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EIAR Chapter 12 Material Assets: Traffic & Transportation

Suir Island Infrastructure Links



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12 Material Assets: Traffic & Transportation

12.1 Introduction

This traffic impact assessment has been prepared by Clifton Scannell Emerson Associates (CSEA), on behalf of Tipperary County Council (TCC), documenting the traffic impacts of the proposed development.

The contents within this Chapter present the outputs of an LinSig capacity analysis discussing the traffic implications of the proposed development. In addition, this Chapter also provides a brief description of the existing traffic conditions in the network.

Due to constraints within the geometry of some of the junctions under study and significant number of one-way sections in major arms within the network, it has not been possible to use the TRL PICADY software for modelling priority-controlled junctions. In light of this, the industry standard LinSig traffic modelling software was considered the next best option to estimate the traffic impacts of the proposed development.

12.2 Study Area

The study area and assessment junctions considered for the Traffic Impact Assessment are identified in Figure 12-1, below.

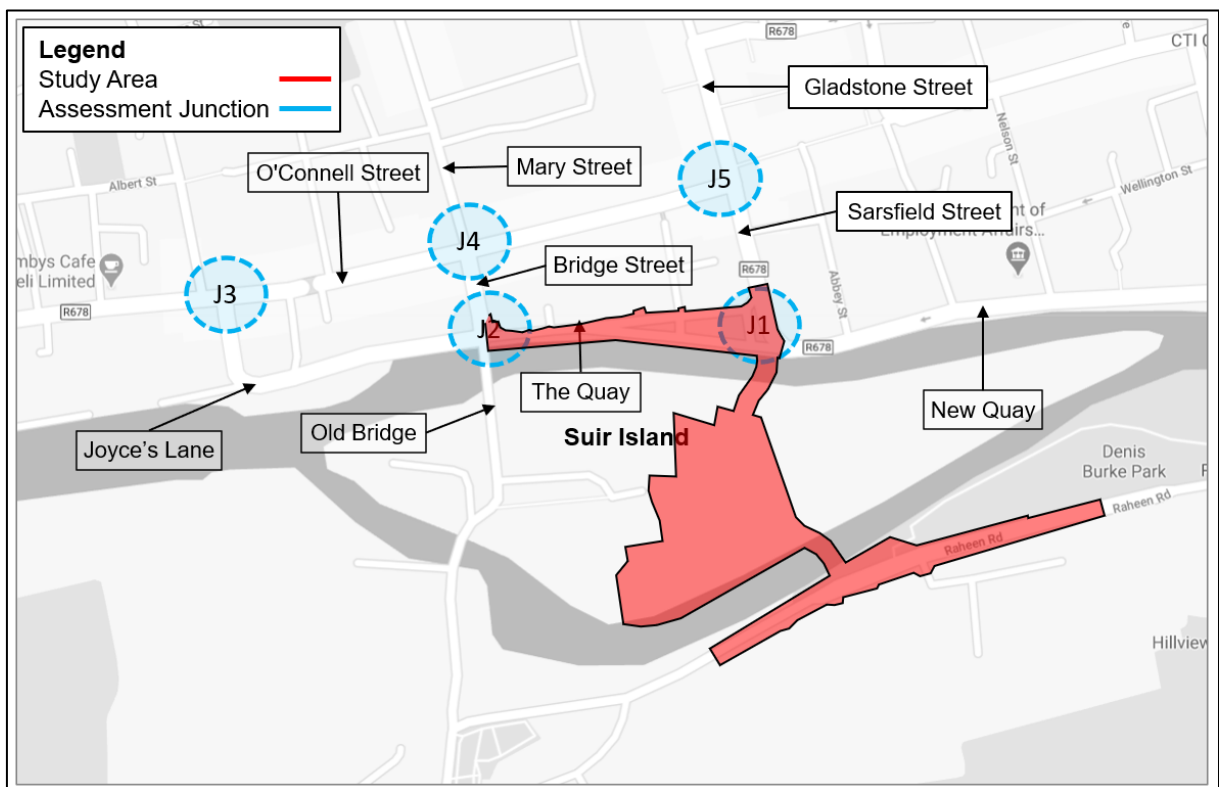


Figure 12-1: Study Area

12.3 Assessment Junctions

Changes to the traffic patterns in the surrounding network will occur as a result of the proposed development. A capacity analysis has been undertaken to assess the performance of the junctions

anticipated to experience changes in turning movements with the implementation of the proposal. These junctions are listed below:

- J1: 3-arm Priority-controlled Quay Street/ R678 Sarsfield Street/ R678 New Quay junction;
- J2: 4-arm Priority-controlled The Quay/ Bridge Street/ Old Bridge Junction;
- J3: 3-arm Priority-controlled Joyce's Lane/ O'Connell Street Junction;
- J4: 4-arm Priority-controlled Mary Street/ Bridge Street/ O'Connell Street junction; and
- J5: 3-arm Priority-controlled O'Connell Street/ R678 Sarsfield Street/ Gladstone Street junction.

12.4 Proposed Layout Changes

The main components of the proposed development are as follows:

1. The delivery of a pedestrian plaza (North Plaza) at the Sarsfield Street/ The Quay/ Quay Street junction.
2. To accommodate the abovementioned 'North Plaza', it is proposed to narrow the carriageway and implement a one-way system along Quay Street, which will cater for westbound traffic only.
3. The provision of 2 no. bridges to accommodate pedestrians and cyclist (active travel bridges) across Suir Island linking Denis Burke Park in Raheen Road to the proposed North Plaza in Sarsfield Street. For this, the proposed development includes two bridges, the first linking the proposed North Plaza to Suir Island, and the second connecting Suir Island to Raheen Road. The second bridge will facilitate access to Denis Burke Park, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.
4. An access ramp and steps from the proposed path to the Suir Island Car Park.
5. Improvements to the Pedestrian/ Cyclists facilities along Raheen Road, in the vicinity of Raheen College and Denis Burke Park.

Figure 12-2, below, illustrates the main components of the proposed development.

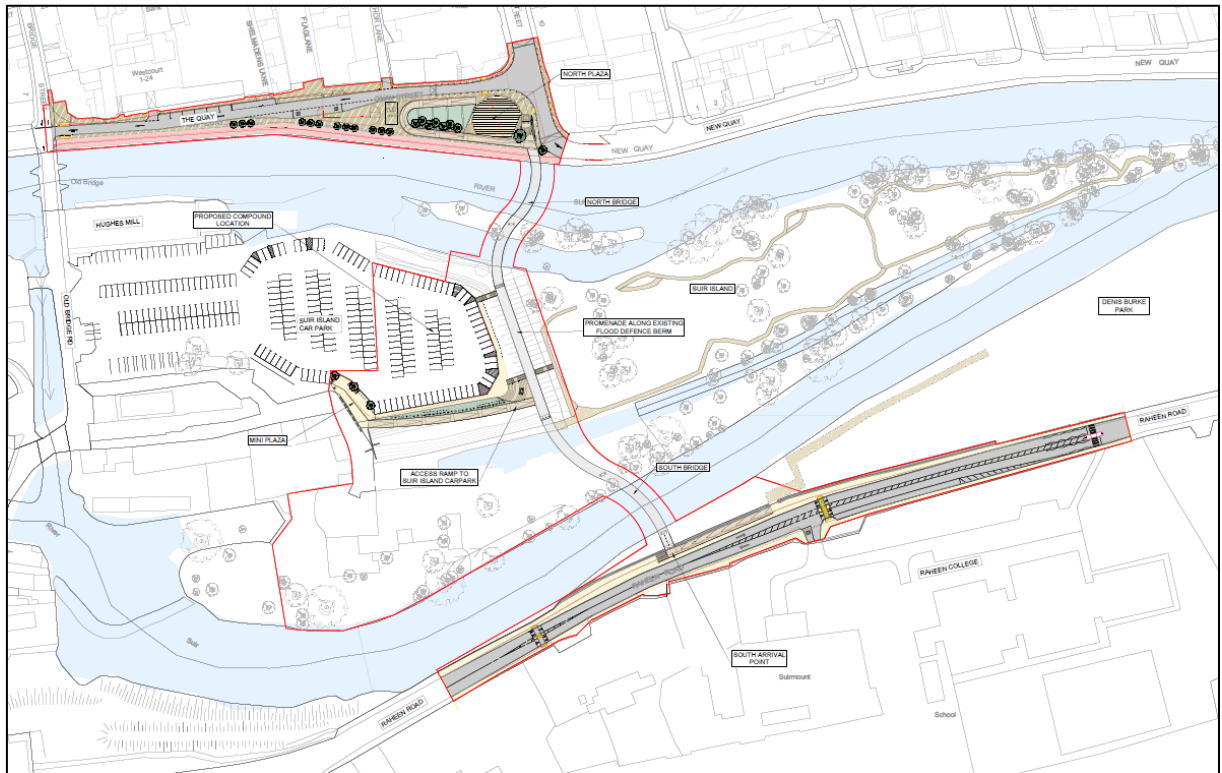


Figure 12-2: Proposed Development Summary (Extract from Drawing No. 20_071-CSE-00-XX-DR-C-2251, CSEA, 2023)

As shown on Figure 12-2 above, with the implementation of this proposed development, it is proposed to eliminate the two-way system currently in place along Quay Street to allow westbound movements only. Furthermore, it is also proposed the elimination of the Quay Street Car Park. Figure 12-3, below, sets out the proposed layout for the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction.

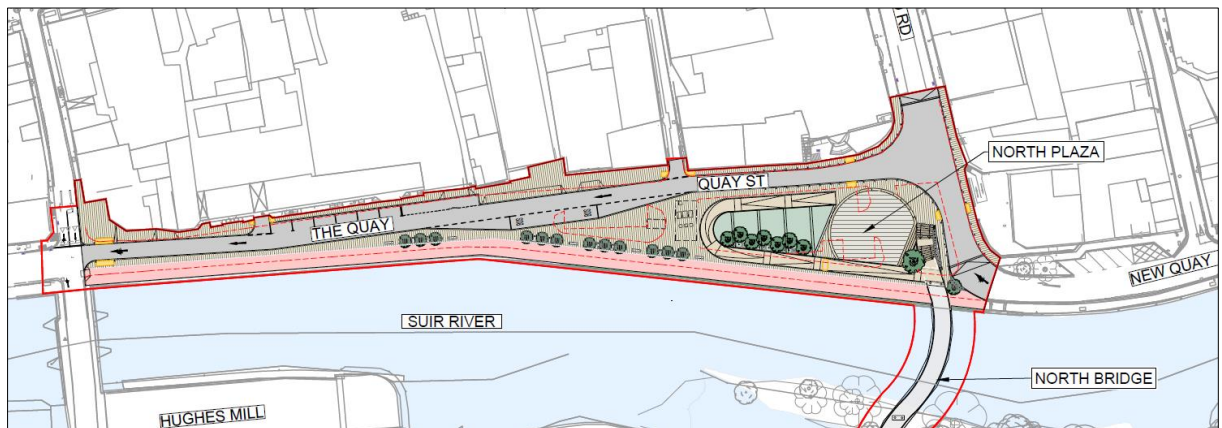


Figure 12-3: Proposed Quay Street/ Sarsfield Street Junction Layout

A bridge connection will be provided between the Suir Island Car Park and Raheen Road. Widening of the footpaths in sections on the boundary of Raheen College and Denis Burke Park is also proposed. This will result in the elimination of 3 no. Car Parking spaces on this Road. Figure 12-4 presents the proposed layout for Raheen Road.

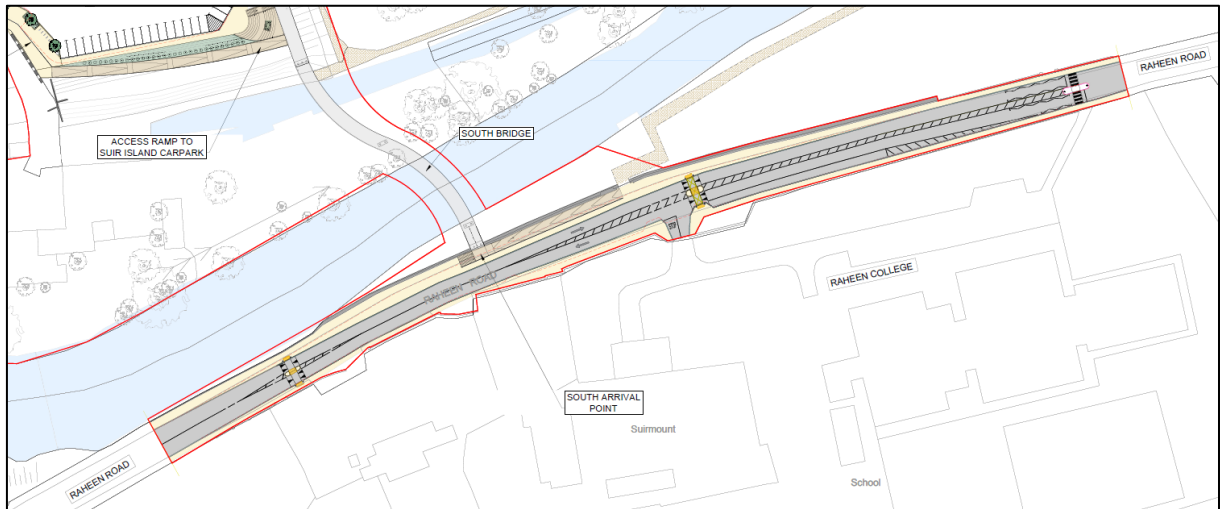


Figure 12-4: Proposed Raheen Road Layout

12.5 Anticipated Traffic Re-Distribution and Parking Impacts

It is anticipated that with the elimination of the two-way system currently in place along Quay Street all eastbound passing through junction No. 1 (see Figure 12-1) will re-route towards O'Connell Street via Joyce's Lane. Due to this, it has been appropriate to undertake a capacity analysis of the junctions discussed in Section 12.3 to understand the impacts of the expected additional traffic along O'Connell Street.

In terms of Parking, all 33 No. existing car parking spaces at the Quay Street Car Park will be removed to accommodate the North Plaza as part of the proposed development and 1 No. parallel car parking space will be eliminated from The Quay. 3 No. car parking spaces will be eliminated from Raheen Road to provide wider and up to standard infrastructure for pedestrians.

It is anticipated that the demand for the car parking spaces lost due to the implementation of the proposed development will be accommodated within the Suir Island Car Park. Based on the results of the car parking accumulation undertaken as part of this assessment (see Section 12.6.3), it can be concluded that Suir Island Car Park has enough capacity to accommodate all additional users.

12.6 Existing Conditions

12.6.1 Existing Road Infrastructure

New Quay intersects with Sarsfield Street and Quay Street via a 3-arm Priority Controlled Junction located directly to the north of Suir Island. The layout of the existing infrastructure is illustrated in Figure 12-5, which follows.



Figure 12-5: Existing Infrastructure

At present, New Quay is a one-way regional road accommodating westbound traffic only. On the approach to the junction, this road splits onto The Quay for westbound traffic movements and Sarsfield Street for northbound traffic movements. Sarsfield Street is also a one-way regional road accommodating northbound movements. The Quay Street arm of the junction only extends for ca. 100 metres accommodating eastbound traffic moving towards Sarsfield Street.

Figure 12-6 and Figure 12-7 present the views of the junction from New Quay and Sarsfield Street, respectively. Footpaths are available along all arms of the junction.



Figure 12-6: Junction View from New Quay



Figure 12-7: Junction View from Sarsfield Street

12.6.2 Existing Car Parking Spaces in Study Area

At present the following car parking spaces are available within the study area:

- Pay and Display Car Park located in the middle of the Quay Street/ Sarsfield Street junction, with capacity for up to 33 No. cars.
- 7 No. parallel parking spaces on The Quay, also operating as Pay and Display plus a Loading Bay.
- 280 No. Car parking spaces within Suir Island Car Park.
- 11 No. Parallel Parking Spaces along Raheen Road, directly adjacent to Raheen College.



12.6.3 Existing Car Parking Volumes in Local Area

Car parking accumulation surveys were undertaken at 10 No. sites within Clonmel Town Centre on 14th June 2019, on behalf of Tipperary County Council. These surveys included the car park located at the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction and the Suir Island Car Park. The car parking accumulation profiles for these two sites are shown on Figure 12-8 and Figure 12-9 (overleaf).

At the time of the assessment, 2023 car parking surveys were not available for the study area. In light of this, historical data has been used to determine the car parking occupancy rates.

A maximum of 32 No. vehicles were recorded at the Quay Street car park. The number remained above 20 vehicles throughout the day. A maximum of 48 No. vehicles were recorded at the Suir Island Car Park, with numbers remaining above 40 throughout the day.

At the time of the assessment, car parking occupancy surveys were not available for the spaces in Raheen Road nor the parallel parking on The Quay.

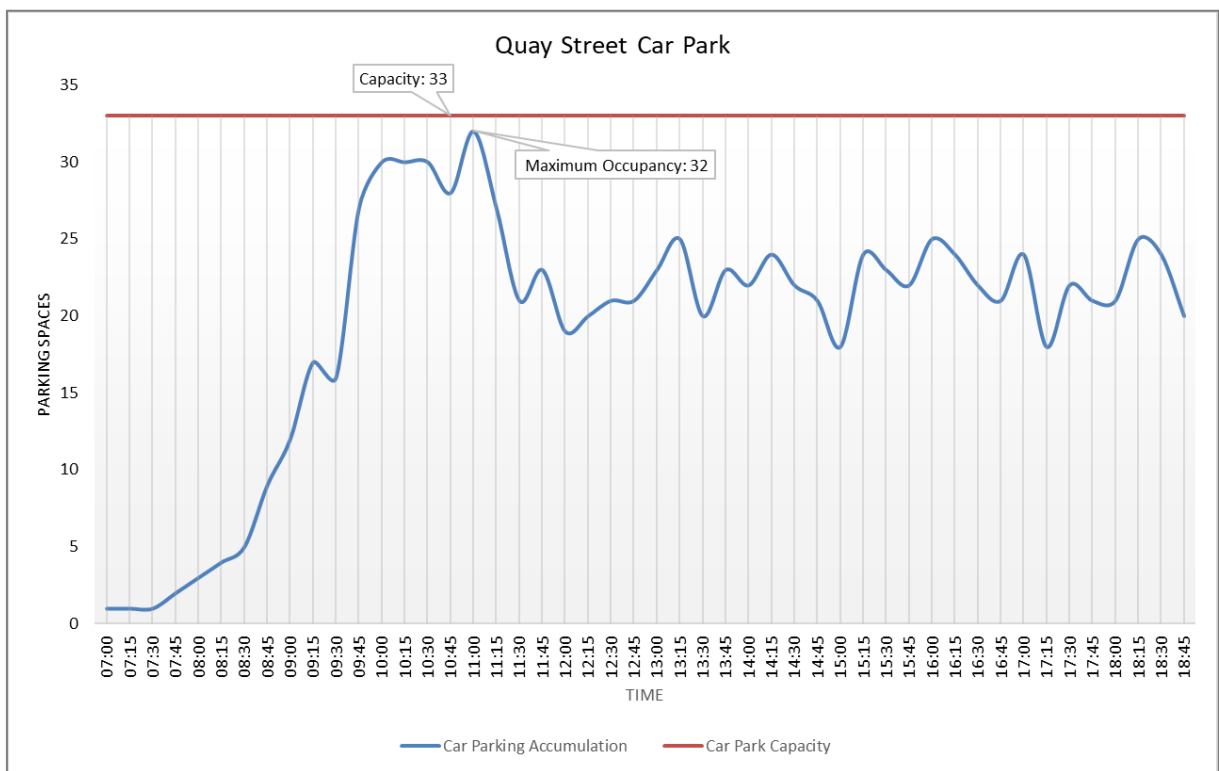


Figure 12-8: Quay Street Car Parking Accumulation

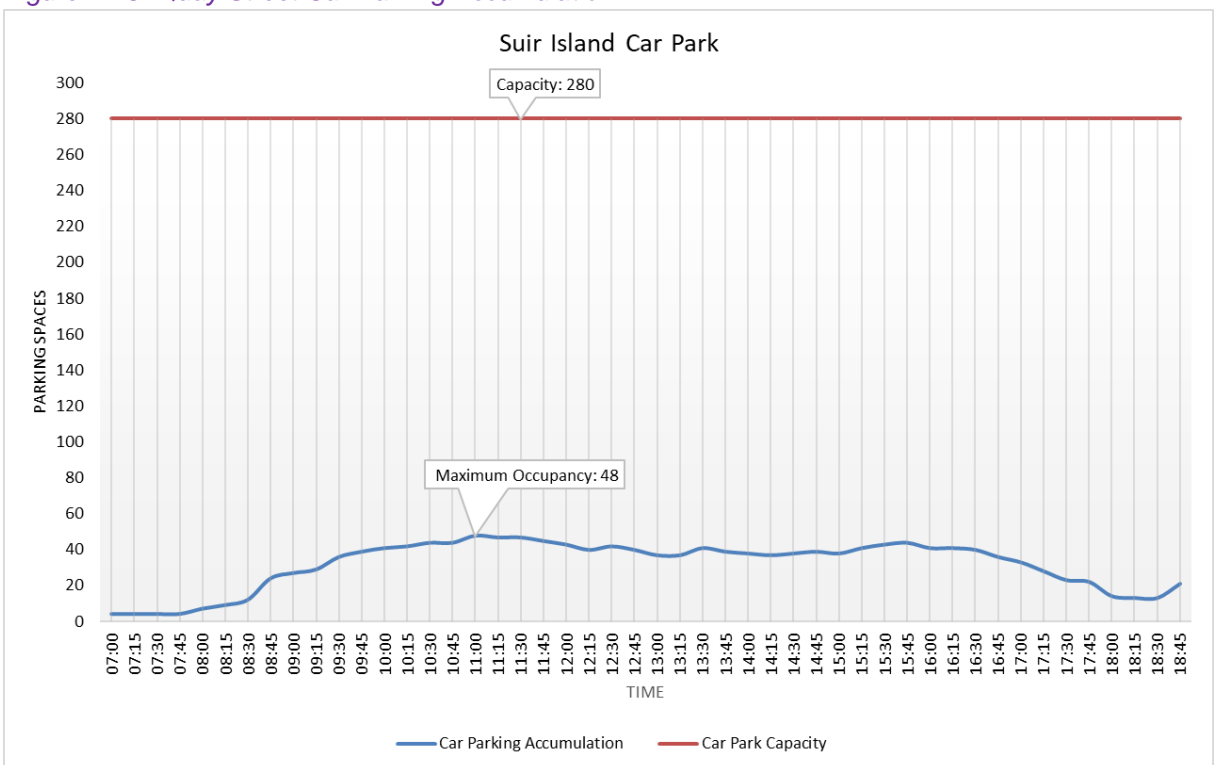


Figure 12-9: Suir Island Car Parking Accumulation

12.6.4 Traffic Data Collection

At the time of the assessment, 2023 traffic counts were not available for all the junctions included in this Traffic Impact Assessment (TIA). Traffic counts dated from Tuesday 24th May 2022 were available only for junction 2 (Old Bridge and Bridge Street Movements only), junction 4 and junction 5. In light of this, historic traffic data has been considered for the assessment. The available 2022 traffic counts have been used to validate the changes in traffic volumes.

Traffic surveys were carried out at 21 No. junctions within Clonmel to be utilised for the *Clonmel Town Centre Traffic Management Study*. This set of surveys were undertaken on Tuesday 8th May 2018 by MHC Traffic Ltd., on behalf of Tipperary County Council.

The abovementioned set of surveys include all junctions under assessment as part of this TIA and its results have been used as inputs to the capacity assessment undertaken.

The result of the 2018 and 2022 sets of surveys and the validation methodology are discussed in the following sections 12.6.5-12.6.7

12.6.5 2018 Traffic Survey Results

Following the analysis of the 2018 traffic surveys, the peak hours for the network under the study were determined to occur between 08:30-09:30hrs for the AM peak, and 17:00-18:00hrs for the PM peak. Table 12-1, below, summarises the total approach flows recorded through each junction. Traffic figures presented in the table below are in Passenger Car Units (PCUs) with the following factors assumed: *medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).*

Table 12-1: 2018 Traffic Survey Results

Junction No.	Approach Flows	
	AM Peak (08:30-09:30hrs)	PM Peak (17:00-18:00hrs)
J1	585	684
J2	559	754
J3	796	820
J4	887	772
J5	777	634

As shown in Table 12-1, above, Junction 3 and Junction 4 carry the highest volume of traffic in the network. Figure 12-10 presents the turning PCUs volumes at each junction.

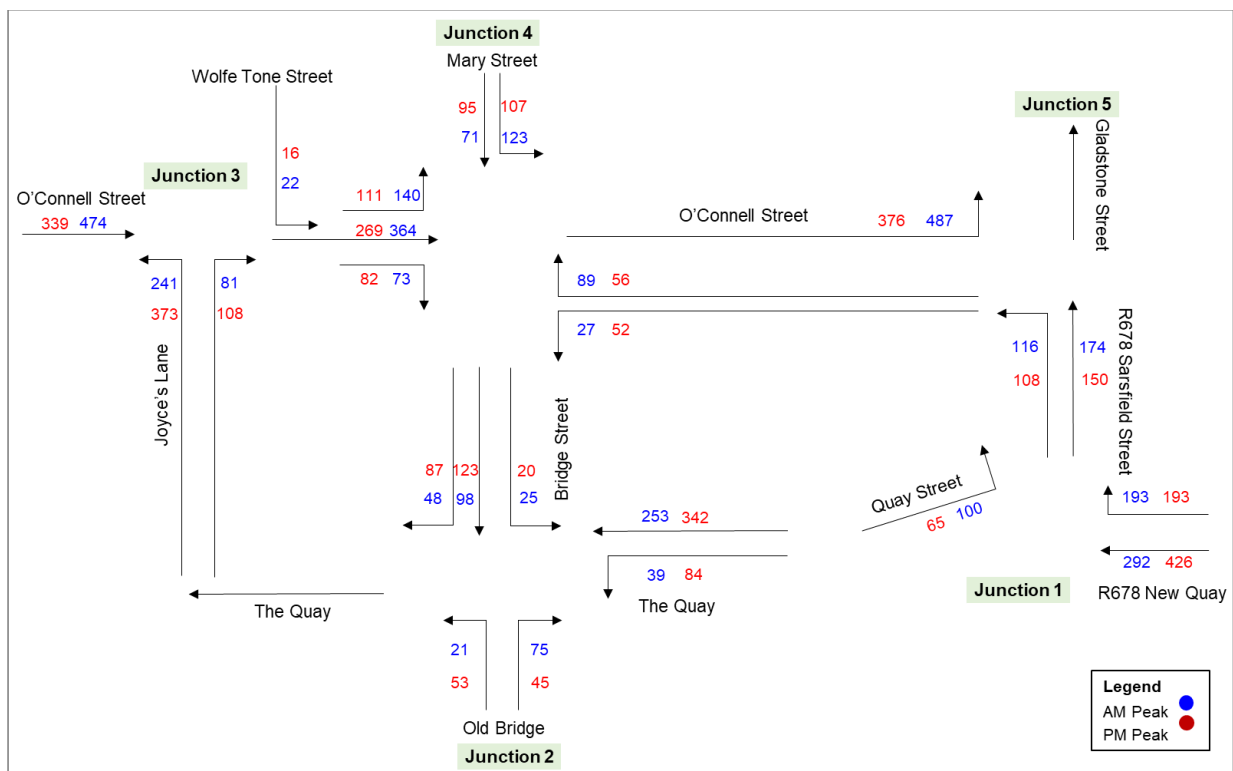


Figure 12-10: 2018 Turning Volumes at Relevant Junctions

12.6.6 2022 Traffic Survey Results

The set of surveys available for the year 2022 includes data for Old Bridge/ Quay Street Junction, O'Connell Street/ Mary Street Junction, and O'Connell Street/ Sarsfield Street Junction, i.e., Assessment junctions 2, 4, and 5. As noted in section 12.6.4, the data available for junction No. 2 only includes movement from Old Bridge and Bridge Street. Following the analysis of the 2022 traffic surveys different peak hours were obtained, when compared to 2018. The following peak hours were determined:

- Junction 2: AM Peak 08:15-09:15 and PM Peak 16:45-17:45.
- Junctions 4 and 5: AM Peak 08:30-09:30 and PM Peak 15:45-16:45

Table 12-2 and Table 12-3 summarises the total approach flows recorded through the junctions in the 2022 surveys and their respective flow change when compared to the 2018 traffic volumes. The traffic flows considered to determine the percentage change between 2018 and 2022 relate to the independent peak hours associated with each year. Even though the peak hours between 2018 and 2022 are different, this has been considered an appropriate approach to determine the worst-case scenario for traffic volumes in the network. Traffic figures presented in the table below are in Passenger Car Units (PCUs) with the following factors assumed: *medium goods vehicles 1.5, bus 2.0, and HGV 2.3*. Source: *TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016)*.

Table 12-2: AM Peak 2022 vs 2018 Traffic Flows

*As per Turning movements presented in Figure 12-10

Junction No.	AM Peak		
	2018 Traffic*	2022 Traffic	% Change compared to 2018
J2 (Old Bridge and Bridge Street Movements Only)	267	289	+8%
J4 (All Approaches)	887	840	-5%
J5 (All Approaches)	777	718	-8%

Table 12-3: PM Peak 2022 vs 2018 Traffic Flows

*As per Turning movements presented in Figure 12-10

Junction No.	PM Peak		
	2018 Traffic*	2022 Traffic	% Change compared to 2018
J2 (Old Bridge and Bridge Street Movements Only)	328	306	-7%
J4 (All Approaches)	772	841	+9%
J5 (All Approaches)	634	675	+6%

As shown in Table 12-2 and Table 12-3, during the AM Peak the biggest change was observed in the Old Bridge Junction, with an 8% traffic increase. For the PM peak the maximum percentage increase was observed in the O'Connell Street/ Mary Street junction with a 9% growth.

12.6.7 2018 Survey Validation Methodology

The maximum percentage traffic increases discussed in the preceding section, i.e., 8% in the AM Peak and 9% in the PM Peak, have been used to validate the 2018 traffic numbers discussed in section 12.6.5 of this Chapter.

To assess a worst-case scenario in traffic numbers, the peak hour traffic obtained in the 2018 survey has been increased in all junctions by 8% in the AM Peak and 9% in the PM Peak, to proportionately reflect 2022 flows. The increased flows have been used for the capacity analysis undertaken for the assessment and discussed in section 12.12 of this Chapter.

12.7 Traffic Growth Forecast and Scenarios

12.7.1 Traffic Modelling Approach and Inputs

Assessment Scenarios and Time Period

The assessment focuses on estimating the traffic impact of the proposed changes to Quay Street/ R678 Sarsfield Street/ R678 New Quay junction (Junction No. 1), and associated traffic redistribution, to the remaining junctions under the study. As noted in Section 12.4, it is proposed to turn Quay Street into a westbound-only link, which will re-route all existing eastbound traffic transiting through this road towards O'Connell Street via Joyce's Lane. As recommended by TII's TTA Guidelines, critical time periods are considered as established by the traffic survey, i.e., the AM peak hour (08:30-09:30hrs) and the PM

peak hour (17:00-18:00hrs). Survey data utilised for the assessment is discussed in Section 12.6.5 of this Chapter.

The following scenarios have been developed in assessing the traffic impacts:

- **Do-Nothing Scenario:** To assess the traffic impact of the proposal on the network, first, the existing junction performance was established. This scenario is referred to as the ‘do-nothing’ scenario and it is based on the existing traffic conditions.
- **Do-Something Scenario:** This scenario assesses the junction performance with the proposed layout changes to Quay Street. This scenario accounts for the redistribution of all eastbound traffic currently using Quay Street on the approach to junction No. 1. A total of 108 No. vehicle trips were redistributed in the AM and 72 No. vehicle trips in the PM.

12.8 Baseline Traffic Growth Forecasting

In order to understand the impact of the proposals on the local road network, it is first necessary to understand the ‘do-nothing’ scenario for the base year (2022), the year of opening (YoO, 2025), future year (YoO+5, 2030), and horizon year (YoO+15, 2040). Traffic levels in the ‘do-nothing’ scenario comprise of forecast background traffic flows, which is assumed to grow organically over the assessment period.

Forecast Background Traffic Flows

Existing traffic flows on the surrounding road network as determined via surveys discussed in Section 12.6.5 have been adjusted through application of appropriate growth factors to determine YoO, YoO+5, and YoO+15 traffic flows. For this assessment, growth factors were determined from the Transport Infrastructure Ireland (TII) *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, October 2021*. Information within these guidelines is provided for Tipperary from 2016-2030 and from 2030-2040 for low, central, and high sensitivity growth scenarios.

This information is provided for light vehicles (LVs) and heavy vehicles (HVs) and was used to determine the future year ‘do-nothing’ traffic flows. Central growth factors were assumed for this assessment to determine future year background traffic flows on the surrounding road network. These factors are set out in Table 12-4, which follows.

Table 12-4: TII Growth Factors (Extract from PE-PAG-02017, October 2021)

Years	Growth Factor for LVs	Growth Factor for HVs
Annual growth factor	1.0119 (2016-2030) 1.0037 (2030-2040)	1.0306 (2016-2030) 1.0116 (2030-2040)
2022 to 2025 (3 years)	1.0361	1.0946
2022 to 2030 (8 years)	1.0993	1.2727
2022 to 2040 (18 years)	1.1406	1.4283

Based on the TII central growth factors in the previous Table 12-4, 2022 traffic volumes have been factored to 2025, 2030, and 2040 levels, to determine the assumed year of opening, future year, and horizon year traffic volumes at the relevant junctions, without the proposal in place. The LV and HV growth factors presented above have been applied as follows:

- 95% of the vehicles in the network were light vehicles (Cars, Taxis, Vans), corresponding to LV growth factor above.
- 5% of the vehicles in the network were Heavy Vehicles (Medium Goods Vehicles, Bus, and HGV Ordinary Goods Vehicles), corresponding to HV growth factor above.

Table 12-5 provides an overview of ‘do-nothing’ base year, year of opening (YoO), year of opening +5 years (YoO+5), and year of opening +15 years (YoO+15) AM and PM peak period traffic volumes. Traffic figures presented in the table below are in Passenger Car Units (PCUs) with the following factors assumed: *car 1.0, medium goods vehicles 1.5, bus 2.0, and HGV 2.3*. Source: *Project Appraisal Guidelines for National Roads Unit 5.2 – Data Collection PE-PAG-02016 (October 2016)*.

Table 12-5: Background Traffic Flows at Relevant Junctions

Junction No.	AM Peak (08:30-09:30hrs)			
	Base Year (2022)	Year of Opening (2025)	YoO+5 (2030)	YoO+15 (2040)
J1	632	656	700	730
J2	604	627	669	697
J3	860	893	952	993
J4	958	995	1061	1106
J5	839	872	930	969
Junction No.	PM Peak (17:00-18:00hrs)			
	Base Year (2018)	Year of Opening (2024)	YoO+5 (2029)	YoO+15 (2039)
J1	739	768	818	853
J2	814	846	902	941
J3	886	920	981	1023
J4	834	866	924	963
J5	685	711	759	791

12.9 Committed Developments

Clonmel Arms Hotel Redevelopment

A review of the planning applications submitted in the local area has been undertaken to identify committed developments (proposed developments with planning approval, but not yet delivered) of sufficient proximity/ scale. One planning application with granted permission was identified in the local area and relates to the proposed redevelopment of the Clonmel Arms Hotel at the corner of Quay Street/ Sarsfield Street junction (*Planning Reg. Ref. 18601355*). This proposed site was granted planning permission by Tipperary County Council on 26th July 2019. It has been deemed relevant to include the traffic generation associated with this development in the traffic impact assessment as all trips to/from the hotel have been assumed to transit through the network under the study. The traffic generation estimated for this hotel during critical time periods and presented within the Traffic and Transport Assessment submitted with the planning application is reproduced in Figure 12-11.

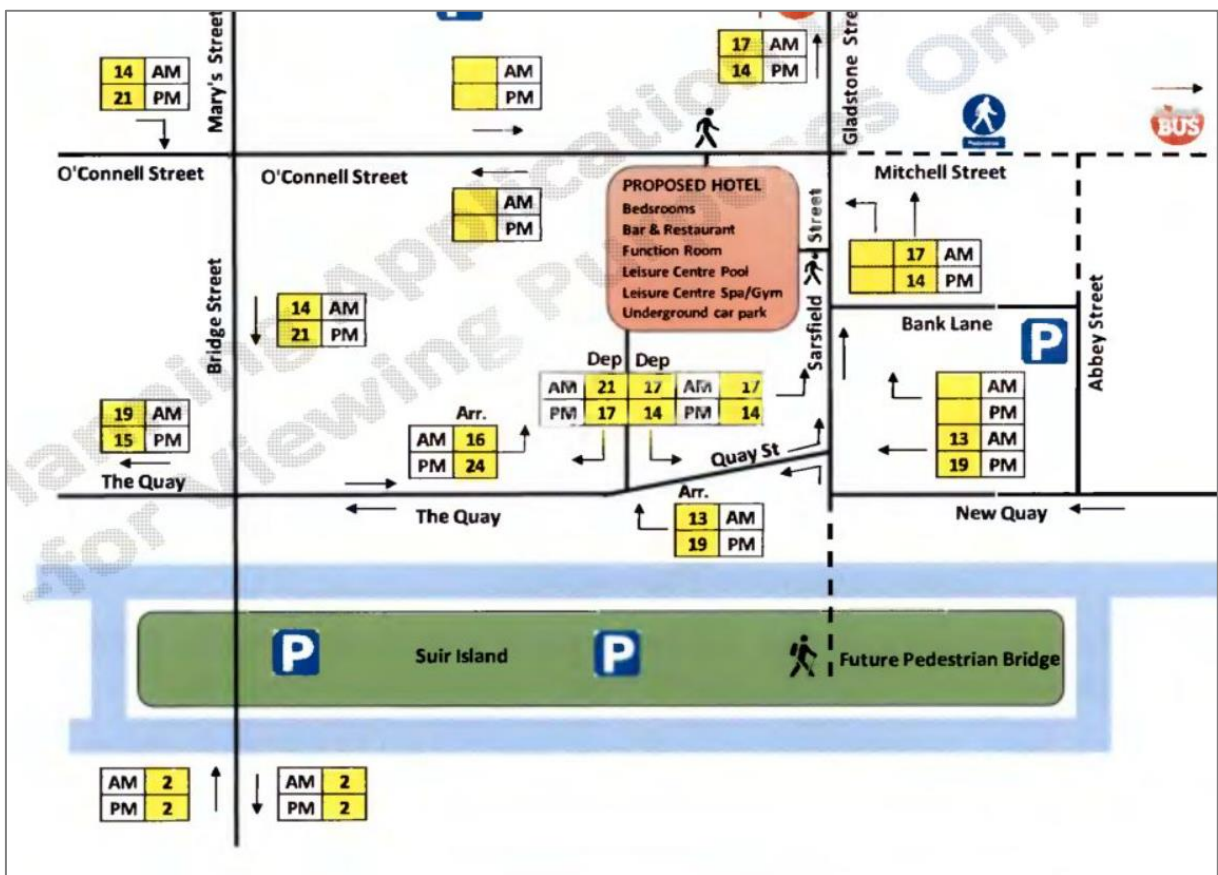


Figure 12-11: Hotel Traffic Generation (Extract from Traffic and Transport Assessment prepared by Coakley Consulting Engineers in October 2018)

The figures presented above have been redistributed into the network to account for the proposed one-way system to be implemented at Quay Street as part of the proposal presented in this Chapter.

Bulmer Visitor Centre

It was relevant to this assessment to also take into consideration the traffic associated with the proposed Bulmers Visitor Centre in Dowds Lane. This centre is expected to open by 2025 and it is estimated that it will attract up to 100,000 customers by year 2030. This estimated number of customers has been obtained from the catchment assessment undertaken as part of the 'Clonmel 2030-Transformational Regeneration Report' prepared by Tipperary County Council. The catchment area for this centre is expected to extend throughout County Tipperary, Laois, North Cork, Limerick, Kilkenny, and Waterford. The proposal will have a car park within its facilities; however, it is likely to be designated for staff only. All customers will be expected to use the Suir Island Car Park once the centre is open.

To date, a Traffic Impact Assessment has not been undertaken for this facility. For the purpose of this analysis, the following assumptions have been made to estimate the worst-case scenario in trip generation for the Centre:

- Out of the 100K users/year estimated by 2030, 75K users will access the Centre by car. The remaining 25K users have been assumed to arrive by bus tours and other transport modes.
- 30% of the 75K users arriving by car have been assumed to be car passengers.
- 70% of the trips have been assumed to happen during the summer months (14 weeks between June 1st and August 31st).

- 50% of the trips have been assumed to access Clonmel Town Centre from the west via the N24/M8 routes, and the remaining 50% have been assumed to access from the east via the N24/N76/M9 routes.
- 50% of the trips estimated for the day have been assumed to occur during the network peak period as determined by the traffic survey discussed in Section 12.6.5.
- Only 50% of the PM peak eastbound traffic leaving the Suir Island Car Park will travel through the town centre, with the remaining 50% travelling via Raheen Road.

Based on the abovementioned assumptions, the Bulmers Visitors Centre trip generation has been estimated with expected journeys through each of the junctions under the study and is set out in Table 12-6, below. The traffic presented below have been distributed through the network with the proposed one-way system on Quay Street in operation.

Table 12-6: Bulmers Visitors Centre Trip Generation

Junction No.	Bulmers Visitor Centre Trips	
	AM Peak (08:30-09:30hrs)	PM Peak (17:00-18:00hrs)
J1	94	0
J2	188	141
J3	94	141
J4	94	47
J5	0	47

The traffic figures presented above have been included only in the 2040 assessment period as these numbers are expected to occur from 2030 onwards. The 'do-nothing' scenario accounts for this traffic.

12.10 Clonmel Urban Design Project

It is the intention of Tipperary County Council (TCC) and Clonmel Borough Council to provide design enhancements to the Clonmel Town Centre. In June 2020, TCC commissioned RPS Group to develop a vision and preferred design for urban realm improvements and enhancements in Clonmel Town Centre and to create an options selection report evaluating each design. This report included a Multi-Criteria Analysis (MCA) to appraise three conceptual design options.

The results of the MCA set option no. 1 as the preferred design for the proposed development. The following changes were proposed to be delivered with this option:

- O'Connell St. to be one lane, one-way eastbound from West Gate to Main Guard. Footpaths to be widened using space taken from road following reduction to one lane.
- Gladstone St. to be one lane, one-way from the Main Guard to the Mary St. car park entrance. Footpaths to be widened using space taken from road following reduction to one lane.
- Re-construct the junction of Anglesea St. and Parnell St. so that right and left turns into the two traffic lanes on Anglesea St can happen simultaneously.
- Remove existing herring bone car parking arrangement at western section of O'Connell St. with a parallel parking arrangement to increase visibility and safety for vehicles and cyclists by reducing conflicts as vehicles currently must reverse onto the carriageway to leave parking bays.
- Introduce a pedestrian crossing on The Quay to facilitate pedestrian access between the Old Bridge and Bridge St.

The design described above has gone through Part VIII planning and it is currently at the detail design stage. The project is at the Detailed design and Procurement phase. The Project has been identified as one of the Governments Pathfinder projects which are to be implemented by 2025.

As changes are proposed to some of the roads on the network under study, it has been deemed relevant to this traffic impact assessment to integrate the relevant design concepts discussed above. The preferred design proposed the implementation of an eastbound one-way system in O'Connell Street and the reduction of the number of traffic lanes to one. It is anticipated that this change will re-route a portion of the left turning traffic from Sarsfield Street towards The Quay and Joyce's Lane.

In order to estimate a worst-case scenario for the proposed development to which this Chapter relates to, it has been assumed that the changes described above will be in place by 2025. Therefore, all future years, for both do-nothing and do-something, have been assessed in the traffic modelling incorporating the changes to O'Connell Street.

12.11 Traffic Impact Assessment

12.11.1 Traffic Modelling Software and Outputs

Traffic Modelling Software

Due to constraints with the geometry of some of the junctions under study and significant number of one-way sections in major arms within the network, it has not been possible to use the TRL PICADY software for modelling priority-controlled junctions. In light of this, the industry standard LinSig traffic modelling software was considered the next best option to estimate the traffic impacts of the proposed development.

LinSig has been used for predicting capacities, queues, and delays at the relevant junctions. LinSig is a modelling software dedicated for analysing isolated junctions and small junction networks. Key functions of this software include capacity-based traffic assignment across the roads and lanes forming the modelled network and forecasting of performance parameters for the entire network, individual junctions, and individual lanes. The models analyse the junctions in relation to their geometry and traffic flows and calculate the Practical Reserve Capacity (PRC).

Traffic Signal Inputs

All junctions under the study function as priority control junctions, therefore no signal control data has been imported into the model.

Traffic Modelling Outputs

The following outputs were obtained from the LinSig model:

- *Degree of Saturation*: this output presents the ratio of demand flow to the maximum flow which can be passed through a junction from a particular approach i.e. number of vehicles that could cross the stop line in an hour on a particular lane. A lane with a degree of saturation greater than 90% is considered to be approaching its theoretical capacity.
- *Maximum Queue Length*: queue lengths at junctions are measured in Passenger Car Units (PCU), which represents a standard vehicle length including a buffer length to the front and back. For the purposes of this assessment, a PCU length of 5.75 metres has been assumed.
- *Practical Reserve Capacity (PRC)*: is the amount by which traffic demand can grow before Practical Capacity is reached. A PRC close to 0% suggest that the junction is operating at capacity. A negative PRC indicates the junction is operating over its practical capacity.

12.12 Junction 1 Traffic Modelling Results

AM Peak

The AM Peak traffic modelling results obtained for the New Quay/ Quay Street/ Sarsfield Street Junction are presented in Table 12-7, which follows.

Table 12-7: Junction 1 AM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	26.3%	-	0.2	-	242.6%	-
Year of Opening YoO (2025)	35.5%	35.5%	0.3	0.3	153.6%	153.4%
YoO+5 (2030)	37.3%	37.3%	0.3	0.3	141.4%	141.6%
YoO+15 (2040)	38.4%	38.4%	0.3	0.3	134.2%	134.6%

*DN= Do-Nothing; **DS= Do-Something

The modelling results obtained for junction 1 indicate that the junction will remain within acceptable levels during both Peak periods. For the Year of Opening (2025), a degree of saturation of 35.5% was obtained.

Due to the organic growth of the background traffic, this percentage is expected to increase over time. However, the performance of the junction should remain within acceptable levels for all assessment periods.

PM Peak

The PM Peak traffic modelling results obtained for Junction 1 are presented in Table 12-8, which follows.

Table 12-8: Junction 1 PM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	31.1%	-	0.2		189.8%	-
Year of Opening YoO (2025)	38.6%	39.3%	0.3	0.3	133.3%	128.9%
YoO+5 (2030)	40.8%	41.5%	0.3	0.4	120.7%	117.0%

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
YoO+15 (2040)	42.3%	43.0%	0.4	0.4	112.9%	109.5%

*DN= Do-Nothing; **DS= Do-Something

Similar to the AM, junction 1 performance stayed within acceptable levels with the proposed development in place. The maximum degree of saturation obtained was 39.3%.

12.13 Junction 2 Traffic Modelling Results

AM Peak

The AM Peak traffic modelling results obtained for the Old Bridge/ The Quay/ Bridge Street junction are presented in Table 12-9, below.

Table 12-9: Junction 2 AM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	16.1%		0.1		355.1%	
Year of Opening YoO (2025)	27.8%	28.7%	0.2	0.2	223.3%	214.0%
YoO+5 (2030)	29.0%	29.8%	0.2	0.2	210.4%	201.9%
YoO+15 (2040)	29.7%	30.5%	0.2	0.2	203.3%	195.2%

*DN= Do-Nothing; **DS= Do-Something

PM Peak

The PM Peak traffic modelling results obtained for the Old Bridge/ The Quay/ Bridge Street junction are presented in Table 12-10.

Table 12-10: Junction 2 PM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	19.6%	-	0.1	-	339.3%	-

Year of Opening YoO (2025)	32.5%	33.2%	0.2	0.2	127.8%	110.0%
YoO+5 (2030)	34.4%	35.1%	0.3	0.3	118.0%	100.9%
YoO+15 (2040)	35.75	36.4%	0.3	0.3	111.5%	95.0%

*DN= Do-Nothing; **DS= Do-Something

With the proposed scheme in place, Junction 2 is expected to operate successfully during both peak periods. The maximum degrees of saturation obtained in the year of opening were 28.7% and 32.5%, for the AM and PM peak, respectively.

12.14 Junction 3 Traffic Modelling Results

AM Peak

The AM Peak traffic modelling results obtained for the Joyce's Lane/ O'Connell Street Junction are presented in Table 12-11.

Table 12-11: Junction 3 AM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	29.6%	-	0.2	-	204.3%	-
Year of Opening YoO (2025)	38.7%	43.1%	0.2	0.2	132.3%	108.8%
YoO+5 (2030)	40.8%	45.4%	0.3	0.3	120.8%	98.4%
YoO+15 (2040)	42.1%	46.8%	0.3	0.3	114.0%	92.2%

*DN= Do-Nothing; **DS= Do-Something

PM Peak

The PM Peak traffic modelling results obtained for Joyce's Lane/ O'Connell Street Junction are presented in Table 12-12, which follows.

Table 12-12: Junction 3 PM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	32.2%	-	0.2	-	179.2%	-

Year of Opening YoO (2025)	32.5%	34.5%	0.2	0.2	177.0%	161.0%
YoO+5 (2030)	34.0%	36.3%	0.3	0.3	164.7%	148.0%
YoO+15 (2040)	35.1%	37.5%	0.3	0.3	156.1%	139.7%

*DN= Do-Nothing; **DS= Do-Something

The modelling results obtained for junction 3 showed that the junction will continue to operate within acceptable margins in the do-something scenario. The maximum degrees of saturation obtained in the year of opening were 43.1% in the AM peak and 34.5% in the PM peak.

12.15 Junction 4 Traffic Modelling Results

AM Peak

The AM Peak traffic modelling results obtained for the Mary Street/ O'Connell Street Junction are presented in Table 12-5, which follows.

Table 12-13: Junction 4 AM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	28.6%	-	0.2	-	215.0%	-
Year of Opening YoO (2025)	41.9%	46.3%	0.4	0.4	115.0%	94.5%
YoO+5 (2030)	44.0%	48.7%	0.4	0.5	104.5%	84.8%
YoO+15 (2040)	45.5%	50.3%	0.4	0.5	98.0%	79.1%

*DN= Do-Nothing; **DS= Do-Something

PM Peak

The PM Peak traffic modelling results obtained for the Mary Street/ O'Connell Street Junction are presented in Table 12-14, which follows.

Table 12-14: Junction 4 PM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	30.6%	-	0.1	-	193.7%	-

Year of Opening YoO (2025)	35.0%	37.2%	0.3	0.3	157.0%	144.0%
YoO+5 (2030)	36.8%	39.1%	0.3	0.3	144.6%	129.9%
YoO+15 (2040)	38.1%	40.5%	0.3	0.3	136.4%	122.2%

*DN= Do-Nothing; **DS= Do-Something

The modelling results obtained for junction 4 showed that the junction will continue to operate within acceptable margins in the do-something scenario. The maximum degrees of saturation obtained in the year of opening were 41.9% in the AM peak and 37.2% in the PM peak.

12.16 Junction 5 Traffic Modelling Results

AM Peak

The AM Peak traffic modelling results obtained for the O'Connell Street/ Sarsfield Street Junction are presented in Table 12-15, which follows.

Table 12-15: Junction 5 AM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	36.1%	-	0.3	-	149.1%	-
Year of Opening YoO (2025)	41.1%	47.5%	0.3	0.5	119.2%	89.6%
YoO+5 (2030)	43.7%	50.3%	0.4	0.5	106.1%	78.8%
YoO+15 (2040)	45.5%	52.3%	0.4	0.5	97.9%	72.1%

*DN= Do-Nothing; **DS= Do-Something

PM Peak

The PM Peak traffic modelling results obtained for the O'Connell Street/ Sarsfield Street Junction are presented in Table 12-16, which follows.

Table 12-16: Junction 5 PM Traffic Modelling Results

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Base Year (2022)	44.3%	-	0.1	-	91.9%	-

Assessment Year	Max Degree of Saturation (%)		Max Queue (PCU)		Practical Reserve Capacity (PRC)	
	DN*	DS**	DN	DS	DN	DS
Year of Opening YoO (2025)	33.9%	38.2%	0.3	0.3	165.2%	135.8%
YoO+5 (2030)	36.0%	40.4%	0.3	0.3	149.7%	122.6%
YoO+15 (2040)	37.5%	42.0%	0.3	0.4	140.2%	114.4%

*DN= Do-Nothing; **DS= Do-Something

The modelling results obtained for junction 5 showed that the junction will continue to operate within acceptable margins in the do-something scenario. The maximum degrees of saturation obtained in the year of opening are 47.5%% in the AM peak and 38.2% in the PM peak.

12.17 Predicted Impacts of the Proposed Scheme

Construction Phase

It is anticipated that the construction of the proposed scheme will commence in Q2 2024 and will last for approximately 18 months. At peak construction, a maximum of 20 HGV vehicles movements per day can be expected and around 40 construction staffs.

Disruptions to the traffic movements should be expected for the areas along the Quays, Quay Street, Old Bridge, and Raheen Road, with road closures in some instances.

The Quay Westbound Lane and Quay Street will be closed for the duration of the works to facilitate the construction of the proposed Plaza Area. Due to vehicle rerouting, higher traffic volumes should be anticipated in the surrounding road network, particularly Sarsfield Streets, O'Connell Street, and Joyce's Lane.

Temporary Lane closure and traffic management are anticipated for Raheen Road.

Construction traffic is expected to access the site via major roads in and around Clonmel, including the N24 and Waterford Road.

Construction vehicles will access Suir Island via Old Bridge. Considering the width restrictions on this road and the size of HGVs, delays are anticipated on the area due to slow moving traffic and traffic management to ensure the safe movement on the road. A higher volume of traffic should also be expected along Old Bridge relating to relocated car parking demand from The Quays.

Some car parking spaces in the Suir Island Car Park can be expected to be out of service for the duration of the works to accommodate HGV movement and construction facilities.

An Outline Construction Environmental Management Plan (OCEMP) has been prepared and submitted with the planning application to ensure the safety of the workforce and the public, as well as minimising traffic delays and disruption in the local area. This will also aim to maintain access to properties.

A Traffic Management Plan (TMP) will be compiled by contractor before construction activities commence and will be a standalone document forming part of the project's Environmental Operating Plan. The TMP will address temporary disruption to traffic lanes, footpath access and the management of pedestrian crossing points. The contractor shall provide an appropriate information campaign for the

duration of the construction works.

The impacts of the proposed scheme at the construction phase will be *short-term, negative, and not significant*.

Operational Phase

The traffic modelling undertaken for the scheme, which is discussed in preceding sections of this Chapter, demonstrated that the road network in the vicinity of the site can accommodate the additional traffic resulting from the road changes proposed with the scheme.

On that basis, the traffic impact of the proposed scheme at the operational phase can be described as *long-term, neutral, and imperceptible*.

12.18 Car Parking Impacts

The implementation of the proposed scheme will result in the elimination of all 33 No. existing car parking spaces at the Quay Street Car Park and 1 No. car parking space on The Quay. Furthermore, the proposal also will also remove 3 No. car parking spaces from Raheen Road.

It is anticipated that the demand for these spaces will be accommodated within the Suir Island Car Park. Based on the results obtained from the car parking accumulation analysis discussed in section 12.6.3 of this chapter, it can be concluded that Suir Island Car Park has enough capacity to accommodate all additional users.

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