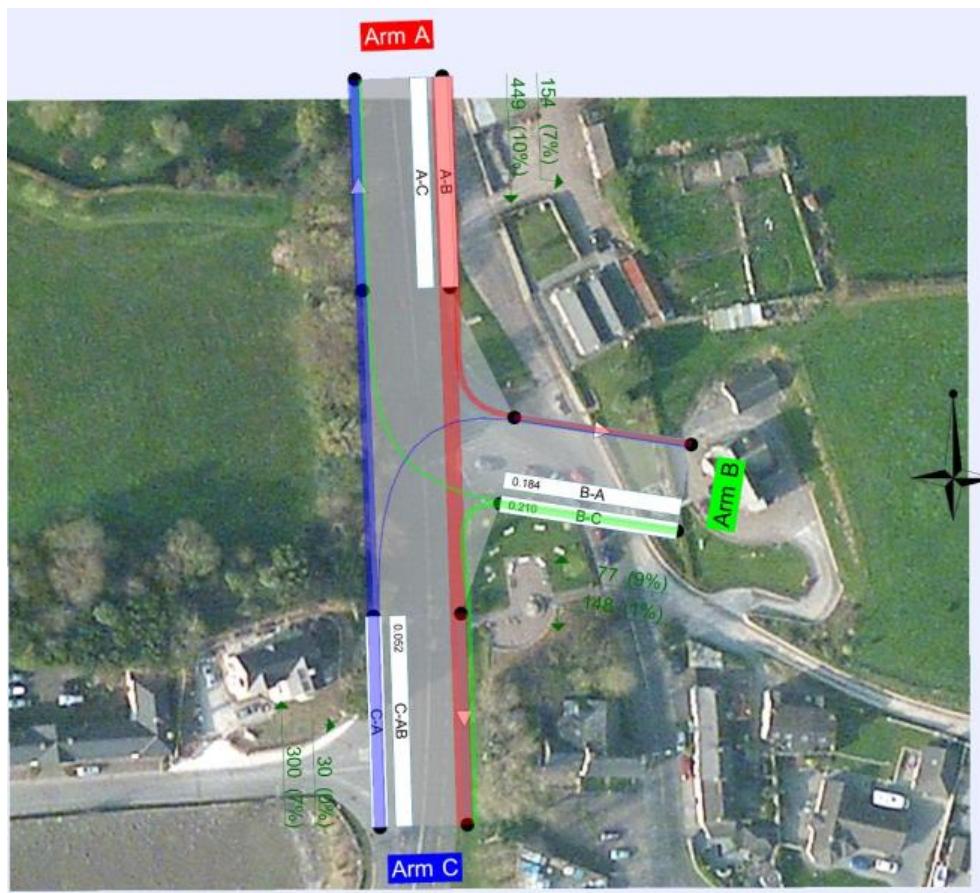


Fig 7.2: R630/R629 Priority "T" Junction

Table 7.2 presents the results of the traffic model analysis for the peak hours 08:00 – 09:00 & 17:00-18:00 for the base year (2022), opening year (2028), opening year +5 (2033) and opening year +15 (2043) for Junction 2 modelled with and without the development in place.

These indicate that with medium-level growth rates being applied to existing traffic flows to develop the future year models Junction 2 continues to operate similarly both with and without the development traffic in place. The priority T-junction operates above capacity from the year 2033 with and without the development. A maximum RFC of 143% is experienced during the AM peak in the 2043 "With Development" scenario which is an increase of 24% from the without development scenario. The critical stream in this instance is the minor arm (B) with delay being experienced for traffic wishing to join the R630 at peak periods. Development traffic is seen to add to this delay. A LOS of F is experienced particularly in the morning peak.

Junction upgrades, and the general upgrade of the R630, were proposed by WSP in the Midleton to Whitegate R630 Traffic Management Study. Junction 02 was identified as requiring upgrading during this study. Significant upgrades to this priority T-Junction would see a reduction in RFC % and delay along the minor arm (R629).

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
2022 - Junction 2										
Stream B-AC	D1	2.4	31.93	0.71	D	D2	0.9	23.78	0.48	C
Stream C-AB		0.4	4.51	0.15	A		0.8	6.54	0.28	A
2028 - Junction 2- No Dev										
Stream B-AC	D3	5.6	68.73	0.88	F	D4	1.7	37.79	0.63	E
Stream C-AB		0.6	4.46	0.19	A		1.2	7.17	0.36	A
2028 - Junction 2- With Dev										
Stream B-AC	D9	5.3	63.21	0.87	F	D10	1.4	30.41	0.58	D
Stream C-AB		0.5	4.44	0.18	A		0.9	6.69	0.31	A
2033 - Junction 2- No Dev										
Stream B-AC	D5	12.1	132.51	0.99	F	D6	2.6	58.22	0.74	F
Stream C-AB		0.7	4.45	0.22	A		1.5	7.76	0.41	A
2033 - Junction 2- With Dev										
Stream B-AC	D11	36.5	329.89	1.19	F	D12	5.4	108.25	0.89	F
Stream C-AB		0.9	4.51	0.25	A		1.9	8.27	0.46	A
2043 - Junction 2- No Dev										
Stream B-AC	D8	35.7	333.19	1.19	F	D7	7.8	153.40	0.96	F
Stream C-AB		1.0	4.58	0.27	A		2.4	9.21	0.51	A
2043 - Junction 2- With Dev										
Stream B-AC	D13	68.9	641.97	1.43	F	D14	19.1	311.80	1.15	F
Stream C-AB		1.3	4.70	0.31	A		3.0	10.17	0.56	B

Table 7.2: Junction 2, 2022, 2028, 2033 &amp; 2043 – With/Without Development in place

## 7.2 ROAD IMPACT CONCLUSIONS

The traffic modelling results presented above show that the existing roads network operates close to or above capacity at present during peak morning and evening periods.

Local traffic from the development will add to significant congestion currently experienced by traffic exiting from the R629 approach to the R630. The R630 is set to benefit from the Midleton Cycleway Scheme which will improve pedestrian and cycle connectivity north towards Midleton.

It should be noted that no allowance for an overall modal shift towards sustainable transport has been applied to background traffic flows. What has been included for is a modest increase from 16.8% to 30% applied to new development traffic only. If this same factor was applied to background-traffic flows then the analysed junctions would continue to operate as they do at present.

## 8. CUMULATIVE IMPACTS

As outlined in Section 6.0 of this report, industry standard growth rates have been applied to background traffic for future year assessments. These growth rates make allowance for modal shift targets as set by national policy but do not take account of site-specific measures that may be implemented to mitigate against traffic generation from a particular development. In this instance there are proposals to upgrade the R630 Midleton to Whitegate Road providing a series of sustainable transport solutions including cycling, walking and public transport improvements. The aim is to further enhance the connectivity between Whitegate and Midleton for cyclists and pedestrians, linking residential areas to schools and other public facilities.

The following figure presents the scheme which has nearly completed construction with the shared cycleway/walkway completed in the immediate junctions which are the focus of this TTA.



Fig. 8.1: R630: Future Road Improvement Works which are nearing completion

## 9. ROAD SAFETY

### 9.1 ROAD COLLISION DATABASE

From accessing Ireland's road collisions database produced from the RSA it can be seen that there are no road traffic incidents in the general area of the proposed development. Only 1 minor incident has been recorded since 2005. This highlights that the layout of the junctions at present are working safely and are not influencing road traffic incidents in the area.

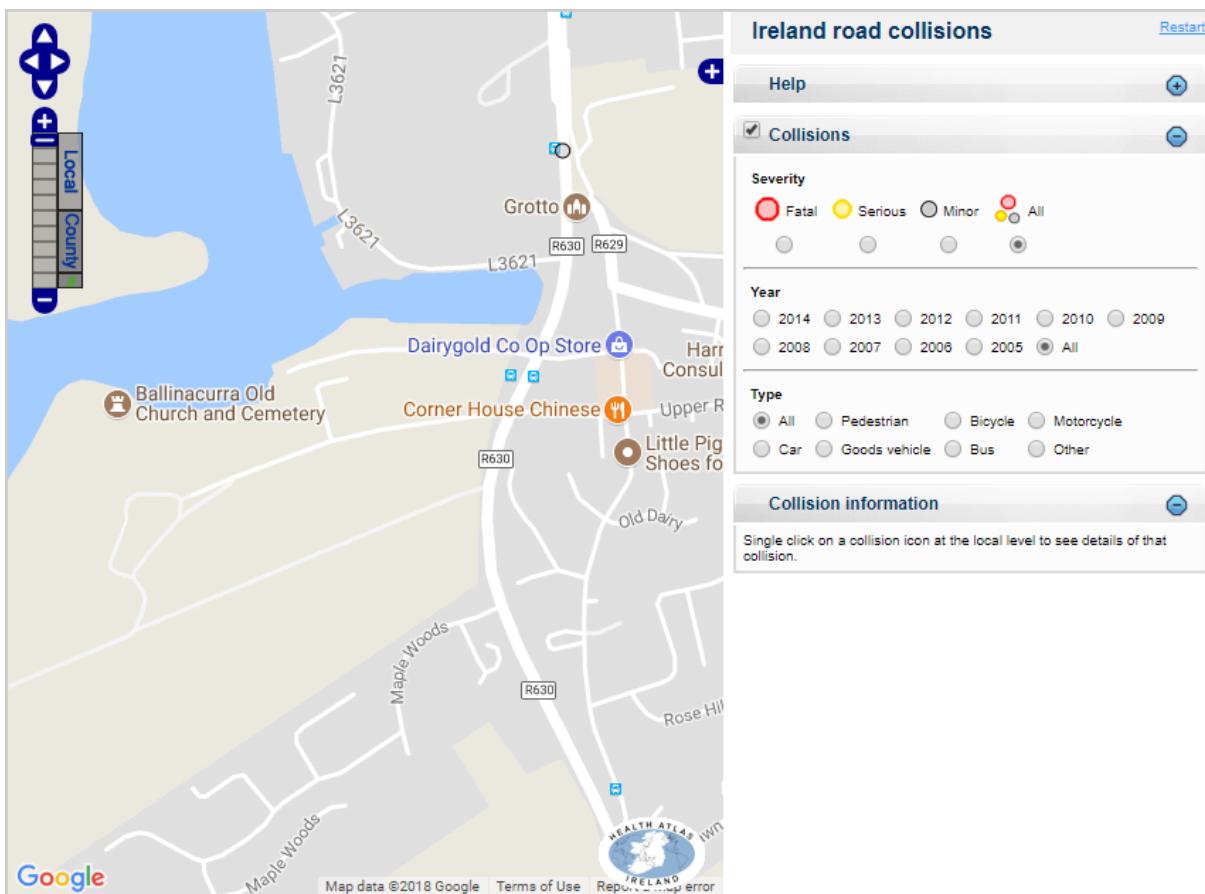


Fig 9.1: RSA Road Collisions database

## 10. ENVIRONMENTAL IMPACT

The environmental impact of the proposed development is minor and relates directly to the resulting increase in traffic generation to the site. It is suggested that given the location of the scheme and its potential for future connections using sustainable transport solutions the environmental impact of developing this site for housing would be positive.

## 11. INTERNAL LAYOUT & PARKING PROVISIONS

The internal roads are 6m wide where appropriate, reducing to 3m in selected areas, with a short section of road necessitating a maximum gradient of 6.4%. The parking requirements of Cork County Council have been met and are all contained within the development boundary. The site is to provide for a total of 214no. parking spaces.



Figure 11.1: Proposed Site Layout

## 12. PEDESTRIANS / CYCLISTS / PEOPLE WITH DISABILITIES

The internal layout of the site is designed to accommodate all road users and will adhere to national requirements regarding people with disabilities.

## 13. PUBLIC TRANSPORT

Ballinacurra is currently served by a bus service with a rail service nearby in Midleton Town. The rail station is 3km north from the proposed site and provides a direct connection to Cork City. The 241 and 261-bus services have a bus stop approximately 350m west towards the R630.

**14. REFERENCES**

National Roads Authority (May 2014) Traffic and Transport Assessment Guidelines NRA, Dublin

Institution of Highways & Transportation (1994) Guidelines for Traffic Impact Assessment IHT, London

National Roads Authority (2000) Road Geometry Handbook NRA, Dublin

National Roads Authority (revised 2003) Design Manual For Roads and Bridges NRA, Dublin

National Roads Authority (November 2004) Draft Traffic and Transport Assessment Guidelines NRA, Dublin

RSA Ireland Road Collisions

<http://www.rsa.ie/RSA/Road-Safety/Our-Research/Ireland-Road-Collisions/>

## **APPENDICES**

**APPENDIX A – TRAFFIC MODEL OUTPUTS – JUNCTIONS 10**