Castletownbere Transportation Study

Cork County Council

Appendix A - D

7 December 2018

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Appendix A 1st Round Public Consultation Report

Report on Public Consultation for Castletownbere Transport Study

7 December 2016

Quality information

Prepared by	Checked by	Approved by
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Revision History

Revision	Revision date	Details	Authorised	Name	Position
0	7/12/16	Draft	EOM	Eoin O'Mahony	Associate Director
1	19/12/16	Final	EOM	Eoin O'Mahony	Associate Director

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1. Introduction

1.1 Project Background

AECOM has been commissioned by Cork County Council to prepare a Transport Plan for Castletownbere. The plan will determine the transport interventions required to improve traffic and transport conditions in the town. Issues that will be addressed include traffic congestion, parking, traffic management, road safety, and accessibility, public transport, walking and cycling.

A Public Consultation Exhibition was held in the Beara Coast Hotel on Tuesday 11th October 2016 from 16:00 to 20:00. The purpose of this public consultation was to listen to anybody who lives, works, shops, goes to school and uses the town in order to understand the current issues and obtain any and all views on potential solutions.

Representatives of Cork County Council and AECOM were in attendance at the public consultation exhibition. Stakeholder meetings were held on Wednesday 12th & Thursday 13th October 2016. The study area is outlined in the figure below.

Figure 1.1 Study Area

1.2 Purpose of this Report

This report provides an overview of the written responses received during the 1st public consultation on Castletownbere Transport Plan. The consultation process forms an important component of the development of the Plan as the responses play a key role in developing a detailed understanding of the current issues affecting Castletownbere and its environs. The consultation process also provides an insight into potential solutions to these issues and a view as to how Castletownbere should develop in terms of transport improvements.

In general, consultation is required for the following reasons:

- Local stakeholders have an in-depth understanding of local issues, given that they experience these conditions on a daily basis. It is therefore crucial to gain an understanding of these issues at an early stage in the study, so that opportunities to address these issues can be considered. Furthermore, public representatives and local community groups are best placed to relay the views of local residents for consideration as part of this study.

- Local businesses are impacted by traffic conditions as a result of general traffic congestion, which increases the costs (and reduces the attractiveness) of accessing their premises to do business. Deliveries are also impacted by general traffic congestion, as is the availability of conveniently located areas to perform these activities. It is important that these issues are understood in the context of making recommendations for the study.

- Greater insight is provided, from the day to day users of the road network, in terms of the impact on all road users (i.e. car drivers, public transport users, cyclists and pedestrians and vulnerable road users) of current traffic conditions and existing traffic management arrangements in the Castletownbere area.

1.3 Consultation Process

The consultation process carried out for the Castletownbere Transport Plan involved a public exhibition, and meetings with stakeholders such as the Castletownbere Harbours Users Forum, Castletownbere Development Association, Beara Community Groups, Bere Islanders, Retailers, Schools and Public Transport Operators.

1.4 Notification of Public Consultation Exhibition

The following activities were undertaken to raise awareness of the public consultation process:

- The Elected Members of the West Cork Municipal District were briefed on the 3rd of October 2016. The briefing involved a presentation from the project team followed by a questions and answers session. The presentation outlined the purpose of the study and the opportunities available for residents and other stakeholders to contribute to the study.
- An advert was placed in the Southern Star Newspaper week commencing 3rd October 2016. The advert highlighted the purpose to the study, the location and timing of the event. The advert also contained contact information for written submissions.
- A leaflet drop was organised to households in Castletownbere to notify residents of the Public Consultation Exhibition in the Beara Coast Hotel on Tuesday 11th October.

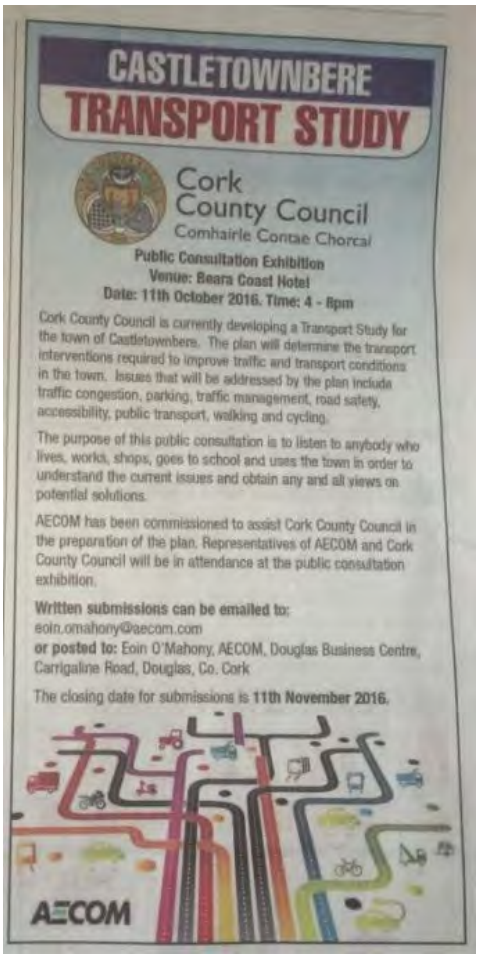


Figure 1.2. Advert for Public Consultation in Southern Star Newspaper

1.5 Public Consultation Event

A number of posters were on display during the event to provide information on the following:

- Project Background
- Purpose of Public Consultation
- Project Objectives
- Data Collection
- Issues
- Traffic Conditions
- Walking and Cycling

A number of maps showing an aerial view of the study area were available and people used these to highlight issues to the study team. The material on display during the Public Consultation is contained within Appendix 1.

The event was well attended with approximately 110 people signing in during the event.

Figure 1.3. Photo of Public Consultation

1.6 Structure of this Report

The remainder of this report is structured as follows;

Chapter 2 Submissions Received

This chapter summarises the submissions received and outlines the response of the study team.

Chapter 3 Conclusion

This Chapter summarises and highlights the key issues and findings from the public consultation process.

Chapter 4 Appendix 1

Contains the maps displayed during the Public Consultation Exhibition.

Chapter 5 Appendix 2

Contains some maps and drawings received as submissions

2. Submissions

2.1 Introduction

This section outlines the submissions received from stakeholders and the general public. This process forms an important part of the study as the responses play a key role in developing a detailed understanding of the current issues affecting Castletownbere and the development of potential solutions.

2.2 Stakeholder Organisations

Stakeholders were contacted by email and invited to a meeting. All stakeholders were encouraged to make written submissions. Those contacted included development associations, community groups, schools, businesses and private individuals were also encouraged to make submissions with any relevant issues. Approximately four weeks was allowed for the receipt of submissions in relation to the study. The local stakeholders who were contacted in relation to this study are illustrated in Table 2.1 below. This table shows that a broad representative response was obtained from local groups and stakeholders.

Table 2.1 Groups consulted

Group/Organisation	Contact Method
Castletownbere Development Association	Email and Meeting
Beara Community Groups	Email and Meeting
Bere Island Group	Email and Meeting
An Garda Siochana	Email and Meeting
Retailers & Business Owners	Email and Meeting
Schools	Email and Meeting
Bus Eireann	Email and Meeting
Department of Agriculture, Food & the Marine	Email and Meeting
Castletownbere Harbour Users Forum	Email and Meeting
General Public	Newspaper Advert, Leaflet Drop and Open Meeting

Written submissions have been received from concerned residents and people with a genuine interest in improving Castletownbere Town. In total 60 written submissions were received from stakeholders and the general public. With regard to privacy and confidentially, submissions from members of the general public have been noted and are included anonymously under the General Public submissions below.

A summary of the information contained in these submissions is outlined in the following pages.

Castletownbere Development Association

Identified issues/problems;

1. Traffic Flow
   Very congested – need for short term solutions – one way streets, change to traffic circulation.
2. Parking
   At very worst the same amount of cars that park in the town should continue to be provided in the future. Infill across from Super Value to create additional parking spaces in new car park
3. Relief Road
   Should be the vision going forward – there can be no improvements in certain areas of the town without a relief road.
4. Footpaths & Amenity
   There are a significant number of trip/fall hazards at present and it is impossible for a person to move freely with a pram or wheelchair to go from one end of the town to the other without being obstructed.

A number of drawings were included in the submissions which propose a new relief road along the inner harbour and changes to traffic circulation. These drawings are contained in the Appendix to this report.

Department of Agriculture Fisheries and Marine (DAFM)

Identified issues/problems;

1. Masterplan
   DAFM are developing masterplan for the harbour. Expect to have draft available in January 2017. Would like to keep in contact with the Transport Study so Plans are consistent.
2. Office Building
   DAFM developing planning application for office building. Will include public car park and willing to transfer ownership of road to Cork County Council. Details of road widths etc to be confirmed to facilitate planning application.
3. Extension to Pier on Dinish Island
   DAFM submitting plans for extension to pier on Dinish island to An Bord Pleanala. Will increase capacity of the harbour. Confirmation on impacts for traffic volumes to be forwarded.

Community Groups (Co –Action Group)

Identified issues/problems;

1. R-571 Kenmare Road
   The submission outlines the view of Co-Action that accessing their centre on the R-571, Kenmare Road is highly dangerous. There is no footpath between the town and the centre.
2. Tallon Road
   Co-Action has two residential units on the Tallon Road. Pedestrian access is not safe from here to Town.
3. Supervalu Junction
   This is a chaotic junction with no pedestrian crossings, narrow footpaths, high volumes of traffic, traffic from multiple directions and haphazard parking. It is impossible for those with a disability – visual impairment, hearing impairment, sensory processing difficulties or poor concentration to negotiate this junction safely.
4. Footpaths throughout Castletownbere
   Footpaths, where they exist are too narrow and for most of the time are unusable as vehicles are parked on them.
5. Access to Castletownbere Community Hospital
   There is no pedestrian crossing to the hospital and the footpath from town is too narrow.
6. Commuter Bus Parking

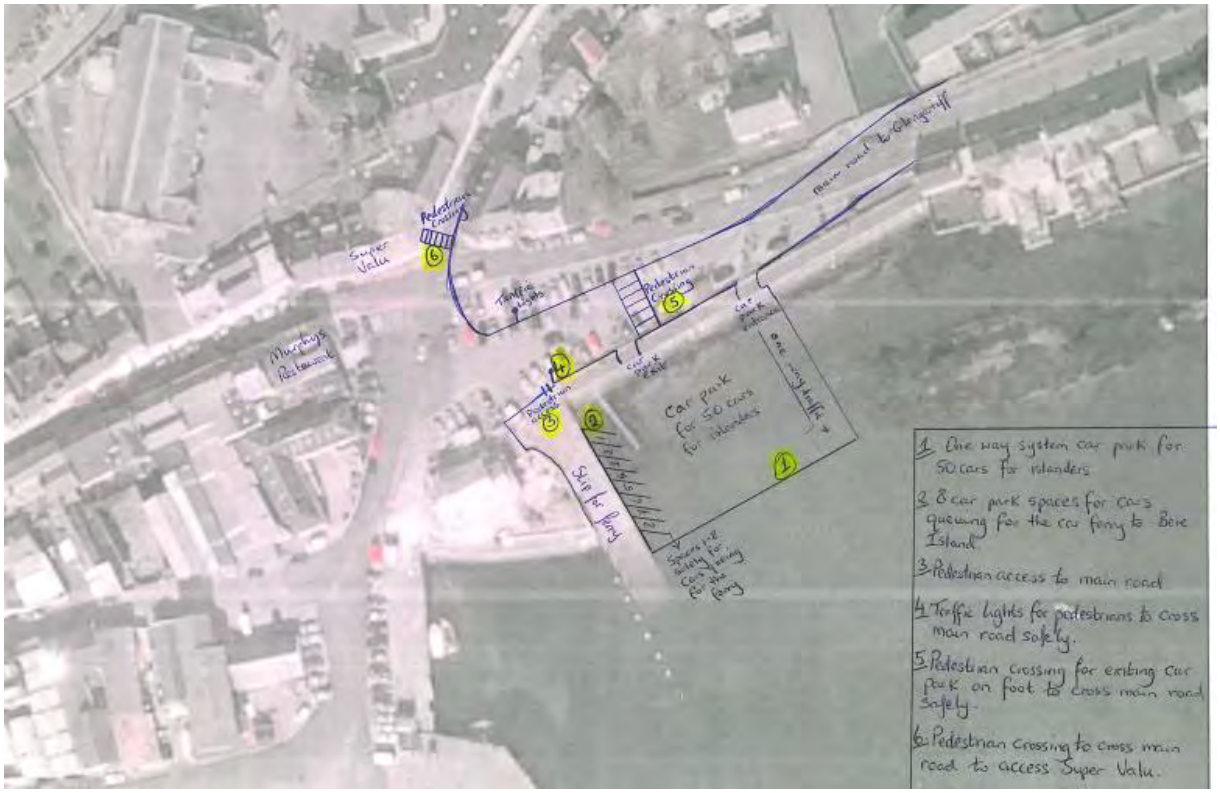
The current bus stop is in the middle of the square, with no pedestrian access and is obviously not wheelchair accessible

Bere Island Projects Group Ltd

Identified issues/problems;

Submission was centred on the area in the vicinity of the ferry landing adjacent to the Super Value junction. An annotated map was included highlighting the proposal:

1. Car parking spaces for 50 cars. From their research this would be a minimum of 50 car park spaces needed to service the island as many cars are left on the mainland.
2. Spaces for cars queuing for the car ferry. A proper queuing system is needed as often the current system extends out across the proposed main road.
3. Access from the slipway to the main road. In the interest of safety this will only serve as a pedestrian access.
4. Traffic lights. To ensure safe crossing of the road traffic lights are required alongside the pedestrian access.
5. Pedestrian crossing from the car park. To ensure safety when exiting the car park a pedestrian crossing is required.
6. Pedestrian crossing near Super Valu. To access Super Valu a pedestrian crossing is needed to safely cross.



Schools

Identified issues/problems;

Secondary School

1. The junction between the public road and the access road to the secondary school needs to be improved. The current alignment results in vehicles failing to yield when travelling from the school towards the public road.

Primary School

2. School buses set down on the North Road as they cannot get up to the Back Road to the school.
3. The lack of footpaths along the Back Road to the primary school creates unsafe conditions for school children.

Business Owners

Identified issues/problems;

1. Owner 'Former Beara Bay' Hotel
   Submission sets out traffic conditions in the vicinity of the 'Former Beara Bay' Hotel. Traffic utilising private car park as through route. Outlines traffic difficulties experienced when area to front of hotel closed off. Submission also highlights several potholes in the area.
2. Sarah Walker of Sarah Walker Gallery

   Opposed to a relief road from the pier along the inlet in front of the gallery building. This proposal would be cutting off pedestrian access to the sea and encouraging HGVs and general traffic. Such a road would cancel out the potential benefits of a seaside aspect.
3. Murphys Stores

   Customers have been using the area marked Black on the following map since the area was reclaimed in the 1970's.

There are currently approx 40 marked spaces in this area including 4 Handicapped Spaces. However over 80 vehicles are using this location at any given time during the week. This increases at times of commercial activity / mass / funerals etc.

It is paramount that accommodation is made for the businesses at the eastern end. At least 100 car park spaces should be made available in this area – It is imperative that status quo remains - the amount of cars parked in this area is replicated. If you had to line out the existing space according to the regulation then you would only get parking for approx 25 cars.

Would like to see a safe crossing in place at this junction that is accessible to wheelchair users and buggies.

The ideal location for parking for the East End of the town that would suffice business needs that make up the East End hub of the town is the area marked below.

This would provide parking for businesses in the town. It would also provide parking both long term and short term for islanders and fishermen who need to leave cars in the town for substantial periods of time. It would also give space to buses, tour buses and visitors alike.

Currently have 10 40ft deliveries to our backyard every week. We also have over 40 large trucks and numerous van etc that use the North Road access to the shop per week. Access to this area must be maintained at all times.

There are two areas that could be considered that are currently derelict adjacent to Super Valu, these are shown on the map below. There is a possibility to use these areas as an alternative access point to the main road. It is also worthy to note the adjacency of this area to the primary school where access and Health and Safety is also currently an issue.

Submissions from General Public

Identified issues/problems;

1. Pedestrians are not well catered for in Castletownbere – cars park and drive on footpaths.. Parking next to zebra crossings reduces visibility of pedestrians crossing the road. No signalised crossings. Speed of traffic too high.
2. Streets are too narrow for two way traffic due to parking. Introduce a one way system
3. Not enough parking available. Infill the harbour to provide more parking.
4. Bus stop is not prominent or wheelchair accessible.
5. Concern was expressed about the co- ordination of this study and the main drainage scheme
6. The availability of parking in close proximity to emergency services is a concern at fire station and for lifeboat crew
7. Concern about safety at Super Value junction
8. Zebra crossing in town not commissioned (lights never on)
9. Delivery trucks park by playground – not safe for children
10. Too many outdoor tables outside licenced premises (taking up parking spaces)
11. Dangerous junction at North Road/R571
12. Provision for wheelchair users is appalling throughout the town
13. Concern this study has missed the tourist season
14. Traffic system introduced for regatta week works very well
15. Absence of cycling facilities
16. Town needs gateway treatment to signify entering a town.
17. So much car parking in town centre makes the place ugly.
18. Town is very congested during funerals

19. Routing of trucks through the town is unsafe
20. Elderly and mobility impaired people are neglected
21. Signage is very poor and confusing
22. Cars are abandoned not parked
23. Kenmare and Clonakilty are good examples of what could be done
24. Castletownbere should be a nicer place for tourists to visit
25. Road surface is very poor. Several potholes particularly are west end.
26. Lighting along Mill Road is not sufficient.
27. Motorvan traffic is high due to Wild Atlantic Way. Need places for these to park.
28. Important that no parking is lost in the town
29. Difficult to walk to schools – need footpaths along Back Road
30. Need dedicated loading bays for deliveries in the town
31. All day parking should not be allowed on Main St
32. Promote off street parking
33. Car parked on footpaths should be clamped
34. Relief road required from west end of pier to silver dollar
35. Council yard should be turned into car park
36. Market on Thursdays should be banned. Takes up too much parking and causes too much disruption.
37. Need more disabled car parking
38. Relocate the playground
39. Access for deliveries is required during any road works
40. Parking regulations need to be enforced
41. Signage should be improved
42. Need to improve footpaths to Co-Action Centre
43. Can lands owned by the Department of Marine be used for more car parking?
44. School buses setting don on the Back Road use up car parking spaces for customers
45. An extension of rural transport services using minibuses would seem to be a practical way of moving towards a more integrated system, especially if linked to Bus Eireann routes and times.
46. Reduce speed limit around the Tallon Road to 50 kmh.
47. Install street lighting around the Tallon Road.
48. Install speed bumps between East end of Tallon Road and Silver Dollar.
49. Install a mini roundabout or island at the junction where the road from the secondary school meets Main Street.
50. Reinstate the STOP junction signs and road markings at the junction adjacent to The Old Bakery that meets Main Street.

51. Police parking on Zig Zag lines and pedestrian crossing at Bank Place.
52. Install STOP signs at Breens Corner and O'Donoghues corner North side of the Square.
53. Develop One Way system on Main Street between McCarthy's bar and the junction at the Pier.
54. Act on historic plan to by-pass town centre via a bridge across the "slob" West End.
55. The road outside Issie's (From Issie's eastwards) should be made pedestrianised. The main road (with a few speed bumps in the town) into CTB from Glengarriff could run closer to the ferry terminal to Bere Island. In saying this there would need to be proper facilities put in place for this to work. These would include (a) traffic lights so people can cross safely from the ferry terminal, (b) pedestrian access via footpaths and (c) traffic lights at Issie's and Super Valu so as to cross the road safely
56. A car park for Bere Islanders is essential

3. Conclusions

This report provides an overview of the responses received during the 1st public consultation on Castletownbere Transport Plan. The consultation process forms an important component of the development of the Transport Plan for Castletownbere.

The responses play a key role in developing a detailed understanding of the current issues affecting Castletownbere and its environs. The consultation process also provides an insight into potential solutions to these issues and a view as to how Castletownbere should develop in terms of transport improvements.

Arising from the public consultation the following are issues to be addressed by the study:

- Pedestrian facilities – Several submissions outline the view that the pedestrians are not well provided for within the town. The streets do not feel comfortable for pedestrians. There is an absence of safe crossings facilities and the speed of traffic is too high.
- Public realm – There was a view expressed that the public realm of Castletownbere town could be more attractive. A number of submissions outlined the view that the town centre is dominated by car parking which does little to reflect the unique, picturesque location of Castletownbere in West Cork.
- Parking – the quantum, location and availability of parking are issues that were raised throughout the consultation. It is proposed that a detailed parking survey be undertaken in the town to identify the existing demand and length of stay.
- Traffic circulation – many submissions expressed the opinion that the current circulation system for traffic in the town is not efficient and proposed the introduction of one way system to improve traffic flow.
- Relief road – To support a one way system a relief road along the inner harbour was proposed. Others preferred a relief road to the north of the town as contained in the Local Area Plan.
- HGV routing – The routing of HGVs through the town is an issue to be considered as part of the study
- Junction and Road Improvements will be developed for:
    - R571/R572 Super Value
    - North Road R571 Junction
    - North Road to Co-Action
    - West End along Main Street to Community Hospital
    - Options for Relief Road
    - Secondary School junction to public road
    - Primary school bus set down and pedestrian route along Back Road
    - Dinish Island Junction
- Public transport – The provision for public transport needs to be considered for the town. The existing bus location although centrally located is not particularly prominent or visible. Layover space for coach and tourist buses is also required.

4. Appendix 1

CASTLETOWNBERE TRANSPORT STUDY

PROJECT OVERVIEW

BACKGROUND

Cork County Council have commissioned AECOM to assist in preparing a Transport Study for Castletownbere .

The plan will determine the transport interventions required to improve traffic and transport conditions in the town. Issues that will be addressed by the plan include traffic congestion, parking, traffic management, road safety, accessibility, public transport, walking and cycling.

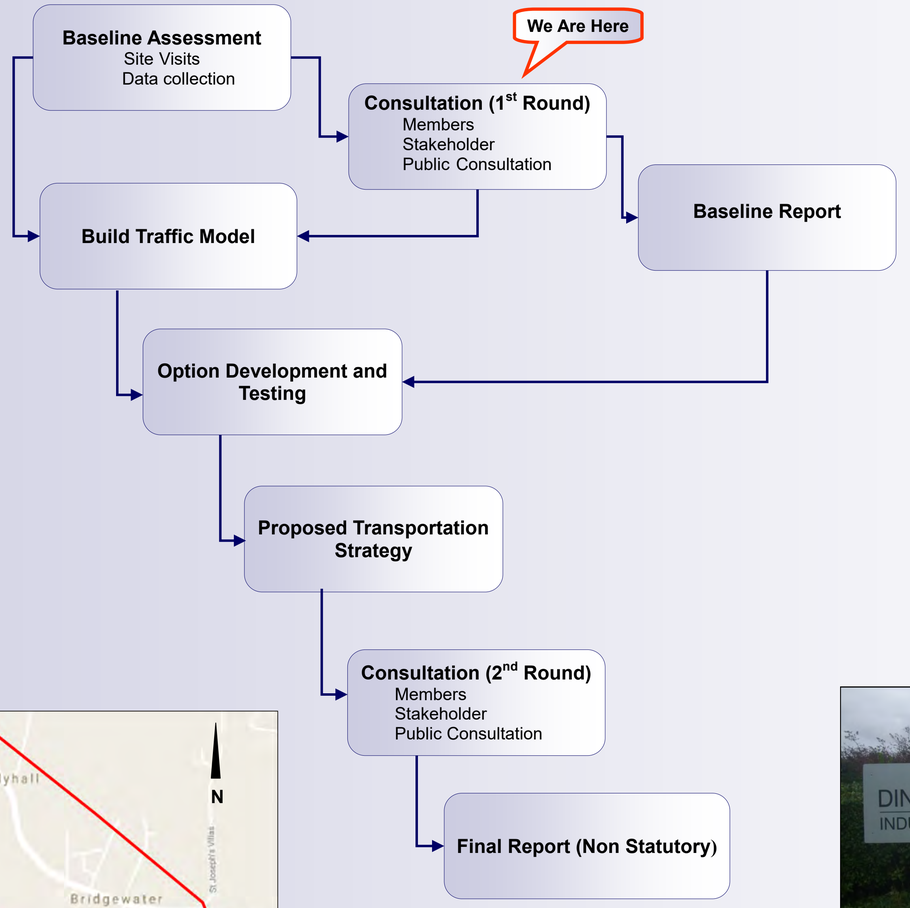
The transportation strategy developed will complement local public transport, walking and cycling, creating an attractive urban environment and promoting accessibility to all. The study area is indicated below in red.

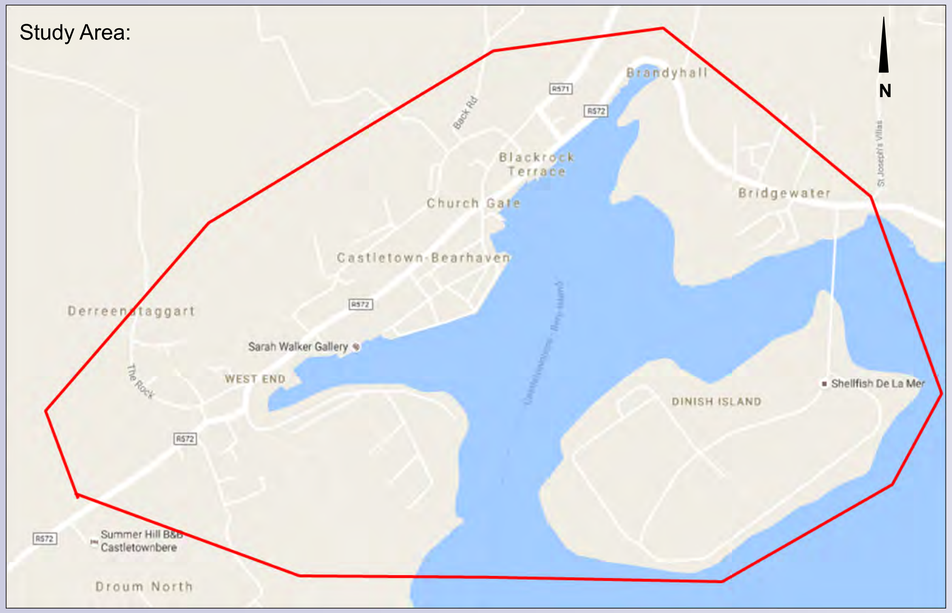
OBJECTIVES

The main aim of this study is to review the transportation context of Castletownbere and identify and recommend interventions as appropriate.

It is intended that this Transport Study will inform reviews of the development plans and the preparation of local area plans in the future, and will guide transportation investment.

METHODOLOGY





PURPOSE OF THIS CONSULTATION

The purpose of this public consultation is to listen to anybody who lives, works, shops, goes to school and uses the town in order to understand the current issues and obtain any and all views on potential solutions.

Please let us know your views on:

- Current traffic conditions in Castletownbere
- What should be improved?
- What are the problem junctions?
- How to support a vibrant town centre?
- How to create a more efficient transport network?

BASELINE ASSESSMENT

SITE VISITS

Detailed site visits were undertaken covering the entire study area. These site surveys identified issues with:

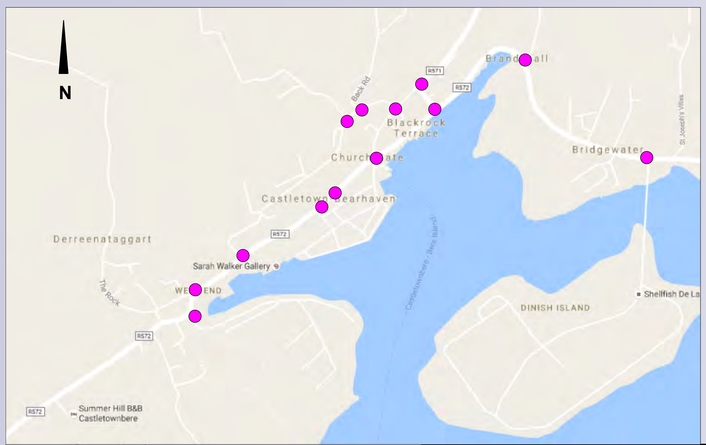
- Congestion
- Parking
- Road Safety
- HGV Traffic
- Pedestrian and Cyclist Facilities
- Disability Access and Facilities
- Delivery Vehicles

TRAFFIC SURVEYS

A detailed programme of data collection will be undertaken in order to ensure that a full understanding of the current traffic situation in the study area could be established. Extensive traffic surveys are proposed at key locations throughout the study area. These surveys provide the necessary information required to produce a detailed traffic model of the area which will inform the land use and transportation study. They will also form a base of quality traffic information which can be used by Cork County Council in the future. These surveys included:

JUNCTION COUNTS

Junction Counts will be undertaken at thirteen sites throughout the area. At each particular location the traffic counts will detect and count passing vehicles and their direction. See below for details of locations.



Legend

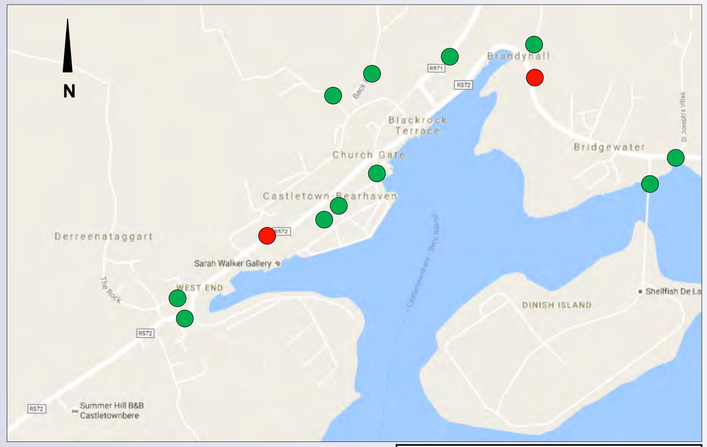
Junction Count s

AUTOMATIC TRAFFIC COUNTERS ON ROADS

Automatic Traffic Counters (ATCs) will be undertaken at two sites, recording daily two-way traffic movements on specific roads for a one week period. Automatic Traffic Counters (ATC) capture information on the direction of passing traffic, the speed at which a vehicle is travelling, the number of vehicles and their classification into cars, lorries, buses or coaches etc. See location map below.

ORIGIN DESTINATION SURVEYS

Origin – destination surveys will be undertaken at eleven sites. These origin-destination surveys will be used to established all external and internal trips within the study area.



Legend

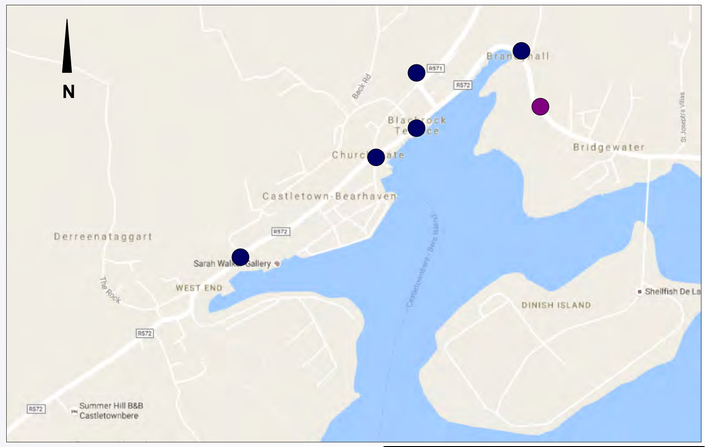
OD Survey Points

ATC Survey Points

ROAD SAFETY ASSESSMENT

Accident data from the Road Safety Authorities database will be studied. The data will be interrogated to identify geographical and numerical clusters of accidents. The data covers the years 2005 — 2013. The interrogation will be undertaken by focusing on the following criteria.

- Severity and location of accidents
- Severity and location of vehicular accidents (excluding pedestrians and cyclists)
- Severity and location of pedestrian & cycle accidents
- Location of any concentrations of serious injuries/fatalities



Legend (Source: Road Safety Authority)

Fatal

Serious

Minor

BASELINE ASSESSMENT

CONSULTATION

Extensive consultation in the form of both stakeholder and public consultation form an important part of developing and delivering the study objectives. The primary aims of the consultations to be carried out are to:

- Gauge the opinions of the general public, local groups, businesses and educational institutions about existing and future conditions in the study area;
- Engage with relevant local authorities and transport providers; and
- Encourage a sense of public ownership of the overall study.

Through both public and stakeholder consultation, a wide spectrum of opinions will be voiced which will reflect the differing experiences of the respondents.

PUBLIC CONSULTATION

The purpose of this public consultation is to assist in determining the issues and problems within the study area. The public's input is vital at this stage of the project in assisting our understanding of the current issues and enabling us to develop effective strategies and proposals. Issues and concerns raised in the initial public consultation will be considered in the formulation of transportation scenarios.

Cork County Council hereby invites any interested parties to make a submission to the undersigned before 11th November 2016. Any submissions or observations so made will be taken into consideration by the Council in the preparation of the study.

Submissions or observations in electronic format can be e-mailed to: eoin.omahony@aecom.com before Friday 11th November 2016 or delivered to:

Castletownbere Transport Study
c/o Eoin O'Mahony
AECOM
Douglas Business Centre,
Carrigaline Road
Douglas,
Co. Cork.

A further round of public consultation will take place later in the study whereby the study produced will be presented and explained, and any additional comments considered.

STAKEHOLDER CONSULTATION

Stakeholder consultation is an important and essential part of the study, to ascertain their concerns. At this stage, the consultation will focus on identifying existing issues and future pressures, in addition to understanding the aspirations of the different organisations.

As part of the stakeholder consultation, we would welcome the input of people or organisations with knowledge of or an interest in transportation and land use in the study area.

Please contact the study team for an appointment if you would like to meet a member of the team during the consultation period.

BASELINE ASSESSMENT

The 'Baseline assessment Report' is an important tool for documenting existing problems and deficiencies in the current transport situation in the study area

This report will incorporate issues raised in the consultation process so as to ensure that a high level of engagement is reached with all interested parties. The output from this stage of the study is a clear summary of the issues to be addressed by the proposals and strategies. These proposals and strategies should then facilitate the delivery of the overall study objectives.

OPPORTUNITIES FOR IMPROVEMENT

Below is a typical list of opportunities for improvement within the transportation network:

Walking
Safer approaches to town and schools
Improved surfacing
Wider footpaths
Improved lighting
Routes for Walking and Cycling only

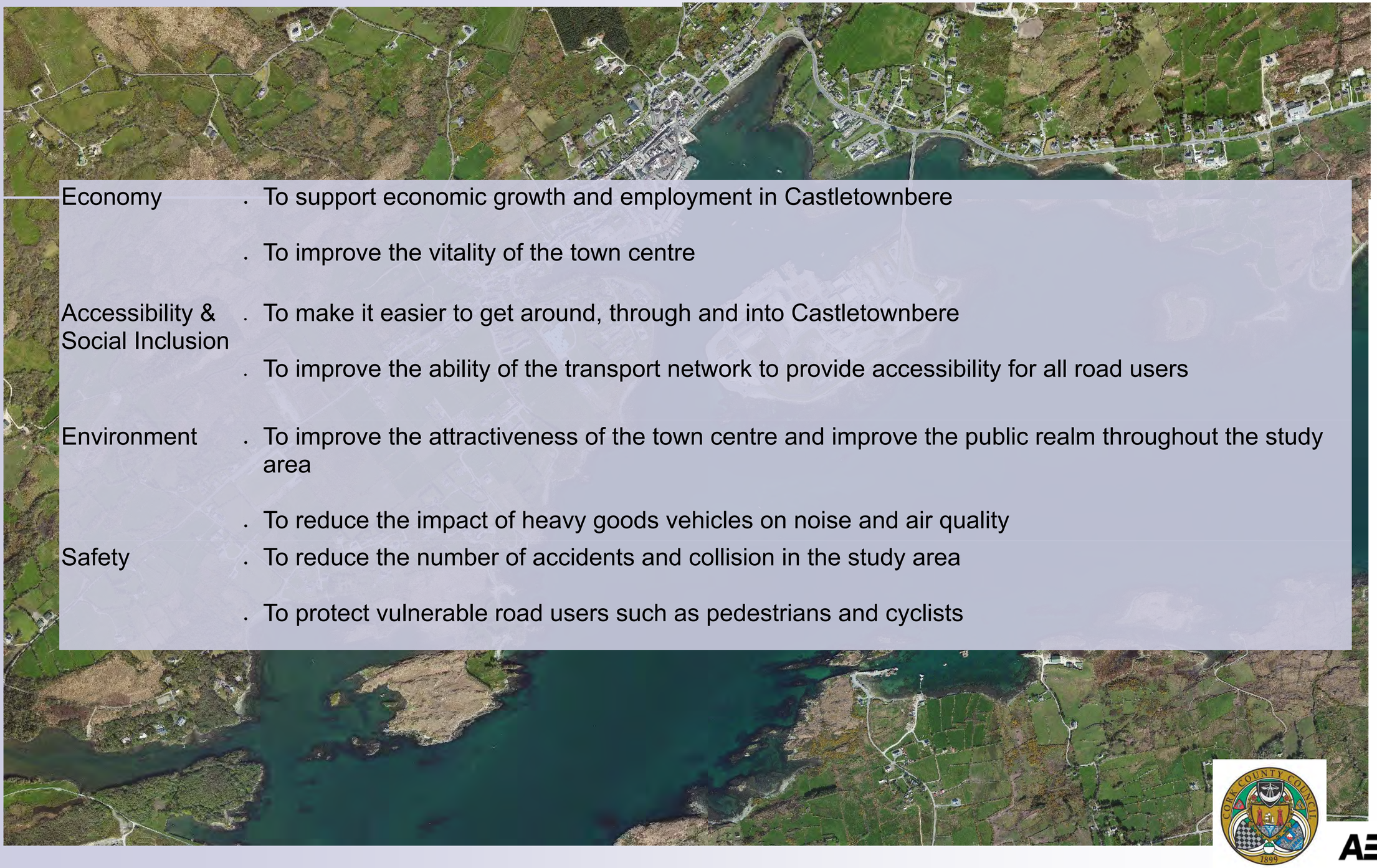
Cycling
New cycle routes
Improved surfacing
Clearer signing
Parking and storage facilities
Routes for Walking and Cycling only

Public Transport
Improve bus stops
Review bus frequency
Increase accessibility
Provision for school bus parking

Private Vehicles
Car parking/loading bay provision
Routing of Heavy Goods Vehicles
Increase signage
Junction improvements

PROJECT OBJECTIVES

EMERGING PROJECT OBJECTIVES



Economy	. To support economic growth and employment in Castletownbere
	. To improve the vitality of the town centre
Accessibility & Social Inclusion	. To make it easier to get around, through and into Castletownbere
	. To improve the ability of the transport network to provide accessibility for all road users
Environment	. To improve the attractiveness of the town centre and improve the public realm throughout the study area
	. To reduce the impact of heavy goods vehicles on noise and air quality
Safety	. To reduce the number of accidents and collision in the study area
	. To protect vulnerable road users such as pedestrians and cyclists

AECOM

ISSUES PICTURES 1

NARROW STREETS 2 WAY TRAFFIC

CAR PARKING

NARROW FOOTPATHS

RESTRICTED FOOTPATH WIDTH FOR PEDESTRIANS

HGV ROUTING THROUGH TOWN

PUBLIC REALM

ISSUES PICTURES 2

PEDESTRIAN CROSSINGS

NARROW STREETS

DELIEVERIES AND COMMERCIAL TRAFFIC

COMMERCIAL TRAFFIC

LACK OF CYCLING FACILITIES

Walking and Cycling

We want to hear your views on walking and cycling in Castletownbere

Is Castletownbere safe and attractive to walk and cycle in?

Do many children walk and cycle to school?

Is it easy to walk and cycle in Castletownbere?

What needs to be improved to encourage more people to walk and cycle?

Traffic Conditions

We want to hear your views on traffic conditions in Castletownbere

Is traffic congestion an issue in Castletownbere?

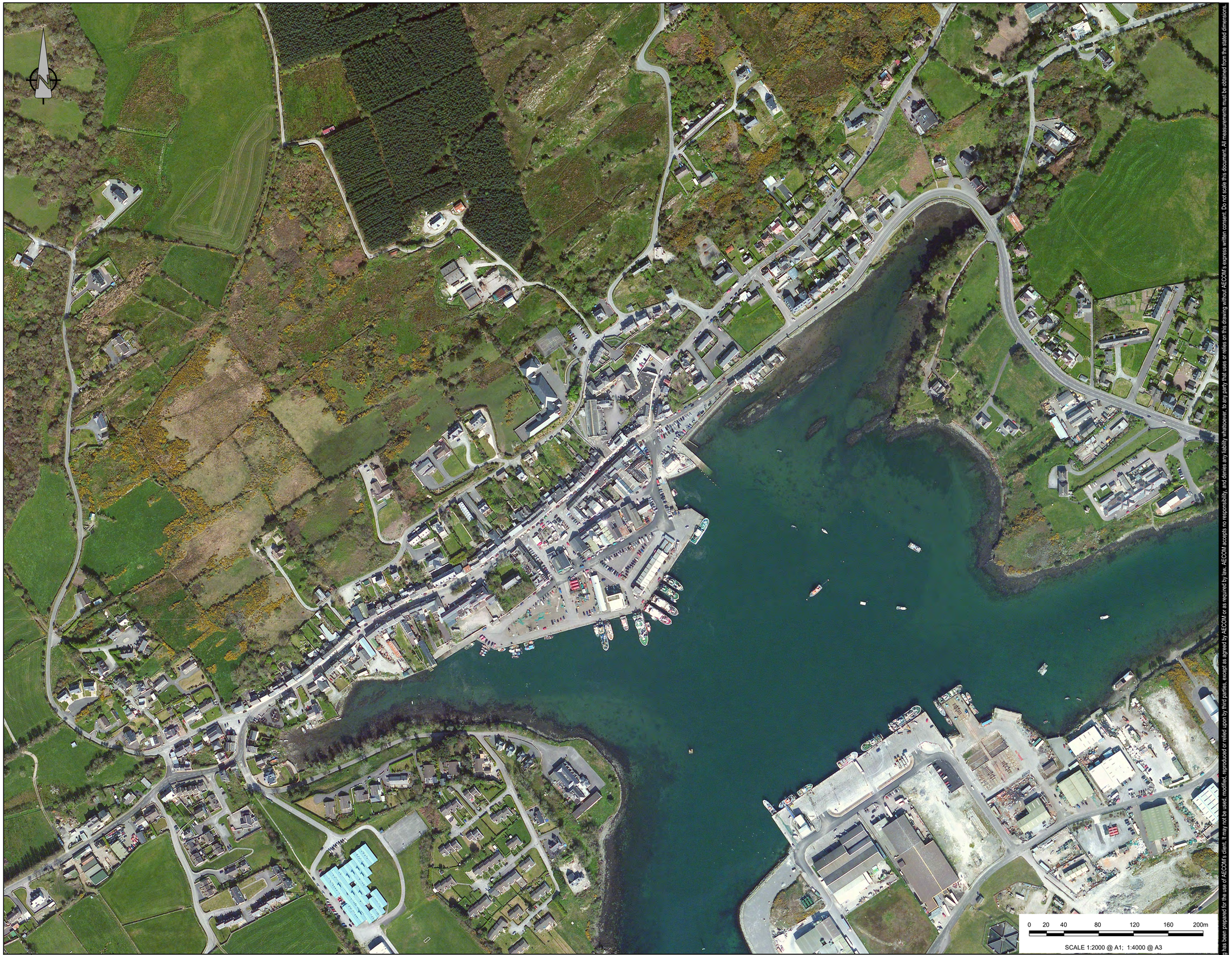
When and where does it occur?

What causes the congestion?

What could be done to improve traffic flow?

How does HGV traffic affect the road network?

Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



A	EXISTING LAYOUT
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AECOM

PROJECT

CASTLETOWNBERE TRANSPORT SUTDY

CLIENT

Cork County Council
Comhairle Contae Chorcaí

CONSULTANT

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I/R	DATE	DESCRIPTION

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PROJECT NUMBER

SHEET TITLE

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SHEET NUMBER

001

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5. Appendix 2

Client:	CASTLETOWNBERE DEVELOPMENT ASSOCIATION
Project:	TRAFFIC MANAGEMENT PLAN SUBMISSION 2016
Drawing Status:	ISSUE FOR DISCUSSION
Drawing Title:	OVERVIEW – TOWN CENTRE
Scale:	A1 – 1:1,000
O.S.S.	CK115

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Drawn By:	John Galvin, B.Sc. Arch. Tech.
Checked By:	Gerard Harrington B.Sc. Arch. Tech.
Date:	23/11/2016
Dwg No:	S00151601-00-141116 –

Castletown Bearhaven
School
NATIONAL SCHOOL
SACRED HEART CHURCH
Church (Cath)
10KV
SUPERVALU
TK'S
School
Seaview Tce
14.9
4.5
Brandyhall Bridge
4.1
5.3
7.6
HWM
7.8
3.9
Castle Heights
PARKING
Blar
Ca
2.5
RNLI
'ARRO' HARDWARE
FUTURE SLIP LOCATION
ALTERNATIVE ROUTE
SPAR
AIB BANK
LIBRARY
FIRE
SERVICE STATION
Imps in prog
PO
POST
TKs
St. Peter's Church (C of I)
Hotel
Tks
rrack oint
Sand & Shingle

- Two-Way Traffic
- One-Way Traffic
- 2m Footpaths
- Parking Areas

N

John J. O'Sullivan & Associates
MAGIC DAY 21st
SUNSET
SUNRISE
MAGIC DAY 21st
WINTER SOLSTICE 21st

Client:	CASTLETOWNBERE DEVELOPMENT ASSOCIATION
Project:	TRAFFIC MANAGEMENT PLAN SUBMISSION 2016
Drawing Status:	ISSUE FOR DISCUSSION
Drawing Title:	OVERVIEW – TOWN CENTRE
Scale:	A1 – 1:1,000
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Dwg No:	S00151601-00-141116

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Appendix B Assessment Framework

Scenario	Scenario A	Scenario B	Scenario C	Notes
Name	Do Nothing	Traffic Management No.1	Traffic Management No.2	Scenarios A-C will allow the optimum traffic circulation option to be identified in the town centre and how it can be expected to perform over the next 10 years.
Year	2026	2026	2026	
Land Use	Builds out as per Local Area Plan by 2036 (pro-rated to 2026)	Builds out as per Local Area Plan(pro-rated to 2026)	Builds out as per Local Area Plan(pro-rated to 2026)	
Transport Network	Current arrangements remain 	One way system (eastbound on Main St) 	One way system (westbound on Main St) 	
Notes	Scenario A facilitates comparison against current situation (base model)	Scenario B establishes impact of one way system on Main Street	Scenario C establishes impact of alternate one way system on Main Street	

Scenario	Scenario D	Scenario E	Scenario F	Notes
Name	Do Traffic Management Proposals (Select best performing Scenario A-C)	Do Roads Proposals (Select best performing Scenario A-C & Northern Road)	Do Roads Proposals (Select best performing Scenario A-C, Northern & Southern Road)	Scenarios D-F will assist in identifying the long term road network to accommodate the full build out of the town over the next 20 years.
Year	2036	2036	2036	
Land Use	Builds out as per Local Area Plan	Builds out as per Local Area Plan(with lands served by Northern Road)	Builds out as per Local Area Plan(with lands served by Northern Road)	
Transport Network				
Notes	Scenario D will establish if a relief road is warranted	Scenario E facilitates understanding the role the Northern Road will serve (ie. Access to development lands)	Scenario F allows benefit of Southern relief road to be understood and the overall performance of the network in fully loaded conditions	

Appendix C Traffic Microsimulation Report

AECOM Imagine it. Delivered.

Castletownbere Transport Study

Traffic Modelling Report

Cork County Council

Project number: 60535188

14 April 2017

Quality information

Prepared by	Checked by	Approved by
Timi Vibal Senior Consultant	Eoin O'Mahony Associate Director	Joseph Seymour Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
Revision 1	01/06/2017	2036-G scenario added	EOM	TV	Senior Consultant

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Table of Contents

Figures

Tables

Introduction

01

1. Introduction

1.1 Background

This Micro-simulation Modelling Report outlines the development, calibration & validation and traffic forecasting for the VISSIM model for Castletownbere. The traffic micro-simulation model has been developed to assess the future transport needs of the town. The model has been used to assess the impact of the anticipated traffic growth due to land use schedule based on the West Cork Municipal District Local Area Plan (LAP) and to test the traffic management and road proposals within the study area.

A number of traffic management and road proposals options forms part of the transport study. This includes the testing and evaluation of one-way system eastbound/westbound options on Main Street for year 2026 and the provision of Northern Road and Southern Road options for year 2036. The study area and extent of the traffic model is illustrated in Figure 1.1.

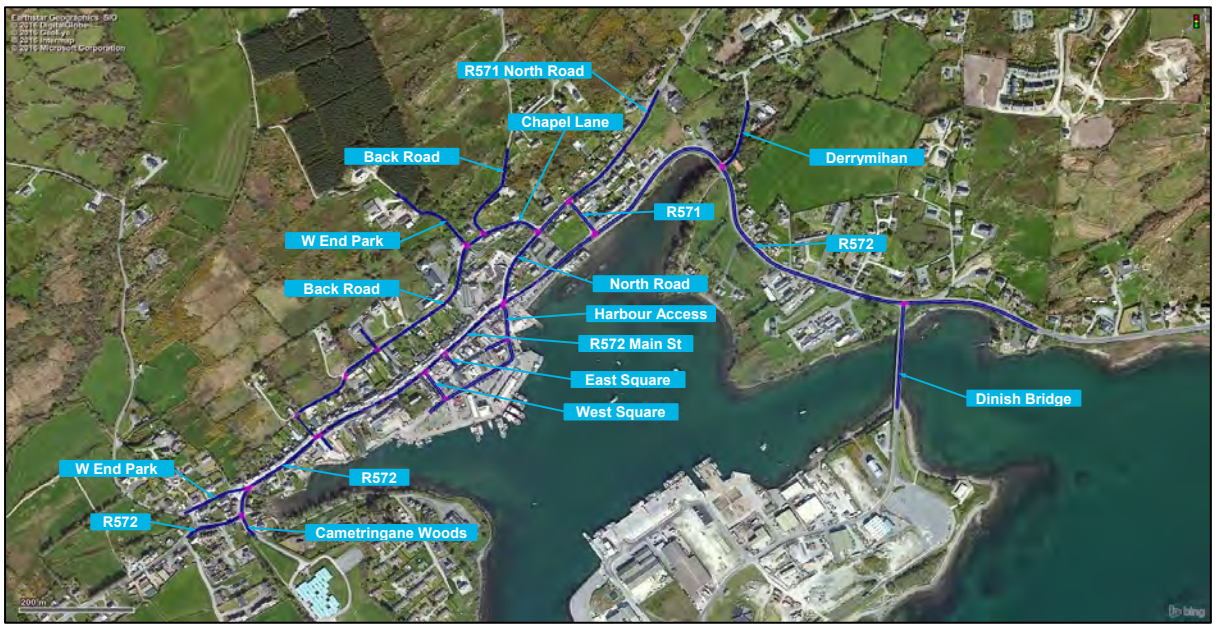

Figure 1.1 Extent of the Micro-simulation Model

1.2 Traffic Modelling Guidelines

The traffic micro-simulation modelling has been prepared in accordance with the following guidelines:

- Project Appraisal Guidelines for National Roads Unit 5.1 – Construction of Transport Models, PE-PAG-02015, October 2016;
- Project Appraisal Guidelines for National Roads Unit 5.2 – Data Collection, PE-PAG-02016, October 2016;
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, PE-PAG-02017, October 2016;
- Project Appraisal Guidelines for National Roads Unit 5.4 – Transport Modelling Report, PE-PAG-02018, October 2016;
- Traffic Modelling Guidelines, TfL Traffic Manager and Network Performance Best Practice, Version 3.0, September 2010; and
- PTV VISSIM 9 User Manual, September 2016.

1.3 Report Structure

This report is structured into the following sections:

- Section 2: Data Collection

  This section presents a review of the existing traffic conditions within the study area. Vehicle junction turning counts and speed data can be found in this section.

- Section 3: Model Development

  This section presents the methodology used to develop the model road network, driver behaviours, matrix building and assignment.

- Section 4: Model Calibration and Validation

  This section presents the comparison of the observed and modelled traffic data and checked against the calibration & validation criteria and acceptability guidelines as set out in the TII PAG.

- Section 5: Future Year Model Development

  This section presents the assessment of traffic management options and road proposals for future years 2026 and 2036.

- Section 6: Summary and Conclusion

  This section summarises the model development, calibration & validation procedures and modelling results for Base and future years 2026 and 2036. This section also presents the key findings and conclusion of the study.

Data Collection

02

2. Data Collection

2.1 Introduction

In order to develop the traffic micro-simulation model, a significant level of traffic data is required to ensure that the models can replicate the existing morning peak and evening peak traffic patterns and volumes. This section of the report describes the collection of data for the development of the Base models.

2.2 Traffic Surveys

A summary of the traffic survey data that was collected as part of the development of the Base model is outlined in Table 2.1.

Table 2.1 Traffic Survey Data

Survey Type	Description
Traffic Count	Junction Turning Count (JTC) surveys at 13 locations were carried out on Tuesday 4th October 2016 between 07:00-10:00 and 16:00-19:00. JCT resurveys at 2 locations were carried out on Tuesday 29th November 2016 between 07:00-10:00.
	Automatic Traffic Count (ATC) surveys at 2 locations were carried out within 7-day period between Monday 3rd October and Sunday 9th October 2016 inclusive.
Journey Time	Journey time surveys were collected for 6 paths within the study area.
Speed Data	Speed data were collected for 2 locations as part of the ATC surveys.

The location of the traffic surveys is illustrated in Figure 2.1.

Figure 2.1 Traffic Survey Locations

2.2.1 Junction Turning Counts

A JTC captures the total number of vehicles turning at a junction and observes which turn they take. The vehicles are classified into different categories including Car, Light Goods Vehicle (LGV), Other Goods Vehicle (OGV), Bus, Motorcycle (M/C) and Pedal Cycle (P/C). JTC surveys were undertaken at 13 junctions on Tuesday 4th October 2016 between 07:00-10:00 and 16:00-19:00. Traffic flow was classified by vehicle type and recorded in 15-minute time intervals. The following junctions were surveyed (see Figure 2.1 for locations map):

- Site 1: R572 / Dinish Bridge Junction;
- Site 2: R572 / Derrymihan Road Junction;
- Site 3: R572 / R571 Junction;
- Site 4: R571 / North Road Junction;
- Site 5: Chapel Lane / North Road Junction;
- Site 6: Back Road / Chapel Lane Junction;
- Site 7: Back Road / W End Park Junction;
- Site 8: R572 / North Road Junction;
- Site 9: Main Street / East Square Junction;
- Site 10: Main Street / West Square Junction;
- Site 11: Main Street / Back Road Junction;
- Site 12: R572 / W End Park Junction; and
- Site 13: R572 / Cametringane Woods Junction.

Sites 9 and 10 were resurveyed on Tuesday 29th November 2016 between 07:00-10:00.

The vehicle junction turning counts at 13 sites within the study area are presented for the AM and PM peaks in Figures 2.2 to 2.4.

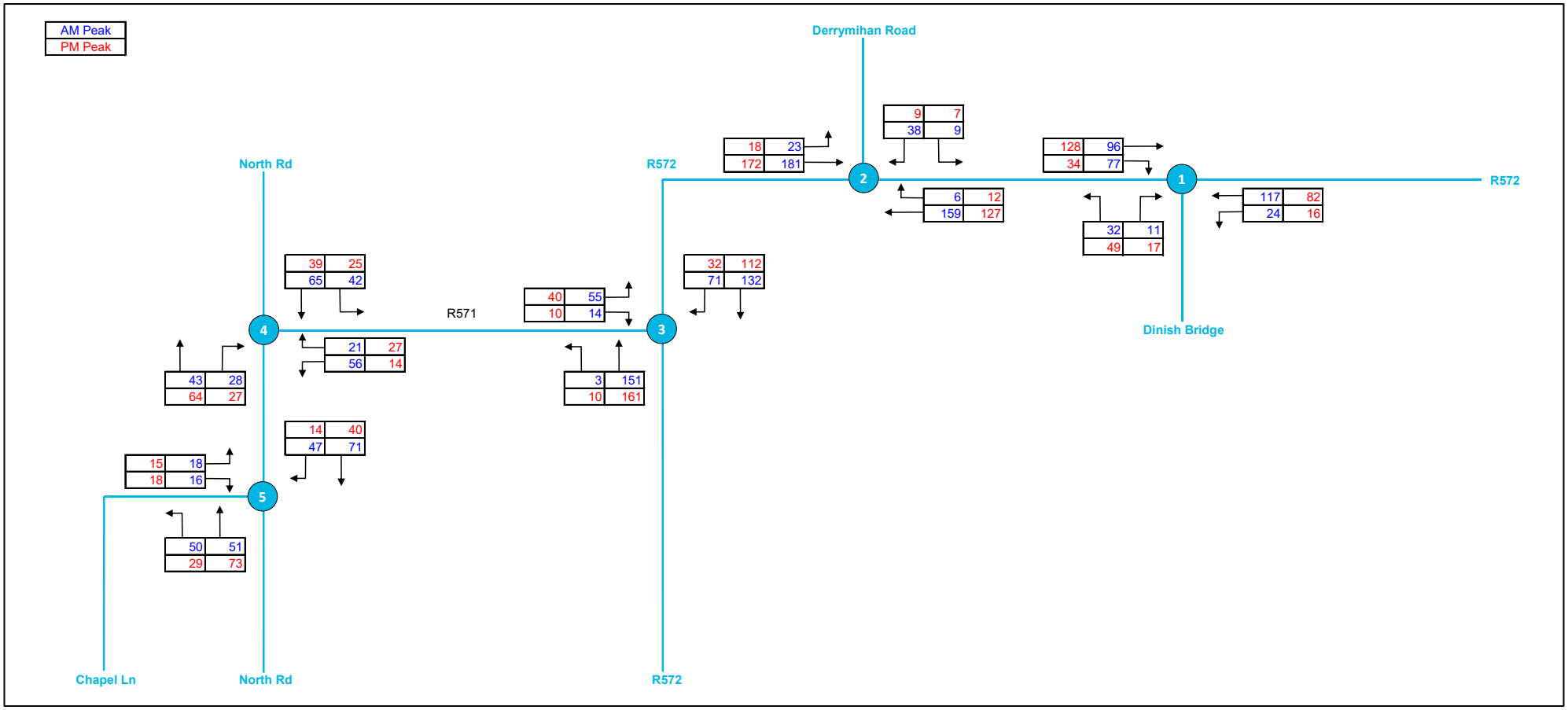

Figure 2.2 JCT for Sites 1 to 5

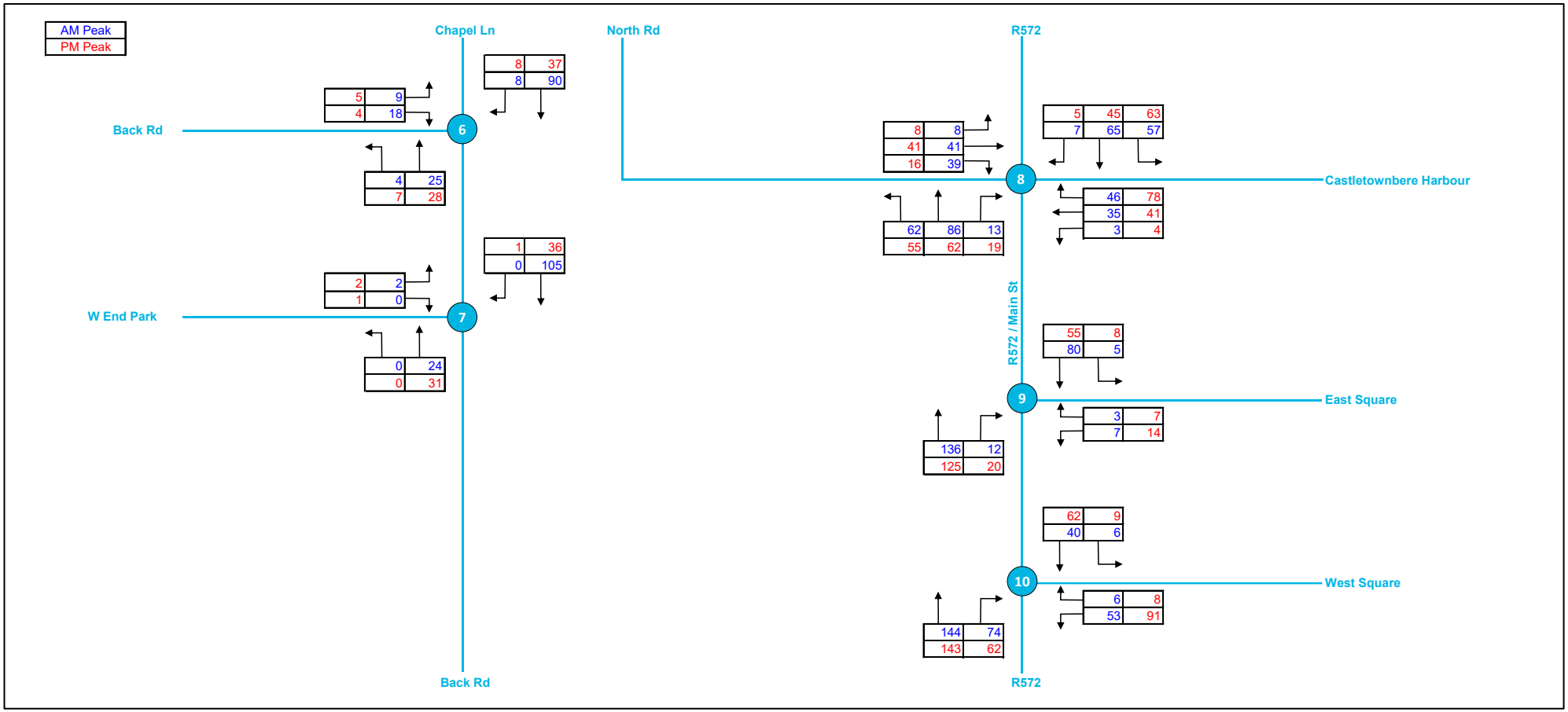

Figure 2.3 JCT for Sites 6 to 10

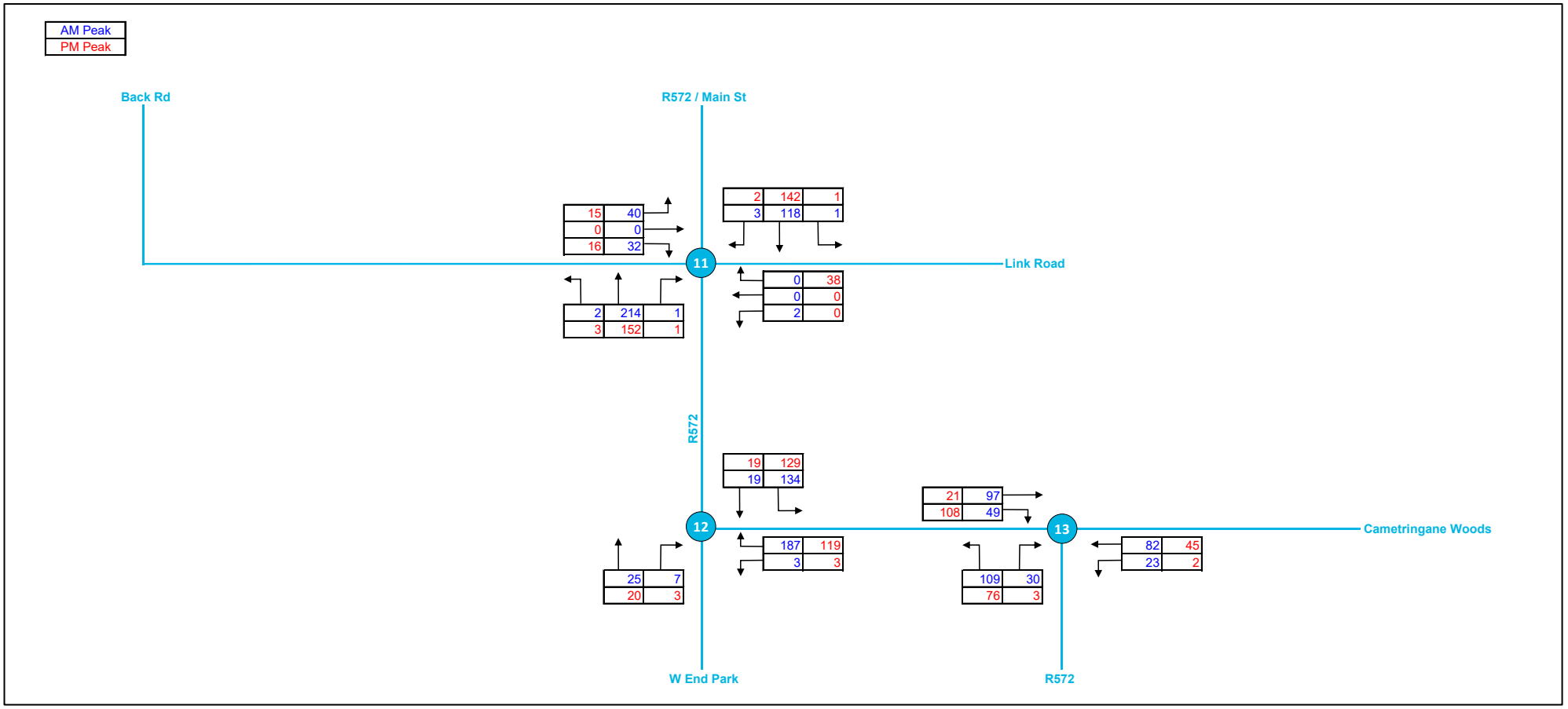

Figure 2.4 JCT for Sites 11 to 13

2.2.2 Automatic Traffic Counts

An ATC captures the number of vehicles passing a given point on a road and classifies the vehicles into different vehicle classifications including Motorcycle, Pedal Cycle, Cars, LGV & PSV (2-axle) OGV1 & PSV (3-axle) and OGV2. Traffic flow data extracted from the 2 ATC site surveys at the following point locations (see Figure 2.1 for locations map):

- Site A: R572 East of Town Centre; and
- Site B: R572 Town Centre.

The ATC surveys were carried out for 7-day period between Monday 3rd October and Sunday 9th October 2016. The weekday 15-minute average flow per vehicle class for each of the survey sites above is illustrated in Figures 2.5 to 2.8.

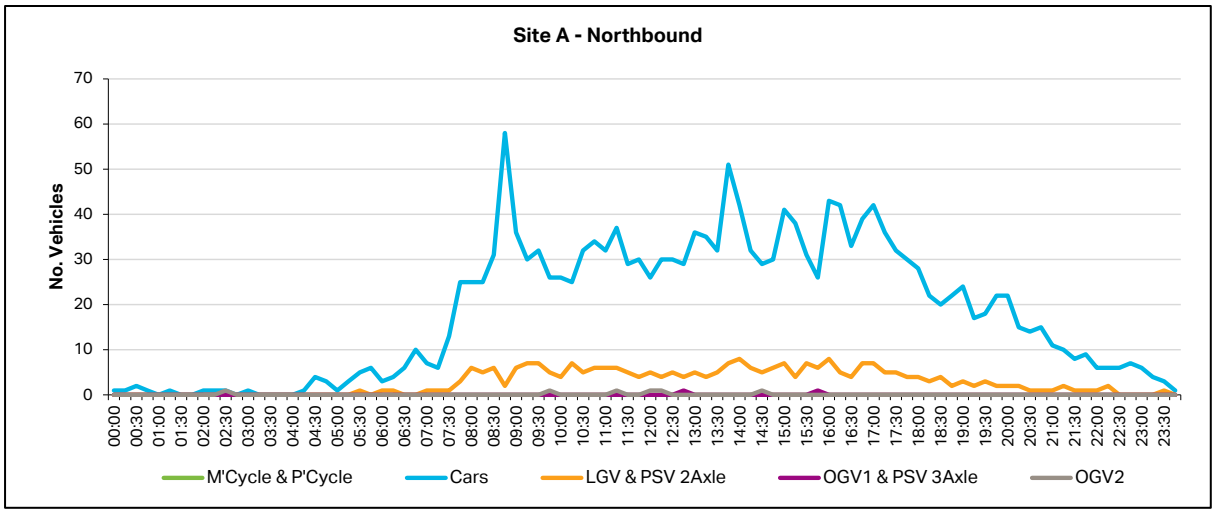

Figure 2.5 ATC for Site A – R572 East of Town Centre Northbound

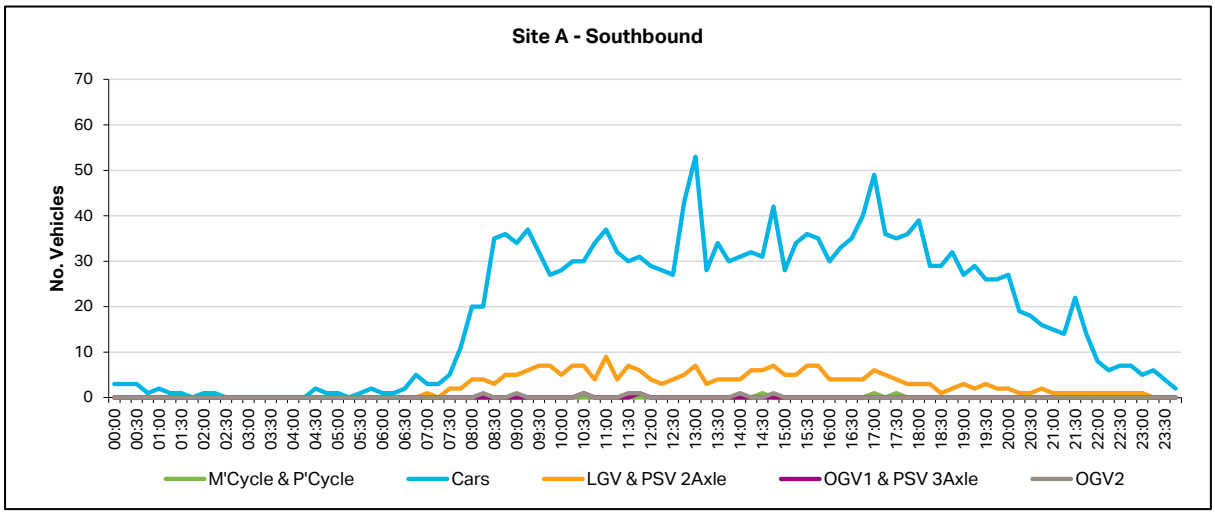

Figure 2.6 ATC for Site A – R572 East of Town Centre Southbound

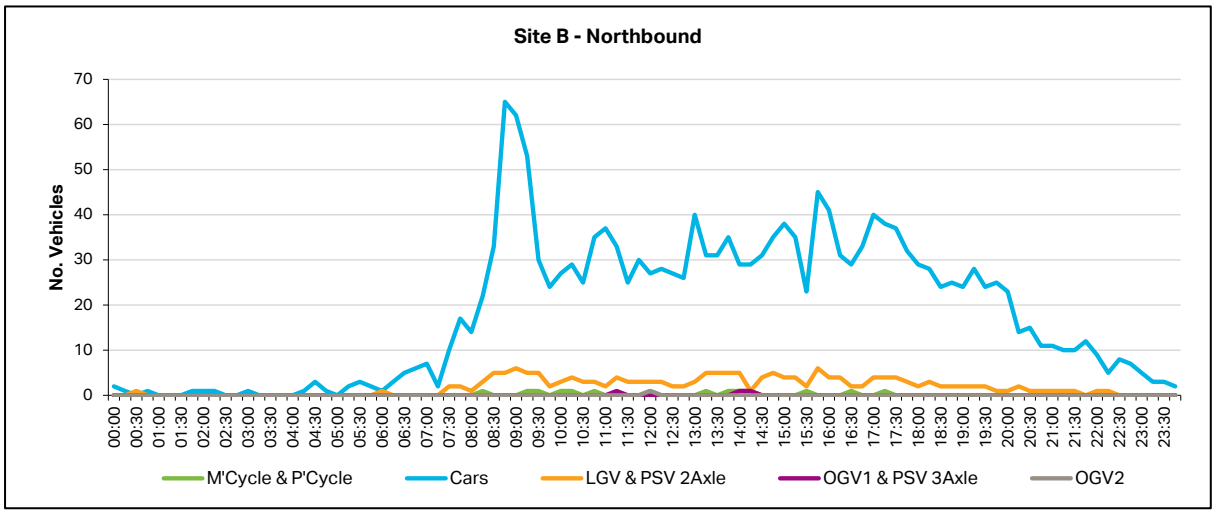

Figure 2.7 ATC for Site B – R572 Town Centre Northbound

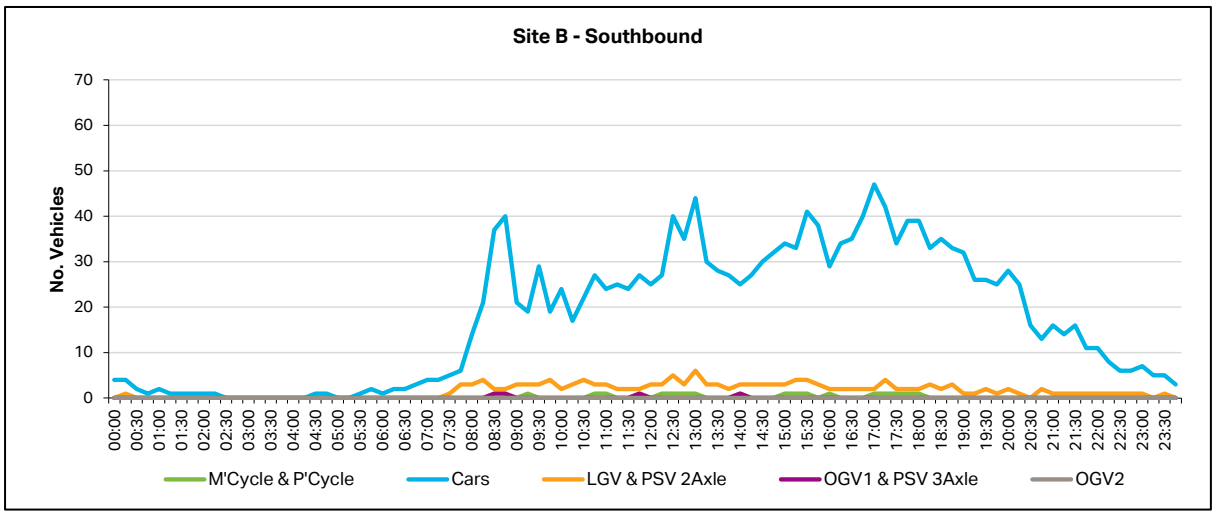

Figure 2.8 ATC for Site B – R572 Town Centre Southbound

2.2.3 Speed Data

Speed data for 2 sites were collected as part of the ATC surveys (see Figure 2.1 for locations map). The summary of the speed data for each direction at the survey sites are summarised in Table 2.2.

Table 2.2 Average Speed

	Time	Average Speed (kph)			
		ATC Site A R572 East of Town Centre		ATC Site B R572 Town Centre	
		Northbound	Southbound	Northbound	Southbound
AM Peak	08:15	51.1	49.0	34.0	32.1
	08:30	50.3	47.7	33.6	31.1
	08:45	49.9	47.1	30.6	28.8
	09:00	47.6	47.3	30.8	25.2
	09:15	48.5	46.3	28.9	25.8
	09:30	48.3	45.6	27.5	25.7
	09:45	47.7	45.4	27.7	26.2
PM Peak	15:45	47.3	45.6	24.7	24.6
	16:00	47.5	47.1	26.3	25.2
	16:15	48.5	45.9	25.7	24.5
	16:30	46.6	46.6	26.2	25.3
	16:45	47.0	45.8	26.3	25.2
	17:00	48.9	46.0	25.4	24.5
	17:15	47.0	47.2	24.6	24.7

2.2.4 Journey Time

Journey time data were collected for 6 paths within the study area. These paths are outlined below and the start and end point locations are illustrated in Figure 2.9.

- Path 1: (A to B) R572 South to R572 North;
- Path 2: (B to A) R572 North to R572 South;
- Path 3: (A to C) R572 South to North Road;
- Path 4: (C to A) North Road to R572 South;
- Path 5: (D to E) Back Road to R572 North; and
- Path 6: (E to D) R572 North to Back Road.

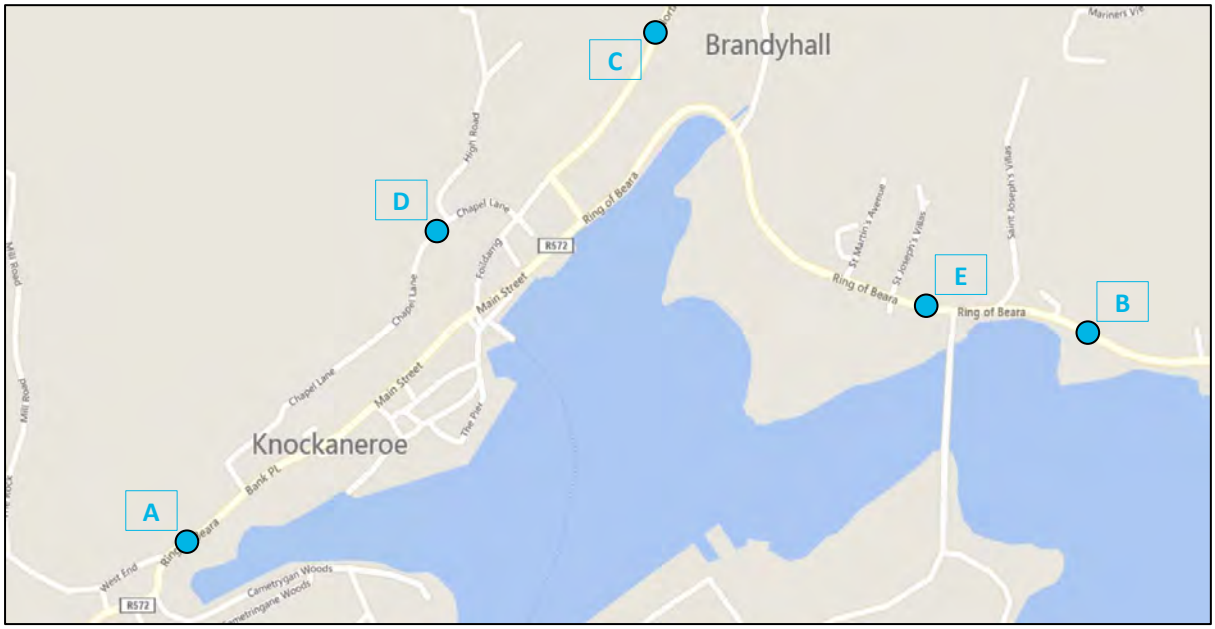

Figure 2.9 Point Locations for Journey Paths

The existing journey times are based on the Google Maps Distance Matrix API (Application Program Interface) which provides travel distance and time for a matrix of origins and destinations. In order to utilise the application program easily, AECOM developed a bespoke Visual Basic for Applications (VBA) spreadsheet which allows recording of journey times for specific time of the day or real time. The spreadsheet was used to record real time journey times on Monday 28th to Wednesday 30th November 2016. The recorded journey times are summarised in Table 2.3 for morning peak, which remained unchanged during the evening peak.

Table 2.3 Average Journey Times

Path No.	Start Point	End Point	Description	Journey Time (mm:ss)
1	A	B	R572 South to R572 North	03:42
2	B	A	R572 North to R572 South	03:45
3	A	C	R572 South to North Road	02:46
4	C	A	North Road to R572 South	03:40
5	D	E	Back Road to R572 North	02:44
6	E	D	R572 North to Back Road	02:39

Model Development

03

3. Model Development

3.1 Overview

This section of the report describes the development of the modelled road network, assignment and matrix building. The micro-simulation models have been developed for the following time periods. This includes 15-minute warm up and cool down periods.

- AM Peak: 08:15 – 09:45; and
- PM Peak: 15:45 – 17:15.

The peak hours were defined following an assessment of the ATCs and JTCs within the study area. The summary of the traffic flow for the JTC survey sites is presented in Figure 3.1.

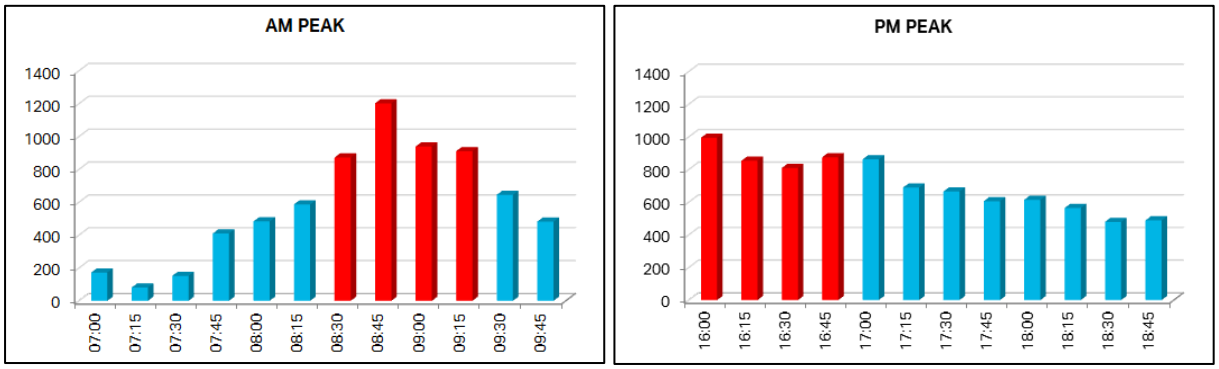

Figure 3.1 Peak Hour Selection

3.2 Network Coverage

A 2016 Base model was developed with network coverage as shown in Figure 1.1 in Section 1 of this report. The extent of the micro-simulation model covers the following areas:

- R572 / Dinish Bridge 3-arm priority junction;
- R572 / Derrymihan Road 3-arm priority junction;
- R572 / R571 3-arm priority junction;
- R571 / North Road 3-arm priority junction;
- Chapel Lane / North Road 3-arm priority junction;
- Back Road / Chapel Lane 3-arm priority junction;
- W End Park / Back Road 3-arm priority junction;
- R572 / North Road 4-arm priority junction;
- Main Street / East Square 3-arm priority junction;
- Main Street / West Square 3-arm priority junction;
- Main Street / Back Road 4-arm staggered priority junction;
- R572 / W End Park 3-arm priority junction; and
- R572 / Cametringane Woods 3-arm priority junction.

3.3 Zoning System

Zones are the start and destination points of the vehicles within the modelled road network. In traffic modelling, these are usually allocated at the end of the links that provide access to and exit from the road network. The micro-simulation model was coded with 18 zones and is illustrated in Figure 3.2.

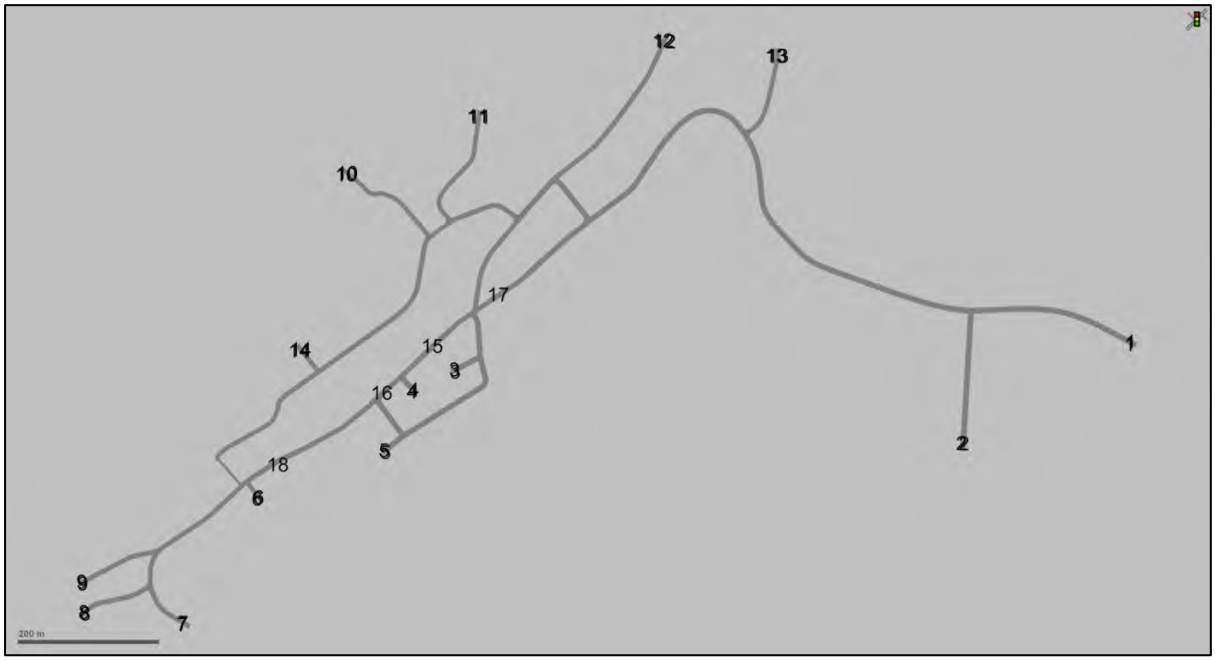

Figure 3.2 Base Model Zoning System

It is noted that Zones 15, 16, 17 and 18 are provided for on-street parking zones for modelling purposes.

3.4 Driver Behaviour

VISSIM incorporates a number of additional parameters to reflect 'real-life' conditions. This includes variable driver behaviours within a normal distribution range and desired speed decisions. Driver behaviour parameters have been modelled using the default car following model settings within VISSIM.

In addition, VISSIM assigns a 'gap acceptance' value at stopping points, to determine how traffic in the model behaves at junctions when seeking to move into the flow of mainline traffic from a minor road approach.

3.5 Assignment Methodology

VISSIM allows users to either specify fixed routing of traffic wherein the traffic demand is specified by using vehicle inputs on selected links with a given traffic volume; or to use the internal 'dynamic assignment' option wherein the traffic demand is specified in the form of one or more origin-destination matrix/matrices. In this case, the dynamic assignment has been used.

In dynamic assignment, traffic is assigned to the road network based on internal cost and travel time calculations. This would allow re-routing based on traffic responding to the changing conditions in the VISSIM road network should route options exist.

3.6 Junction Modelling

Priority markers were utilised to reflect the real life situation at priority junctions with minor arm traffic seeking gaps in opposing traffic. This has been applied in a number of junctions based on the survey video coverage, site visit observation and modelling judgement.

In addition, 'reduced speed areas' was used where appropriate (i.e. road bends, turns at a junction, etc.) in order to require vehicles to decelerate before entering the area and enter it at a reduced speed. The vehicle automatically accelerates after leaving the reduced speed area until it reaches its desired speed again.

3.7 Matrix Development

The Origin-Destination (O-D) matrix was initially based on the observed traffic turning count data. This process involved using observed traffic flows entering the model and applying turning proportions through the network to generate an output O-D prior matrix. The O-D prior matrix has been furnessed using the matrix projection facility in VISUM. This involved the projection to target values with input production and attraction values. The process has been set to 100 maximum numbers of iterations and produced the final matrix for the model.

Model Calibration and Validation

04

4. Model Calibration and Validation

4.1 Introduction

Following the development of the Base models, the process of calibration and validation were undertaken and is detailed in this section of the report.

4.2 Model Calibration

The purpose of model calibration is to ensure that the model assignments reflect the existing travel situation. Calibration is an iterative process, whereby the model is continually revised to ensure that the most accurate replication of the base year conditions is represented.

4.2.1 Model Calibration and Acceptability Guidelines

The model calibration process has been undertaken based on the requirements of the TII *PAG for National Roads Unit 5.1: Construction of Transport Models*. The PAG specifies the acceptable values for modelled and observed flow comparisons and suggests how calibration should relate to the magnitude of the values being compared. A summary of these targets is shown in Table 4.1 below.

Table 4.1. Model Calibration Criteria: Individual Flows

Criteria and Measures		Acceptability Guideline
Assigned hourly flows compared with observed flows		
1	Individual flows within 100 v/h flows less than 700 v/h	More than 85% of cases
2	Individual flows within 15% for flows between 700 & 2,700 v/h	
3	Individual flows within 400 v/h for flows greater than 2,700 v/h	

The standard method used to compare modelled counts against observed counts involves the calculation of the Geoff E. Havers (GEH) statistic (Chi-squared statistic), incorporating both relative and absolute errors. The GEH statistic is a measure of comparability that takes account of not only the difference between the observed and modelled flows, but also the significance of this difference with respect to the size of the observed flow. The GEH statistic is calculated as follows:

$$\mathrm{GEH} = \sqrt{\frac{(\mathrm{M} - 0)^2}{0.5(\mathrm{M} + 0)}}$$

Where M = Modelled Flow and O = Observed Flow.

Guidance in the PAG sets out the following GEH criteria:

Table 4.2. Model Calibration Criteria: GEH Values

Criteria and Measures		Acceptability Guideline
GEH Statistics	Individual flows – GEH < 5	More than 85% of cases

4.2.2 Calibration of Individual Flows

A total of 41 individual flows were used in the calibration process. The calibration results are summarised in Tables 4.3. The full calibration data set can be found in Appendix A of this report.

Table 4.3. Calibration Results: Individual Flows

Category	Criteria	AM Peak		PM Peak		Target
		LV	HV	LV	HV	
700 – 2,700 v/h	Within 15%	-	-	-	-	> 85%
<700 v/h	Within 100 v/h	100%	100%	100%	100%	> 85%
>2,700 v/h	Within 400 v/h	-	-	-	-	> 85%

As the results show, all GEH statistics are 100% for all user classes both for AM and PM peaks. The results therefore confirm that the models have been calibrated to a standard compliant with the TII PAG criteria for all user classes and both time periods.

4.2.3 Calibration of Link Flows

A total of 19 link flows were used in the calibration process. The results of the calibration are summarised in Table 4.4.

Table 4.4. Calibration Results: Link Flows

Criteria	AM Peak		PM Peak		Target
	LV	HV	LV	HV	
GEH Statistic	89%	100%	100%	100%	> 85%

The comparison of modelled and observed link flows shows that AM and PM peak models meet the TII calibration criteria. The results demonstrate that the calibration target is exceeded.

4.2.4 Calibration of Turning Flows

The observed and modelled turning flows were compared at each of the calibration sites in accordance with the GEH statistic criteria. The permissible difference was calculated for each value (based on the observed figure) and compared with that which had been modelled. The calibration results are summarised in Tables 4.5.

Table 4.5. Calibration Results: Turning Flows

Criteria	AM Peak		PM Peak		Target
	LV	HV	LV	HV	
GEH Statistic	90%	100%	98%	100%	> 85%

The comparison of modelled and observed turning flows shows that all peak period models meet the TII calibration criteria. The results demonstrate that the calibration target is exceeded.

4.3 Model Validation

Model validation comprises the comparison of calibrated flows against an independent data set which was not used as part of the calibration process. It forms a check on the quality of the network and assignment. Validation checks include the following:

- Individual flows validation;
- Link flows validation;

- Turning flows validation;
- Screenline validation; and
- Journey times validation.

4.3.1 Model Validation and Acceptability Guidelines

The TII PAG set out the criteria associated with the validation of transport models against flows, screenline and journey times. These criteria are summarised in Table 4.6.

Table 4.6. Model Validation Criteria

Criteria and Measures		Acceptability Guideline
Assigned hourly flows compared with observed flows		
1	Individual flows within 100 v/h flows less than 700 v/h	More than 85% of cases
2	Individual flows within 15% for flows between 700 & 2,700 v/h	
3	Individual flows within 400 v/h for flows greater than 2,700 v/h	
4	GEH statistic: Individual flows – GEH < 5	More than 85% of cases
Screenline		
5	GEH statistic: screenline totals < 4	
Modelled journey times compared with observed times		
6	Times within 15% or 1 minute if higher	More than 85% of cases

4.3.2 Validation of Individual Flows

A total of 49 observed and modelled individual flows were compared at a number of validation sites which were kept exclusive of the calibration data, in accordance with the criteria above. The permissible difference was calculated for each value (based on the observed figure) and compared with that which had been modelled. The validation results are summarised in Tables 4.7. The full validation data set can be found in Appendix A of this report.

Table 4.7. Validation Results: Individual Flows

Category	Criteria	AM Peak		PM Peak		Target
		LV	HV	LV	HV	
700 – 2,700 v/h	Within 15%	-	-	-	-	> 85%
<700 v/h	Within 100 v/h	100%	100%	100%	100%	> 85%
>2,700 v/h	Within 400 v/h	-	-	-	-	> 85%

The comparison of modelled and observed flows demonstrates that the AM and PM peak period models exceed GEH target for all user classes. Therefore, the model is deemed validated in terms of individual flows.

4.3.3 Validation of Link Flows

A total of 22 link flows were used in the validation process. The results of the validation are summarised in Table 4.8.

Table 4.8. Validation Results: Link Flows

Criteria	AM Peak		PM Peak		Target
	LV	HV	LV	HV	
GEH Statistic	86%	100%	100%	100%	> 85%

The comparison of modelled and observed link flows shows that all peak period models meet the TII criteria. The results demonstrate that the validation target is exceeded.

4.3.4 Validation of Turning Flows

The observed and modelled turning flows were compared at each of the validation sites in accordance with the GEH statistic criteria. The permissible difference was calculated for each value (based on the observed figure) and compared with that which had been modelled. The validation results are summarised in Tables 4.9.

Table 4.9. Validation Results: Turning Flows

Criteria	AM Peak		PM Peak		Target
	LV	HV	LV	HV	
GEH Statistic	94%	100%	98%	100%	> 85%

The comparison of modelled and observed turning flows shows that all peak period models meet the TII validation criteria. Therefore, the model is deemed validated in terms of turning flows.

4.3.5 Validation of Screenline

A comparison of modelled and observed flows across 3 screenlines by vehicle type and modelled time period has been undertaken for additional validation check of the models. The validation results are summarised in Table 4.10.

Table 4.10. Validation Results: Screenline

Category	Criteria	AM Peak	PM Peak	Target
GEH Statistic: Screenline Totals	< 4	100%	100%	> 85%

The comparison of modelled and observed flows across screenlines shows that all peak period models meet the TII validation criteria. The results demonstrate that the validation target is exceeded.

4.3.6 Validation of Journey Times

Validation checks were also undertaken for journey time by a comparison of modelled and observed times for 6 paths as discussed in Section 2.0 of this report. The journey time validation results are summarised in Tables 4.11 and 4.12 for AM peak and PM peak respectively.

Both AM and PM peak models satisfy the PAG requirement that 85% of all modelled journey times are within 15% of observed data or less than 60 seconds if higher. As such the Base models are considered validated to the requirements of PAG in terms of journey times.

Table 4.11. Validation Results: Journey Times – AM Peak

Path No.	Start Point	End Point	Route	Observed (mm:ss)	Modelled (mm:ss)	Absolute Difference (mm:ss)	% Difference	Validated
1	A	B	R572 South to R572 North	03:42	04:27	00:45	20.3%	**YES**
2	B	A	R572 North to R572 South	03:45	03:13	00:32	14.4%	**YES**
3	A	C	R572 South to North Road	02:46	02:57	00:11	6.6%	**YES**
4	C	A	North Road to R572 South	03:40	03:00	00:40	18.4%	**YES**
5	D	E	Back Road to R572 North	02:44	03:22	00:38	23.3%	**YES**
6	E	D	R572 North to Back Road	02:39	02:09	00:30	19.2%	**YES**
Percentage Validated								**100 %**

Table 4.12. Validation Results: Journey Times – PM Peak

Path No.	Start Point	End Point	Route	Observed (mm:ss)	Modelled (mm:ss)	Absolute Difference (mm:ss)	% Difference	Validated
1	A	B	R572 South to R572 North	03:42	04:01	00:19	8.4%	**YES**
2	B	A	R572 North to R572 South	03:45	03:36	00:09	4.1%	**YES**
3	A	C	R572 South to North Road	02:46	02:46	00:00	0.1%	**YES**
4	C	A	North Road to R572 South	03:40	03:08	00:32	14.7%	**YES**
5	D	E	Back Road to R572 North	02:44	02:45	00:01	0.7%	**YES**
6	E	D	R572 North to Back Road	02:39	02:06	00:33	20.7%	**YES**
Percentage Validated								**100 %**

Future Year Model Development

05

5. Future Year Model Development

5.1 Introduction

This section of the report sets out the development of the future year traffic models for the years 2026 and 2036 scenarios as outlined below:

- Scenario A: 2026 Do Nothing;
- Scenario B: 2026 Traffic Management No. 1;
- Scenario C: 2026 Traffic Management No. 2;
- Scenario D: 2036 Do Traffic Management No. 1 (i.e. the best performing option in year 2026);
- Scenario E: 2036 Do Traffic Management No. 1 and Roads Proposal – Northern Road;
- Scenario F: 2036 Do Traffic Management No. 1 and Roads Proposals – Northern and Southern Roads; and
- Scenario G: 2036 Do Traffic Management No. 1 and Roads Proposals – Southern Road.

5.2 Future Year Network Development

5.2.1 Scenario A: 2026 Do Nothing

The future year 'Do Nothing' network consists of the existing road network, which is assumed to be maintained over time. A screenshot of the modelled network for Scenario A, which is the same as the existing, is shown in Figure 5.1.

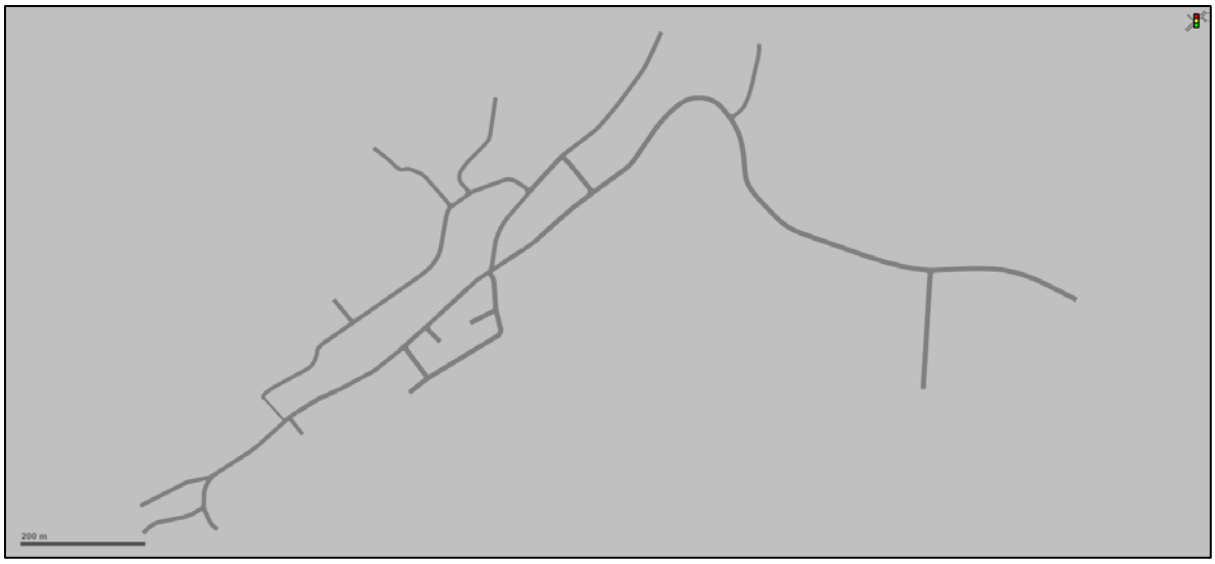

Figure 5.1 Scenario A – Modelled Network

5.2.2 Scenario B: 2026 Traffic Management No. 1

Traffic Management No. 1 includes the proposed one-way system on Main Street eastbound. The one-way system on the Main Street starts at its junction with the West Square and ends at its junction with the North Road. A screenshot of the modelled network for Scenario B is shown in Figure 5.2.

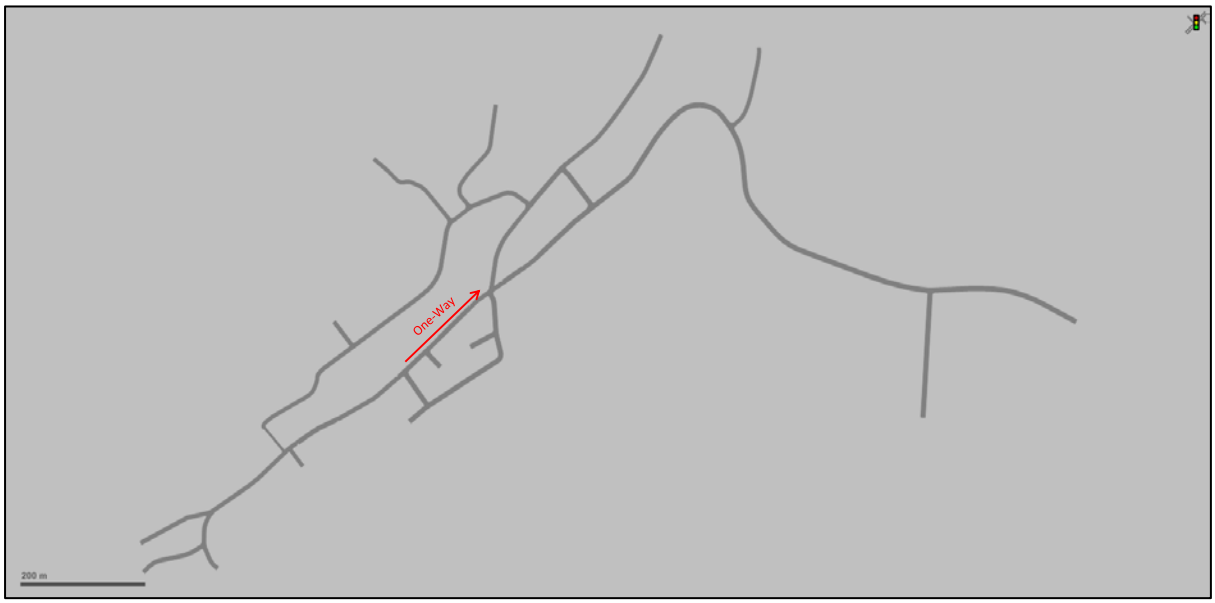

Figure 5.2 Scenario B – Modelled Network

5.2.3 Scenario C: 2026 Traffic Management No. 2

Traffic Management No. 2 includes the proposed one-way system on Main Street westbound. The one-way system on the Main Street starts at its junction with the North Road and ends at its junction with the West Square. A screenshot of the modelled network for Scenario B is shown in Figure 5.3.

Figure 5.3 Scenario C – Modelled Network

5.2.4 Scenario D: 2036 Do Traffic Management No. 1

The network for Scenario D is based on the best performing network among Scenarios A to C. As the modelling results show that the network for Scenario B is the best performing network when compared to Scenarios A and C, this network with the proposed one-way system on Main Street eastbound has been carried forward to modelling the scenarios for year 2036. A screenshot of the modelled network for Scenario D, which is the same as Scenario B, is shown is Figure 5.4. The modelling results are discussed in detail in Section 5.4 of this report.

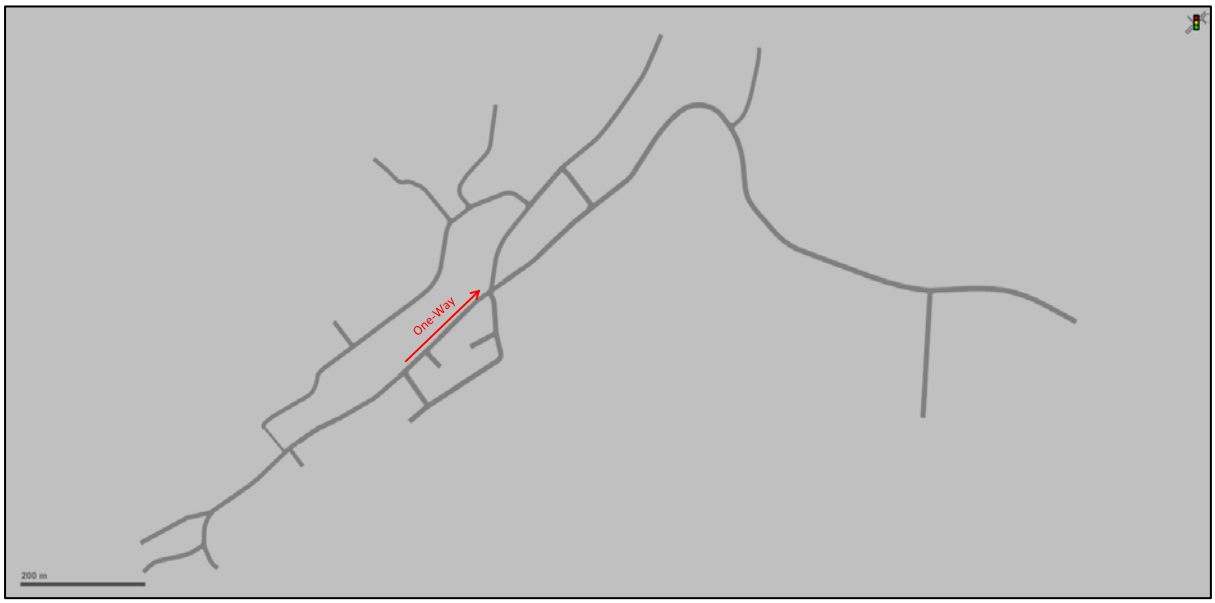

Figure 5.4 Scenario D – Modelled Network

5.2.5 Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road

Scenario E includes the proposed Northern Road as per LAP. This road runs parallel to the Back Road and links the W End Road at the south-west to Chapel Lane at the north-east of the network. Scenario E also includes the proposed one-way system on the Main Street eastbound. A screenshot of the modelled network for Scenario E is shown in Figure 5.5.

Figure 5.5 Scenario E – Modelled Network

It is noted that from this scenario, the existing St. Martin's Avenue has been added in the model at the north-east of the network. This road provides additional access to the future residential developments in the area (i.e. CR R-01 and CR R-02 – see Figure 5.10 for Castletownbere land use map). This road is coded as the same zone connector as Derrymihan Road to Zone 13. The zoning system for this scenario is illustrated in Figure 5.6.

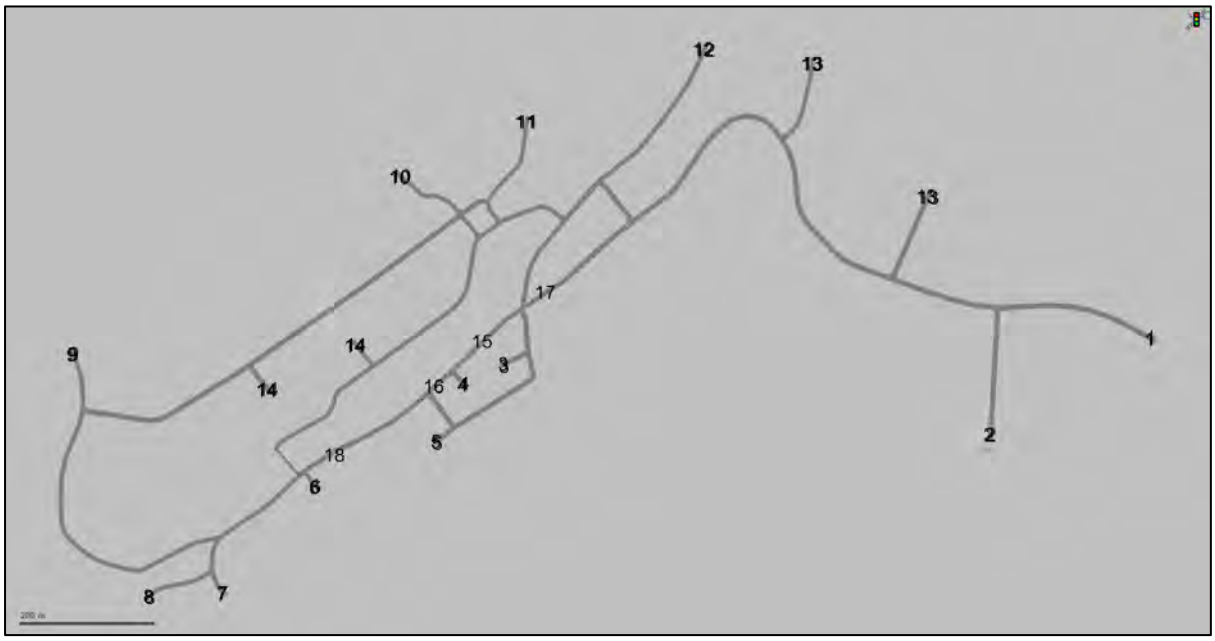

Figure 5.6 Scenario E – Modelled Zoning System

5.2.6 Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads

Scenario F includes the proposed Northern Road as per LAP and the proposed Southern Road as shown in Figure 5.7. The proposed Northern Road is the same as in Scenario E. The proposed Southern Road runs parallel to the Main Street. It forms a crossroad at the existing R572/Cametringane Woods Junction and provides link to The Square. This scenario also includes the proposed one-way system on the Main Street eastbound.

Figure 5.7 Scenario F – Modelled Network

5.2.7 Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road

Scenario G is similar to the previous scenario but without the Northern Road as shown in Figure 5.8. This scenario includes the Southern Road which runs parallel to the Main Street. It extends the existing road at The Square and connects with the existing R572/Cametringane Woods Junction. It is noted that additional arm has been included in the model at R572/Cametringane Woods Junction.

This provides access to the future residential and retail developments in the area (i.e. CR R-03 and CR T-02 – see Figure 5.10 for Castletownbere land use map).

Figure 5.8 Scenario G – Modelled Network

The zoning system for this scenario is illustrated in Figure 5.9.

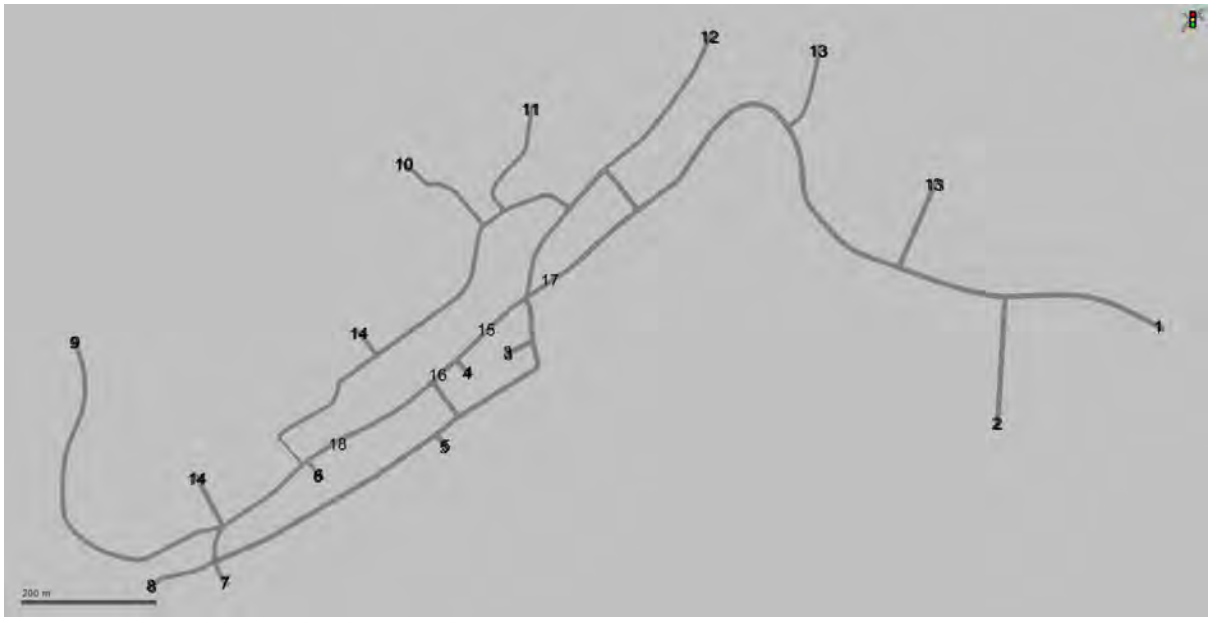

Figure 5.9 Scenario G – Modelled Zoning Sytem

5.3 Future Year Matrix Development

5.3.1 Overview

Two sets of matrices have been developed for future year scenarios. First is the demand forecast for background traffic based on the TII PAG growth factors. Second is the traffic growth based on the land use schedule within the study area as set out in the LAP.

5.3.2 Future Demand Forecast

The future demand forecast is based on the central growth factors as set out in the TII PAG. These factors were applied to the existing traffic and are summarised in Table 5.1.

Table 5.1 TII PAG Central Growth Factors

Region	2013 – 2030		2030 – 2050	
	LV	HV	LV	HV
South-West	1.02%	2.37%	0.12%	1.76%

5.3.3 Traffic Growth Based on Land Use Schedule

The LAP sets out specific zoning objectives for Castletownbere. These objectives include development for residential, industry, business, town centre, community, utilities and open space, recreation & amenity. Details of each of the development objectives are summarised in Table 5.2 and illustrated in Figure 5.10 as per LAP.

Table 5.2 LAP Castletownbere Specific Zoning Objectives

Development Objective	Objective No.	Approx. Area (Ha)	% Share	Description
Residential	CR R-01	8.8	23.0%	Medium B Density Residential Development to include detached and serviced sites subject to preparation of a detailed landscaping plan and provision of adequate road access for in---depth development & a link to adjoining residential site.
	CR R-02	8.4	21.9%	Medium B Density Residential Development including healthcare and community facilities to include detailed landscaping plan.
	CR R-03	9.8	25.6%	Medium B Density Residential Development including the phased construction of relief road.
	CR R-04	0.5	1.3%	Medium B Density Residential Development.
	CR R-05	4.6	12.0%	Medium B Density Residential Development including serviced sites and provision for access road.
	CR R-06	6.2	16.2%	Medium B Density Residential Development including provision for access road.
Total		38.3	100.0%	
Industry	CR I-01	21.3	100.0%	Small to medium sized industrial units for specialist marine related activities.
Business	CR B-01	17.6	94.6%	Small to medium sized business units within an overall planned business park layout subject to provision of adequate water services and roads infrastructure and a detailed landscaping plan.
	CR B-02*	0.8	4.3%	Business Development.
	CR B-03	0.2	1.1%	Healthcare and community facilities.
Total		18.6	100.0%	

Development Objective	Objective No.	Approx. Area (Ha)	% Share	Description
Town Centre	CR T-01*	5.7	35.6%	To promote the town centre as the primary area for retail and mixed use development, encourage sensitive refurbishment/redevelopment of existing sites and promote public realm improvements.
	CR T-02	10.3	64.4%	Provide for expansion of the town centre to facilitate additional retail/mixed use development, provision of community facilities and construction of part of U---03 northern relief road. Any proposals should make provision for a new public car park (the exact location and size of which to be agreed with the Council), provide for new town centre streets with connectivity to the existing town centre and include proposals for public realm improvements.
Total		16.0	100.0%	
Community	CR C-01	1.4	100.0%	Lands reserved for community purposes and the provision of outdoor education facilities.
Utilities	CR U-10	1.3	100.0%	Reserve site for wastewater treatment plant.
Open Space, Sports, Recreation & Amenity	CR O-01	3.8	52.8%	Provision for pedestrian and cycling link between the two roads & along the river bank.
	CR O-02	2.8	38.9%	Retain openness, trees and parkland quality.
	CR O-03	0.6	8.3%	Contribute to character and amenity of the town. Protect trees and view across the site and cove.
Total		7.2	100.0%	
Special Policy Area	CR X-01	1.7	100.0%	To protect this area for specialist marine related uses and other complementary harbour activities.

* Existing Development

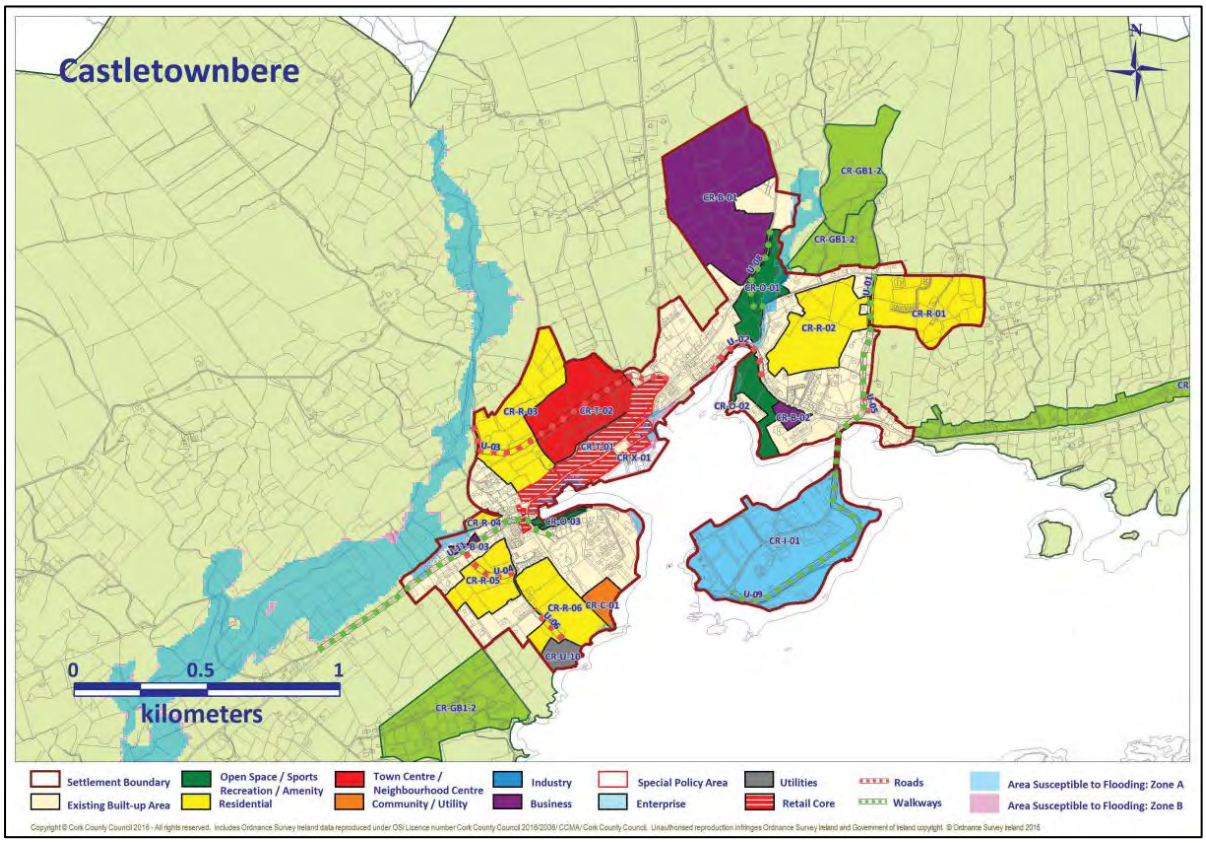

Figure 5.10 Castletownbere Land Use Map

The trip generation for the development objectives above was based on the trip rates from the Trip Rate Information Computer System (TRICS) database. TRICS is a database system comprising a large number of records including survey counts, traffic and multi-modal information of individual developments across a wide range of land use categories gathered from several places in UK and Ireland. The TRICS database has been examined and developments have been carefully selected to be similar town environments as with Castletownbere (i.e. low public transport, small size population). Table 5.3 summarises the trip rates for different land uses gathered from TRICS.

It is noted that the trip rates used for the Town Centre are based on the traffic counts at the 3 parking areas' entrance/exit points within the existing retail core (i.e. CR T-01 – see Figure 5.10 for Castletownbere land use map). These traffic counts are discussed in detail in Section 2 of this report.

Table 5.3 TRICS Trip Rates

Land Use	AM		PM		Calculation Factor (Vehicles)
	Arrival	Departure	Arrival	Departure	
Residential	2.50	9.50	8.14	5.14	Per 1 hectare
Industry	12.86	8.00	6.97	11.68	Per 1 hectare
Business	24.71	8.57	5.60	18.78	Per 1 hectare
Town Centre	36.49	26.84	17.72	27.72	Per 1 hectare
Community	15.11	6.12	6.69	12.05	Per 1 hectare
Utilities	28.16	28.16	10.68	12.62	Per 1 hectare
Open Space	0.14	0.06	0.17	0.34	Per 1 hectare
SPA / Marinas	1.88	1.10	3.17	6.70	Per 1 hectare

The trips generated for each of the development objectives based on the trip rates above is summarised in Table 5.4 both for arrivals and departures for AM and PM peaks. These trips were used for modelling the scenarios for year 2036 and with a 50% reduction for 2026. It is noted that the CR I-01 Industry relates primarily to the pier extension on Dinish Island. It is assumed that the total trips relating to the Industry would apply on year 2026.

Table 5.4 Trip Generation

Development Objective	Objective No.	Approx. Area (Ha)	% Share	AM Peak			PM Peak		
				Arr	Dep	Total	Arr	Dep	Total
Residential	CR R-01	8.8	23.0%	22	84	106	72	45	117
	CR R-02	8.4	21.9%	21	80	101	68	43	111
	CR R-03	9.8	25.6%	25	93	118	80	50	130
	CR R-04	0.5	1.3%	1	5	6	4	3	7
	CR R-05	4.6	12.0%	12	44	56	37	24	61
	CR R-06	6.2	16.2%	16	59	75	50	32	82
Total		38.3	100.0%	96	365	462	311	197	508
Industry	CR I-01	21.3	100.0%	274	170	444	148	249	397
Business	CR B-01	17.6	98.9%	435	151	586	99	331	430
	CR B-03	0.2	1.1%	5	2	7	1	4	5
Total		17.8	100.0%	440	153	593	100	335	435
Town Centre	CR T-02	10.3	100.0%	376	276	652	183	286	468
Community	CR C-01	1.4	100.0%	21	9	30	9	17	26
Utilities	CR U-10	1.3	100.0%	37	37	73	14	16	30
Open Space, Sports, Recreation & Amenity	CR O-01	3.8	52.8%	1	0	1	1	1	2
	CR O-02	2.8	38.9%	0	0	0	0	1	1
	CR O-03	0.6	8.3%	0	0	0	0	0	0
Total		7.2	100.0%	1	0	1	1	2	3
Special Policy Area	CR X-01	1.7	100.0%	3	2	5	5	11	17

5.3.4 Future Year Trip Distribution

With reference to the Castletownbere Land Use Map (see Figure 5.10) and Micro-simulation Model Zoning System (see Figures 3.2, 5.6 and 5.9), the arrival and departure trips have been assigned to the model zones in close proximity to the location of the developments. Table 5.5 outlines the model zones where the development trips have been assigned. These trips have been distributed on the network based on the existing trip ends pattern.

Table 5.5 Development Trips Assigned to Model Zones

Development Objective	Objective No.	AM Peak Vehicle Trips	PM Peak Vehicle Trips	Assigned to Model Zone
Residential	CR R-01	106	117	Zone 13

Development Objective	Objective No.	AM Peak Vehicle Trips	PM Peak Vehicle Trips	Assigned to Model Zone
	CR R-02	101	111	Zone 13
	CR R-03	118	130	Zone 14
	CR R-04	6	7	Zone 8
	CR R-05	56	61	Zone 8
	CR R-06	75	82	Zone 8
Total		462	508	
Industry	CR I-01	444	397	Zone 2
Business	CR B-01	586	430	Zone 12
	CR B-03	7	5	Zone 8
Total		593	435	
Town Centre	CR T-02	652	468	Zone 14
Community	CR C-01	30	26	Zone 7
Utilities	CR U-10	73	30	Zone 8
Open Space, Sports, Recreation & Amenity	CR O-01	1	2	Zone 13
	CR O-02	0	1	Zone 13
Total		1	3	
Special Policy Area	CR X-01	5	17	Zone 5

5.4 Results

5.4.1 Introduction

This section of the report presents the modelling results in terms of the following:

- Network Performance (including Average Travel Time per Vehicle, Total Travel Time, Average Speed, Average Delay);
- Journey Time; and
- Queue Length.

5.4.2 Network Performance

Network performance statistics were extracted from the traffic models for each of the future scenarios and a comparison was made against the Base. These statistics are summarised in Tables 5.6 to 5.9. These results are also illustrated in Figures 5.11 to 5.14. Key findings for each scenario are detailed as follows:

Scenario A: 2026 Do Nothing

In this scenario, the impact of the increased traffic in year 2026 assigned to existing road network includes increases in travel time & delay and a decrease in average speed as expected. During the AM peak, the average travel time per vehicle is seen to increase by two times (i.e. from 2.3 minutes

in Base to 4.7 minutes in year 2026). The average speed is seen to drop from 23.7 kph to 11.2 kph. Also, there has been a ninefold increase in average delay. During the PM peak, the average travel time per vehicle is seen to increase by 28.6% from the Base (i.e. from 2.1 minutes to 2.7 minutes). The average speed is seen to drop by 23% from the Base (i.e. from 27 kph to 20.8 kph) and as expected, the average delay is seen to increase by three times having 42.6 seconds in this scenario from to 13.8 seconds in the Base.

Scenario B: 2026 Traffic Management No. 1

The traffic impact of the proposed one-way system on Main Street eastbound in network performance includes minor increases in travel time & delay and minor decrease in average speed. During the AM peak, the average travel time per vehicle is seen to increase by 0.3 minutes (i.e. 18 seconds) which is negligible. Minor decrease in average speed is seen with 13.5% (i.e. from 23.7 kph in Base to 20.5 kph in 2026). Also, minor increase in average delay with additional 13.8 seconds to the Base can be seen in the modelling results. Similar patterns of traffic impact can be seen during the PM peak. Minor increase in travel time per vehicle is seen during the PM peak with 0.4 minutes (24 seconds) increase from the Base. A decrease in average speed is seen with 15.9% (i.e. from 27 kph in Base to 22.7 kph in 2026). The results also show an increase in average delay with additional 10.2 seconds to the Base, which is negligible. This scenario performs better than the previous Scenario A.

Scenario C: 2026 Traffic Management No. 2

The traffic impact of the proposed one-way system on Main Street westbound in network performance includes 26.1% minor increase in average travel time per vehicle (i.e. from 2.3 minutes in Base to 2.9 minutes in this scenario) during the AM peak. The average speed is seen to drop by 20.7% (i.e. from 23.7 kph to 18.8 kph). The average delay is seen to increase by more than threefold from the Base (i.e. from 17.2 seconds to 43 seconds). During the PM peak, the average travel time per vehicle is seen to increase by 28.6% from the Base (i.e. from 2.1 minutes to 2.7 minutes). The average speed is seen to drop by 21.1% from the Base (i.e. from 27 kph to 21.3 kph) and the average delay is seen to increase by more than two times from the Base (i.e. from 13.8 seconds to 28.4 seconds). This scenario performs better than Scenario A. However, the previous Scenario B performs better than this scenario.

2026 Modelling Results Summary

Overall, the modelling results show that **Scenario B** with the proposed one-way system on Main Street eastbound (Traffic Management No. 1) is the best performing option in year 2026. This is seen for both AM and PM peaks. The traffic management modelled in Scenario B is carried forward to the modelling of 2036 scenarios.

Scenario D: 2036 Do Traffic Management No. 1

The impact of the increased traffic in year 2036 assigned to the network with the one-way system on Main Street eastbound (i.e. 2026 Scenario B network) includes increases in travel time & delay and a decrease in average speed as expected. During the AM peak, the average travel time per vehicle is seen more than doubled from the Base (i.e. from 2.3 minutes in Base to 5.1 minutes is this scenario). The average speed is seen to drop significantly from 23.7 kph to 10.1 kph and there has been more than a tenfold increase in average delay having 182.30 seconds in this scenario from 17.2 seconds in Base. Similarly, during the PM peak, the average travel time per vehicle is seen to increase by 42.9% from the Base (i.e. from 2.1 minutes to 3.0 minutes). A decrease of 30.4% is seen in average speed and as expected, there has been more than a threefold increase in average delay from the Base.

Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road

The traffic impact of the proposed Northern Road together with the proposed one-way system on Main Street eastbound includes increases in travel time & delay and a decrease in average speed. However these impacts are better than the previous Scenario D. During the AM peak, the average

travel time is seen to increase by 52.2% (i.e. from 2.3 minutes in Base to 3.5 minutes in this scenario). The average speed is seen to drop by 32.1% having 16.1 kph in this scenario from 23.7 kph in Base. As expected, an increase in delay is seen with more than five times from the Base (i.e. from 17.2 seconds to 90 seconds). During the PM peak, the average travel time is seen to increase by 42.9% (i.e. from 2.1 minutes in Base to 3.0 minutes in this scenario). The average speed is seen to drop by 26.7% having 19.8 kph in this scenario from 27 kph in the Base. An increase in delay is seen with more than three times from the Base (i.e. from 13.8 seconds to 44.1 seconds). This scenario performs better than the previous Scenario D.

Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads

The traffic impact of the proposed Southern and Northern Road together with the proposed one-way system on Main Street eastbound includes increases in travel time & delay and a decrease in average speed. However these impacts are better than the previous Scenario E. During the AM peak, the average travel time is seen to increase 30.4% having 3.0 minutes in this scenario from 2.3 minutes in Base. The average speed is seen to decrease by 19.4% (i.e. from 23.7 kph in Base to 19.1 kph in this scenario). The average delay is seen to increase by more than three times from the Base having 58.8 seconds delay in this scenario from 17.2 seconds in Base. During the PM peak, minor increase of 33.3% is seen on average travel time per vehicle (i.e. from 2.1 minutes in Base to 2.8 minutes in this scenario). The average speed is seen to drop by 23% having 20.8 kph in this scenario from 27 kph in Base. Also, minor increase of 23.5 seconds is seen on average delay having 37.3 seconds delay in this scenario from 13.8 seconds in the Base. This scenario performs better than Scenario D. However, the previous Scenario E performs better than this scenario.

Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road

Increases in travel time & delay are seen with the proposed Southern Road together with the proposed one-way system on Main Street eastbound. Scenario F performs better than this scenario. The results show that the difference in average speed between this scenario and Scenario E (with the proposed Northern Road) is marginal. During the AM peak, the average travel time is seen to increase 82.6% having 4.2 minutes in this scenario from 2.3 minutes in Base. During the PM peak, there is a 38.1% increase in average travel time having 2.1 and 2.9 minutes for Base and Scenario G respectively.

2036 Modelling Results Summary

Overall, the modelling results show that **Scenario F** with the proposed Southern and Northern Road together with the proposed one-way system on Main Street eastbound is the best performing option in year 2036. This is seen for both AM and PM peaks. Both Scenario E (with the proposed Northern Road) and Scenario F (with the proposed Northern Road and Southern Road) is seen to improve the network performance when compared against Scenario D (without the Northern and Southern Roads) and Scenario G (with the Southern Road only) especially during the AM peak which is the town's busiest time of the day.

Table 5.6 Network Performance Results – 2026 AM Peak

Network Performance	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
Ave. Travel Time per Veh (min)	2.3	4.7	2.4	104.3%	2.6	0.3	13.0%	2.9	0.6	26.1%
Total Travel Time (hours)	2,108.9	9,483.7	7,374.8	349.7%	5,274.5	3,165.6	150.1%	5,861.9	3,753.0	178.0%
Average Speed (kph)	23.7	11.2	-12.5	-52.7%	20.5	-3.2	-13.5%	18.8	-4.9	-20.7%
Average Delay (secs)	17.2	161.3	144.1	837.8%	31.0	13.8	80.2%	43.0	25.8	150.0%

Table 5.7 Network Performance Results – 2036 AM Peak

Network Performance	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 – G	Diff	% Diff
Ave. Travel Time per Veh (min)	2.3	5.1	2.8	121.7%	3.5	1.2	52.2%	3.0	0.7	30.4%	4.2	1.9	82.6%
Total Travel Time (hours)	2,108.9	14,447.6	12,338.7	585.1%	10,593.6	8,484.7	402.3%	8,882.8	6,773.9	321.2%	12,375.2	10,266.3	486.8%
Average Speed (kph)	23.7	10.1	-13.6	-57.4%	16.1	-7.6	-32.1%	19.1	-4.6	-19.4%	13.0	-10.7	-45.1%
Average Delay (secs)	17.2	182.3	165.1	959.9%	90	72.8	423.3%	58.8	41.6	241.9%	130.9	113.7	661.0%

Table 5.8 Network Performance Results – 2026 PM Peak

Network Performance	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
Ave. Travel Time per Veh (min)	2.1	2.7	0.6	28.6%	2.5	0.4	19.0%	2.7	0.6	28.6%
Total Travel Time (hours)	1,678.1	4,830.7	3,152.6	187.9%	4,470.9	2,792.8	166.4%	4,811.4	3,133.3	186.7%
Average Speed (kph)	27	20.8	-6.2	-23.0%	22.7	-4.3	-15.9%	21.3	-5.7	-21.1%
Average Delay (secs)	13.8	42.6	28.8	208.7%	24	10.2	73.9%	28.4	14.6	105.8%

Table 5.9 Network Performance Results – 2036 PM Peak

Network Performance	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 – G	Diff	% Diff
Ave. Travel Time per Veh (min)	2.1	3.0	0.9	42.9%	3.0	0.9	42.9%	2.8	0.7	33.3%	2.9	0.8	38.1%
Total Travel Time (hours)	1,678.1	7,455.2	5,777.1	344.3%	7,479.9	5,801.8	345.7%	7,001.9	5,323.8	317.3%	7,129.5	5,451.4	324.9%
Average Speed (kph)	27	18.8	-8.2	-30.4%	19.8	-7.2	-26.7%	20.8	-6.2	-23.0%	19.7	-7.3	-27.0%
Average Delay (secs)	13.8	47.7	33.9	245.7%	44.1	30.3	219.6%	37.3	23.5	170.3%	52.1	38.3	277.5%

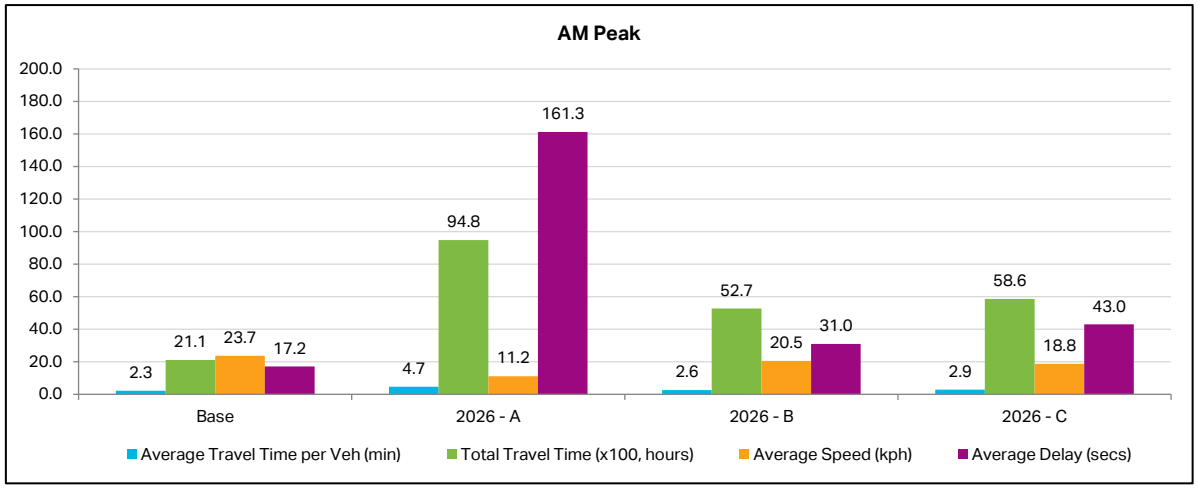

Figure 5.111 Network Performance Results – 2026 AM Peak

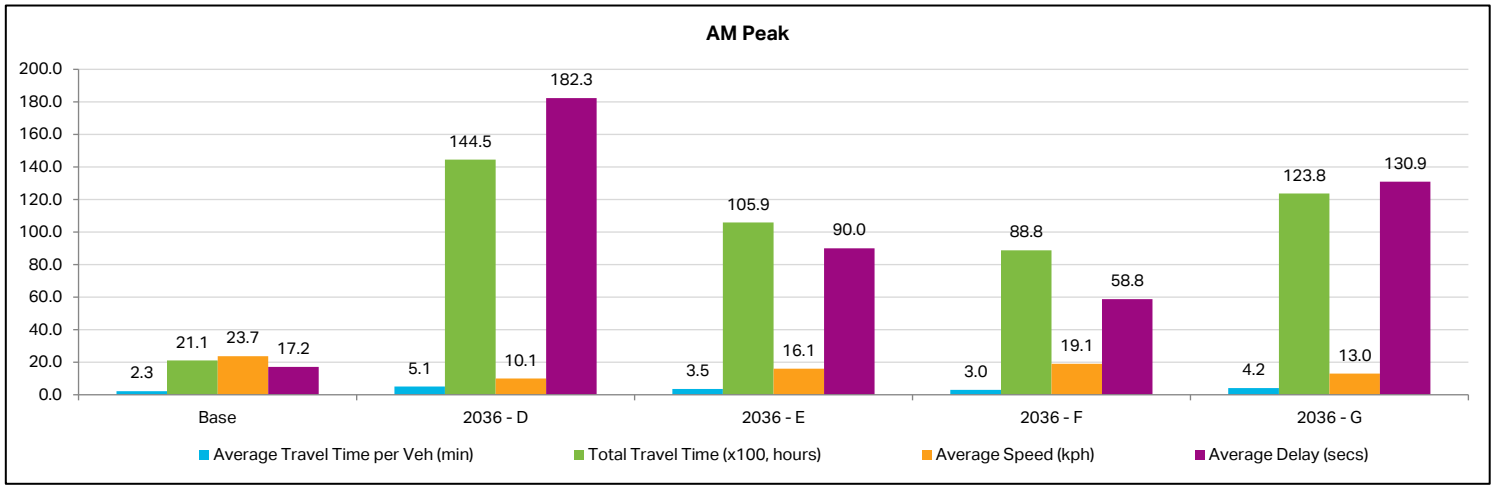

Figure 5.122 Network Performance Results – 2036 AM Peak

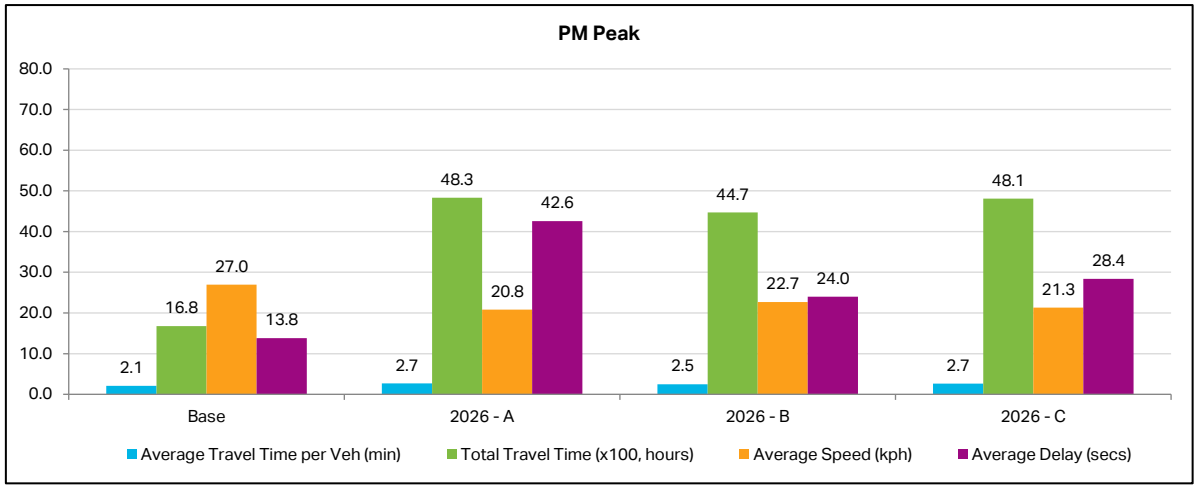

Figure 5.133 Network Performance Results – 2026 PM Peak

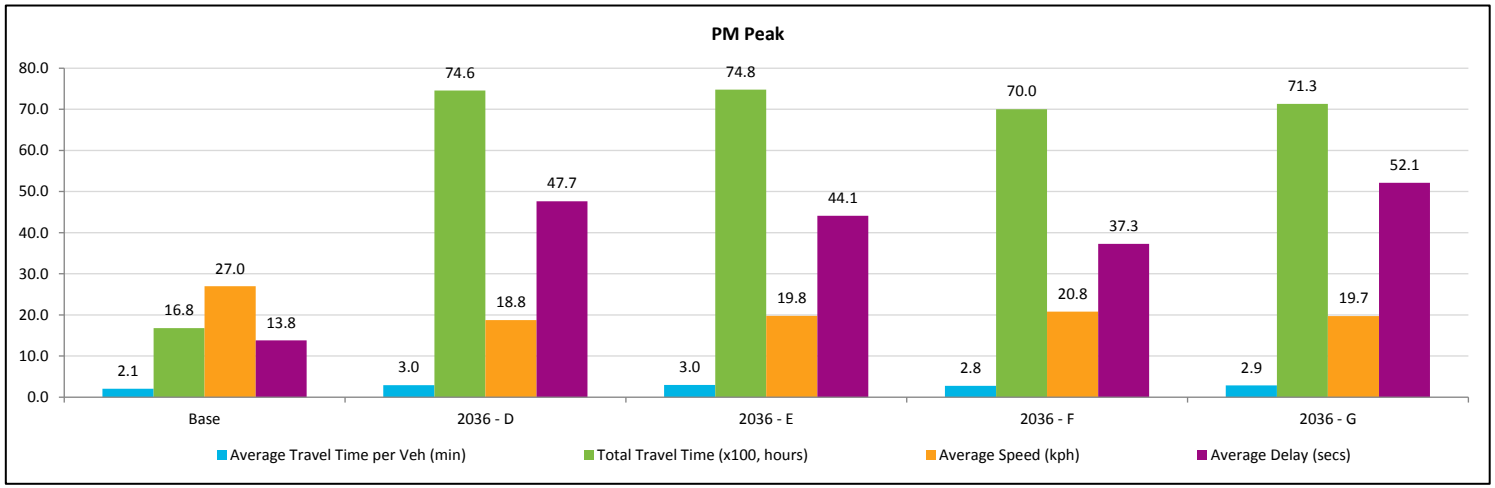

Figure 5.14 Network Performance Results – 2036 PM Peak

5.4.3 Journey Time

Journey times were extracted from the traffic models for 6 paths and a comparison was made against the Base. Details of these paths are discussed in Section 2 of this report – see Figure 2.9 for the start and end point locations of the paths. Journey time results are summarised in Tables 5.10 to 5.13. These results are also illustrated in Figures 5.15 to 5.18. Key findings for each scenario are detailed as follows:

Scenario A: 2026 Do Nothing

As expected, increases in journey time can be seen from the results for both AM and PM peaks. The highest increase can be seen on path no. 4 North Road to R572 South with more than four times from the Base (i.e. from 03:00 in Base to 12:24 in Scenario A) during the AM peak. During the PM peak, the highest 63.7% increase in journey time can be seen on path no. 3 R572 South to North Road with 04:31 in this scenario from 02:46 in Base.

Scenario B: 2026 Traffic Management No. 1

In this scenario, there has been a 39.5% increase in journey time on path no. 4 North Road to R572 South (i.e. from 03:00 in Base to 04:11 in Scenario B) being the highest during the AM peak. This is because of the longer route that vehicles take for this journey path due to the proposed one-way system on Main Street eastbound. While increases can be seen during the PM peak, these impacts are minor having less than 60 seconds for all paths. This scenario has better journey times than the previous Scenario A.

Scenario C: 2026 Traffic Management No. 2

In this scenario, the highest 68.9% increase in journey time can be seen on path no. 3 R572 South to North Road having 04:59 in this scenario from 02:57 in Base. Similarly, during the PM peak, 36% increase can be seen on path no. 1 R572 South to R572 North having 05:27 in this scenario from 04:01 in Base. These increases are expected on the paths because of the longer route that vehicles take due to the proposed one-way system on Main Street westbound. This scenario generally appears to have better journey times than Scenario A. However, the previous Scenario B performs better than this scenario.

2026 Modelling Results Summary

Generally, the journey time results show that **Scenario B** with the proposed one-way system on Main Street eastbound (Traffic Management No. 1) is the best performing option in year 2026.

Scenario D: 2036 Do Traffic Management No. 1

Increases in journey time can be seen in the modelling results for all paths for both AM and PM peaks as expected. There has been an additional 05:34 journey time for path no. 3 R572 South to North Road during the AM peak and 01:14 during the PM peak, being the highest increases for this scenario.

Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road

In this scenario, the modelling results show increases in journey times when compared against the Base. However, this scenario generally performs better than the previous Scenario D. During the AM peak, the highest increase is seen on path no. 6 R572 North to Back Road with additional 02:50 journey time to the Base. It is noted that due to the traffic growth for year 2036, a build-up of queues is observed on the R572 southbound approach at R572/R571 Junction. Additional delays are seen on R572/R571 and R571/North Road Junctions. These delays have increased journey times on paths traversing the Back Road and the North Road. More details on queue length are presented in Section 5.4.4 of this report – see Figure 5.20 for model screenshot of the build-up of queues on R572 North Road. During the PM peak, the highest 55.8% increase in journey time can be seen on path no. 3 R572 South to North Road (i.e. from 02:46 in Base to 04:18 in this scenario).

Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads

The journey time results in this scenario are generally better than the previous Scenarios D and E. While increases can be seen when compared against the Base, the journey time results for this scenario generally show improvements when compared to Scenarios D and E.

During the AM peak, an additional 02:12 journey time to the Base can be seen on path no. 6 R572 North to Back Road which is the highest increase in this time period. During the PM peak, the highest increase can be seen on path no. 5 Back Road to R572 North with additional 01:16 journey time to the Base. As discussed in the previous scenario, the build-up of queues on R572/R571 areas introduced additional delays on paths traversing the Back Road and the North Road.

Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road

In this scenario, the modelling results show increases in journey times when compared against the Base. The high increases are seen during the AM peak on path no. 2 R572 North to R572 South and path no. 6 R572 North to Back Road. The increase in path no 2 R572 North to R572 South is almost three times the Base (i.e. from 03:13 in Base to 09:51 in this scenario) while the increase in path no. 6 R572 North to Back Road is almost two times the Base (i.e. from 02:09 in Base to 04:30 in this scenario). Again, this is due to the build-up of queues on R572/R571 areas which introduced additional delays on paths traversing the Back Road and the northern part of the North Road. During the PM peak, the journey time increases are all less than 1 minute. The highest increase is seen on path no. 5 Back Road to R572 North with 57 seconds increase from the Base. Scenario F is generally performs better than this scenario. *2036 Modelling Results Summary*

The addition of the Northern Road on the network in Scenario E brings improvement on the journey times for the 6 paths within the study area in year 2036 when compared against Scenario D. Similarly, the addition of the Southern Road on the network in Scenario G brings improvement on the journey times when compared to Scenario D. Also, the modelling results show that with the Southern Road on the network together with the Northern Road and the proposed one-way system on Main Street eastbound in Scenario F generally brings further improvements on the journey times. **Scenario F** is the best performing option for 2036 in terms of journey time.

Table 5.10 Journey Time Results – 2026 AM Peak

Path No.	Journey Path	Dist (km)	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
1	R572 South to R572 North	1.70	04:27	06:30	02:03	46.1%	04:21	00:06	-2.2%	06:35	02:08	47.8%
2	R572 North to R572 South	1.70	03:13	05:59	02:47	86.6%	04:14	01:01	31.7%	03:59	00:47	24.4%
3	R572 South to North Road	1.10	02:57	05:10	02:13	74.9%	03:34	00:37	20.8%	04:59	02:02	68.9%
4	North Road to R572 South	1.07	03:00	12:24	09:24	314.2%	04:11	01:11	39.5%	03:53	00:53	29.5%
5	Back Road to R572 North	1.20	03:22	04:38	01:16	37.5%	03:29	00:07	3.5%	03:31	00:09	4.5%
6	R572 North to Back Road	1.20	02:09	06:14	04:05	190.6%	02:23	00:15	11.6%	02:20	00:11	8.6%

Table 5.11 Journey Time Results – 2036 AM Peak

Path No.	Journey Path	Dist (km)	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 – G	Diff	% Diff
1	R572 South to R572 North	1.70	04:27	06:36	02:09	48.2%	04:54	00:27	10.3%	04:09	00:18	-6.6%	04:28	00:01	0.4%
2	R572 North to R572 South	1.70	03:13	07:34	04:22	136.0%	07:22	04:10	129.6%	05:47	02:34	80.2%	09:51	06:38	206.8%
3	R572 South to North Road	1.10	02:57	08:31	05:34	188.4%	03:35	00:38	21.5%	03:21	00:24	13.3%	03:52	00:55	31.2%
4	North Road to R572 South	1.07	03:00	04:59	01:59	66.5%	05:18	02:18	76.9%	04:38	01:38	54.5%	04:42	01:43	57.1%
5	Back Road to R572 North	1.20	03:22	05:03	01:41	50.0%	04:40	01:17	38.3%	03:31	00:09	4.2%	03:40	00:17	8.6%
6	R572 North to Back Road	1.20	02:09	05:41	03:32	164.9%	04:58	02:50	132.0%	04:21	02:12	102.7%	06:39	04:30	210.3%

Table 5.12 Journey Time Results – 2026 PM Peak

Path No.	Journey Path	Dist (km)	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
1	R572 South to R572 North	1.70	04:01	05:49	01:49	45.1%	04:29	00:29	11.9%	05:27	01:27	36.0%
2	R572 North to R572 South	1.70	03:36	03:54	00:18	8.4%	03:44	00:08	3.7%	04:02	00:26	12.2%
3	R572 South to North Road	1.10	02:46	04:31	01:46	63.7%	02:48	00:02	1.1%	03:45	00:59	35.8%
4	North Road to R572 South	1.07	03:08	03:22	00:14	7.6%	03:32	00:25	13.1%	03:36	00:28	15.2%

Path No.	Journey Path	Dist (km)	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
5	Back Road to R572 North	1.20	02:45	02:56	00:11	6.6%	03:32	00:46	28.1%	03:35	00:50	30.3%
6	R572 North to Back Road	1.20	02:06	02:12	00:06	4.6%	02:13	00:07	5.6%	02:12	00:06	5.1%

Table 5.13 Journey Time Results – 2036 PM Peak

Path No.	Journey Path	Dist (km)	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 – G	Diff	% Diff
1	R572 South to R572 North	1.70	04:01	05:32	01:31	37.9%	04:51	00:50	20.9%	04:27	00:27	11.0%	04:39	00:39	16.1%
2	R572 North to R572 South	1.70	03:36	04:18	00:43	19.7%	05:05	01:29	41.1%	04:39	01:03	29.2%	04:10	00:34	15.9%
3	R572 South to North Road	1.10	02:46	04:00	01:14	44.6%	04:18	01:33	55.8%	03:24	00:38	23.1%	03:28	00:42	25.3%
4	North Road to R572 South	1.07	03:08	03:41	00:34	17.9%	04:00	00:52	27.7%	04:02	00:54	28.9%	04:01	00:53	28.4%
5	Back Road to R572 North	1.20	02:45	03:54	01:09	41.5%	03:56	01:11	43.1%	04:01	01:16	46.0%	03:42	00:57	34.4%
6	R572 North to Back Road	1.20	02:06	02:33	00:27	21.30%	02:30	00:24	18.9%	02:30	00:24	18.9%	02:15	00:08	6.7%

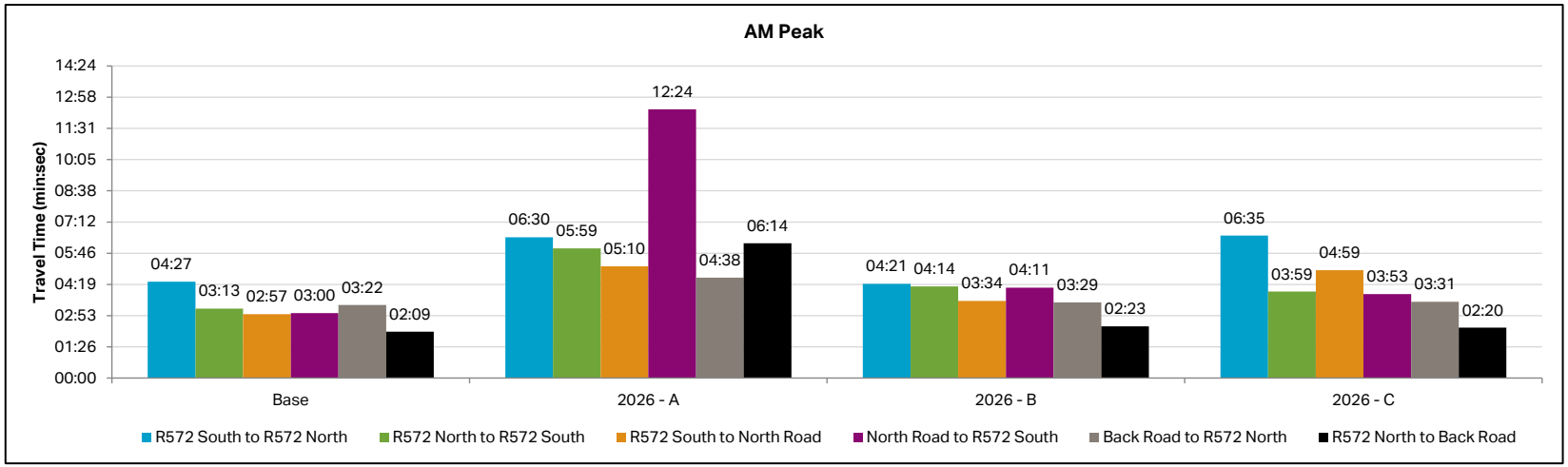

Figure 5.15 Journey Time Results – 2026 AM Peak

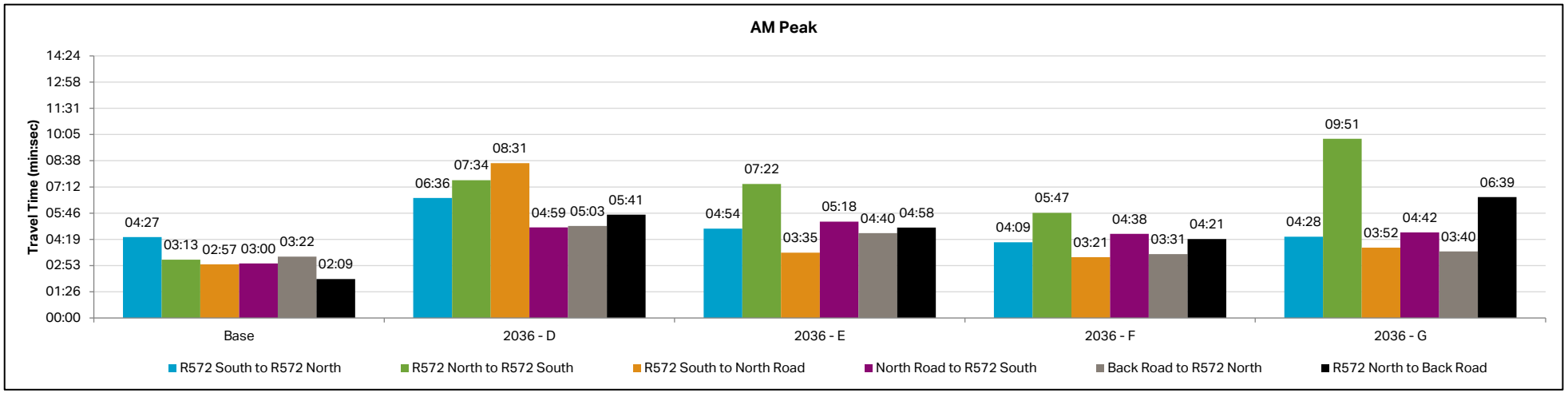

Figure 5.16 Journey Time Results – 2036 AM Peak

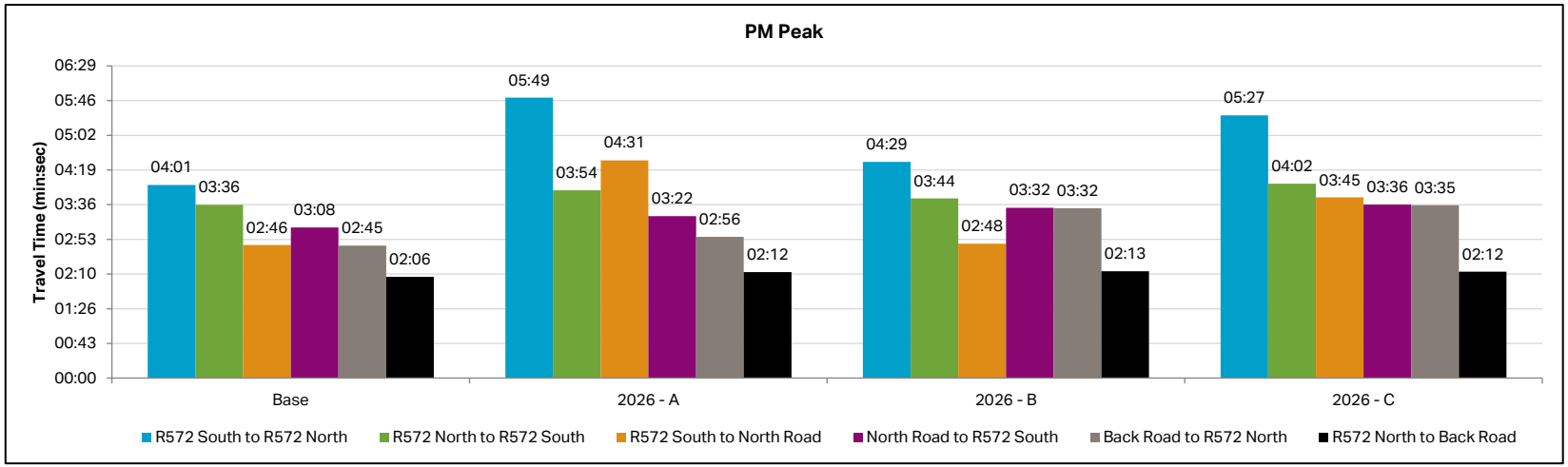

Figure 5.17 Journey Time Results – 2026 PM Peak

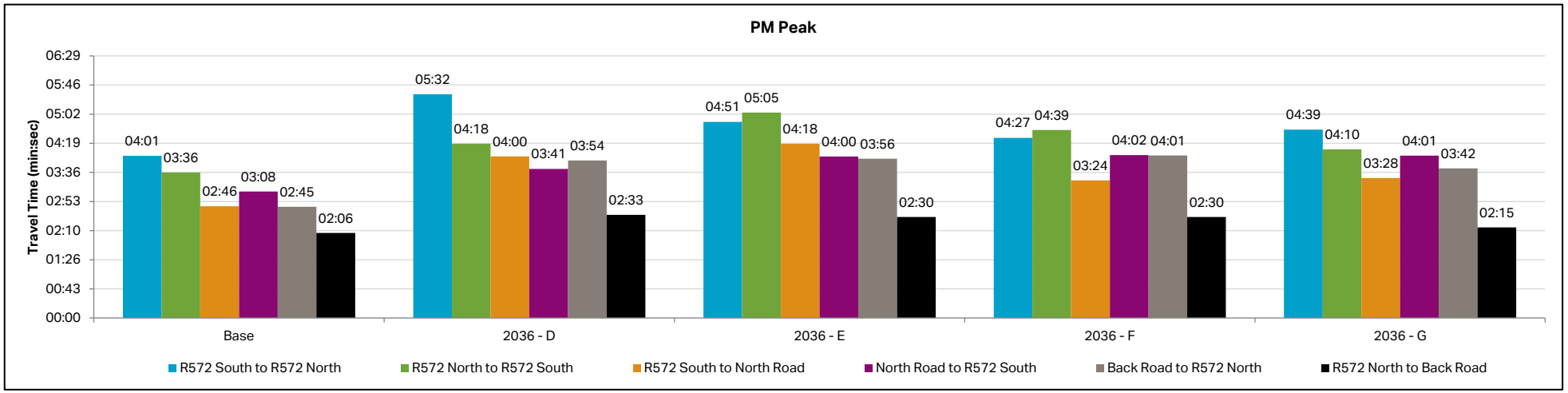

Figure 5.18 Journey Time Results – 2036 PM Peak

5.4.4 Queue Length

Queue lengths were extracted from the traffic models for 3 junctions within the study area. These junctions are outlined below and the locations are shown in Figure 5.19.

- Junction 1: R572 Main Street / West Square;
- Junction 2: R572 Main Street / North Road; and
- Junction 3: R572 / R571.

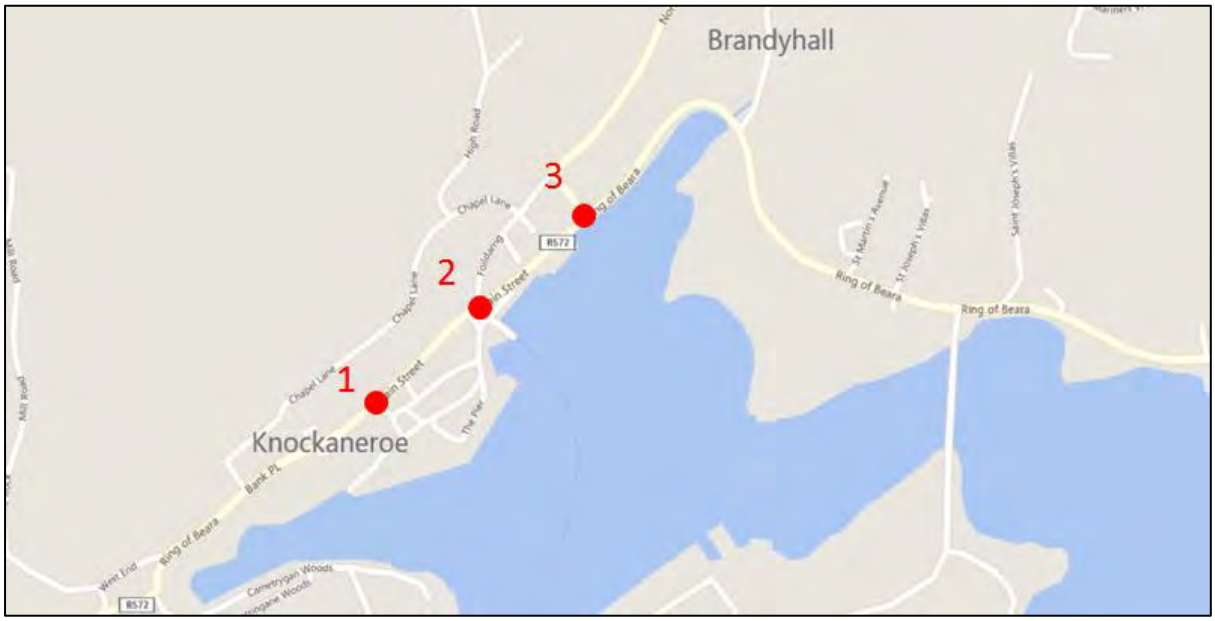

Figure 5.19 Location of Junctions for Queue Length Results

Queue length results are summarised in Tables 5.14 to 5.17. Key findings for each scenario are detailed as follows:

Scenario A: 2026 Do Nothing

In this scenario, a build-up of queues with 96 vehicles is seen on the North Road eastbound approach at R572 Main Street/North Road Junction and 82 vehicles on R571 eastbound approach on R572/R571 Junction during the AM peak. These queues would cause excessive delay and therefore suggests a need for traffic mitigation measures. During the PM peak, the longest queue is 15 vehicles and is seen on R572 Main Street northbound approach at R572 Main Street/West Square Junction while the existing is 7 vehicles. The level of queues during the PM peak seems manageable.

Scenario B: 2026 Traffic Management No. 1

The impact on queues in this scenario is seen minor during the AM and PM peaks. The longest queue is seen on R572 Main Street northbound at R572 Main Street/West Square Junction from 11 vehicles in Base to 18 vehicles in this scenario during the AM peak. During the PM peak, the highest impact is seen on West Square westbound at R572 Main Street/West Square Junction from 3 vehicles in Base to 9 vehicles in this scenario. The network in this scenario leads to improvement on queue length which is better than the previous Scenario A.

Scenario C: 2026 Traffic Management No. 2

The impact on queues in this scenario is generally with the same level as seen in the previous Scenario B. The longest queue is seen on R572 Main Street northbound approach with 16 vehicles and 12 vehicles for AM peak and PM peak respectively, which are both manageable.

2026 Modelling Results Summary

As can be seen in the modelling results, both **Scenario B** and **Scenario C** lead to improvement of queues when compared against Scenario A. The impact on queue in these two scenarios are the same and manageable.

Scenario D: 2036 Do Traffic Management No. 1

As expected, a build-up of queues with 84 vehicles is seen on North Road eastbound at R572 Main Street/North Road Junction and 92 vehicles on R572 southbound at R572/R571 Junction during the AM peak. During the PM peak, the longest queue with 29 vehicles is seen on R571 eastbound at R572/R571 Junction.

Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road

In this scenario, the modelling shows a massive build-up of queues with 101 vehicles on R572 southbound approach at R572/R571 Junction during the AM peak and 56 vehicles on R571 eastbound approach at the same junction during the PM peak. A screenshot of the model with the queues in these areas is presented in Figure 5.20. The impacts on queues in other areas are seen minor and manageable. This scenario is better than the previous Scenario D.

Figure 5.20 Build-up of Queues of R571 North Road

Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads

This scenario generally shows improvements on queue results when compared against Scenario E and Scenario G. However, the long queues at R572/R571 Junction is still existent on R572 southbound approach with 95 vehicles during the AM peak and 51 vehicles on R571 eastbound during the PM peak. The impacts on queues in other areas are seen minor and manageable.

Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road

In this scenario, the highest queue is seen on R572 southbound at R572/R571 Junction with 102 vehicles during the AM peak. Again, this is due to the delay in R571/R572 area with the increased traffic flow in year 2036. During the PM peak, the highest queue is seen on R572 Main Street northbound at R572 Main Street/North Road Junction. Generally, Scenario F is seen to perform better than this scenario in terms of queues for both AM and PM peaks.

2036 Modelling Results Summary

The modelling results show that **Scenario F** has the least impact in queue lengths on the network. However, the results shown in Scenario E and G have a small difference when compared against Scenario F. Both Scenarios F and E lead to improvement on queues when compared to Scenario D in general. Also, the modelling shows a build-up of queues at R572/R571 Junction on R572 southbound and R571 eastbound approaches which suggests a need for traffic mitigation measure (i.e. signal controls) for year 2036.

The queue results for all scenarios are also illustrated in Figures 5.21 to 5.24.

Table 5.14 Queue Length Results – 2026 AM Peak

Junc No.	Junction	Approach	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
1	R572 Main St/ West Square	R572 Main St. NB	11	25	14	127.3%	18	7	63.6%	16	5	45.5%
		R572 Main St SB	0	2	2	0.0%	0	0	0.0%	6	6	0.0%
		West Square WB	2	3	1	50.0%	12	10	500.0%	7	5	250.0%
2	R572 Main St/ North Road	R572 Main St. NB	2	3	1	50.0%	9	7	350.0%	0	-2	-100.0%
		R572 Main St. SB	0	5	5	0.0%	2	2	0.0%	5	5	0.0%
		Harbour Access WB	3	10	7	233.3%	9	6	200.0%	10	7	233.3%
		North Road EB	2	96	94	4700.0%	9	7	350.0%	9	7	350.0%
3	R572/R571	R572 NB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%
		R572 SB	1	82	81	8100.0%	11	10	1000.0%	8	7	700.0%
		R571 EB	3	7	4	133.3%	4	1	33.3%	5	2	66.7%

Table 5.15 Queue Length Results – 2036 AM Peak

Junc No.	Junction	Approach	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 –G	Diff	% Diff
1	R572 Main St/ West Square	R572 Main St. NB	11	14	3	27.3%	24	13	118.2%	11	0	0.0%	17	6	54.5%
		R572 Main St SB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
		West Square WB	2	22	20	1000.0%	16	14	700.0%	3	1	50.0%	7	5	250.0%
2	R572 Main St/ North Road	R572 Main St. NB	2	12	10	500.0%	8	6	300.0%	7	5	250.0%	13	11	550.0%
		R572 Main St. SB	0	5	5	0.0%	1	1	0.0%	0	0	0.0%	2	2	0.0%
		Harbour Access WB	3	20	17	566.7%	18	15	500.0%	18	15	500.0%	21	18	600.0%
		North Road EB	2	84	82	4100.0%	8	6	300.0%	9	7	350.0%	16	14	700.0%
3	R572/R571	R572 NB	0	2	2	0.0%	0	0	0.0%	0	0	0.0%	1	1	0.0%
		R572 SB	1	92	91	9100.0%	101	100	10000.0%	95	94	9400.0%	102	101	10100.0%
		R571 EB	3	5	2	66.7%	10	7	233.3%	7	4	133.3%	12	9	300.0%

Table 5.16 Queue Length Results – 2026 PM Peak

Junc No.	Junction	Approach	Base	2026 – A	Diff	% Diff	2026 – B	Diff	% Diff	2026 – C	Diff	% Diff
1	R572 Main St/ West Square	R572 Main St. NB	7	15	8	114.3%	8	1	14.3%	12	5	71.4%
		R572 Main St SB	0	0	0	0.0%	0	0	0.0%	5	5	0.0%
		West Square WB	3	7	4	133.3%	9	6	200.0%	4	1	33.3%
2	R572 Main St/ North Road	R572 Main St. NB	2	3	1	50.0%	5	3	150.0%	0	-2	-100.0%
		R572 Main St. SB	0	0	0	0.0%	0	0	0.0%	3	3	0.0%
		Harbour Access WB	3	5	2	66.7%	7	4	133.3%	6	3	100.0%
		North Road EB	2	6	4	200.0%	5	3	150.0%	6	4	200.0%
3	R572/R571	R572 NB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%
		R572 SB	0	4	4	0.0%	6	6	0.0%	4	4	0.0%
		R571 EB	1	6	5	500.0%	5	4	400.0%	8	7	700.0%

Table 5.17 Queue Length Results – 2036 PM Peak

Junc No.	Junction	Approach	Base	2036 – D	Diff	% Diff	2036 – E	Diff	% Diff	2036 – F	Diff	% Diff	2036 –G	Diff	% Diff
1	R572 Main St/ West Square	R572 Main St. NB	7	9	2	28.6%	8	1	14.3%	5	-2	-28.6%	12	5	71.4%
		R572 Main St SB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
		West Square WB	3	14	11	366.7%	13	10	333.3%	3	0	0.0%	6	3	100.0%
2	R572 Main St/ North Road	R572 Main St. NB	2	7	5	250.0%	10	8	400.0%	9	7	350.0%	28	26	1300.0%
		R572 Main St. SB	0	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%
		Harbour Access WB	3	10	7	233.3%	14	11	366.7%	16	13	433.3%	21	18	600.0%
		North Road EB	2	10	8	400.0%	9	7	350.0%	13	11	550.0%	8	6	300.0%
3	R572/R571	R572 NB	0	0	0	0.0%	0	0	0.0%	1	1	0.0%	0	0	0.0%
		R572 SB	0	5	5	0.0%	11	11	0.0%	14	14	0.0%	9	9	0.0%
		R571 EB	1	29	28	2800.0%	56	55	5500.0%	51	50	5000.0%	15	14	1400.0%

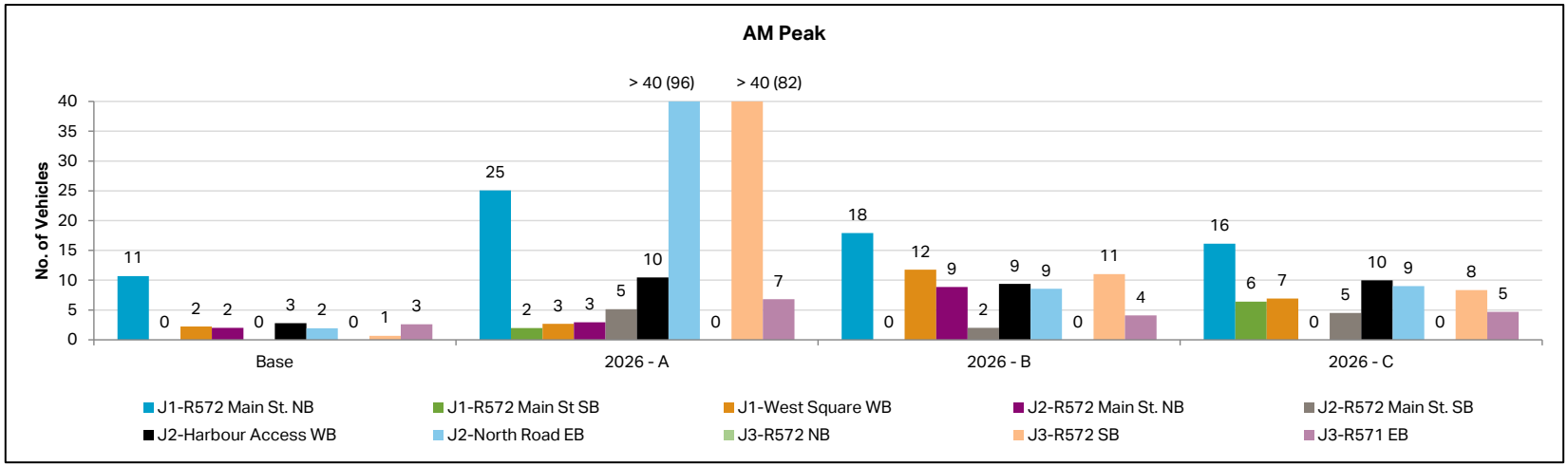

Figure 5.21 Queue Length Results – 2026 AM Peak

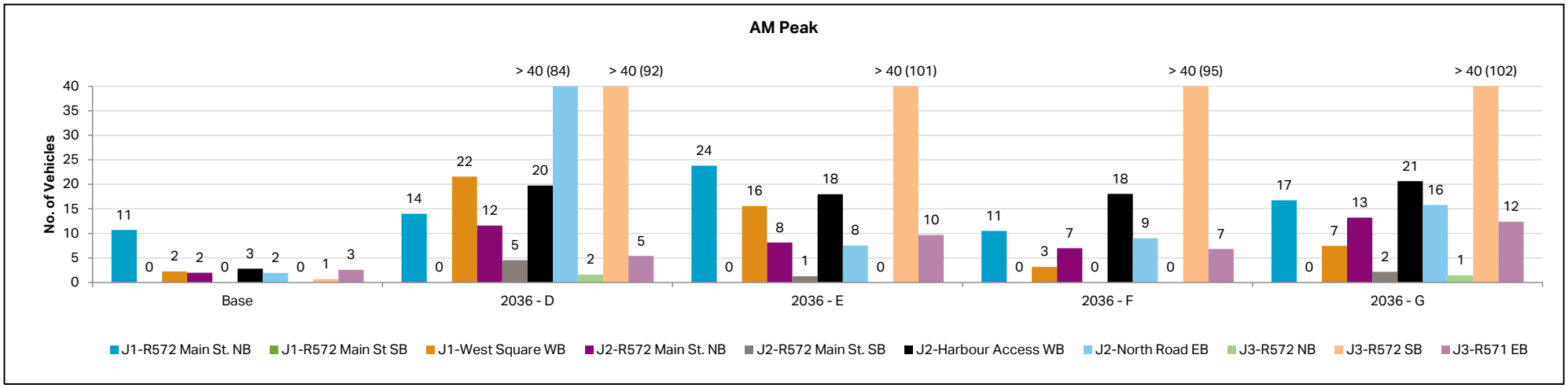

Figure 5.22 Queue Length Results – 2036 AM Peak

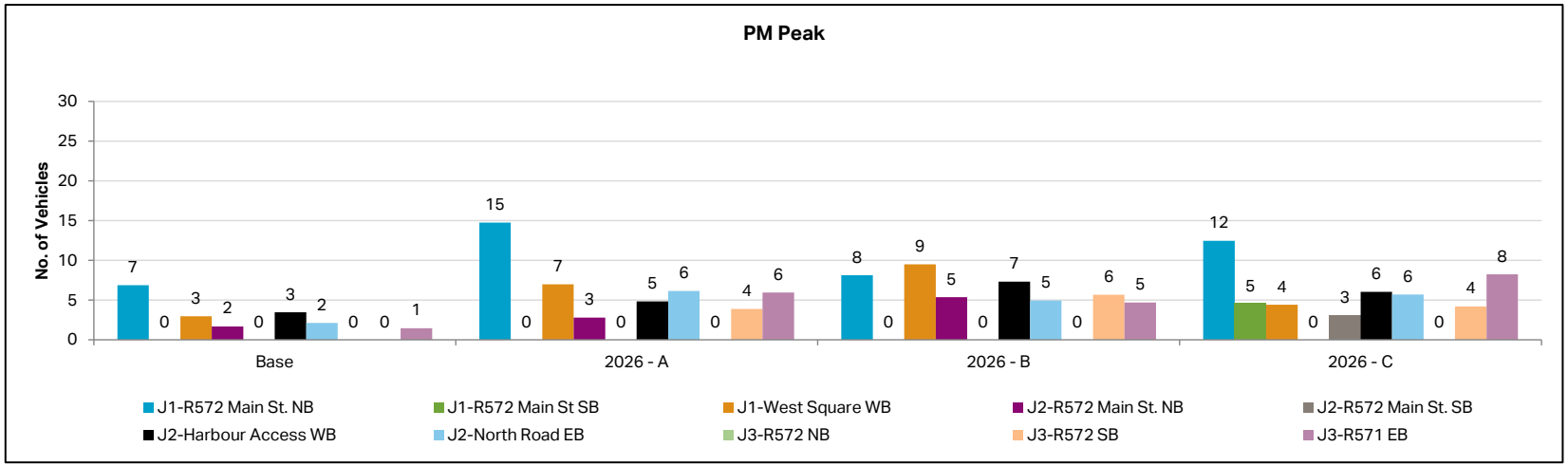

Figure 5.23 Queue Length Results – 2026 PM Peak

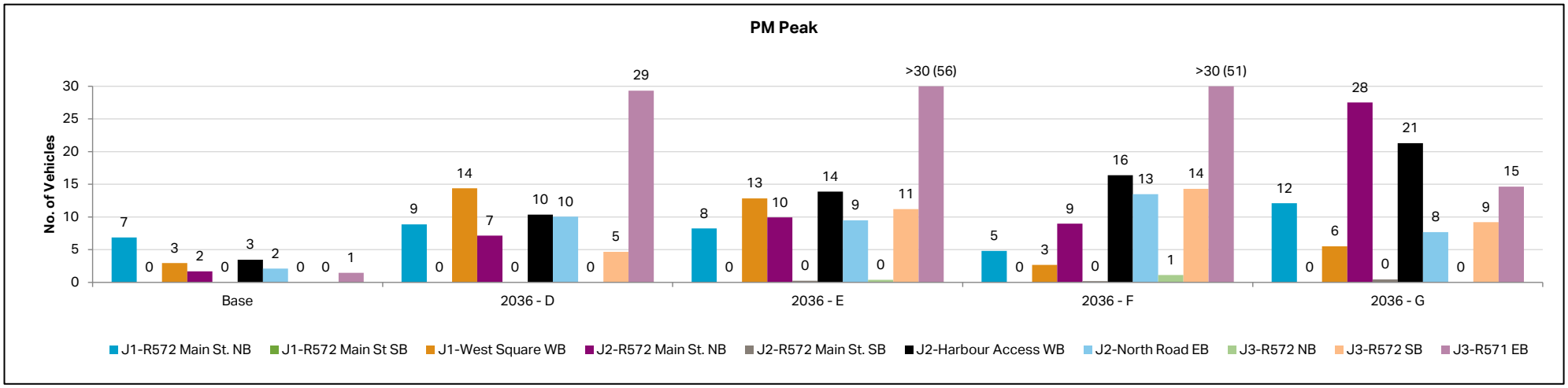

Figure 5.24 Queue Length Results – 2036 PM Peak

Summary and Conclusion

06

6. Summary and Conclusion

This report has been prepared to detail the development, calibration and validation of the VISSIM models for Castletownbere. AECOM developed the micro-simulation models in order to assess the impact of the traffic growth in the area. The models were also used to test the traffic management and road proposals within the study area. The Base models have been developed using a significant level of traffic data including a number of traffic surveys to ensure that the model can replicate the existing volumes and traffic patterns in Castletownbere town.

Model calibration and validation checks were undertaken in accordance with *TII PAG Unit 5.1 – Construction of Transport Models*. As detailed in Section 4 of this report, the calibration and validation results for traffic flows and journey times show that the AM and PM peak models exceed the targets for all user classes. This demonstrates that the quality of the Base models network and assignment is robust and fit for purpose. Therefore the results of future modelling works are considered robust.

Future years 2026 and 2036 were assessed with different scenarios as follows:

- *Scenario A: 2026 Do Nothing* – this scenario includes the traffic growth in 2026 assigned on the current arrangement of road network. The modelled network is shown in Figure 5.1 in Section 5 of this report.
- *Scenario B: 2026 Traffic Management No. 1* – this includes the traffic growth in 2026 assigned on a network with the proposed one-way system on Main Street eastbound. The modelled network is presented in Figure 5.2 in Section 5 of this report.
- *Scenario C: 2026 Traffic Management No. 2* – this includes the traffic growth in 2026 assigned on a network with the proposed one-way system on Main Street westbound. The modelled network is presented in Figure 5.3 in Section 5 of this report.
- *Scenario D: 2036 Do Traffic Management No. 1* – this includes the traffic growth in 2036 assigned on a network with the proposed one-way system on Main Street eastbound (i.e. Scenario B which is the best performing network with the proposed traffic management tested in year 2026). The modelled network is presented in Figure 5.4 in Section 5 of this report.
- *Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road* – this includes the traffic growth in 2036 assigned to a network with the proposed one-way system on Main Street eastbound and with the proposed Northern Road. The modelled network is presented in Figure 5.5 in Section 5 of this report.
- *Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads* – this includes the traffic growth in 2036 assigned on a network with the proposed one-way system on Main Street eastbound and with the proposed Northern Road and Southern Road. The modelled network is presented in Figure 5.7 is Section 5 of this report.
- *Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road* – this includes the traffic growth in 2036 assigned to a network with the proposed one-way system on Main Street eastbound and with the proposed Southern Road. The modelled network is presented in Figure 5.8 in Section 5 of this report.

The key findings for each of the scenarios assessed include the following:

Scenario A: 2026 Do Nothing

Scenario A leads to increases in travel time & delay and a decrease in average speed as expected. During the AM peak, the average travel time per vehicle is seen to increase by two times (i.e. from 2.3 minutes in Base to 4.7 minutes in year 2026). The average speed is seen to drop from 23.7 kph to 11.2 kph. Also, there has been a ninefold increase in average delay. During the PM peak, the

average travel time per vehicle is seen to increase by 28.6% from the Base (i.e. from 2.1 minutes to 2.7 minutes). The average speed is seen to drop by 23% from the Base (i.e. from 27 kph to 20.8 kph) and as expected, the average delay is seen to increase by three times having 42.6 seconds in this scenario from to 13.8 seconds in the Base.

Increases in journey time can be seen from the results for both AM and PM peaks. The highest increase can be seen on path no. 4 North Road to R572 South with more than four times from the Base (i.e. from 03:00 in Base to 12:24 in Scenario A) during the AM peak. During the PM peak, the highest 63.7% increase in journey time can be seen on path no. 3 R572 South to North Road with 04:31 in this scenario from 02:46 in Base.

A build-up of queues with 96 vehicles is seen on the North Road eastbound approach at R572 Main Street/North Road Junction and 82 vehicles on R571 eastbound approach on R572/R571 Junction during the AM peak. These queues would cause excessive delay and therefore suggests a need for traffic mitigation measures.

Scenario B: 2026 Traffic Management No. 1

Scenario B leads to minor increases in travel time & delay and minor decrease in average speed. During the AM peak, the average travel time per vehicle is seen to increase by 0.3 minutes (i.e. 18 seconds) which is negligible. Minor decrease in average speed is seen with 13.5% (i.e. from 23.7 kph in Base to 20.5 kph in 2026). Also, minor increase in average delay with additional 13.8 seconds to the Base can be seen in the modelling results. Similar patterns of traffic impact can be seen during the PM peak. Minor increase in travel time per vehicle is seen during the PM peak with 0.4 minutes (24 seconds) increase from the Base. A decrease in average speed is seen with 15.9% (i.e. from 27 kph in Base to 22.7 kph in 2026). The results also show an increase in average delay with additional 10.2 seconds to the Base, which is negligible. The network in this scenario performs better than the previous Scenario A.

There has been a 39.5% increase in journey time on path no. 4 North Road to R572 South (i.e. from 03:00 in Base to 04:11 in Scenario B) being the highest during the AM peak. This is because of the longer route that vehicles take for this journey path due to the proposed one-way system on Main Street eastbound. While increases can be seen during the PM peak, these impacts are minor having less than 60 seconds for all paths. This scenario has better journey times than the previous Scenario A.

The impact on queues in this scenario is seen minor during the AM and PM peaks. The longest queue is seen on R572 Main Street northbound at R572 Main Street/West Square Junction from 11 vehicles in Base to 18 vehicles in this scenario during the AM peak. During the PM peak, the highest impact is seen on West Square westbound at R572 Main Street/West Square Junction from 3 vehicles in Base to 9 vehicles in this scenario. The network in this scenario leads to improvement on queue length which is better than the previous Scenario A.

Scenario C: 2026 Traffic Management No. 2

Scenario C leads to 26.1% increase in average travel time per vehicle (i.e. from 2.3 minutes in Base to 2.9 minutes in this scenario) during the AM peak. The average speed is seen to drop by 20.7% (i.e. from 23.7 kph to 18.8 kph). The average delay is seen to increase by more than threefold from the Base (i.e. from 17.2 seconds to 43 seconds). During the PM peak, the average travel time per vehicle is seen to increase by 28.6% from the Base (i.e. from 2.1 minutes to 2.7 minutes). The average speed is seen to drop by 21.1% from the Base (i.e. from 27 kph to 21.3 kph) and the average delay is seen to increase by more than two times from the Base (i.e. from 13.8 seconds to 28.4 seconds). This scenario performs better than Scenario A. However, the previous Scenario B performs better than this scenario.

In terms of journey time, the highest 68.9% increase can be seen on path no. 3 R572 South to North Road having 04:59 in this scenario from 02:57 in Base. Similarly, during the PM peak, 36% increase can be seen on path no. 1 R572 South to R572 North having 05:27 in this scenario from 04:01 in Base. These increases are expected on the paths because of the longer route that vehicles take

due to the proposed one-way system on Main Street westbound. This scenario generally appears to have better journey times than Scenario A. However, the previous Scenario B is better than this scenario.

The impact on queues in this scenario is generally with the same level as seen in the previous Scenario B. The longest queue is seen on R572 Main Street northbound approach with 16 vehicles and 12 vehicles for AM peak and PM peak respectively, which are both manageable.

2026 Modelling Results Summary

The modelling results show that **Scenario B** with the proposed one-way system on Main Street eastbound (Traffic Management No. 1) is the best performing option in year 2026. This is seen for both AM and PM peaks in terms of network performance, journey times and queues. The traffic management modelled in Scenario B is carried forward to the modelling of 2036 scenarios.

Scenario D: 2036 Do Traffic Management No. 1

Scenario D leads to increases in travel time & delay and a decrease in average speed as expected. During the AM peak, the average travel time per vehicle is seen more than doubled from the Base (i.e. from 2.3 minutes in Base to 5.1 minutes is this scenario). The average speed is seen to drop significantly from 23.7 kph to 10.1 kph and there has been more than a tenfold increase in average delay having 182.30 seconds in this scenario from 17.2 seconds in Base. Similarly, during the PM peak, the average travel time per vehicle is seen to increase by 42.9% from the Base (i.e. from 2.1 minutes to 3.0 minutes). A decrease of 30.4% is seen in average speed and as expected, there has been more than a threefold increase in average delay from the Base.

Increases in journey time can be seen in the modelling results for all paths for both AM and PM peaks. There has been an additional 05:34 journey time for path no. 3 R572 South to North Road during the AM peak and 01:14 during the PM peak, being the highest increases for this scenario.

As expected, a build-up of queues with 84 vehicles is seen on North Road eastbound at R572 Main Street/North Road Junction and 92 vehicles on R572 southbound at R572/R571 Junction during the AM peak. During the PM peak, the longest queue with 29 vehicles is seen on R571 eastbound at R572/R571 Junction.

Scenario E: 2036 Traffic Management No. 1 and Roads Proposal – Northern Road

Scenario E leads to increases in travel time & delay and a decrease in average speed. However these impacts are better than the previous Scenario D. During the AM peak, the average travel time is seen to increase by 52.2% (i.e. from 2.3 minutes in Base to 3.5 minutes in this scenario). The average speed is seen to drop by 32.1% having 16.1 kph in this scenario from 23.7 kph in Base. As expected, an increase in delay is seen with more than five times from the Base (i.e. from 17.2 seconds to 90 seconds). During the PM peak, the average travel time is seen to increase by 42.9% (i.e. from 2.1 minutes in Base to 3.0 minutes in this scenario). The average speed is seen to drop by 26.7% having 19.8 kph in this scenario from 27 kph in the Base. An increase in delay is seen with more than three times from the Base (i.e. from 13.8 seconds to 44.1 seconds). This scenario performs better than the previous Scenario D.

The modelling results show increases in journey times when compared against the Base. However, this scenario generally performs better than the previous Scenario D. During the AM peak, the highest increase is seen on path no. 6 R572 North to Back Road with additional 02:50 journey time to the Base. It is noted that due to the traffic growth for year 2036, a build-up of queues is observed on the R572 southbound approach at R572/R571 Junction. Additional delays are seen on R572/R571 and R571/North Road Junctions. These delays have increased journey times on paths traversing the Back Road and the North Road. During the PM peak, the highest 55.8% increase in journey time can be seen on path no. 3 R572 South to North Road (i.e. from 02:46 in Base to 04:18 in this scenario).

The modelling also shows a massive build-up of queues with 101 vehicles on R572 southbound approach at R572/R571 Junction during the AM peak and 56 vehicles on R571 eastbound approach at the same junction during the PM peak. The impacts on queues in other areas are seen minor and manageable.

Scenario F: 2036 Traffic Management No. 1 and Roads Proposal – Northern and Southern Roads

Scenario F leads to increases in travel time & delay and a decrease in average speed. However these impacts are better than the previous Scenario E. During the AM peak, the average travel time is seen to increase 30.4% having 3.0 minutes in this scenario from 2.3 minutes in Base. The average speed is seen to decrease by 19.4% (i.e. from 23.7 kph in Base to 19.1 kph in this scenario). The average delay is seen to increase by more than three times from the Base having 58.8 seconds delay in this scenario from 17.2 seconds in Base. During the PM peak, minor increase of 33.3% is seen on average travel time per vehicle (i.e. from 2.1 minutes in Base to 2.8 minutes in this scenario). The average speed is seen to drop by 23% having 20.8 kph in this scenario from 27 kph in Base. Also, minor increase of 23.5 seconds is seen on average delay having 37.3 seconds delay in this scenario from 13.8 seconds in the Base. This scenario performs better than Scenario D. However, the previous Scenario E performs better than this scenario.

The journey time results in this scenario are generally better than the previous Scenarios D and E. While increases can be seen when compared against the Base, the journey time results for this scenario generally show improvements when compared to Scenarios D and E. During the AM peak, an additional 02:12 journey time to the Base can be seen on path no. 6 R572 North to Back Road which is the highest increase in this time period. During the PM peak, the highest increase can be seen on path no. 5 Back Road to R572 North with additional 01:16 journey time to the Base. As discussed in the previous scenario, the build-up of queues on R572/R571 areas introduced additional delays on paths traversing the Back Road and the North Road.

This scenario generally shows improvements on queue results when compared against Scenario E and Scenario G. However, the long queues at R572/R571 Junction is still existent on R572 southbound approach with 95 vehicles during the AM peak and 51 vehicles on R571 eastbound during the PM peak. The impacts on queues in other areas are seen minor and manageable.

Scenario G: 2036 Traffic Management No. 1 and Roads Proposal – Southern Road

Scenario G leads to increases in travel time & delay when compared against the Base. Scenario F performs better than this scenario. The results show that the difference in average speed between this scenario and Scenario E (with the proposed Northern Road) is marginal. During the AM peak, the average travel time is seen to increase 82.6% having 4.2 minutes in this scenario from 2.3 minutes in Base. During the PM peak, there is a 38.1% increase in average travel time having 2.1 and 2.9 minutes for Base and Scenario G respectively.

The journey time results in this scenario also show increases when compared against the Base. The high increases are seen during the AM peak on path no. 2 R572 North to R572 South and path no. 6 R572 North to Back Road. The increase in path no 2 R572 North to R572 South is almost three times the Base (i.e. from 03:13 in Base to 09:51 in this scenario) while the increase in path no. 6 R572 North to Back Road is almost two times the Base (i.e. from 02:09 in Base to 04:30 in this scenario). Again, this is due to the build-up of queues on R572/R571 areas which introduced additional delays on paths traversing the Back Road and the northern part of the North Road. Scenario F generally performs better than this scenario. During the PM peak, the journey time increases are all less than 1 minute. The highest increase is seen on path no. 5 Back Road to R572 North with 57 seconds increase from the Base.

In terms of queues, the highest queue is seen on R572 southbound at R572/R571 Junction with 102 vehicles during the AM peak. Again, this is due to the delay in R571/R572 area with the increased traffic flow in year 2036. During the PM peak, the highest queue is seen on R572 Main Street northbound at R572 Main Street/North Road Junction. Generally, Scenario F is seen to perform better than this scenario in terms of queues for both AM and PM peaks.

2036 Modelling Results Summary

The modelling results show that **Scenario F** with the proposed Southern and Northern Road together with the proposed one-way system on Main Street eastbound is the best performing option in year 2036. This is seen for both AM and PM peaks. Both Scenario E (with the proposed Northern Road) and Scenario F (with the proposed Northern Road and Southern Road) is seen to improve the network performance when compared against Scenario D (without the Northern and Southern Roads) and Scenario G (with the Southern Road only) especially during the AM peak which is the town's busiest time of the day.

The addition of the Northern Road on the network in Scenario E brings improvement on the journey times for the 6 paths within the study area in year 2036 when compared against Scenario D. Similarly, the addition of the Southern Road on the network in Scenario G brings improvement on the journey times when compared to Scenario D. Also, the modelling results show that with the addition of the Southern Road on the network together with the Northern Road and the proposed one-way system on Main Street eastbound in Scenario F generally brings further improvements on the journey times. **Scenario F** is the best performing option for 2036 in terms of journey time.

The modelling results also show that **Scenario F** has the best impact in reducing queue lengths on the network.

Appendices

Appendix A

Calibration and Validation Data Set

Appendix A Calibration and Validation Data Set

- Calibration Data – AM Peak – Light Vehicles
- Calibration Data – AM Peak – Heavy Vehicles
- Calibration Data – PM Peak – Light Vehicles
- Calibration Data – PM Peak – Heavy Vehicles
- Validation Data – AM Peak – Light Vehicles
- Validation Data – AM Peak – Heavy Vehicles
- Validation Data – PM Peak – Light Vehicles
- Validation Data – PM Peak – Heavy Vehicles

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Appendix D Car Parking Data

Castletownbere
Car Parking Data

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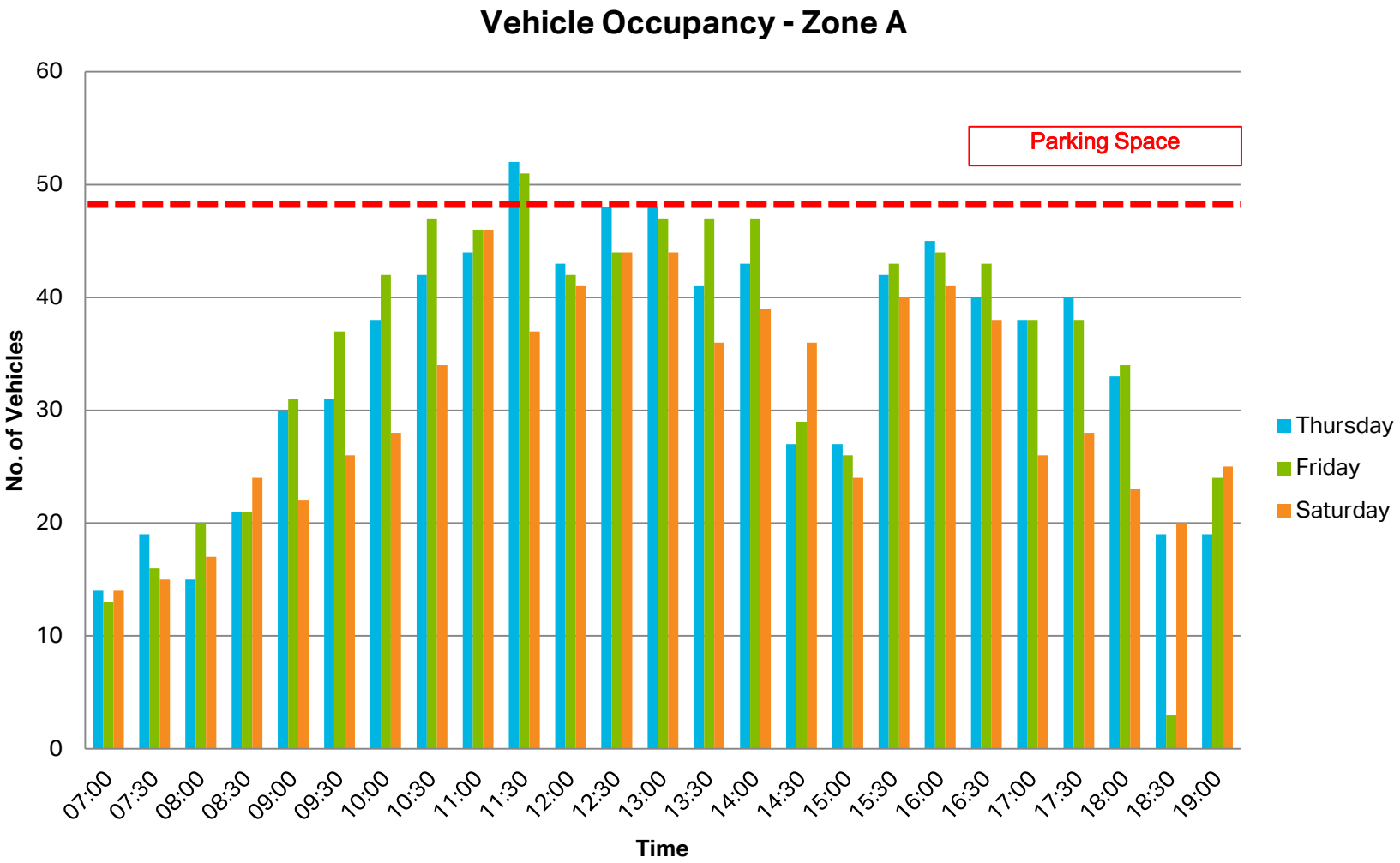
Car Parking Zones

Demand & Capacity – Zone A



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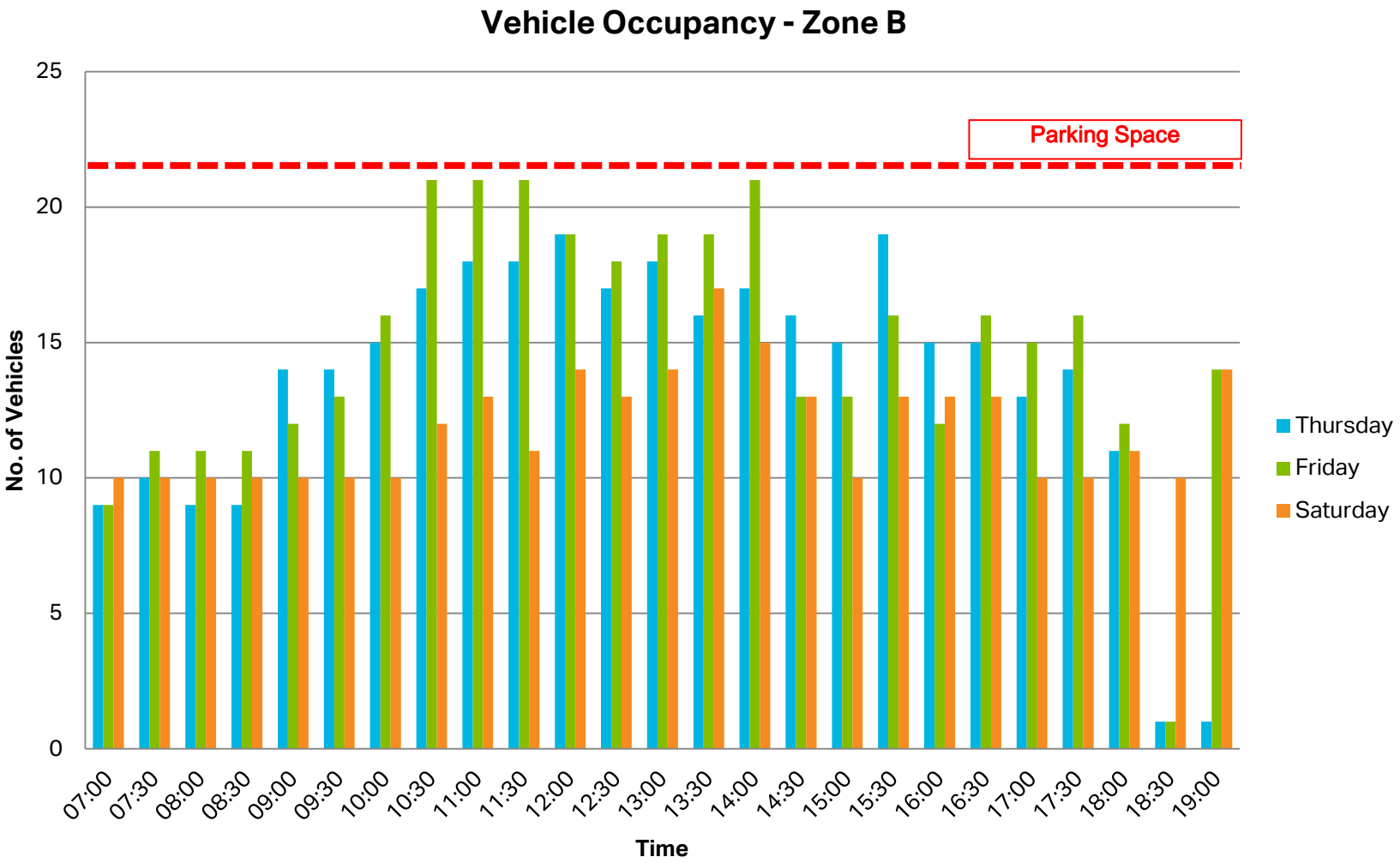
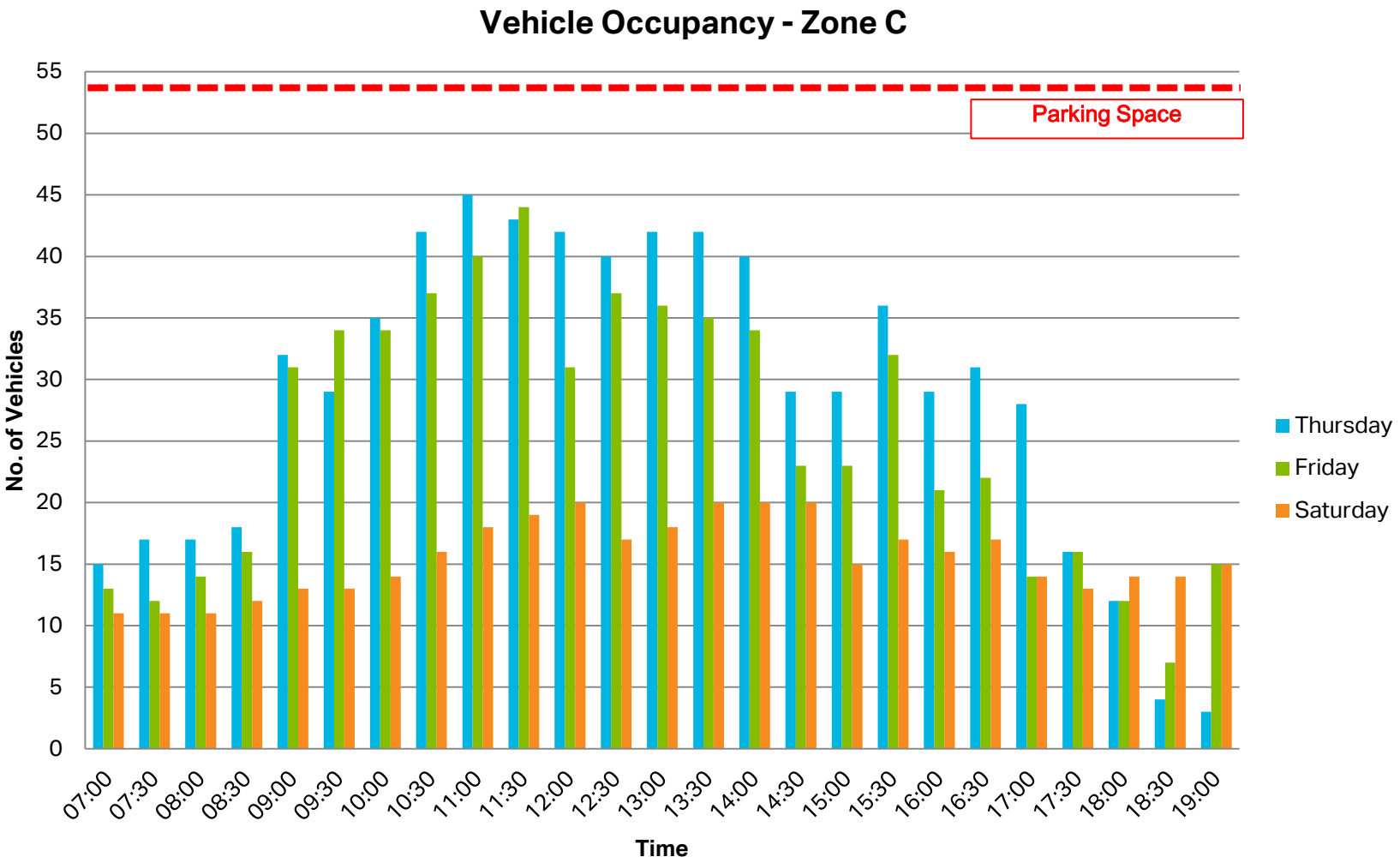
Demand & Capacity – Zone B



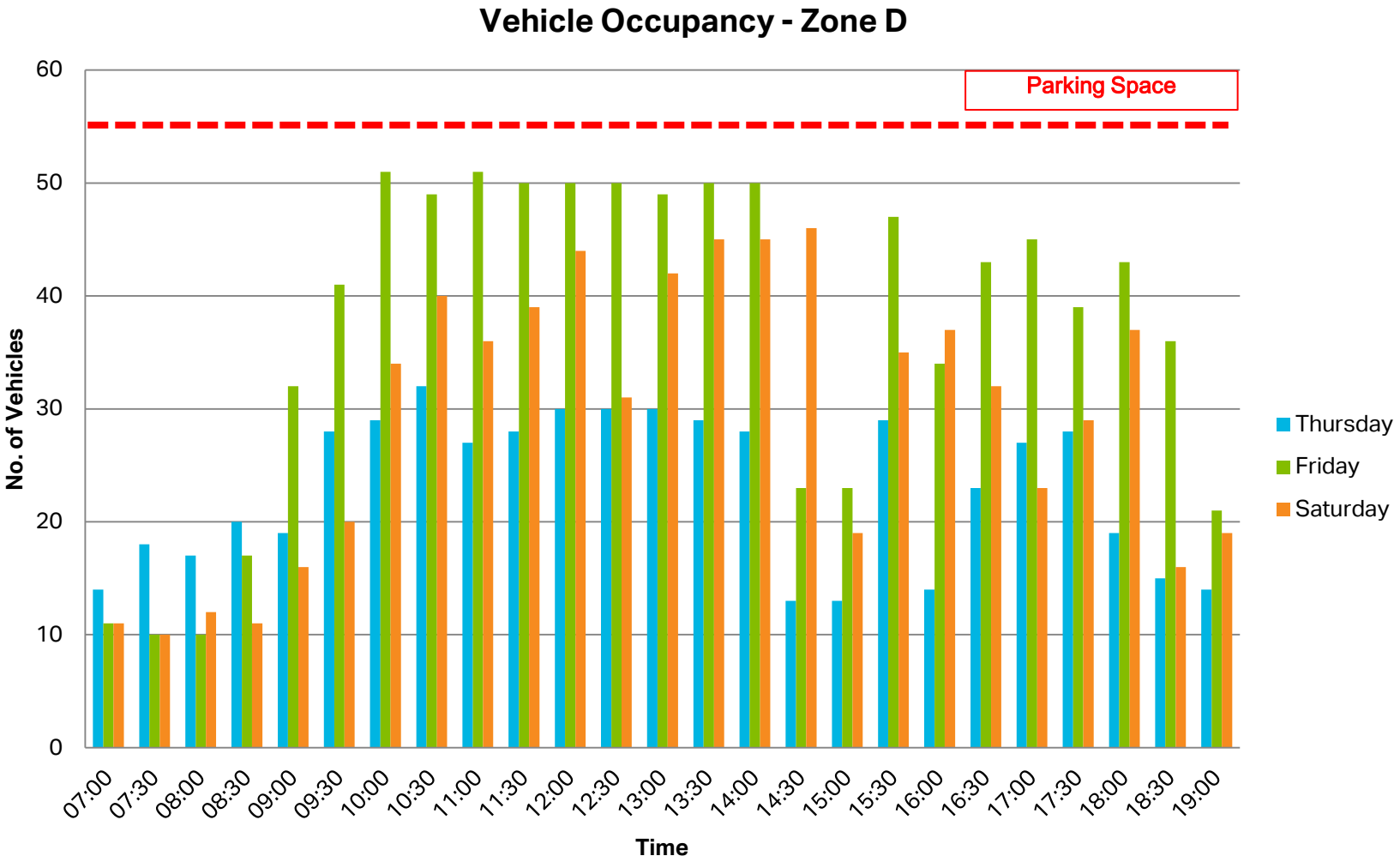
AECOM

Demand & Capacity – Zone C



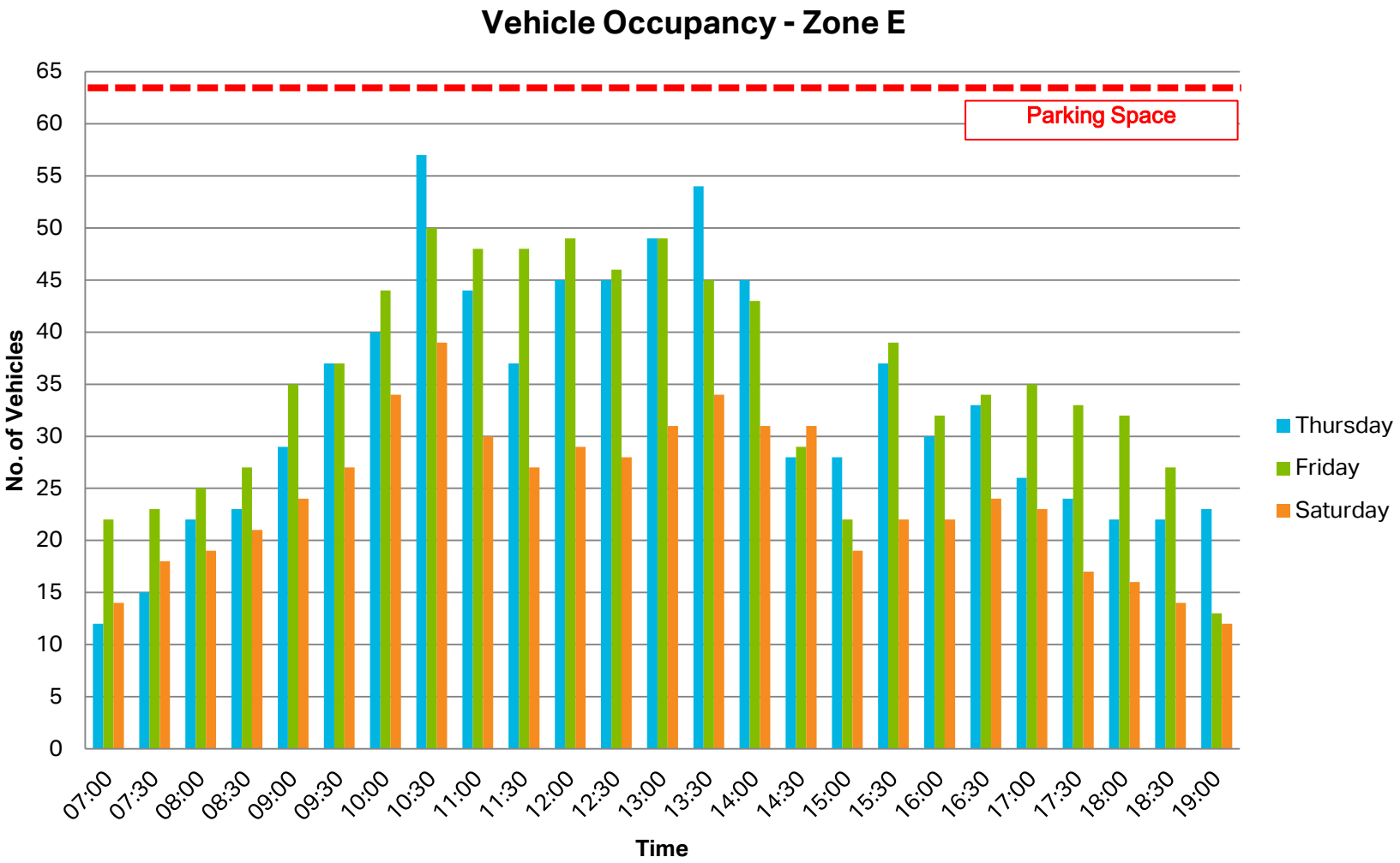
AECOM

Demand & Capacity – Zone D



AECOM

Demand & Capacity – Zone E



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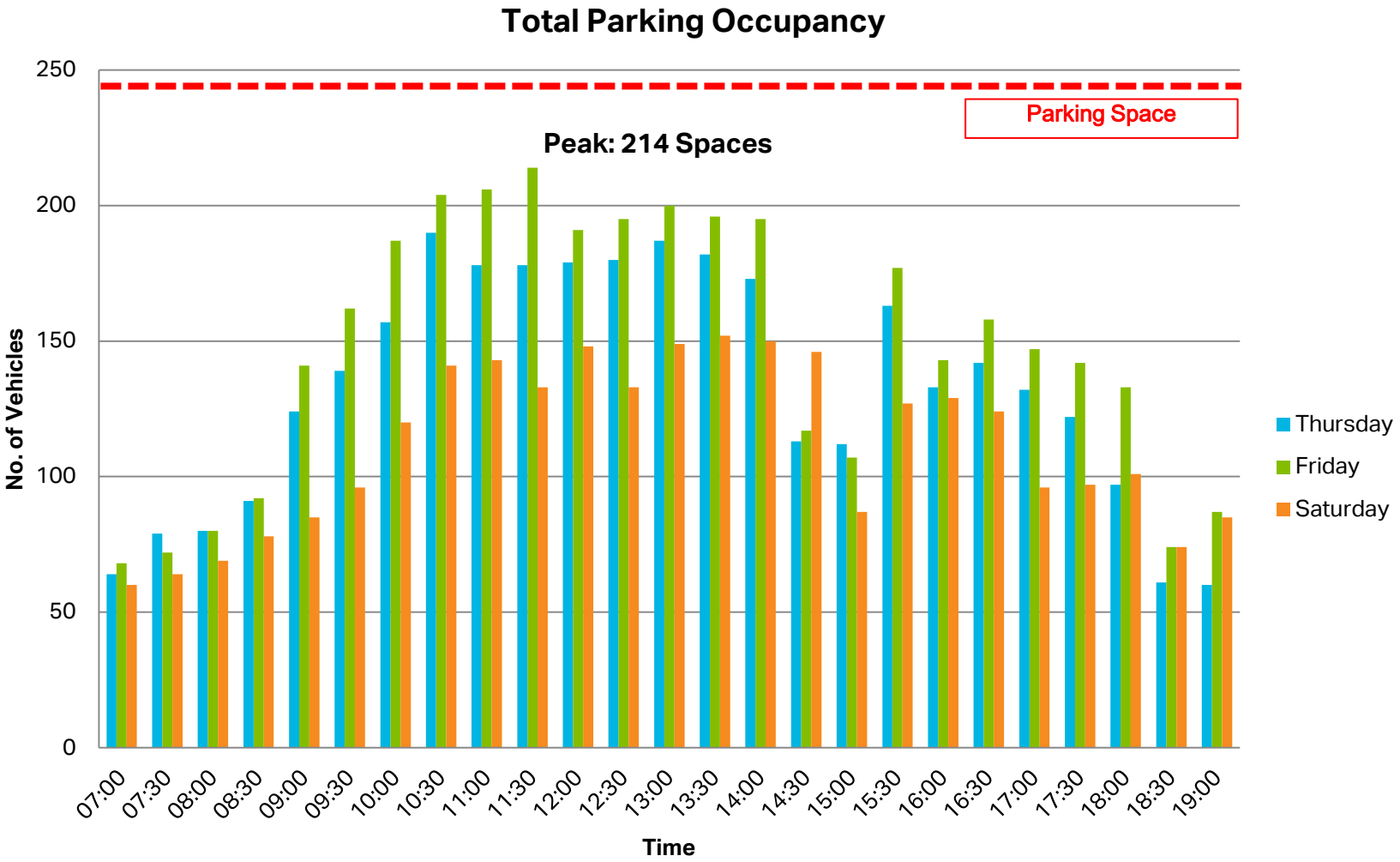
Demand & Capacity – All Zones



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