

For: **Cork County Council**

Gallanes Amenity Area (Phase 2)



Traffic & Transportation Assessment

NOVEMBER 2021



MHL & Associates Ltd.
Consulting Engineers





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1 NON TECHNICAL SUMMARY

M.H.L. & Associates Ltd. Consulting Engineers has been engaged by Cork County Council to prepare a Traffic and Transportation Assessment (TTA) in support of a Part VIII planning application for a new walkway project in Clonakilty, Co. Cork.

The site extents are to be situated along the N71, east of Clonakilty town centre. The proposed works entail the continuation of an amenity walk from Gallanes Lake to the Clonakilty Rugby Club. The project is to cater for amenity /leisure walkers and act as a pedestrian link between the West Cork Technology & Business Park / Clonakilty RFC with the town centre. The development of the walkway is in keeping with Cork County Development Plan, fulfilling sustainable transport linkages for urban employment.

As part of the project a new 53no. space car park is also proposed to be built as part the walkway. This will be the key trip generator as it is expected to cater for visitors to the amenity walk. This TTA has assessed these trips as part of the following traffic reporting.

This report has been prepared in accordance with the TII'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 Opening year is the year of expected completion for the development and is taken to be 2023. In accordance with the TII's "Traffic and Transport Assessment Guidelines", a traffic analysis is required to be undertaken for the **Opening Year (2023), Opening Year +5 (2028)** and fifteen years from this date i.e., the **Opening Year+15 (2038)**.

This TTA assessment focused on the following traffic junction:

- Junction J1: The N71/ L4032 priority " T" junction

As part of this assessment, peak hour traffic flows were recorded by MHL for the N71 priority T junction, with these traffic counts recorded on the 16/09/2021. These counts been factored up to the modelling year scenarios 2021 through to 2038 with TII expansion factors.

The overall impact of the development on the adjoining local road is to increase traffic flows entering the development due to the additional of 53no. car parking spaces proposed. The modelling assumed the worst-case traffic scenario where the additional amenity car parking spaces would be used to facilitate match day traffic entering and exiting during peak morning and evening rush hour traffic. This would be reflective of training camps coupled with tournaments running throughout competition days. Assuming all traffic generated by the car park development is new to the network, the development is modelled to increase traffic %RFC between circa 10% to 18% for morning and evening peaks respectively, in the Opening Year of the development, showing the increase is minor from a junction capacity perspective.

The traffic modelling analysis carried out for these design year scenarios shows that the development junction and the nearby road junction are operating below capacity for all design years with minor max %RFC for the 2038 for both morning and evening peaks. Comparing the analysis of the traffic models, the development will have a minor impact of

the operation of this junction from a capacity point-of-view and will not require geometric junction upgrades to facilitate the development.

2 EXISTING SITE

The proposed project extents are within the local Gallanes area, northeast of Clonakilty town centre, as noted site location below.

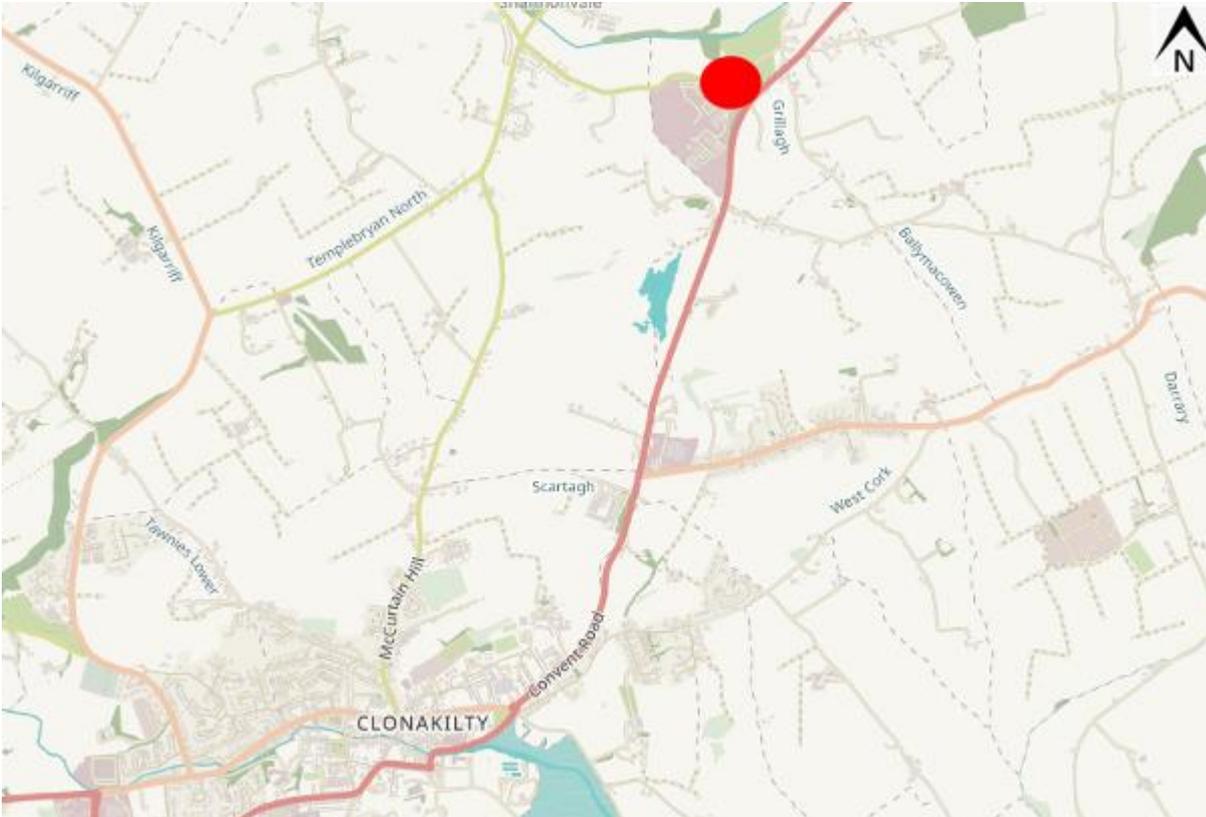


Figure 2.1 Applicant's Site Location

The site extents are to connect to the south with the amenity walk at Gallanes Lake, Scartagh and run through the N71/L4032 road junction, linking the West Cork Technology & Business Park and the Clonakilty Rugby Club with the town's footpath network.

3 PROPOSED DEVELOPMENT

The proposed extents of project the N71 between Grillagh and Scartagh, northeast of Clonakilty town centre, as noted below in the site location

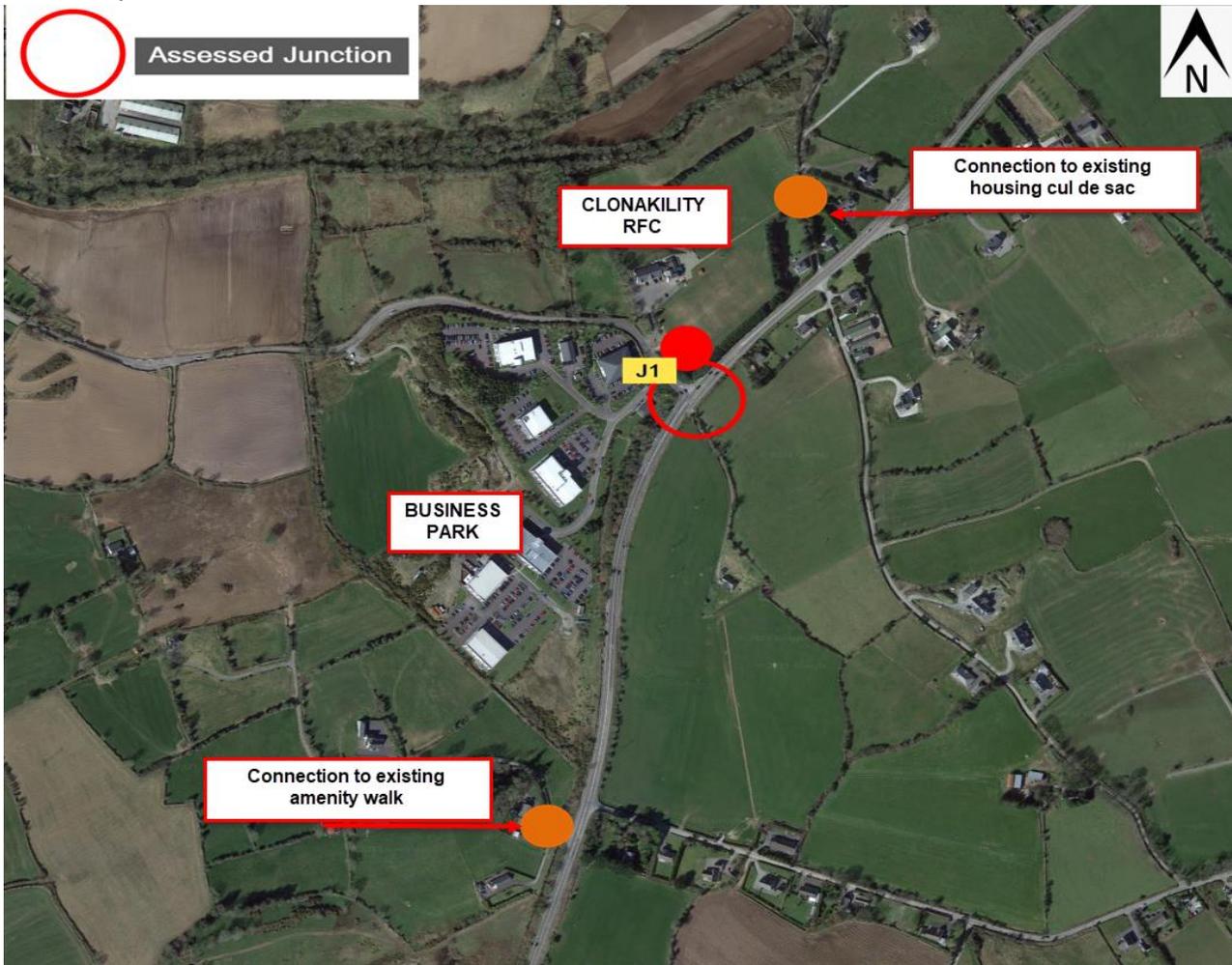


Figure 3.1 Site Location

The Part VIII planning application seeks permission to extend an existing walkway north to link up with the Business Park, the Clonakilty Rugby Club and the neighbouring residential estates/ private homes in the location, just 3km outside the town centre, as shown in the proposed site layout below.

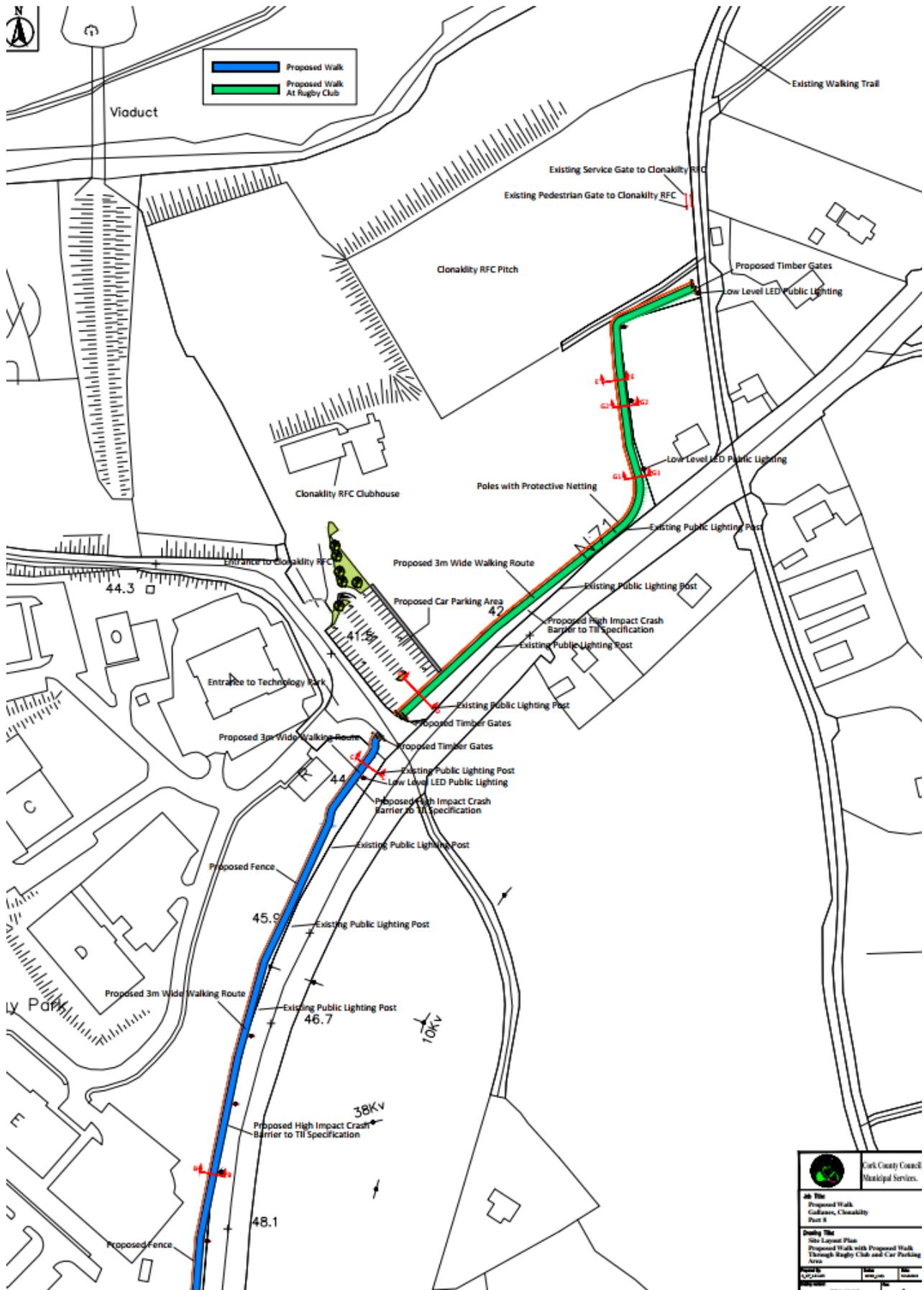


Figure 3.2 Project extents

The new proposed walkway will also provide car parking area as shown. The parking provision is to cater for amenity walkers and provide increased parking facilities during rugby club match days. The new parking provision is to offset uncontrolled parking in the area, generated by match day and visitor traffic.

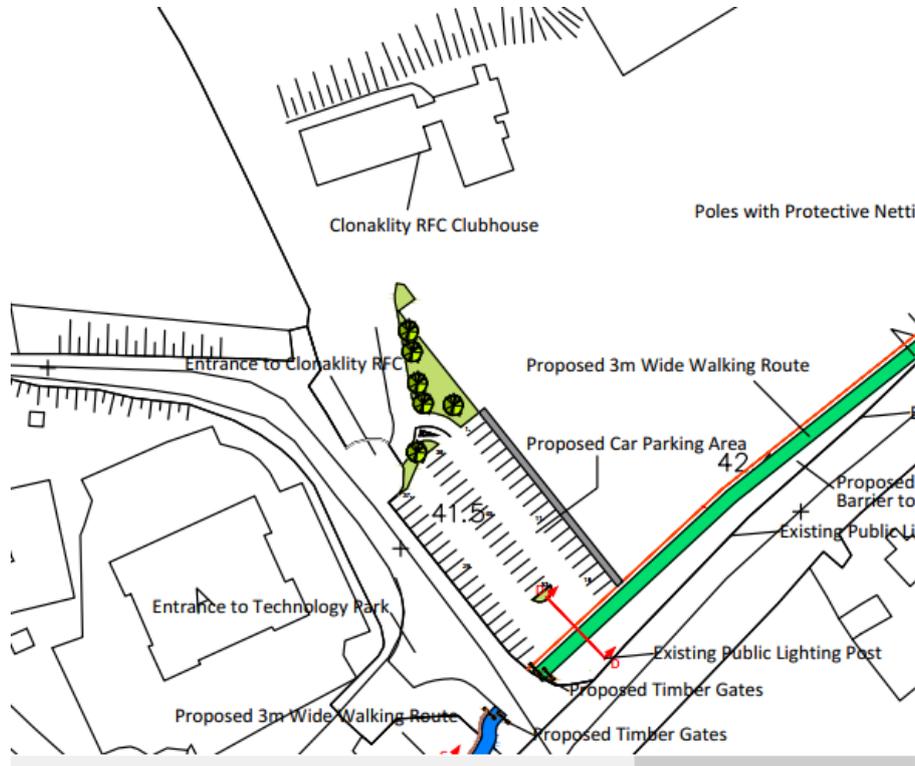


Figure 3.3 Proposed Car Parking at Clonakilty RFC

4 TRAFFIC

4.1 Traffic Assessment

For this development site, the TTA assesses 1no. junction in terms of traffic impact, junction capacity and operation for both the morning and evening traffic peaks.

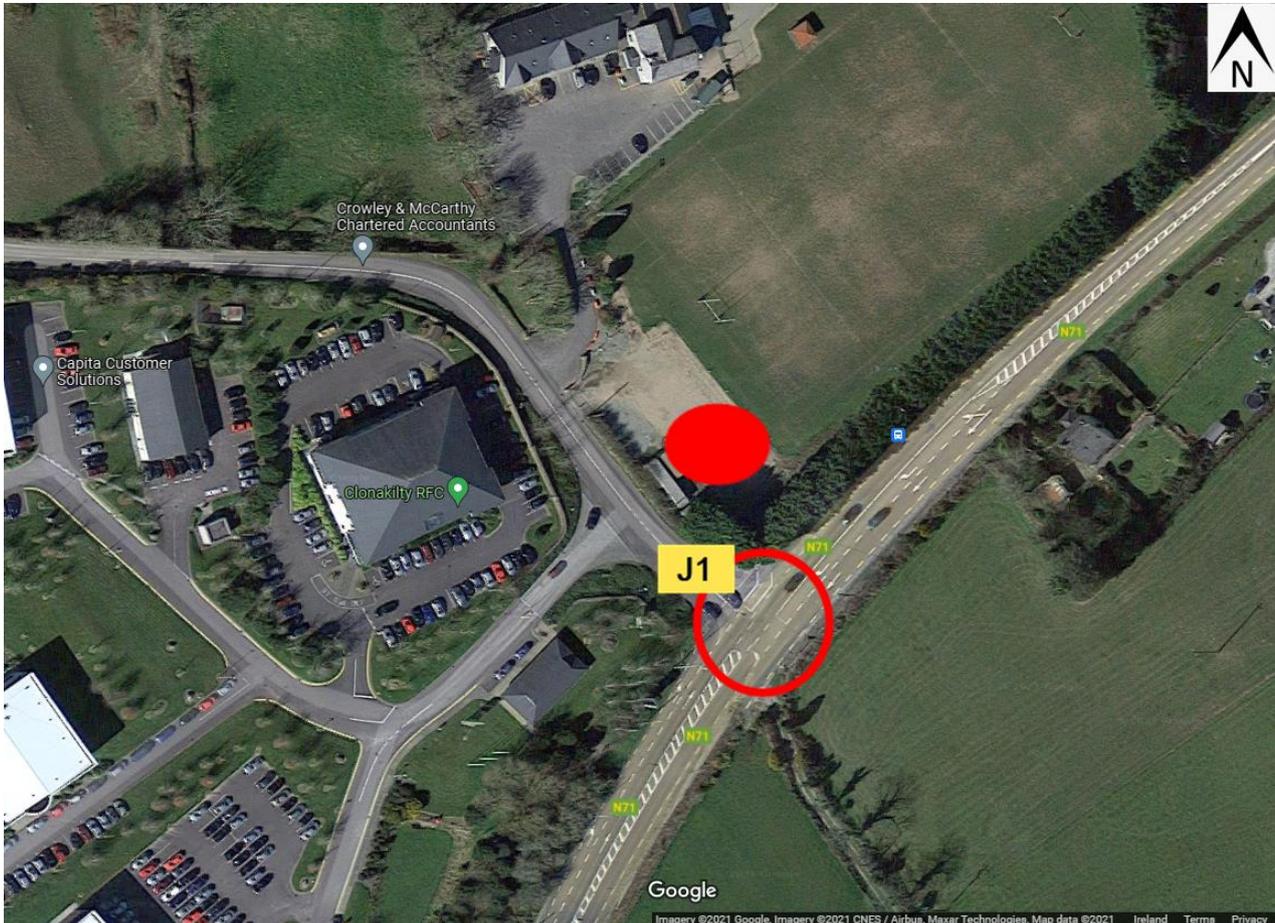


Figure 4.1 Proposed site extents and location

4.2 Traffic Generation

In terms of traffic generation:

- The new car parking area is proposed to cater 53no. vehicles.
- The existing rugby club and business park is accounted for in the traffic counts collected on site.
- For match days, the full capacity of the existing rugby club parking (approx. 45no spaces) has been accounted for.

Proposed Units				
Existing Rugby Club	45	spaces		
Proposed Car Parking	53	spaces		
Total	98	spaces		
			AM PEAK	PM PEAK
			Arrivals	Departures
Peak Trips for Parking	45	5	5	45
Trips Generated	50		50	
Total Trips Generated	50		50	
Peak Trips for Parking	53	6	6	53
Trips Generated	59		59	
Total Trips Generated	109		109	

Figure 4.2 Peak Hour Traffic Generation for the proposed development

The development figures were deemed an accurate assessment of the expected traffic generation for the new development, inclusive of demand traffic generated by match days, as noted, to produce projected traffic trip generation for the site. This conservative approach provides a very robust basis for the traffic assessment and modelling that following.

4.3 Site Traffic Counts

Traffic counts were conducted on the 16/09/2021 by MHL and were utilised to establish the AM & PM Peak traffic hours for the local road network for the purposes of this assessment. These existing junction traffic counts were growth factored as described in Chapter 5. Based on the traffic counts and considering the recommendation of the Guidelines for Traffic and Transportation Assessments, the peak hours considered in this TTA are reflective of the demand case for the site.

4.4 Modal Choice

In predicting 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. It is assumed that primary means of transport will be vehicular, due to the nature of the development. The analysis therefore assumes car will dominate the developments traffic movements. Future public transport improvements would encourage modal shift in the future towards sustainable travel modes for workers travelling to work at the facility, as encouraged by local and National Transport Authority Policy. This would reduce the modelled impact of this development on the surrounding road network.

4.5 Existing Situation

Traffic counts taken at the assessed junction were used as the basis of the modelling, producing morning and evening O/D Matrices. The traffic flows through the main N71 junction are as shown in the following figures.

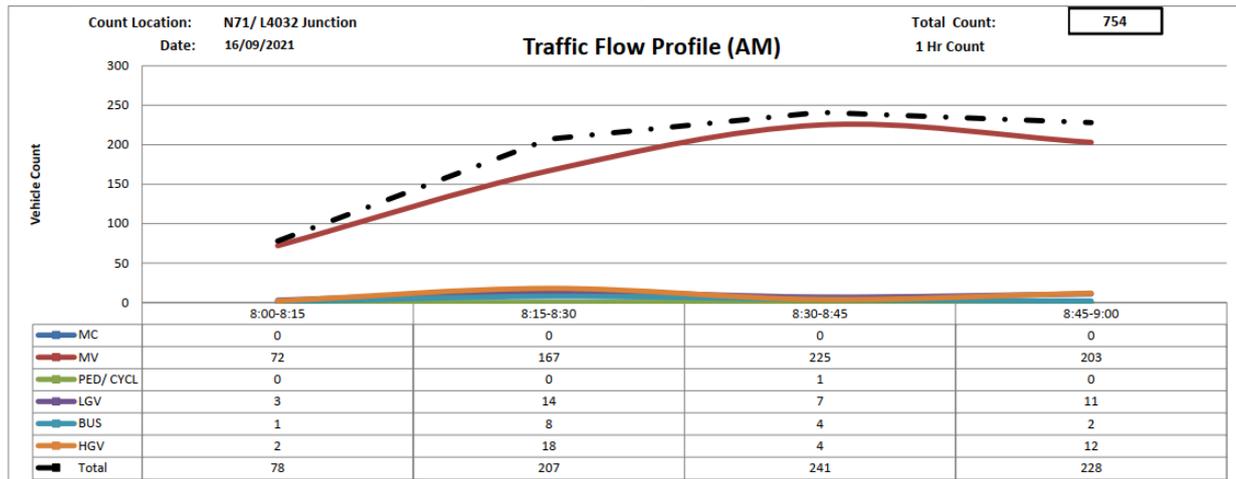


Figure 4.5 N71 junction morning traffic profile.

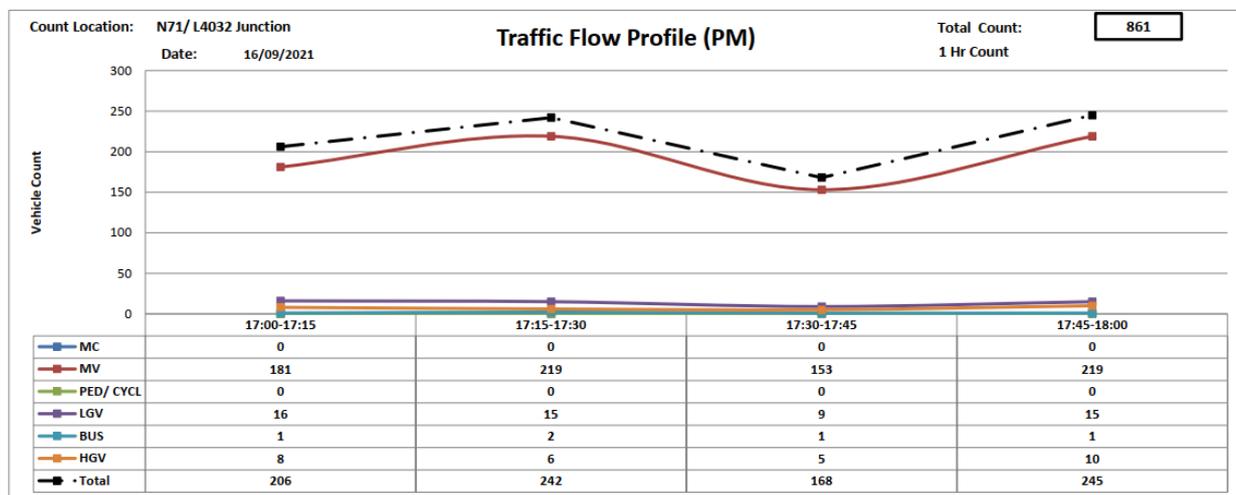


Figure 4.6 N71 junction evening traffic profile.

4.7 Trip Assignment

The proposed development will generate traffic as outlined in Section 4 following current flow patterns. Figures in Section 5 show the overall projected traffic movements at the development for the Opening year 2023, Opening Year +5 in 2028, and Opening Year +15 in 2038 for the AM and PM peak hours.

Traffic models were produced for these scenarios for the “without development” and also “with development” scenario. These models incorporate the existing thru traffic at the junction, factored up along with predicted development traffic as described.

5 TRAFFIC ASSESSMENT

The base year is taken as 2021. It is anticipated that the first year of operation, subject to a positive outcome from the planning process would be 2023. In accordance with the Guidelines for Traffic and Transportation Assessments as published by the TII, a traffic analysis is required to be undertaken for the Opening Year, Opening Year plus five years and Opening Year plus fifteen years.

The TII publication "Project Appraisal Guidelines for National Routes Unit 5.3 – Travel Demand Projections" was used to calculate growth factors for the road network traffic. Table 5.1 below shows the calculated growth factors:

			Cars/LGV	HGV	Combined	
Count %			95%	5%		
	2021	to	2023	1.038	1.077	1.040
	2021	to	2028	1.140	1.296	1.148
	2021	to	2038	1.255	1.531	1.269

TII Project Appraisal Guidelines for National Roads Unit 5.3
Travel Demand Projections (PE-PAG-0217)

Figure 5.1 Future Projected Growth Rates

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 signalised junction.

5.1 Future Year Traffic Flows

The following figures below outline the projected traffic flows at the site for the AM with development scenario and the PM with development scenario for opening 2023 period.

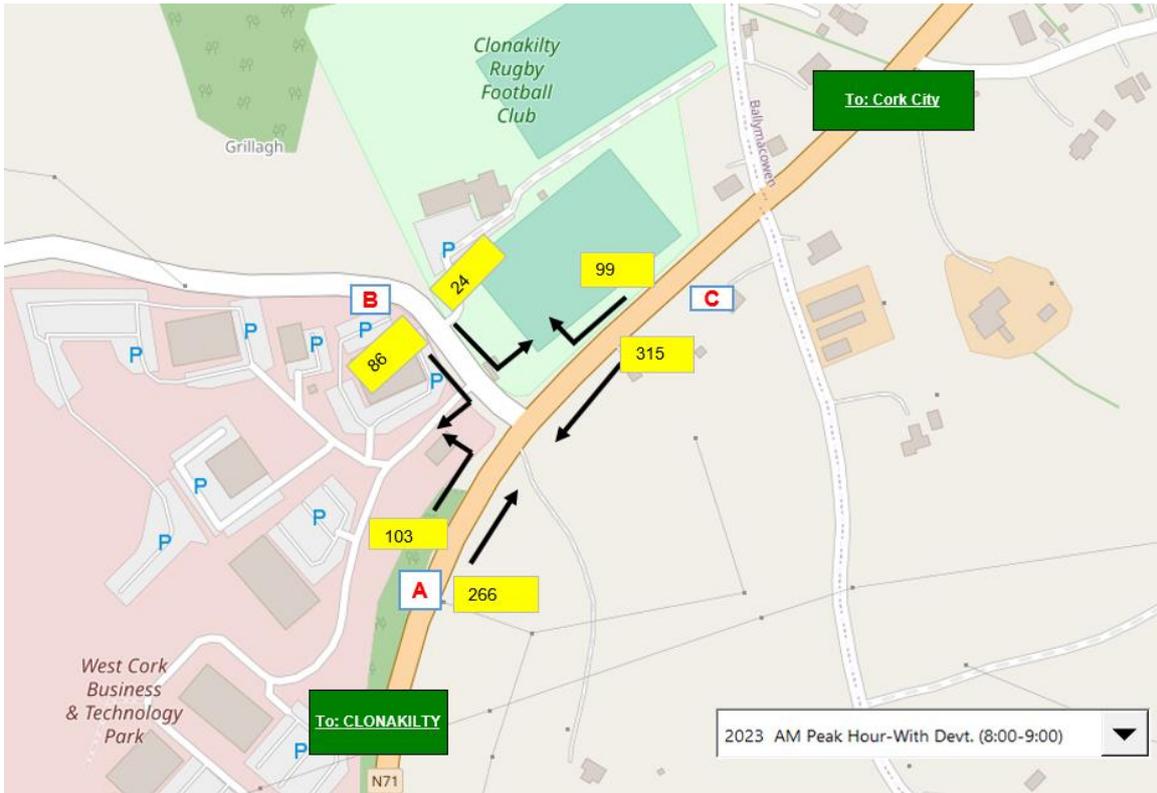


Figure 5.2 Projected Opening Year, 2023, AM Peak Hour Flows

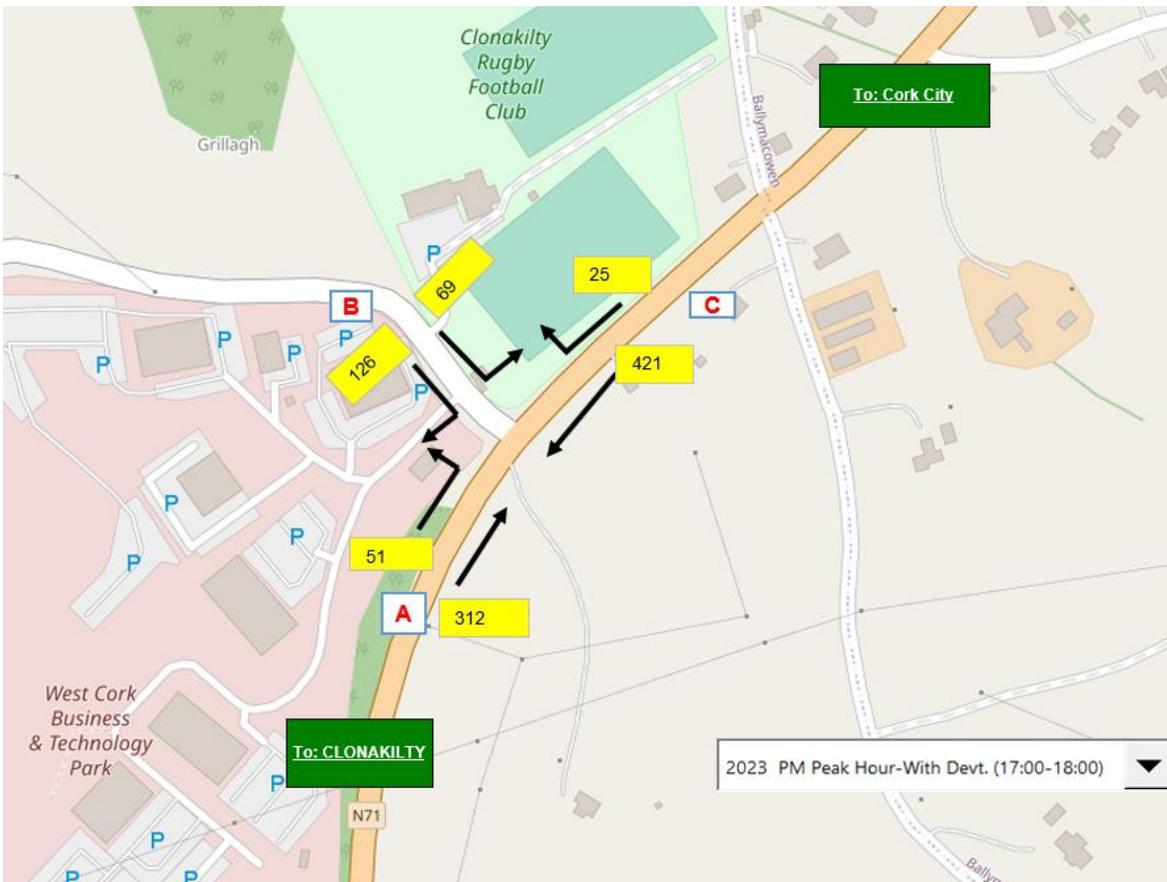


Figure 5.3 Projected Opening Year, 2023, PM Peak Hour Flows

6 TRAFFIC MODELLING

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. To assess the capacity of junction (J1), traffic models were produced using traffic modelling software Junction 9 "Picady".

Picady is used in the assessment and design of priority T junctions

The output results sheets from Picady modelling, consists of tables of Demand Flow, Practical Reserve Capacity, 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 junction design and the capacity of existing junctions. Generally, an RFC of 0.90 or less is considered acceptable during the peak period for a signalised junction. An RFC of this value would indicate that at peak times the junction is at 90% of its operational capacity and therefore has a practical reserve capacity of 10%. This reserve capacity of 10% is considered by traffic engineers to be the level of reserve capacity at a junction required to cater for periods of unusually high traffic flows, such as bank holiday weekends etc. The degree of saturation of a junction is a measure of the capacity of the junction.

The following sets out the results of the traffic model analysis of the junction for all design year scenarios.

6.1 Junction Assessment

The traffic capacity modelling for the junction (J1) was assessed and the summary results are below.

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
2021 Current Year												
Stream B-C	D1	0.1	7.68	0.05	A	115 % [Stream B-A]	D2	0.1	7.40	0.07	A	119 % [Stream B-A]
Stream B-A		0.3	10.95	0.20	B			0.2	10.82	0.17	B	
Stream C-AB		0.1	6.72	0.08	A			0.0	6.25	0.03	A	
2023 Opening Year [Do Nothing]												
Stream B-C	D3	0.1	7.76	0.05	A	106 % [Stream B-A]	D4	0.1	7.48	0.07	A	111 % [Stream B-A]
Stream B-A		0.3	11.22	0.21	B			0.2	11.06	0.17	B	
Stream C-AB		0.1	6.78	0.09	A			0.0	6.30	0.04	A	
2023 Opening Year [With Dev]												
Stream B-C	D5	0.1	7.96	0.06	A	80 % [Stream B-A]	D6	0.2	8.76	0.16	A	54 % [Stream B-A]
Stream B-A		0.3	12.40	0.25	B			0.6	14.25	0.35	B	
Stream C-AB		0.3	7.79	0.19	A			0.1	6.38	0.05	A	
2028 Opening Year+5 [Do Nothing]												
Stream B-C	D7	0.1	7.97	0.06	A	87 % [Stream B-A]	D8	0.1	7.72	0.08	A	91 % [Stream B-A]
Stream B-A		0.3	12.03	0.24	B			0.3	11.85	0.20	B	
Stream C-AB		0.1	6.96	0.10	A			0.0	6.42	0.04	A	
2028 Opening Year+5 [With Dev]												
Stream B-C	D9	0.1	8.21	0.06	A	64 % [Stream B-A]	D10	0.2	9.14	0.17	A	43 % [Stream B-A]
Stream B-A		0.4	13.42	0.28	B			0.6	15.54	0.39	C	
Stream C-AB		0.3	8.02	0.20	A			0.1	6.51	0.05	A	
2038 Opening Year+15 [Do Nothing]												
Stream B-C	D11	0.1	8.25	0.06	A	69 % [Stream B-A]	D12	0.1	8.01	0.09	A	72 % [Stream B-A]
Stream B-A		0.4	13.10	0.27	B			0.3	12.84	0.23	B	
Stream C-AB		0.1	7.15	0.11	A			0.0	6.56	0.04	A	
2038 Opening Year+15 [With Dev]												
Stream B-C	D13	0.1	8.50	0.07	A	51 % [Stream B-A]	D14	0.2	9.65	0.19	A	33 % [Stream B-A]
Stream B-A		0.5	14.68	0.31	B			0.8	17.30	0.42	C	
Stream C-AB		0.3	8.29	0.22	A			0.1	6.65	0.06	A	

Figure 6.1 Junction performance summary

The Picady analysis carried out for the development junction (J1), shows that the junction is operating below capacity for all design years. The max %RFC difference between with and without development scenarios for the 2038 morning and evening peaks is very minor with minor delay noted on the minor local road junction arm. Comparing the analysis of the "With Development" and "Without Development" traffic models, the development will have a minor impact of the operation of the junction from a capacity point-of-view.

6.2 Cumulative Impact

The overall impact of the development in the Opening Year on the adjoining National Secondary Road is to increase traffic delay on the ghost island by one second with negligible vehicle queues shown to form on the mainline. The %RFC change on the right turn lane (C-B) for the morning peak is 10% and 1%RFC in the evening peak, assuming all traffic generated by the development is new to the network. This increase is negligible from a junction capacity perspective.

7 ROAD SAFETY

The traffic collision statistics for the surrounding road network were assessed for this application.

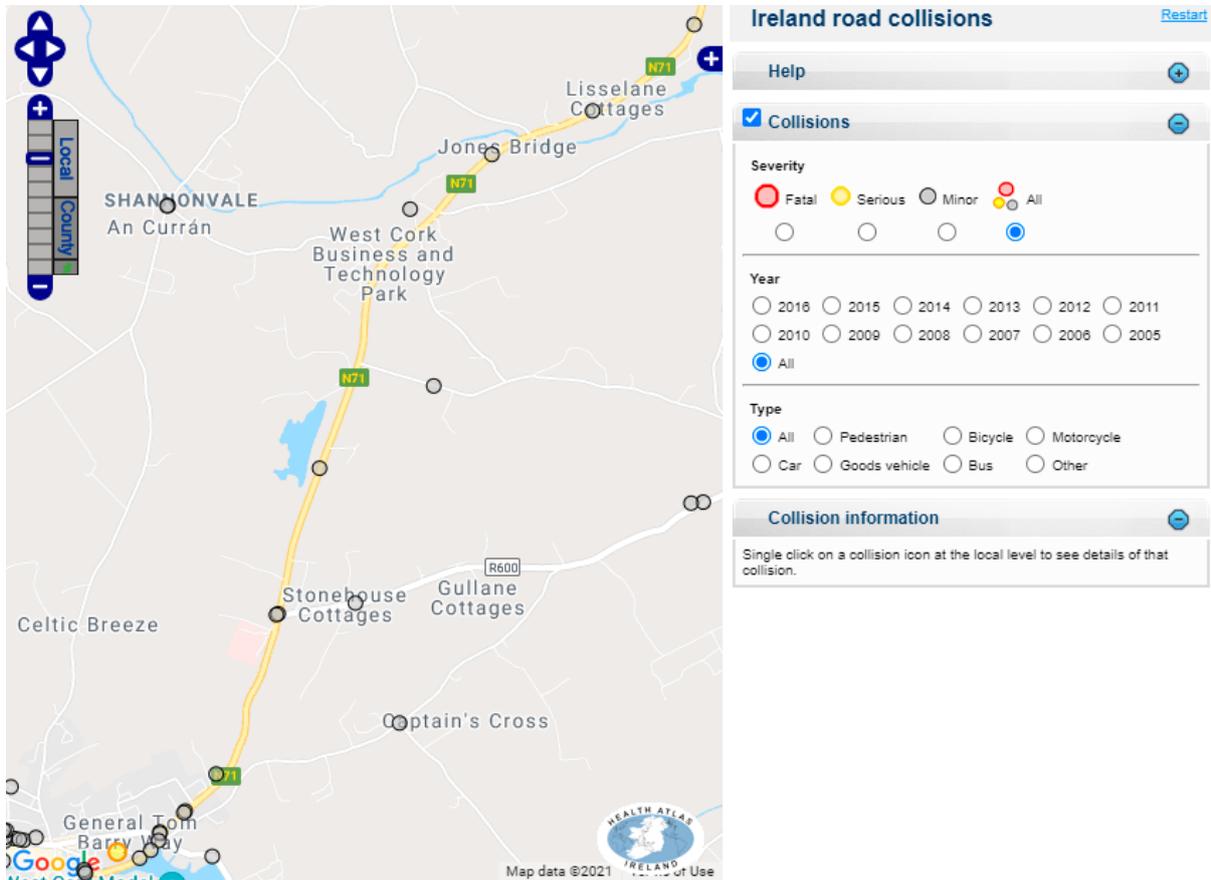


Figure 7.1 Road collision between 2005-2016 (RSA)

Please refer to the Stage 1/2 Road Safety Report (RSA) submitted as part of this Part VIII planning submission.

8 INTERNAL LAYOUT & PARKING PROVISION

The site is to have a hard tarmac or concrete surface with adequate foundation to withstand the wheel loads involved. The overall drainage of the site should be adequate to cope with storm water. The whole site is to be well lit to ensure the safe execution of manoeuvres, the safety of passengers and the security of vehicles and their contents. The lighting should be from a high level to prevent glare during manoeuvres and reduce the potential for vandalism. The layout of the site is to be designed to reduce the need for reversing manoeuvres. Where these are unavoidable, there should be an adequate area to safely execute the reversing or turning manoeuvres necessary.

The proposed parking for the development will be facilitated with new standard parking spaces for private car, disabled parking and set down traffic.

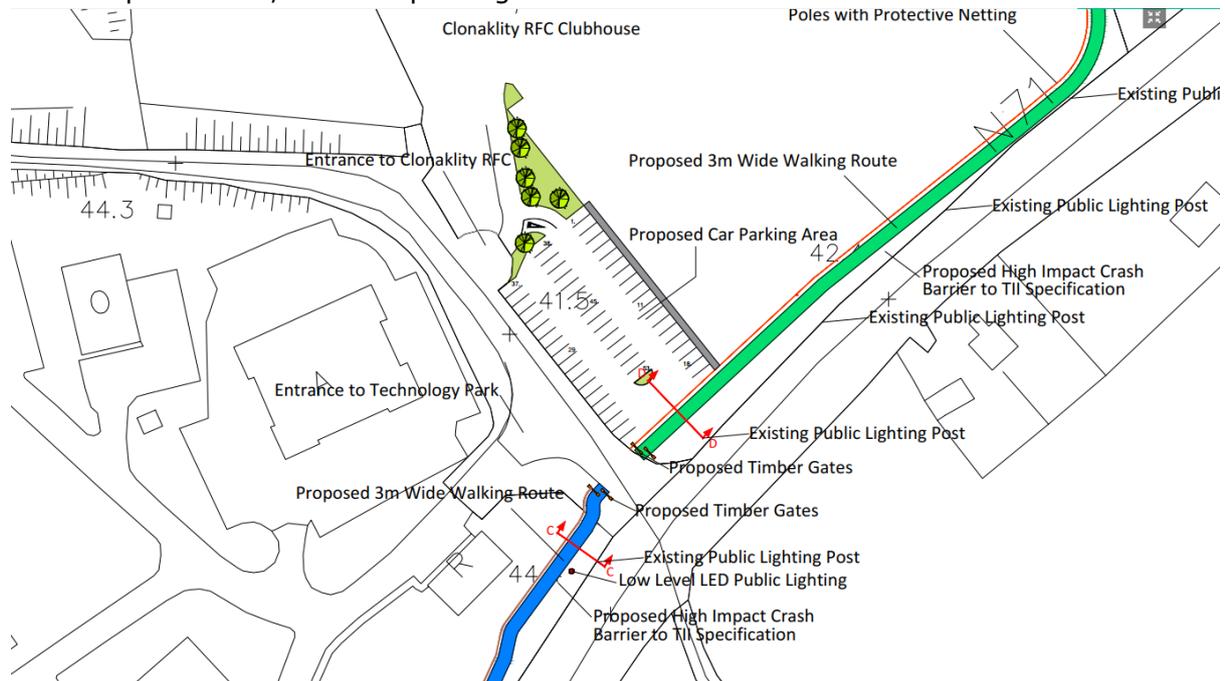


Figure 8.1 Site layout showing parking proposals (Credit: Tadhg Casey Architects)

This provision is in line with the requirements set out in the Cork County Development Plan whereby the proposed maximum parking standard for the use case is dependent upon the nature and location of use. The client’s intention is to provide ease of parking for visitors whilst ensuring operation and delivery is appropriate for the residential use case. Referencing the expected visitor numbers projected for the site, the proposed internal parking spaces numbers are expected to cater for the expected peak demand.

- All parking spaces are required to be a minimum 2.4m x 4.9m in size.

9 PEDESTRIAN / CYCLIST / DISABILITY

All internal footpaths should be dished at all entrances and crossings with tapered/dropped kerbs and tactile paving used on approaches in accordance with the design guidelines for use with tactile paving. This is to accommodate wheelchair access and guide the visually impaired users safely through the development. Adequate bicycle parking provision is proposed as per development schedules presented.

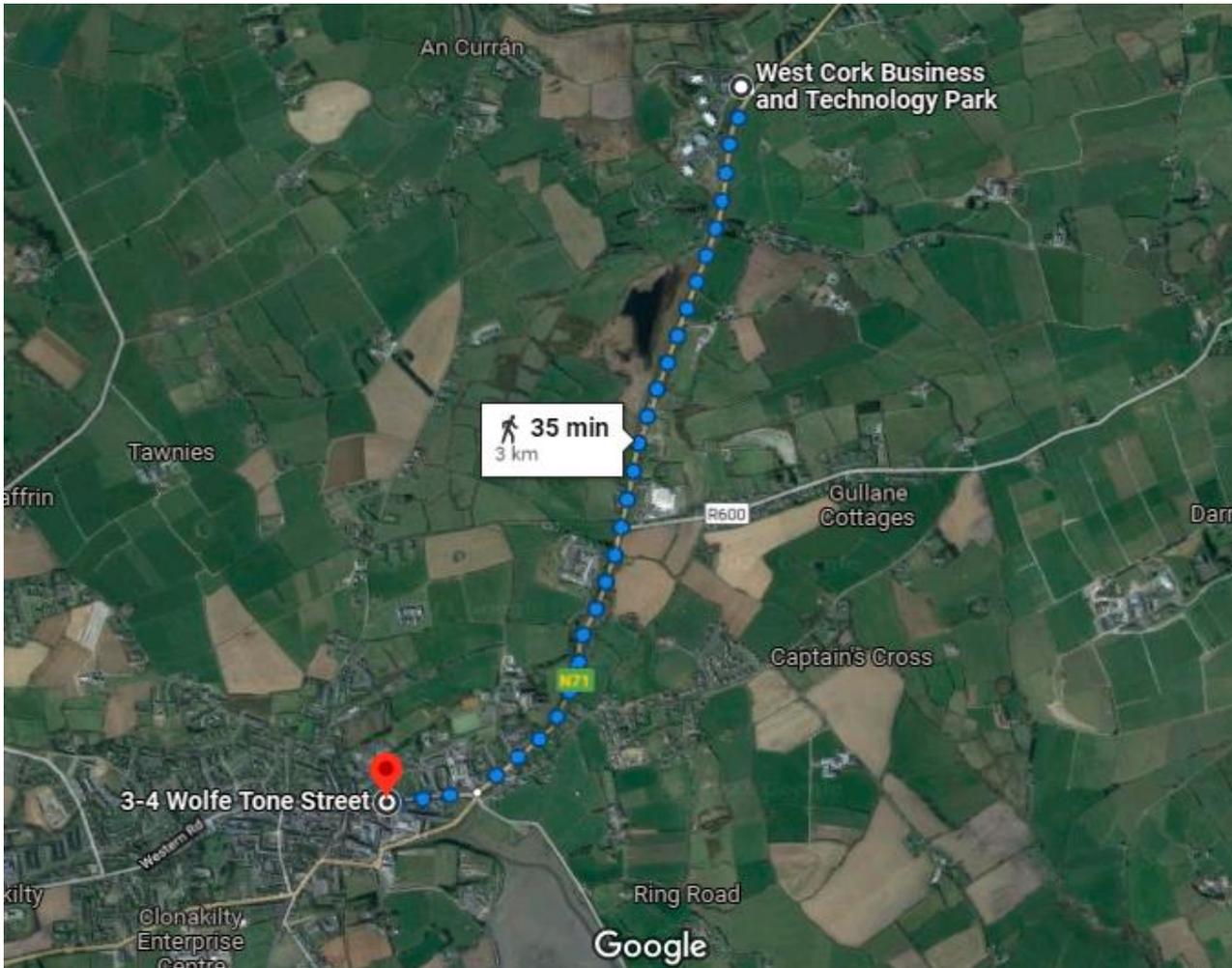


Figure 9.1 Proximity of site to town centre (Credit: Google)

9.1 Environmental Impact

The proposed development has been designed in accordance with the principles of DMURS (Design Manual for Urban Roads and Streets) with all internal roads having a gradient of not greater than 5% and good pedestrian connectivity throughout.

The developments proximity to current public transport facilities, via connection to existing footpath network is a positive, located within 3km of the centre of the town.

The construction stage of the scheme proposes to re-use / relocate the bulk of the excavation within the site implying that there will be a significant reduction in construction traffic generated to and from the site over and above a site where importation or exportation of

earthworks is required. This will minimise the impact the development will have on the existing roads network during this period.

As outlined in of this report, industry standard growth rates have been applied to background traffic for future year assessments (to account for further development within the area). 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.

10 CONCLUSIONS

In accordance with the TII's "Traffic and Transport Assessment Guidelines", the traffic analysis was undertaken for the **Opening Year (2023)**, **Opening Year +5 (2028)** and fifteen years from this date i.e., the **Opening Year+15 (2038)**.

In summary, the TTA assessment focused on 1no. traffic junction (the nearby N71 junction) for this application.

The traffic modelling analysis carried out for these design year scenarios shows that:

- The development junction and the nearby N71 Road Junction are operating below capacity for all design years for the 2038 for both morning and evening peaks respectively.
- The % increase in RFC between "without development" and "with development" scenarios is minor.
- These max %RFC are within junction operation thresholds.

Comparing the analysis of the traffic models, the development will have a minor impact of the operation of these junctions from a capacity point-of-view.

11 REFERENCES

- TII. Traffic and Transport Assessment Guidelines, PE-PDV-02045
- National Roads Authority (2014) Traffic and Transport Assessment Guidelines
- Institution of Highways & Transportation (1994) Guidelines for Traffic Impact Assessment IHT, London
- National Roads Authority (2000) Road Geometry Handbook NRA, Dublin
- National Roads Authority Design Manual for Roads and Bridges NRA, Dublin
- Design Manual for Urban Roads and Streets
- Transport for Ireland (May 2019) Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts
- Transport for Ireland 2017. Geometric Design of Junctions, DN-GEO-03060
- Transport for Ireland 2017. Rural Road Link Design, DN-GEO-03031
- National Disability Authority (NDA) guidelines – Towards Best Practice in Provision of Transport Services
- TII approved junction simulation modelling program, Picady
- Trip Rate Information Computer System (TRICS)
- PCU (passenger carrying units) factors, Transport in The Urban Environment, The Institution of highways and Transportation.
- Google Maps
- Openstreetmaps
- British Parking Association, Parking Know How Bay Sizes

12 APPENDIX

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13 ASSESSMENT JUNCTIONS

13.1 Junction J1



Figure 13.1 Development site entrance/ N71 Junction (Credit: Google)

14 TRAFFIC COUNT DATA

Available on request.

15 MODELLING RESULTS

<h1>Junctions 9</h1>
<h2>PICADY 9 - Priority Intersection Module</h2>
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: N71L4032 Junction COB.j9

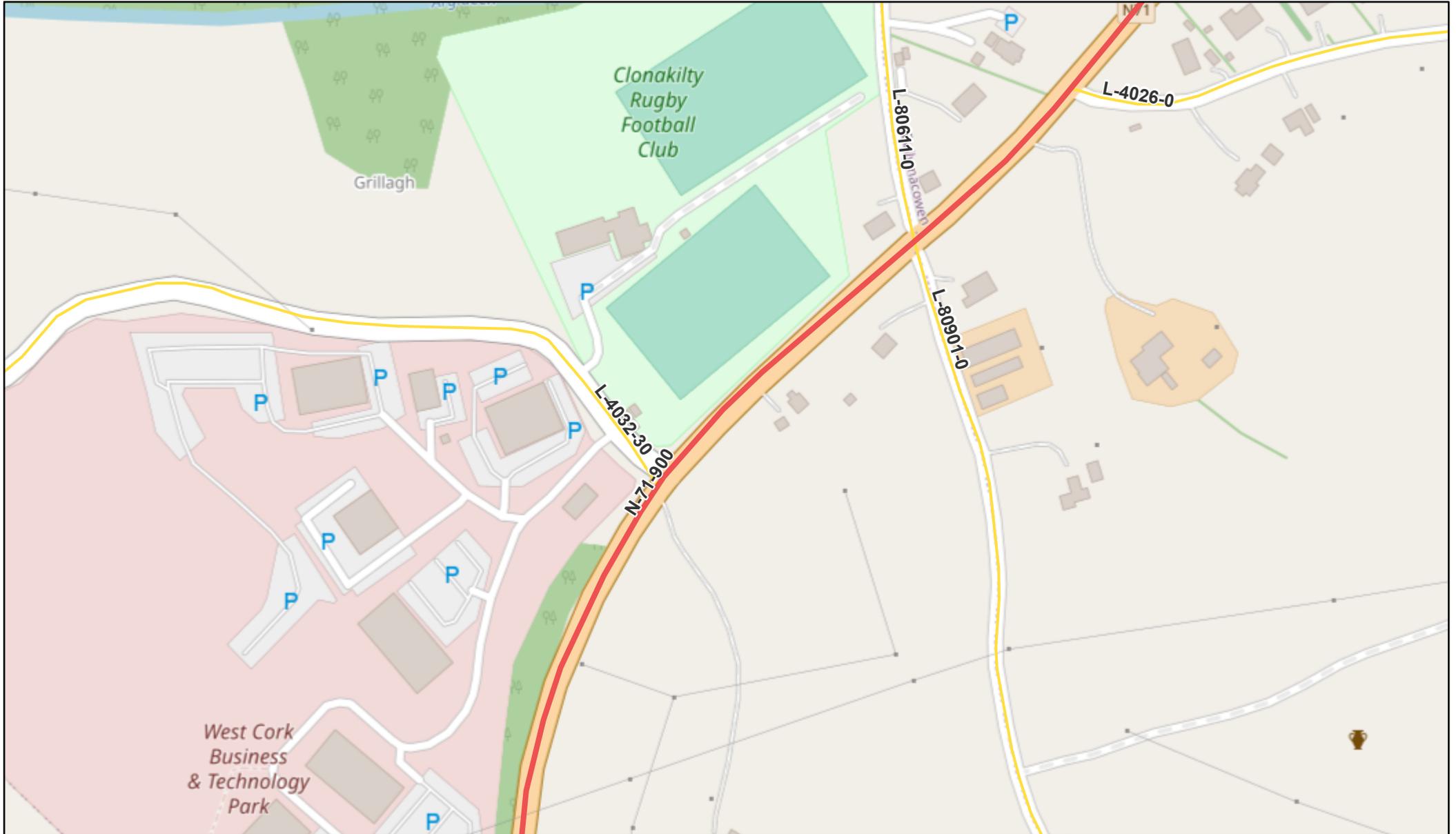
Path: N:\TIA\21119TT Gallanes Walkway Clonakilty\Planning\04. Word\01. DOC 1 TTA\Traffic Data\05. Traffic Models

Report generation date: 02/11/2021 09:48:05

-
- »2021 Current Year, AM
 - »2021 Current Year, PM
 - »2023 Opening Year [Do Nothing], AM
 - »2023 Opening Year [Do Nothing], PM
 - »2023 Opening Year [With Dev], AM
 - »2023 Opening Year [With Dev], PM
 - »2028 Opening Year+5 [Do Nothing], AM
 - »2028 Opening Year+5 [Do Nothing], PM
 - »2028 Opening Year+5 [With Dev], AM
 - »2028 Opening Year+5 [With Dev], PM
 - »2038 Opening Year+15 [Do Nothing], AM
 - »2038 Opening Year+15 [Do Nothing], PM
 - »2038 Opening Year+15 [With Dev], AM
 - »2038 Opening Year+15 [With Dev] , PM

16 JUNCTION N71/ L4032

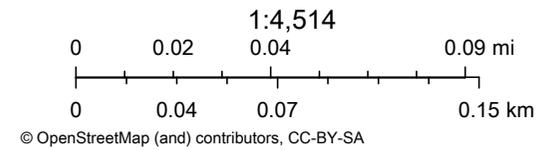
N71/ L4032 Junction



9/16/2021, 4:16:53 PM

Road Segments — National

— Local County Boundary





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