Clifton Scannell Emerson Associates

Suir Island Infrastructure Links
Traffic Impact Assessment

Comhairle Contae Thiobraid Árann
Tipperary County Council

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1 Background

1.1 *Introduction*

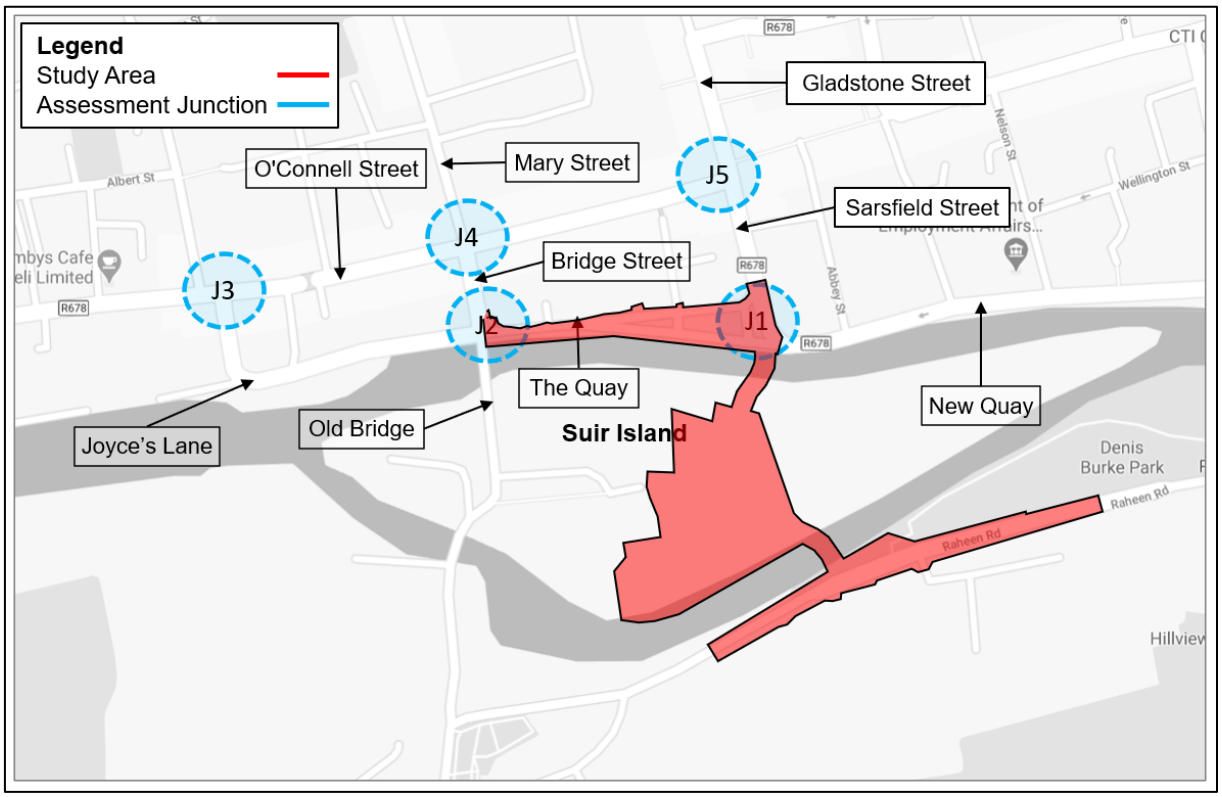
This Report has been prepared by Clifton Scannell Emerson Associates (CSEA), on behalf of the Tipperary County Council (TCC), documenting the traffic implications of the proposed layout changes to the Quay Street/ R678 The Quay/ R678 Sarsfield Street junction. Modifications to the existing junction layout are proposed to accommodate a Pedestrian Plaza in the vicinity of the junction, to be delivered as part of the proposed Suir Island Pedestrian Links.

The contents within this Report present the outputs of an LinSig capacity analysis discussing the traffic implications of the design proposal. In addition, this Report 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.

1.2 *Study Area*

The study area and junctions under study are identified in Figure 1-1, which follows.



1.3 *Assessment Junctions*

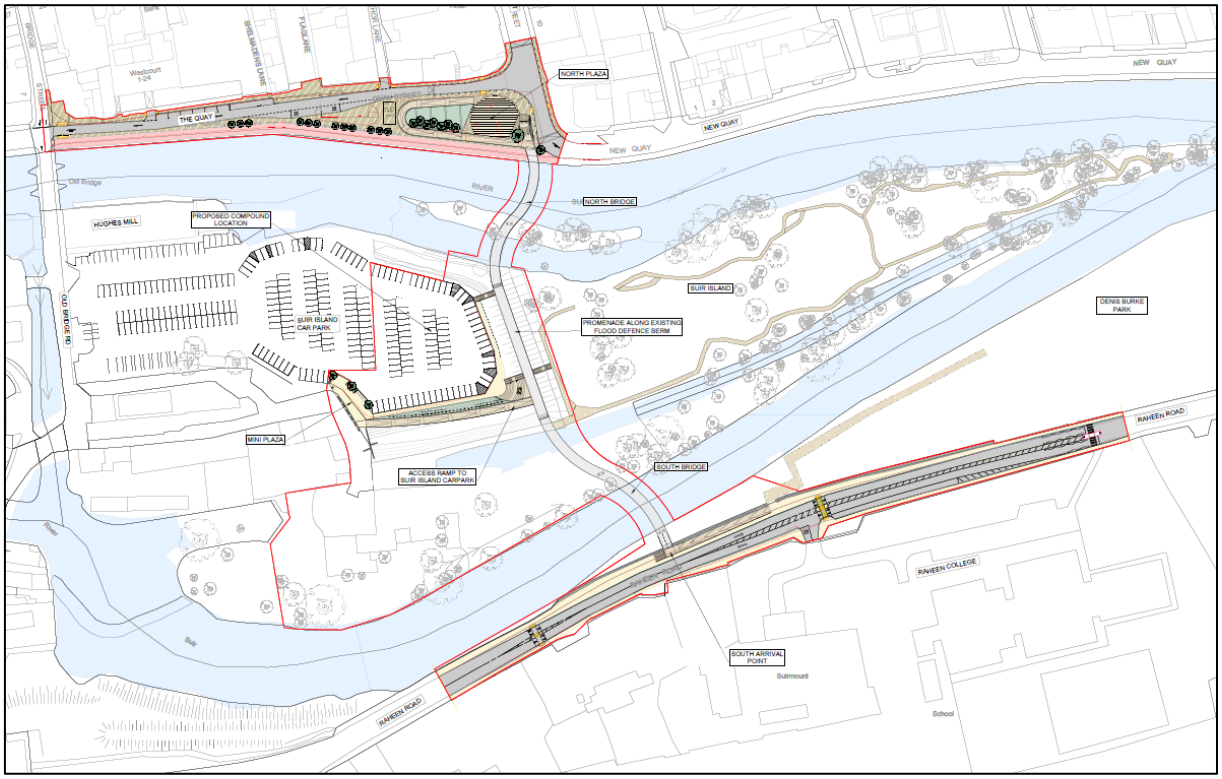
Changes to the traffic patterns in the surrounding network will occur as a result of the proposed development. A capacity analysis has been undertaken to assess the performance of the junctions

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

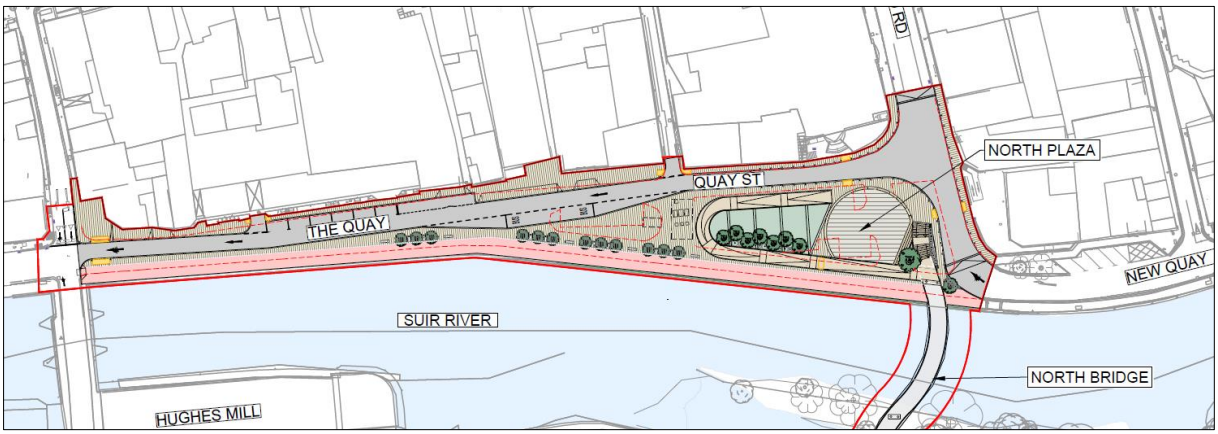
- J1: 3-arm Priority-controlled Quay Street/ R678 Sarsfield Street/ R678 New Quay junction;
- J2: 4-arm Priority-controlled The Quay/ Bridge Street/ Old Bridge Junction;
- J3: 3-arm Priority-controlled Joyce's Lane/ O'Connell Street Junction;
- J4: 4-arm Priority-controlled Mary Street/ Bridge Street/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

1.4 *Proposed Layout Changes*

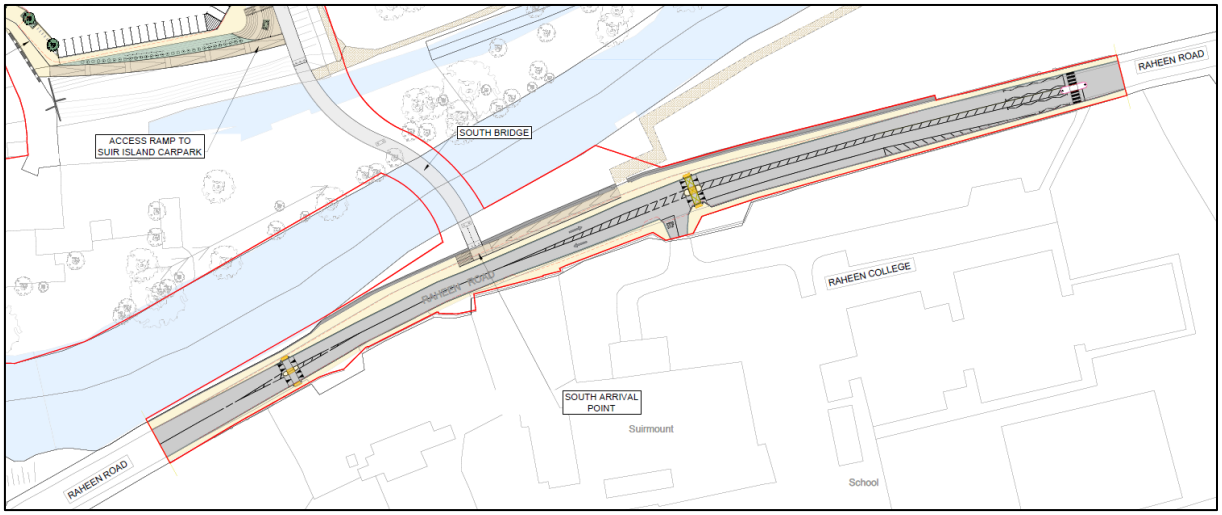
Layout changes will be implemented at the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction as part of a bigger scheme which intend to improve the pedestrian/cyclist infrastructure provision in the vicinity of Suir Island. Figure 1-2 below, illustrates the main components of the Scheme.



As shown on Figure 1-2 above, a plaza area (North Plaza) is proposed at the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction. With the implementation of this scheme, it is proposed to eliminate the two-way system currently available along Quay Street, allowing westbound movements only. Figure 1-3, below, sets out the proposed layout for the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction.



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 1-4 presents the proposed layout for Raheen Road.



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 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 1.3 to understand the impacts of the expected additional traffic along O'Connell Street.

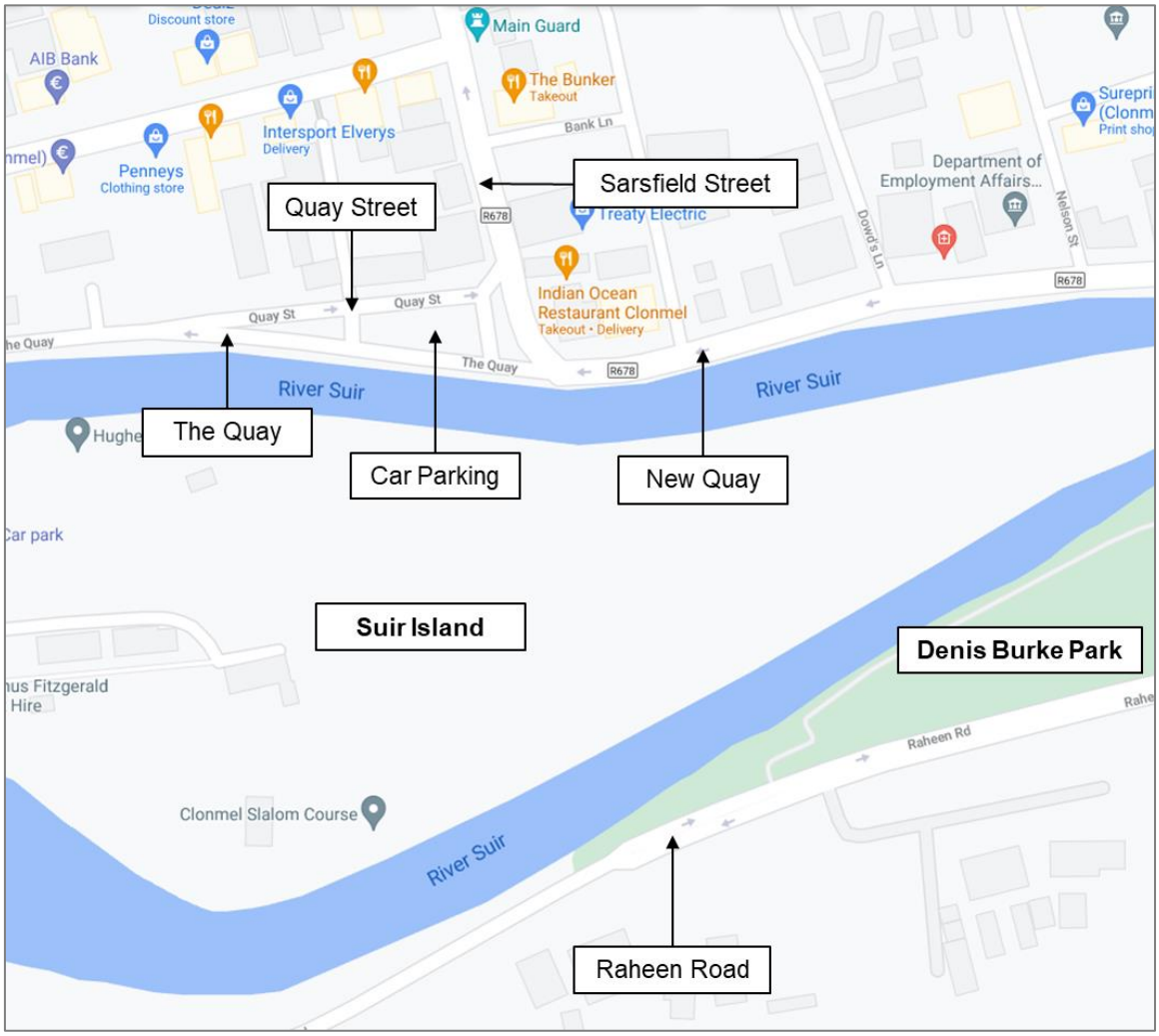
In terms of Parking, all 33 No. existing car parking spaces at the Quay Street Car Park will be removed to accommodate the North Plaza as part of the proposed development and 1 No. parallel car parking space will be eliminated from The Quay. 3 No. car parking spaces will be eliminated from Raheen Road 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, it can be concluded that Suir Island Car Park has enough capacity to accommodate all additional users.

2 Existing Conditions

2.1 *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 2-1, which follows.



At present, New Quay is a one-way regional road accommodating westbound traffic only. On the approach to the junction, this road splits into 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.

As shown on Figure 3-1 (overleaf), a Pay and Display Car Park is located in the middle of the junction with capacity for up to 33 No. cars. Figures 2-2 and 2-3[1] present the views of the junction from New Quay and Sarsfield Street, respectively.

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Footpaths are available in all arms of the junction.

2.2 *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.

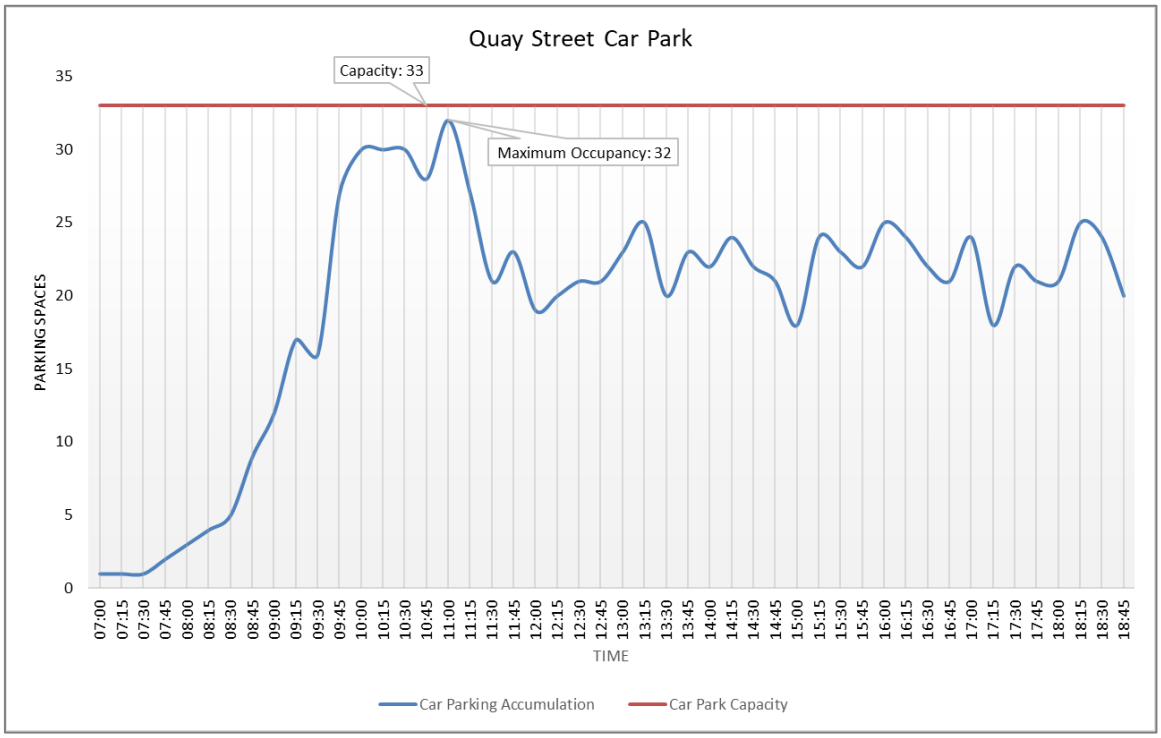
2.3 *Existing Car Parking Volumes in Local Area*

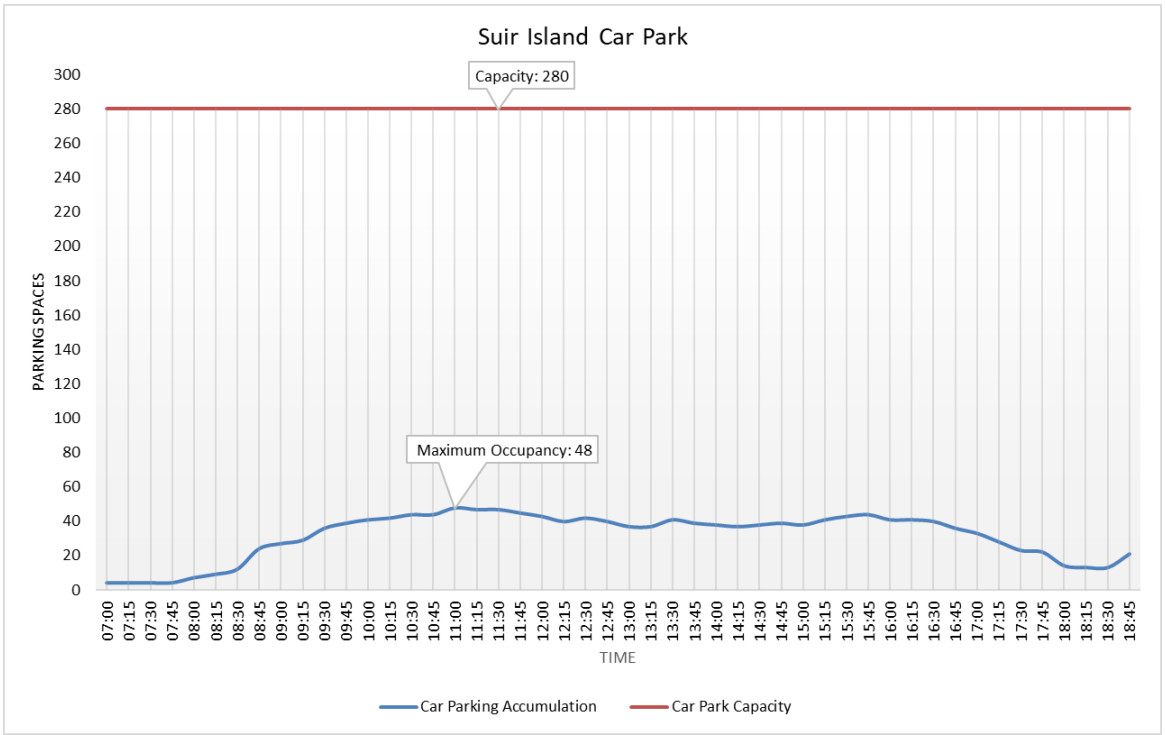
Due to the ongoing global COVID-19 pandemic and related restrictions implemented by the Irish Government in December 2020, it has not been possible to undertake car parking surveys to obtain updated volumes at the time of the assessment. Similar to the traffic surveys discussed in preceding sections, historic data has been used for the assessment.

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 2-5 and Figure 2-6 (overleaf).

As shown on Figure 2-5, a maximum of 30 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.

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 scheme. It is anticipated that these users will be accommodated in surrounding car parks. Based on the figures obtained from the car parking accumulation, it can be concluded that Suir Island Car Park has enough capacity to accommodate all additional users.





2.4 *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 _____ _____. 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 2.4-2.6

2.5 *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 2-1, 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:

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. 0 .

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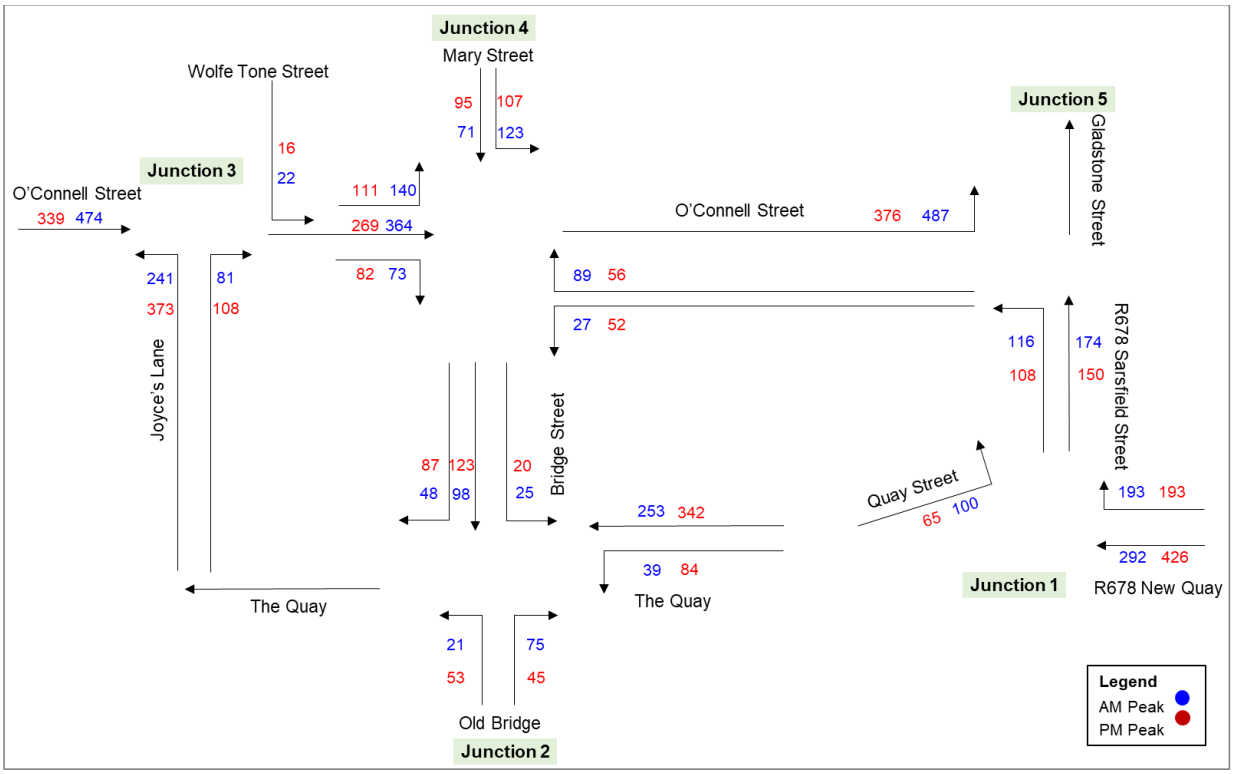
Junction No.	Approach Flows	
	AM Peak (08:30-09:30hrs)	**PM Peak (17:00-18:00hrs)**
J1	585	684
J2	559	754
J3	796	820
J4	887	772
J5	777	634

As shown in Table 2-1, above, Junction 3 and Junction 4 carry the highest volume of traffic in the network. Figure 2-6 presents the turning PCUs volumes at each junction.



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2.6 *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 2.4, 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 2-2 and Table 2-3 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: . .0 . .

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Junction No.	AM Peak		
	2018 Traffic	2022 Traffic	% Change compared to 2018
J2	267	289	+8%

(Old Bridge and Bridge Street Movements Only)			
J4 (All Approaches)	887	840	-5%
J5 (All Approaches)	777	718	-8%

0 0

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 2-2 and Table 2-3, 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.

2.7 *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 2.6 of this report.

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 4 of this report.

3 Traffic Growth Forecast and Scenarios

3.1 *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 1.4, 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 2.5 of this report.

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.

3.2 *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 1.5 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) . – *0* . 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 3-1, which follows.

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ears	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 3-1, 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.

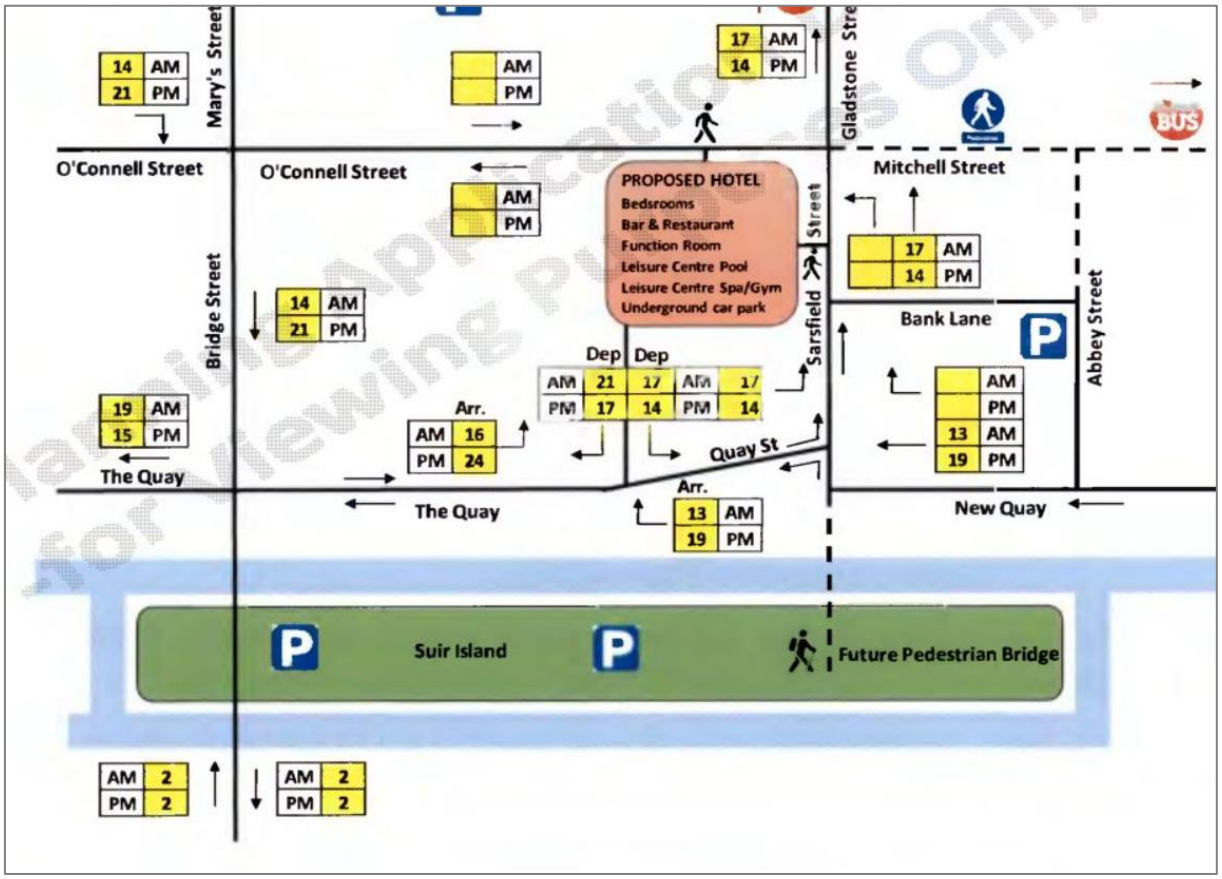
Table 3-2 provides an overview of 'do-nothing' base year, year of opening (YoO), year of opening +5 years (YoO+5), and year of opening +15 years (YoO+15) AM and PM peak period traffic volumes. Traffic figures presented in the table below are in Passenger Car Units (PCUs) with the following factors assumed: *.0*, *. .0 . .* *. – 0 0 0 .*

Junction No.	AM Peak (08:30-09:30hrs)			
	Base ear (2022)	ear of Opening (2025)	oO 5 (2030)	oO 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 ear (2018)	**ear of Opening (2024)**	**oO 5 (2029)**	**oO 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

3.3 *Committed Developments*

3.3.1 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 . . 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 3-1.



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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 report.

3.3.2 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 ' *0 0 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 1.5.
- 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 3-3, below. The traffic presented below have been distributed through the network with the proposed one-way system on Quay Street in operation.

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.

3.3.3 Clonmel Ur an 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 report 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.

4 Traffic Impact Assessment

4.1 *Traffic Modelling Software and Outputs*

4.1.1 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 if 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:

- : 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.
- : 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.
- : 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.

4.2 *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 4-1, which follows.

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

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 4-2, which follows.

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

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

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%.

4.3 *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 4-3, below.

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

PM Peak

The PM Peak traffic modelling results obtained for the Old Bridge/ The Quay/ Bridge Street junction are presented in Table 4-4.

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

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

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.

4.4 *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 4-5.

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

PM Peak

The PM Peak traffic modelling results obtained for Joyce's Lane/ O'Connell Street Junction are presented in Table 4-6, which follows.

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

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

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.

4.5 *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 4-7, which follows.

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

PM Peak

The PM Peak traffic modelling results obtained for the Mary Street/ O'Connell Street Junction are presented in Table 4-8, which follows.

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

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

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.

4.6 *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 4-9, which follows.

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

PM Peak

The PM Peak traffic modelling results obtained for the O'Connell Street/ Sarsfield Street Junction are presented in Table 4-10, which follows.

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

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

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.

4.7 *Predicted Impacts of the Proposed Scheme*

4.7.1 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.

4.7.2 Operational Phase

The traffic modelling undertaken for the scheme, which is discussed in preceding sections of this report, 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
- and .

4.7.3 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 2.3 of this report, it can be concluded that Suir Island Car Park has enough capacity to accommodate all additional users.

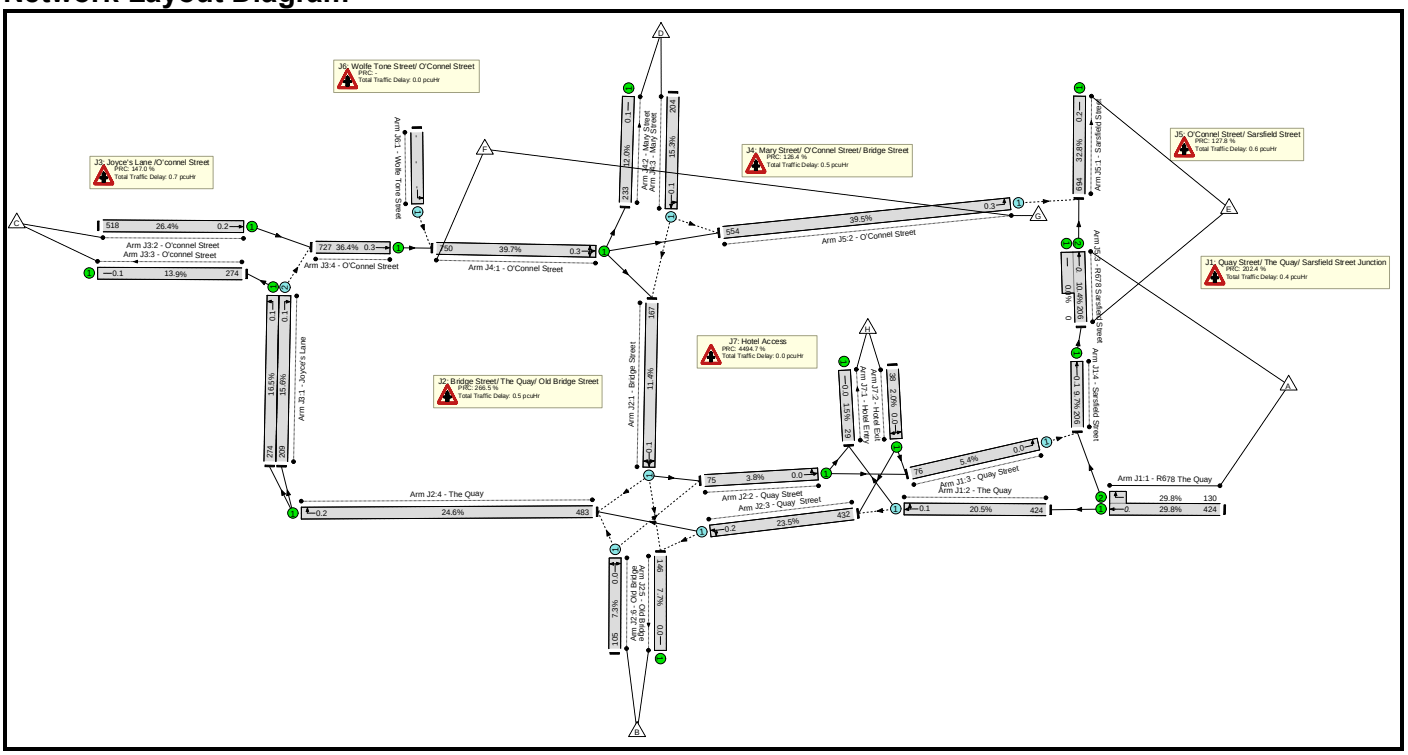
Appendix A: LinSig Modelling Results

User and Project Details

Project:	**20_071 Suir Island Infrastructure Links**
Title:	**Suir Island Links**
Location:	The Quay, Clomnel Town Centre
Client:	Tipperary County Council
Date Started:	January 27th ,2021
Model Purpose:	Layout Testing for Quay Street One Way System
Checked By:	RG
Additional detail:	
File name:	Suir Island -Quay Network do-nothing with PR v3.2.lsg3x
Author:	Carol Diaz Rosario
Company:	Clifton Scannel Emerson and Associates
Address:	
Linsig Version:	3, 2, 40, 0

Scenario 2: 'AM PEAK 2023' (FG2: 'AM PEAK 2023', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

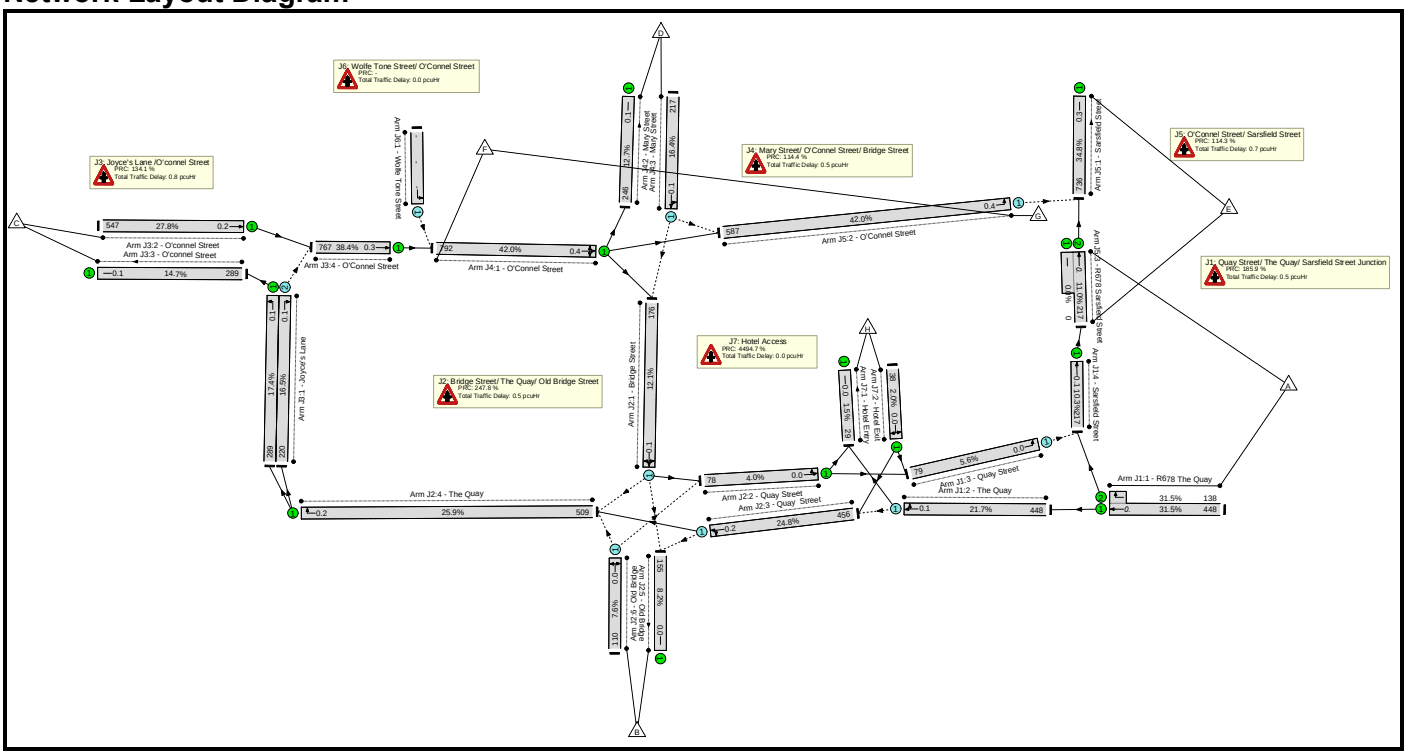
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**39.7%**	**1147**	**542**	**0**	**2.8**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**29.8%**	**76**	**411**	**0**	**0.4**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	554	1895:1760	1425+437	29.8 : 29.8%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	424	2065	2065	20.5%	0	411	0	0.1	1.1	0.1
3/1	Quay Street Left	O	76	2000	1410	5.4%	76	0	0	0.0	1.3	0.0
4/1	Sarsfield Street Ahead	U	206	2115	2115	9.7%	-	-	-	0.1	0.9	0.1
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**24.6%**	**217**	**57**	**0**	**0.5**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	167	1878	1464	11.4%	103	23	0	0.1	1.4	0.1
2/1	Quay Street Ahead Left	U	75	1965	1965	3.8%	-	-	-	0.0	1.0	0.0
3/1	Quay Street Ahead Left	O	432	1908	1838	23.5%	43	0	0	0.2	1.3	0.2
4/1	The Quay Right	U	483	1967	1967	24.6%	-	-	-	0.2	1.2	0.2
5/1	Old Bridge	U	146	1885	1885	7.7%	-	-	-	0.0	1.0	0.0
6/1	Old Bridge Right Left	O	105	1534	1446	7.3%	71	34	0	0.0	1.3	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**36.4%**	**209**	**0**	**0**	**0.7**	**-**	**-**
1/1	Joyce's Lane Left	U	274	1659	1659	16.5%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	209	1642	1340	15.6%	209	0	0	0.1	1.6	0.1
2/1	O'connel Street Ahead	U	518	1965	1965	26.4%	-	-	-	0.2	1.2	0.2
3/1	O'connel Street	U	274	1965	1965	13.9%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	727	1995	1995	36.4%	-	-	-	0.3	1.4	0.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**39.7%**	**130**	**74**	**0**	**0.5**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	750	1887	1887	39.7%	-	-	-	0.3	1.6	0.3
2/1	Mary Street	U	233	1940	1940	12.0%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	204	1761	1337	15.3%	130	74	0	0.1	1.6	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**39.5%**	**515**	**0**	**0**	**0.6**	**-**	**-**
1/1	Sarsfield Street	U	694	2115	2115	32.8%	-	-	-	0.2	1.3	0.2
2/1	O'Connel Street Left	O	554	1861	1402	39.5%	515	0	0	0.3	2.1	0.3
3/2+3/1	R678 Sarsfield Street Ahead	U	206	1975:1975	1975+0	10.4 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 126.4 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.78 Cycle Time (s): 90

Scenario 3: 'AM PEAK 2028' (FG3: 'AM PEAK 2028', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

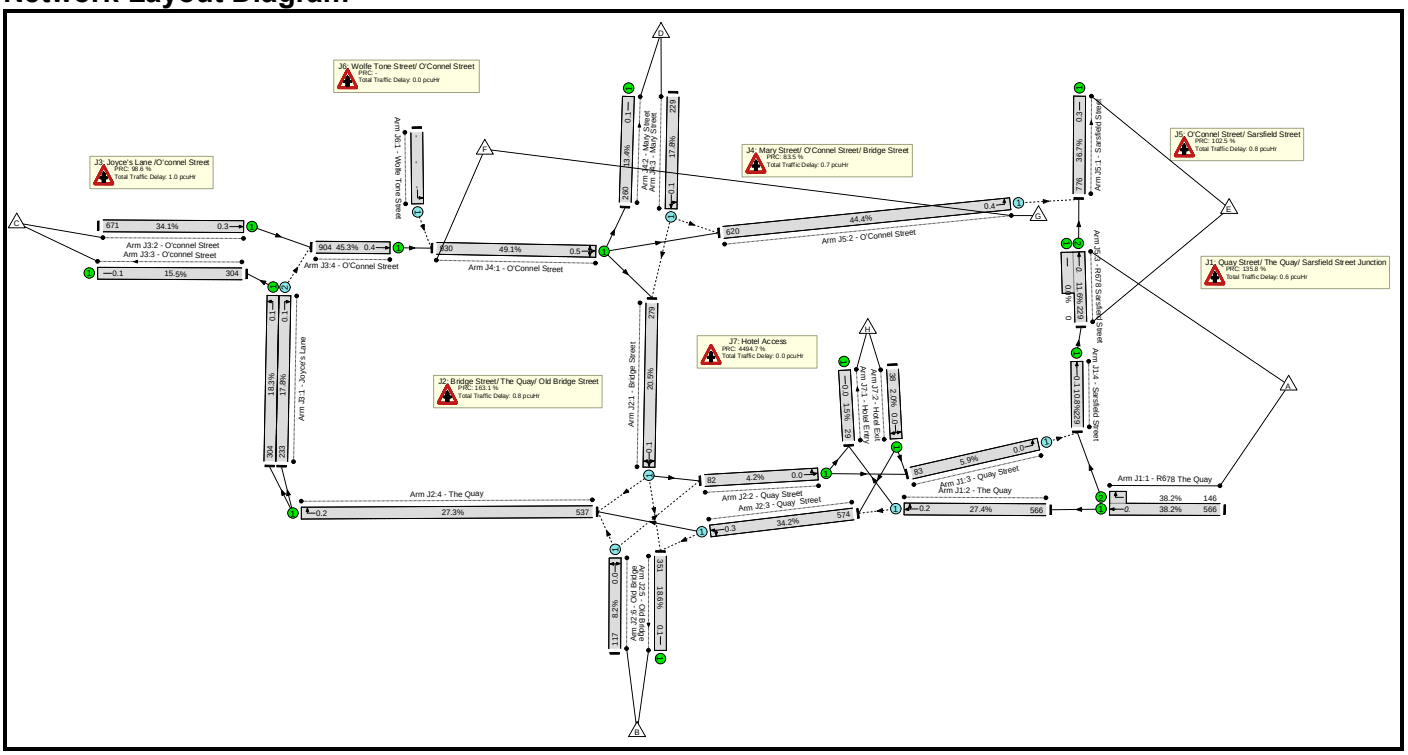
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**42.0%**	**1213**	**575**	**0**	**3.0**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**31.5%**	**79**	**435**	**0**	**0.5**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	586	1895:1760	1423+438	31.5 : 31.5%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	448	2065	2065	21.7%	0	435	0	0.1	1.1	0.1
3/1	Quay Street Left	O	79	2000	1409	5.6%	79	0	0	0.0	1.4	0.0
4/1	Sarsfield Street Ahead	U	217	2115	2115	10.3%	-	-	-	0.1	0.9	0.1
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**25.9%**	**229**	**61**	**0**	**0.5**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	176	1880	1456	12.1%	109	25	0	0.1	1.4	0.1
2/1	Quay Street Ahead Left	U	78	1965	1965	4.0%	-	-	-	0.0	1.0	0.0
3/1	Quay Street Ahead Left	O	456	1907	1836	24.8%	46	0	0	0.2	1.3	0.2
4/1	The Quay Right	U	509	1967	1967	25.9%	-	-	-	0.2	1.2	0.2
5/1	Old Bridge	U	155	1885	1885	8.2%	-	-	-	0.0	1.0	0.0
6/1	Old Bridge Right Left	O	110	1535	1445	7.6%	74	36	0	0.0	1.3	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**38.4%**	**220**	**0**	**0**	**0.8**	**-**	**-**
1/1	Joyce's Lane Left	U	289	1659	1659	17.4%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	220	1642	1335	16.5%	220	0	0	0.1	1.6	0.1
2/1	O'connel Street Ahead	U	547	1965	1965	27.8%	-	-	-	0.2	1.3	0.2
3/1	O'connel Street	U	289	1965	1965	14.7%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	767	1995	1995	38.4%	-	-	-	0.3	1.5	0.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**42.0%**	**138**	**79**	**0**	**0.5**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	792	1887	1887	42.0%	-	-	-	0.4	1.6	0.4
2/1	Mary Street	U	246	1940	1940	12.7%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	217	1761	1326	16.4%	138	79	0	0.1	1.6	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**42.0%**	**547**	**0**	**0**	**0.7**	**-**	**-**
1/1	Sarsfield Street	U	736	2115	2115	34.8%	-	-	-	0.3	1.3	0.3
2/1	O'Connel Street Left	O	587	1861	1398	42.0%	547	0	0	0.4	2.2	0.4
3/2+3/1	R678 Sarsfield Street Ahead	U	217	1975:1975	1975+0	11.0 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 114.3 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 3.00 Cycle Time (s): 90

Scenario 4: 'AM PEAK 2038' (FG4: 'AM PEAK 2038', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

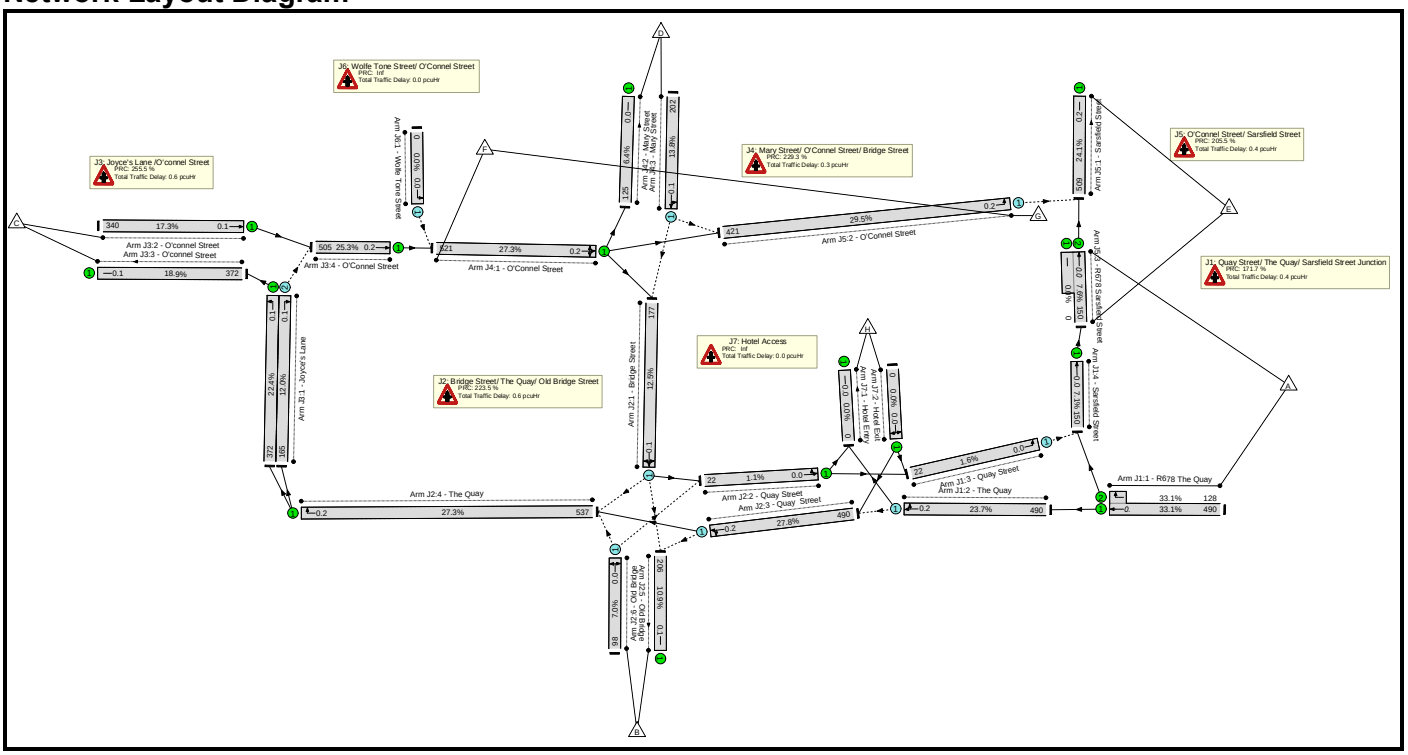
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**49.1%**	**1469**	**700**	**0**	**3.8**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**38.2%**	**83**	**553**	**0**	**0.6**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	712	1895:1760	1483+383	38.2 : 38.2%	-	-	-	0.3	1.6	0.3
2/1	The Quay Ahead Right	O	566	2065	2065	27.4%	0	553	0	0.2	1.2	0.2
3/1	Quay Street Left	O	83	2000	1407	5.9%	83	0	0	0.0	1.4	0.0
4/1	Sarsfield Street Ahead	U	229	2115	2115	10.8%	-	-	-	0.1	1.0	0.1
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**34.2%**	**430**	**64**	**0**	**0.8**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	279	1954	1363	20.5%	209	26	0	0.1	1.7	0.1
2/1	Quay Street Ahead Left	U	82	1965	1965	4.2%	-	-	-	0.0	1.0	0.0
3/1	Quay Street Ahead Left	O	574	1829	1678	34.2%	142	0	0	0.3	1.6	0.3
4/1	The Quay Right	U	537	1967	1967	27.3%	-	-	-	0.2	1.3	0.2
5/1	Old Bridge	U	351	1885	1885	18.6%	-	-	-	0.1	1.2	0.1
6/1	Old Bridge Right Left	O	117	1534	1431	8.2%	79	38	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**45.3%**	**233**	**0**	**0**	**1.0**	**-**	**-**
1/1	Joyce's Lane Left	U	304	1659	1659	18.3%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	233	1642	1311	17.8%	233	0	0	0.1	1.7	0.1
2/1	O'connel Street Ahead	U	671	1965	1965	34.1%	-	-	-	0.3	1.4	0.3
3/1	O'connel Street	U	304	1965	1965	15.5%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	904	1995	1995	45.3%	-	-	-	0.4	1.6	0.4

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**49.1%**	**146**	**83**	**0**	**0.7**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	930	1896	1896	49.1%	-	-	-	0.5	1.9	0.5
2/1	Mary Street	U	260	1940	1940	13.4%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	229	1761	1285	17.8%	146	83	0	0.1	1.7	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**44.4%**	**577**	**0**	**0**	**0.8**	**-**	**-**
1/1	Sarsfield Street	U	776	2115	2115	36.7%	-	-	-	0.3	1.3	0.3
2/1	O'Connel Street Left	O	620	1861	1395	44.4%	577	0	0	0.4	2.3	0.4
3/2+3/1	R678 Sarsfield Street Ahead	U	229	1975:1975	1975+0	11.6 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 83.5 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 3.77 Cycle Time (s): 90

Scenario 5: 'PM PEAK 2018' (FG5: 'PM PEAK 2018', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

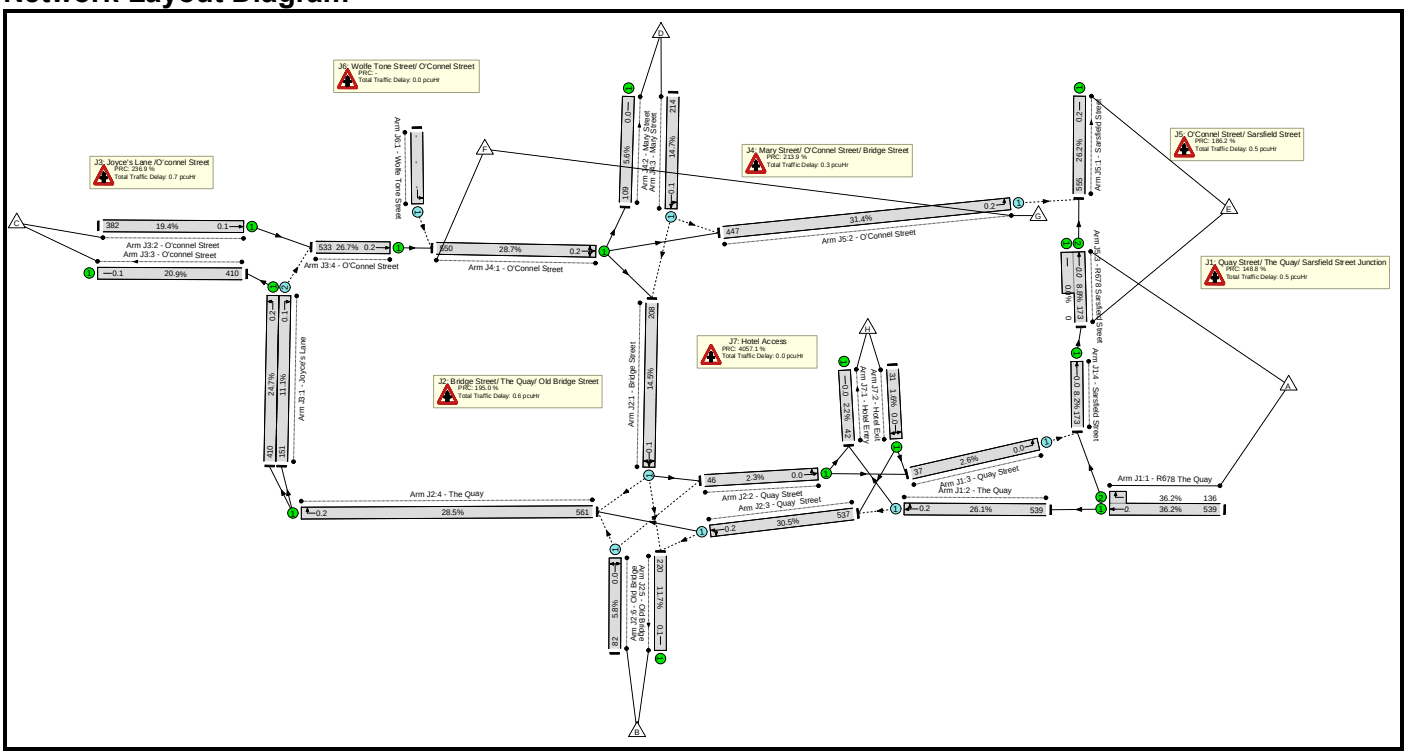
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**33.1%**	**975**	**622**	**0**	**2.3**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**33.1%**	**22**	**490**	**0**	**0.4**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	618	1895:1760	1479+386	33.1 : 33.1%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	490	2065	2065	23.7%	0	490	0	0.2	1.1	0.2
3/1	Quay Street Left	O	22	2000	1411	1.6%	22	0	0	0.0	1.3	0.0
4/1	Sarsfield Street Ahead	U	150	2115	2115	7.1%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**27.8%**	**302**	**37**	**0**	**0.6**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	177	1927	1418	12.5%	122	35	0	0.1	1.4	0.1
2/1	Quay Street Ahead Left	U	22	1965	1965	1.1%	-	-	-	0.0	0.9	0.0
3/1	Quay Street Ahead Left	O	490	1869	1761	27.8%	84	0	0	0.2	1.4	0.2
4/1	The Quay Right	U	537	1967	1967	27.3%	-	-	-	0.2	1.3	0.2
5/1	Old Bridge	U	206	1885	1885	10.9%	-	-	-	0.1	1.1	0.1
6/1	Old Bridge Right Left	O	98	1462	1406	7.0%	96	2	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**25.3%**	**165**	**0**	**0**	**0.6**	**-**	**-**
1/1	Joyce's Lane Left	U	372	1659	1659	22.4%	-	-	-	0.1	1.4	0.1
1/2	Joyce's Lane Right	O	165	1642	1374	12.0%	165	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	340	1965	1965	17.3%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	372	1965	1965	18.9%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	505	1995	1995	25.3%	-	-	-	0.2	1.2	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**27.3%**	**107**	**95**	**0**	**0.3**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	521	1906	1906	27.3%	-	-	-	0.2	1.3	0.2
2/1	Mary Street	U	125	1940	1940	6.4%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	202	1789	1461	13.8%	107	95	0	0.1	1.4	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**29.5%**	**379**	**0**	**0**	**0.4**	**-**	**-**
1/1	Sarsfield Street	U	509	2115	2115	24.1%	-	-	-	0.2	1.1	0.2
2/1	O'Connel Street Left	O	421	1861	1429	29.5%	379	0	0	0.2	1.8	0.2
3/2+3/1	R678 Sarsfield Street Ahead	U	150	1975:1975	1975+0	7.6 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	1965	0.0%	0	0	0	0.0	0.0	0.0
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0
2/1	Hotel Exit Left Right	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 171.7 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.32 Cycle Time (s): 90

Scenario 6: 'PM PEAK 2023' (FG6: 'PM PEAK 2023', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**36.2%**	**1003**	**661**	**0**	**2.6**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**36.2%**	**37**	**520**	**0**	**0.5**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	675	1895:1760	1490+376	36.2 : 36.2%	-	-	-	0.3	1.5	0.3
2/1	The Quay Ahead Right	O	539	2065	2065	26.1%	0	520	0	0.2	1.2	0.2
3/1	Quay Street Left	O	37	2000	1409	2.6%	37	0	0	0.0	1.3	0.0
4/1	Sarsfield Street Ahead	U	173	2115	2115	8.2%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**30.5%**	**298**	**41**	**0**	**0.6**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	208	1884	1434	14.5%	129	37	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	U	46	1965	1965	2.3%	-	-	-	0.0	0.9	0.0
3/1	Quay Street Ahead Left	O	537	1870	1760	30.5%	91	0	0	0.2	1.5	0.2
4/1	The Quay Right	U	561	1967	1967	28.5%	-	-	-	0.2	1.3	0.2
5/1	Old Bridge	U	220	1885	1885	11.7%	-	-	-	0.1	1.1	0.1
6/1	Old Bridge Right Left	O	82	1469	1403	5.8%	78	4	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**26.7%**	**151**	**0**	**0**	**0.7**	**-**	**-**
1/1	Joyce's Lane Left	U	410	1659	1659	24.7%	-	-	-	0.2	1.4	0.2
1/2	Joyce's Lane Right	O	151	1642	1366	11.1%	151	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	382	1965	1965	19.4%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	410	1965	1965	20.9%	-	-	-	0.1	1.2	0.1
4/1	O'Connel Street Ahead	U	533	1995	1995	26.7%	-	-	-	0.2	1.2	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**28.7%**	**114**	**100**	**0**	**0.3**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	550	1918	1918	28.7%	-	-	-	0.2	1.3	0.2
2/1	Mary Street	U	109	1940	1940	5.6%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	214	1788	1452	14.7%	114	100	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**31.4%**	**403**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	555	2115	2115	26.2%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	447	1861	1421	31.4%	403	0	0	0.2	1.8	0.2
3/2+3/1	R678 Sarsfield Street Ahead	U	173	1975:1975	1975+0	8.8 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1

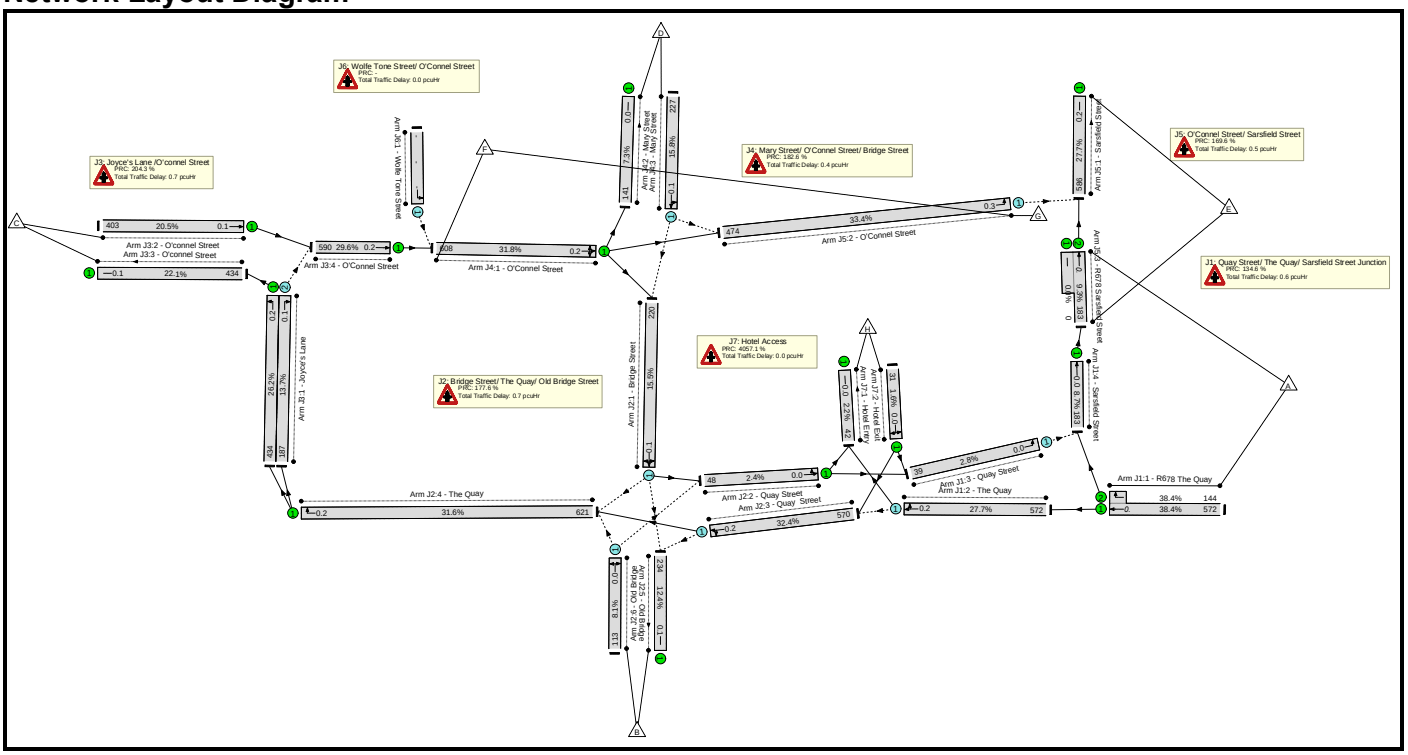
PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 148.8

Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 2.58

Cycle Time (s): 90

Scenario 7: 'PM PEAK 2028' (FG7: 'PM PEAK 2028', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**38.4%**	**1115**	**703**	**0**	**2.9**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**38.4%**	**39**	**553**	**0**	**0.6**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	716	1895:1760	1491+375	38.4 : 38.4%	-	-	-	0.3	1.6	0.3
2/1	The Quay Ahead Right	O	572	2065	2065	27.7%	0	553	0	0.2	1.2	0.2
3/1	Quay Street Left	O	39	2000	1407	2.8%	39	0	0	0.0	1.3	0.0
4/1	Sarsfield Street Ahead	U	183	2115	2115	8.7%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**32.4%**	**343**	**43**	**0**	**0.7**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	220	1885	1423	15.5%	137	39	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	U	48	1965	1965	2.4%	-	-	-	0.0	0.9	0.0
3/1	Quay Street Ahead Left	O	570	1870	1758	32.4%	97	0	0	0.2	1.5	0.2
4/1	The Quay Right	U	621	1967	1967	31.6%	-	-	-	0.2	1.3	0.2
5/1	Old Bridge	U	234	1885	1885	12.4%	-	-	-	0.1	1.1	0.1
6/1	Old Bridge Right Left	O	113	1466	1399	8.1%	109	4	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**29.6%**	**187**	**0**	**0**	**0.7**	**-**	**-**
1/1	Joyce's Lane Left	U	434	1659	1659	26.2%	-	-	-	0.2	1.5	0.2
1/2	Joyce's Lane Right	O	187	1642	1362	13.7%	187	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	403	1965	1965	20.5%	-	-	-	0.1	1.2	0.1
3/1	O'connel Street	U	434	1965	1965	22.1%	-	-	-	0.1	1.2	0.1
4/1	O'Connel Street Ahead	U	590	1995	1995	29.6%	-	-	-	0.2	1.3	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**31.8%**	**120**	**107**	**0**	**0.4**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	608	1909	1909	31.8%	-	-	-	0.2	1.4	0.2
2/1	Mary Street	U	141	1940	1940	7.3%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	227	1789	1440	15.8%	120	107	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**33.4%**	**426**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	586	2115	2115	27.7%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	474	1861	1420	33.4%	426	0	0	0.3	1.9	0.3
3/2+3/1	R678 Sarsfield Street Ahead	U	183	1975:1975	1975+0	9.3 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1

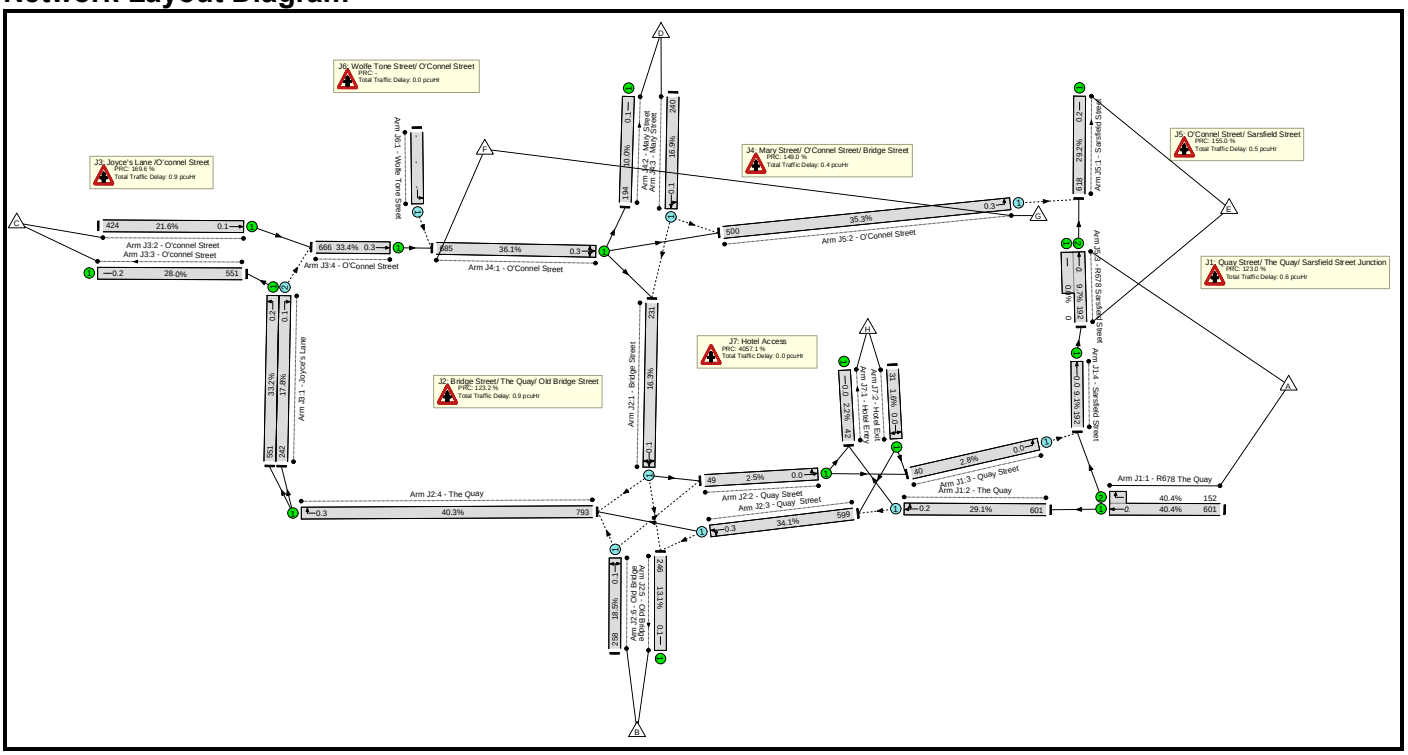
PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 134.6

Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 2.87

Cycle Time (s): 90

Scenario 8: 'PM PEAK 2038' (FG8: 'PM PEAK 2038', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**40.4%**	**1359**	**741**	**0**	**3.4**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**40.4%**	**40**	**582**	**0**	**0.6**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	753	1895:1760	1489+377	40.4 : 40.4%	-	-	-	0.3	1.6	0.3
2/1	The Quay Ahead Right	O	601	2065	2065	29.1%	0	582	0	0.2	1.2	0.2
3/1	Quay Street Left	O	40	2000	1405	2.8%	40	0	0	0.0	1.3	0.0
4/1	Sarsfield Street Ahead	U	192	2115	2115	9.1%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**40.3%**	**500**	**46**	**0**	**0.9**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	231	1886	1415	16.3%	144	42	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	U	49	1965	1965	2.5%	-	-	-	0.0	0.9	0.0
3/1	Quay Street Ahead Left	O	599	1869	1756	34.1%	102	0	0	0.3	1.6	0.3
4/1	The Quay Right	U	793	1967	1967	40.3%	-	-	-	0.3	1.5	0.3
5/1	Old Bridge	U	246	1885	1885	13.1%	-	-	-	0.1	1.1	0.1
6/1	Old Bridge Right Left	O	258	1461	1396	18.5%	254	4	0	0.1	1.6	0.1
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**33.4%**	**242**	**0**	**0**	**0.9**	**-**	**-**
1/1	Joyce's Lane Left	U	551	1659	1659	33.2%	-	-	-	0.2	1.6	0.2
1/2	Joyce's Lane Right	O	242	1642	1358	17.8%	242	0	0	0.1	1.6	0.1
2/1	O'connel Street Ahead	U	424	1965	1965	21.6%	-	-	-	0.1	1.2	0.1
3/1	O'connel Street	U	551	1965	1965	28.0%	-	-	-	0.2	1.3	0.2
4/1	O'Connel Street Ahead	U	666	1995	1995	33.4%	-	-	-	0.3	1.4	0.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**36.1%**	**127**	**113**	**0**	**0.4**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	685	1895	1895	36.1%	-	-	-	0.3	1.5	0.3
2/1	Mary Street	U	194	1940	1940	10.0%	-	-	-	0.1	1.0	0.1
3/1	Mary Street Ahead Left	O	240	1789	1420	16.9%	127	113	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**35.3%**	**450**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	618	2115	2115	29.2%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	500	1861	1417	35.3%	450	0	0	0.3	2.0	0.3
3/2+3/1	R678 Sarsfield Street Ahead	U	192	1975:1975	1975+0	9.7 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Left Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 123.0

Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 3.43

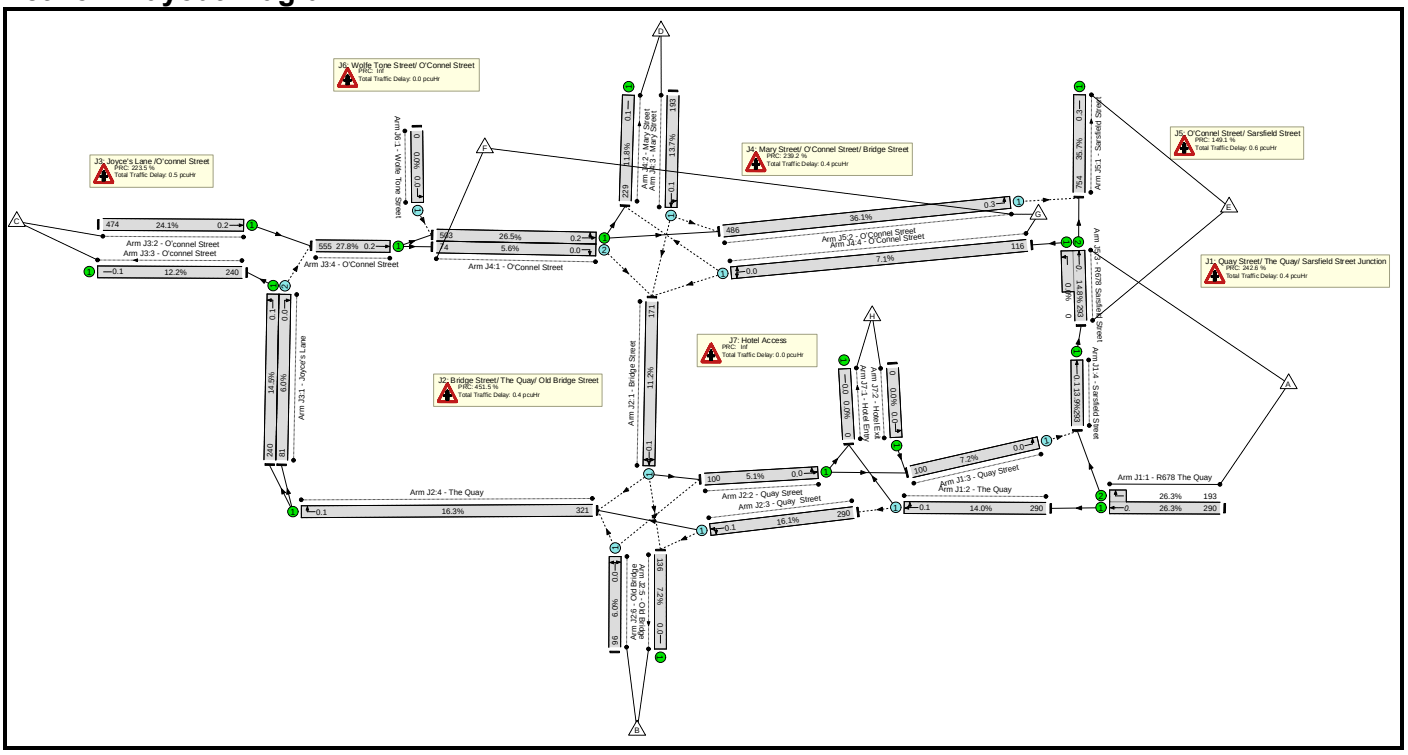
Cycle Time (s): 90

User and Project Details

Project:	**20_071 Suir Island Infrastructure Links**
Title:	**Suir Island Links**
Location:	The Quay, Clonmel Town Centre
Client:	Tipperary County Council
Date Started:	January 27th ,2021
Model Purpose:	Layout Testing for Quay Street One Way System
Checked By:	RG
Additional detail:	
File name:	Suir Island -Quay Network do-nothing v2.2.lsg3x
Author:	Carol Diaz Rosario
Company:	Clifton Scannel Emerson and Associates
Address:	
Linsig Version:	3, 2, 40, 0

Scenario 1: 'AM PEAK 2018' (FG1: 'AM PEAK 2018', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

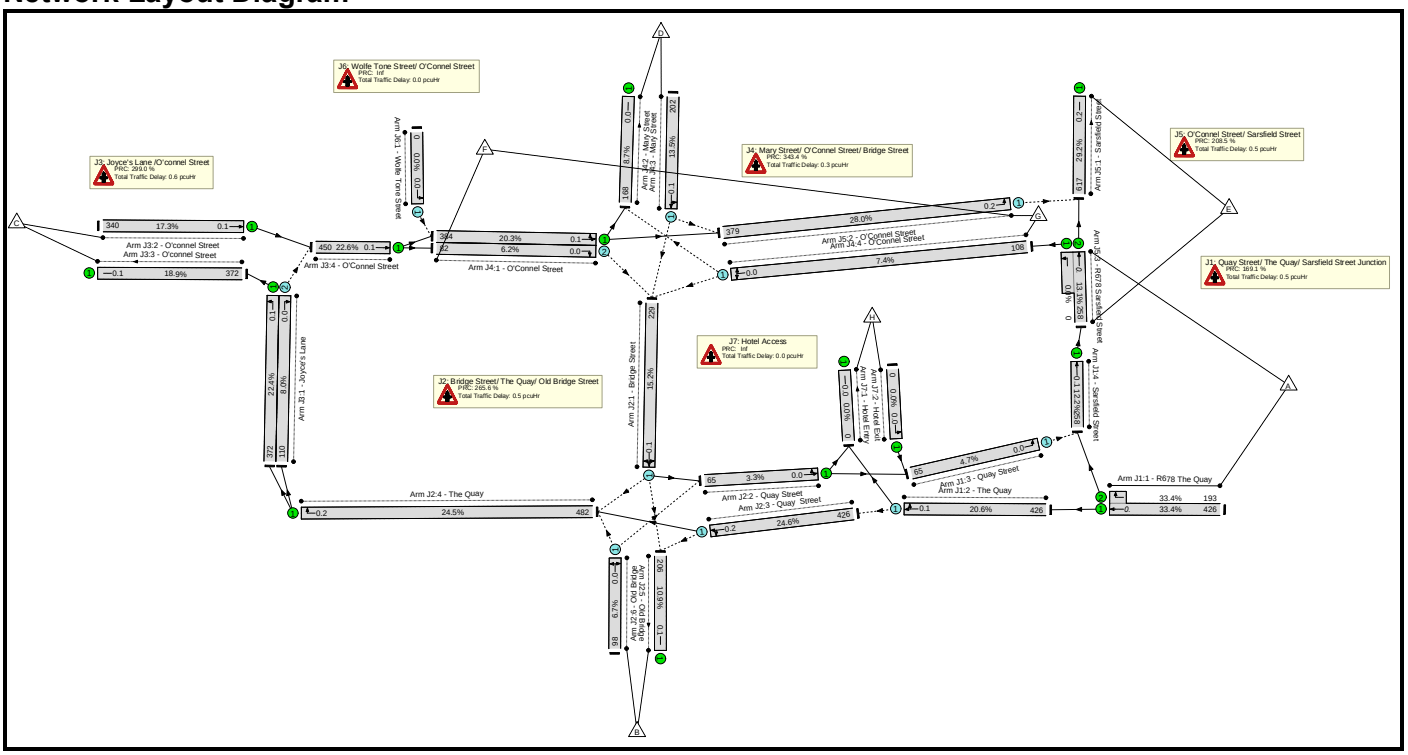
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**36.1%**	**1048**	**573**	**0**	**2.3**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**26.3%**	**100**	**290**	**0**	**0.4**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	483	1895:1760	1104+735	26.3 : 26.3%	-	-	-	0.2	1.3	0.2
2/1	The Quay Ahead Right	O	290	2065	2065	14.0%	0	290	0	0.1	1.0	0.1
3/1	Quay Street Left	O	100	2000	1396	7.2%	100	0	0	0.0	1.4	0.0
4/1	Sarsfield Street Ahead	U	293	2115	2115	13.9%	-	-	-	0.1	1.0	0.1
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**16.3%**	**157**	**124**	**0**	**0.4**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	171	1863	1523	11.2%	97	49	0	0.1	1.3	0.1
2/1	Quay Street Ahead Left	U	100	1965	1965	5.1%	-	-	-	0.0	1.0	0.0
3/1	Quay Street Ahead Left	O	290	1889	1800	16.1%	39	0	0	0.1	1.2	0.1
4/1	The Quay Right	U	321	1967	1967	16.3%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge	U	136	1885	1885	7.2%	-	-	-	0.0	1.0	0.0
6/1	Old Bridge Right Left	O	96	1657	1595	6.0%	21	75	0	0.0	1.2	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**27.8%**	**81**	**0**	**0**	**0.5**	**-**	**-**
1/1	Joyce's Lane Left	U	240	1659	1659	14.5%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	81	1642	1349	6.0%	81	0	0	0.0	1.4	0.0
2/1	O'connel Street Ahead	U	474	1965	1965	24.1%	-	-	-	0.2	1.2	0.2
3/1	O'connel Street	U	240	1965	1965	12.2%	-	-	-	0.1	1.0	0.1
4/1	O'Connel Street Ahead	U	555	1995	1995	27.8%	-	-	-	0.2	1.2	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**26.5%**	**224**	**159**	**0**	**0.4**	**-**	**-**
1/1	O'Connel Street Left Ahead	U	503	1896	1896	26.5%	-	-	-	0.2	1.3	0.2
1/2	O'Connel Street Right	O	74	1497	1331	5.6%	74	0	0	0.0	1.4	0.0
2/1	Mary Street	U	229	1940	1940	11.8%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	193	1761	1407	13.7%	123	70	0	0.1	1.5	0.1
4/1	O'Connel Street Left Right	O	116	1851	1641	7.1%	27	89	0	0.0	1.2	0.0
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**36.1%**	**486**	**0**	**0**	**0.6**	**-**	**-**
1/1	Sarsfield Street	U	754	2115	2115	35.7%	-	-	-	0.3	1.3	0.3
2/1	O'Connel Street Left	O	486	1861	1345	36.1%	486	0	0	0.3	2.1	0.3
3/2+3/1	R678 Sarsfield Street Ahead Left	U	293	1975:1975	1975+0	14.8 : 0.0%	-	-	-	0.1	1.1	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	1965	0.0%	0	0	0	0.0	0.0	0.0
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0
2/1	Hotel Exit Left	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 149.1 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.31 Cycle Time (s): 90

Scenario 5: 'PM PEAK 2018' (FG5: 'PM PEAK 2018', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**33.4%**	**1054**	**709**	**0**	**2.4**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**33.4%**	**65**	**426**	**0**	**0.5**	**-**	**-**
1/1+1/2	R678 The Quay Ahead Right	U	619	1895:1760	1274+577	33.4 : 33.4%	-	-	-	0.3	1.5	0.3
2/1	The Quay Ahead Right	O	426	2065	2065	20.6%	0	426	0	0.1	1.1	0.1
3/1	Quay Street Left	O	65	2000	1396	4.7%	65	0	0	0.0	1.4	0.0
4/1	Sarsfield Street Ahead	U	258	2115	2115	12.2%	-	-	-	0.1	1.0	0.1
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**24.6%**	**259**	**132**	**0**	**0.5**	**-**	**-**
1/1	Bridge Street Left Right Ahead	O	229	1852	1503	15.2%	122	87	0	0.1	1.4	0.1
2/1	Quay Street Ahead Left	U	65	1965	1965	3.3%	-	-	-	0.0	0.9	0.0
3/1	Quay Street Ahead Left	O	426	1855	1730	24.6%	84	0	0	0.2	1.4	0.2
4/1	The Quay Right	U	482	1967	1967	24.5%	-	-	-	0.2	1.2	0.2
5/1	Old Bridge	U	206	1885	1885	10.9%	-	-	-	0.1	1.1	0.1
6/1	Old Bridge Right Left	O	98	1568	1470	6.7%	53	45	0	0.0	1.3	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**22.6%**	**110**	**0**	**0**	**0.6**	**-**	**-**
1/1	Joyce's Lane Left	U	372	1659	1659	22.4%	-	-	-	0.1	1.4	0.1
1/2	Joyce's Lane Right	O	110	1642	1374	8.0%	110	0	0	0.0	1.4	0.0
2/1	O'connel Street Ahead	U	340	1965	1965	17.3%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	372	1965	1965	18.9%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	450	1995	1995	22.6%	-	-	-	0.1	1.2	0.1

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**20.3%**	**241**	**151**	**0**	**0.3**	**-**	**-**
1/1	O'Connel Street Left Ahead	U	384	1892	1892	20.3%	-	-	-	0.1	1.2	0.1
1/2	O'Connel Street Right	O	82	1497	1330	6.2%	82	0	0	0.0	1.4	0.0
2/1	Mary Street	U	168	1940	1940	8.7%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	202	1789	1495	13.5%	107	95	0	0.1	1.4	0.1
4/1	O'Connel Street Left Right	O	108	1734	1451	7.4%	52	56	0	0.0	1.3	0.0
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**29.2%**	**379**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	617	2115	2115	29.2%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	379	1861	1356	28.0%	379	0	0	0.2	1.8	0.2
3/2+3/1	R678 Sarsfield Street Ahead Left	U	258	1975:1975	1975+0	13.1 : 0.0%	-	-	-	0.1	1.0	0.1
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	1965	0.0%	0	0	0	0.0	0.0	0.0
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0
2/1	Hotel Exit Left	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0

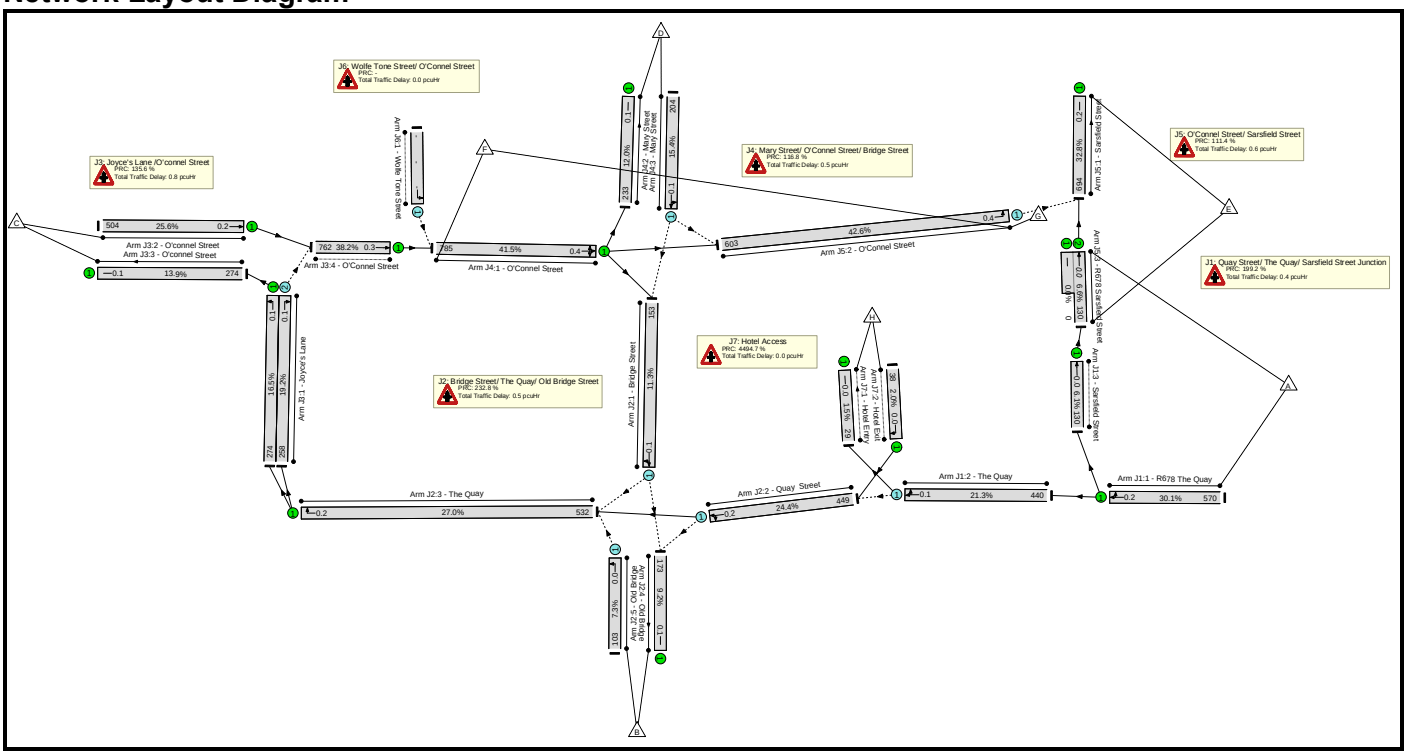
C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 169.1 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.36 Cycle Time (s): 90

User and Project Details

Project:	**20_071 Suir Island Infrastructure Links**
Title:	**Suir Island Links**
Location:	The Quay, Clomnel Town Centre
Client:	Tipperary County Council
Date Started:	January 27th ,2021
Model Purpose:	Layout Testing for Quay Street One Way System
Checked By:	RG
Additional detail:	
File name:	Suir Island -Quay Network Do-Something with PR v3.3.lsg3x
Author:	Carol Diaz Rosario
Company:	Clifton Scannel Emerson and Associates
Address:	
Linsig Version:	3, 2, 40, 0

Scenario 2: 'AM PEAK 2023' (FG2: 'AM PEAK 2023', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

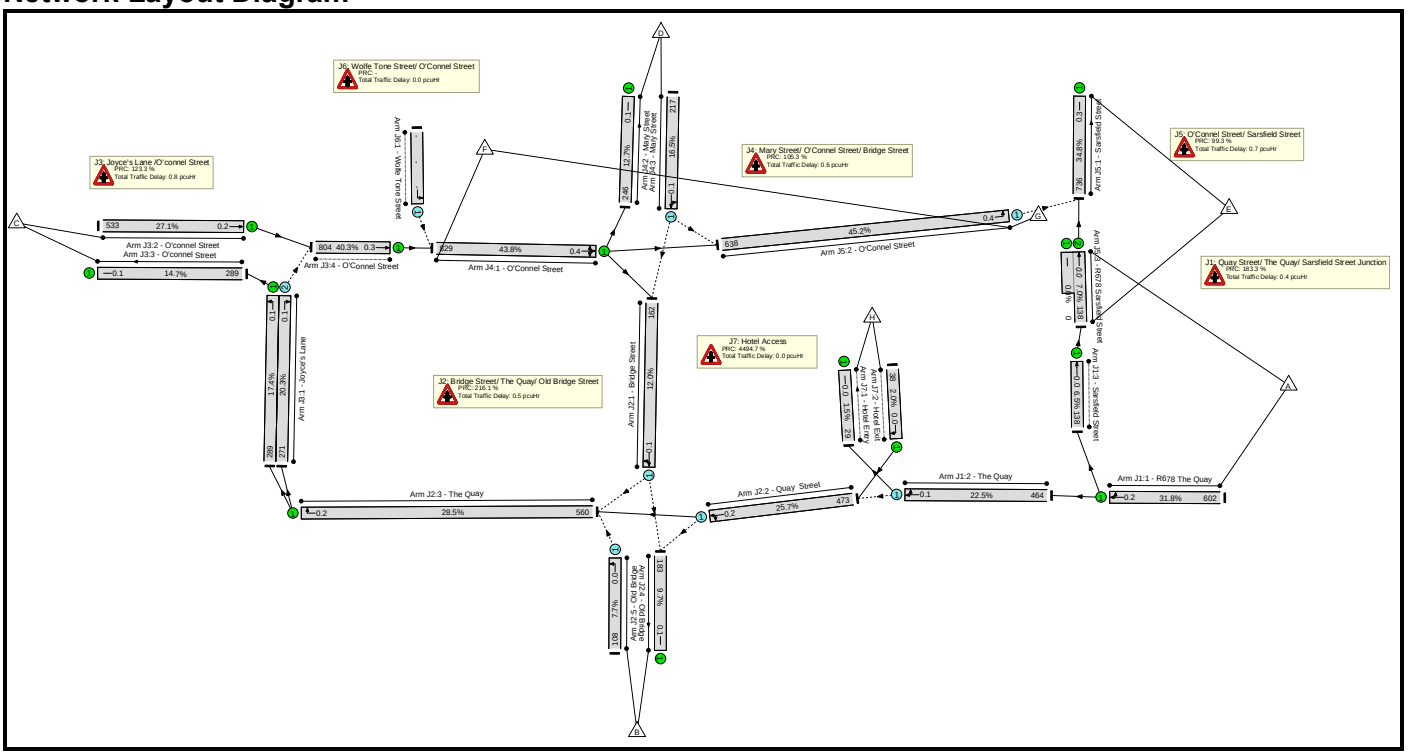
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**42.6%**	**1228**	**508**	**0**	**2.8**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**30.1%**	**0**	**411**	**0**	**0.4**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	570	1895	1895	30.1%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	440	2065	2065	21.3%	0	411	0	0.1	1.1	0.1
3/1	Sarsfield Street Ahead	U	130	2115	2115	6.1%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**27.0%**	**276**	**23**	**0**	**0.5**	**-**	**-**
1/1	Bridge Street Right Ahead	O	153	2025	1357	11.3%	130	23	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	O	449	1910	1843	24.4%	43	0	0	0.2	1.3	0.2
3/1	The Quay Right	U	532	1967	1967	27.0%	-	-	-	0.2	1.3	0.2
4/1	Old Bridge	U	173	1885	1885	9.2%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	103	1458	1410	7.3%	103	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**38.2%**	**258**	**0**	**0**	**0.8**	**-**	**-**
1/1	Joyce's Lane Left	U	274	1659	1659	16.5%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	258	1642	1343	19.2%	258	0	0	0.1	1.7	0.1
2/1	O'connel Street Ahead	U	504	1965	1965	25.6%	-	-	-	0.2	1.2	0.2
3/1	O'connel Street	U	274	1965	1965	13.9%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	762	1995	1995	38.2%	-	-	-	0.3	1.5	0.3
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**41.5%**	**130**	**74**	**0**	**0.5**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	785	1891	1891	41.5%	-	-	-	0.4	1.6	0.4

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	233	1940	1940	12.0%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	204	1761	1327	15.4%	130	74	0	0.1	1.6	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**42.6%**	**564**	**0**	**0**	**0.6**	**-**	**-**
1/1	Sarsfield Street	U	694	2115	2115	32.8%	-	-	-	0.2	1.3	0.2
2/1	O'Connel Street Left	O	603	1861	1416	42.6%	564	0	0	0.4	2.2	0.4
3/2+3/1	R678 Sarsfield Street Ahead	U	130	1975:1975	1975+0	6.6 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 111.4 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.84 Cycle Time (s): 90

Scenario 3: 'AM PEAK 2028' (FG3: 'AM PEAK 2028', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

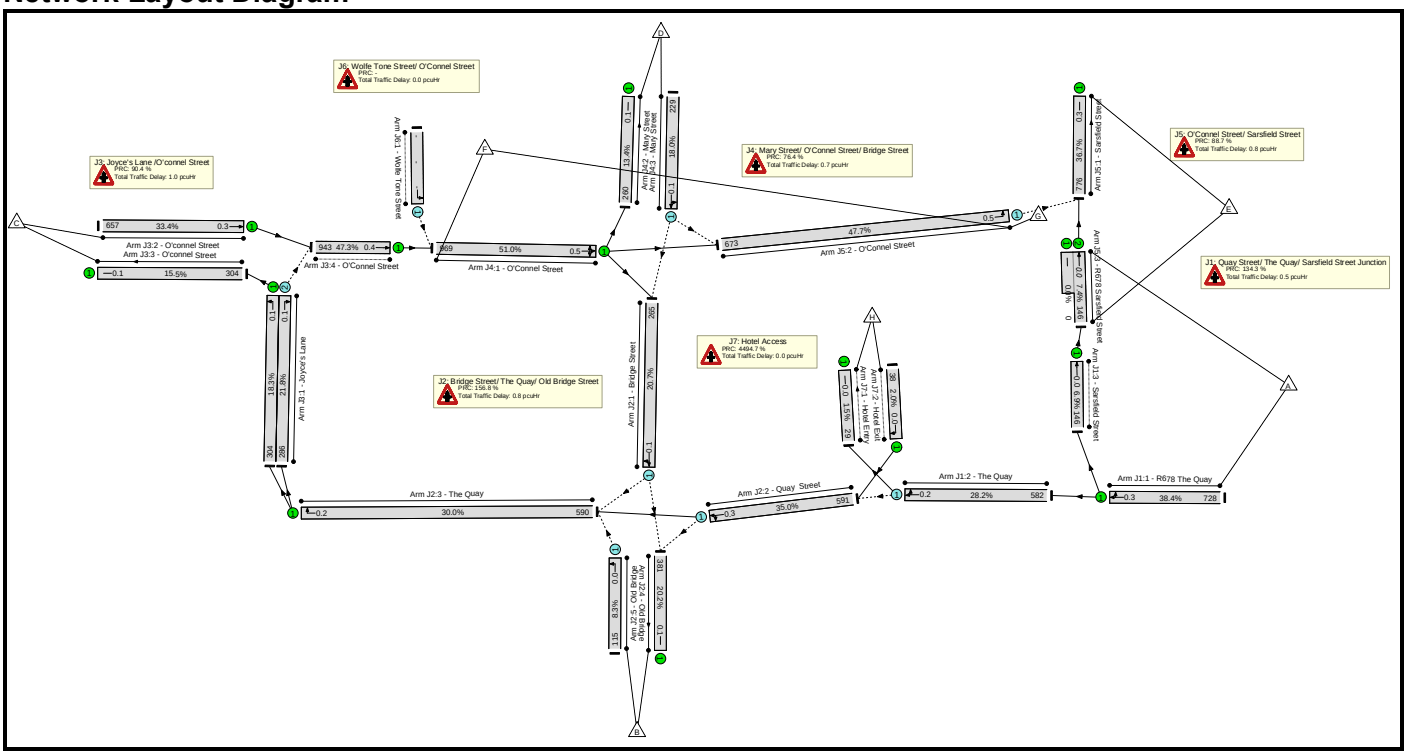
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**45.2%**	**1298**	**539**	**0**	**3.1**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**31.8%**	**0**	**435**	**0**	**0.4**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	602	1895	1895	31.8%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	464	2065	2065	22.5%	0	435	0	0.1	1.1	0.1
3/1	Sarsfield Street Ahead	U	138	2115	2115	6.5%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**28.5%**	**291**	**25**	**0**	**0.5**	**-**	**-**
1/1	Bridge Street Right Ahead	O	162	2023	1351	12.0%	137	25	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	O	473	1909	1841	25.7%	46	0	0	0.2	1.3	0.2
3/1	The Quay Right	U	560	1967	1967	28.5%	-	-	-	0.2	1.3	0.2
4/1	Old Bridge	U	183	1885	1885	9.7%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	108	1458	1408	7.7%	108	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**40.3%**	**271**	**0**	**0**	**0.8**	**-**	**-**
1/1	Joyce's Lane Left	U	289	1659	1659	17.4%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	271	1642	1338	20.3%	271	0	0	0.1	1.7	0.1
2/1	O'connel Street Ahead	U	533	1965	1965	27.1%	-	-	-	0.2	1.3	0.2
3/1	O'connel Street	U	289	1965	1965	14.7%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	804	1995	1995	40.3%	-	-	-	0.3	1.5	0.3
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**43.8%**	**138**	**79**	**0**	**0.6**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	829	1891	1891	43.8%	-	-	-	0.4	1.7	0.4

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	246	1940	1940	12.7%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	217	1761	1315	16.5%	138	79	0	0.1	1.6	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**45.2%**	**598**	**0**	**0**	**0.7**	**-**	**-**
1/1	Sarsfield Street	U	736	2115	2115	34.8%	-	-	-	0.3	1.3	0.3
2/1	O'Connel Street Left	O	638	1861	1413	45.2%	598	0	0	0.4	2.3	0.4
3/2+3/1	R678 Sarsfield Street Ahead	U	138	1975:1975	1975+0	7.0 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 99.3 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 3.08 Cycle Time (s): 90

Scenario 4: 'AM PEAK 2038' (FG4: 'AM PEAK 2038', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

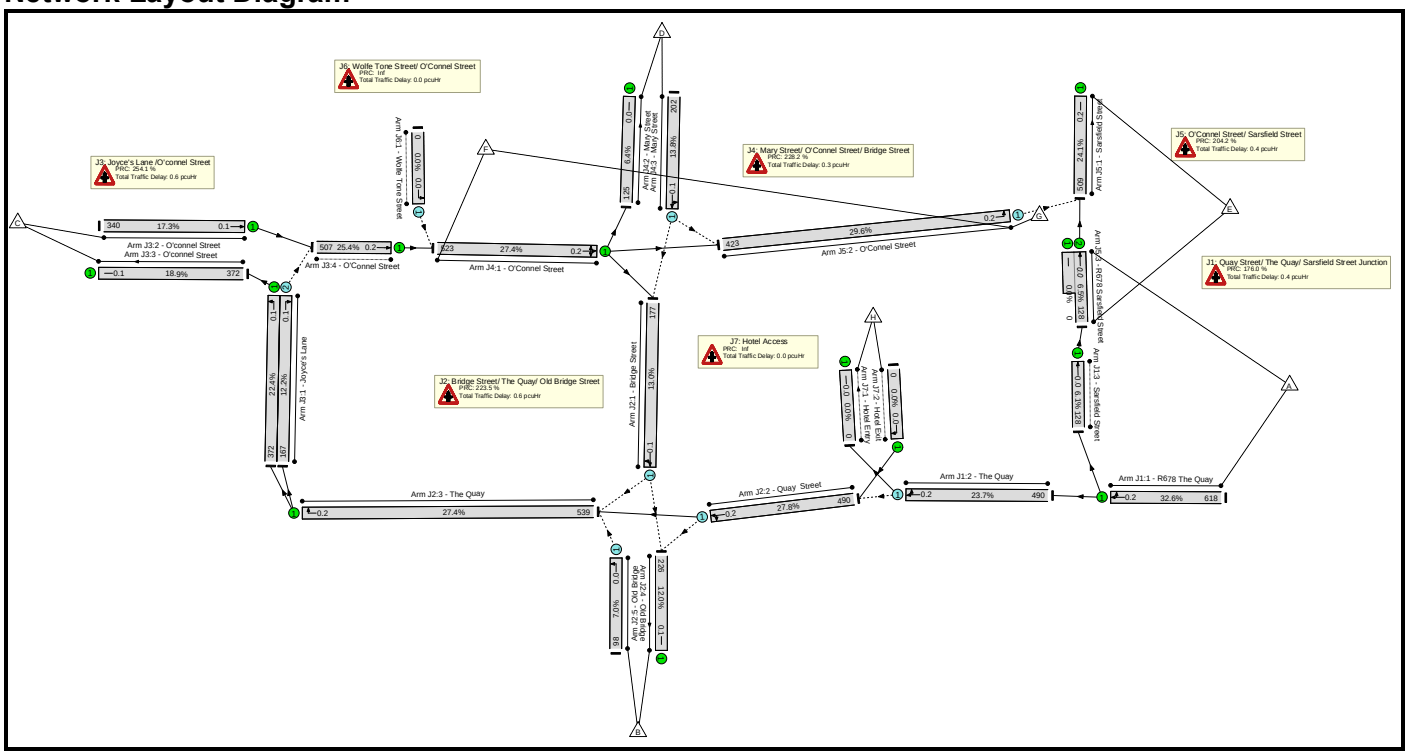
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**51.0%**	**1558**	**662**	**0**	**3.9**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**38.4%**	**0**	**553**	**0**	**0.5**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	728	1895	1895	38.4%	-	-	-	0.3	1.5	0.3
2/1	The Quay Ahead Right	O	582	2065	2065	28.2%	0	553	0	0.2	1.2	0.2
3/1	Sarsfield Street Ahead	U	146	2115	2115	6.9%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**35.0%**	**496**	**26**	**0**	**0.8**	**-**	**-**
1/1	Bridge Street Right Ahead	O	265	2056	1282	20.7%	239	26	0	0.1	1.8	0.1
2/1	Quay Street Ahead Left	O	591	1833	1686	35.0%	142	0	0	0.3	1.6	0.3
3/1	The Quay Right	U	590	1967	1967	30.0%	-	-	-	0.2	1.3	0.2
4/1	Old Bridge	U	381	1885	1885	20.2%	-	-	-	0.1	1.2	0.1
5/1	Old Bridge Left	O	115	1458	1389	8.3%	115	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**47.3%**	**286**	**0**	**0**	**1.0**	**-**	**-**
1/1	Joyce's Lane Left	U	304	1659	1659	18.3%	-	-	-	0.1	1.3	0.1
1/2	Joyce's Lane Right	O	286	1642	1314	21.8%	286	0	0	0.1	1.8	0.1
2/1	O'connel Street Ahead	U	657	1965	1965	33.4%	-	-	-	0.3	1.4	0.3
3/1	O'connel Street	U	304	1965	1965	15.5%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	943	1995	1995	47.3%	-	-	-	0.4	1.7	0.4
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**51.0%**	**146**	**83**	**0**	**0.7**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	969	1899	1899	51.0%	-	-	-	0.5	1.9	0.5

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	260	1940	1940	13.4%	-	-	-	0.1	1.1	0.1
3/1	Mary Street Ahead Left	O	229	1761	1273	18.0%	146	83	0	0.1	1.7	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**47.7%**	**630**	**0**	**0**	**0.8**	**-**	**-**
1/1	Sarsfield Street	U	776	2115	2115	36.7%	-	-	-	0.3	1.3	0.3
2/1	O'Connel Street Left	O	673	1861	1411	47.7%	630	0	0	0.5	2.4	0.5
3/2+3/1	R678 Sarsfield Street Ahead	U	146	1975:1975	1975+0	7.4 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	29	1940	1940	1.5%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	38	1940	1940	2.0%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 76.4 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 3.88 Cycle Time (s): 90

Scenario 5: 'PM PEAK 2018' (FG5: 'PM PEAK 2018', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

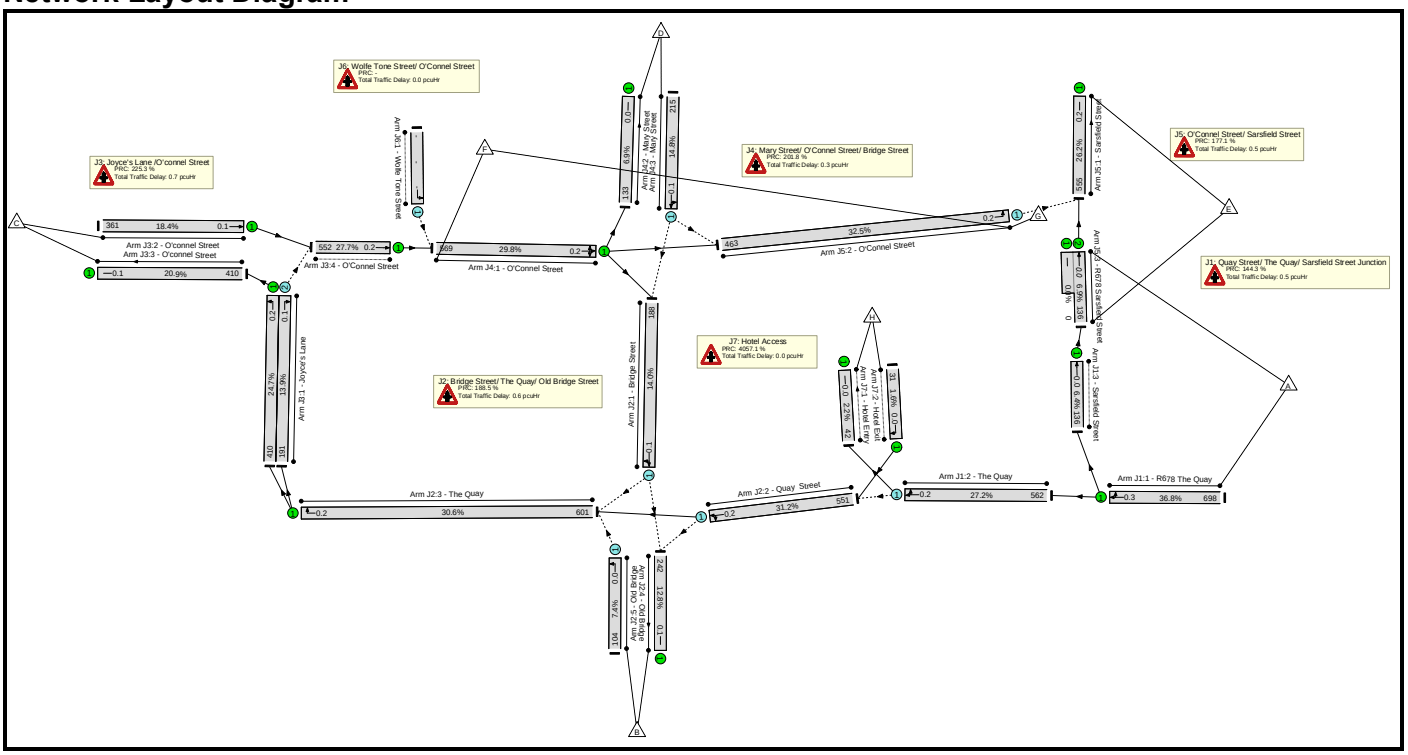
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**32.6%**	**979**	**620**	**0**	**2.3**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**32.6%**	**0**	**490**	**0**	**0.4**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	618	1895	1895	32.6%	-	-	-	0.2	1.4	0.2
2/1	The Quay Ahead Right	O	490	2065	2065	23.7%	0	490	0	0.2	1.1	0.2
3/1	Sarsfield Street Ahead	U	128	2115	2115	6.1%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**27.8%**	**324**	**35**	**0**	**0.6**	**-**	**-**
1/1	Bridge Street Right Ahead	O	177	1999	1366	13.0%	142	35	0	0.1	1.5	0.1
2/1	Quay Street Ahead Left	O	490	1869	1761	27.8%	84	0	0	0.2	1.4	0.2
3/1	The Quay Right	U	539	1967	1967	27.4%	-	-	-	0.2	1.3	0.2
4/1	Old Bridge	U	226	1885	1885	12.0%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	98	1458	1405	7.0%	98	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**25.4%**	**167**	**0**	**0**	**0.6**	**-**	**-**
1/1	Joyce's Lane Left	U	372	1659	1659	22.4%	-	-	-	0.1	1.4	0.1
1/2	Joyce's Lane Right	O	167	1642	1374	12.2%	167	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	340	1965	1965	17.3%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	372	1965	1965	18.9%	-	-	-	0.1	1.1	0.1
4/1	O'Connel Street Ahead	U	507	1995	1995	25.4%	-	-	-	0.2	1.2	0.2
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**27.4%**	**107**	**95**	**0**	**0.3**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	523	1907	1907	27.4%	-	-	-	0.2	1.3	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	125	1940	1940	6.4%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	202	1789	1461	13.8%	107	95	0	0.1	1.4	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**29.6%**	**381**	**0**	**0**	**0.4**	**-**	**-**
1/1	Sarsfield Street	U	509	2115	2115	24.1%	-	-	-	0.2	1.1	0.2
2/1	O'Connel Street Left	O	423	1861	1430	29.6%	381	0	0	0.2	1.8	0.2
3/2+3/1	R678 Sarsfield Street Ahead	U	128	1975:1975	1975+0	6.5 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	1965	0.0%	0	0	0	0.0	0.0	0.0
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0
2/1	Hotel Exit Right	U	0	1940	1940	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 176.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.30 Cycle Time (s): 90

Scenario 6: 'PM PEAK 2023' (FG6: 'PM PEAK 2023', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

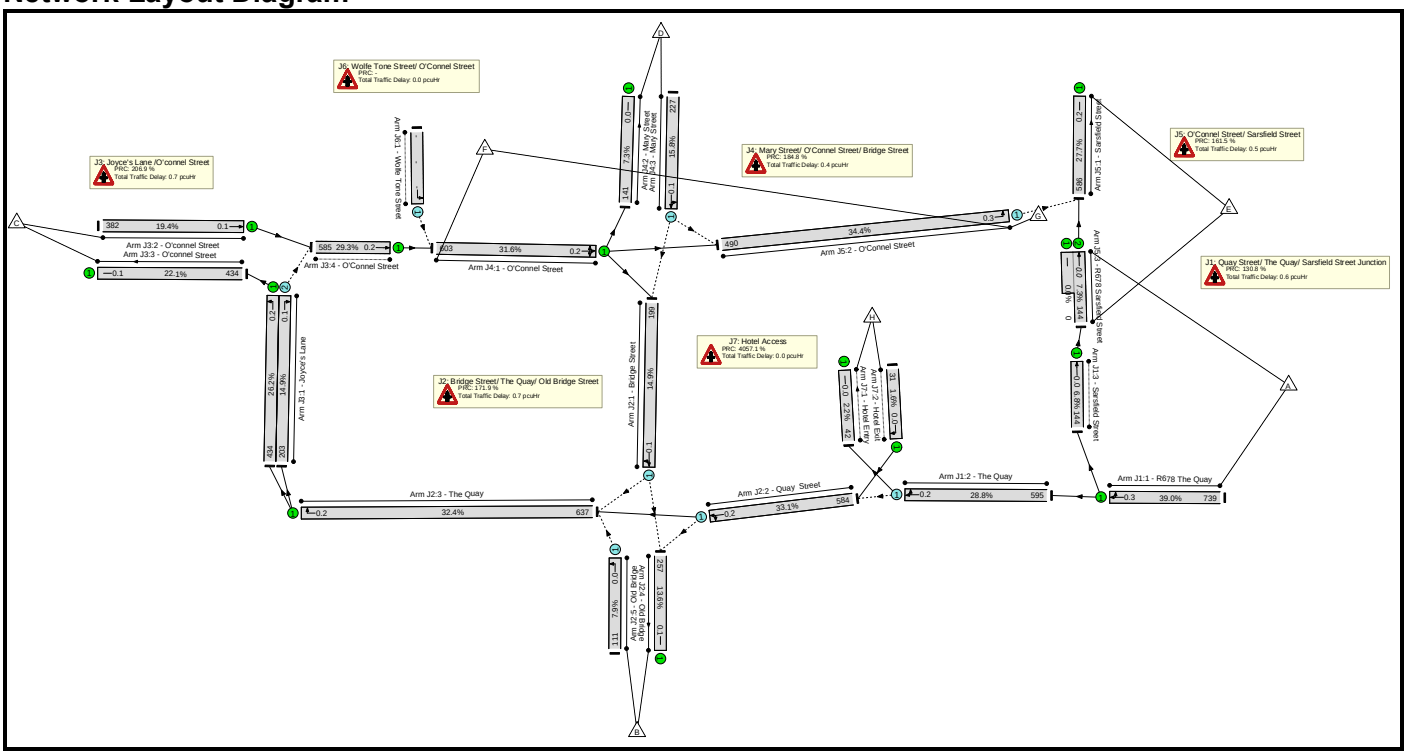
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**36.8%**	**1070**	**658**	**0**	**2.6**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**36.8%**	**0**	**520**	**0**	**0.5**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	698	1895	1895	36.8%	-	-	-	0.3	1.5	0.3
2/1	The Quay Ahead Right	O	562	2065	2065	27.2%	0	520	0	0.2	1.2	0.2
3/1	Sarsfield Street Ahead	U	136	2115	2115	6.4%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**31.2%**	**346**	**37**	**0**	**0.6**	**-**	**-**
1/1	Bridge Street Right Ahead	O	188	1999	1346	14.0%	151	37	0	0.1	1.6	0.1
2/1	Quay Street Ahead Left	O	551	1872	1766	31.2%	91	0	0	0.2	1.5	0.2
3/1	The Quay Right	U	601	1967	1967	30.6%	-	-	-	0.2	1.3	0.2
4/1	Old Bridge	U	242	1885	1885	12.8%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	104	1458	1403	7.4%	104	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**27.7%**	**191**	**0**	**0**	**0.7**	**-**	**-**
1/1	Joyce's Lane Left	U	410	1659	1659	24.7%	-	-	-	0.2	1.4	0.2
1/2	Joyce's Lane Right	O	191	1642	1370	13.9%	191	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	361	1965	1965	18.4%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	410	1965	1965	20.9%	-	-	-	0.1	1.2	0.1
4/1	O'Connel Street Ahead	U	552	1995	1995	27.7%	-	-	-	0.2	1.2	0.2
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**29.8%**	**114**	**101**	**0**	**0.3**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	569	1908	1908	29.8%	-	-	-	0.2	1.3	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	133	1940	1940	6.9%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	215	1789	1449	14.8%	114	101	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**32.5%**	**419**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	555	2115	2115	26.2%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	463	1861	1426	32.5%	419	0	0	0.2	1.9	0.2
3/2+3/1	R678 Sarsfield Street Ahead	U	136	1975:1975	1975+0	6.9 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 144.3 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.65 Cycle Time (s): 90

Scenario 7: 'PM PEAK 2028' (FG7: 'PM PEAK 2028', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

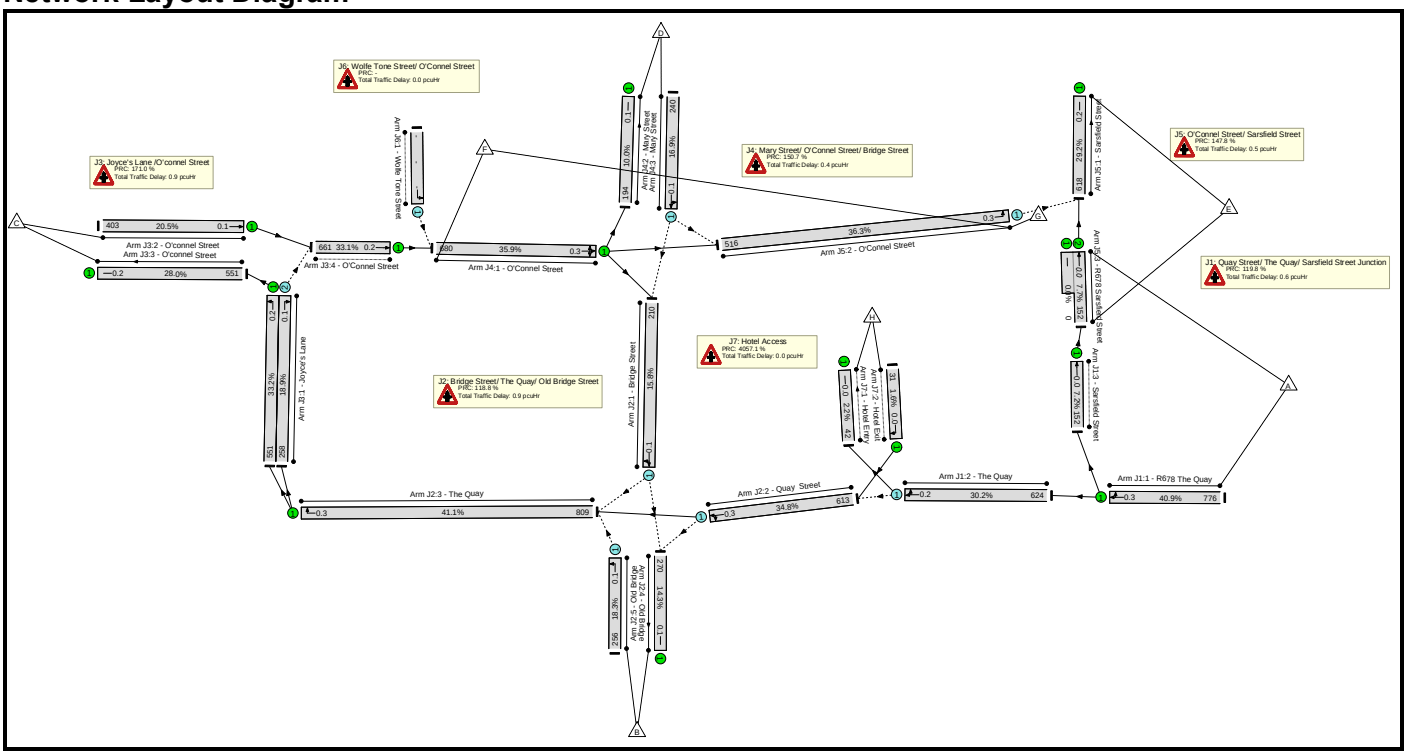
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**39.0%**	**1133**	**699**	**0**	**2.9**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**39.0%**	**0**	**553**	**0**	**0.6**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	739	1895	1895	39.0%	-	-	-	0.3	1.6	0.3
2/1	The Quay Ahead Right	O	595	2065	2065	28.8%	0	553	0	0.2	1.2	0.2
3/1	Sarsfield Street Ahead	U	144	2115	2115	6.8%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**33.1%**	**368**	**39**	**0**	**0.7**	**-**	**-**
1/1	Bridge Street Right Ahead	O	199	2000	1335	14.9%	160	39	0	0.1	1.6	0.1
2/1	Quay Street Ahead Left	O	584	1872	1764	33.1%	97	0	0	0.2	1.5	0.2
3/1	The Quay Right	U	637	1967	1967	32.4%	-	-	-	0.2	1.4	0.2
4/1	Old Bridge	U	257	1885	1885	13.6%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	111	1458	1401	7.9%	111	0	0	0.0	1.4	0.0
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**29.3%**	**203**	**0**	**0**	**0.7**	**-**	**-**
1/1	Joyce's Lane Left	U	434	1659	1659	26.2%	-	-	-	0.2	1.5	0.2
1/2	Joyce's Lane Right	O	203	1642	1366	14.9%	203	0	0	0.1	1.5	0.1
2/1	O'connel Street Ahead	U	382	1965	1965	19.4%	-	-	-	0.1	1.1	0.1
3/1	O'connel Street	U	434	1965	1965	22.1%	-	-	-	0.1	1.2	0.1
4/1	O'Connel Street Ahead	U	585	1995	1995	29.3%	-	-	-	0.2	1.3	0.2
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**31.6%**	**120**	**107**	**0**	**0.4**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	603	1908	1908	31.6%	-	-	-	0.2	1.4	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	141	1940	1940	7.3%	-	-	-	0.0	1.0	0.0
3/1	Mary Street Ahead Left	O	227	1789	1441	15.8%	120	107	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**34.4%**	**442**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	586	2115	2115	27.7%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	490	1861	1424	34.4%	442	0	0	0.3	1.9	0.3
3/2+3/1	R678 Sarsfield Street Ahead	U	144	1975:1975	1975+0	7.3 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 PRC Over All Lanes (%): 130.8 Total Delay for Signalled Lanes (pcuHr): 0.00 Total Delay Over All Lanes(pcuHr): 2.86 Cycle Time (s): 90

Scenario 8: 'PM PEAK 2038' (FG8: 'PM PEAK 2038', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Suir Island Links	**-**	**-**	**-**	**-**	**-**	**41.1%**	**1377**	**737**	**0**	**3.4**	**-**	**-**
J1: Quay Street/ The Quay/ Sarsfield Street Junction	**-**	**-**	**-**	**-**	**-**	**40.9%**	**0**	**582**	**0**	**0.6**	**-**	**-**
1/1	R678 The Quay Ahead Right	U	776	1895	1895	40.9%	-	-	-	0.3	1.6	0.3
2/1	The Quay Ahead Right	O	624	2065	2065	30.2%	0	582	0	0.2	1.2	0.2
3/1	Sarsfield Street Ahead	U	152	2115	2115	7.2%	-	-	-	0.0	0.9	0.0
J2: Bridge Street/ The Quay/ Old Bridge Street	**-**	**-**	**-**	**-**	**-**	**41.1%**	**526**	**42**	**0**	**0.9**	**-**	**-**
1/1	Bridge Street Right Ahead	O	210	1998	1327	15.8%	168	42	0	0.1	1.6	0.1
2/1	Quay Street Ahead Left	O	613	1872	1763	34.8%	102	0	0	0.3	1.6	0.3
3/1	The Quay Right	U	809	1967	1967	41.1%	-	-	-	0.3	1.6	0.3
4/1	Old Bridge	U	270	1885	1885	14.3%	-	-	-	0.1	1.1	0.1
5/1	Old Bridge Left	O	256	1458	1399	18.3%	256	0	0	0.1	1.6	0.1
J3: Joyce's Lane /O'connel Street	**-**	**-**	**-**	**-**	**-**	**33.2%**	**258**	**0**	**0**	**0.9**	**-**	**-**
1/1	Joyce's Lane Left	U	551	1659	1659	33.2%	-	-	-	0.2	1.6	0.2
1/2	Joyce's Lane Right	O	258	1642	1362	18.9%	258	0	0	0.1	1.6	0.1
2/1	O'connel Street Ahead	U	403	1965	1965	20.5%	-	-	-	0.1	1.2	0.1
3/1	O'connel Street	U	551	1965	1965	28.0%	-	-	-	0.2	1.3	0.2
4/1	O'Connel Street Ahead	U	661	1995	1995	33.1%	-	-	-	0.2	1.3	0.2
J4: Mary Street/ O'Connel Street/ Bridge Street	**-**	**-**	**-**	**-**	**-**	**35.9%**	**127**	**113**	**0**	**0.4**	**-**	**-**
1/1	O'Connel Street Right Left Ahead	U	680	1894	1894	35.9%	-	-	-	0.3	1.5	0.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
2/1	Mary Street	U	194	1940	1940	10.0%	-	-	-	0.1	1.0	0.1
3/1	Mary Street Ahead Left	O	240	1789	1421	16.9%	127	113	0	0.1	1.5	0.1
J5: O'Connel Street/ Sarsfield Street	**-**	**-**	**-**	**-**	**-**	**36.3%**	**466**	**0**	**0**	**0.5**	**-**	**-**
1/1	Sarsfield Street	U	618	2115	2115	29.2%	-	-	-	0.2	1.2	0.2
2/1	O'Connel Street Left	O	516	1861	1421	36.3%	466	0	0	0.3	2.0	0.3
3/2+3/1	R678 Sarsfield Street Ahead	U	152	1975:1975	1975+0	7.7 : 0.0%	-	-	-	0.0	1.0	0.0
J6: Wolfe Tone Street/ O'Connel Street	**-**	**-**	**-**	**-**	**-**	**0.0%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Wolfe Tone Street Left	O	0	1965	-	-	-	-	-	-	-	-
J7: Hotel Access	**-**	**-**	**-**	**-**	**-**	**2.2%**	**0**	**0**	**0**	**0.0**	**-**	**-**
1/1	Hotel Entry	U	42	1940	1940	2.2%	-	-	-	0.0	0.9	0.0
2/1	Hotel Exit Right	U	31	1940	1940	1.6%	-	-	-	0.0	0.9	0.0

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 118.8 Total Delay Over All Lanes(pcuHr): 3.43

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