

# Appendix B: Strategy Testing – Short and Medium Term

## 1. INTRODUCTION

1.1.1 Section 2.5 of the Final Report details the methodology used for testing the various strategies developed as part of the Bandon TPREP. This Appendix outlines the results of the strategy testing undertaken for the forecast year 2020, and comprises of the following sections:

- **Town Centre Circulation Results:** Outlining the results of analysis carried out on three identified town centre circulation options. These have been assessed based on a select number of key objectives related to Bandon Town Centre and using the outputs of the Bandon Traffic Model (BTM) for the forecast year of 2020.
- **Junction Improvement Testing:** Presenting the results of microsimulation and individual junction modelling used to assess the introduction of junction improvements at key locations within Bandon town centre; and
- **2020 Preferred Strategy Evaluation:** Detailing the results of analysis carried out on the preferred Bandon TPREP strategies using the developed evaluation framework (described in Chapter 4 of the Final Report).

## 2. STEP 1: TOWN CENTRE CIRCULATION RESULTS

### 2.1 Introduction

2.1.1 A number of the Bandon TPREP objectives are related to improving the attractiveness and footfall within the town, providing a safer environment for vulnerable road users and supporting its economic expansion. To assist in achieving these objectives, a series of traffic management measures were identified to:

- improve internal circulation and reduce conflicts at junctions;
- release space for public realm improvements and creation of an event space; and
- discourage through trips and reinforce the use of alternative routings around the town.

2.1.2 As part of these traffic management measures, the following alterations to the layout and operation of a number of streets within the town centre were suggested:

- **MacSwiney Quay** - become one-way to provide sufficient space to facilitate widening of footpaths and general improvements to public realm beside the river.
- **Market Street** - become one-way to facilitate improved footpath widths and pedestrian facilities.
- **Market Quay and Bridge Lane** - introduction of shared space environment permitting vehicular access but no through road.
- **Bridge Street** - become one-way to facilitate improved pedestrian facilities. Currently Bridge Street allows two-directional traffic flow, however due to the limited carriageway width and the availability of on-street parking, there is insufficient space to safely facilitate two lanes of traffic.



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- 2.1.3 Three town centre traffic circulation options, illustrated in Figures 2.1 to 2.3 below, have been developed to incorporate the street layout alterations described above, and facilitate efficient traffic circulation within Bandon Town.

#### **TOWN CENTRE CIRCULATION OPTION 1 (TC01) – KEY FEATURES**

- **MacSwiney Quay operates as one-way in a westbound direction:**
  - facilitates easy access for traffic from the east/north to the heart of Bandon town centre and key retail destinations such as Bridge Street and Riverview Shopping Centre;
  - Facilitates easy access to South Main Street via MacSwiney Quay and Bridge Street/Weir Street;
  - Removes conflict at the junction with MacSwiney Quay and St. Finbarr's Place i.e. no traffic exiting onto St. Finbarr's Place from MacSwiney Quay; and
  - Provides enhanced space for public realm improvements
- **Market Street operates one-way in a northbound direction:**
  - Removes conflict at the junction between Market Street and South Main Street. It is envisaged that priority will be given to the dominant traffic flow i.e. from Market Street to South Main Street; and
  - Facilitates an improvement to the pedestrian environment on Market Street linking it with South Main Street and the potential shared surface space on Market Quay and Bridge Lane.
- **Bridge Street operates one-way in a southbound direction:**
  - Facilitates access to South Main Street from MacSwiney Quay; and
  - Provides space for public realm improvements such as increased footpath widths etc.
- **Western end of St. Oliver Plunkett St and Brady's Lane one-way in an eastbound and northbound direction respectively:**
  - Provides alternative routing for eastbound traffic from South Main Street. This assists in reducing right turning vehicles entering the Glasslynn Rd/St. Finbarr's Place junction from the south.
- **Potential event space on South Main Street between Ballymodan Place and Market Street:**
  - Creates a spacious and bright area which can be closed to vehicular traffic for short periods for events such as markets, festivals etc.



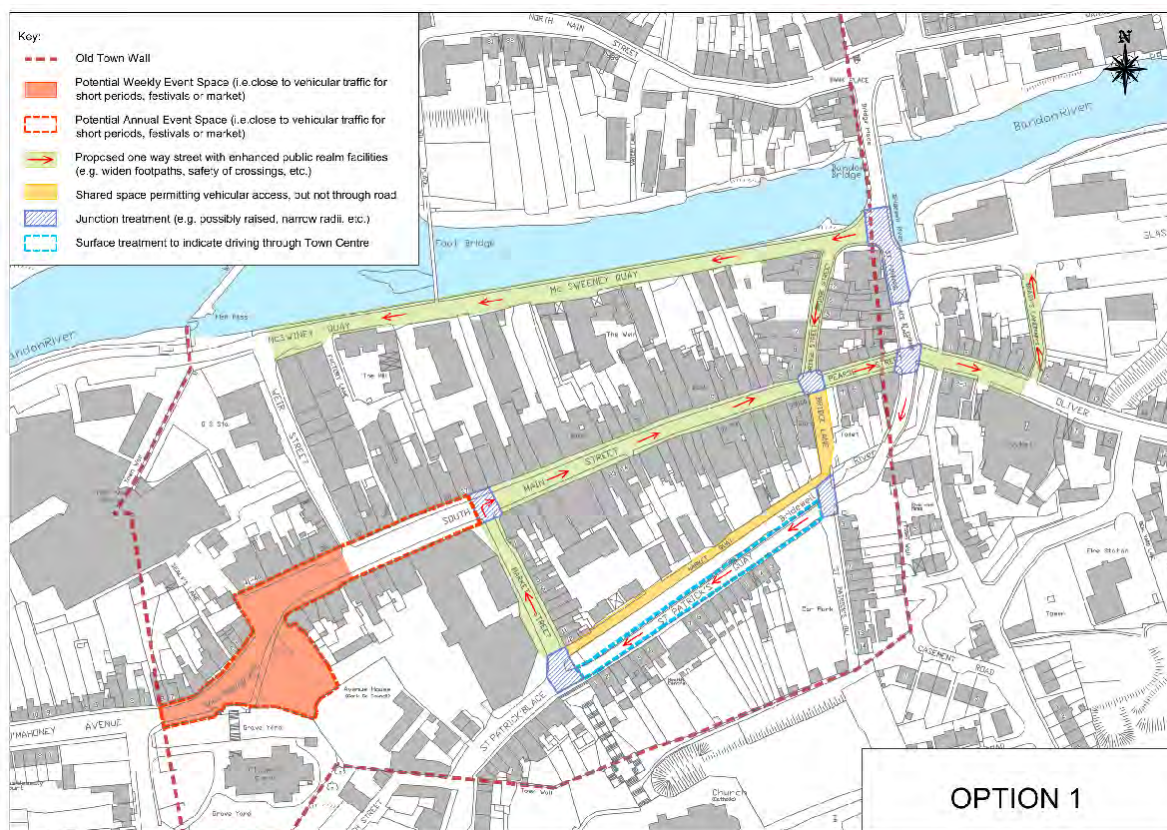


Figure 2.1 Town Centre Circulation Option 1

## TOWN CENTRE CIRCULATION OPTION 2 (TC02) – KEY FEATURES

- **MacSwiney Quay operates as one-way in an eastbound direction:**
  - Facilitates direct access from Riverview SC to MacSwiney Quay and north of Bandon Bridge;
  - It is envisaged that the right turn onto St. Finbarr's place will be banned at the eastern end of MacSwiney Quay. This should reduce some conflict at the junction between MacSwiney Quay and St. Finbarr's Place;
  - Provides alternative routing for traffic travelling north on Bandon Bridge.
- **Market Street operates one-way in a northbound direction:**
  - Removes conflict at the junction between Market Street and South Main Street. It is envisaged that priority will be given to the dominant traffic flow i.e. from Market Street to South Main Street; and
  - Facilitates an improvement to the pedestrian environment on Market Street linking it with South Main Street and the potential shared surface on Market Quay and Bridge Lane.
- **Bridge Street operates one-way in a southbound direction:**
  - Facilitates access to South Main Street from MacSwiney Quay; and
  - Provides space for public realm improvements, such as increased footpath widths etc.
- **Western end of St. Oliver Plunkett St and Brady's Lane one-way in an eastbound and northbound direction respectively:**
  - Provides alternative routing for eastbound traffic from South Main Street. This

## TOWN CENTRE CIRCULATION OPTION 2 (TC02) – KEY FEATURES

assists in reducing right turning vehicles entering the Glasslynn Rd/St. Finbarr's Place junction from the south.

- **Potential event space on South Main Street between Market Street and Bridge Lane:**
  - Creates a long area on South Main Street which can be closed to vehicular traffic for short periods for events such as markets, festivals etc.

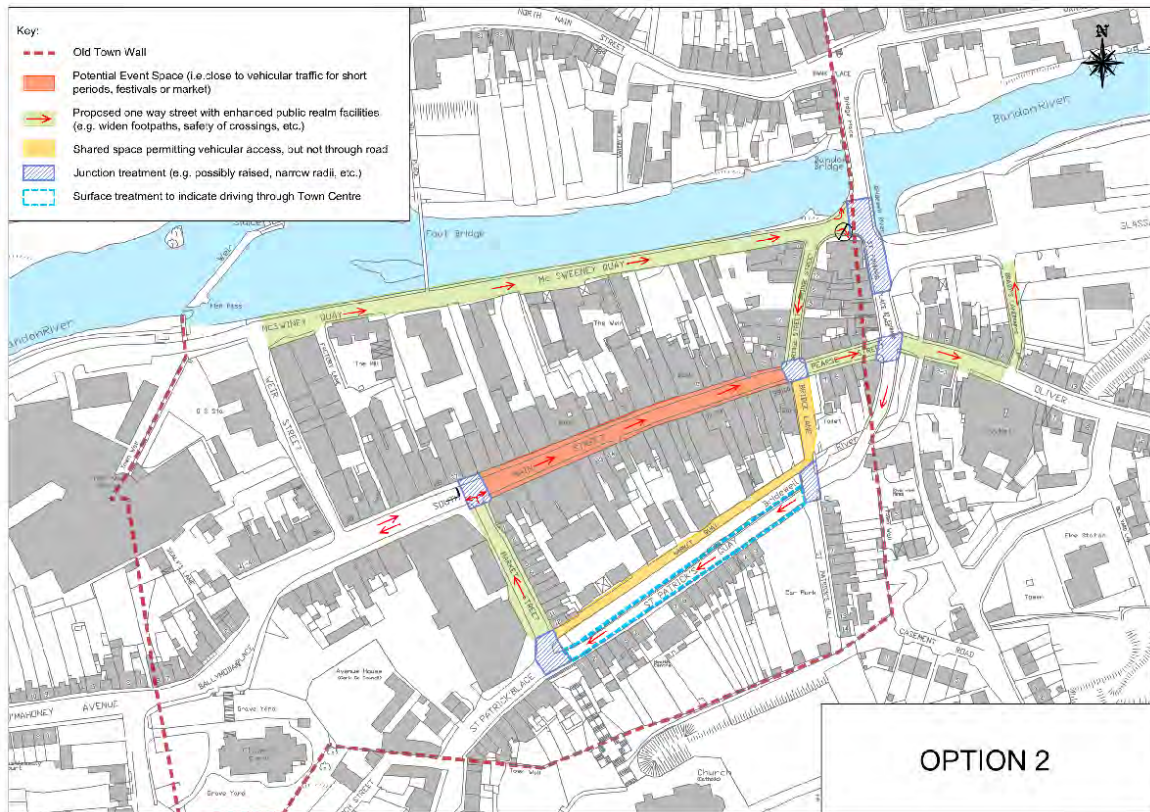


Figure 2.2 Town Centre Circulation Option 2

## TOWN CENTRE CIRCULATION OPTION 3 (TC03) – KEY FEATURES

- **MacSwiney Quay operates as one-way in a westbound direction:**
  - Facilitates direct access for traffic from the east/north to the heart of Bandon town centre and key retail destinations such as Riverview Shopping Centre;
  - Provides enhanced space for public realm improvements.
- **Reversal of main traffic flow within the town centre, as follows:**
  - South Main Street operates in a westbound direction;
  - Market Street operates one-way in a southbound direction;
  - St. Patrick's Quay operates in an eastbound direction;
- **Based on submissions received during public and stakeholder consultation:**
  - A number of Local traders considered that traffic from Cork City was not travelling through the retail centre of Bandon (South Main Street) and, hence, this area was missing out on potential passing trade.

## TOWN CENTRE CIRCULATION OPTION 3 (TC03) – KEY FEATURES

- **Bridge Street operates one-way in a northbound direction:**
  - Provides access to MacSwiney Quay from Pearse Street and, hence, facilitates recirculation of traffic when the potential event space on South Main Street is closed off; and
  - Provides space for public realm improvements such as increased footpath widths etc.
- **Potential event space on South Main Street between Market Street and Bridge Lane:**
  - Creates a long area on South Main Street which can be closed to vehicular traffic for short periods for events such as markets, festivals etc.

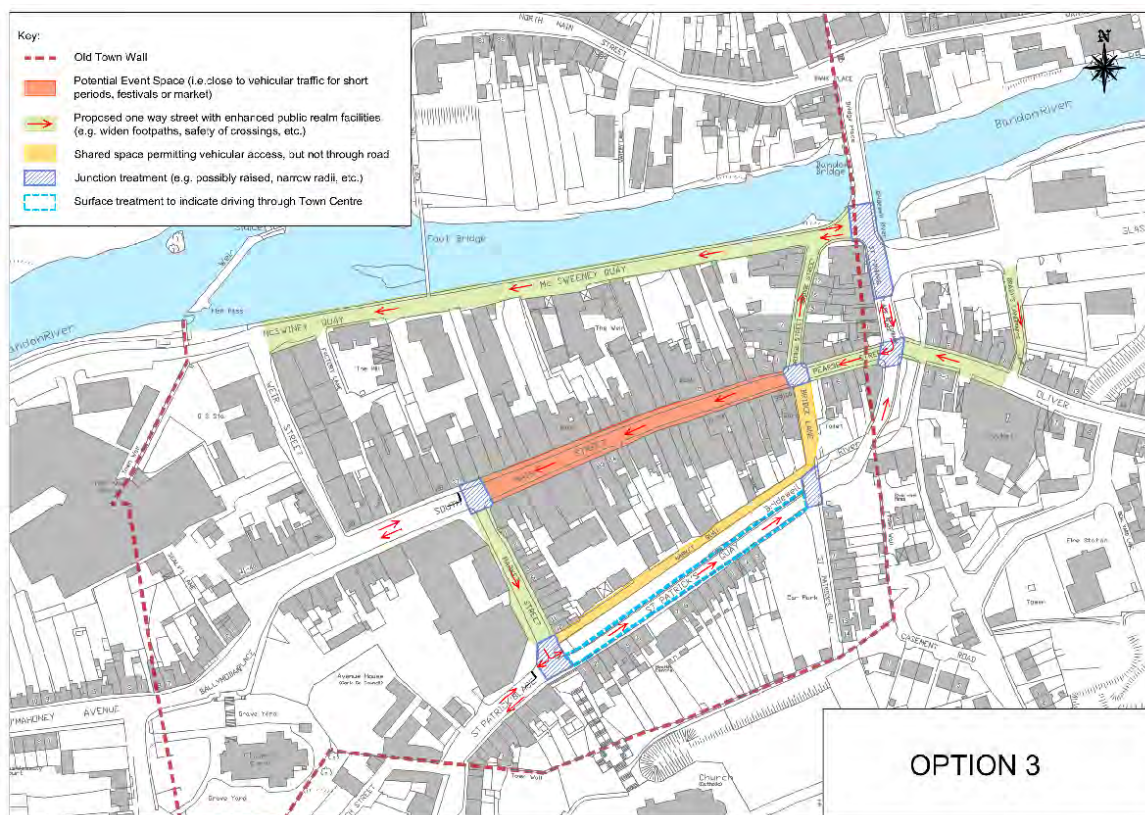


Figure 2.3 Town Centre Circulation Option 3

2.1.4 As mentioned in the strategy testing methodology section of the Final Report (Chapter 2), the three town centre options have been assessed based on a selection of specific study objectives relating to Bandon town centre, namely:

Table 2.1 Town Centre Circulation Objectives and KPI's

No.	Objectives	Key Performance Indicators	Units
1	Support improved economic competitiveness of Bandon Town	Journey times on key routes	% Change
2	Regenerate Bandon Town centre to increase footfall	Creation of market /event spaces	Rating Scale

- 2.1.5 The following sections of this chapter provide an overview of the results of analysis carried out on the three town centre circulation options including the selection of a preferred option.

## 2.2 Journey Time Analysis

- 2.2.1 Journey time analysis was carried out on key routes entering/exiting Bandon town centre to identify the impact of changes in street layout and operation under each of the three town centre circulation options.

- 2.2.2 The analysis was carried out using the 2020 forecast year BTM and focused on access /egress from strategic gateways on the edge of the town centre to key retail/employment locations, namely:

- South Main Street; and
- Riverview Shopping Centre.

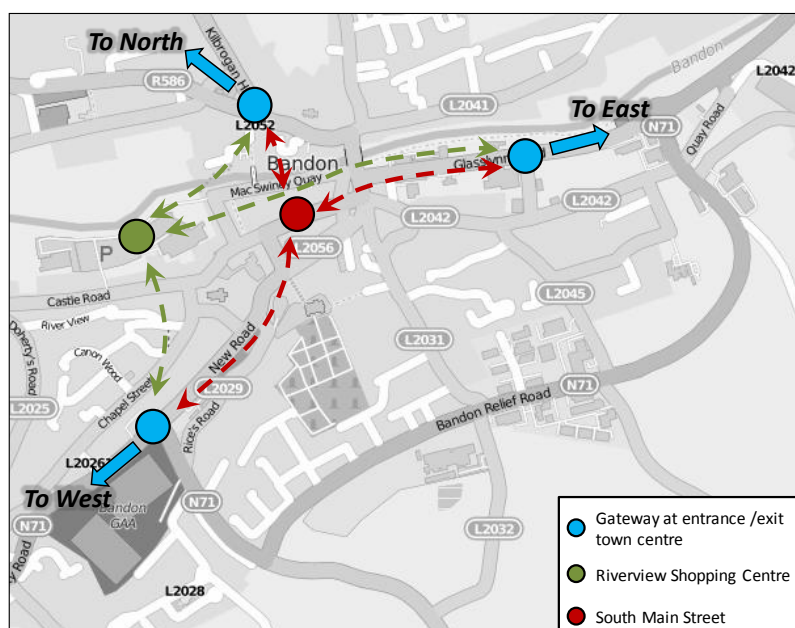


Figure 2.4 Journey Time Analysis Testing Locations

- 2.2.3 It should be noted that all of the results presented in this section relate to the PM peak period of 17:30 – 18:00. This is due to the fact that the town centre experiences heavier traffic volumes during this period with increased levels of retail activity.

### To/ From North (Kilbrogan Hill) and East (Glasslynn Rd) Bandon

- 2.2.4 Figure 2.5 and 2.6, overleaf, illustrate the journey time results for trips between the north/east of Bandon, and Riverview Shopping Centre and South Main Street.

- 2.2.5 The results indicate that TC03 experiences the longest journey times when travelling from Bandon town centre to Kilbrogan Hill and Glasslynn Rd. In TC03, both MacSwiney Quay and South Main Street operate in a westbound direction. As such, traffic exiting from Riverview Shopping Centre and South Main Street must utilise Market Street and St. Patrick's Quay to travel eastbound or northbound over the bridge. This causes a significant increase in traffic loading on St. Patrick's Quay leading to congestion and delay.

- 2.2.6 TC01 experiences the second highest journey times to the north and east of Bandon. In this scenario, MacSwiney Quay operates 1-way in a westbound direction, and therefore, traffic from Riverview Shopping Centre utilises South Main Street to travel eastbound, or northbound, leading to an increase in journey time when compared to TC02.

- 2.2.7 For traffic travelling from the north and east of Bandon, TC03 provides the quickest journey times to Bandon town centre due to both MacSwiney Quay and South Main Street operating in a westbound direction. However, as noted in Section 2.2.11, the reversal of the one-way on South Main Street results in a conflicting movement at its junction with Oliver Plunkett St., which in turn results in significant congestion and delays at this location in the peak periods, in particular the PM peak hour.
- 2.2.8 The results in Figure 2.5 and 2.6 indicate that TC02 provides the slowest journey times from Kilbrogan Hill and Glasslynn Rd to key retail and employment locations in Bandon town centre. This is due to the fact that both MacSwiney Quay and South Main Street operate in an eastbound direction in this scenario. During public and stakeholder consultation, it was noted that local traders were concerned that traffic could not easily access the main retail centre on South Main Street, and that this was impacting on trade in the town. The implementation of TC02 would appear to further discourage traffic from accessing the town centre from the north and east of Bandon as journey times increase in the order of 90%-100% over TC01 and TC03.



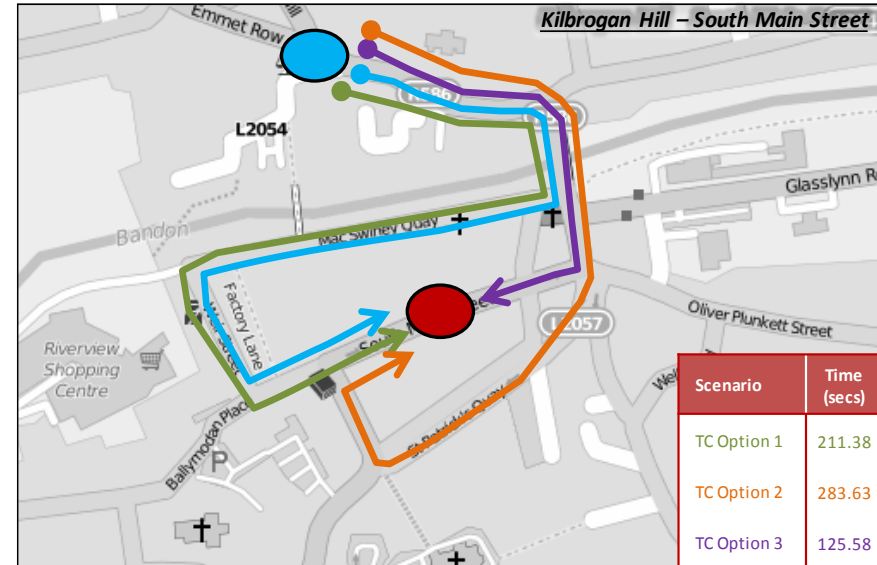
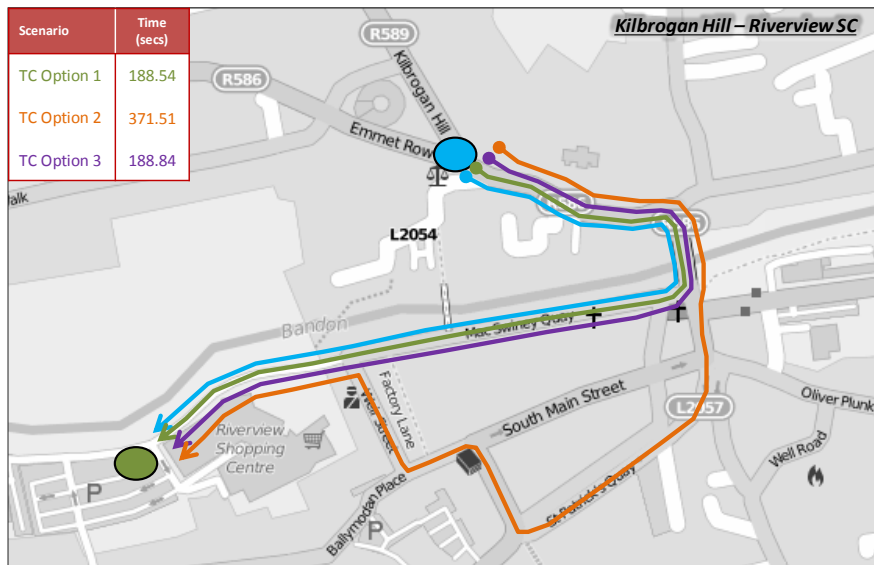
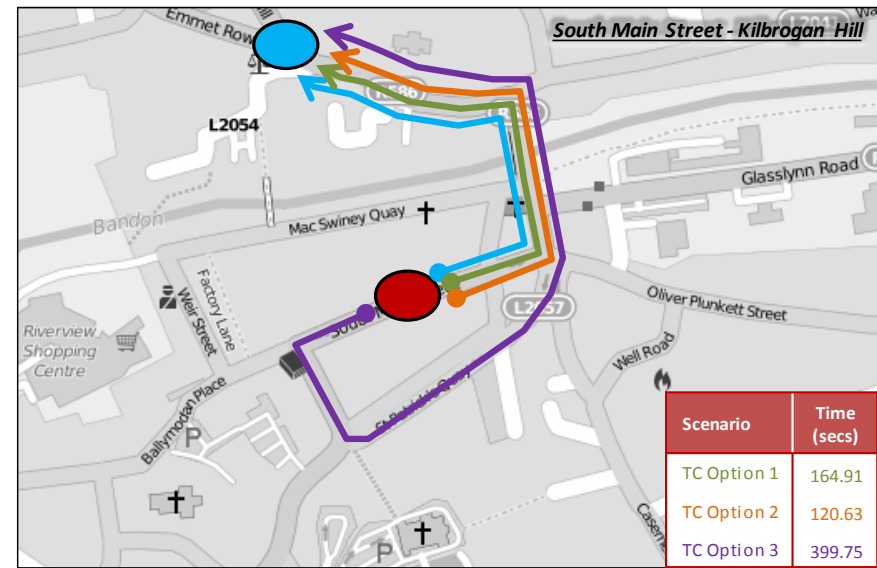
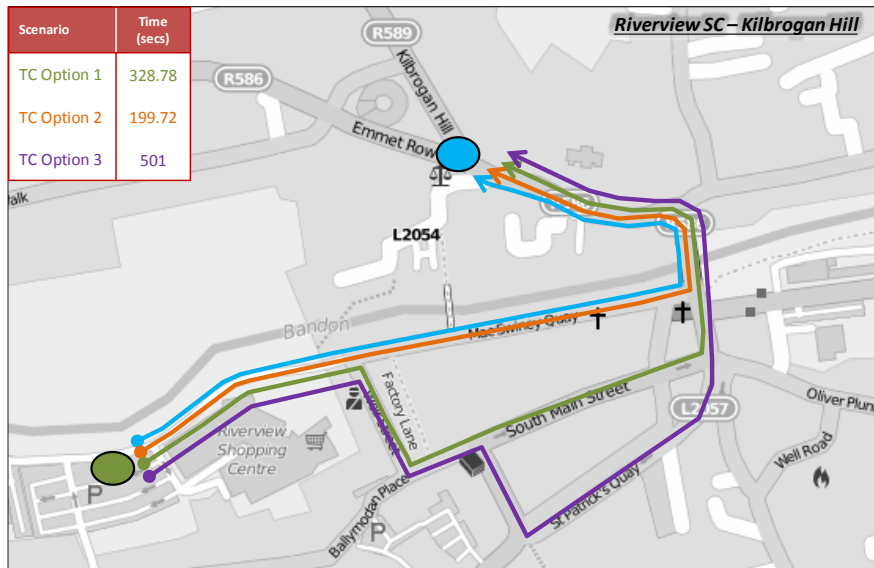


Figure 2.5 Journey Time Results To/From Kilbrogan Hill



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consulting engineers

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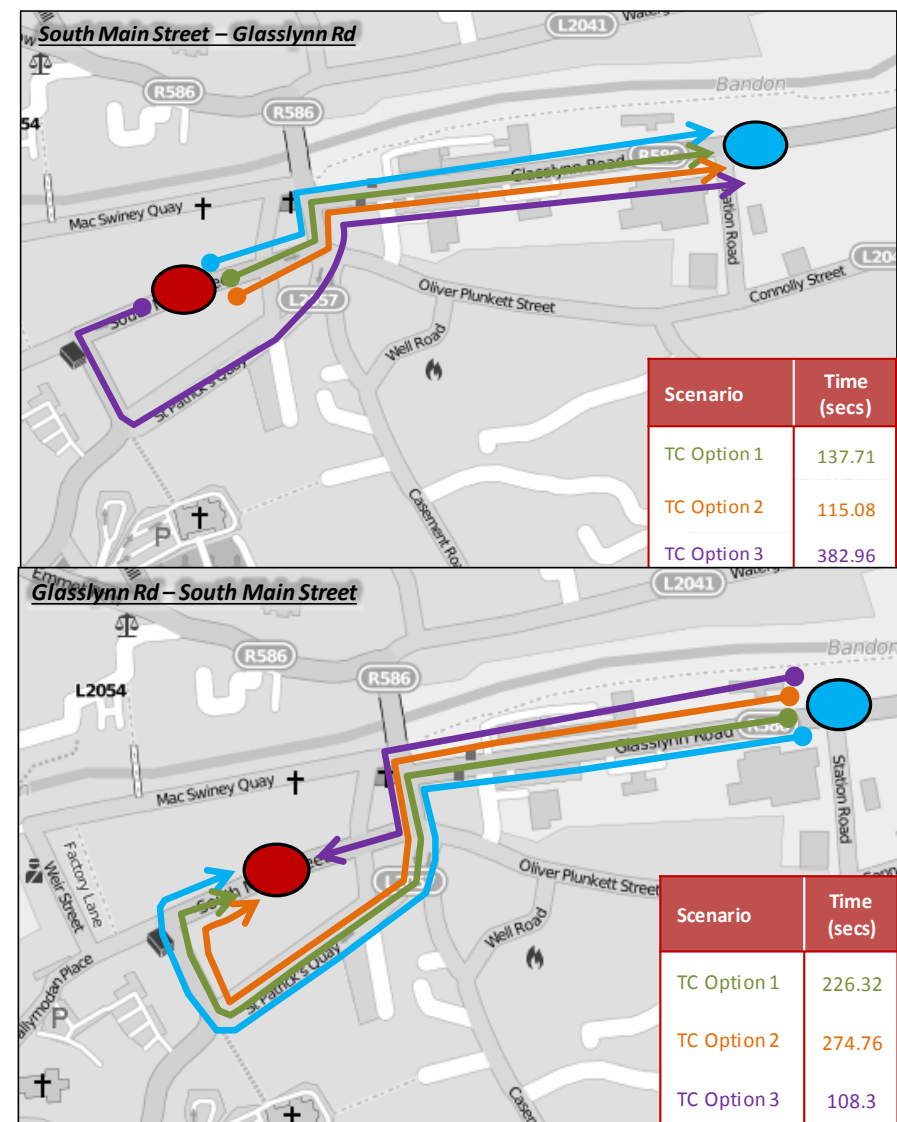
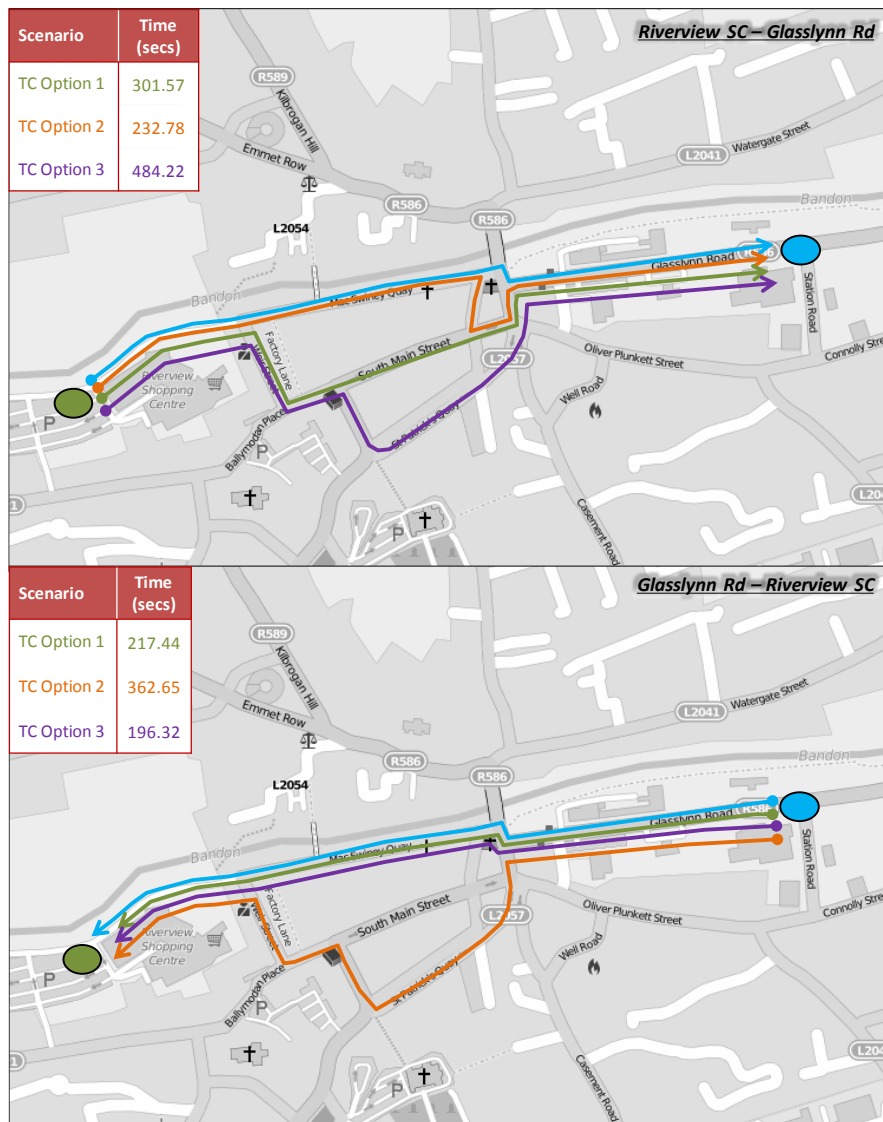


Figure 2.6 Journey Time Results To/From Glasslynn Rd



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consulting engineers

**SYSTRA**

## To/From West (New Rd) Bandon

- 2.2.9 Figure 2.8, overleaf, illustrates the journey time results for trips between west Bandon and South Main Street. It should be noted that the proposed town centre circulation options will have little impact on how people access Riverview Shopping Centre from the west of Bandon, and as such, the results are not presented in this section.
- 2.2.10 The results indicate that TC03 provides the quickest journey time to the west of Bandon from the town centre as South Main Street operates one-way in a westbound direction under this scenario. For all other town centre options, traffic utilises South Main Street and St. Patrick's Quay to travel westbound leading to journey time increases in the order of 30%-35% over the TC03 scenario.
- 2.2.11 For traffic travelling from west Bandon to South Main Street, TC03 provides significantly longer journey times than the alternative town centre scenarios. In TC03, the current one-way town centre system is reversed with South Main Street operating in a westbound direction and St. Patrick's Quay operating eastbound. This causes significant traffic conflicts, particularly at the South Main Street/St. Patrick's Quay/Oliver Plunkett Street junction as illustrated in Figure 2.7 below. Junction modelling, carried out in PICADY<sup>1</sup>, indicates that this conflict causes the junction to operate over capacity with a maximum ratio of flow to capacity (RFC) of 1.215, which leads to queuing of 52 vehicles (approx. 312 metres) during peak periods.

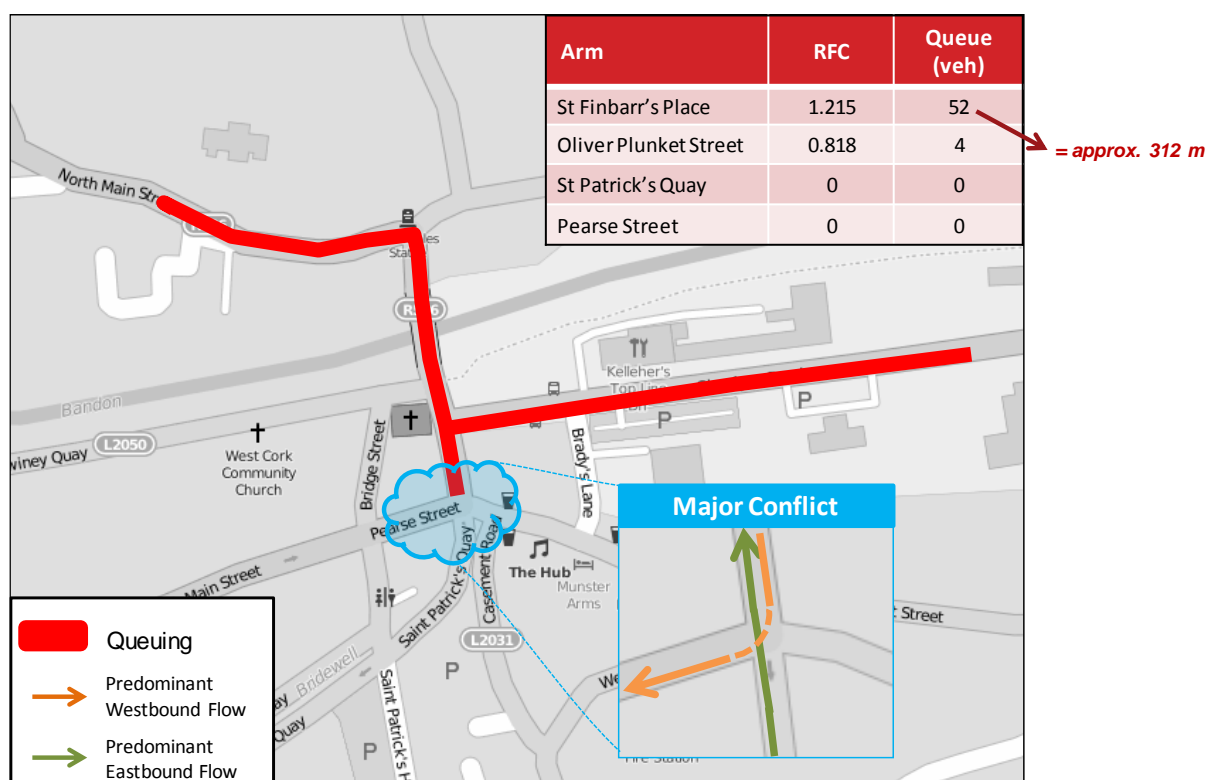


Figure 2.7 TC03 Traffic Conflicts

<sup>1</sup> PICADY is a software package used to assess capacities, queues and delays at priority junctions.

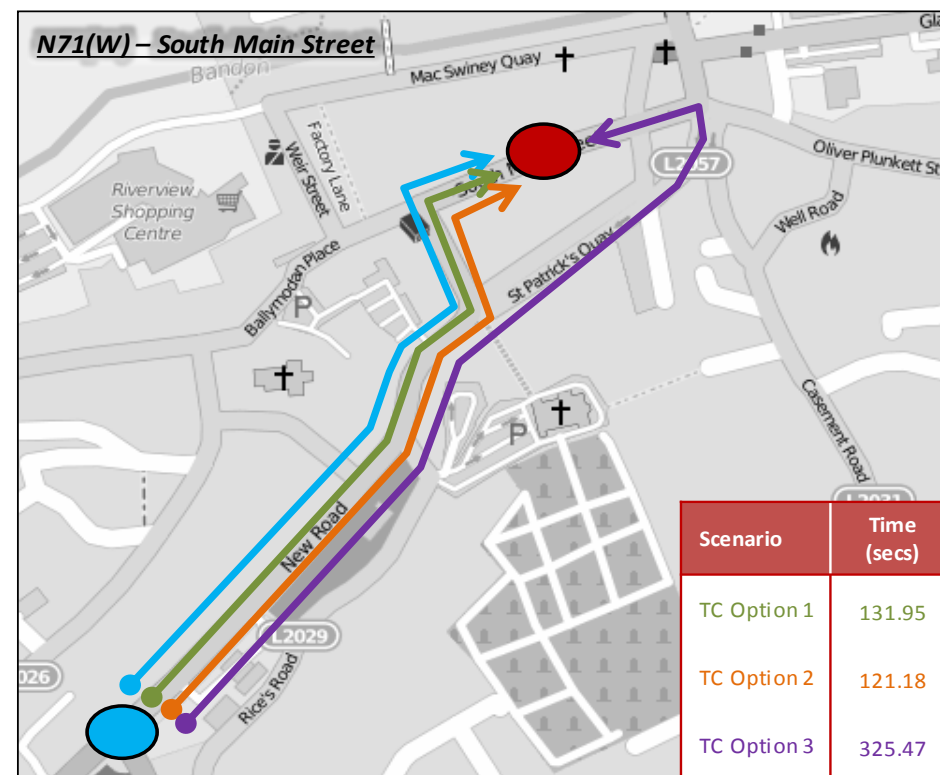
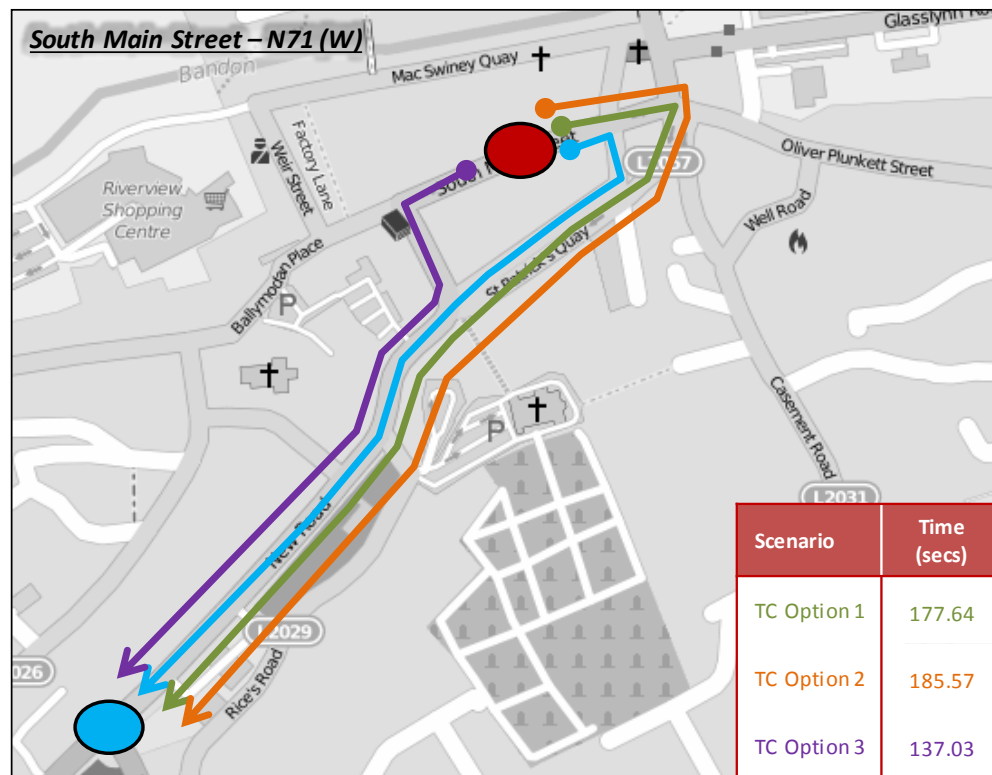


Figure 2.8 Journey Time Results To/From N71 (New Road)



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## Journey Time Results Summary

2.2.12 Table 2.2 below outlines the overall journey time results for access/egress from strategic gateways on the edge of the town centre to key retail/employment locations in Bandon.

**Table 2.2 Town Centre Circulation Journey Time Results**

Route	TC01 (seconds)	TC02 (seconds)	TC03 (seconds)
Riverview SC - Kilbrogan Hill	328.78	199.72	501
Riverview SC - Glasslynn Rd	301.57	232.78	484.22
Kilbrogan Hill - Riverview SC	188.54	371.51	188.84
Glasslynn Rd - Riverview SC	217.44	362.65	196.32
South Main St - Kilbrogan Hill	164.91	120.63	399.75
South Main St - Glasslynn Rd	137.71	115.08	382.96
South Main St - N71 (W)	177.64	185.57	137.03
Kilbrogan Hill - South Main St	211.38	283.63	125.58
Glasslynn Rd - South Main St	226.32	274.76	108.3
N71 (W) - South Main St	131.95	121.18	325.47
<b>Total</b>	<b>2086.24</b>	<b>2267.51</b>	<b>2849.47</b>
<b>% Change</b>		<b>+9%</b>	<b>+37%</b>

2.2.13 In summary the journey time analysis indicates that:

TC01 performs best in terms of providing space for public realm enhancements while facilitating traffic circulation within Bandon town centre;

TC03 is the worst performing scenario in terms of facilitating circulation of traffic within the town centre with a 37% increase in overall journey times on key routes versus the best performing Scenario (i.e. TC01);

The street layout in TC03 is less desirable as it causes significant traffic conflicts at the junctions either end of St. Patrick's Quay leading to congestion and delay; and

The street layout in TC02 is less desirable as it forces traffic from the east and north of Bandon to utilise a circuitous route via St. Patrick's Quay and Market Street when accessing key retail locations within the town centre.



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## 2.3 Creation of market /event spaces

2.3.1 The three town centre circulation options, outlined in Figures 2.1 – 2.3 previously, include potential areas within the town centre which can be closed off to vehicular traffic to create an event space:

- TC01: Event space at **Ballymodan Place**;
- TC02 & TC03: Event space on **South Main Street** between Market Street and Bridge Lane

### Ballymodan Place Event Space

2.3.2 A two-tiered event space, illustrated in Figure 2.9 below, is proposed at Ballymodan Place, which includes:

- **Regular Event Space:** stretching from South Main Street, at the junction with Weir Street, to O'Mahoney Avenue, and could be closed to vehicular traffic for weekly events; and
- **Occasional Event Space:** stretching from South Main Street, at the junction with Market Street, to O'Mahoney Avenue and could be closed to vehicular traffic for annual/bi-annual events.



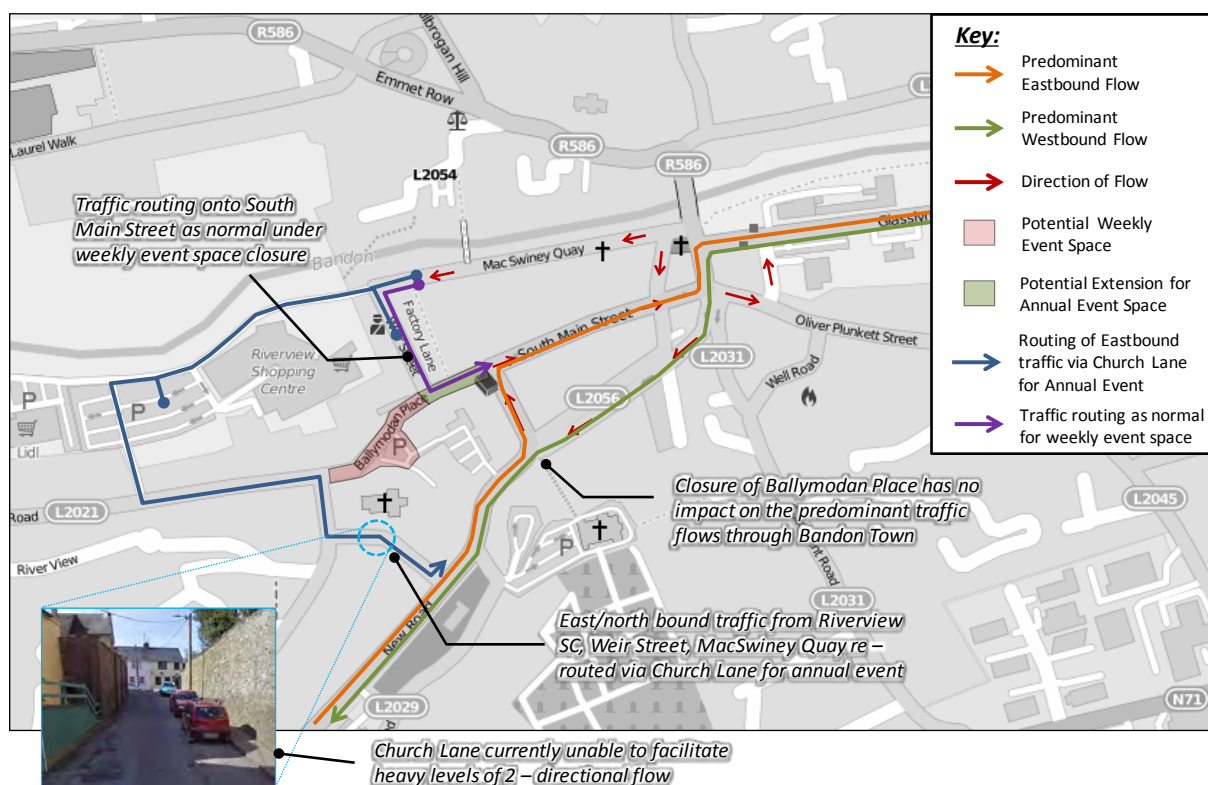
Figure 2.9 Ballymodan Place Event Space

2.3.3 Ballymodan Place offers a wide, spacious, well-lit environment capable of facilitating events such as markets, festivals etc. The car park at Ballymodan Place is currently utilised for the Bandon Farmers' Market which takes place on Saturday mornings with numerous stalls selling local produce.

2.3.4 By expanding the event space to cover both the Ballymodan Place car park and the nearby road network, a stronger connection is created between the Riverview Shopping Centre and South Main Street, thus encouraging the movement of pedestrians between these two key retail locations in Bandon town centre.

2.3.5 Figure 2.10 below illustrates the potential impact of closing the Ballymodan Place event space to vehicular traffic for a period of time under TC01. The results indicate that the

closure of Ballymodan place has no significant impact on predominant traffic flows through Bandon town centre via South Main Street and St. Patrick's Quay.



**Figure 2.10 Town Centre Traffic Operation during Ballymodan Place Closure**

- 2.3.6 Traffic exiting Bandon to the east/north from Weir Street and Riverview Shopping Centre can utilise South Main Street as normal and are not impacted by the closure of the regular event space at Ballymodan Place.
- 2.3.7 During the annual/bi-annual event, eastbound traffic from Weir Street and Riverview Shopping Centre are re-routed via Church Lane which experiences a comparatively large (112%) increase in traffic volumes when the full Ballymodan Place event space is closed. As illustrated in Figure 2.10 above, Church Lane has quite narrow carriageway widths with on-street parking, and as such, is unlikely to be able to facilitate large increases in traffic volumes. However, as this issue is only likely to occur once or twice a year during a large public event, specific measures could be implemented to mitigate against negative traffic impacts, such as Making Church Lane one-way in the southbound direction. This would allow for increased capacity for traffic utilising this route to exit Bandon to the north/east.
- 2.3.8 During all event space closures, access will still be provided for emergency vehicles, in particular for Garda vehicles from the station located on Weir Street.

#### **South Main Street Event Space**

- 2.3.9 The proposed event space on South Main Street would operate between Market Street and Bridge Lane and is illustrated in Figure 2.11 below. The main advantages with having the event space along South Main Street are:
- Increase footfall for traders operating on South Main Street;
  - large area of event space which could be completely closed to traffic;
  - Attract visitors into the heart of Bandon town centre impacting positively on trade in the vicinity of South Main Street.

- 2.3.10 While South Main Street does provide a long event space, it cannot provide the wide open aspect offered by Ballymodan Place. As such, the event space on South Main Street may have limitations in terms of the number, and size, of stalls which could be set up.
- 2.3.11 Figure 2.11 and 2.12 below, illustrate the operation of the town centre circulation with South Main Street closed to traffic in TC02 and TC03 scenarios respectively. South Main Street is a key link for east-west (or vice versa) traffic, and therefore, its potential closure would cause re-routing of traffic via circuitous routes. This disruption to traffic circulation could potentially benefit Bandon by deterring through traffic from using the town centre route, however, this could also have a negative impact on passing trade within the town.
- 2.3.12 South Main Street is one of the key retail centres in Bandon with a considerable level of on-street parking available. Whilst a local event, such as a market, festival etc., will attract visitors to South Main Street thus impacting positively on trade, it may also deter some regular shoppers from the area due to the need to take alternative access/egress routes.
- 2.3.13 One of the key advantages of the Ballymodan Event Space (outlined previously), over South Main Street, is that it allows South Main Street to operate as normal. The event space at Ballymodan Place would attract visitors, and potential trade, to South Main Street while still facilitating the current level of access and parking.

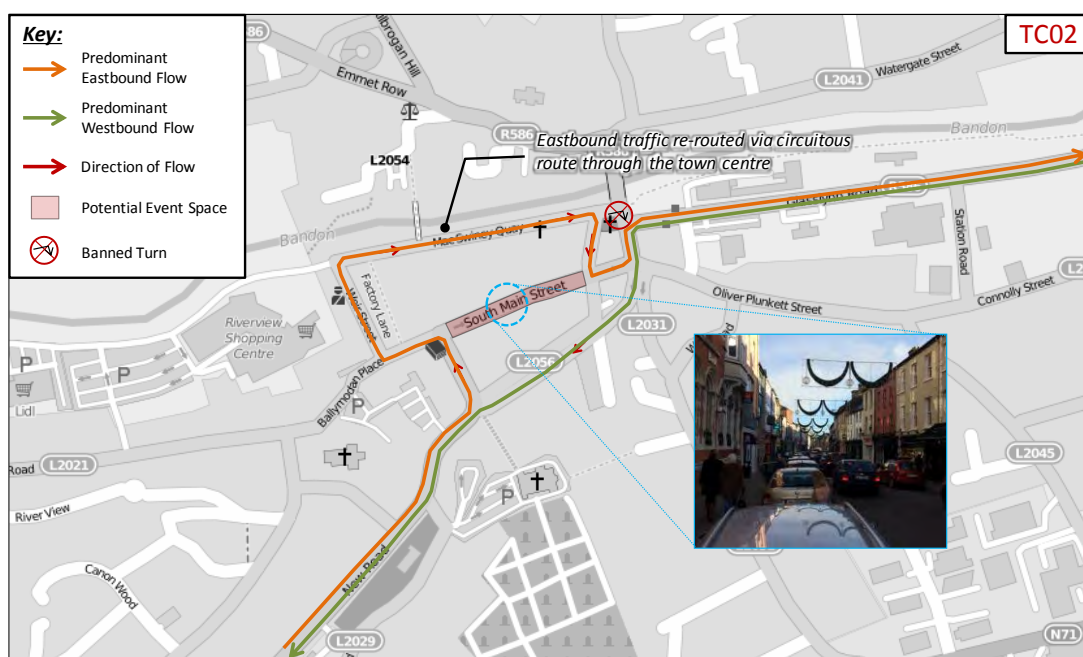


Figure 2.11 Town Centre Circulation during South Main Street Closure (TC02)

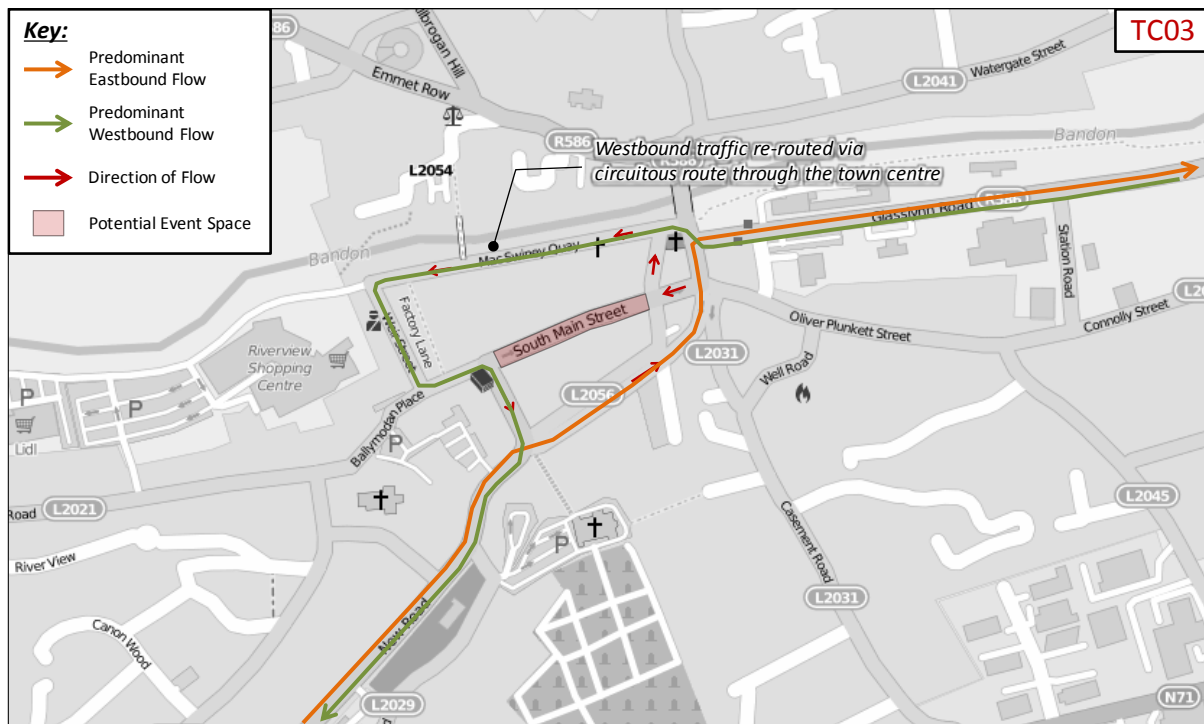


Figure 2.12 Town Centre Circulation during South Main Street Closure (TC03)

## Summary

2.3.14 Table 2.3 below outlines the relative advantages and disadvantages associated with each of the event space options outlined previously.

Table 2.3 Event Space Comparison

Ballymodan Place	South Main Street
<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>Wide, open, well-lit environment;</li> <li>Currently hosts the Bandon Farmers' Market – able to facilitate large events</li> <li>Links the two key retail locations in Bandon</li> <li>Does not significantly impact on traffic flow through the town</li> <li>Does not impact on the current operation of South Main Street</li> </ul>	<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>Large potential event space;</li> <li>Attract visitors to the retail core of Bandon;</li> <li>Potentially reduce through traffic due to impact on routing through town centre</li> </ul>
<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Re-route traffic onto Church Lane during annual/bi-annual event space closure: <ul style="list-style-type: none"> <li>Could be mitigated by making Church Lane 1-way.</li> </ul> </li> </ul>	<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Re-route town centre traffic via circuitous route – may deter people from travelling into town centre impacting on passing trade;</li> <li>Disruption to the operation of South Main Street (e.g. reduced parking) – may deter shoppers from the area</li> <li>Relatively narrow event space – may have limitations on the size of event which could be facilitated</li> </ul>

- 2.3.1 In Summary, Table 2.3 suggests that Ballymodan Place provides a better event space than that proposed at South Main Street due to the following:

It provides a larger event area which is open and well-lit, and can facilitate larger festivals, markets etc;

It would complement South Main Street by attracting visitors to the area without negatively impacting on its operation;

It can be closed off to traffic without significantly disrupting circulation in the town centre. While some potential issues were noted at Church Lane, these are likely to occur only once/twice per year and could be easily mitigated.

## 2.4 Conclusion

- 2.4.1 The previous sections of this chapter have outlined the results of analysis carried out on three town centre circulation options identified for Bandon town as part of the TPREP strategy.

- 2.4.2 The key objectives of the circulation options are to:

- Release space for public realm improvements;
- Create an event space which can be closed to vehicular traffic;
- Facilitate traffic circulation within the town removing conflicts where possible.

- 2.4.3 The results were analysed under two main headings based on objectives defined for Bandon town centre, namely:

- **Journey Times and Delay:** Investigating how the traffic circulation options impact on travel times and delay in the town centre;
- **Creation of Event Space:** Investigating two potential event space options including operation of traffic during closure.

- 2.4.4 In summary, the results indicate the following:

- TC01 is the best performing scenario as:
  - It experiences the shortest journey times and delay for travel within the town centre;
  - The event space at Ballymodan Place is preferred over South Main Street;
  - TC03 experiences significant congestion and delay, particularly due to conflicts at junctions either end of St. Patrick's Quay; and
  - The street operation in TC02 may be undesirable as it forces traffic from the east and north of Bandon to utilise a circuitous route via St. Patrick's Quay and Market Street when accessing key retail locations within the town centre.

**TC01 IS CHOSEN TO BE TAKEN FORWARD FOR TESTING THROUGH THE FULL EVALUATION FRAMEWORK (I.E. STEP 2).**



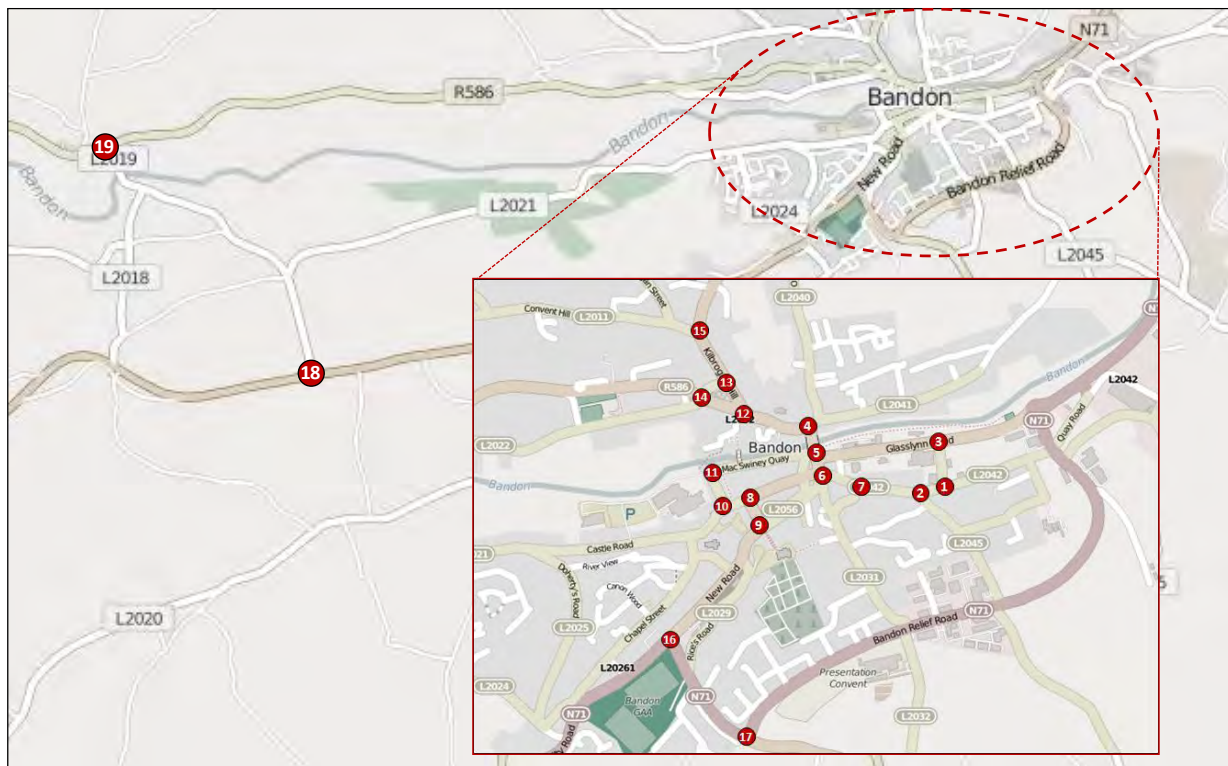
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### 3. JUNCTION IMPROVEMENT TESTING

#### 3.1 Introduction

- 3.1.1 A number of junction upgrades have been identified as part of the Bandon TPREP to reduce congestion and delay in key areas and improve overall accessibility for pedestrians and cyclists.
- 3.1.2 Section 5.4 of the Final Report details the various junction upgrades/improvements proposed at 19 locations throughout Bandon town, illustrated in Figure 3.1 below, including a rationale for design choice. A number of these improvements are relatively minor in nature, i.e. raised road level, build out of footpaths, provision of pedestrian crossings etc., and as such, detailed modelling assessments were not carried out at these locations.



delay for through traffic. This is primarily due to geometric restrictions at the junction including:

- narrow approach widths resulting in one lane approaches on all arms;
- a very tight corner radius requiring northbound HGV to encroach onto opposing lanes (when vacant); and
- poor sight lines.

3.2.2 Through review of traffic surveys carried out in the area, it was noted that the right turning movement onto Watergate Street/Cork Road experiences relatively high flows, particularly in the PM peak where people are returning home after work (approx. 130 pcu's from 17:00 – 18:00). Therefore, it was determined that in order to reduce queuing issues on Bandon Bridge, this right turning traffic would need to be accommodated in a more efficient manner.

3.2.3 Three alternative junction options were identified for testing, namely:

- Mini-roundabout;
- Compact Roundabout; and
- Priority Junction.

3.2.4 It should be noted that a traffic signal option was also examined at this location at an early stage in the design process, however it was discounted as it resulted in significant delays and queuing. The following sections provide an overview of each of the proposed junction options including a review of their associated advantages and disadvantages.

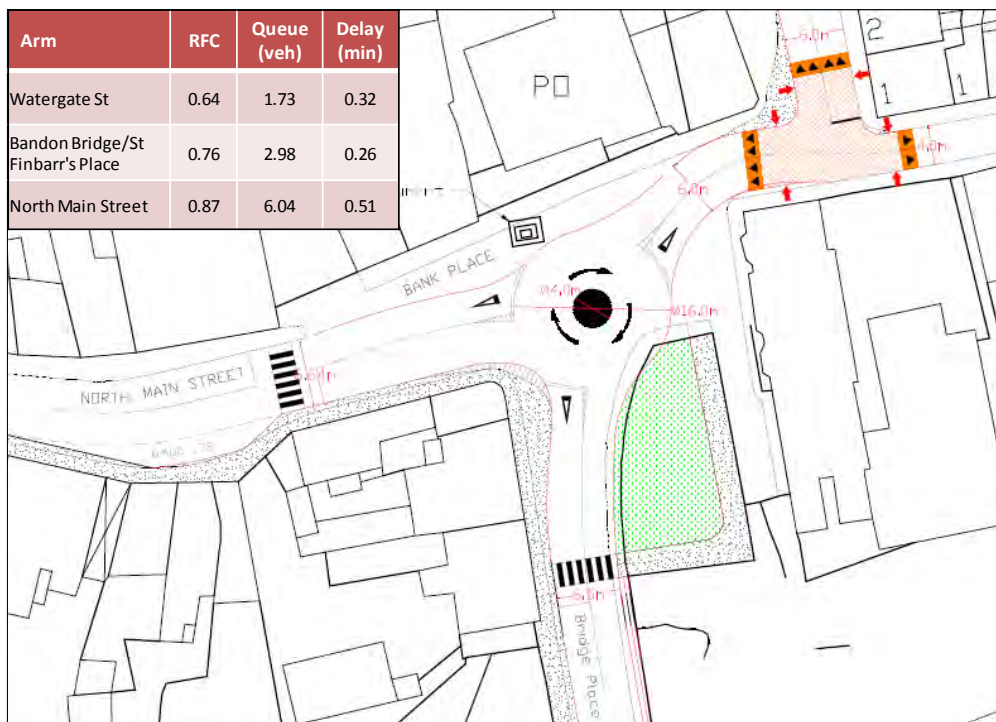
#### **Mini-roundabout**

3.2.5 In order to facilitate the right turning traffic from Bandon Bridge to Watergate Street/Cork Road, a mini-roundabout junction option was identified for testing. The advantage of the mini-roundabout is that it would allow right turning traffic on Bandon Bridge to move without impeding vehicles travelling onto North Main Street. The proposed mini-roundabout option is illustrated in Figure 3.2 below, including the results of junction analysis carried out in ARCADY<sup>2</sup>. The ARCADY assessment indicates that the mini-roundabout performs quite well with only small levels of queuing experienced on all arms.

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<sup>2</sup> ARCADY is a software package used to assess capacities, queues and delays at roundabouts.





**Figure 3.2 North Main St/Watergate St Mini-Roundabout Option**

3.2.6 Table 3.1, provides a summary of the pros and cons associated with the mini-roundabout junction option in terms of its capacity for facilitating vehicular flows, its impact on public realm in the area and its ability to facilitate pedestrian and cyclist movements.

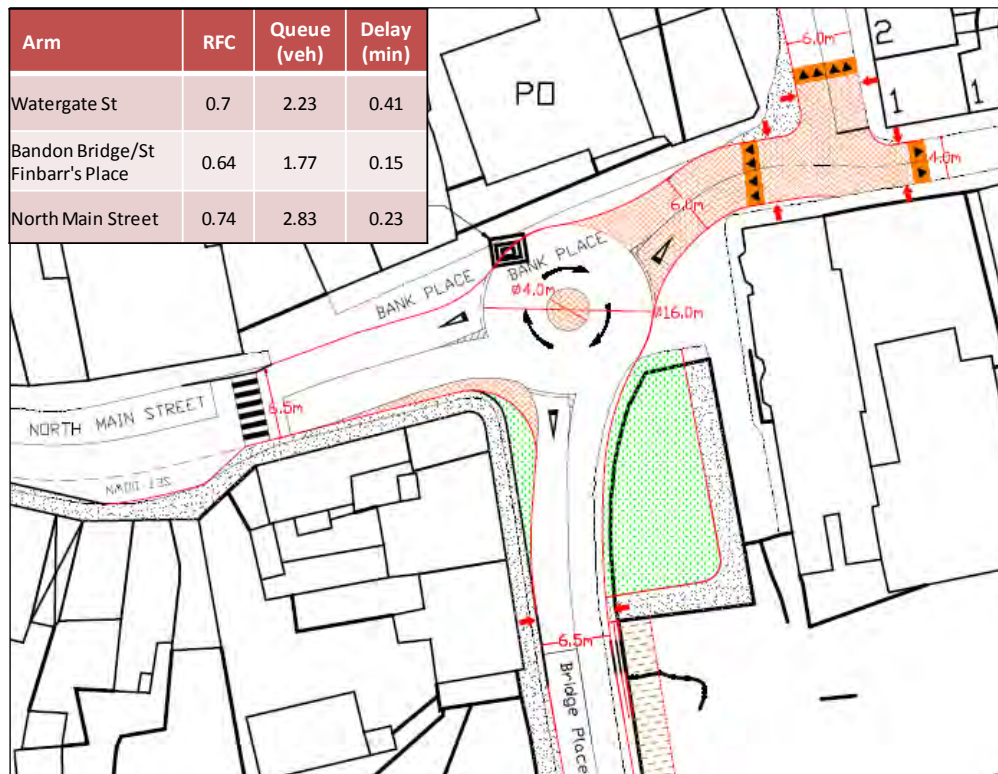
**Table 3.1 Mini-Roundabout Option Pros & Cons**

<b>Capacity</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Issue at present where right turning vehicles from Bandon Bridge wishing to travel towards Watergate St are blocked by opposing traffic. This causes congestion on Bandon Bridge. The mini-roundabout option would allow these right turning vehicles to move thus removing some of the disruption to Bandon Bridge;</li> <li>- Should assist in improving current traffic delay on Bandon Bridge allowing freedom of movement in all directions</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Tight turning radii for large HGVs</li> <li>- Are still likely to have issues where two opposing HGVs will not be able to make the turn at the same time and, as such, this could lead to congestion</li> <li>- As the diameter of the roundabout is small, the roundabout could become blocked at peak times as headway or gaps between vehicles on the gyratory reduce.</li> <li>- Large HGVs will have to overrun the central island which will degrade any attractive surface material used in this location</li> </ul>
<b>Public Realm</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Removing some of the queuing on Bandon Bridge will increase the attractiveness of this area</li> <li>- Tidying up of junction North of Bandon Bridge will make a more attractive location for pedestrian activity</li> <li>- Maybe able to retain the statue in its current position</li> <li>- May require some land take from the adjacent public realm area, but very minor</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Mini-roundabout may look out of place at this location</li> <li>- The presence of HGV traffic will make it difficult to introduce an attractive mini-roundabout design as any surface material used would be degraded easily</li> </ul>
<b>Pedestrian &amp; Cyclists</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Pedestrian Crossing points at each arm provide access for pedestrian movements</li> <li>- Pedestrian Crossings help link North Main Street / Cork Rd with Bandon Bridge and St. Finbarr's Place / Glasslynn Rd / South Main Street</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Mini-roundabout can be difficult for cyclists to negotiate</li> <li>- Large volumes of turning HGVs cause safety concerns for pedestrians and cyclists</li> </ul>

### **Compact-roundabout**

- 3.2.7 As noted in Table 3.1, one of the main capacity issues associated with the mini-roundabout option is the tight turning radii required, and the impact this can have on gaps/headway between vehicles on the gyratory leading to some delays at peak times.
- 3.2.8 Therefore, it was decided to test a slightly larger roundabout option with a greater Inscribed Circle Diameter (ICD) which would provide greater capacity for turning volumes, in particular HGVs.
- 3.2.9 Figure 3.3, overleaf, illustrates the proposed compact-roundabout solution for the North Main Street/Watergate Street junction including the results of capacity analysis carried out in ARCADY. The ARCADY analysis indicates that the compact-roundabout option performs better than the mini-roundabout in terms of capacity, queuing and delay.





**Figure 3.3 North Main St/Watergate St Compact-Roundabout Option**

- 3.2.10 Table 3.2 below, provides a summary of the pros and cons associated with the compact-roundabout junction option in terms of its capacity for facilitating vehicular flows, its impact on public realm and its ability to facilitate pedestrian and cyclist movements.

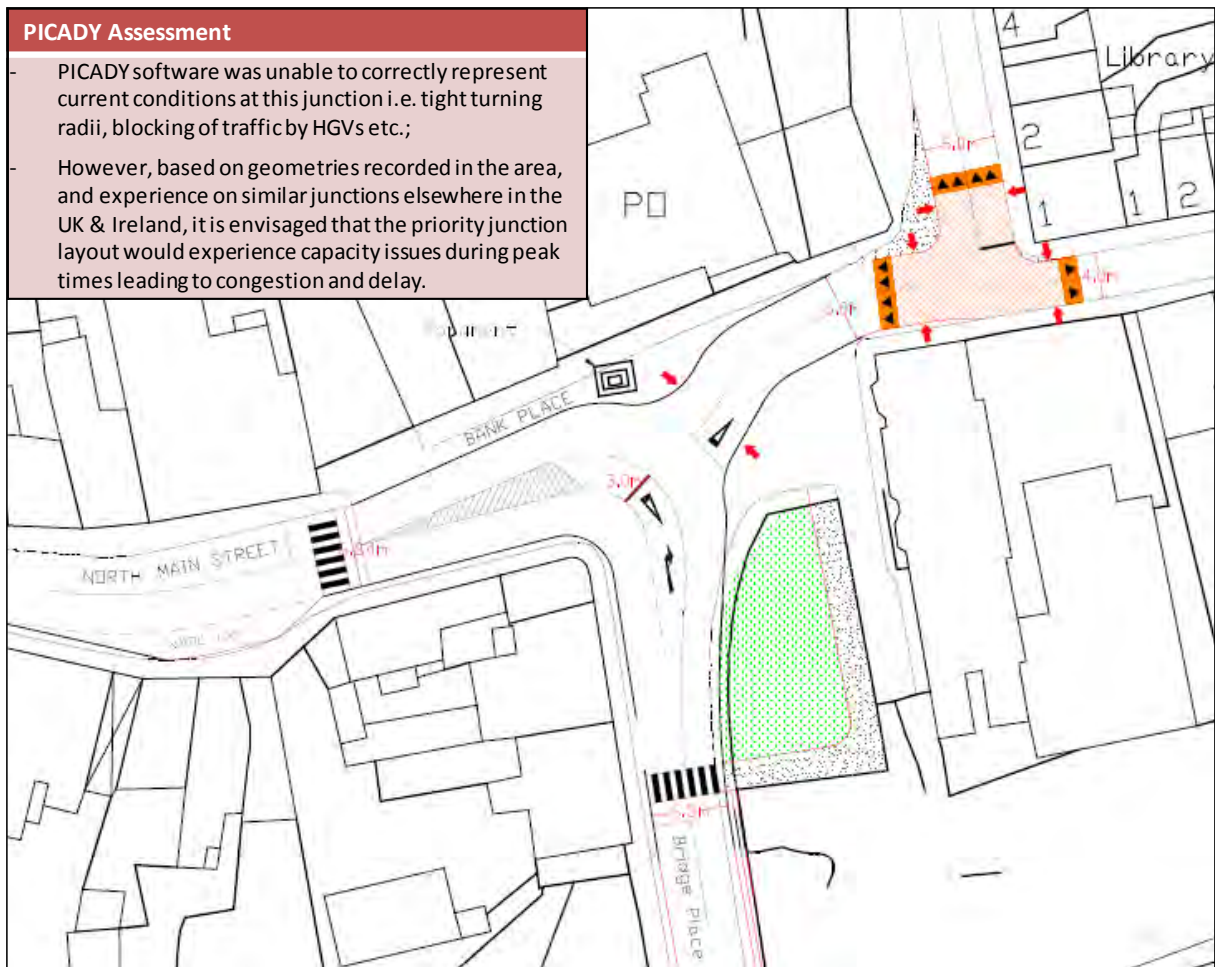
**Table 3.2 Compact-Roundabout Option Pros & Cons**

Capacity	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Issue at present where right turning vehicles from Bandon Bridge wishing to travel towards Watergate St are blocked by opposing traffic. This causes congestion on Bandon Bridge. The roundabout option would allow these right turning vehicles to move thus removing some of the disruption to Bandon Bridge;</li> <li>- Larger turning radii (over the mini-roundabout option) and, as such, should have a greater impact on improving current traffic delay on Bandon Bridge allowing freedom of movement in all directions</li> <li>- Allow 2 opposing HGVs to make the turn at the same time without disrupting other traffic flows</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Tight turning radii for large HGVs</li> <li>- Vehicle tracking indicates that large HGVs may have to use part of the central overrun which will degrade any attractive surface material used in this location</li> </ul>
Public Realm	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Removing some of the queuing on Bandon Bridge will increase the attractiveness of this area</li> <li>- Tidying up of junction North of Bandon Bridge will make a more attractive location for pedestrian activity</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Larger roundabout may be deemed unattractive and look out of place at this location</li> <li>- The presence of HGV traffic will make it difficult to introduce an attractive roundabout design as any surface material used would be degraded easily</li> <li>- Additional space required for larger Roundabout ICD reduces space available for public realm improvements</li> <li>- Will require relocation of the statue at Bank Place</li> </ul>
Pedestrian & Cyclists	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Pedestrian Crossing points at each arm provide access for pedestrian movements</li> <li>- Pedestrian Crossings help link North Main Street / Cork Rd with Bandon Bridge and St. Finbarr's Place / Glasslynn Rd / South Main Street</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Roundabouts can be difficult for cyclists to negotiate, however approach speeds will be very low in this case and the design of the roundabout is compact.</li> <li>- Large volumes of turning HGVs cause safety concerns for pedestrians and cyclists</li> </ul>

3.2.11 As an alternative to the roundabout solutions, a priority junction option was identified which is similar to the current layout, but with an improved junction definition and a dedicated right turning pocket which could store approx. two waiting vehicles turning into Watergate Street.

3.2.12 The proposed priority junction option is illustrated in Figure 3.4 below. Capacity analysis was carried out in PICADY<sup>3</sup>, however, the software was not able to accurately represent conditions at the junction e.g. tight turning radii, blocking of traffic by HGVs etc. Therefore, the results obtained were deemed unrealistic and not utilised in the overall assessment of junction performance.

<sup>3</sup> PICADY is a software package used to assess capacities, queues and delays at priority junctions.



**Figure 3.4 North Main St/Watergate St priority junction Option**

- 3.2.13 Table 3.3, overleaf, provides a summary of the pros and cons associated with the priority junction option in terms of its capacity for facilitating vehicular flows, its impact on public realm in the area and its ability to facilitate pedestrian and cyclist movements.

**Table 3.3 Priority Junction Option Pros & Cons**

<b>Capacity</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Issue at present where right turning vehicles from Bandon Bridge wishing to travel towards Watergate St are blocked by opposing traffic. This causes congestion on Bandon Bridge. Introduction of junction markings and right turning lane should help alleviate this issue</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Tight turning radii for large HGVs</li> <li>- Whilst the junction may operate satisfactorily in off peak periods, it is likely to experience temporary operational issues during peak periods as turning HGV's or traffic waiting to turn right (in excess of 2 queued vehicles) onto Watergate Street block through traffic.</li> </ul>
<b>Public Realm</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Tidying up of junction North of Bandon Bridge will make a more attractive location for pedestrian activity</li> <li>- Provide a more attractive junction layout than the roundabout options providing a lot of space for public realm improvements</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Still likely to experience congestion on Bandon Bridge thus reducing the attractiveness of the area</li> </ul>
<b>Pedestrian &amp; Cyclists</b>	
<p><u>Pros:</u></p> <ul style="list-style-type: none"> <li>- Pedestrian Crossing points at each arm provide access for pedestrian movements</li> <li>- Pedestrian Crossings help link North Main Street / Cork Rd with Bandon Bridge and St. Finbarr's Place / Glasslynn Rd / South Main Street</li> </ul>	<p><u>Cons:</u></p> <ul style="list-style-type: none"> <li>- Large volumes of turning HGVs cause safety concerns for pedestrians and cyclists</li> </ul>

### Summary

3.2.14 The previous sections have outlined analysis carried out on three identified options for the North Main Street/Watergate Street junction along with the advantages/disadvantages of each. Through consultation with the wider project working group, the compact-roundabout was chosen as the preferred option as:

- It performs best in terms of facilitating forecast flows without causing significant queueing on Bandon Bridge;
- It has a greater capacity than the mini-roundabout option and can facilitate two-directional HGV flows at the junction; and
- Through review of current conditions, and experience from similar junctions in the UK & Ireland, it is envisaged that the priority junction option would lead to significant queueing on Bandon Bridge in the forecast year of 2020.



## VISSIM Analysis

- 3.2.15 In order to determine the potential benefits of the chosen compact-roundabout option, it was tested versus a 'Do Nothing' scenario (i.e. current junction layout) in VISSIM<sup>4</sup> for the forecast year 2020. Figure 3.5, overleaf, displays screenshots taken from the compact-roundabout ('Do Something') and 'Do Nothing' model runs illustrating the impact on queuing on Bandon Bridge. It should be noted that all modelling analysis were undertaken for the PM peak as it represents the busiest period for flows on Bandon Bridge wishing to turn onto Watergate Street/Cork Road.

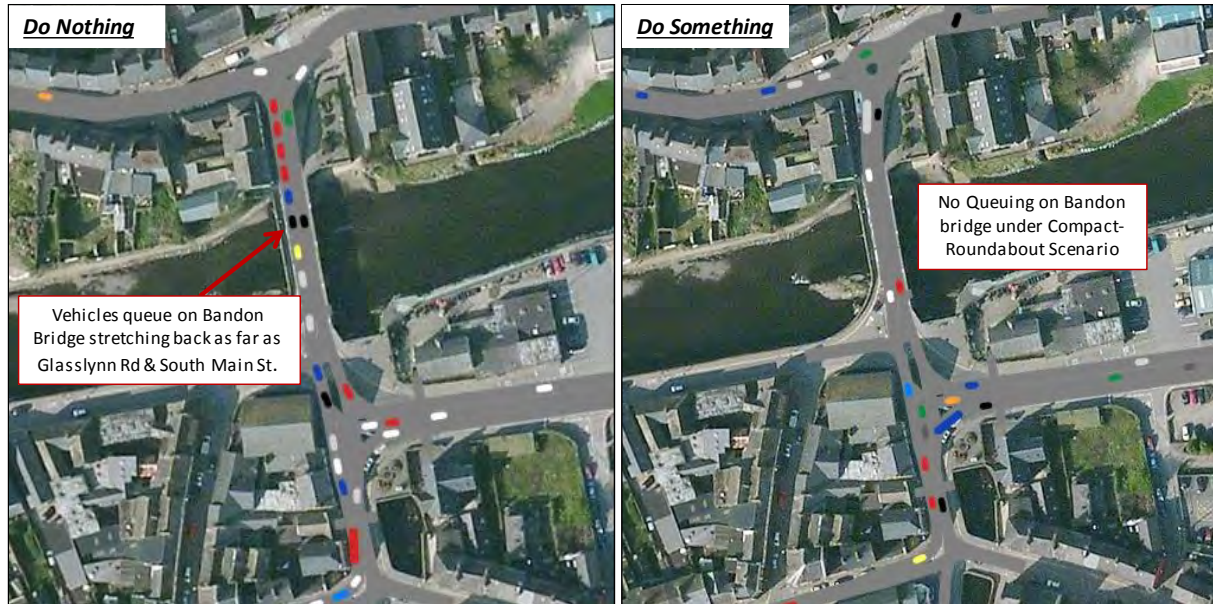


Figure 3.5 North Main St/Watergate St Junction VISSIM Analysis

- 3.2.16 In VISSIM, queue counters were placed on each of the junction arms to identify the average and max queuing for the 2020 PM peak hour (17:00 – 18:00) under the 'Do Nothing' and 'Do Something' (compact-roundabout) Scenarios. The results of this queue length analysis are outlined in Table 3.4 below.

Table 3.4 VISSIM Queue Length Analysis

Arm Name	2020 Do Nothing		2020 Do Something	
	Average Q (m)	Max Q (m)	Average Q (m)	Max Q (m)
North Main St	0.48	59.85	8.22	74.5
Bandon Bridge NB	42.03	208.15	0.72	43.64
Cork Rd/ Watergate St	5.05	45.89	0.35	25.92

- 3.2.17 The modelling analysis indicates that, with the forecast growth in vehicular traffic up to 2020, the current junction layout ('Do Nothing') would result in significant queuing on Bandon Bridge with an average queue of 42 metres (approx. 9 cars<sup>5</sup>) and a maximum queue of 208 metres (approx. 43 cars). This maximum queuing level would cause

<sup>4</sup> VISSIM is a microsimulation multi-modal traffic flow simulation software package developed by PTV Planung Transport Verkehr AG

<sup>5</sup> Assuming 1 car length = 4.8 metres

blocking back to the junctions with Glasslynn Road and South Main Street leading to congestion and delay in these areas.

- 3.2.18 The introduction of the compact-roundabout significantly improves conditions on Bandon Bridge with an average queue of less than one metre for the entire modelled PM peak hour period. The maximum queuing level is also significantly reduced (approx. 80% reduction) versus the 'Do Nothing' scenario indicating that, even at worst period in the PM peak, traffic will not block back to the junctions immediately south of the river.
- 3.2.19 The results in Table 3.4 indicate that the introduction of the compact-roundabout option does increase queuing on North Main Street, however, at a relatively minor level with an increase in average queue of approx. 2 cars (8 metres), and an increase in maximum queue levels of approx. 3 cars (14 metres). This minor increase in queuing is outweighed by the significant benefit that the compact-roundabout junction has on congestion on Bandon Bridge.
- 3.2.20 Within VISSIM, journey time analysis was carried for vehicles travelling north on Bandon Bridge towards North Main Street and the results for the 'Do Nothing' and 'Do Something' scenarios are illustrated in Figure 3.6 below. The modelling results indicate that, due to the reduction in queuing noted previously, the introduction of the compact-roundabout junction provides significant reductions (43%) in average journey times for traffic travelling towards North Main Street.

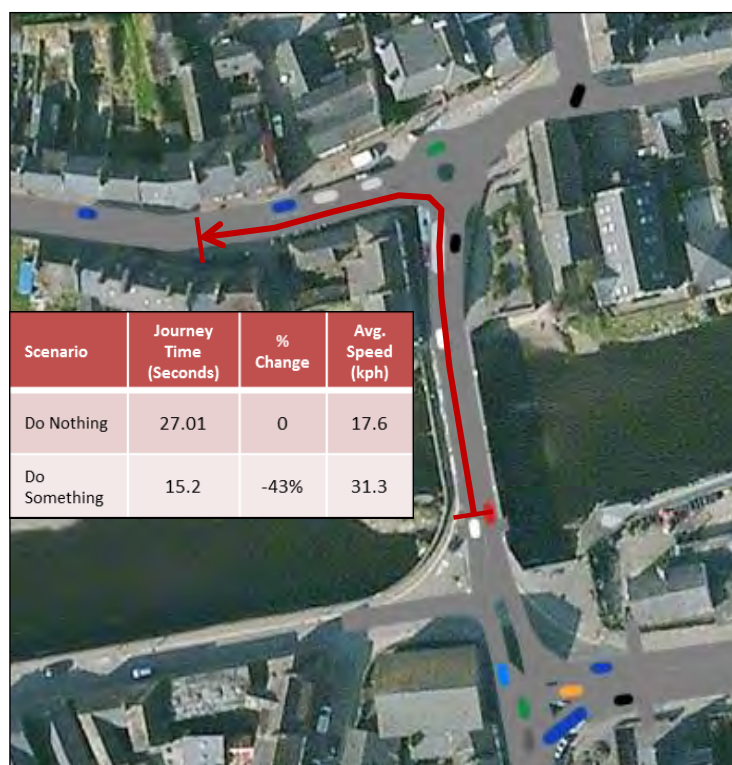


Figure 3.6 North Main St/Watergate St Junction VISSIM Journey Time Analysis

- 3.2.21 In summary, the VISSIM analysis indicates that the compact-roundabout junction provides significant benefits over the 'Do Nothing' scenario including:

- significantly reducing queuing (up to 80% reduction) on Bandon Bridge in the PM peak hour;
- reducing average journey times for traffic travelling north on Bandon Bridge; and

- reducing the maximum queuing levels so that traffic does not block back to junctions south of the river impacting on Glasslynn Road and South Main Street.

### 3.3 Glasslynn Rd/St. Finbarr's Place Junction

#### Introduction

3.3.1 It was noted through public consultation, and site visits, that the current Glasslynn Rd/St. Finbarr's Place junction can be extremely difficult for pedestrians to cross due to:

- Large turning radii;
- Heavy traffic flows;
- Large carriageway widths; and
- Lack of pedestrian crossings.



**Figure 3.7 Glasslynn Road/St. Finbarr's Place Junction Issues**

3.3.2 As noted in Section 5.5 and 5.6 of the Final Report, the Glasslynn Road/St. Finbarr's Place junction is critical in facilitating safe access for pedestrians to the town centre from bus stops located on Glasslynn Road (or vice versa).

3.3.3 Therefore, the following two proposed junction options were identified for testing to improve pedestrian access without significantly impeding traffic flow in the area:

- Signalised Junction Option; and
- Priority junction with pelican crossings.

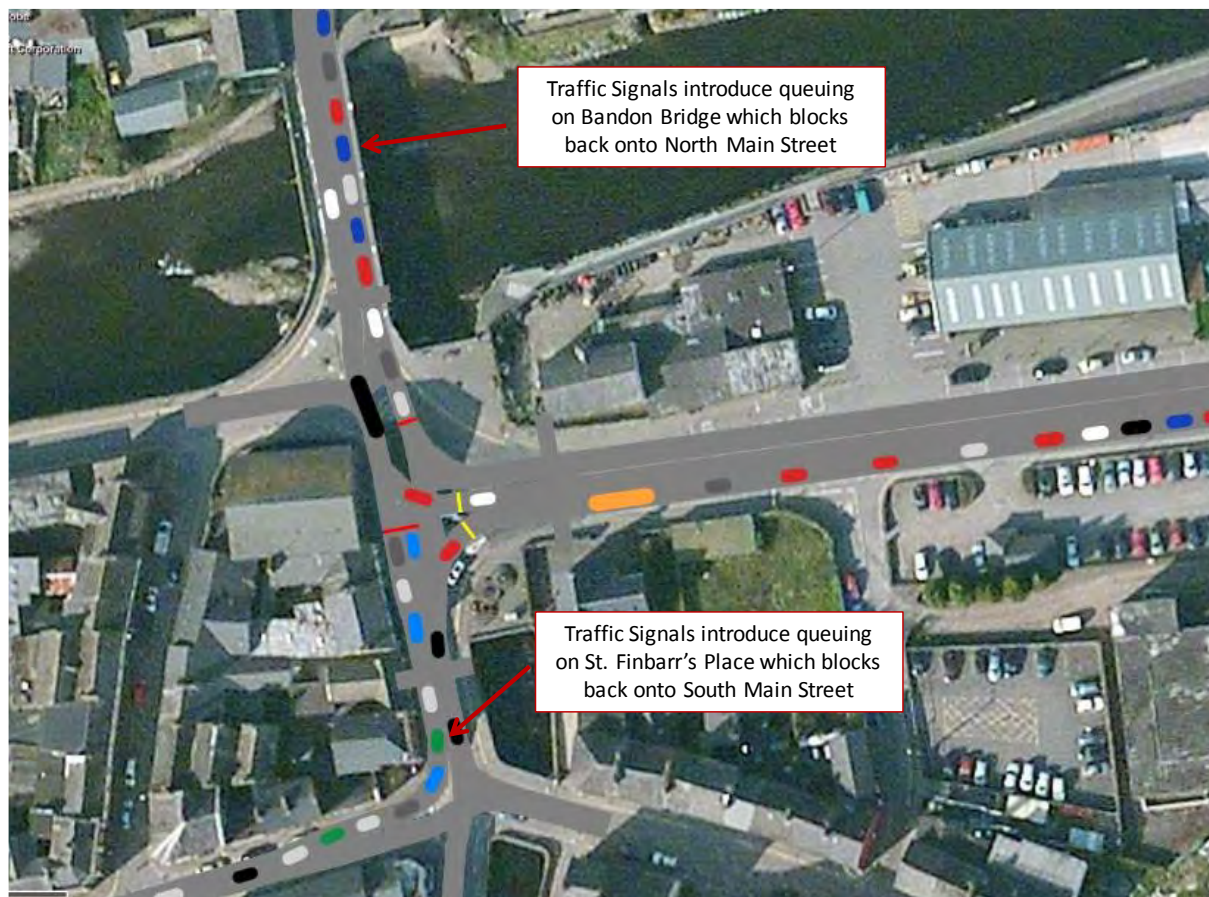
3.3.4 The following sections of this chapter provide an overview of the junction options outlined above including details of modelling analysis carried out on each. It should be noted that all modelling results outlined in this section are for the PM peak (17:00-18:00) as it represents the busiest period for traffic in the town centre.

#### Signalised Junction Option

3.3.5 The introduction of traffic signals can provide the following benefits:

- Facilitate pedestrian movements safely by providing dedicated crossing facilities; and
- Facilitate the control of traffic movements which can ease congestion during peak periods.

3.3.6 In order to assess the potential of introducing signals at the Glasslynn Road/St. Finbarr's Place junction, microsimulation modelling analysis was carried out in VISSIM. Figure 3.8, overleaf, displays a screenshot taken from the 2020 VISSIM model illustrating the impact of introducing traffic lights at this junction.



**Figure 3.8 Glasslynn Rd/St. Finbarr's Place Junction VISSIM Analysis**

3.3.7 In VISSIM, queue counters were placed on each of the junction arms to identify the average queuing for the 2020 PM peak hour (17:00 – 18:00) for the scenario with traffic signals introduced at the Glasslynn Rd/St. Finbarr's Place junction. The results of this queue length analysis are outlined in Table 3.5 below.

**Table 3.5 VISSIM Queue Length Analysis – Signalised Junction**

Arm Name	2020 – Traffic Signals
	Average Q (m)
Glasslynn Road Right Turn	49.5
Glasslynn Road Left Turn	72.0
St. Finbarr's Place Straight Through	66.3

St. Finbarr's Place Right Turn	65.6
Bandon Bridge	57.0

3.3.8 The modelling results indicate that the introduction of traffic signals causes significant levels of queuing on South Main Street (66 metres average queue) and Bandon Bridge (57 metres average queue). As illustrated in Figure 3.8 above, this level of queuing would cause traffic to block back into nearby junctions leading to significant levels of congestion and delay on South Main Street and Bandon Bridge/North Main Street.

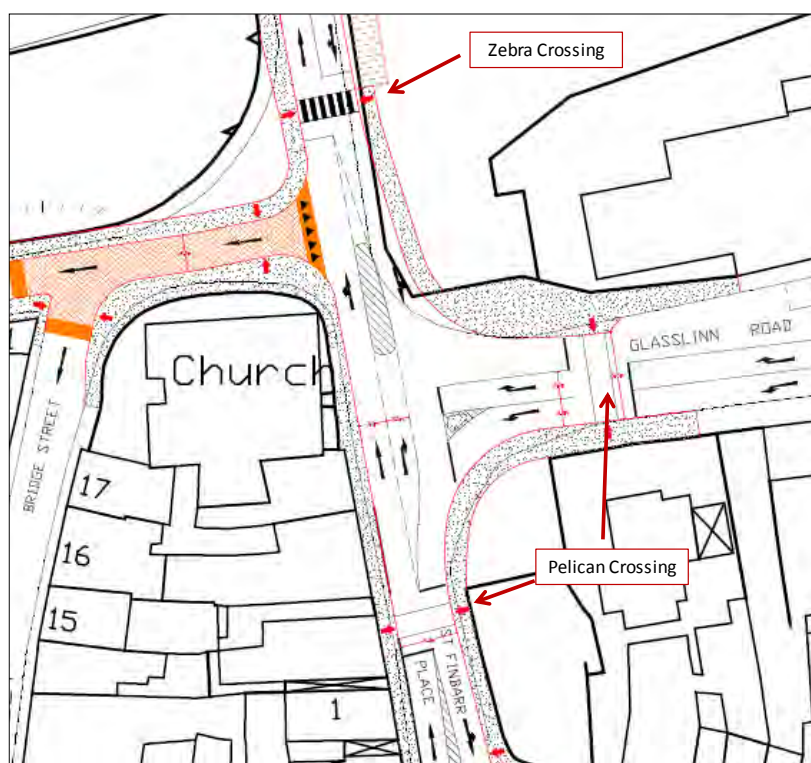
3.3.9 The results of the above analysis indicate that traffic signals would not be an appropriate solution for the Glasslynn Road/St. Finbarr's Place junction due to:

- The close proximity of nearby junctions;
- The lack of available space to construct sufficient stacking lanes for turning vehicles; and
- The level of queuing introduced on South Main Street and Bandon Bridge.

#### **Priority junction with Pelican Crossings**

3.3.10 As the introduction of full traffic signals is not appropriate at the Glasslynn Road/St. Finbarr's Place junction, it was decided that it should remain as a priority junction with pelican crossings provided to facilitate pedestrian safety and accessibility. The proposed updated junction design is illustrated in Figure 3.9 below.





**Figure 3.9 Glasslynn Rd/St. Finbarr's Place Proposed Priority Junction**

3.3.11 The operation of the proposed priority junction option was tested in VISSIM. Similar to the signalised junction testing, queue counters were placed on each of the junction arms to identify the average queuing for the 2020 PM peak hour (17:00 – 18:00). The results of this queue length analysis are outlined in Table 3.6 below.

**Table 3.6 VISSIM Queue Length Analysis – Priority Junction**

Arm Name	2020 – Priority Junction
	Average Q (m)
Glasslynn Road Right Turn	37.5
Glasslynn Road Left Turn	1.7
St. Finbarr's Place Straight Through	7.8
St. Finbarr's Place Right Turn	8.7
Bandon Bridge	2.9

3.3.12 The results of the modelling analysis indicate that the priority junction option performs relatively well in the 2020 PM peak with little or no average queuing on the Bandon Bridge (North) and St. Finbarr's Place (South) arms. There is some queuing experienced for right turning vehicles on Glasslynn Road travelling towards Bandon Bridge (average of 8 vehicles (37.5 metres)), however, this can be accommodated by the stacking lane provided.

## Summary

- 3.3.13 The previous sections of this chapter have provided information on two proposed junction upgrades for the Glasslynn Road/St. Finbarr's Place junction. In summary, the priority junction with pelican crossings is chosen as the preferred option as:

- The availability of pelican crossings facilitates the safe movement of pedestrians through the junction;
- The modelling analysis indicates that the priority junction option experiences acceptable levels of queuing during the busiest peak period; and
- The modelling results indicate that the traffic signal option introduces unacceptable levels of queuing on Bandon Bridge and South Main Street which would block back to nearby junctions causing significant levels of congestion and delay.

## 3.4 Southern Relief Rd / New Rd Junction

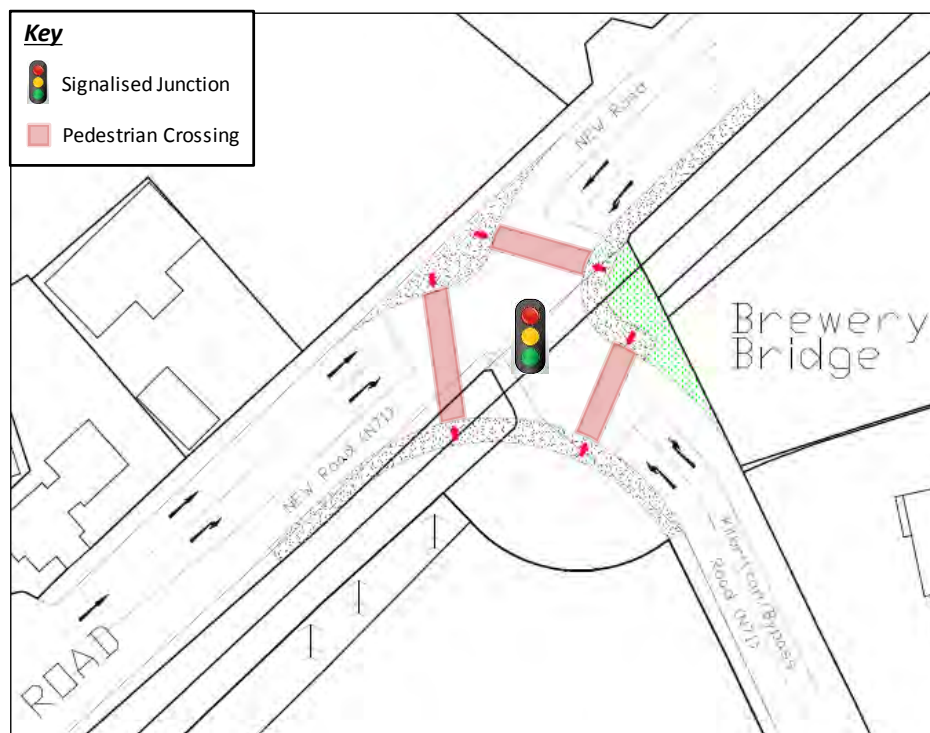
### Introduction

- 3.4.1 A number of issues were noted with the current Southern Relief Road during the first round public consultation including the lack of priority, poor sightlines and poor gradient. One of the key issues noted was with the operation of the Southern Relief Road/New Road Junction. This junction is currently a mini-roundabout, however, due to its alignment and layout, it operates more like a priority junction with priority given to traffic travelling to/from Bandon town centre.
- 3.4.2 One of the key objectives of the Bandon TPREP is to reduce the volumes of through traffic (i.e. with no origin/destination in Bandon), in particular HGVs, travelling via the town centre, thus creating a safer environment for pedestrian and cyclist activity. Therefore, upgrades have been identified to promote the use of the route via the Southern Relief Road for through traffic bypassing the town centre.

### Proposed Upgrade

- 3.4.3 The proposed junction upgrade for the Southern Relief Road/New Road junction is illustrated in Figure 3.10, overleaf. The key aspects of the preferred design choice are:
- **Junction realignment:** The junction arms will be realigned to ensure that the route via the Southern Relief Road is considered to be the dominant movement, rather than the route through the town centre.
  - **Introduction of Traffic Signals:** Traffic signals provide two key functions at this location, namely:
    - Facilitate the safe movement of pedestrian and cyclists; and
    - Facilitate the control of traffic movements through the junction providing priority for movements along the Southern Relief Road
  - **Pedestrian Crossings:** Provide safe areas for pedestrians to cross on all junction arms. The provision of a safe environment for pedestrians and cyclists is particularly important at this location due to its close proximity to the local GAA club and Gaelscoil Dhroichead ná Banndan.





**Figure 3.10 Southern Relief Rd/New Rd Proposed Signalised Junction**

3.4.4 In order to assess the potential upgrades planned for the Southern Relief Road/New Road junction, including the introduction of traffic signals, an operational assessment was carried out in LINSIG<sup>6</sup> for the forecast year 2020. The results of this LINSIG analysis are presented in Table 3.7 below.

**Table 3.7 Southern Relief Rd/New Rd LINSIG Analysis**

Arm	RFC	Queue (veh)	Delay (min/veh)
N71 (west)	0.55	3	0.3
New Road	0.73	6	0.4
N71 (Relief Road)	0.57	5	0.36

3.4.5 The modelling analysis indicates that the proposed junction operates well, with the ratio of flow to capacity (RFC) within acceptable thresholds for all junction arms. This implies that the signalised junction will have sufficient capacity to facilitate forecast flows at this location without causing excessive congestion or delay.

3.4.6 Therefore, the signalised junction option, illustrated in Figure 3.10 above, is chosen as the preferred upgrade for the Southern Relief Road/New Road Junction because:

- It operates effectively in the busiest peak period in the forecast year 2020;
- it facilitates the control of traffic movements through the junction promoting the use of the Southern Relief Road; and

<sup>6</sup> LINSIG is a software package used for the assessment and design of traffic signal junctions

### 3.5 Kilbrogan Hill / The Shambles Junction

#### Introduction

- 3.5.1 It was noted through public consultation that Kilbrogan Hill is used as an unofficial set-down area for school buses, and that significant volumes of students walk via this route to access schools in the area.
- 3.5.2 The baseline review of current conditions within the town (outlined in the *Bandon TPREP Interim Report*) highlighted the gradient on Kilbrogan Hill noting that it was in the order of 6%, with a wide carriageway which is conducive to high speeds. These high vehicular speeds create an unsafe environment for pedestrian and cyclist movements.
- 3.5.3 The Bandon TPREP proposes the realignment of the Dunmanway Road, and re-allocation of Emmet Row as a shared surface environment with access for local traffic only (See Chapter 5 and 6 of the Final Report for further information). As such, some additional volumes of traffic will use the Kilbrogan Hill/The Shambles junction due to the closure of Emmet Row.
- 3.5.4 Therefore, junction improvements are required to ensure that:
- It can safely facilitate the movement of pedestrians and cyclist in the area, particular vulnerable road users such as school children; and
  - It can facilitate the additional traffic demand caused by the closure of Emmet Row.
- 3.5.5 In order to address these issues, two design options were chosen for testing, namely:
- Priority junction option with pelican crossings; and
  - Signalised Junction option.
- 3.5.6 The following section provides an overview of these two junction improvement options including a review of modelling analysis carried out on each.

#### Priority junction option with pelican crossings

- 3.5.7 The proposed layout for the priority junction is similar to the current arrangement with Kilbrogan Hill north/south given priority, and the Dunmanway Road acting as the minor arm. In order to facilitate safe pedestrian movements, pelican crossings will be introduced on the Dunmanway Road and Kilbrogan Hill (north) junction arms.
- 3.5.8 To assess the priority junction option, microsimulation modelling analysis was carried out in VISSIM for the forecast year 2020. It should be noted that, through a review of forecast traffic flows, the AM peak (08:00-09:00) was identified as the busiest period and, as such, only the results for this period are presented in following sections.
- 3.5.9 Queue counters were placed on each of the junction arms to identify the average queuing for the 2020 AM peak hour for the priority junction scenario. The results of this queue length analysis are outlined in Table 3.8 below.

**Table 3.8 VISSIM Queue Length Analysis – Priority Junction**

Arm Name	2020 – Priority Junction
	Average Q (m)
North Main Street Straight	0.0
North Main Street Left	0.1
Dunmanway Road Left	73.5
Dunmanway Road Right	163.2
Kilbrogan Hill Straight	0.0
Kilbrogan Hill Right	0.9

3.5.10 The results of the modelling analysis indicate that the priority junction layout causes significant queuing on the Dunmanway Road with an average queue length of approximately 163 metres (reaching a maximum of approx. 400 metres during the busiest period in the peak hour). This is due to the large volumes of traffic wishing to turn out from the Dunmanway Road, and the presence of heavy opposing flows on Kilbrogan Hill.

3.5.11 Figure 3.8, below, displays a screenshot taken from the 2020 VISSIM model illustrating the queuing experienced under the priority junction layout.



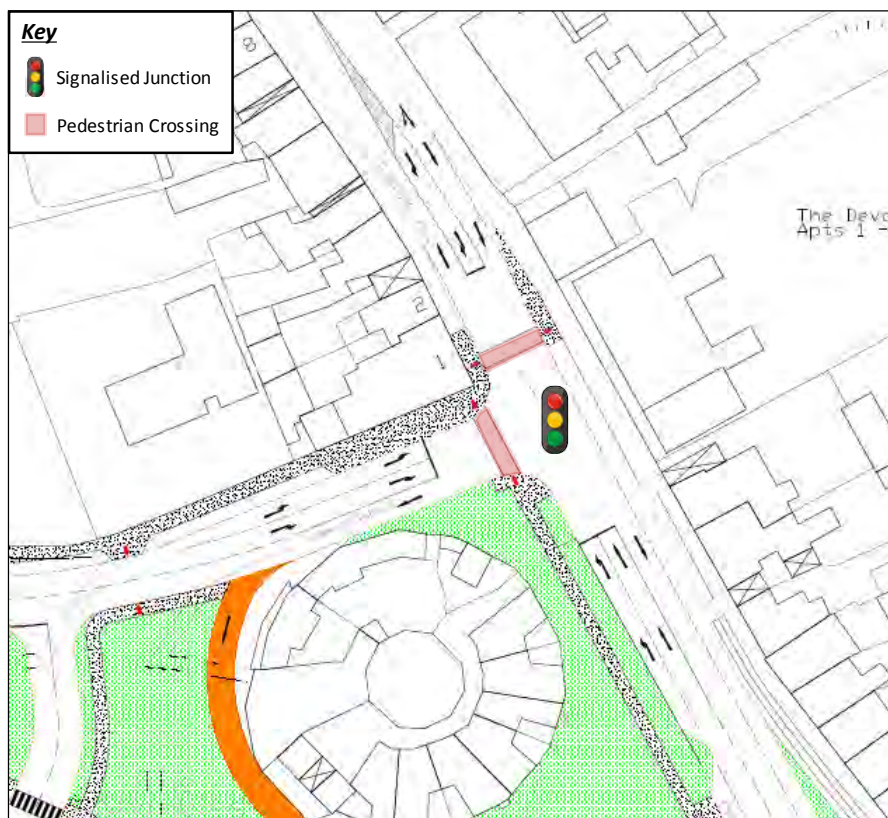
**Figure 3.11 Kilbrogan Hill/Dunmanway Rd Priority Junction VISSIM Analysis**

### Signalised Junction Option

3.5.12 The above modelling analysis of the priority junction option indicates that the proposed junction layout has issues facilitating the additional demand experienced on the Dunmanway Road, with significant queuing experienced in the AM peak.

- 3.5.13 The introduction of traffic signals at this location has three main benefits, namely:
- Enables the control of traffic movements, thus ensuring that vehicles from the minor arm can get through the junction without excessive delays;
  - Slows traffic on Kilbrogan Hill creating a safer environment for pedestrian and cyclists; and
  - Facilitate pedestrian movements safely by providing dedicated crossing facilities which are unopposed by vehicular traffic

3.5.14 The proposed upgrade for the Kilbrogan Hill/The Shambles junction is illustrated in Figure 3.12 below.



**Figure 3.12 Kilbrogan Hill/The Shambles Signalised Junction**

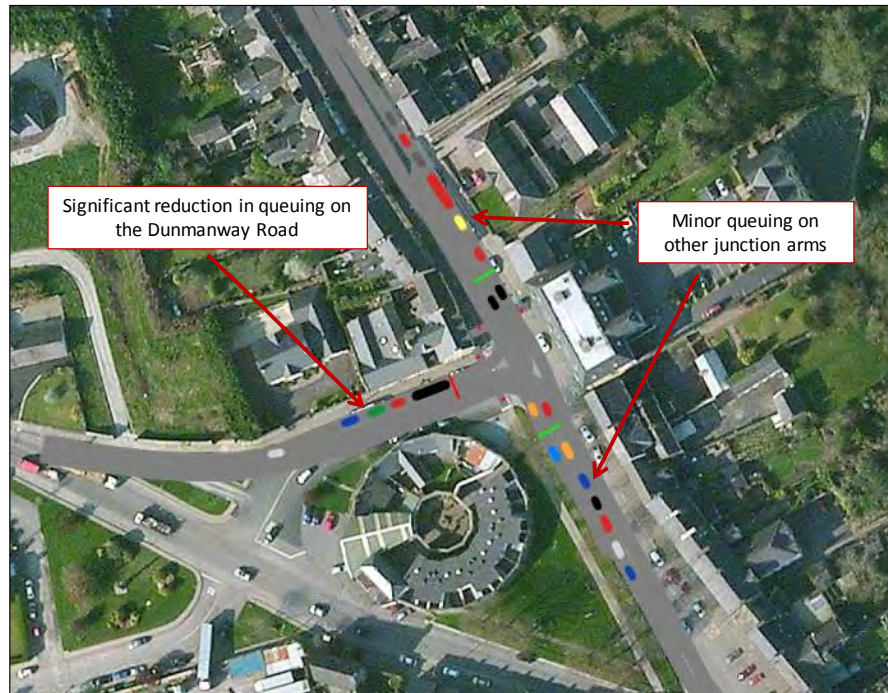
3.5.15 In order to assess the potential planned upgrades, including the introduction of traffic signals, an operational assessment was carried out in VISSIM for the forecast year 2020. Similar to the priority junction option, queue length counters were set up on each of the junction arms and the results are illustrated in Table 3.9 below.

**Table 3.9 VISSIM Queue Length Analysis – Signalised Junction**

Arm Name	2020 – Signalised Junction
	Average Q (m)
North Main Street Straight	9.9
North Main Street Left	1.0
Dunmanway Road Left	9.4
Dunmanway Road Right	10.9

Kilbrogan Hill Straight	23.9
Kilbrogan Hill Right	28.2

3.5.16 The modelling results indicate that the introduction of traffic signals at this location causes minor levels of queuing on all junction arms. However, it should be noted that the analysis also indicates that queued traffic can get through the junction during a single green phase. The results suggest that the traffic signal option operates better than the priority junction in terms of facilitating flows from all arms through the junction. This is reflected in the significant reduction in queuing (85% reduction in average queue) on the Dunmanway Road outlined in Table 3.9 above, and illustrated in Figure 3.13.



**Figure 3.13 Kilbrogan Hill/Dunmanway Rd Signalised Junction VISSIM Analysis**

## Summary & Conclusion

3.5.17 The previous sections have outlined the modelling analysis carried out on two proposed upgrade options for the Kilbrogan Hill/The Shambles junction. In the summary, the signalised junction option was chosen as:

- It facilitates the control of movement through the junction for all arms, thus allowing traffic from the minor arm to exit without significant delay;
- It facilitates the reduction of speed for all traffic on Kilbrogan Hill; and
- It facilitates the safe movement of pedestrians and cyclists.



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## 4. STEP 2: 2020 PREFERRED STRATEGY EVALUATION

### 4.1 Introduction

4.1.1 Chapter 4 of the Final Report provides a detailed description of the evaluation framework developed to assess the various Bandon TPREP strategies including information on the defined objectives and key performance indicators (KPIs).

4.1.2 In order to test the performance of the preferred TPREP strategy, it is measured against a 2020 'Do Nothing' scenario which essentially represents baseline conditions i.e. growth in traffic in line with Cork Co. Co. projections, however, no alterations to current road infrastructure.

4.1.3 At this stage, the various short/medium term strategies which are common to all forecast scenarios have been included for assessment, namely:

- Specific junction improvements (Section 5.4 Final Report);
- Pedestrian & Cyclist facilities (Section 5.5 Final Report);
- Public Transport initiatives (Section 5.6 Final Report);
- Short term HGV Strategy (Section 5.7 Final Report);
- School travel plans (Section 5.9 Final Report); and
- Parking strategies (Section 5.8 Final Report).

#### **Bandon TPREP 2020 Evaluation**

4.1.4 Table 3.1 – 3.4 below illustrate the performance of the Bandon TPREP Strategy versus a 2020 'Do Nothing'.

4.1.5 As mentioned previously in the Final Report, the KPI measurements in the evaluation framework are both qualitative and quantitative. Qualitative measures include:

- Outputs from the BTM and individual junction assessments;
- Physical measurement e.g. length of improved cycle network etc.

4.1.6 The qualitative KPI's for each option are given a ranking or score relative to the Base Case Scenario in the following manner:

- ✓ - represents a negative change over the base case scenario;
- ✓✓ - represents no change over the base case scenario;
- ✓✓✓ - represents a positive change over the base case scenario; and
- ✓✓✓✓ - represents a very positive change over the base case scenario.



Table 4.1 Economic Evaluation Framework (2020)

Economic Evaluation Framework (2020)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2020	
				Do Nothing	TPREP
1	Support improved economic competitiveness of Bandon Town	Area of enhanced Public Realm	m <sup>2</sup>	0 m <sup>2</sup>	4,800 m <sup>2</sup>
		Reduced queuing at key town centre junctions <sup>7</sup>	% Change	-	-36%
		Flows on Bandon Bridge <sup>8</sup>	% Change	1,824 (pcus <sup>9</sup> /0.5hr)	-9% (1,652 (pcus/0.5 hr))
2	Regenerate Bandon Town centre to increase footfall	Creation of market /event spaces	Rating Scale	✓✓	✓✓✓✓
		Quality of pedestrian/cyclist linkages to town centre		✓✓	✓✓✓✓
3	Improve the attractiveness of the town centre	HGV flows on key routes (e.g. South Main Street) <sup>10</sup>	% Change	-	-23%
		Increased HGV flows on external strategic routes <sup>11</sup>		-	+22%

<sup>7</sup> Key Junctions selected include Glasslynn Rd/St. Finbarr's Place and North Main St/Watergate Street – these junctions were selected as they were identified during public consultation as areas which experience the highest levels of congestion in the town centre during peak periods

<sup>8</sup> Represents the total two directional flow across Bandon Bridge in the AM and PM peak half hours

<sup>9</sup> A Passenger Car Unit (PCU) is a method used in Transport Modelling to allow for the different vehicle types within a traffic flow group to be assessed in a consistent manner. Typically a car is classed as 1 pcu while a large goods vehicle could have a pcu value of 2.5/3

<sup>10</sup> Key Routes Chosen = South Main Street & Bandon Bridge

<sup>11</sup> External Strategic Routes = Southern Relief Rd & Crossbarry Route



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Table 4.2 Health & Safety Evaluation Framework (2020)

Health & Safety Evaluation Framework (2020)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2020	
				Do Nothing	TPREP
1	Facilitate a healthy lifestyle for all people living and working in the Bandon Area	Length of improved walking routes	KMs	0 km	5.4 km
		Length of Cycle Network	KMs	0 km	3.8 km
2	Provide a safer environment for vulnerable road users	Reduced network speeds across town centre cordon <sup>12</sup>	% Change	27 kph	22 kph (-18%)
		Number and quality of pedestrian crossings	Rating	✓✓	✓✓✓✓
		Reduced HGV flows in sensitive areas <sup>13</sup>	% Change	-	-23%
3	Creation of a cleaner environment	Change in vehicle emissions particularly those that cause higher health risks <sup>14</sup>	% Change	-	-3%

<sup>12</sup> Network Speed taken from average AM and PM speeds on North Main Street, MacSwiney Quay, South Main Street & St. Patrick's Quay

<sup>13</sup> Sensitive Areas = South Main Street & Bandon Bridge

<sup>14</sup> Measured within Bandon Town Centre



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Table 4.3 Integration, Accessibility & Social Inclusion Objectives Evaluation Framework (2020)

Integration, Accessibility & Social Inclusion Objectives Evaluation Framework (2020)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2020	
				Do Nothing	TPREP
1	Improve accessibility for all	Walking - Length of improved walking routes	KMs	0 km	5.4 km
		Cycling - Length of cycle routes	KMs	0 km	3.8 km
		Bus - Quality of walk facilities to/from PT stops	Rating	✓✓	✓✓✓✓
		Private car – Reduced queuing at key town centre junctions <sup>15</sup>	% Change	-	-36%
2	Facilitate high levels of sustainable travel to school	Quality of walking/cycling/ traffic management infrastructure in vicinity of schools	Rating	✓✓	✓✓✓✓
3	Integration of new development areas with the existing town to encourage sustainable travel	Quality of pedestrian/cyclist linkages to Town Centre	Rating	✓✓	✓✓✓✓

<sup>15</sup> Key Junctions selected include Glasslynn Rd/St. Finbarr's Place and North Main St/Watergate Street



Table 4.4 Environmental Evaluation Framework (2020)

Environmental Evaluation Framework (2020)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2020	
				Do Nothing	TPREP
1	Promote the natural and built heritage of Bandon Town	Reduced HGV volumes in sensitive areas <sup>16</sup>	% Change	-	-23%
		Enhancement of heritage sites	Rating	✓✓	✓✓✓
2	Reduce the adverse impact of noise, vibration and emissions generated by traffic movements	Reduced traffic volumes on sensitive routes <sup>17</sup>	% Change	-	-19%
		Greenhouse vehicle emissions	CO <sub>2</sub> (Kg's)	213.62	203.91
3	Provide an environment which supports sustainable travel	Length of improved walking routes	KMs	0 km	5.4 km
		Walking & Cycling and Public Transport Mode Share	Rating	✓✓	✓✓✓

<sup>16</sup> Sensitive Areas = South Main Street & Bandon Bridge

<sup>17</sup> Total reduction in traffic volumes on Bandon Bridge, St. Patrick's Quay, South Main Street, MacSwiney Quay and North Main Street



## 4.2 Summary & Conclusions

4.2.1 The main conclusions from this evaluation are as follows:

- Under the **Economic** Evaluation Framework 2020:
  - Bandon TPREP has a beneficial impact on traffic congestion with decreased queuing and congestions levels experienced at key junctions within the town centre;
  - The proposed public realm enhancements, including creation of public event spaces, will improve the ambience within the town centre, encouraging increased levels pedestrian footfall and will also lead to improved inward investment when compared to the Do-Nothing situation.
- Under the **Health and Safety** Evaluation Framework 2020, the Bandon TPREP again performs significantly better than the Do-Nothing option as it will:
  - Create additional cycle lanes and walkways to encourage a healthier lifestyle;
  - Improve the quality and provision of pedestrian crossing points;
  - Lead to reduced vehicle emissions;
  - Lead to reduced traffic speeds in sensitive areas; and
  - Reduced HGV flows in sensitive areas
- Similarly, under the **Environmental** Evaluation Framework 2020, the Bandon TPREP outperforms Do-Nothing as it will:
  - Reduce greenhouse emissions;
  - Reduce traffic flow in sensitive areas;
  - Provide improved walking and cycling facilities; and
  - Promote the natural and built heritage of Bandon Town.
- Under the **Integration, accessibility and Social Inclusion** Evaluation Framework 2020, the Bandon TPREP performs significantly better than Do-Nothing as it will:
  - Provide improved accessibility for all transport modes;
  - Facilitate the integration of proposed development areas to the town centre to encourage sustainable travel; and
  - Facilitate higher levels of sustainable travel to schools within Bandon.

The Bandon TPREP 2020 provides the following benefits:

- includes a number of initiatives to help encourage sustainable travel;
- leads to improved integration and accessibility;
- leads to increased protection for vulnerable road users leading to significant increases in walking, cycling and public transport use;
- leads to significant improvements in overall traffic conditions (reduced congestion levels & journey times) when compared to the Do-Nothing Scenario; and
- will encourage greater levels of footfall within the town centre.



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## Appendix C: Strategy Testing – Long Term

### 5. INTRODUCTION

5.1.1 The following sections of this Appendix outline the results of strategy testing undertaken for the forecast year 2030, and comprises of the following sections:

- **Major Infrastructure Results:** Outlining the results of analysis carried out on the introduction of the proposed Northern Ring Road and the continuation of the Southern Bypass using the 2030 Bandon Traffic Model (BTM); and
- **2030 Preferred Strategy Evaluation:** Detailing the results of analysis carried out on the preferred Bandon TPREP strategies using the developed evaluation framework (described in Chapter 4 of the Final Report).

### 6. MAJOR INFRASTRUCTURE RESULTS

#### 6.1 Introduction

6.1.1 As discussed in Section 5.2 of the Final Report, the medium to long term road and street hierarchy for Bandon sets out the provision of two major road infrastructure measures to assist in reducing traffic congestion in the town and facilitate the removal a significant proportion of through traffic, namely:

- **Northern Relief Road:** creation of a second bridge crossing linking the N71 to the R589 Macroom Road; and
- **Southern Bypass:** Continuation of the existing Southern Relief Road onto the Clonakilty Road.

6.1.2 These two measures, illustrated in Figure 6.1 overleaf, are described in detail in Section 5.2 of the Final Report. The following sections of this Appendix provide an overview of the results of analysis carried out using the BTM to identify the key benefits of the infrastructure measures outlined above.



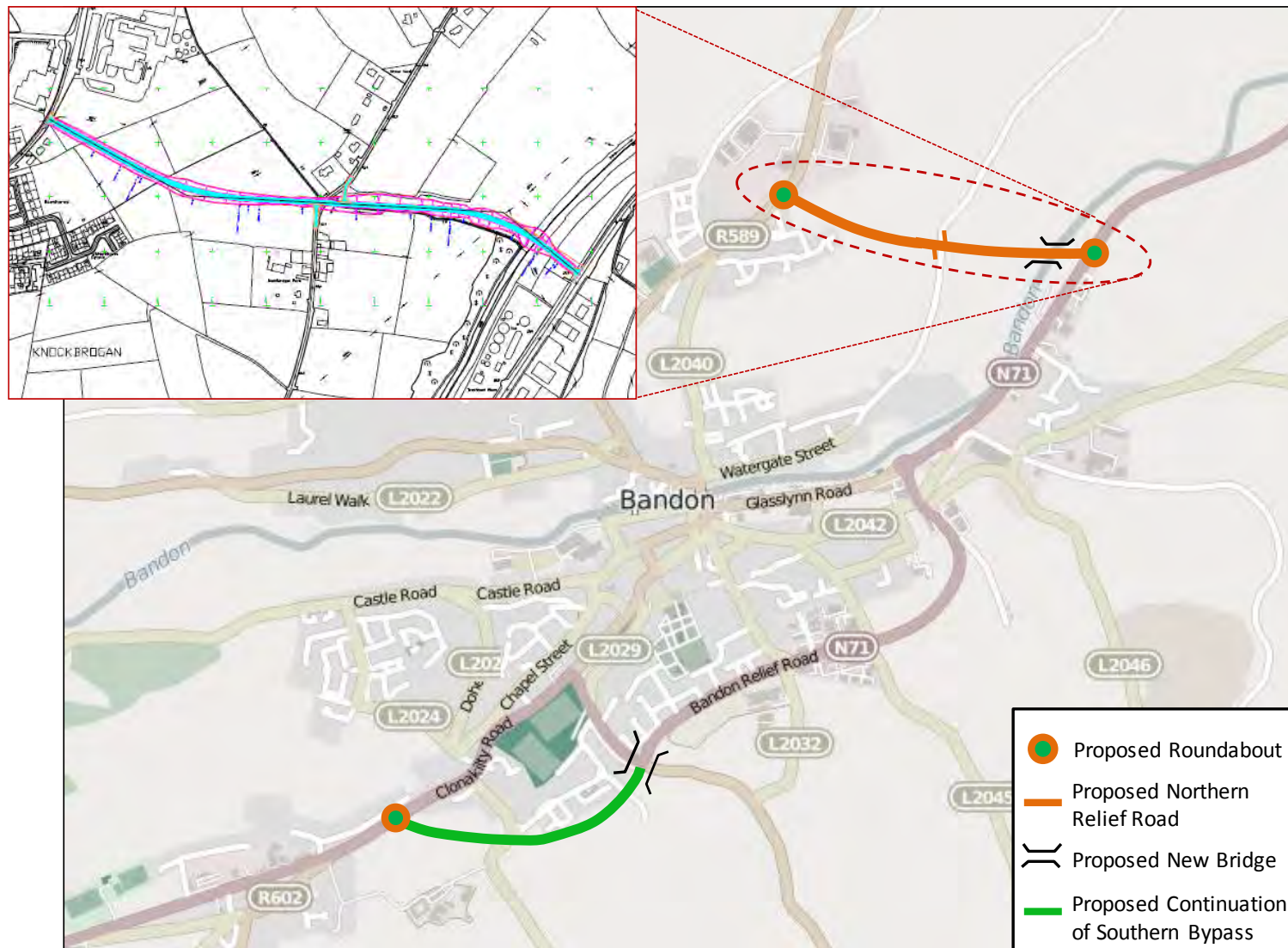


Figure 6.1 Bandon TPREP Major Infrastructure Measures



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SYSTRA

## 6.2 Northern Relief Road

### Introduction

- 6.2.1 As noted during the baseline review of current traffic conditions in Bandon, the presence of a single river crossing within the town causes significant traffic issues (see the Bandon TPREP Interim Report for further information). Traffic travelling from the N71 wishing to access the R586 (Dunmanway Rd) and R589 (Macroom Rd), or vice versa, must enter the town centre and cross the river via Bandon Bridge. Traffic count data indicates that approximately 1,200 vehicles traverse the bridge during the AM and PM peak hours, a significant proportion of which represent through traffic i.e. they do not have an origin/destination in Bandon Town.
- 6.2.2 The high volumes of traffic on Bandon Bridge leads to traffic congestion in peak times due to the narrow carriageway widths and junction layouts, particularly at its northern end at the junction with North Main Street and Watergate Street.
- 6.2.3 It is proposed that the introduction of the Northern Relief Road, and the second river crossing, would reduce traffic volumes on Bandon Bridge and, therefore, reduce congestion and delay in this area. The Northern Relief Road will also provide an alternative access to existing residential areas located to the north of Bandon Town, as well as future zoned lands as contained in the Bandon Local Area Plan.
- 6.2.4 The introduction of the proposed Northern Relief Road was tested using the 2030 forecast year BTM, and the results were analysed under the following headings:
- **Demand Flow:** Investigating the potential vehicular traffic flows expected on the new Northern Relief Road in the AM and PM peaks;
  - **Flows on Bandon Bridge:** Identifying the impact that the introduction of the Northern Relief Road will have on traffic volumes on Bandon Bridge; and
  - **Journey Times and Route Choice:** Investigating journey times for movements through Bandon via the new Northern Relief Road versus the route over Bandon Bridge.

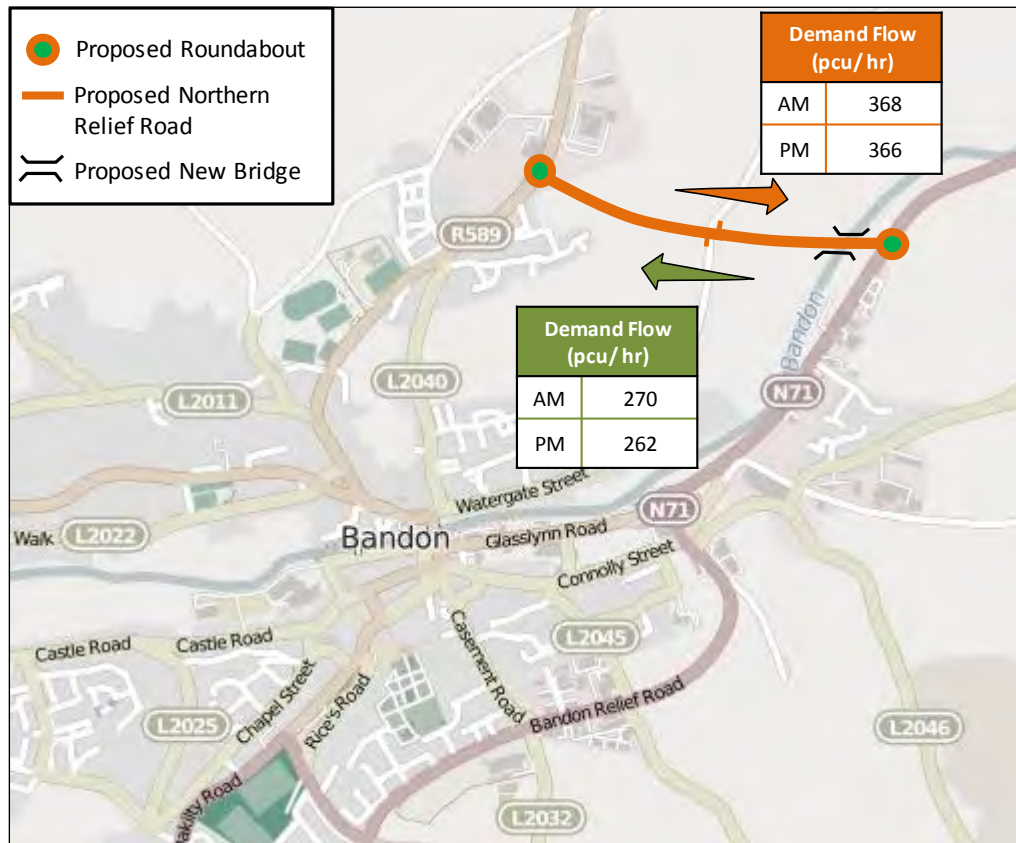
### Demand Flow

- 6.2.5 Figure 6.2 below illustrates the vehicular demand flow in passenger car units (pcus)<sup>18</sup> per hour utilising the proposed Northern Relief Road in the forecast year 2030.
- 6.2.6 The modelling results indicate that the proposed Northern Ring Road is well used with a two-directional flow of approximately 630 pcus in the AM (08:00-09:00) and PM (17:00-18:00) peak hours.

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<sup>18</sup> A Passenger Car Unit (PCU) is a method used in Transport Modelling to allow for the different vehicle types within a traffic flow group to be assessed in a consistent manner. Typically a car is classed as 1 pcu while a large goods vehicle could have a pcu value of 2.5/3.





**Figure 6.2 Northern Relief Road Demand Flow**

### Flows on Bandon Bridge

- 6.2.7 The vehicular flows on Bandon Bridge were tested against a 2030 'Do Nothing' Scenario to evaluate the impact of introducing the Northern Relief Road. As noted in Section 5.7 of the Bandon TPREP Final Report, it is a recommendation of the plan to restrict the movement of HGV's on Bandon Bridge following construction of the Northern Ring Road in order to create a safer and more attractive environment for visitors to the town centre. Therefore, the impact on traffic flows on Bandon Bridge with this restriction in place has also been tested. The results for the AM and PM peaks are illustrated in Figures 6.3 and 6.4 below.

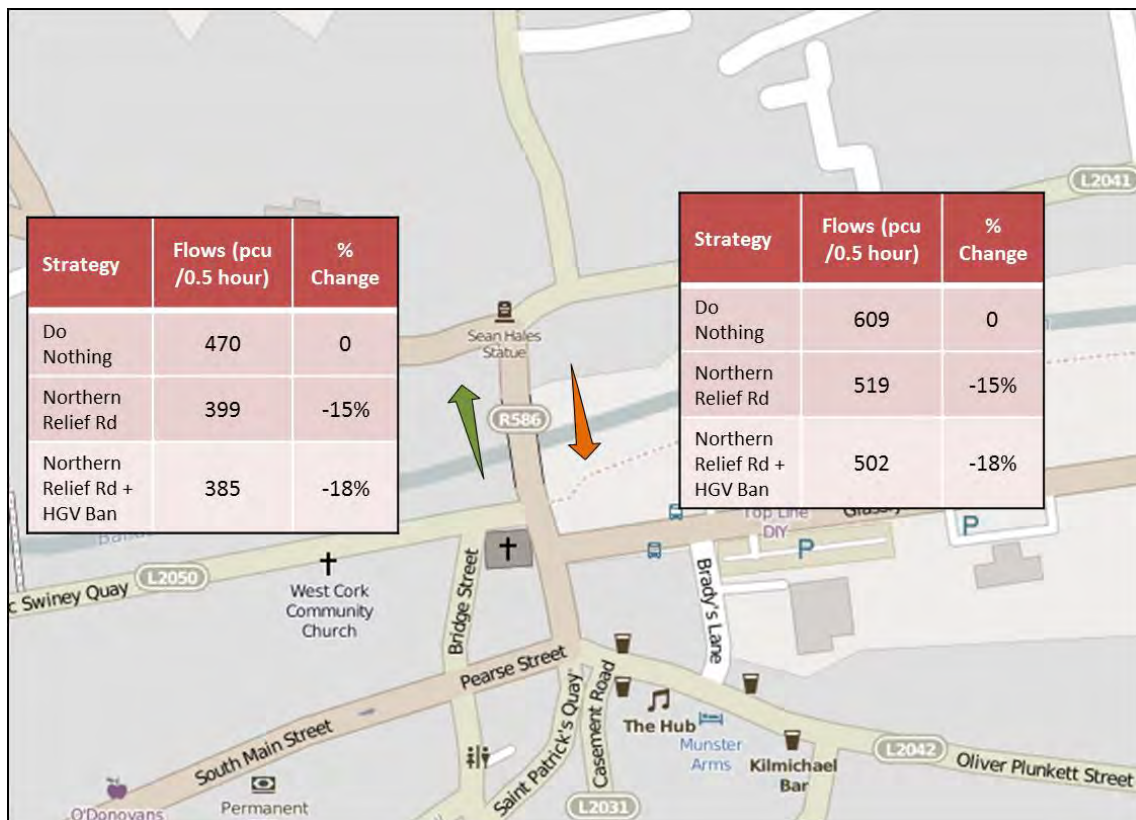


Figure 6.3 Traffic Flow on Bandon Bridge (AM peak)

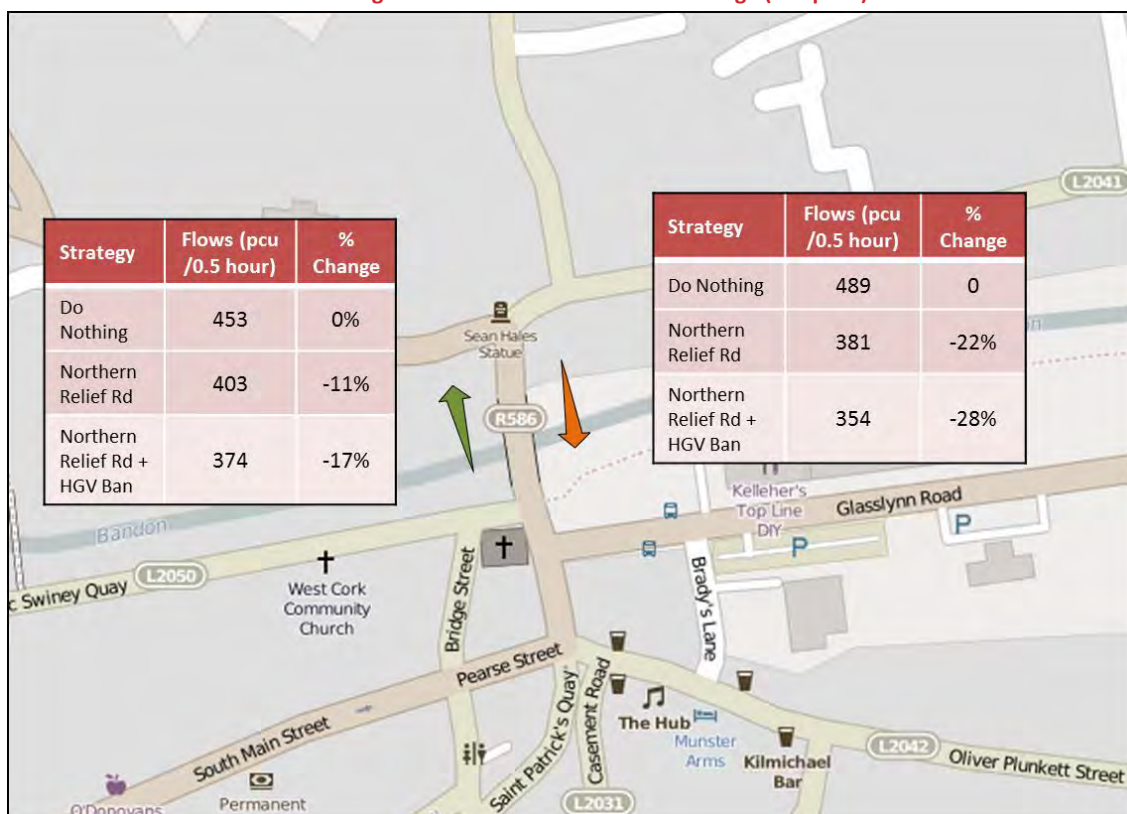


Figure 6.4 Traffic Flow on Bandon Bridge (PM Peak)

- 6.2.8 The results of the modelling analysis indicate that the introduction of the Northern Relief Road significantly reduces the volume of vehicular traffic on Bandon Bridge with an average of 15% reduction in the AM Peak, and 17% in the PM Peak.
- 6.2.9 This reduction in traffic volumes leads to a decrease in congestion and delay on Bandon Bridge. Journey time analysis undertaken for vehicles traversing the bridge indicated an

average 16% reduction in travel time for northbound traffic, and a 34% reduction for southbound traffic, over the AM and PM peak half hour periods.

- 6.2.10 In the scenario where the HGV restriction is implemented in the town centre, a further reduction in traffic is experienced on the bridge with an average of 18% reduction in the AM Peak, and 23% in the PM Peak.

### Journey Times and Route Choice

- 6.2.11 One of the key benefits associated with the construction of the Northern Relief Road is that it facilitates the removal of a significant proportion of through traffic from Bandon town centre, in particular Bandon Bridge and North Main Street.

- 6.2.12 As noted previously, traffic travelling from Cork City wishing to access the Dunmanway Road (R586) (or vice-versa) must currently utilise Bandon Bridge. However, the introduction of the Northern Relief Road provides an attractive alternative route. To highlight the benefits associated with the Northern Relief Road, journey time analysis was carried out for traffic travelling through Bandon town. The results of this analysis are illustrated in Figure 6.5 below, and highlight the advantage of the Northern Relief Road for through traffic with journey time savings of up to 17% over the 'Do Nothing' Scenario (i.e. the route via Bandon Bridge).

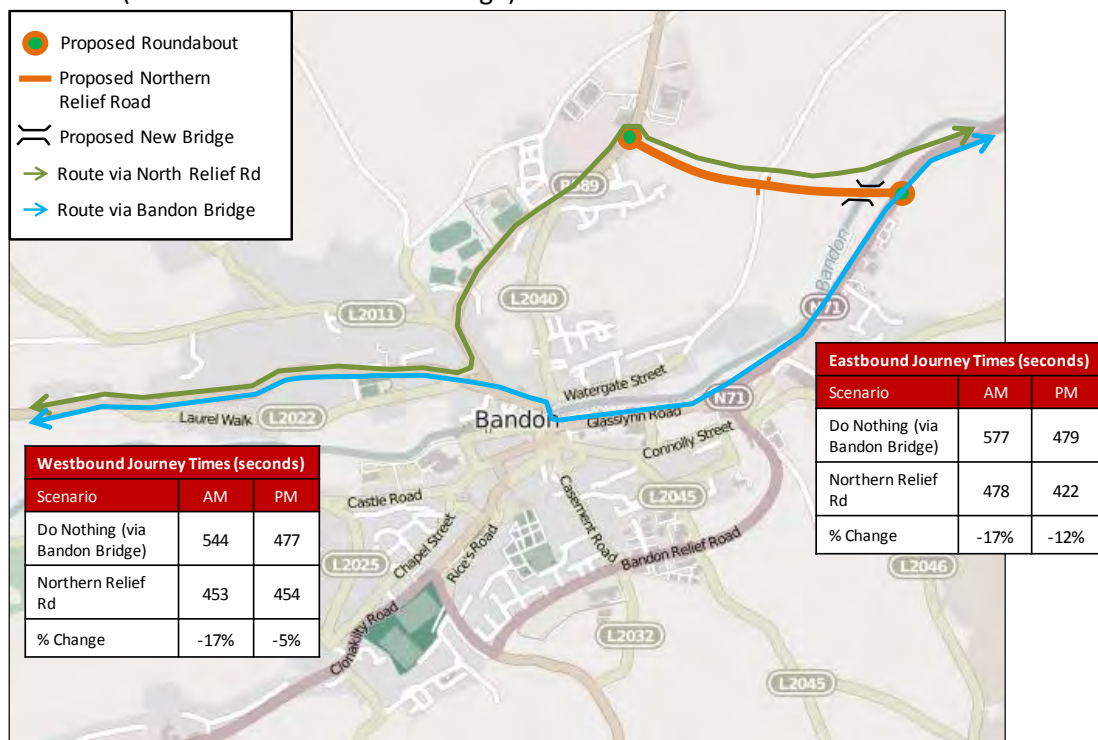


Figure 6.5 Journey Time Analysis Bandon Bridge Vs Northern Relief Road

- 6.2.13 Select link analysis<sup>19</sup> was carried out on the Dunmanway Road, and the N71 east of Bandon, to identify the proportion of through traffic choosing to utilise the Northern Relief Road in the forecast year. The results of this select link analysis are illustrated in Figure 6.6 and 6.7 below.

<sup>19</sup> Select link analysis is a function in SATURN which identifies the various routes used by traffic on the network which pass through a specified link.

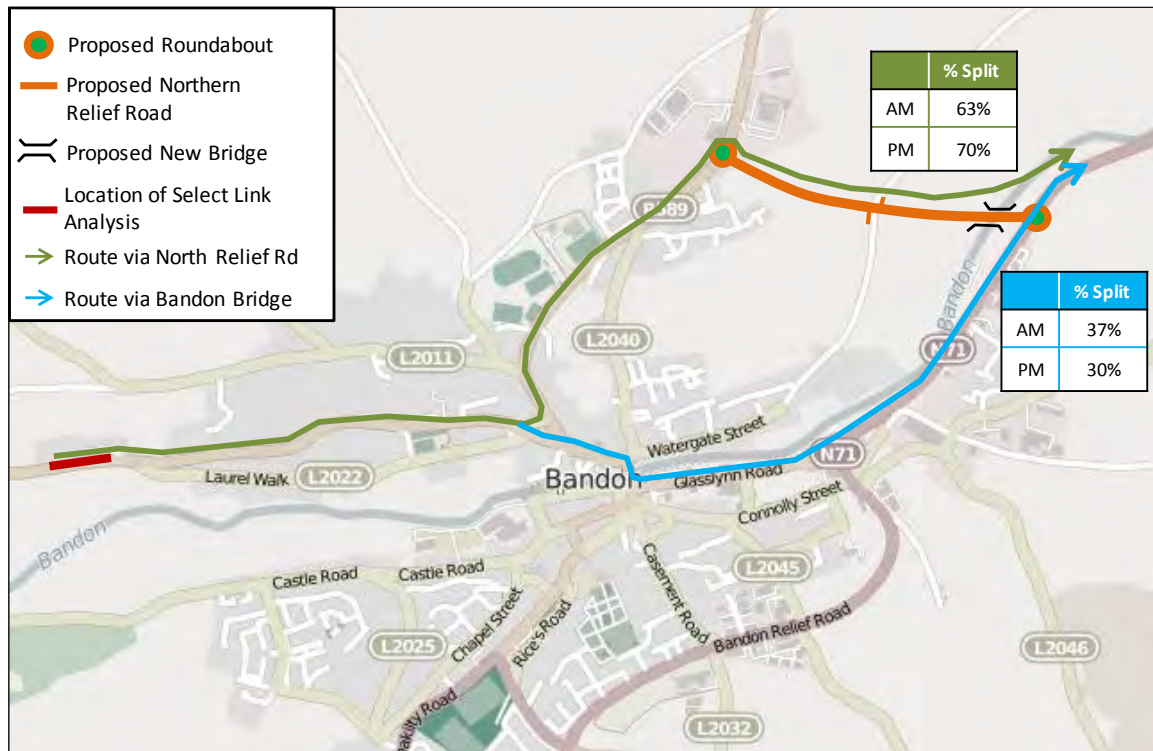


Figure 6.6 Select Link Analysis - Dunmanway Rd

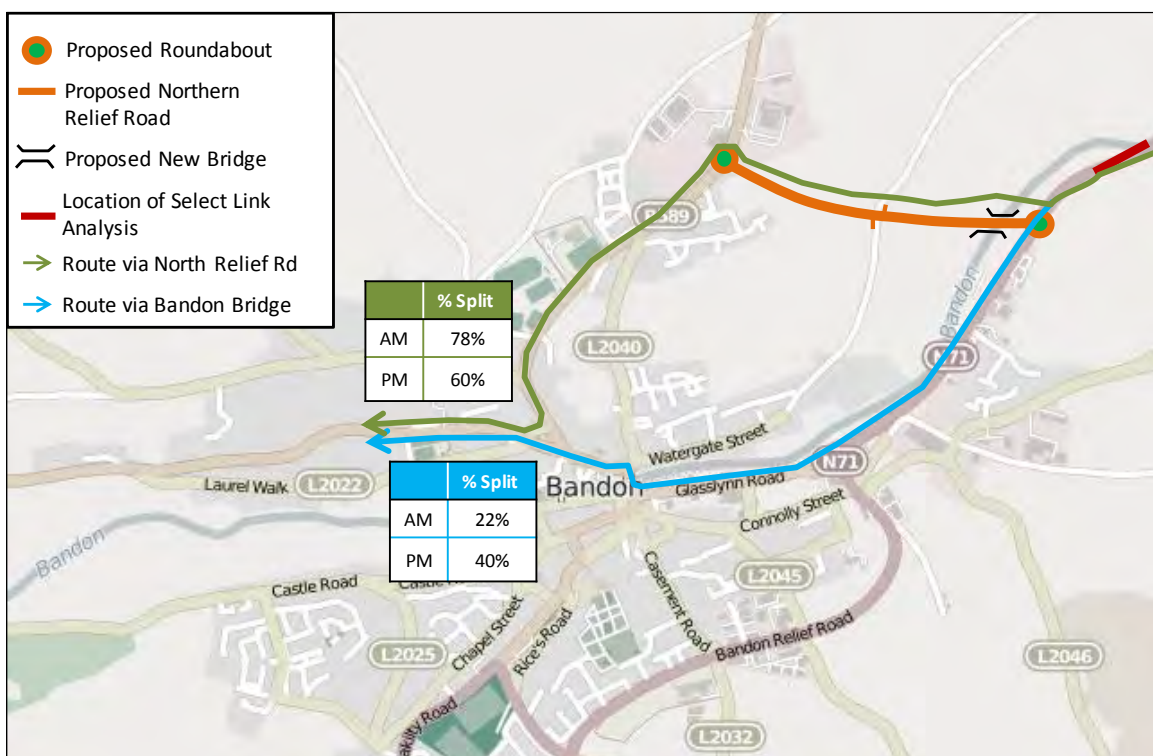


Figure 6.7 Select Link Analysis – N71

6.2.14 The results in Figure 6.6 and 6.7 above indicate that a significant proportion of through traffic (approx. 60%-80%) choose to utilise the Northern Relief Road rather than the route via Bandon Bridge as it offers a less congested, quicker route option. This illustrates the fact that the Northern Relief Road provides an attractive alternative route for traffic travelling through Bandon, and therefore, facilitates in the removal of a significant proportion of vehicles from Bandon Bridge (as noted previously in this section).

## Summary and Conclusions

- 6.2.15 The previous sections of this chapter outline the results of modelling analysis carried out on the Northern Relief Road proposed for Bandon.
- 6.2.16 In Summary:

The Northern Relief Road is well used with a two-directional flow of approximately 630 pcus in the AM (08:00-09:00) and PM (17:00-18:00) peak hours;

The introduction of the Northern Relief Road significantly reduces the volume of vehicular traffic on Bandon Bridge with an average of 15% reduction in the AM Peak, and 17% in the PM Peak;

In the event that the HGV restriction is implemented in the town centre, a further reduction in traffic is experienced on the bridge with an average of 18% reduction in the AM Peak, and 23% in the PM Peak.

The Northern Relief Road provides significant journey time savings (up to 17%) for traffic travelling through Bandon, over the route via Bandon Bridge; and

Route choice analysis indicates that a significant proportion of through traffic (60%-80%) utilise the Northern Relief Road rather than the route via Bandon Bridge in the AM and PM peak periods.



## 6.3 Southern Bypass

### Introduction

6.3.1 The current Bandon Southern Relief road forms a partial bypass of Bandon town centre, however, a number of issues have been noted with this route through public consultation, such as:

- unsafe road gradient on approach to the R603 (Kilbrittain Rd) junction;
- inappropriate junction priority at western end of the relief road;
- poor sightlines; and
- poor junction design

6.3.2 Therefore, due to the issues outlined above, a significant proportion of through traffic on the N71 (in particular HGVs) avoid the relief road and continue to use the route via Bandon town centre which leads to congestion on the local network.

6.3.3 The continuation of the Southern Relief Road to form a full bypass of the town is recommended in the Bandon LAP, and it is envisaged that it will remove a large proportion of through traffic from Bandon town centre.

6.3.4 The proposed continuation of the Southern Relief Road was tested using the 2030 forecast year BTM, and the results were analysed under the following headings:

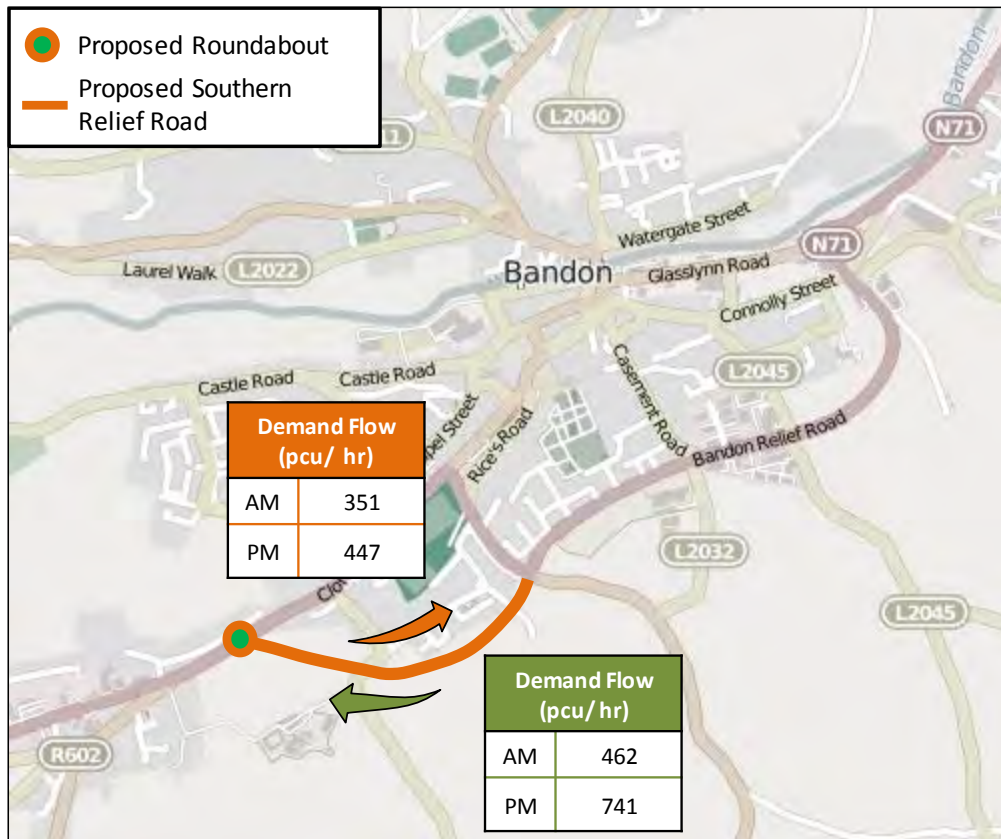
- **Demand Flow:** Investigating the potential vehicular traffic flows expected on the new Southern Bypass Road in the AM and PM peaks; and
- **Journey Times and Route Choice:** Investigating journey times for east-west (and vice-versa) movements via the new Southern Bypass versus the route through the town centre.

### Demand Flow

6.3.5 Figure 6.8 below illustrates the vehicular demand flow in passenger car units (pcus) per hour utilising the proposed new Southern Bypass in the forecast year 2030.

6.3.6 The modelling results indicate that the proposed Southern Bypass is well used with a two-way directional flow of approximately 820 pcus in the AM (08:00-09:00), and 1188 pcus in the PM (17:00-18:00) peak hours.





**Figure 6.8 Southern Bypass Demand Flow**

### Journey Times and Route Choice

- 6.3.7 One of the key benefits associated with the continuation of the Southern Relief Road is that it completes the bypass of the town centre providing an attractive alternative route for through traffic travelling towards west Cork (or alternatively travelling towards Cork City).
- 6.3.8 Journey time analysis was carried out for the following three alternative routes to highlight the benefits associated with the completion of the Southern Bypass, and the results are presented in Figure 6.9, overleaf:
- Route via Bandon Town Centre ('Do Nothing' Scenario);
  - Route via existing Southern Relief Road ('Do Nothing' Scenario); and
  - Route via the new Southern Bypass.
- 6.3.9 The modelling analysis indicates that the new Southern Bypass provides considerable journey time savings for east-west (or vice-versa) through traffic over the current routes available through the town centre and via the current Southern Relief Road. This is primarily due to the issues associated with the Southern Relief Road including the lack of priority at the junction with the Kilbrittain Rd, and the mini-roundabout at the New Road junction.
- 6.3.10 The journey time savings are particularly prevalent in the eastbound direction, versus the route via the town centre, with a reduction of up to 30%. This is due to the fact that eastbound traffic travelling the alternative route through Bandon town centre must utilise South Main Street which can become congested due the narrow streetscape, availability of on-street parking, increased retail activity etc.

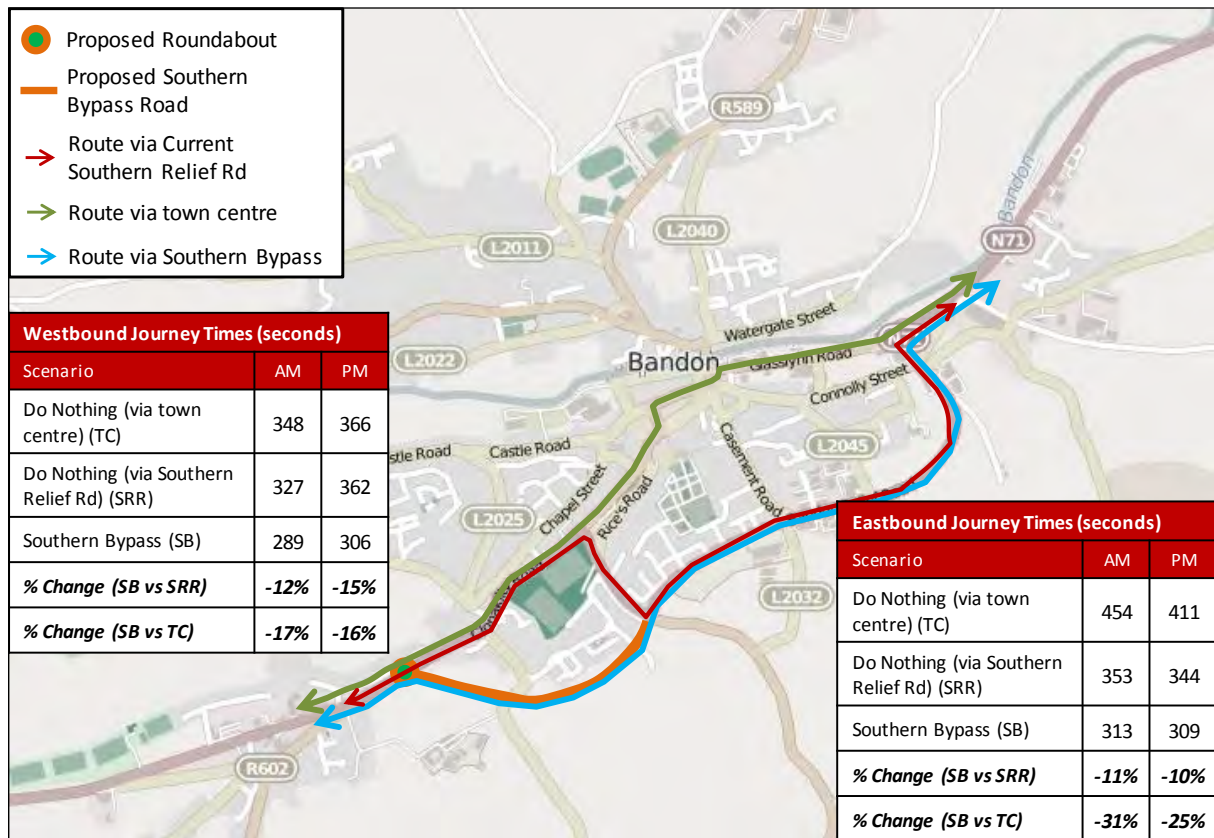
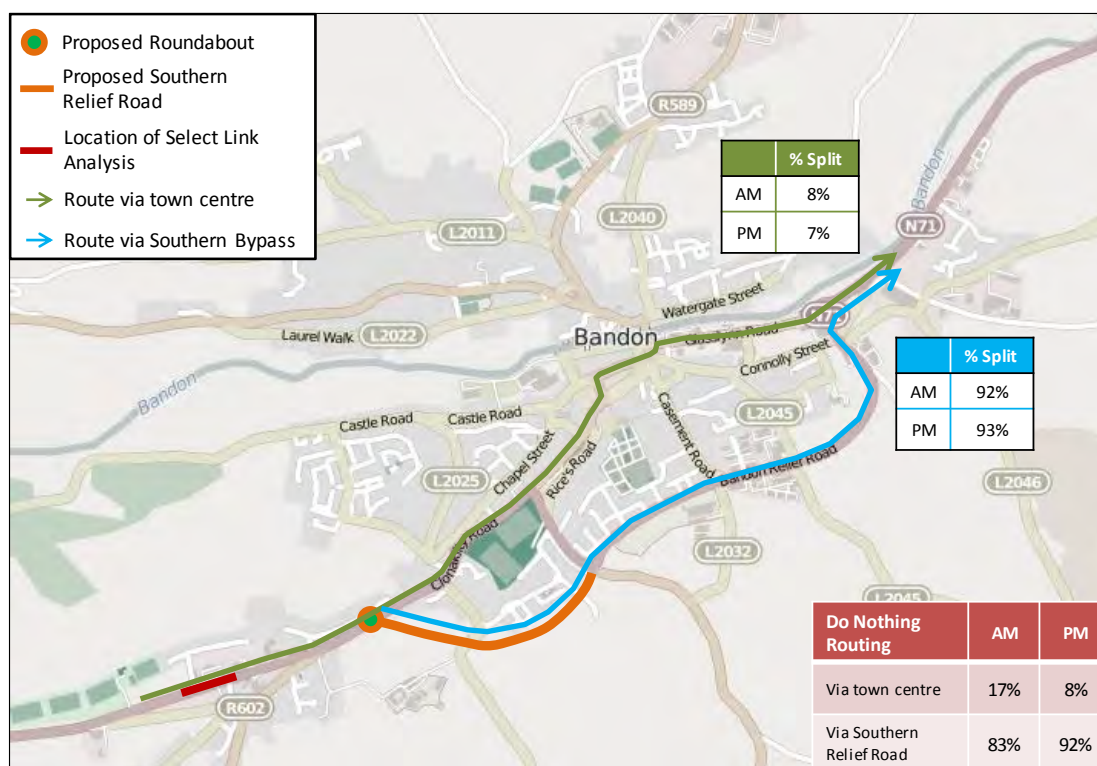


Figure 6.9 Southern Bypass Journey Time Analysis

6.3.11 The above journey time analysis highlights the benefits associated with the completion of the Southern Bypass and this is reflected in the route choice for traffic in the forecast year. Similar to the Northern Relief Road discussed previously, select link analysis was carried out on the N71 either side of Bandon town to provide an indication of route choice for west-east (or vice-versa) through traffic i.e. with no origin/destination in Bandon. The results of this select link analysis for eastbound traffic are illustrated in Figure 6.10 below.



**Figure 6.10 Select Link Analysis – Eastbound Traffic**

- 6.3.12 The results in Figure 6.10 above indicate that, in the 2030 ‘Do Nothing’ Scenario, the majority of traffic (80%-90%) travelling through Bandon towards Cork City utilise the Southern Relief Road. The growth in traffic volumes within Bandon town centre up to 2030 increases the level of congestion experienced on South Main Street due its narrow streetscape and availability of on-street parking. This is reflected in the journey time analysis with a considerable journey time saving experienced via the current Southern Relief Road in the ‘Do Nothing’ Scenario.
- 6.3.13 The completion of the Southern Bypass provides further journey time benefits to through traffic and, as such, the proportion of traffic choosing this route increases to above 90% for both the AM and PM peak periods.
- 6.3.14 The results of the select link analysis for westbound traffic are illustrated in Figure 6.11 below. The ‘Do Nothing’ Scenario results indicate an approximate 50/50 split for traffic travelling via the town centre and the current Southern Relief Road. The completion of the Southern Bypass improves current issues associated with the Southern Relief Road including lack of priority, poor gradient etc., and as such, provides significant journey time savings as noted in Figure 6.9 previously. This journey time saving leads to the majority (over 95%) of westbound traffic choosing to use the new Southern Bypass, thus removing a significant proportion of through traffic from Bandon town centre.

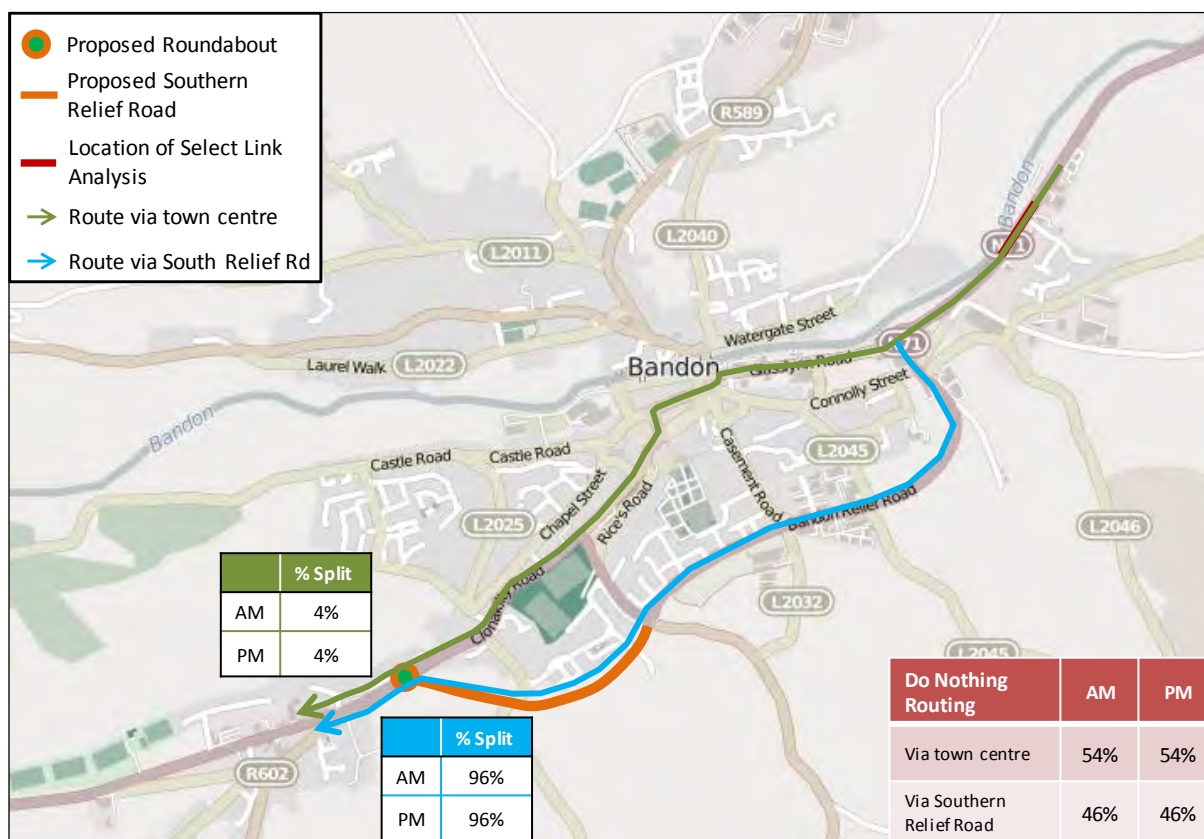


Figure 6.11 Select Link Analysis – Westbound Traffic

### Summary and Conclusions

- 6.3.15 The previous sections outline the results of modelling analysis carried out on the Southern Bypass proposed for Bandon.
- 6.3.16 In Summary:

The proposed Southern Bypass is well used with a two-directional flow of approximately 820 pcus in the AM (08:00-09:00), and 1188 pcus in the PM (17:00-18:00) peak hours;

The new Southern Bypass provides significant journey time savings for east-west (or vice-versa) through traffic over the current routes available through the town centre and via the current Southern Relief Road; and

This journey time saving attracts a large proportion of through traffic to utilise the Southern Bypass, thus removing traffic from Bandon town centre and impacting positively on congestion and delay.

## 6.4 Major Infrastructure – Summary

- 6.4.1 The previous sections of this chapter have highlighted the two major medium to long term road infrastructure developments proposed for Bandon town, including the results of modelling analysis carried out on each.
- 6.4.2 The modelling results have highlighted a number of benefits associated with each scheme including:
- Removal of traffic from Bandon Bridge, thus, reducing traffic congestion in the area;
  - Provision of a second river crossing to facilitate the continued growth of the town;
  - Reduction of through traffic from Bandon town centre; and
  - Improved journey times for through traffic;
- 6.4.3 It was noted, through consultation with the wider project working group, that the funding for the two proposed schemes are likely to come from different sources. As the proposed Southern Bypass is part of a national secondary route (N71), any potential upgrade would be funded by Transport Infrastructure Ireland (TII) (previously the National Roads Authority). However, it is envisaged that the construction of the Northern Relief Road would most likely be funded from a number of different streams, one of which could be from the development of land along the road corridor.
- 6.4.4 As these schemes are likely to receive funding from different sources, and perform varying and multiple functions, it was decided that they would not be mutually exclusive, i.e. it is not necessary to make a decision on including one over the other.
- 6.4.5 Therefore, as both of the major infrastructure schemes provide significant transport benefits to Bandon town, they are both included in the medium to long term road and street hierarchy for Bandon as part of the TPREP.



## **7. STEP 3: 2030 PREFERRED STRATEGY EVALUATION**

### **7.1 Introduction**

7.1.1 In order to test the performance of the preferred TPREP strategy, it is measured against a 2030 'Do Nothing' scenario which essentially represents baseline conditions i.e. growth in traffic in line with Cork Co. Co. projections, however, no alterations to current road infrastructure.

7.1.2 The key differences between the 2020 and 2030 TPREP strategies are the inclusion of larger scale infrastructure measures which are unlikely to be achievable in the short/medium term, such as:

- Provision of the Northern Relief Road (See Section 6.2 above);
- Continuation of the Southern Bypass (See Section 6.3 above); and
- Implementation of a HGV restriction on Bandon Bridge (Section 5.7 Final Report).

### **7.2 Bandon TPREP 2030 Evaluation**

7.2.1 Table 7.1 – 7.4 below illustrate the performance of the Bandon TPREP Strategy versus a 2030 'Do Nothing'.

7.2.2 As mentioned previously in the Final Report, the KPI measurements in the evaluation framework are both qualitative and quantitative. Qualitative measures include:

- Outputs from the BTM and individual junction assessments;
- Physical measurement e.g. length of improved cycle network etc.

7.2.3 The qualitative KPI's for each option are given a ranking or score relative to the Base Case Scenario in the following manner:

- ✓ - represents a negative change over the base case scenario;
- ✓✓ - represents no change over the base case scenario;
- ✓✓✓ - represents a positive change over the base case scenario; and
- ✓✓✓✓ - represents a very positive change over the base case scenario.



Table 7.1 Economic Evaluation Framework (2030)

Economic Evaluation Framework (2030)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2030	
				Do Nothing	TPREP
1	Support improved economic competitiveness of Bandon Town	Area of enhanced Public Realm	m <sup>2</sup>	0 m <sup>2</sup>	4,800 m <sup>2</sup>
		Reduced queuing at key town centre junctions <sup>20</sup>	% Change	-	-93%
		Flows on Bandon Bridge <sup>21</sup>	% Change	2,021 (pcus/0.5hr)	-30% (1,421 pcus/0.5hr)
2	Regenerate Bandon Town centre to increase footfall	Creation of market /event spaces	Rating Scale	✓✓	✓✓✓✓
		Quality of pedestrian/cyclist linkages to town centre		✓✓	✓✓✓✓
3	Improve the attractiveness of the town centre	HGV flows on key routes (e.g. South Main Street) <sup>22</sup>	% Change	-	-88%
		Increased HGV flows on external strategic routes <sup>23</sup>		-	+34%

<sup>20</sup> Key Junctions selected include Glasslynn Rd/St. Finbarr's Place and North Main St/Watergate Street – these junctions were selected as they were identified during public consultation as areas which experience the highest levels of congestion in the town centre during peak periods

<sup>21</sup> Represents the total two directional flow across Bandon Bridge in the AM and PM peak half hours

<sup>22</sup> Key Routes Chosen = South Main Street & Bandon Bridge

<sup>23</sup> External Strategic Routes = Southern Relief Rd & Crossbarry Route



Table 7.2 Health & Safety Evaluation Framework (2030)

Health & Safety Evaluation Framework (2030)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2030	
				Do Nothing	TPREP
1	Facilitate a healthy lifestyle for all people living and working in the Bandon Area	Length of improved walking routes	KMs	0 km	5.4 km
		Length of Cycle Network	KMs	0 km	3.8 km
2	Provide a safer environment for vulnerable road users	Reduced network speeds across town centre cordon <sup>24</sup>	% Change	25 kph	22 kph (-12%)
		Number and quality of pedestrian crossings	Rating	✓✓	✓✓✓✓
		Reduced HGV flows in sensitive areas <sup>25</sup>	% Change	-	-88%
3	Creation of a cleaner environment	Change in vehicle emissions particularly those that cause higher health risks <sup>26</sup>	% Change	-	-14%

<sup>24</sup> Network Speed taken from average AM and PM speeds on North Main Street, MacSwiney Quay, South Main Street & St. Patrick's Quay

<sup>25</sup> Sensitive Areas = South Main Street & Bandon Bridge

<sup>26</sup> Measured within Bandon Town Centre



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Table 7.3 Integration, Accessibility & Social Inclusion Objectives Evaluation Framework (2030)

Integration, Accessibility & Social Inclusion Objectives Evaluation Framework (2030)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2030	
				Do Nothing	TPREP
1	Improve accessibility for all	Walking - Length of improved walking routes	KMs	0 km	5.4 km
		Cycling - Length of cycle routes	KMs	0 km	3.8 km
		Bus - Quality of walk facilities to/from PT stops	Rating	✓✓	✓✓✓✓
		Private car – Reduced queuing at key town centre junctions <sup>27</sup>	% Change	-	-93%
2	Facilitate high levels of sustainable travel to school	Quality of walking/cycling/ traffic management infrastructure in vicinity of schools	Rating	✓✓	✓✓✓✓
3	Integration of new development areas with the existing town to encourage sustainable travel	Quality of pedestrian/cyclist linkages to TC	Rating	✓✓	✓✓✓✓

<sup>27</sup> Key Junctions selected include Glasslynn Rd/St. Finbarr's Place and North Main St/Watergate Street



Table 7.4 Environmental Evaluation Framework (2030)

Environmental Evaluation Framework (2030)					
No.	Key Evaluation Objectives	Key Performance Indicator (KPI)	Units of measure	2030	
				Do Nothing	TPREP
1	Promote the natural and built heritage of Bandon Town	Reduced HGV volumes in sensitive areas <sup>28</sup>	% Change	-	-88%
		Enhancement of heritage sites	Rating	✓✓	✓✓✓
2	Reduce the adverse impact of noise, vibration and emissions generated by traffic movements	Reduced traffic volumes on sensitive routes <sup>29</sup>	% Change	-	-33%
		Greenhouse vehicle emissions	CO <sub>2</sub> (Kg's)	264.15	223.42
3	Provide an environment which supports sustainable travel	Length of improved walking routes	KMs	0 km	5.4 km
		Walking & Cycling and Public Transport Mode Share	Rating	✓✓	✓✓✓

<sup>28</sup> Sensitive Areas = South Main Street & Bandon Bridge

<sup>29</sup> Total reduction in traffic volumes on Bandon Bridge, St. Patrick's Quay, South Main Street, MacSwiney Quay and North Main Street



## 7.3 Summary & Conclusions

7.3.1 The main conclusions from this evaluation are as follows:

- Under the **Economic** Evaluation Framework 2030:
  - The inclusion of the Northern Relief Road and the continuation of the Southern Bypass will assist in the removal of through traffic in the town centre, resulting in decreased queuing and congestion levels experienced at key junctions within the town centre;
  - The proposed public realm enhancements, including creation of public event spaces, will improve the ambience within the town centre, encouraging increased levels pedestrian footfall and will also lead to improved inward investment when compared to the Do-Nothing situation.
- Under the **Health and Safety** Evaluation Framework 2030, the Bandon TPREP again performs significantly better than the Do-Nothing option as it will:
  - Enable the removal of HGV's on Bandon Bridge, thus significantly reducing HGV levels within the town centre
  - Create additional cycle lanes and walkways to encourage a healthier lifestyle;
  - Improve the quality and provision of pedestrian crossing points;
  - Lead to reduced vehicle emissions; and
  - Lead to reduced traffic speeds in sensitive areas;
- Similarly, under the **Environmental** Evaluation Framework 2030, the Bandon TPREP outperforms Do-Nothing as it will:
  - Reduce greenhouse emissions;
  - Reduce traffic flow in sensitive areas;
  - Provide improved walking and cycling facilities; and
  - Promote the natural and built heritage of Bandon Town.
- Under the **Integration, accessibility and Social Inclusion** Evaluation Framework 2030, the Bandon TPREP performs significantly better than Do-Nothing as it will:
  - Improve connectivity between the North Main Street and South Main Street for pedestrians and cyclists as a result of the removal of HGV's from these areas.
  - Provide improved accessibility for all transport modes;
  - Facilitates the integration of proposed development areas to the town centre to encourage sustainable travel; and
  - Facilitates higher levels of sustainable travel to schools within Bandon.

The Bandon TPREP 2030 provides the following benefits:

- Creation of a safe and relaxing town centre environment, as a result of the removal of HGV's;
- includes a number of initiatives to help encourage sustainable travel;
- leads to improved integration and accessibility;
- leads to significant improvements in overall traffic conditions (reduced congestion levels & journey times) when compared to the Do-Nothing Scenario; and



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- will encourage greater levels of footfall within the town centre, thus improving its economic competitiveness as a regional market town



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