

LIVING IN CARLINGFORD - VISITING CARLINGFORD



MGT0610
F01
17 April 2022

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
A01	FOR APPROVAL	MF	DF	DF	06/07/2022
F01	FINAL	MF	DF	DF	17/04/2023

Approval for issue

DF

17 April 2023

© Copyright R P S Group Limited. All rights reserved.

The report has been prepared for the exclusive use of our client and unless otherwise agreed in writing by R P S Group Limited no other party may use, make use of or rely on the contents of this report.

The report has been compiled using the resources agreed with the client and in accordance with the scope of work agreed with the client. No liability is accepted by R P S Group Limited for any use of this report, other than the purpose for which it was prepared.

R P S Group Limited accepts no responsibility for any documents or information supplied to R P S Group Limited by others and no legal liability arising from the use by others of opinions or data contained in this report. It is expressly stated that no independent verification of any documents or information supplied by others has been made.

R P S Group Limited has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

No part of this report may be copied or reproduced, by any means, without the written permission of R P S Group Limited.

Prepared by:

RPS

Prepared for:

Louth County Council

Dublin | Cork | Galway | Sligo
rpsgroup.com

RPS Group Limited, registered in Ireland No. 91911
RPS Consulting Engineers Limited, registered in Ireland No. 161581
RPS Planning & Environment Limited, registered in Ireland No. 160191
RPS Engineering Services Limited, registered in Ireland No. 99795
The Registered office of each of the above companies is West Pier
Business Campus, Dun Laoghaire, Co. Dublin, A96 N6T7



Contents

1	INTRODUCTION	1
1.1	Location.....	1
2	PARKING	2
2.1	Existing Parking	2
2.2	Potential Impacts to Existing Parking.....	3
2.2.1	Existing Effected Parking.....	3
2.2.1	Parking Volumes Following Urban Realm Enhancement.....	5
2.3	Identification of new Parking Locations.....	7
2.3.1	Location 1	7
2.3.2	Location 2	9
2.3.3	Location 3	11
2.3.4	Location 4	14
2.3.5	Location 5	18
2.3.6	Location 6	21
2.3.7	Location 7	23
2.3.1	Location 8	27
2.3.1	Location 9	29
2.3.2	Location 10	32
2.3.1	Location 11	35
2.4	Vehicle Parking Management Strategy.....	37
2.5	Green Travel Parking Management Strategy	38
2.5.1	Linking the Town to the Carlingford Ferry	38
2.5.1	Promotion of Bus Timetables in Neighbouring Towns and areas	39
2.5.1	Promotion of Greenway use and Provision of Park and Ride	39
3	TRAFFIC MANAGEMENT STRATEGY	41
3.1	Existing Traffic Volumes and Congestion	41
3.1.1	Analysis of Long-Term Existing Traffic Data (Pneumatic Tube Counter).....	43
3.1.1	Analysis of Short-Term Existing Traffic Data.....	47
3.1.2	Baseline Traffic Modelling.....	49
3.2	Existing Traffic Flow Arrangement	51
3.3	Considered Change to Traffic Flow Arrangement	52
3.4	Pedestrianisation.....	54
4	TESTING OF PARKING AND TRAFFIC MANAGEMENT STRATEGIES	58
4.1	Traffic Queuing.....	58
4.2	Journey Times.....	60
5	CONCLUSION	66
5.1	Parking Strategy.....	66
5.2	Traffic Management Strategy.....	67
5.3	Recommendations	67

Appendices

Appendix A Location Map

Appendix B Traffic and Parking Survey Data

Appendix C Drawings

1 INTRODUCTION

Louth County Council (LCC) have commissioned RPS to develop a vision and preferred design for urban realm improvements and enhancements in Carlingford Town, Co. Louth. The traffic objective of the project is,

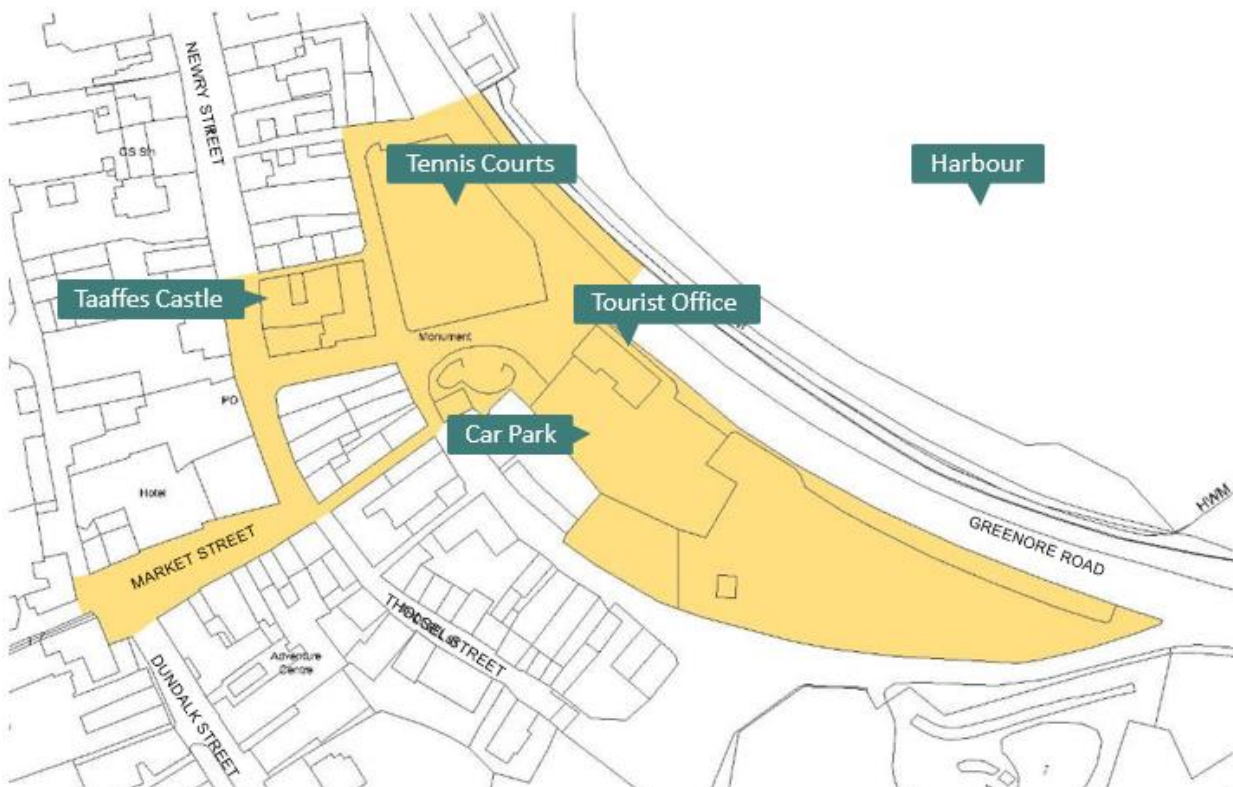
“The removal of congestion in Carlingford and delivering more rationalised vehicular movements and parking plan within the village that will promote innovation and build innovation capacity within the village and its hinterland particularly with Omeath and Greenore”

This objective is addressed in the report by first providing an appraisal of the existing parking and traffic conditions within Carlingford Town Centre; secondly assessing the potential impact the proposed urban realm improvements will have on parking and traffic within the town; and lastly, to develop a traffic management strategy for the town. A key aim of the traffic management strategy is to prioritise pedestrian and active travel transport and cater for peak congestion during the tourist season.

1.1 Location

Carlingford is a medieval walled located on the southern shore of Carlingford Lough in County Louth. The traffic and parking surveys were carried out within the town boundary and their locations are shown on the Map in Appendix A. The location of the proposed urban realm improvements within Carlingford Town is shown in yellow in **Figure 1-1** below;

Figure 1-1 Extents of Scheme

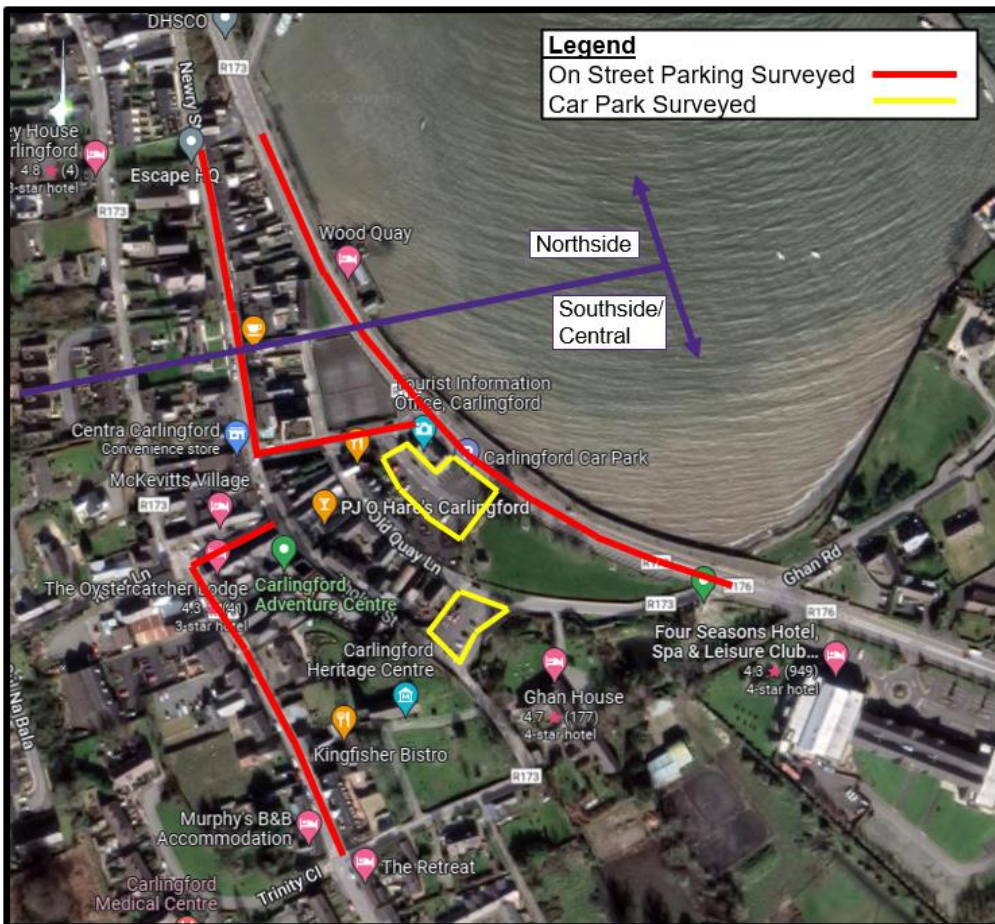


2 PARKING

2.1 Existing Parking

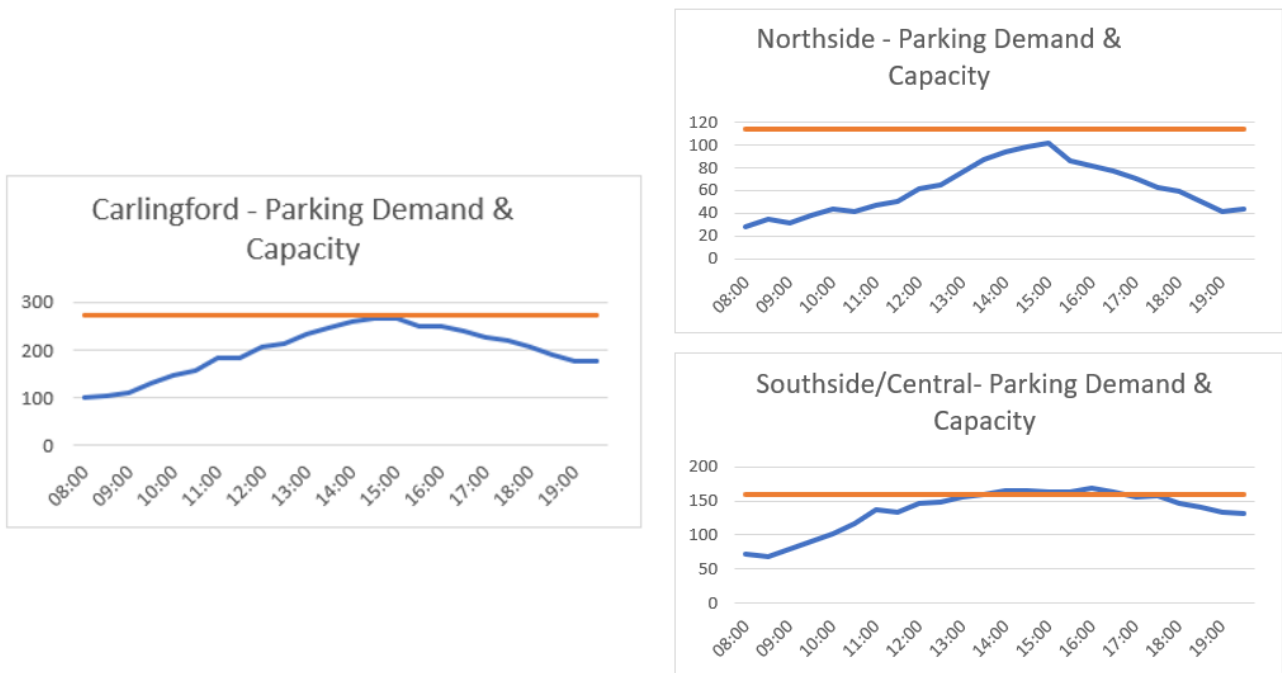
RPS commissioned parking occupancy surveys in Carlingford on behalf of LCC. These surveys were carried out over the Saturday and Sunday (31/07/2021 and 01/08/2021) of the August Bank Holiday so as to capture and measure seasonal challenges. The August Bank Holiday is recognised as a very busy period in the village. The locations of these surveys are shown in **Figure 2-1** below.

Figure 2-1 Parking Survey Locations



The survey data recorded a parking volume within the surveyed area of 274 vehicles. This included illegally parked cars as there is minimal enforcement to prevent the illegal parking of cars which is a common day occurrence. The occupancy survey recorded that the existing car parking supply is at relative capacity, at approximately 97% during a busy bank holiday weekend. This parking was further examined by splitting the town into two separate areas, the northern side of the town and the south/central area of the town. When the two areas were examined, the parking occupancy was not evenly distributed and shows some capacity to the north of the town. This is shown on the below graphs in **Figure 2-2**. Detailed parking occupancy records are provided in **Appendix B**.

Figure 3-2 Parking Survey Results



2.2 Potential Impacts to Existing Parking

2.2.1 Existing Effected Parking

Three potential options for urban realm improvements have been developed. Drawings illustrating these options are provided within **Appendix C**.

These options affect an area of the town which has 120 car parking spaces and where a further 20 cars were observed illegally parked at the time of the survey. The analysis considers both the 120 car parking spaces and the additional capacity required to cater for the 20 illegally parked cars.

Figure 4-3 Existing Effectuated Parking



2.2.1 Parking Volumes Following Urban Realm Enhancement

The impacts on the existing parking numbers from each of the potential urban realm improvement options are shown in Figures 2-4 to 2-6 below.

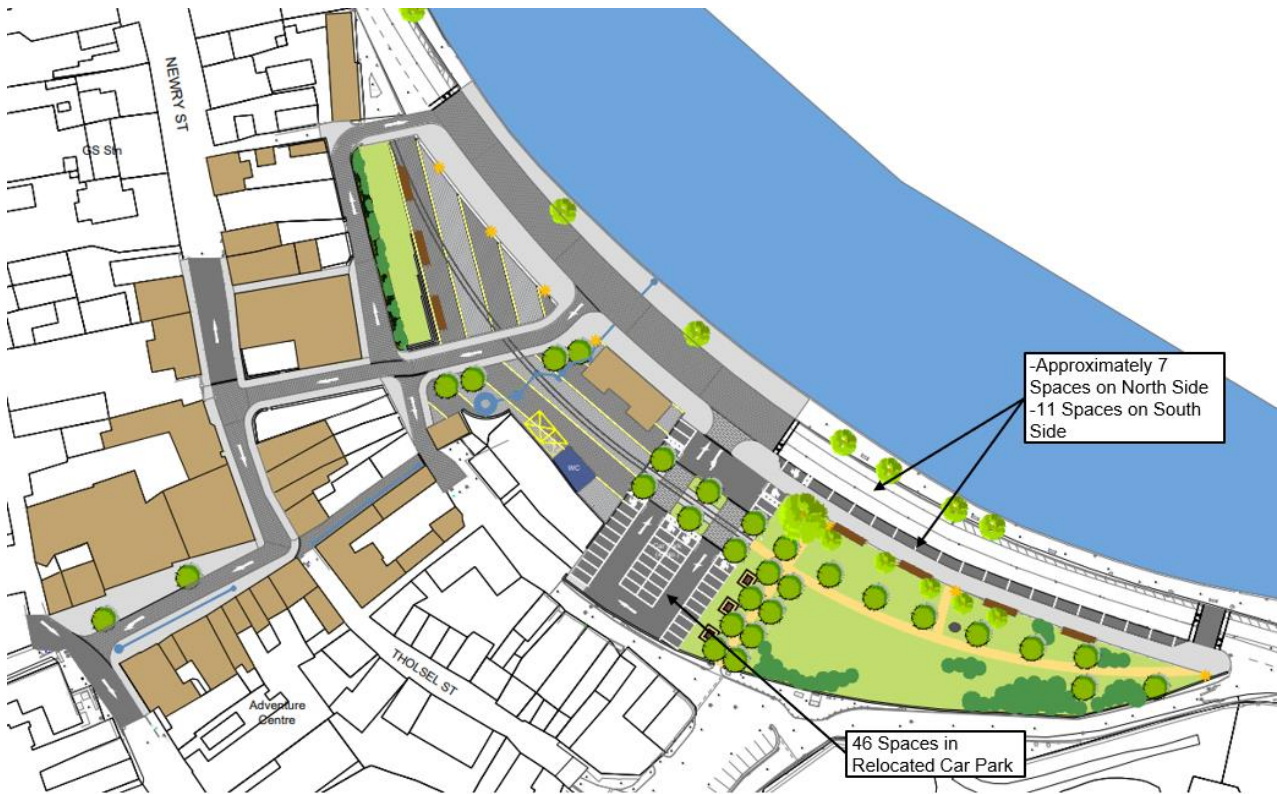
- **Option 1:** Parking reduced from 140 to 70 car parking spaces

Figure 5-4 Public Realm Improvements Option 1



- **Option 2:** Parking reduced from 140 to 66 car parking spaces

Figure 6-5 Public Realm Improvements Option 2



- **Option 3:** Parking reduced from 140 to 71 car parking spaces

Figure 7-6 Public Realm Improvements Option 3



Each of the proposed urban realm improvement options reduce the volume of parking that is currently available. This reduction in parking is required to facilitate urban realm improvements and promote a pedestrian friendly streetscape. However, to offset this reduction, potential new parking locations have been identified. These new parking locations are discussed below.

2.3 Identification of new Parking Locations

To mitigate the decrease in parking spaces following the public realm improvements, and to create additional capacity, a number of potential locations have been identified. The appraisal of each proposed location is based on the following criteria,

- Distance to Town Centre and Connectivity;
- Topography; and
- Known constraints.

2.3.1 Location 1

Location 1 is situated to the north of Carlingford Town and includes an existing parking area as shown in **Figure 2-7** and **Figure 2-8** below.

Figure 8-7 Proposed Parking Location 1



Figure 9-8 Proposed Parking Location 1 Existing Features



There is opportunity to add approximately 21 parking spaces and a new footpath along approximately 130 m of the existing hard shoulder. To create enough space to achieve this, the existing road markings (lines and hatches) would be removed and re-designed.

The existing parking to the north as shown above could be formalised. This would create additional parking capacity; however the safety implications of this proposal should be assessed by a Road Safety Audit Team.

2.3.1.1 Distance to Town Centre and Connectivity

Location 1 is located approximately 550m from the town centre (7-minute walk) and the construction of a new footpath would be required to provide sufficient connectivity to the town centre for pedestrians.

Location 1 offers a convenient location for south bound traffic to park before entering the town. This would contribute to a reduction in the volume of traffic entering the town centre.

2.3.1.2 Topography

Location 1 is located on an existing road carriageway. The topography is sloping at a gradient varying from 3% to 9.5% from south to north as visible in **Figure 2-8**. This gradient is greater than the 5% maximum desirable gradient as advised in DMURS. It is marginally greater than the 8.3% that wheelchair users can negotiate as advised in the Design Manual for Urban Road and Streets (DMURS). To mitigate this, disabled parking can be prioritised within the town centre in areas with a flat gradient and to the south of Location 1 as close as possible to the town centre to reduce the potential travelling time for wheelchair users from parking to the town centre. Additionally, re-grading and re-surfacing of the existing surface could be carried out to achieve compliant gradients of $\leq 5\%$.

Location 1 is situated within a large 'cut' in rock (see **Figure 2-8**). This would be a significant construction constraint should additional space beyond the existing carriageway and verge be required, however this is unlikely to be the case due to the width of the existing paved area being $>12\text{m}$.

PARKING AND TRAFFIC MANAGEMENT STRATEGY

There are proposals to connect the existing Omeath to Carlingford Greenway to the town centre along this section of the R173. The presence of an existing bridge with a road width of 9.6m will restrict creating cycle facilities and a footpath. In the absence of a complete design for this greenway, the width of this bridge is considered to be sufficient to provide a footpath and adequate road width.

2.3.1.3 Constraints and Options

Whilst there are no major known hard engineering constraints with regards providing parking at Location 1, there are some road safety concerns with this location, particularly with regards to driver speed and awareness of pedestrians due to the rural characteristics of this section of road. Should Location 1 be considered for provision of additional parking, consideration should be given to changing the rural characteristic of the area to make it more urbanised with traffic calming measures to increase the safety for pedestrians and visitors accessing the parked vehicles. The provision of a footpath, signage and street furniture will assist this.

2.3.2 Location 2

Location 2 is situated to the north of Carlingford Town as shown below in **Figure 2-9**. It is a green field site in private ownership, adjacent to an existing private car park. It has an area of approximately 1200m² with the potential of providing approximately 30-40 parking spaces.

Figure 10-9 Proposed Parking Location 2

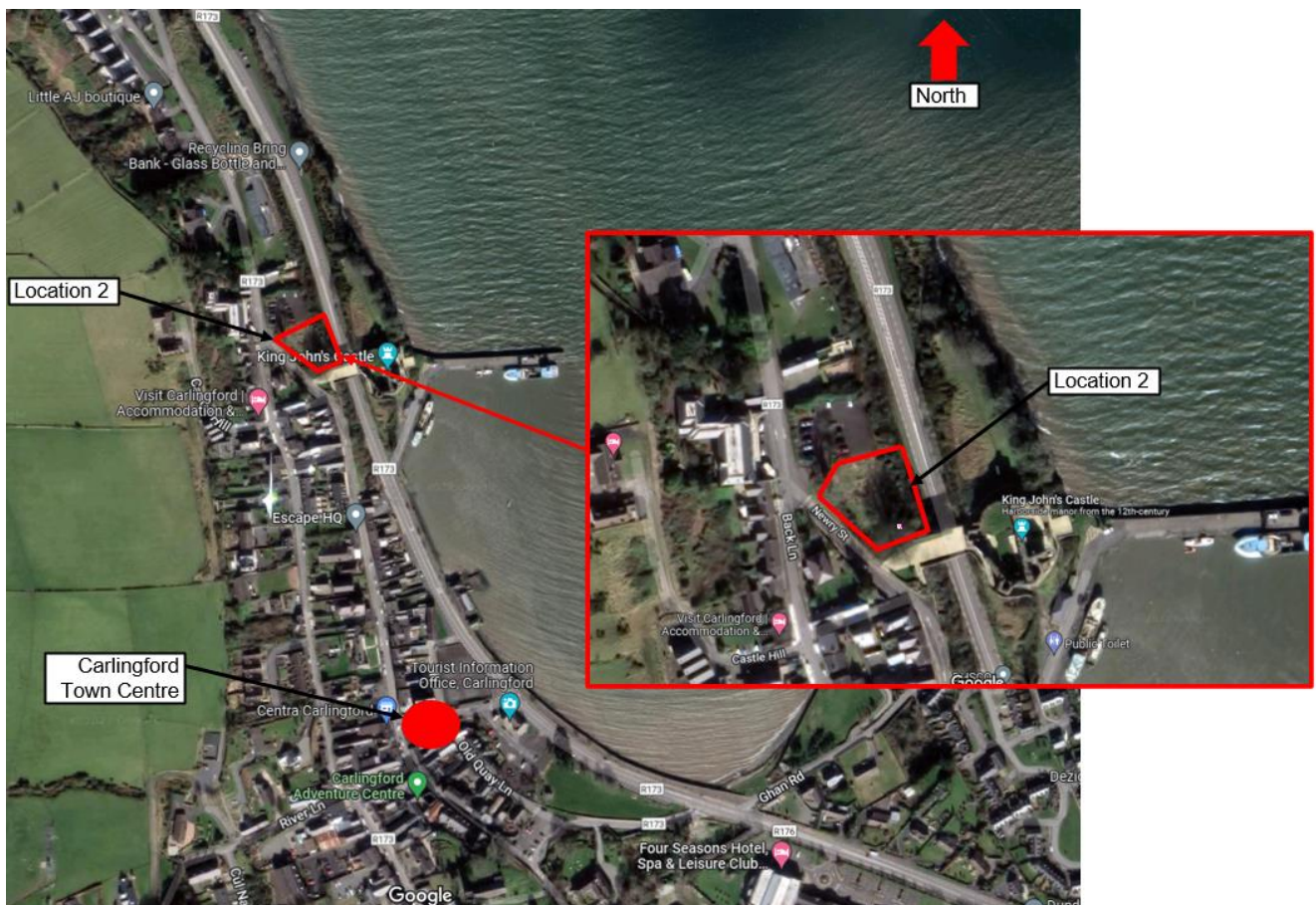
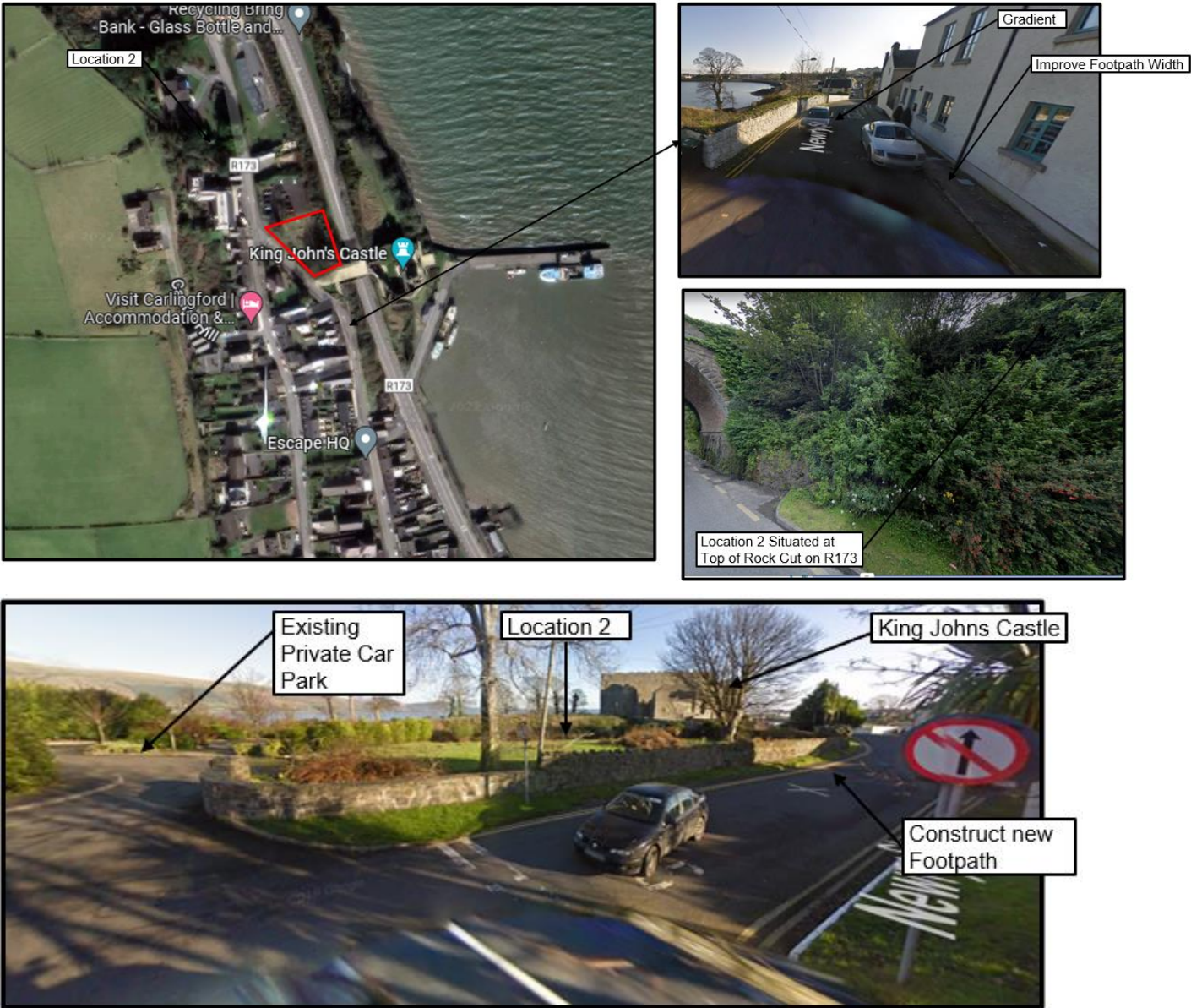


Figure 11-10 Proposed Parking Location 2 Existing Features

Location 2: Newry St., North of Carlingford



2.3.2.1 Distance to Town Centre and Connectivity

Location 2 is located approximately 400m from the town centre (5-minute walk). To facilitate this, the construction of a new footpath and enhancements to existing footpaths along Newry St will be required to provide sufficient connectivity for pedestrians.

For vehicular traffic Location 2 is located along Newry St to the north of Carlingford Town centre. Creating parking at this location will likely benefit traffic travelling from the north of the town as it can be accessed via a two-way section of the R173 and Newry St.. However it may cause traffic travelling from the south to travel through the town centre area to access this via Newry St. A signage strategy could be used to avoid this and direct traffic to this parking area via the R173.

2.3.2.2 Topography

Location 2 is located on an existing road carriageway. The topography is sloping at a gradient varying from 2% to 9.2% from south to north as visible in **Figure 2-10**. This gradient is greater than the 5% maximum

desirable gradient as advised in DMURS. It is marginally greater than the 8.3% that wheelchair users can negotiate as advised in DMURS. To mitigate this, disabled parking can be prioritised within the town centre in areas with a flat gradient. Re-grading of this car park may reduce gradients to comply with DMURS, however shallow rock, which is evident in the area, may require breaking out if the levels are to be lowered.

2.3.2.3 Known Constraints

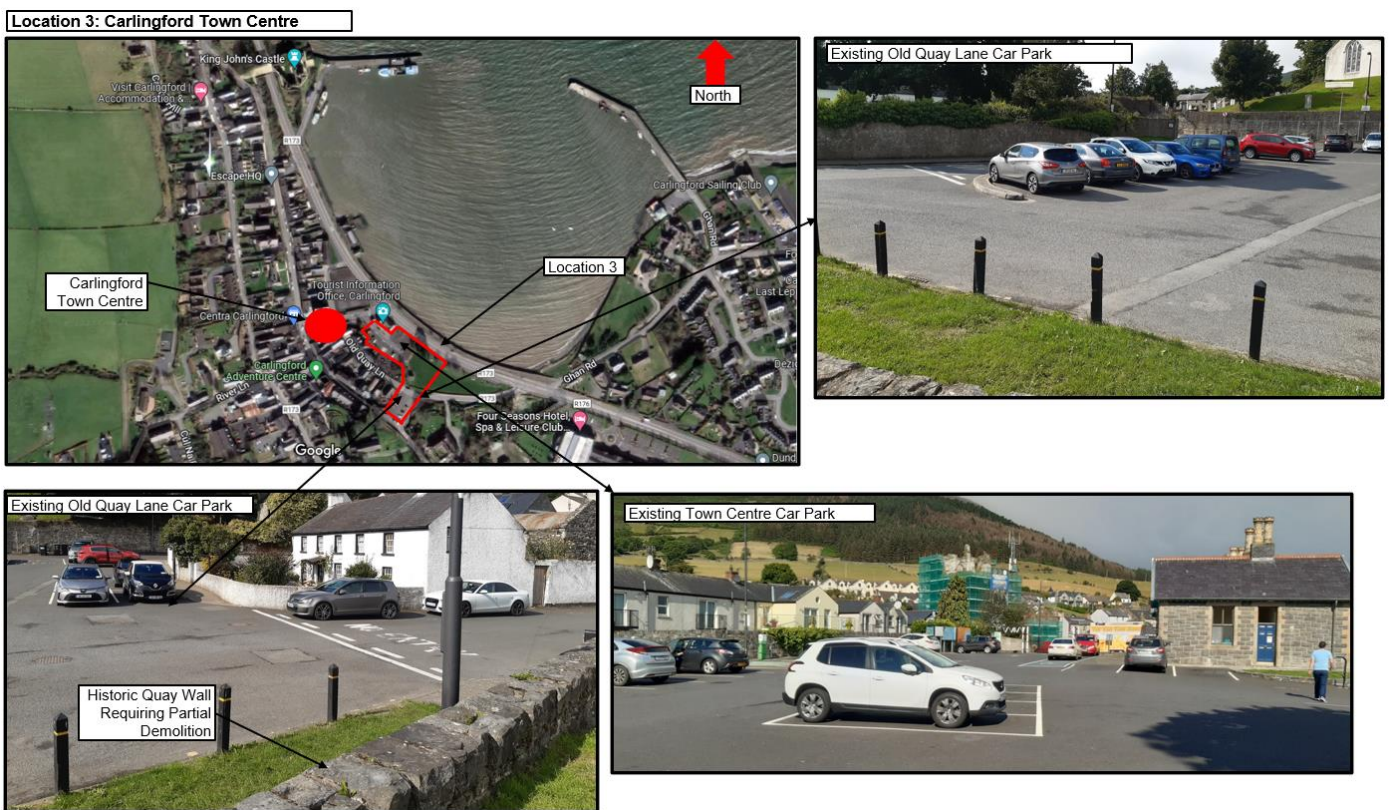
Whilst there are no major known hard engineering constraints with regards providing parking at Location 1. The likely constraints at this location are related to the acquisition of private land. Road improvements will also likely be required to cater for vehicular traffic and pedestrian traffic to and from the town centre area due to the existing condition being poor.

There may be a visual constraint associated with this location due to its proximity to King Johns Castle. This would be required to be assessed in further detail should LCC consider this location a viable option.

2.3.3 Location 3

Location 3 is located approximately 170 m from the town centre as shown below in **Figure 2-11**. It is proposed to extend and merge the existing car parking facilities at this location to increase the car parking capacity close to the town centre. Location 3 is currently an existing car park and green amenity area. By merging these two car parks and gaining additional space from the green area it creates a potential for 40-50 new car parking spaces. It will require the removal of approximately 1250m² of the existing amenity area. It is noted that this proposed arrangement would require a reconfiguration of the proposed public realm improvement options.

Figure 12-11 Proposed Parking Location 3 and Existing Features



2.3.3.1 Distance to Town Centre and Connectivity

Location 3 is located approximately 170m from the town centre (<2-minute walk). As Location 3 is an extension of an existing parking facility it has the benefit of good pedestrian linkages to the town centre. Vehicular access is also considered to be good as existing access points can be used to access the R173 and avoids the need for vehicles to travel through the town centre.

2.3.3.2 Topography

Location 3 is located predominately on existing paved and green space areas. These areas have relatively flat gradients, but minor re-grading may be required to achieve compliant gradients across the full extent of the proposed footprint.

2.3.3.3 Known Constraints

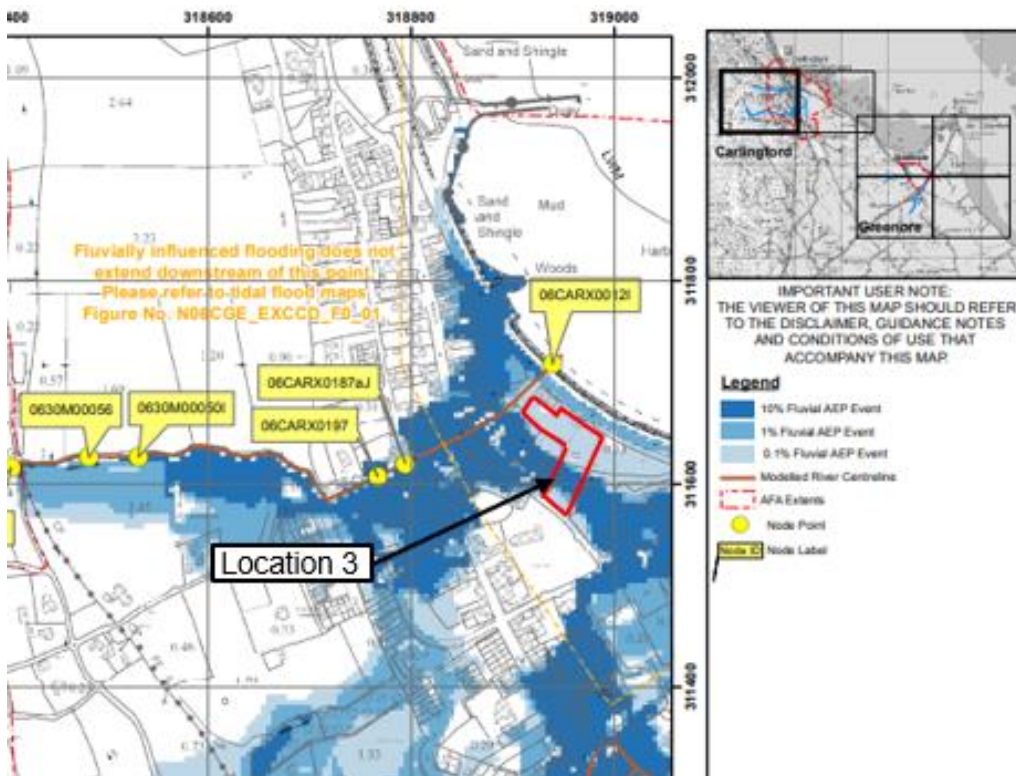
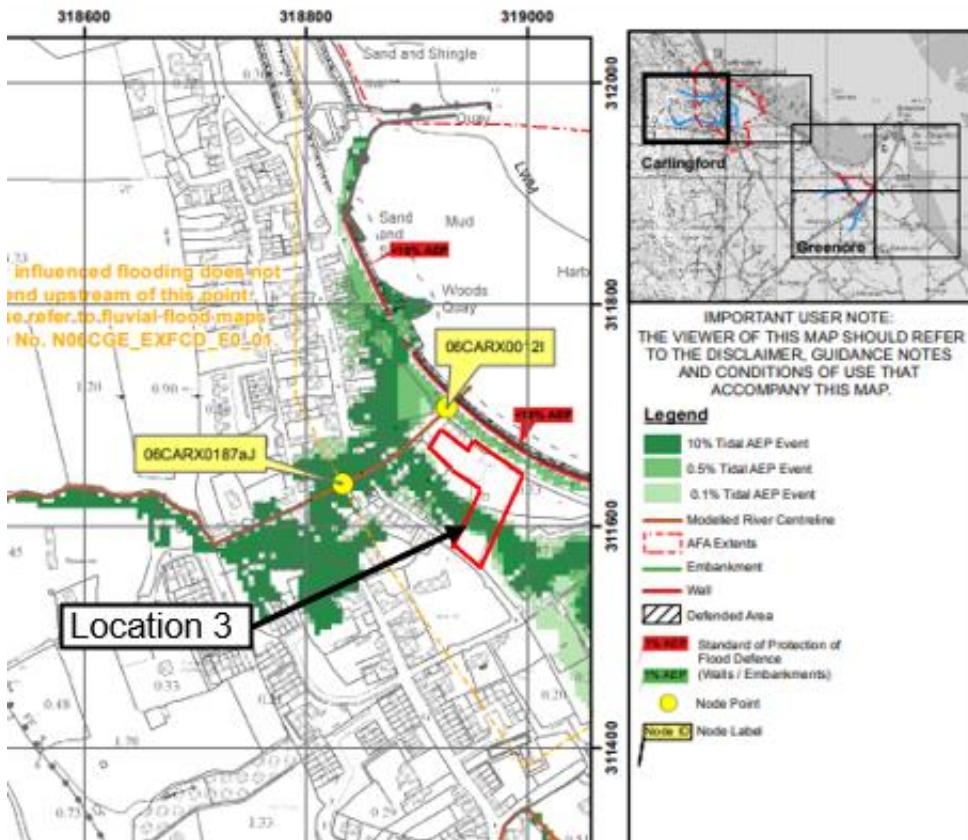
The main constraint to Location 3 is its location within the town centre and whether the using of this space for car parking would be in contradiction to the proposed urban realm improvements and overall vision for the town of Carlingford.

A further constraint to this location would be the required width of an opening required to link the two car parks and its impact on the protected structure of the historic quay wall as shown in **Figure 2-11**.

There will be environmental constraints relating to the potential removal of the existing mature trees. The removal of these could be avoided but would reduce the additional space gained in relation to parking. This may also have a negative visual effect on the area as existing greenery is removed to allow for paved parking. The visual impact could be reduced through the use of grasscrete style paving and selective planting.

These existing car parks are located within a 1 in 10 and 1 in 1000 year for both fluvial and tidal flood events as shown in Figure 2-12 below. This will need to be considered, however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal impact.

Figure 13-12 Proposed Parking Location 3 Flood Maps



2.3.4 Location 4

Location 4 is located to the south of the town centre and is within a greenfield site. Its location is shown in **Figure 2-13** and **Figure 2-14** below. Location 4 is approximately 1.3ha in size and has the potential to create approximately 575 new car parking spaces in the arrangement shown in white below (**Figure 2-15**).

Figure 14-13 Proposed Parking Location 4

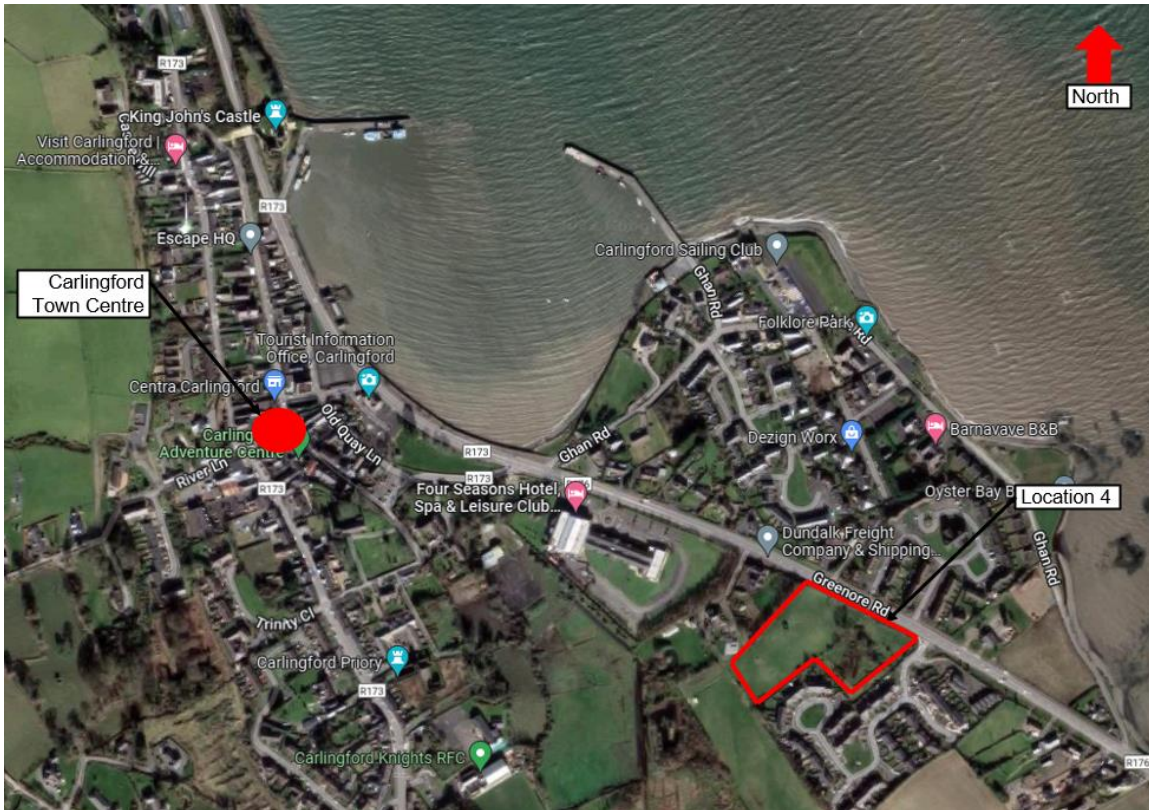


Figure 15-14 Proposed Parking Location 4 Existing Features

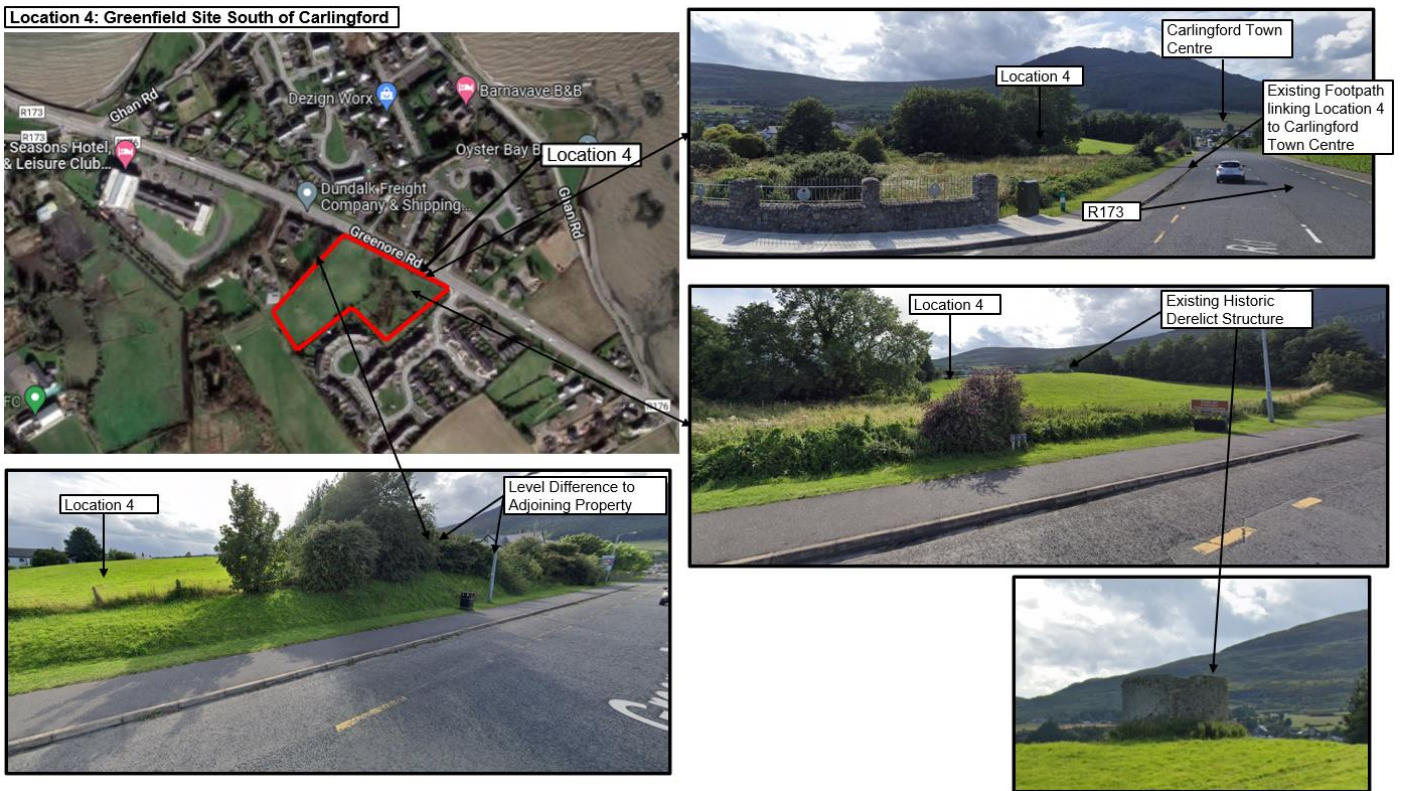


Figure 16-15 Proposed Parking Location 4 Potential Layout



2.3.4.1 Distance to Town Centre and Connectivity

Location 4 is located along the R173 to the south of Carlingford Town and approximately 650m from the town centre (8-minute walk). There is an existing footpath along the R173 which links to Carlingford Town Centre.

For vehicular traffic, the creation of parking at this location will help alleviate the under capacity and over demand for parking in Carlingford described in Section 2.1.

2.3.4.2 Topography

Location 4 is a partially sloping site with a relatively large mound which creates a significant level difference between the R173 and the adjacent private property along its northern boundary. To maximise the number of new parking spaces earthworks will be required to re-level this mound. Any re-grading works should be considered in parallel with the impact on adjoining properties and the potential need for retaining walls.

2.3.4.3 Known Constraints

Location 4 had previously received planning permission for 367 car parking spaces as indicated in Planning Application No:17792. Included in this planning application is a single storey toilet block, kiosk/office, electric vehicle charging points, picnic areas, public lighting, landscaping, and associated site development from LCC. This planning approval was subsequently overturned by An Bord Pleanála for the reasons shown in **Figure 2-16** below.

Figure 17-16 Proposed Parking Location 4 Previously Refused Planning Permission Reasons

Reasons and Considerations

1. The site is located in an area covered by the Z1 Residential (New) zoning objective in the Louth County Development Plan 2015 to 2021 which seeks to "To protect and/or enhance existing residential communities and provide for new residential communities." The principal permitted land use within Z1 is residential, and car parks are not listed as a use that is open for consideration. The proposed car park would not be compatible with the Z1 zoning objective for the area and it would result in an inappropriate and unsustainable use of the limited availability of residentially zoned land in Carlingford. The proposed development would materially contravene the Z1 Residential (New) zoning objective of the Development Plan and it would, therefore, be contrary to the proper planning and sustainable development of the area.
2. Notwithstanding the plans and particulars submitted with this application, the Board is not satisfied, on the basis of the information provided, that the proposed development would not give rise to additional flooding on the surrounding lands as a consequence of the proposal to increase in ground levels in the south-west section of the site and the proposal to infill the wetland/flood storage area in the north-east section of the site. The proposed development would,



ABP-301442-18

An Bord Pleanála

Page 2 of 3

therefore, be contrary to the proper planning and sustainable development of the area.

3. The site occupies a visually dominant position on the approach to Carlingford Village, and the dovecote is located on a prominent elevated part of the site and is an attractive historical feature which contributes to the historic character of the area. It is considered, therefore, that the proposed development, by reason of its nature, scale and design would distract from the visual amenity of the area and from the built heritage and character of the area.

Having considered An Bord Pleanála's reasons for denying planning permission previously, it is unlikely planning permission would be granted at this location in the future.

2.3.5 Location 5

Location 5 is located to the south of the town centre and within a greenfield site. Its location is shown in **Figure 2-17** below. Location 5 is approximately 7,900m² in size and has the potential to create approximately 253 new car parking spaces in the arrangement shown in white below.

Figure 18-17 Proposed Parking Location 5 and Existing Features

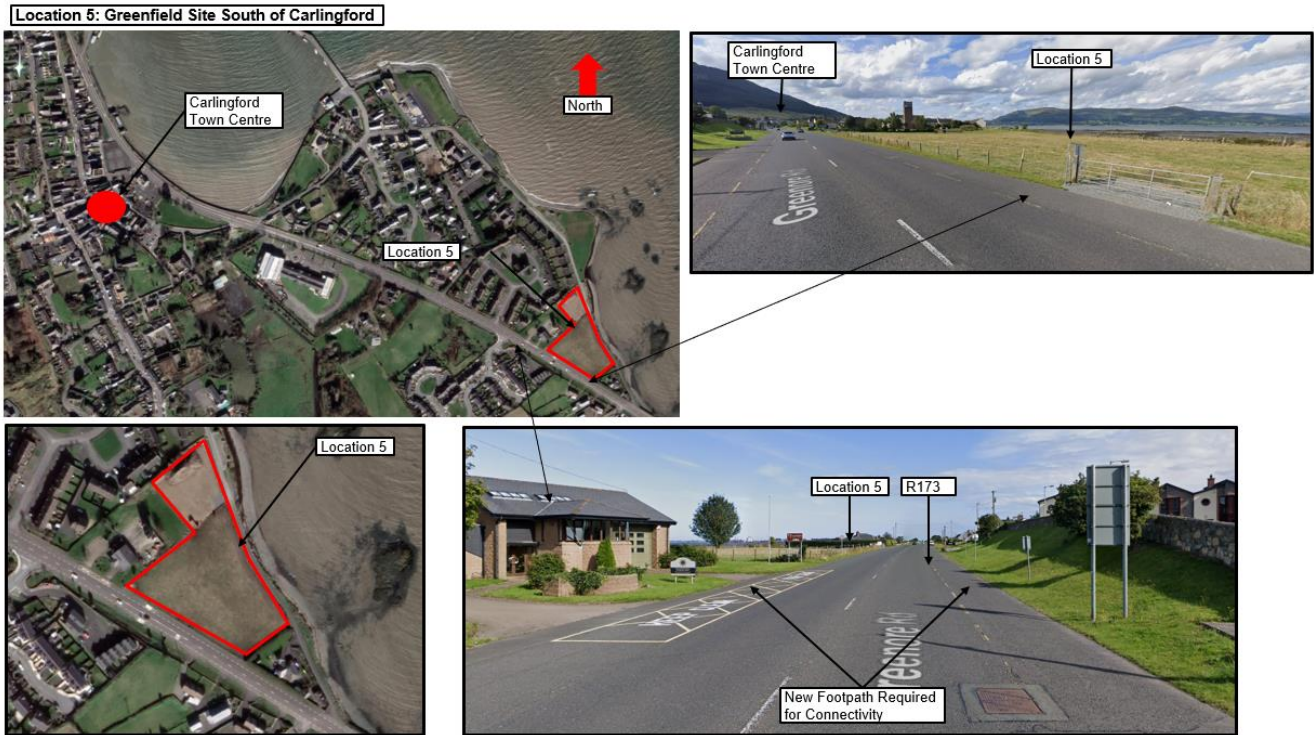
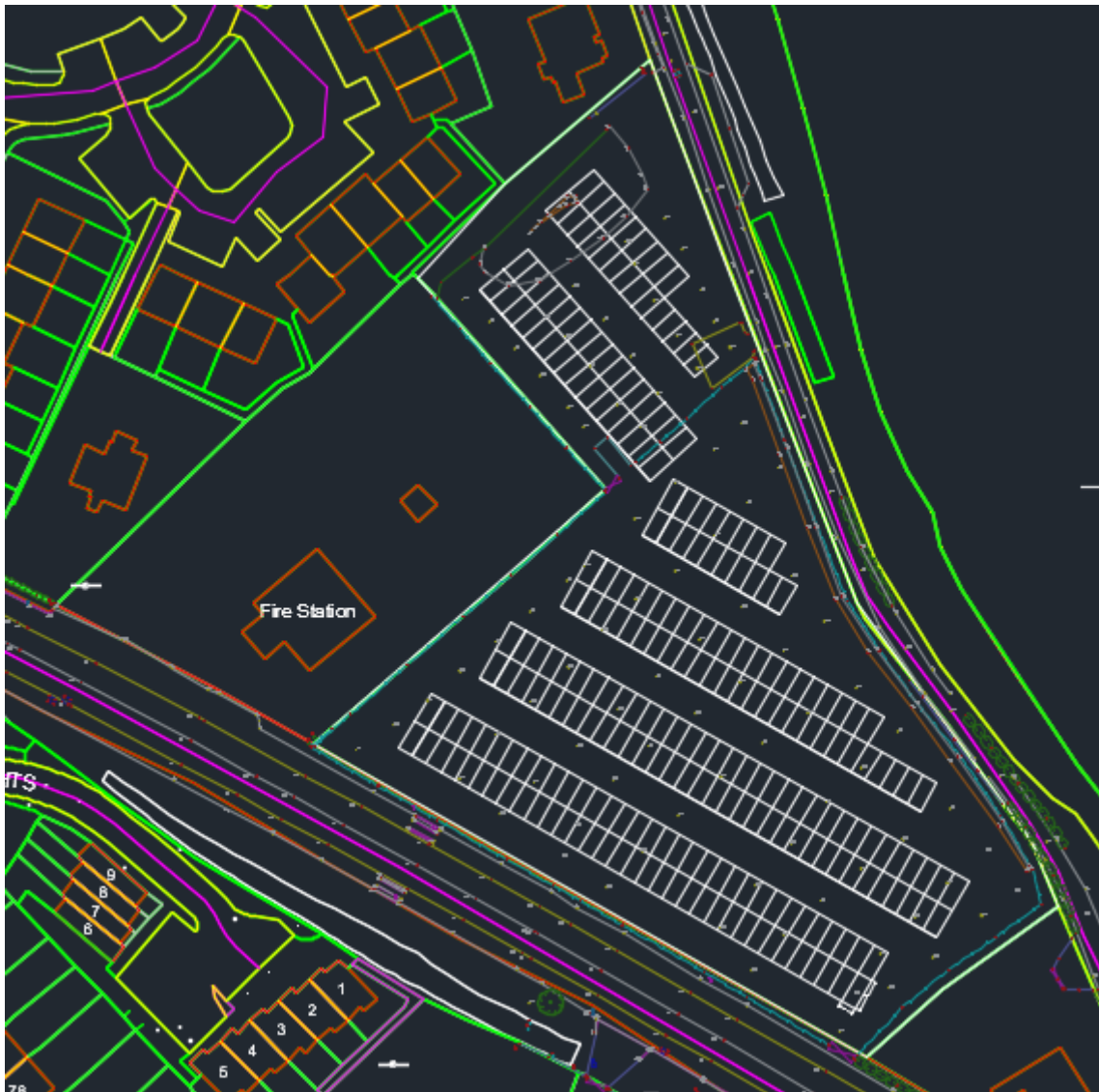


Figure 19-18 Proposed Parking Location 5 Potential Layout



2.3.5.1 Distance to Town Centre and Connectivity

Location 5 is located along the R173 to the south of Carlingford Town centre and approximately 900m from the town centre (11-minute walk). This location has previously been used as a temporary car park during events. However, to formalise permanent parking at this location, a new footpath, and enhancements to existing footpaths along the R173 will be required.

For vehicular traffic, the creation of parking at this location will help alleviate the under capacity and over demand for parking in Carlingford described in Section 2.1.

2.3.5.2 Topography

Location 5 is a relatively flat site which will require minimal earthworks to construct a level surface for a car park as shown previously in **Figure 2-17** previously.

2.3.5.3 Known Constraints

There will be environmental constraints at this location due to it being a green field site, located with a flood zone and adjacent to both a Special Area of Conservation (SAC) and a Special Protection Area (SPA). This may attract a number of planning requirements and measures to mitigate any potential impacts during the

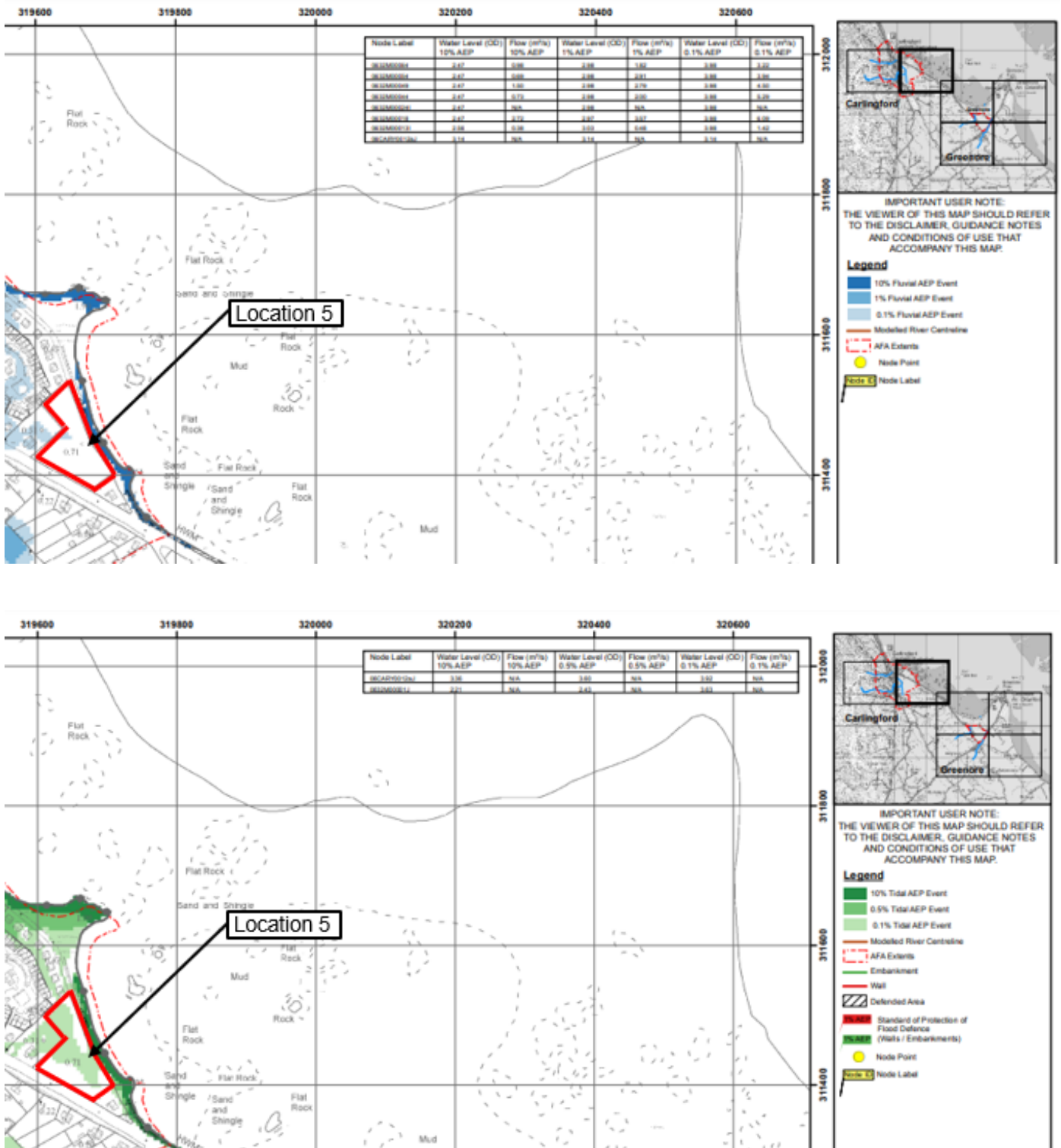
PARKING AND TRAFFIC MANAGEMENT STRATEGY

construction, operation and decommissioning of the car park. Measure may include the use of petrol interceptors, grass-crete or a similar Sustainable Urban Drainage System (SUDS) compliant paving system.

These existing car parks are located within a 1 in 1000 year for both fluvial and tidal flood events as shown in **Figure 2-19** below. This will need to be considered however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal impact on parking capacities.

Location 5 is currently within private ownership and would need to be acquired by Louth County Council.

Figure 20-19 Proposed Parking Location 5 Flood Maps



2.3.6 Location 6

Location 6 is located to the south of the town centre and is within a greenfield site and SAC. Its location is shown in **Figure 2-20** below. Location 6 is approximately 1.3ha. in size and has the potential to create approximately 472 new car parking spaces in the arrangement shown in white below.

Figure 21-20 Proposed Parking Location 6 and Existing Features

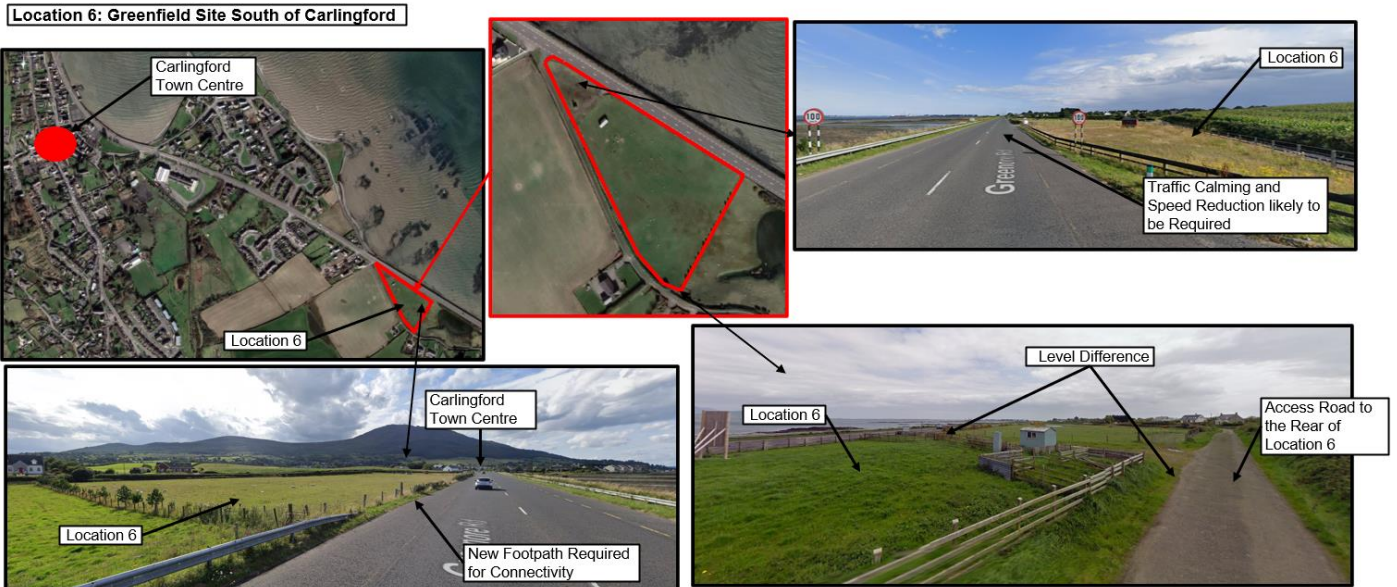


Figure 22-21 Proposed Parking Location 6 Potential Layout



2.3.6.1 Distance to Town Centre and Connectivity

Location 6 is located approximately 1.2km from the town centre (15-minute walk). To facilitate this parking a new footpath and enhancements to existing footpaths along the R173 will be required.

For vehicular traffic Location 6 is located along the R173 to the south of Carlingford Town centre. Creating parking in this location will likely benefit the overcapacity parking recorded in the parking survey described in Section 2.1.

2.3.6.2 Topography

Location 6 is a relatively flat site which would require minimal earthworks to construct a level surface for a car park as shown in **Figure 2-20**. There is a level difference across the site that will require re-grading to achieve appropriate levels that comply with DMURS.

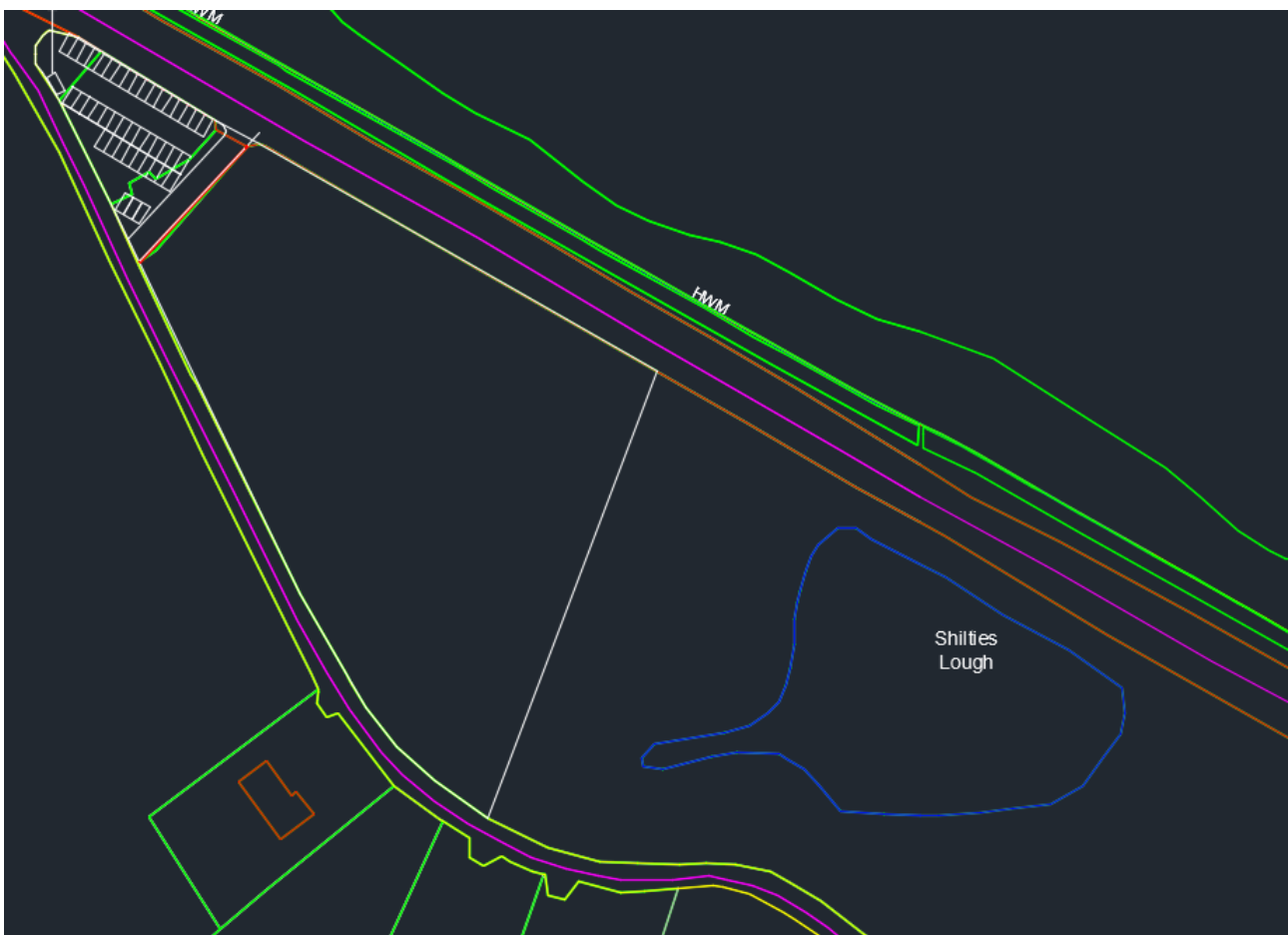
2.3.6.3 Known Constraints

There will be environmental constraints at this location due to it being a green field site, located with a flood zone, an SAC and proposed Natural Heritage Area.

Location 6 is currently within private ownership and would need to be acquired by Louth County Council.

Location 6 will encroach the SAC and therefore will be unlikely to achieve planning permission. By reducing the size of the car park to only include the area outside of the SAC as shown below in **Figure 2-22**, the parking volume reduces leaving a remaining 44 spaces.

Figure 23-22 Proposed Parking Location 6 Revised Layout



2.3.7 Location 7

Location 7 is located to the south of the town centre and is within a greenfield site. Its location is shown in **Figure 2-23** below. Location 7 is approximately 5100m² in size and has the potential to create approximately 168 new car parking spaces in the arrangement shown in white below.

Figure 24-23 Proposed Parking Location 7 and Existing Features

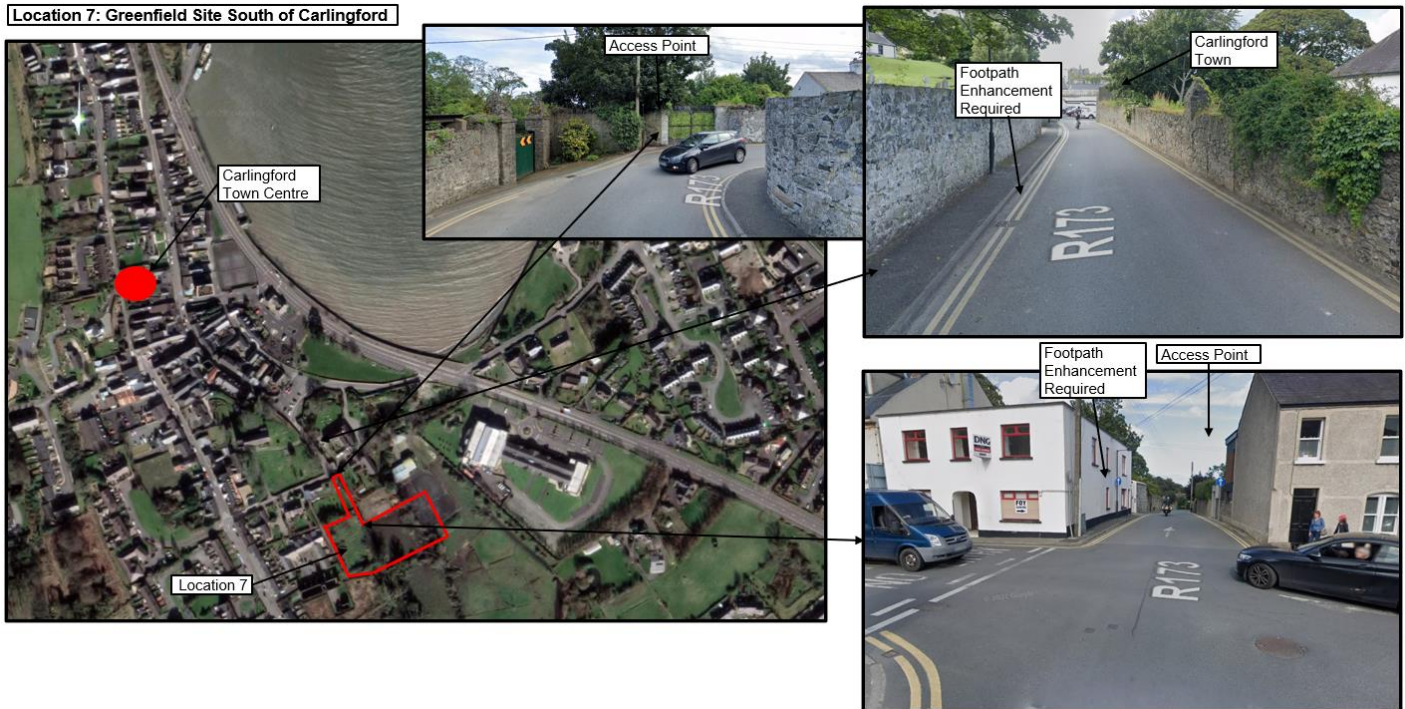
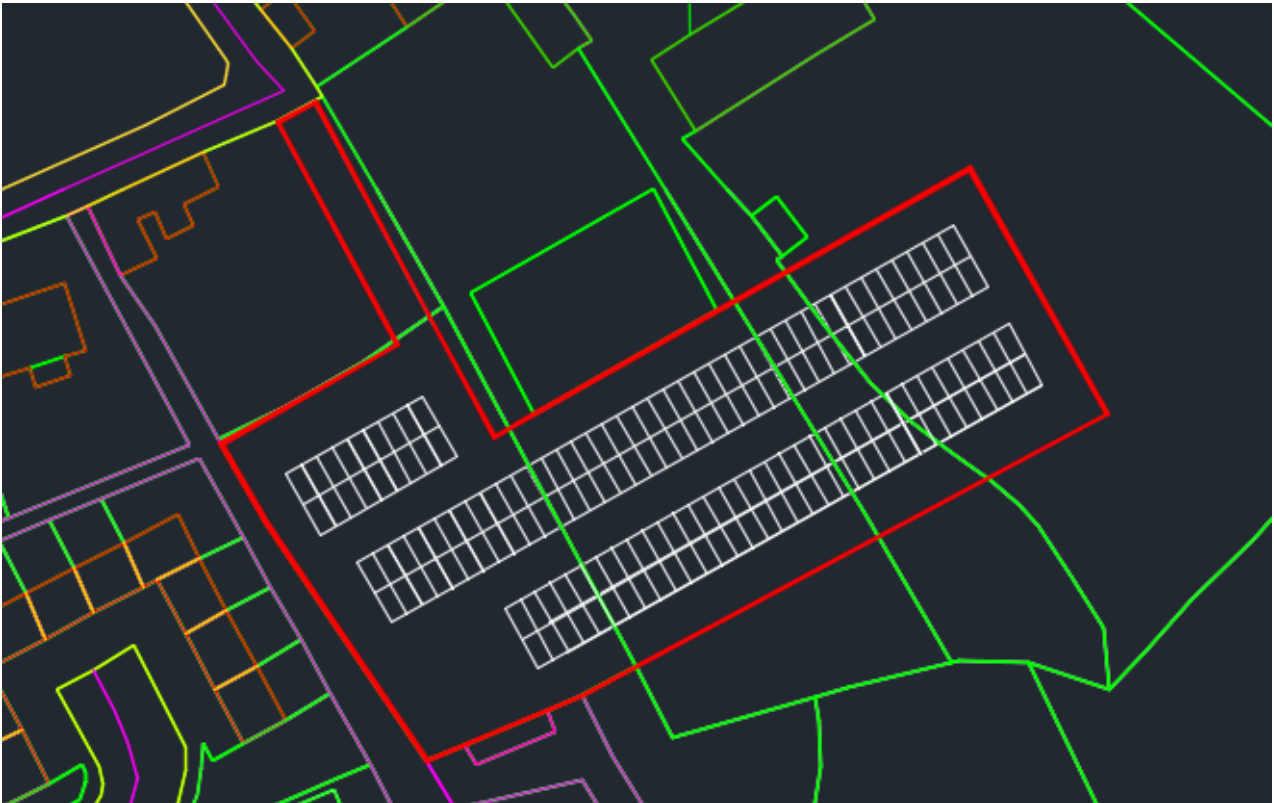


Figure 25-24 Proposed Parking Location 7 Potential Layout



2.3.7.1 Distance to Town Centre and Connectivity

Location 7 is located approximately 210m from the town centre (3-minute walk). To facilitate this, enhancements to existing footpaths along the R173 will be required to provide sufficient connectivity for pedestrians.

For vehicular traffic, Location 7 is located off the R173 to the south of Carlingford Town centre. Creating parking at this location will offer additional capacity to alleviate some of the under capacity described in Section 2.1. From the north, this car park would be accessed via the R173, Dundalk Street and the one-way system through the town centre. From the south, the car park would be accessed via Crossalaney Road and would not be obvious to motorists approaching Carlingford from the R176.

Figure 26-25 Proposed Parking Location 7 Access from South of Carlingford



2.3.7.2 Topography

Location 7 is in private ownership and an assessment of the site's topography was limited to that observed on aerial mapping. However, based on the level differences along the surrounding road networks, it is anticipated that the site will be sloping and will require significant earthworks to achieve appropriate levels as shown in **Figure 2-23**

2.3.7.3 Known Constraints

There will be an ecological constraint on this location due to its current condition being a green field site. This could potentially be mitigated through the use of grasscrete style paving.

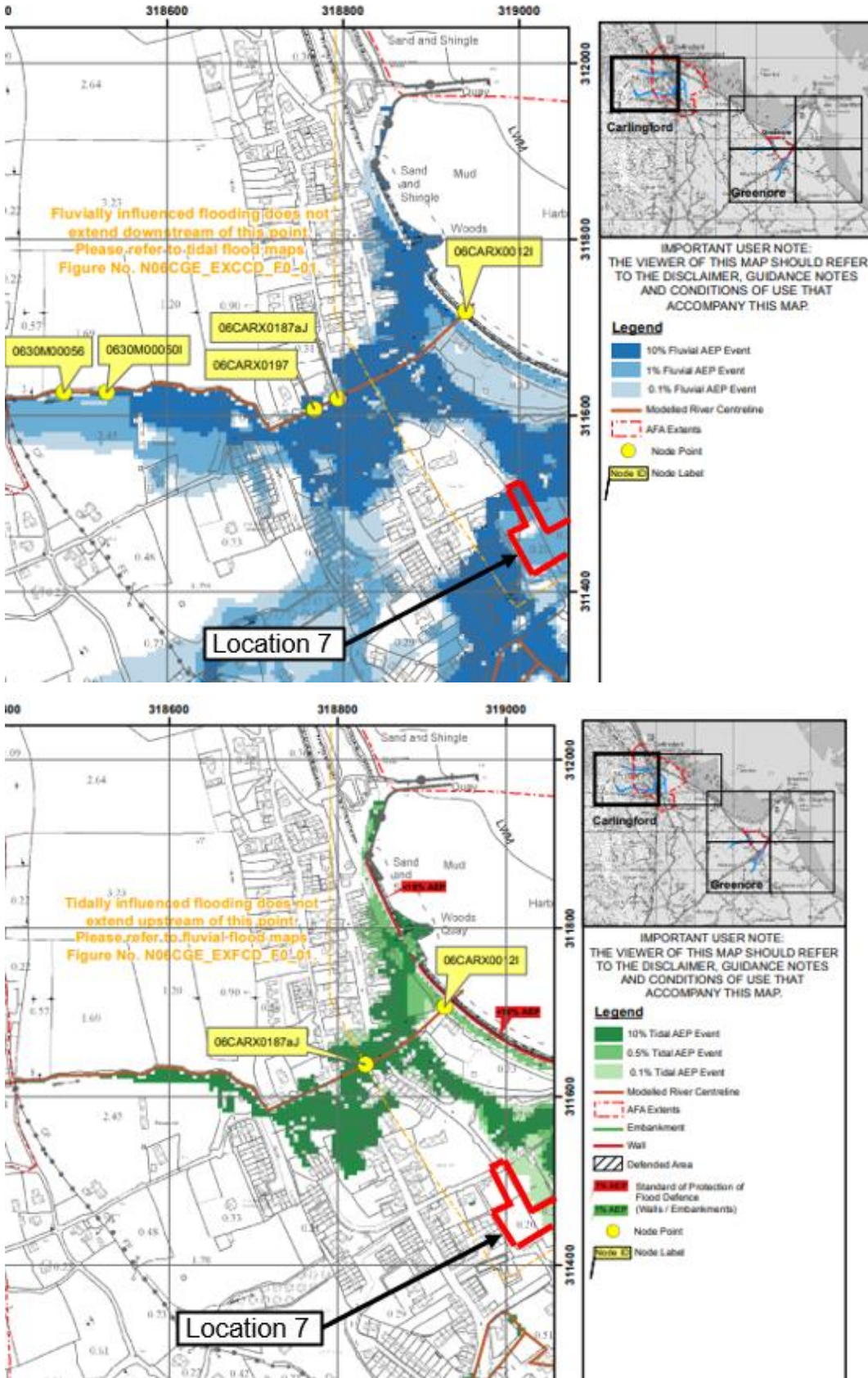
There will be environmental constraints at this location due to it being a green field site, and located within a flood zone

Location 7 is currently within private ownership and would need to be acquired by Louth County Council.

There is a watercourse adjacent to Location 7. This river is noted on OPW flood maps. The site is also within the extents for a 1 in 10 year fluvial and 1 in 1000 year tidal flood events as shown in **Figure 2-28** below. This will need to be considered however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal impact.

Location 7 is currently in private ownership and may require Louth County Council to acquire it.

Figure 27-26 Proposed Parking Location 7 Flood Maps



2.3.1 Location 8

Location 8 is located to the east of the town centre and is within a greenfield site. Its location is shown in **Figure 2-28** below. Location 8 is approximately 3100m² in size and the potential to create approximately 84 new car parking spaces in the arrangement shown in white below.

Figure 28-27 Proposed Parking Location 8 and Existing Features

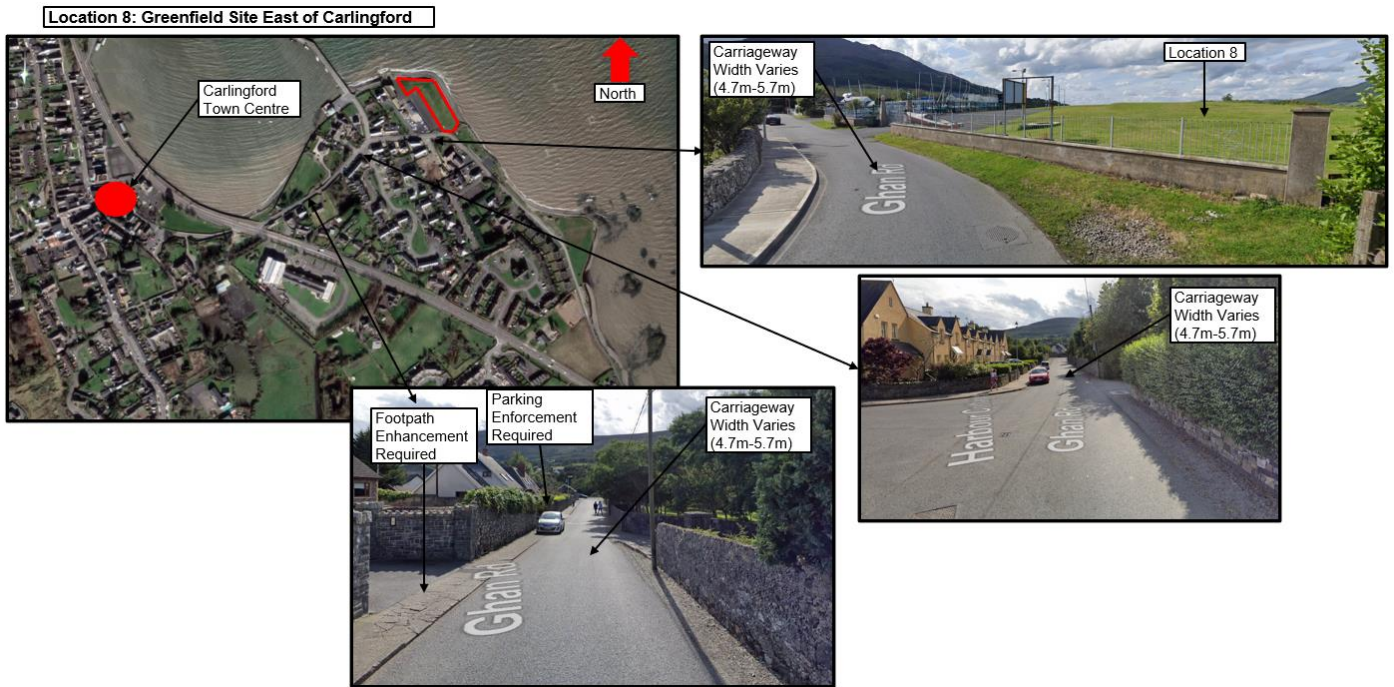
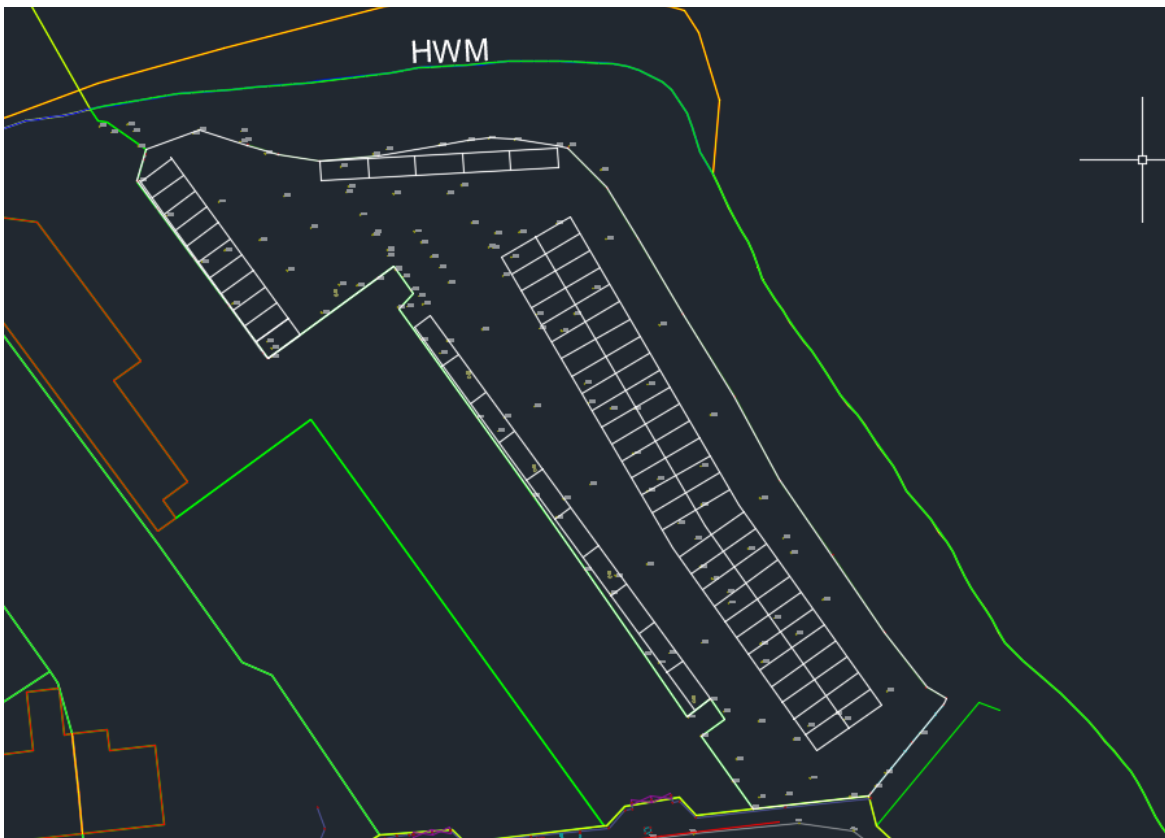


Figure 29-29 Proposed Parking Location 8 Potential Layout



2.3.1.1 Distance to Town Centre and Connectivity

Location 8 is located approximately 650m from the town centre (9-minute walk). To facilitate this parking enhancements to existing footpaths along the Ghan Road will be required to provide sufficient connectivity for pedestrians. Parking enforcement may also be required as vehicles parking on footpaths has been observed, it is noted however that constructing this new car park may mitigate this.

For vehicular traffic, Location 8 is located to the south of the parking survey split line as shown previously in Section 2.1. Creating parking at this location will help alleviate some of the parking issues described previously. This car park would be accessed via Ghan Road which width varies between 4.7m-5.7m. DMURS recommends lane widths of 2.5m-2.75m to give a total width of 5-5.5m. A spatial analysis was carried out and with some minor road works a carriageway width of 5m can be achieved. This may require the undergrounding or moving of some utilities to create sufficient space to achieve this.

2.3.1.2 Topography

Location 8 is sloping and likely to require minor earthworks to achieve appropriate levels and grades (**Figure 2-27**). Level differences recorded are in the region of 6% along its east west axis and 3.5% along its north south axis..

2.3.1.3 Known Constraints

There will be an ecological constraint on this location due to its current condition being a green field site. This could potentially be mitigated through the use of grasscrete style paving.

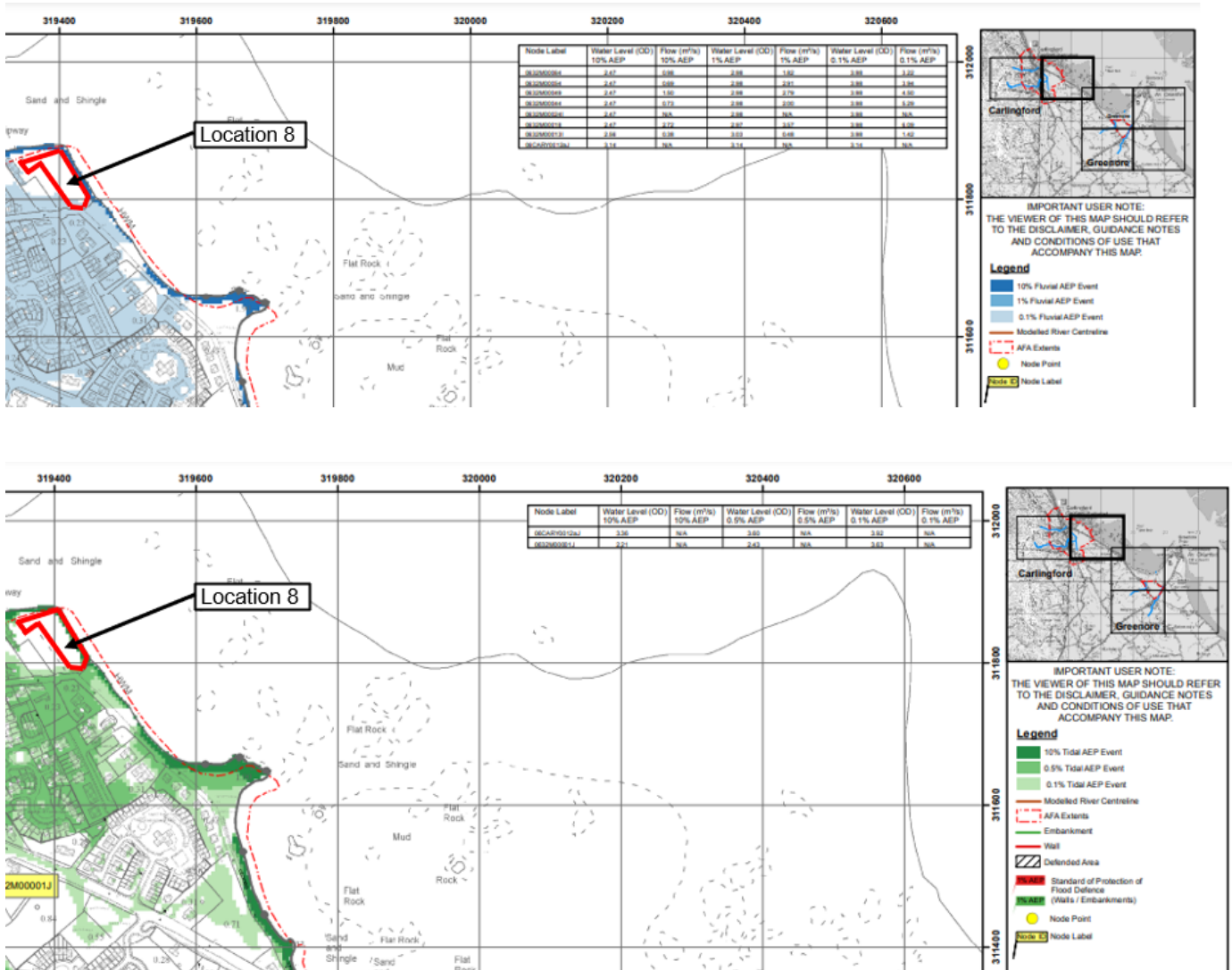
There will be environmental constraints at this location due to it being a green field site, and located within a flood zone

Location 8 is currently within private ownership. The acquisition of this land is a constraint.

The proposed car park site is not within a Flood Zone, however the access road to this location is noted on OPW flood maps within a 1 in 1000 year fluvial and 1 in 1000 year tidal flood events as shown in **Figure 2-30** below. This will need to be considered however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal impact.

Location 8 is currently in private ownership and may require Louth County Council to acquire it

Figure 30-30 Proposed Parking Location 8 Flood Maps



2.3.1 Location 9

Louth County Council proposed Location 9 as a potential new parking site. It is located to the south of the town centre and is within the existing site boundary of the Four Seasons Hotel. Its location is shown in **Figure 2-31** below. Location 9 is made up of two separate car parking areas; Location 9a is approximately 1467m² in size and has the potential to create approximately 37 new car parking spaces. Location 9b is approximately 1210m² in size and has the potential to create approximately 46 new car parking spaces. This results in a combined 83 new car parking spaces as shown in the arrangement in white below.

Figure 31-31 Proposed Parking Location 9 and Existing Features

Location 9: Four Seasons Hotel South of Carlingford

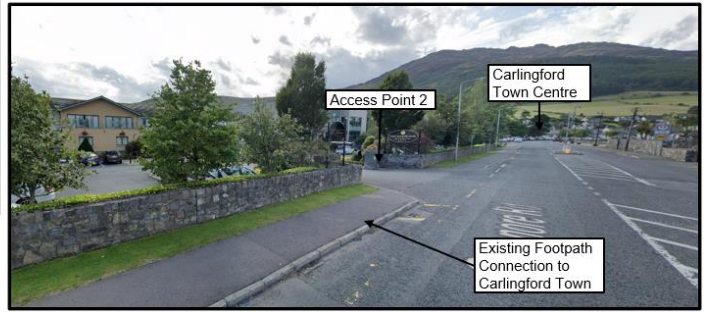
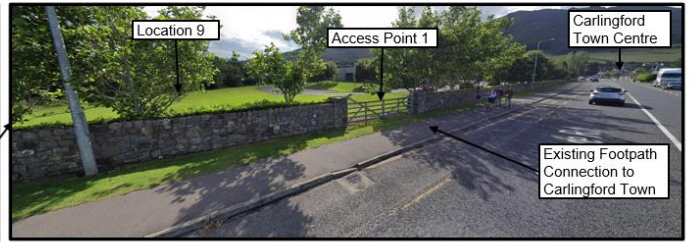


Figure 32-32 Proposed Parking Location 9 Potential Layout



2.3.1.1 Distance to Town Centre and Connectivity

Location 9 is located approximately 450m from the town centre (6-minute walk) along an existing footpath network.

For vehicular traffic Location 9 is located to the south of the parking survey split line as shown previously in Section 2.1. Creating parking at this location will help alleviate the over demand and under supply of parking recorded as part of the parking survey. Location 9 is accessed from the R173 via two existing entrances. Some modifications would be required to the existing footpath to facilitate an improved vehicular access to Location 9a.

2.3.1.2 Topography

Location 9 is relatively flat. A review of aerial mapping suggests that at the eastern perimeter of Location 9a and the southern perimeter of Location 9b there appears to be some steep sloping ground which will require some earthworks. These slopes may be drainage features in the form of open drains and therefore these drains may need to be piped to allow for earthworks.

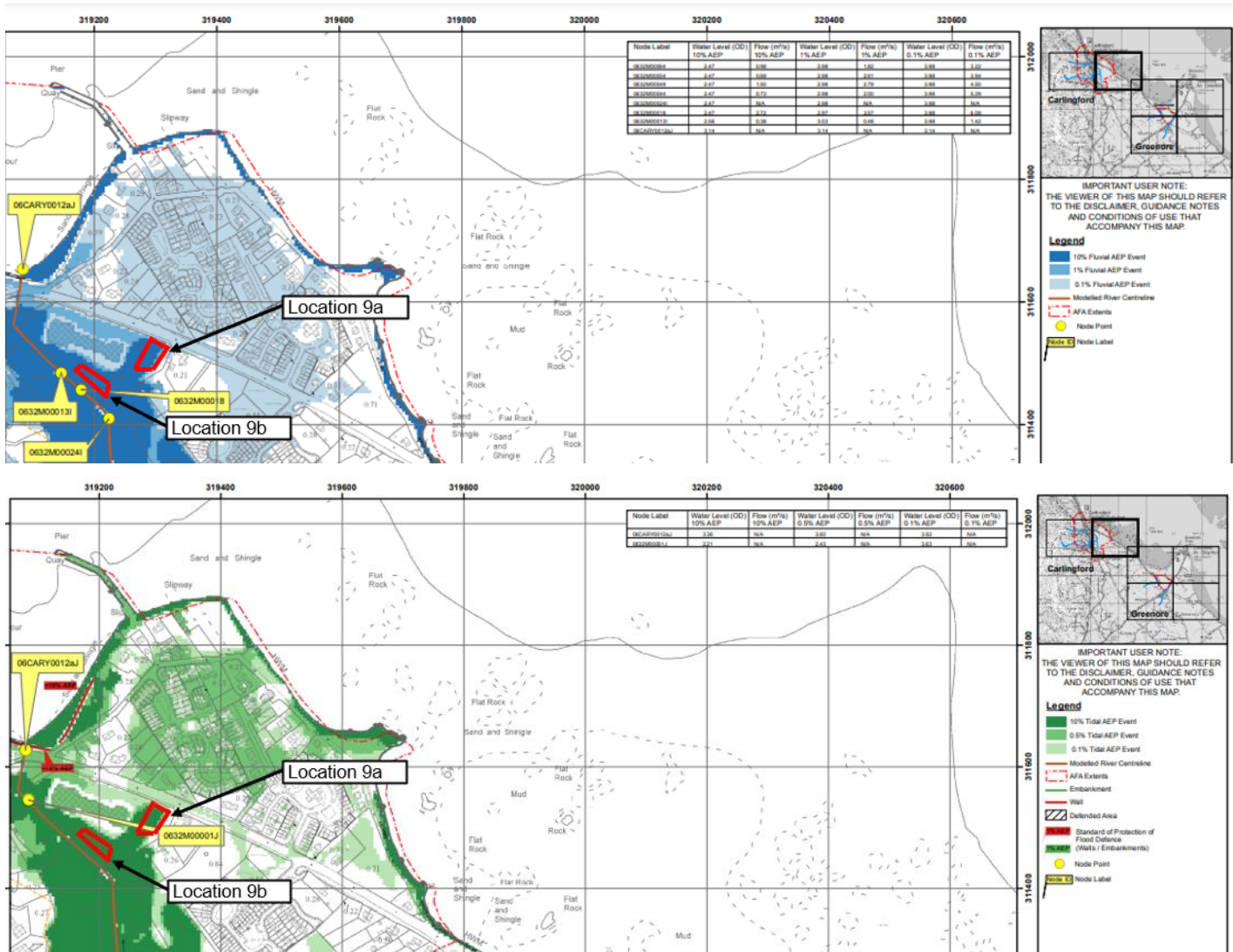
2.3.1.3 Known Constraints

There will be an environmental constraint at this location due to apparent open drains along the perimeter of the site and proximity to the SAC and SPA

Location 9 is currently within private ownership and Louth County Council may need to acquire the site or come to some mutually agreeable arrangement with the Hotel.

The proposed car park site is within a Flood Zone as noted on OPW flood maps, Location 9 is within a 1 in 10 year fluvial and 1 in 10 year tidal flood events as shown in **Figure 2-33** below. This will need to be considered however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal effect.

Figure 33-33 Proposed Parking Location 9 Flood Maps



2.3.2 Location 10

Location 10 is located to the east of the town centre and is within a greenfield site. Its location is shown in **Figure 2-34** below. Location 10 is approximately 1.9ha. in size and the potential to create approximately 755 new car parking spaces in the arrangement shown in white below.

Figure 34-34 Proposed Parking Location 10 and Existing Features

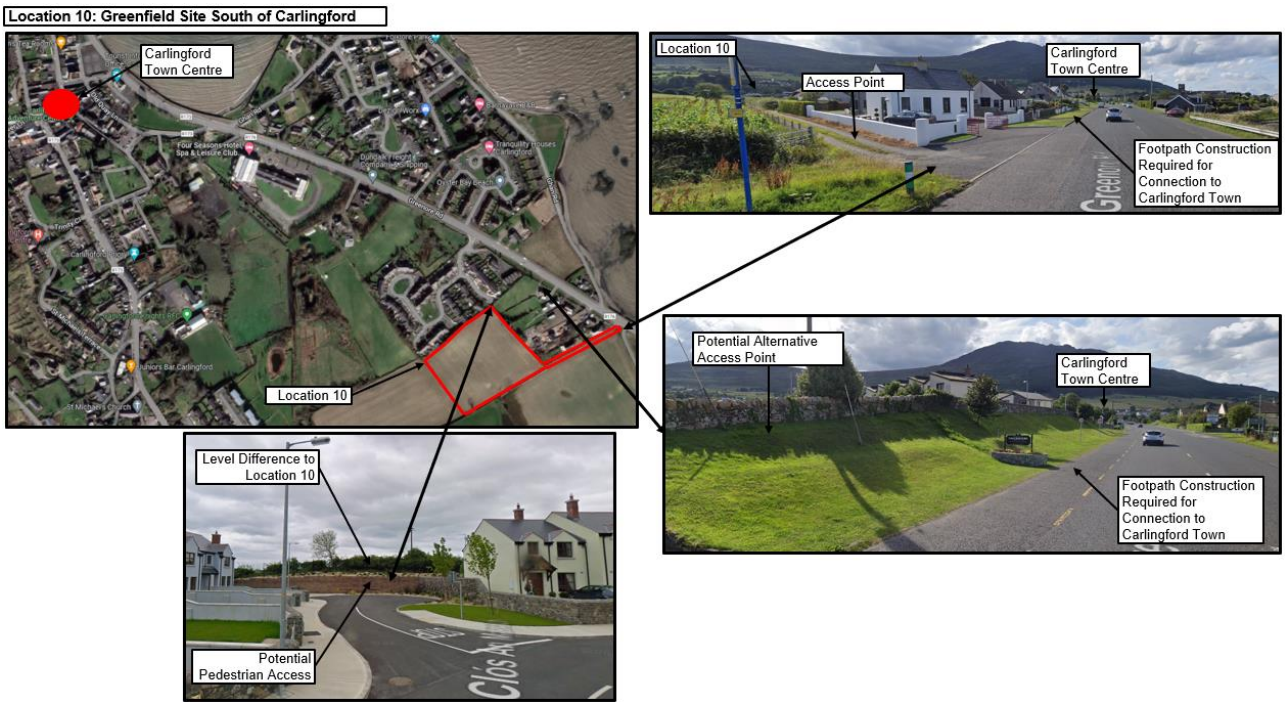
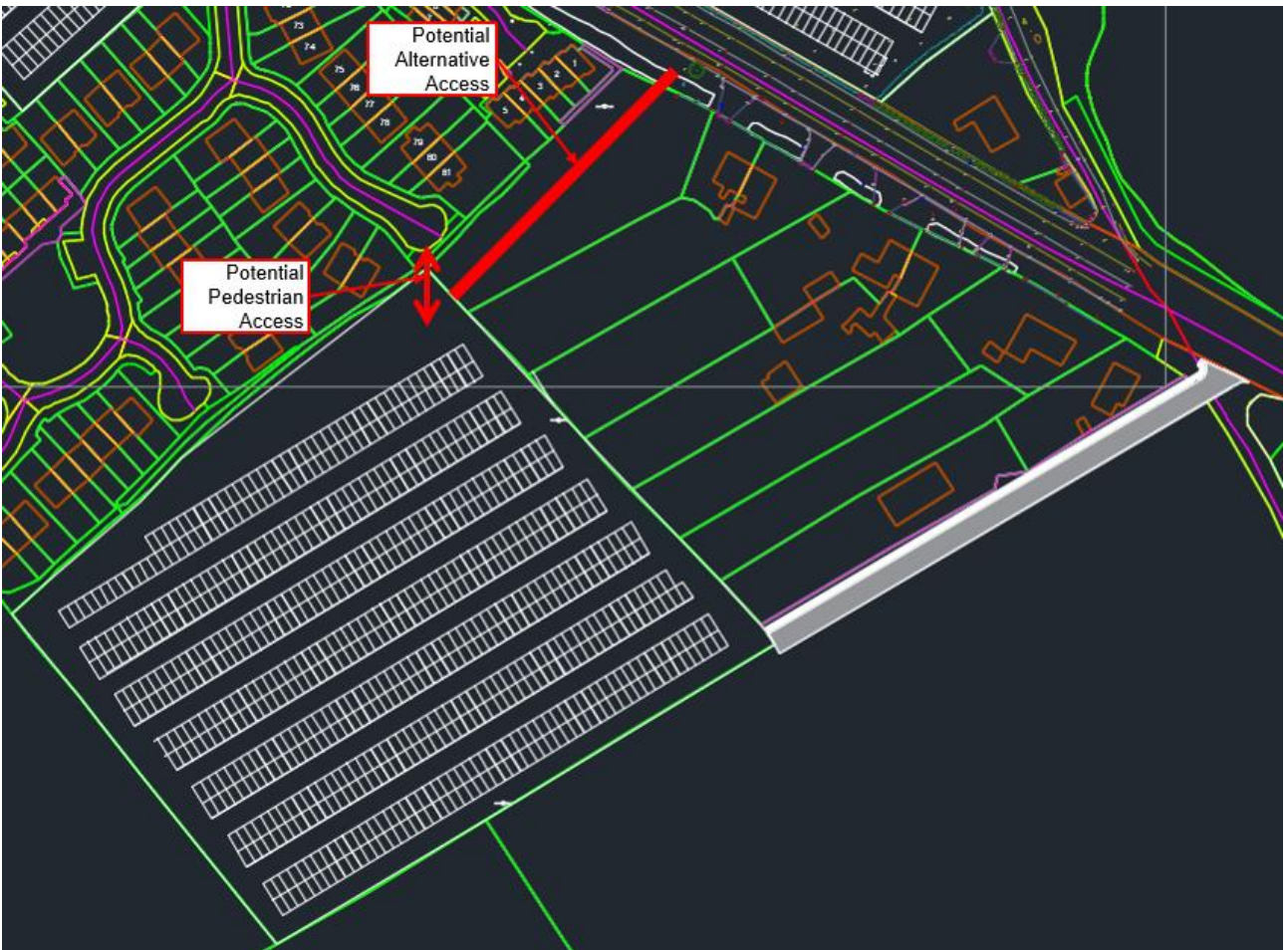


Figure 35-35 Proposed Parking Location 10 Potential Layout



2.3.2.1 Distance to Town Centre and Connectivity

Location 10 is located approximately 1.1km from the town centre (14-minute walk). To facilitate this parking a new footpath and enhancements to existing footpaths along the R173 will be required.

For vehicular traffic Location 10 is located off the R173 to the south of Carlingford Town centre. Creating parking in this location will likely benefit the overcapacity parking recorded in the parking survey described in Section 2.1. To create this parking, a new access road to the R173 would be required to be constructed. There are two potential locations for this as shown previously in Figure 2-34. The most likely feasible access point is located to the south of the site at a current access lane to these lands. .

2.3.2.2 Topography

Location 10 is sloping and likely to require earthworks to achieve appropriate levels and grades (**Figure 2-34**). Level differences appear, based on visual observations to be significant, particularly at access points to the R173 and this may be a key factor in providing this parking at this location.

2.3.2.3 Known Constraints

There will be an ecological constraint on this location due to its current condition being a green field site. This could potentially be mitigated through the use of grasscrete style paving.

There will be environmental constraints at this location due to it being a green field site, and located within a flood zone

The location of this proposed car park being off the R173 and a distance of 1.1km from the town is considered likely to be a constraint to its usage. It will not be visible from the R173 and this may lead to drivers not being attracted to it. This could be mitigated in part through the use of signage.

Location 10 is currently within private ownership. The acquisition of this land is considered to be constraint.

The proposed car park site is not within a Flood Zone, however the access road to this location is noted on OPW flood maps within a 1 in 1000 year fluvial and 1 in 1000 year tidal flood events as shown in **Figure 2-36** below. This will need to be considered however as the peak holidaying season is in Spring and Summer months it is likely to have a minimal impact.

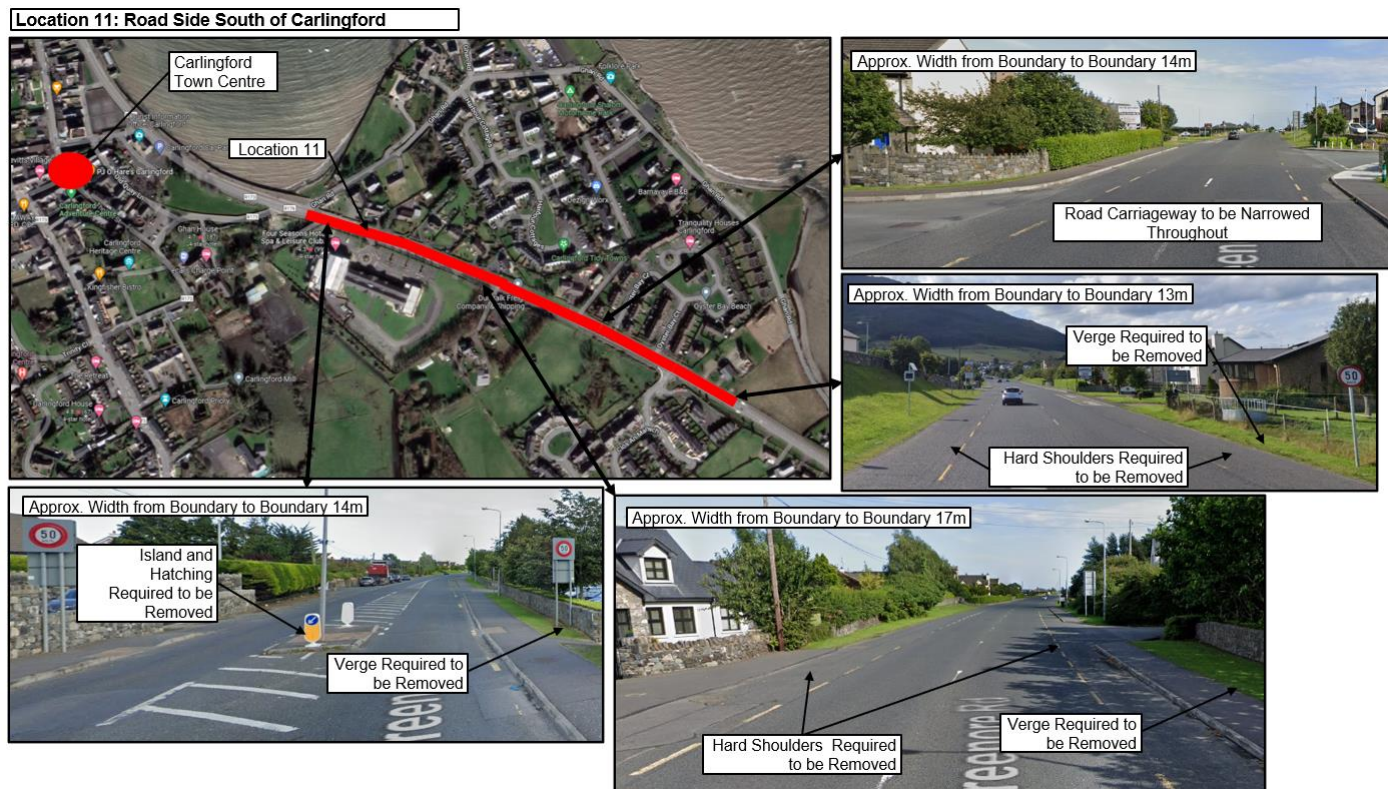
Figure 36-36 Proposed Parking Location 10 Flood Maps



2.3.1 Location 11

Location 11 is situated to the south of Carlingford Town and is a proposal to provide on-street parking along the R173 as shown in **Figure 2-37** below.

Figure 37-37 Proposed Parking Location 11



There is opportunity to add approximately 50 parking spaces and a new footpath along the existing hard shoulder. To create enough space to achieve this, the existing road markings (lines and hatches) would be removed and re-designed.

The road carriageway would be required to be narrowed to 6.5m

2.3.1.1 Distance to Town Centre and Connectivity

Location 11 is located between approximately 350m and 850m from the town centre (4-10 minute walk) and the construction of a new footpath would be required to provide sufficient connectivity to the town centre for pedestrians.

Location 11 offers a convenient location for traffic travelling from the south to park before entering the town. This would contribute to a reduction in the volume of traffic entering the town centre.

2.3.1.2 Topography

Location 1 is located on an existing road carriageway. The topography is relatively good with no significant sloping.

2.3.1.3 Constraints and Options

Whilst there are no major known hard engineering constraints with regards providing parking at Location 1, there are some road safety concerns with this location, particularly with regards to driver speed and awareness of pedestrians due to the rural characteristics of this section of road. Should Location 11 be considered for provision of additional parking, consideration should be given to changing the rural characteristic of the area to make it more urbanised with traffic calming measures to increase the safety for pedestrians and visitors accessing the parked vehicles. The provision of a footpath, signage and street furniture will assist this.

2.4 Vehicle Parking Management Strategy

Key to the success of the proposed urban realm improvements in Carlingford, and the improved pedestrian environment will be the management of vehicular traffic. It is good urban design practice to ensure as much space as possible is given to pedestrians and recreational activities within the town centre. Considering this, car parks outside of the town centre area would be beneficial to the aspirations of the urban design and therefore improvements to parking capacity in areas with direct access to the R173 are preferred over town centre car parking or car parking that requires traffic to travel through the town centre. This is the approach to parking management being taken in these proposals. Based on this approach, and the above assessment of locations, the following car park locations are suitable to compliment the urban design based on the location, volume of parking that can be provided and the known constraints of each site.,

- Location 5 – 258 Spaces approx.
- Location 6 – 44 Spaces approx.
- Location 9 – 83 Spaces approx.

These car parks do not require visitors to the town to travel through the town centre. To further assist the reduction of traffic within the town centre, the construction of roundabouts at the outer limits of the town and car park locations should be considered. This will allow vehicular traffic to use the R173 solely when choosing a parking location or if car parks have reached their capacity and requires drivers to seek parking elsewhere. These roundabouts could be placed at the below locations and may also benefit traffic calming within the area as they reduce vehicle speeds on approach to the town centre and within the vicinity of these proposed car parking locations. Live car parking capacity signage should also be considered to assist drivers in choosing a parking location

Figure 38-38 Proposed Parking Management Strategy



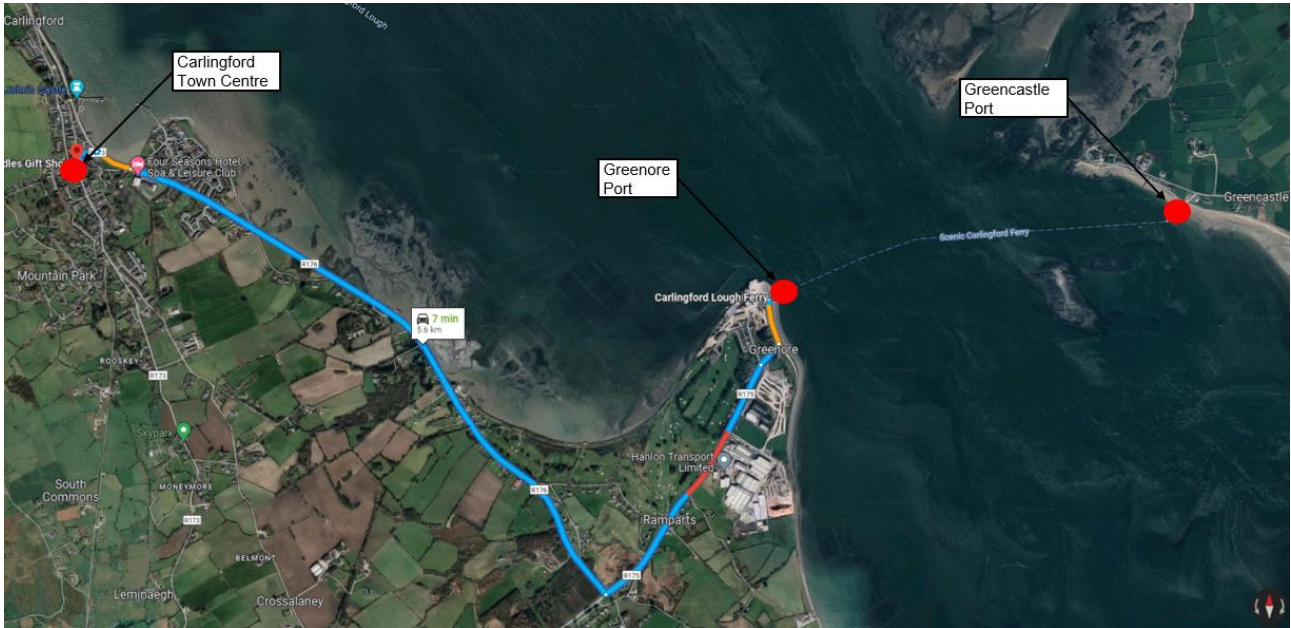
2.5 Green Travel Parking Management Strategy

Alongside providing for vehicular traffic within the town, a focus should also be put on reducing carbon emissions in the town caused by visitors in cars. Providing options other than car travel to visitors can help to reduce the volume of traffic within the town and reduce the carbon emissions in the area. Some examples of alternative options of travel for consideration are given below.

2.5.1 Linking the Town to the Carlingford Ferry

Approximately 5.6km from the town centre of Carlingford, the Carlingford Lough Ferry operates between Greenore and Greencastle ports. This is an important tourism link between the north and south of Ireland. Providing a shuttle bus service between the port and Carlingford town centre would encourage foot passengers to use the ferry and continue their journey using the shuttle bus thus reducing the number of cars travelling into the town. As a further way of reducing the carbon emissions, an electric powered bus could be used for this service. The location of the Carlingford Lough Ferry and route of travel for bus travel is shown in **Figure 2-39** below.

Figure 39-39 Proposed Green Travel Parking Proposal 1



Consideration should be given to carrying out a cross border feasibility study into the operation of this service to gauge a potential cost benefit. This service could be restricted to the peak seasons if required.

2.5.1 Promotion of Bus Timetables in Neighbouring Towns and areas

Carlingford is serviced by the 161 Bus Eireann Route from Dundalk to Newry and vice versa. This bus route has a total of 6 journeys to and from Carlingford Monday to Saturday. There is currently no service provided on a Sunday. Greater promotion of this route could be given on peak visiting days to Carlingford such as on Bank Holidays. The existing Carlingford.ie website gives information on this bus timetable. Greater promotion of this website and the bus service could be undertaken through social media channels and displays. Greater usage of this route could see an improvement in the service undertaken by the provider.

Consideration could be given to using private bus operators to provide a service from Dundalk and Newry to and from Carlingford on peak seasonal days where high traffic volumes would be expected.

2.5.1 Promotion of Greenway use and Provision of Park and Ride

The Carlingford to Omeath Greenway is a 7km greenway that currently terminates north of Carlingford Town centre at the location shown in **Figure 2-40** below.

Figure 40-40 Proposed Green Travel Parking Proposal 2



A separate parking study could be carried out in Omeath to assess the parking capacity there. Should there be considerable capacity within Omeath, this area could be used to target visitors to Carlingford who are visiting for recreational/exercise purposes and give them an option of using the greenway to travel into Carlingford thus removing vehicles from Carlingford.

There are plans in place to extend this greenway south towards Greenore and Dundalk. These plans should include an assessment of potential Park and Ride car parks that could encourage parking outside of the town centre and the usage of the greenway to continue their journey to the town using a zero-carbon travelling method such as walking or cycling. Bicycle hire at these Park and Ride facilities could be used to help encourage this mode of travel.

3 TRAFFIC MANAGEMENT STRATEGY

As stated in Section 1 of this Report, an objective of this project is to achieve

“The removal of congestion in Carlingford and delivering more rationalised vehicular movements and parking plan within the village that will promote innovation and build innovation capacity within the village and its hinterland particularly with Omeath and Greenore”

This Section along with Section 2 aims to provide potential solutions to satisfy this objective.

3.1 Existing Traffic Volumes and Congestion

The Project Brief required traffic surveys to capture information within the area shown in **Figure 3-1** below defined as the Carlingford Core Historic Townscape.

Figure 3-1 Extents of Traffic Management Survey Area

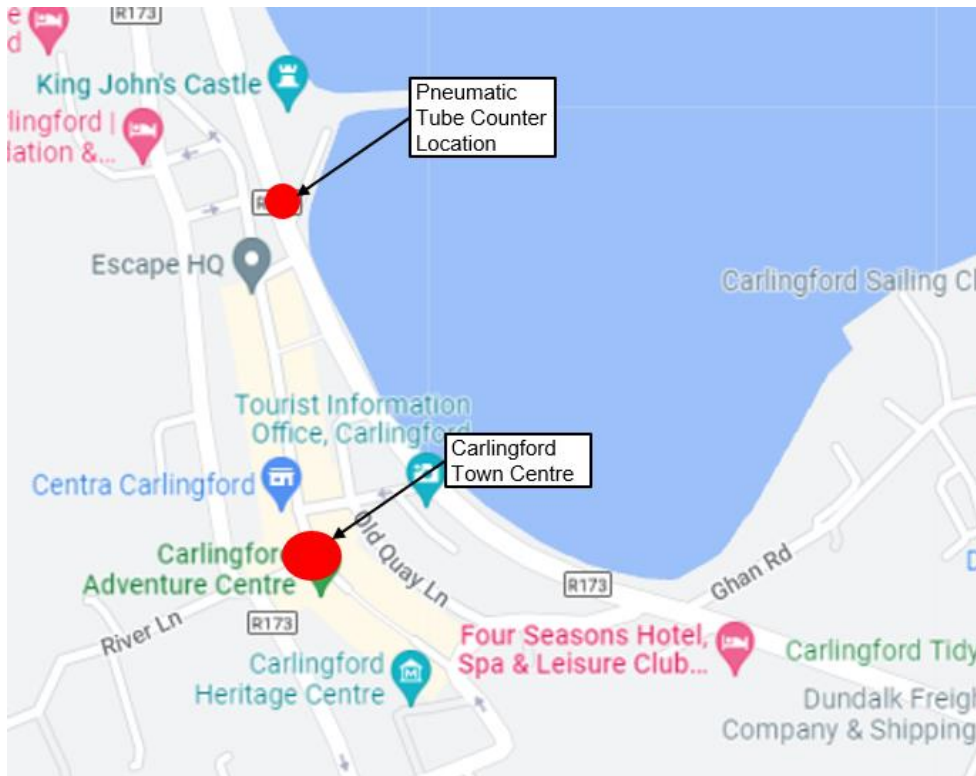


Similar with the Parking Surveys, to capture and measure seasonal challenges to traffic, two days of the August Bank Holiday weekend, Saturday and Sunday (31/07/2021 and 01/08/2021) were chosen in consultation with Louth County Council to carry out traffic surveys.

These traffic surveys took three different forms,

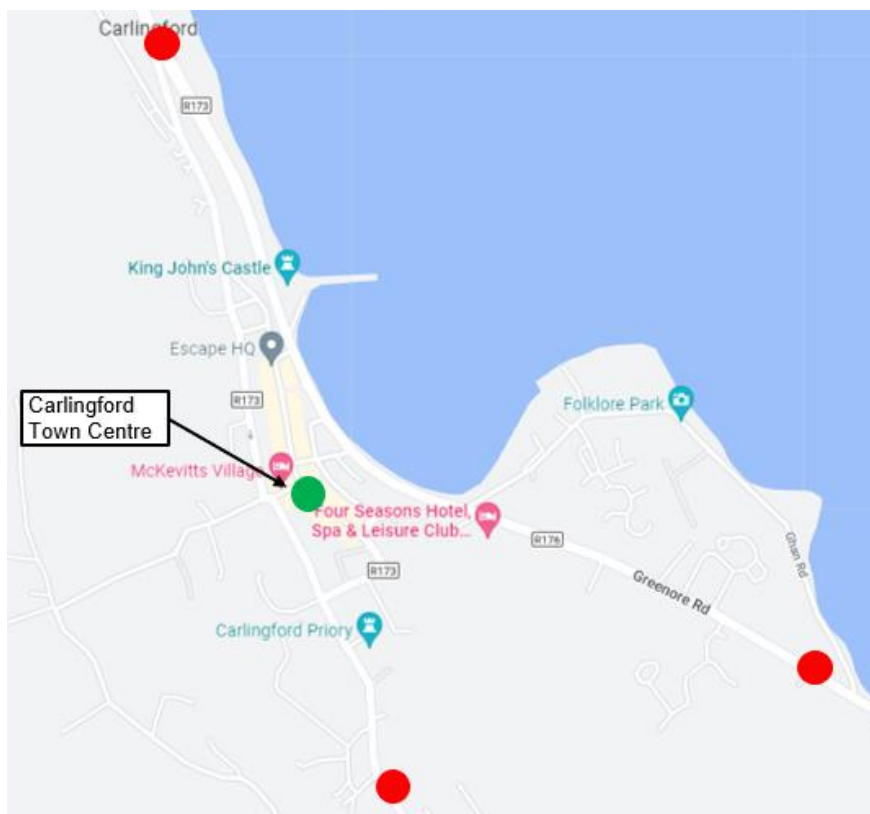
1. A long-term count carried out over 6 weeks from Friday 20th July 2021 to 24th August 2021 using a Pneumatic tube counter on the R173 at the below location;

Figure 3-2 Location of Long-Term Survey



- 2. Automatic Number Plate Recognition Surveys carried out on Saturday 31/07/2021 and Sunday 01/08/2021 at the below locations noted in red below. This survey was carried out to measure the time taken for vehicles to travel between the points shown below in both directions. This type of survey is useful to measure congestion based on duration of travel; and

Figure 3-3 Location of Journey Time Survey



3. Video Junction Turning Counts carried out on Saturday 31/07/2021 and Sunday 01/08/2021 at the below locations noted in red below.

Figure 3-4 Location of Junction Turning Count Survey



3.1.1 Analysis of Long-Term Existing Traffic Data (Pneumatic Tube Counter)

The weekly average daily flow of traffic as extracted from the pneumatic tube counter is shown in the below Table;

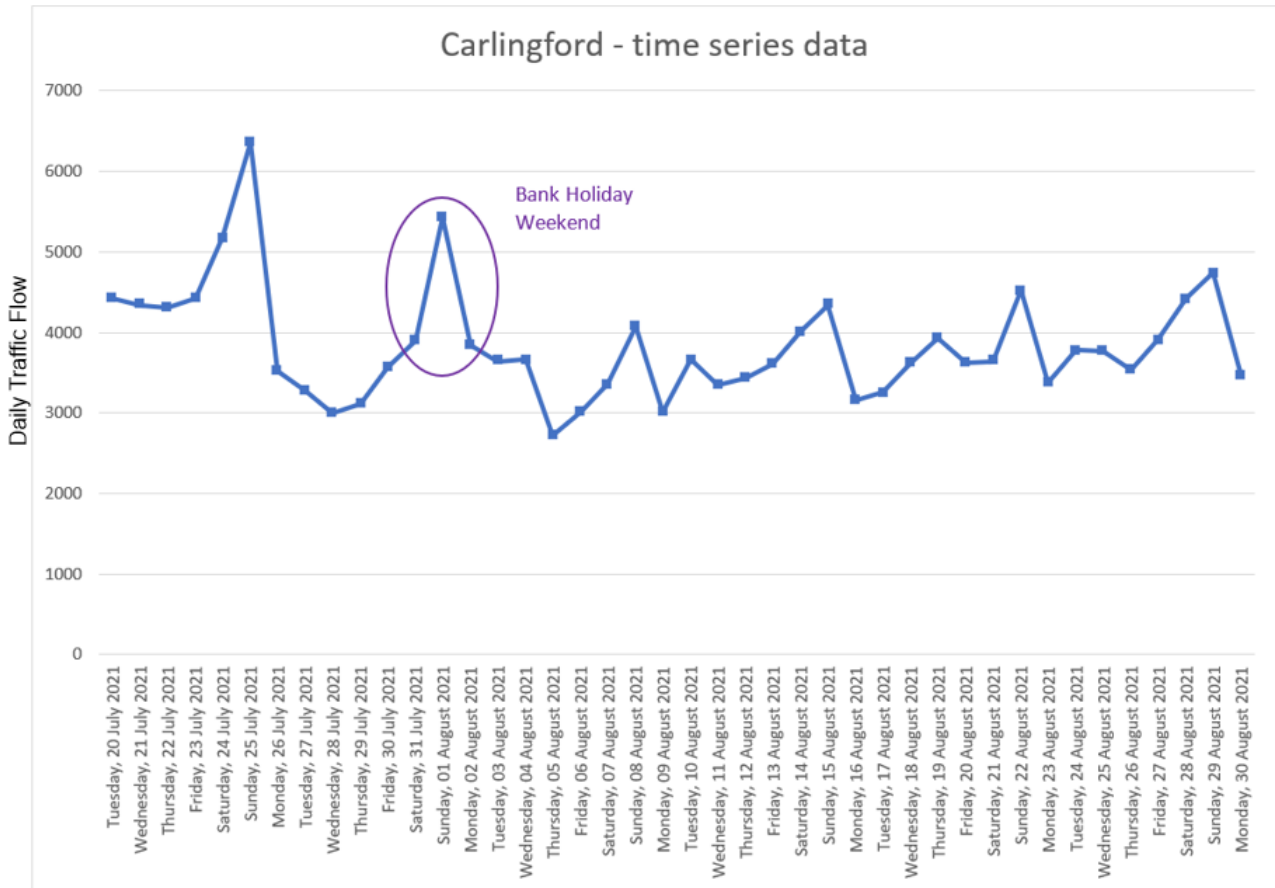
Table 3-1 Recorded Long Term Existing Traffic Data

Week Beginning	7-Day Average Daily Flow
Tuesday, 20 July 2021	4649
Tuesday, 27 July 2021	3731
Tuesday, 03 August 2021	3353
Tuesday, 10 August 2021	3652
Tuesday, 17 August 2021	3710
Tuesday, 24 August 2021	3946

PARKING AND TRAFFIC MANAGEMENT STRATEGY

This information was further broken down to determine the daily traffic flow. This was done so the busiest day of the week could be determined and is shown graphically in **Figure 3-5** below;

Figure 3-5 Recorded Long Term Traffic Flows



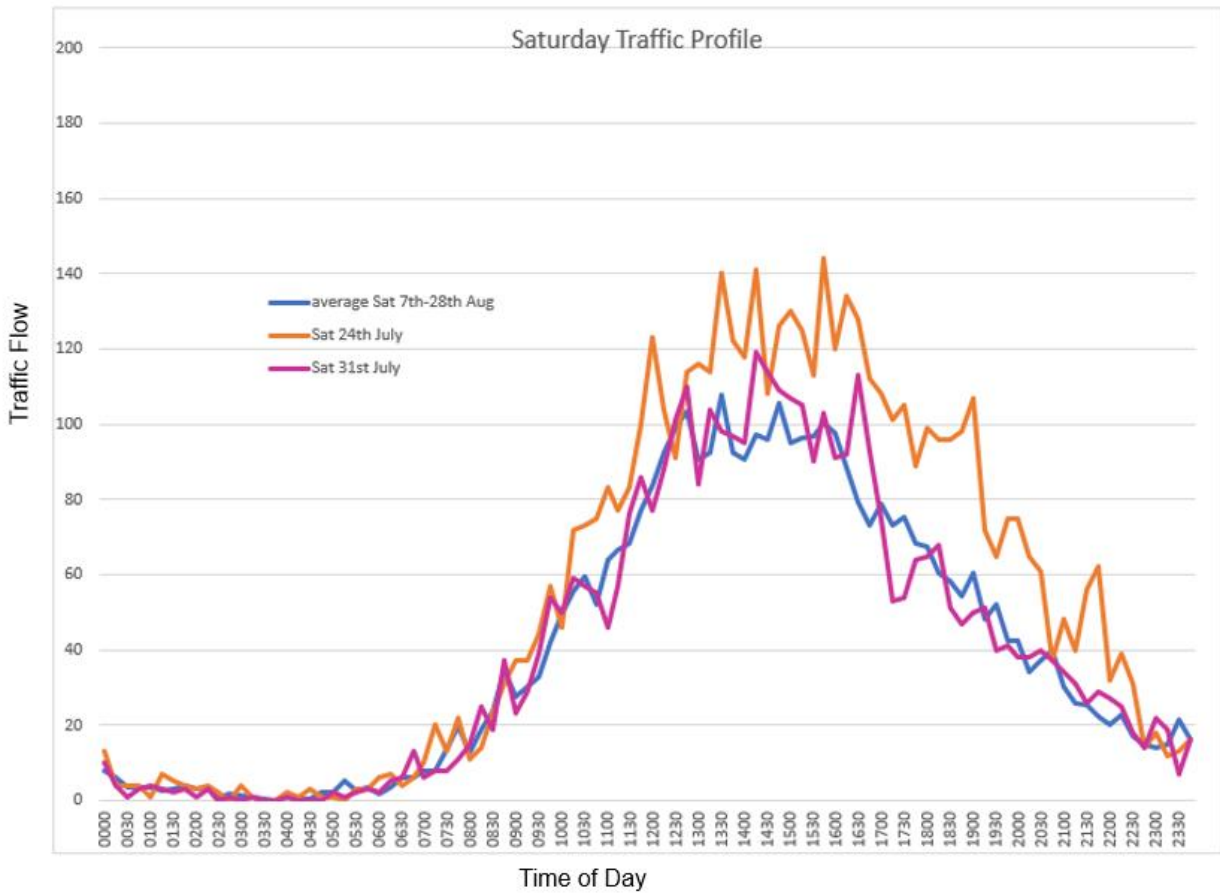
Prior to carrying out the traffic surveys, it was agreed with Louth County Council that the Bank Holiday weekend, would be the most appropriate weekend to capture and measure seasonal traffic patterns. However, from the above graph the weekend prior to the Bank Holiday Weekend recorded a higher traffic volume than the Bank Holiday Weekend. Further investigation was carried out to determine the cause of this anomaly and it was discovered that a sailing regatta was held that same weekend. Due to the irregularity of this type of event, the Bank Holiday Weekend is still considered to be an appropriate weekend to measure seasonal challenges to traffic. The Bank Holiday Weekend recorded a higher volume of traffic than on the four weeks following it. This is illustrated in the below Table.

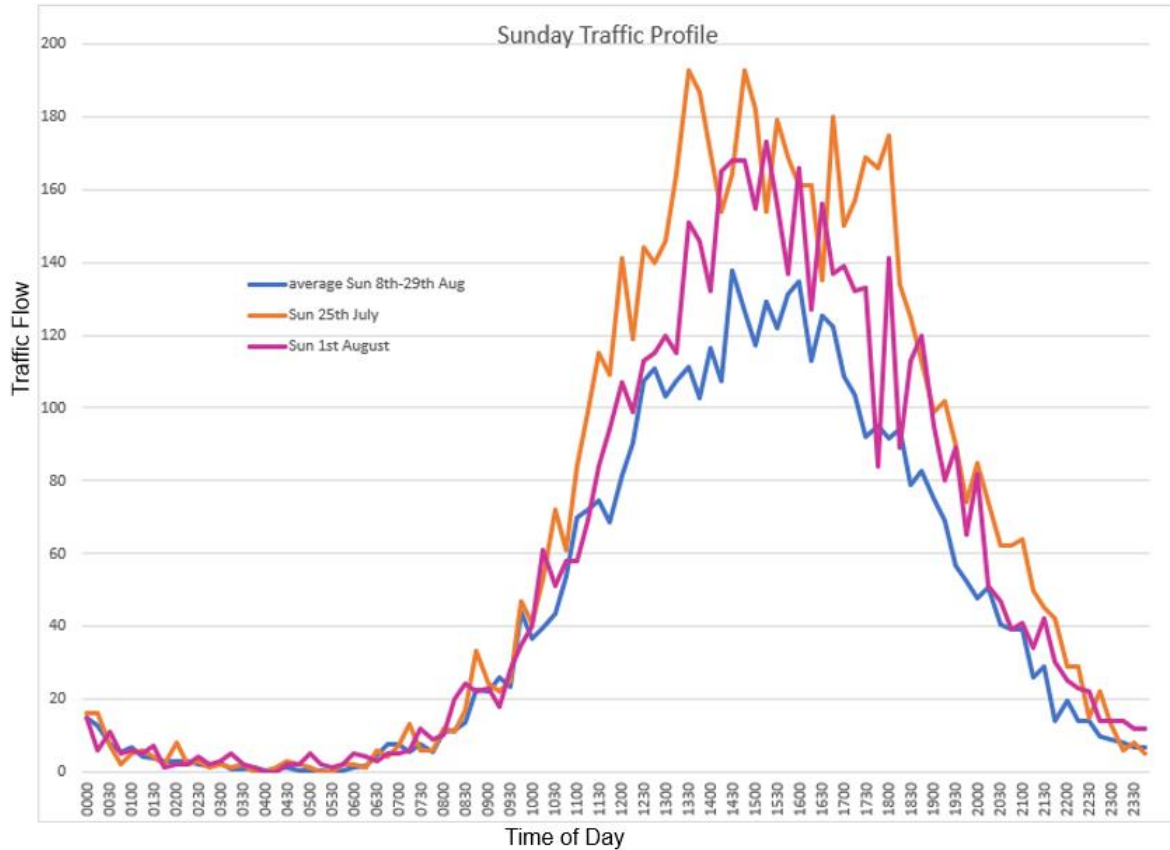
Table 3-2 Analysis of Recorded Long Term Existing Traffic Data

Sunday Flow	Flow from 11:00-22:30	Difference
August Average	3902	-19%
Bank Holiday	4805	
Previous Weekend	5739	+19%

Sunday traffic flows later in the month of August did not reach the same as those recorded for the Bank Holiday Sunday. The traffic flows recorded for the Bank Holiday Saturday were typical of those recorded for other Saturdays in July and August. This is illustrated in the graphs shown below in **Figure 3-8**.

Figure 3-6 Recorded Traffic Profiles





The data shown in the above graphs is summarised as follows,

- On a typical Saturday, flows peaked at around 400 vehicles per hour and this level lasted roughly from 12:30 to 16:00.
- On Bank Holiday Saturday, this level lasted a little later until nearly 17:00, with a spike of higher flow at around 14:30.
- On the previous Saturday, flows peaked at around 500 vehicles per hour, and this level lasted roughly from 13:00 to 17:00.
- On a typical Sunday, flows peaked at around 500 vehicles per hour, and this level lasted broadly from 14:30 to 16:30
- On Bank Holiday Sunday, flows peaked at around 650 vehicles per hour, and this level lasted over roughly the same period.
- On the previous Sunday, flows reached around 750 vehicles per hour for short periods and maintained an average flow of around 650 vehicles per hour between 12:30 and 18:30 – a six-hour peak. This increase in traffic flows is thought due to a local sailing regatta which was held that weekend.

3.1.1 Analysis of Short-Term Existing Traffic Data

The Automatic Number Plate Recognition Survey data was used to measure the existing journey time through the town between the points in **Figure 3-7**

Figure 3-7 Location of Journey Time Surveys



The journey times recorded on the busiest day of the Bank Holiday Weekend (Sunday) are shown in **Figure 3-8 to 3-10** below. From the below graphs, similar journey times were recorded in both north to south (Site A to Site B) directions along the R173 with a max journey time in the south to north (Site B to Site A) journey time of 5.5mins. Journey times through the town centre were measured by durations from Sites A and B to Site C. This journey time was slower, with a max journey time recorded in the northern direction of 7.5mins.

Figure 3-8 Observed Journey Times Site A

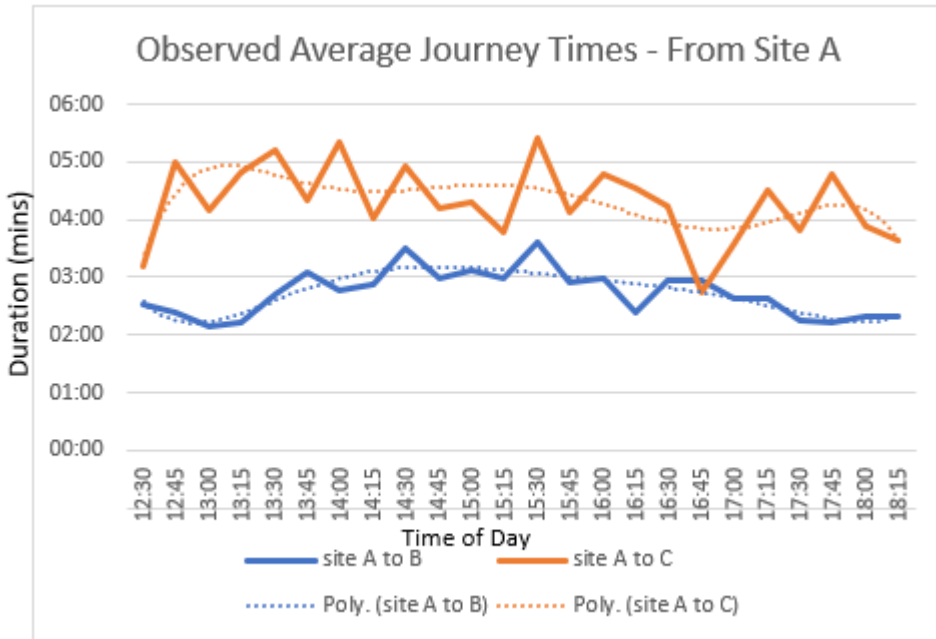


Figure 3-9 Observed Journey Times Site B

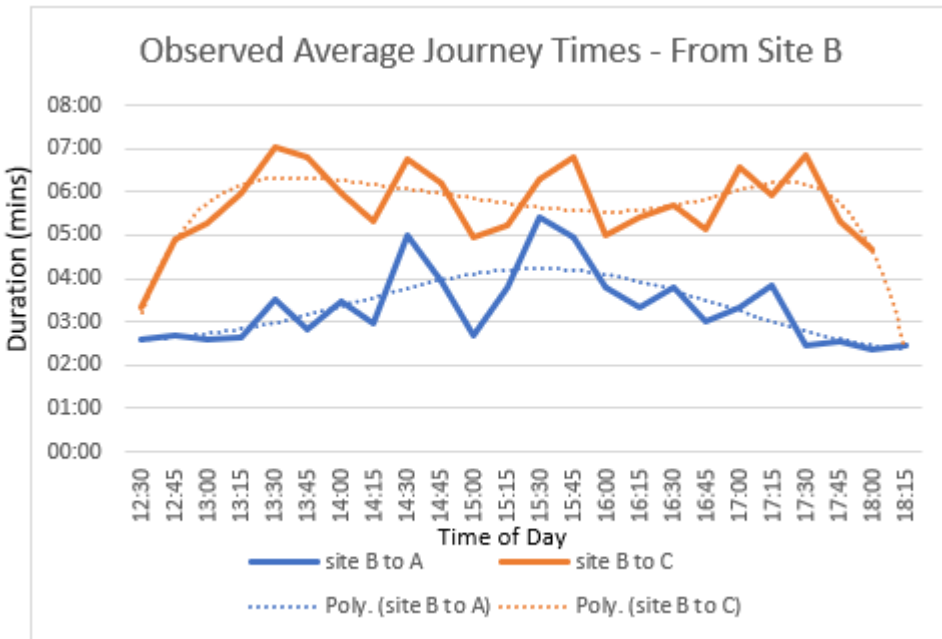
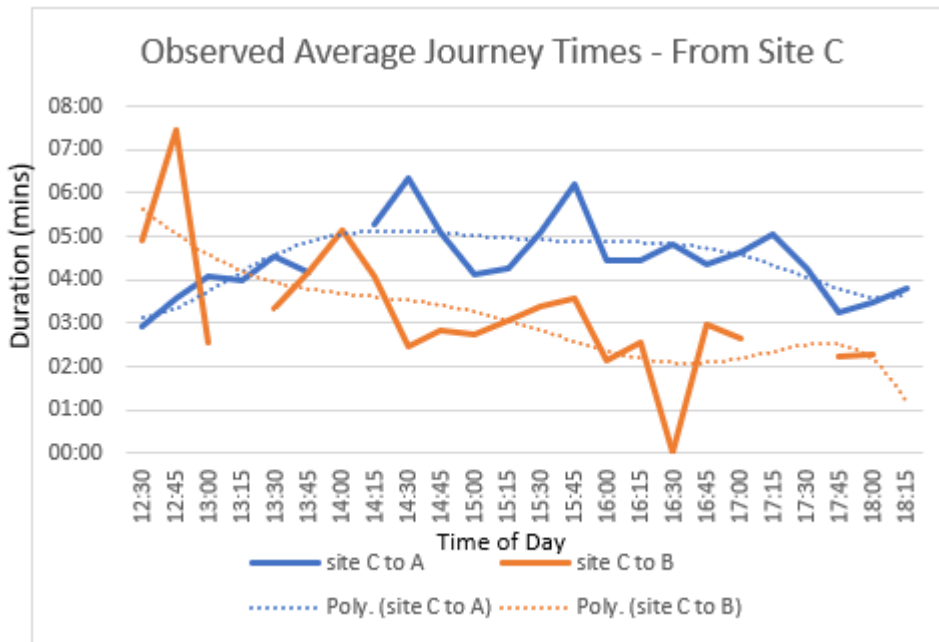


Figure 3-10 Observed Journey Times Site C



3.1.2 Baseline Traffic Modelling

Having established the Bank Holiday Sunday as being a fair representation of seasonal traffic patterns, the junction turning count data, as described previously in Section 3.1, has been used to create a micro-simulation model of the traffic movements within the town. This micro-simulation model was constructed using VISSIM Software.

The journey time data was used to calibrate the model to create a greater accuracy of traffic movements and congestion within the town.

The following is a summary of recorded queuing lengths from the existing traffic model at the key junctions below. The model of the complete network as illustrated previously in **Figure 3-1** recorded an average delay of 51seconds throughout the period from 11:30 to 16:30. A maximum delay of 2 minutes 4 seconds was recorded during the hour between 14:30 and 15:30.

Figure 3-11 Key Junctions Modelled

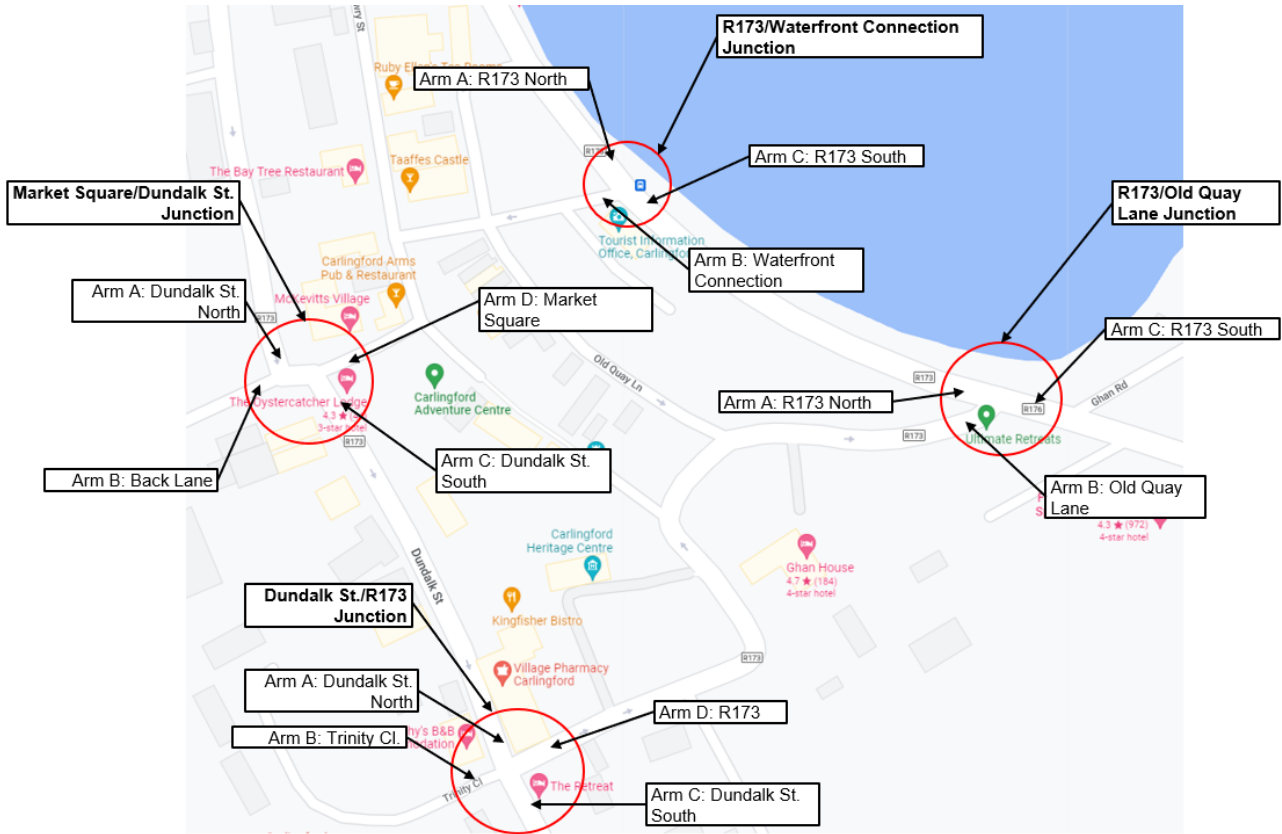


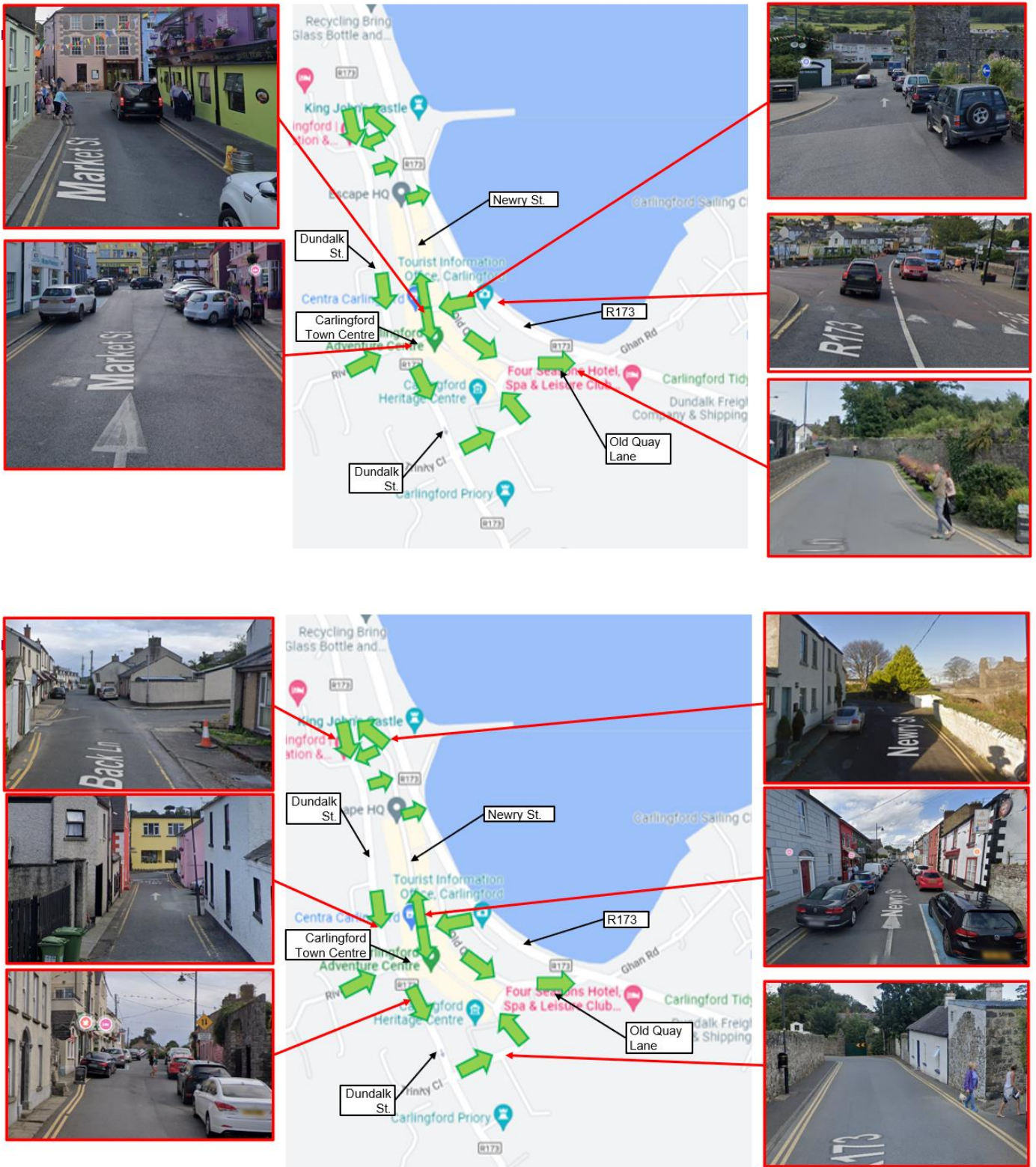
Table 3-3 Modelled Queue Lengths at Key Junctions

Junction	Queue Length (m)
R173/Waterfront Connection	
Arm A	22
Arm C	73
Market Square/Dundalk St	
Arm A	7
Arm B	2
Arm D	0
Dundalk St./R173	
Arm A	29
Arm B	0
Arm C	7
R173/Old Quay Lane	
Arm A	1
Arm B	59
Arm C	17

3.2 Existing Traffic Flow Arrangement

The existing streetscape in Carlingford Town is narrow for both cars and pedestrians and includes one-way vehicular traffic systems within the town centre and its surrounding streets. The below **Figure 3-12** illustrates the existing, predominantly, one-way traffic management layout within the town centre and surrounding areas. Streets with no arrows depicting the traffic flow direction, are two-way streets.

Figure 3-12 Existing Traffic flow Arrangement and Features



3.3 Considered Change to Traffic Flow Arrangement

Consideration was given to changing the traffic flows within the town to see if a more efficient traffic route could be established. Due to the narrow streetscape, and the residential nature of the streets surrounding the town centre, the introduction of new two-way flows were not deemed feasible.

An analysis was carried out to test the merit of changing the existing one-way systems on Newry St. and Dundalk St. This would require changes to the directions of flows as depicted in Figure 3-13 below. To test the merits of carrying out these changes, a high-level analysis of route lengths was carried out. The start and end point of the route was measured from their existing junctions with the R173. This is illustrated in Figure 3-14 and described below.

Figure 3-13 Considered Change to Traffic Flow Arrangement

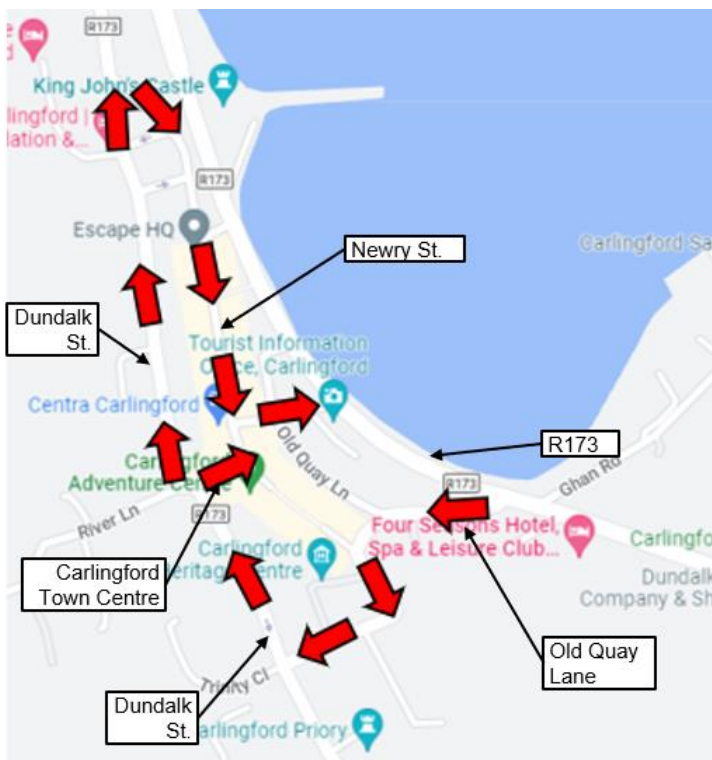
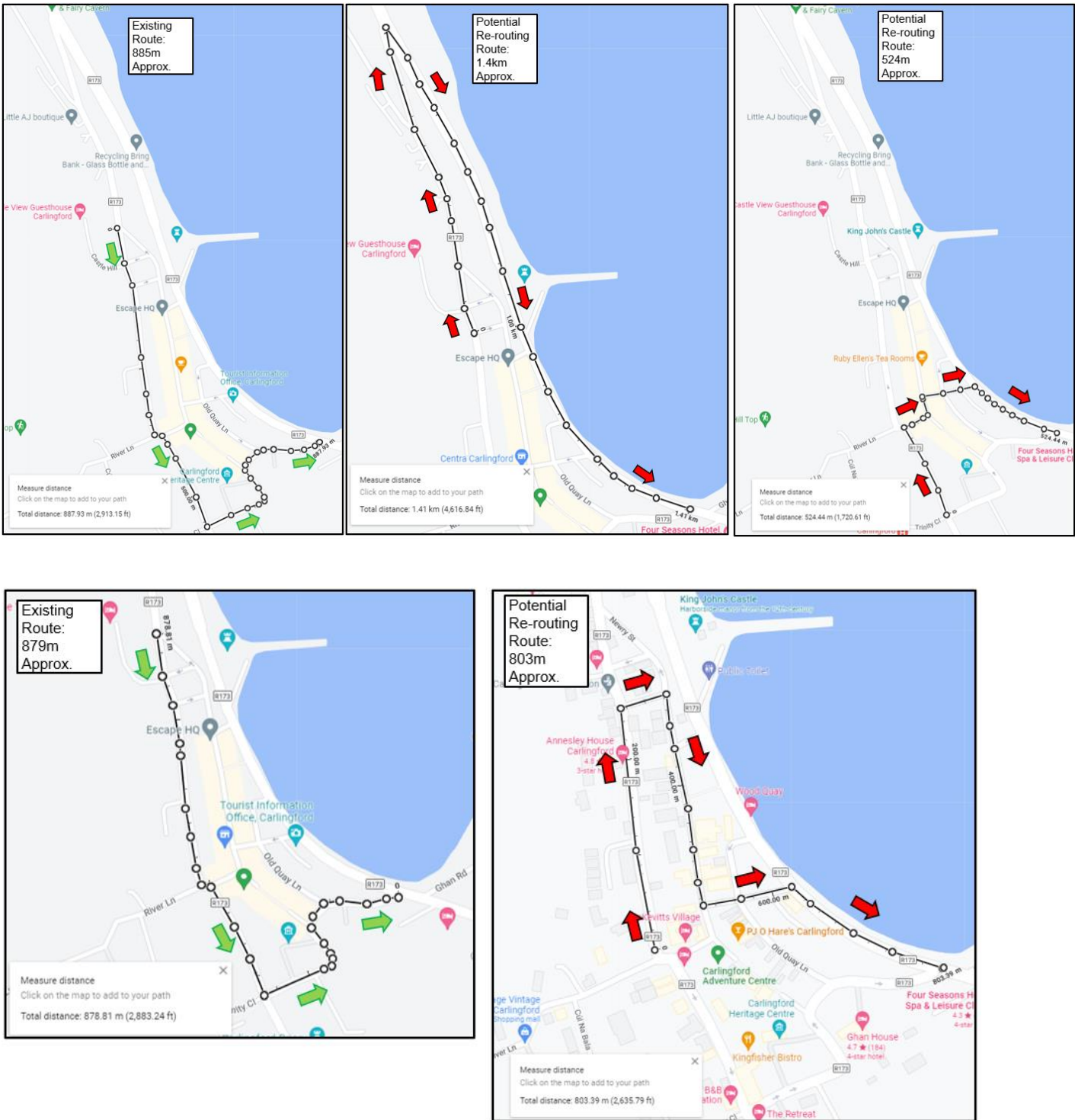


Figure 3-14 Considered Change to Traffic Flow Arrangement Analysis – Dundalk St.



The images above indicate that the vehicle route from Dundalk St. to the R173 is approximately 885m. Reversing the direction of flow will increase the travel distance for those located to the north of Dundalk St. by 515m for a total length of 1.4km. However, for those to the south of Dundalk St. it will reduce the travel distance by 355m for a total distance of 524m. For journeys starting midway along Dundalk St. the travel distance will reduce by 76m for a total distance of 803m. This results in an overall increased travel distance of 90m.

For Newry St. the below images show the effects of the changing of traffic flow direction.

Figure 3-15 Considered Change to Traffic Flow Arrangement Analysis – Newry St.



The above images show the existing route length to service Newry St. to the R173 is approximately 434m. Should the traffic flow on this street be re-routed in the opposite direction, the travel distance will increase by 1.03km to a total distance of 1.46km. This increase combined with that on Dundalk St. is 1.12km.

As stated previously, due to the width constraints on these streets, there is no opportunity to provide a two-way traffic flow arrangement. Furthermore, it is not considered to be beneficial to change the direction of flow along Newry St. and Dundalk St. as it results in an increased distance to travel. This would have a particular negative effect on encouraging a modal shift towards bike travel as this type of active travel is easier to encourage over shorter distances. It may also encourage cyclist to cycle against the flow of traffic which may pose a safety risk to them.

3.4 Pedestrianisation

Some of the key objectives of this project as defined in the Project Brief are to deliver,

“Transformative potential, the capacity of the final completed project to deliver transformative change for a rural town or village, deliver social and economic benefits for rural communities and act as a catalyst for increased activity in a rural area.”

“Delivering key objectives of the Local Community Plan to empower inclusive communities through enabling well-being, providing more pleasant pedestrian/cycle movements within and between key heritage assets and beyond”

Key relevant Themes of this project as defined in the Project Brief are,

“Enhancing the spatial qualities of Carlingford public spaces at the Waterfront arrival and connecting streets and laneways with enhanced consideration given to pedestrians routes and visual connections”

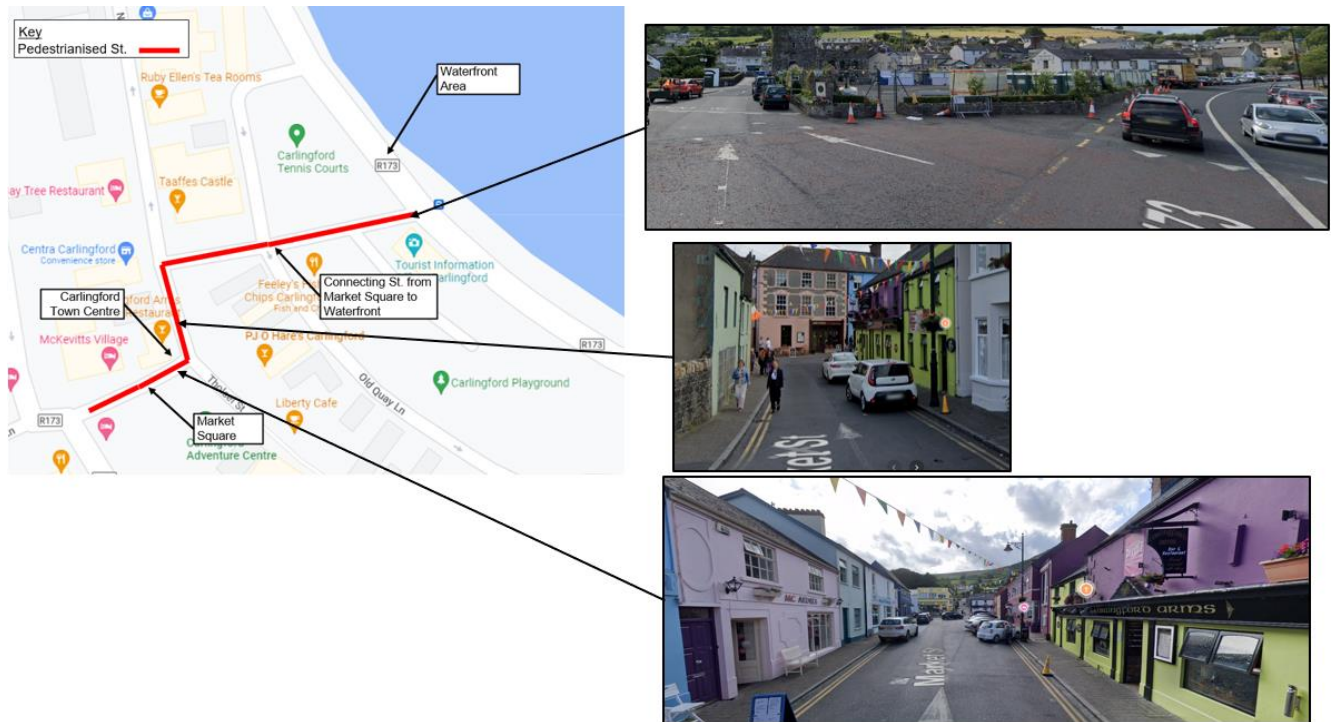
“Enhancing the spatial qualities of Carlingford Market Square and connecting streets to the Waterfront with enhanced consideration given to pedestrian routes and visual connections”

“This will be in conjunction with an agreed Traffic Management and Parking Strategy for Carlingford, with particular focus on the Waterfront and Village core, which aims to facilitate additional outdoor and shop front

space to businesses, restaurants, heritage assets and non-vehicular modes of accessing activities and amenities”

Based on the above, pedestrianisation within the town centre and approaches between it and the Waterfront areas was considered. The route of the pedestrianised streets is illustrated in **Figure 3-16** below.

Figure 3-16 Proposed Pedestrianisation of Market Square

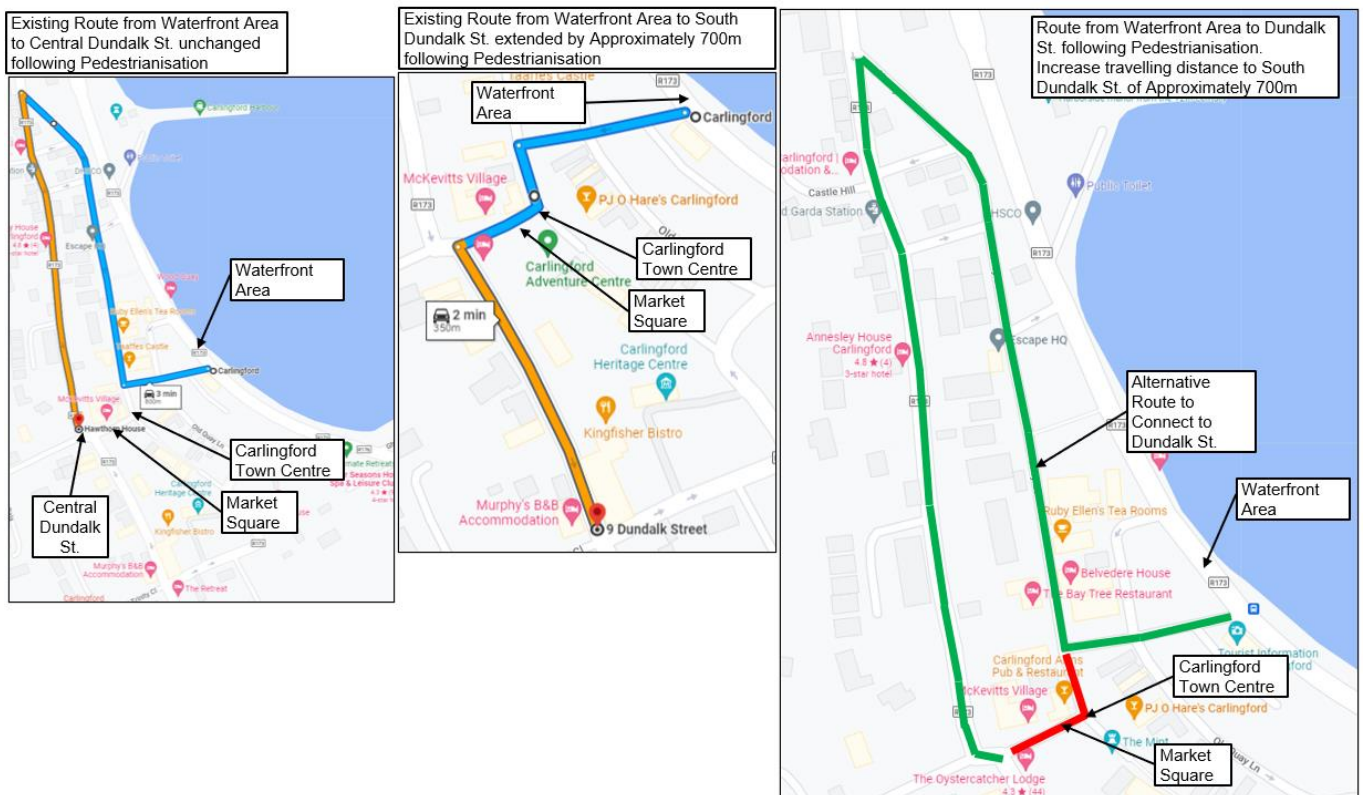


Whilst the characteristics of Market Square and the connecting street from Market Square to the Waterfront are considered to be appropriate for pedestrianisation, the effects of carrying out this type of intervention on residents within this vicinity needs to be considered. The closing of the connecting street from Market Square to the Waterfront would require the removal of vehicular access for Newry St. residents as there is no alternative route for them to take due to the one-way systems in place. Additionally, the changing of existing traffic flows is not considered beneficial to the scheme based on the findings highlighted in **Section 3.3**. Therefore, it is proposed to create a shared surface arrangement and put in place measures to make this route less attractive to visitors so it operates as a local access route only. Some proposed measures to achieve this are,

- Remove parking as a means of removing its attractiveness to visitors;
- Use a paving material in the carriageway that has a similar aesthetic to that found in the footpaths. This has the effect of showing drivers that this area is not a typical road and is a pedestrian dominated area, thus slow travelling is required;
- Local Access Only and No Parking signage at the entrance to this street; and
- Provision of good off street car parks and signage to encourage its use before drivers attempt to find parking on local streets.

Market Square does not share this same constraint with regards residential access as it is predominantly commercial in nature and is acting as a connection between the two one-way systems along Newry St. and Dundalk St. An alternative route can be provided for vehicular traffic to connect with Dundalk St. from Newry St. as shown below.

Figure 3-17 Proposed Pedestrianisation of Market Square Analysis

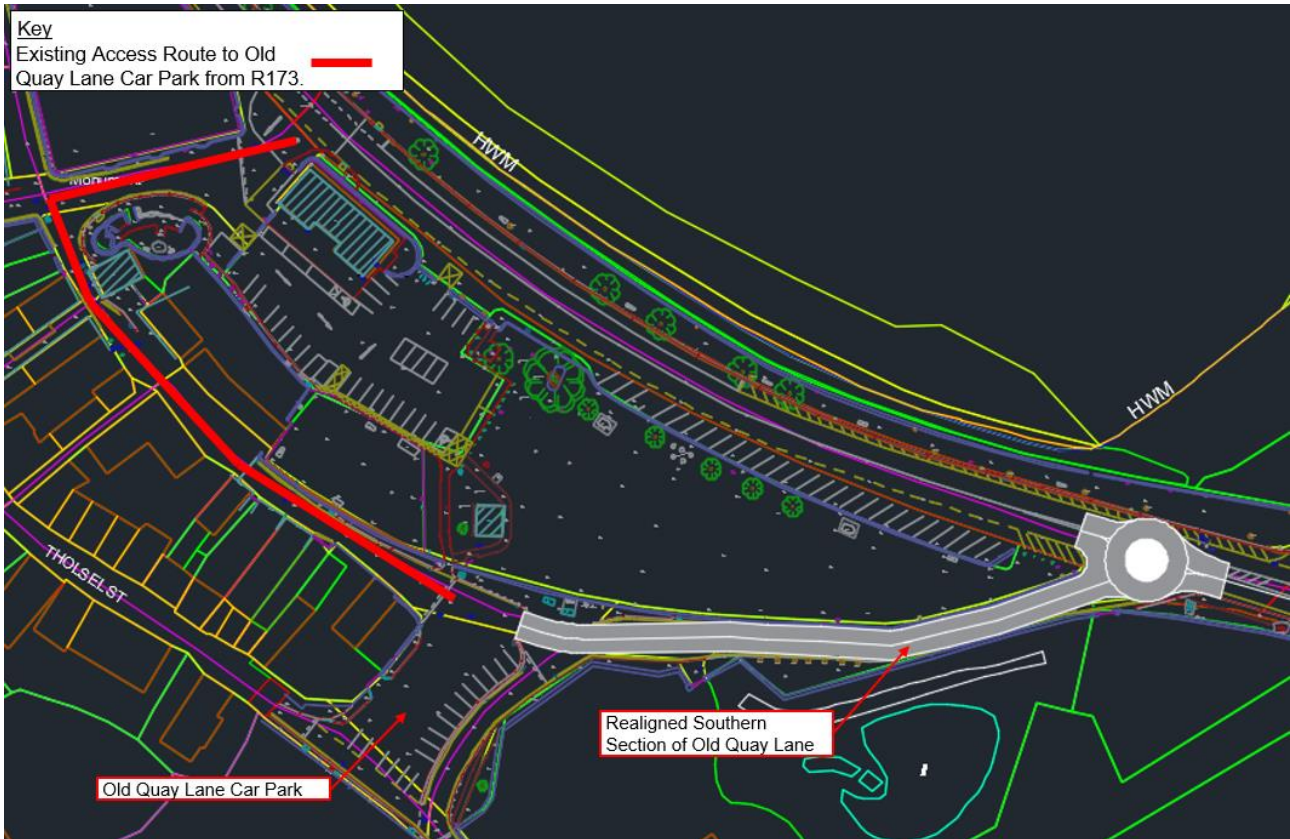


The above images show that there will be a somewhat negative effect on vehicular traffic to the south of Dundalk St. only, with vehicles travelling an additional 700m. There are significant benefits however to the pedestrian spaces by carrying out pedestrianisation in this area and this is considered to outweigh this negative effect to vehicular traffic in terms of meeting the objectives and themes of this project.

Whilst full pedestrianisation of this area is possible, it is recommended that it be carried out on temporary basis, such as weekends and night-time, prior to fully banning vehicular traffic. This will give businesses time to adjust to the change and find ways to occupy the road space to give a greater offering to residents and visitors to Carlingford. By creating a shared space for both vehicles and pedestrians and reducing parking numbers in the short term, it will help discourage vehicular traffic through Market Square as the offering for vehicle drivers is reduced e.g., road space and parking. The pedestrianised Market Square should remain open to cyclists as it has sufficient space to achieve this. It is probable that cyclists will travel through Market Square rather than cycle around Newry St. and Dundalk St. This should be encouraged as a means of promoting a modal shift from car to bicycle travel.

The proposed pedestrianisation of Market Square and creation of a shared surface at the connecting street to the Waterfront may have a negative effect on gaining access to the Old Quay Lane Car Park. To mitigate this potential negative effect, a two-way flow arrangement could be introduced along the southern section of Old Quay Lane. A mini roundabout could be constructed at its junction with the R173 to assist traffic flows, however this can also be achieved with a priority junction. The junction arrangement at this location should be chosen with consideration of the proposed greenway and its connection to the town. Roundabout junctions can often provide a low level of service for cyclists. **Figure 3-18** below illustrates a potential option for providing a two-way traffic flow entry to the Old Quay Lane car park from the R173.

Figure 3-18 Proposed Traffic Management Arrangement at Old Quay Lane

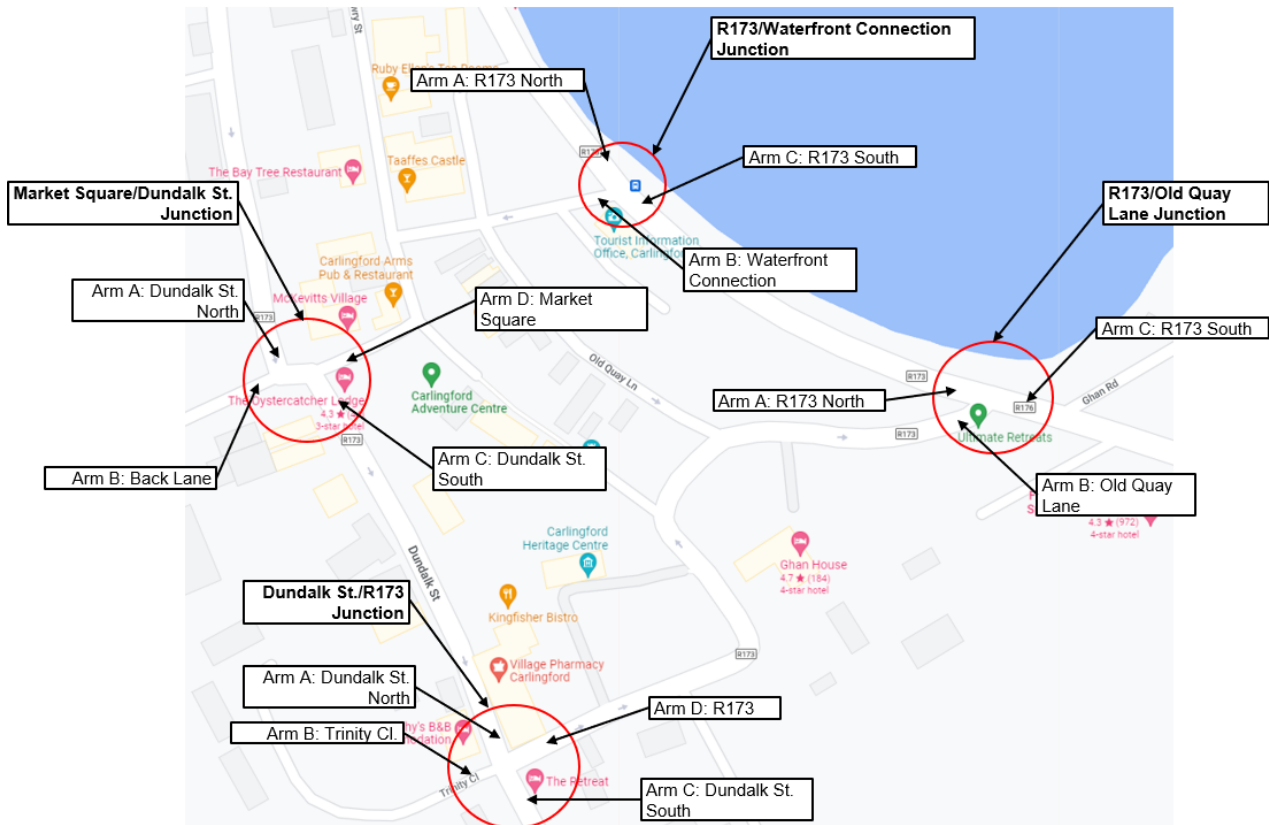


4 TESTING OF PARKING AND TRAFFIC MANAGEMENT STRATEGIES

The proposed traffic management strategy is applicable to each of the proposed concept design options. As each concept has only minor differences in the volume of parking they offer, the output of the traffic modelling is applicable to each option.

The key junctions analysed in this assessment, as extracted from the VISSIM traffic model are illustrated below.

Figure 4-1 Key Junctions Modelled using VISSIM



4.1 Traffic Queuing

The traffic model was carried out to show the worst-case scenario, which would be the proposal to close Market St. temporarily and make it a pedestrianised street. The results of the traffic modelling are listed below in terms of queue length.

Junction	Baseline Queue Length (m)	Proposed Traffic Management Strategy Implemented Queue Length (m)	Difference (m)
R173/Waterfront Connection			
Arm A	22	10	12
Arm C	73	51	22
Market Square/Dundalk St			
Arm A	7	30	23
Arm B	2	1	1
Arm D	0	0	0
Dundalk St./R173			
Arm A	29	31	2
Arm B	0	0	0
Arm C	7	3	4
R173/Old Quay Lane			
Arm A	1	28	27
Arm B	59	52	7
Arm C	17	35	18
Total Effect on Queuing through all junctions			-24

The proposed urban realm improvement and traffic strategy, results in an additional 24m of queuing over all junctions analysed above. This equates to approximately 4 additional cars queuing at these junctions.

Positive effects of the urban realm improvements can be seen at the R173/Waterfront Connection Junction and the Dundalk St./R173 junctions with an overall reduction in queuing.

An additional queue length of 23m was recorded at the Dundalk St. North arm of the Market Square/Dundalk St. junction. A potential reason for this is the retention of the stop line at this junction arm. The stop line will be required to be retained to allow for traffic flows on Market Square on days when it is open to vehicular traffic. This will affect driver behaviour on days when Market Square is pedestrianised by slowing traffic on Dundalk St. North. The inclusion of this stop line is considered to be essential for days when Market Square is open to vehicular traffic and whilst it will cause some delay at this arm of the junction it will allow for priority for cyclists using the Market Square route.

Queuing at the R173/Old Quay Lane junction also increased. This is expected on the R173 South arm as Old Quay Lane is a proposed to be newly opened to westbound traffic following the introduction of a two-way traffic flow. A mini-roundabout junction arrangement has been modelled in this location. This means the R173 South arm of the junction will now be affected by right turning traffic from R173 North arm and traffic from the Old Quay Lane arm and will be required to slow down or stop, thus causing some queuing. Queuing also increased on the R173 North Arm. This is likely due to right turners at the proposed roundabout as the priority of this junction has changed. The existing layout of this junction is a priority junction with the priority given to the R173. The introduction of a roundabout will change this and thus create a queue at this arm.

The queue lengths recorded in this model are not considered to be adverse and are relatively typical to what would be expected in peak times in an urban area. Maximum queue lengths were recorded as being 51m and 52m at the R173/Waterfront Connection and R173/Old Quay Lane junctions. Using a typical vehicle length, including the space between queuing vehicles of 6m, this equates to approximately 9 vehicles queuing. This is not considered to be adverse in an urban environment.

4.2 Journey Times

Journey times were also extracted from the model of the proposal to close Market St. temporarily and make it a pedestrianised street and compared to the recorded journey times between points A, B and C described in **Section 3.1.1**. **Figure 4-2** shows the locations of these points again for ease of reading.

Figure 4-2 Journey Times Analysed between Points



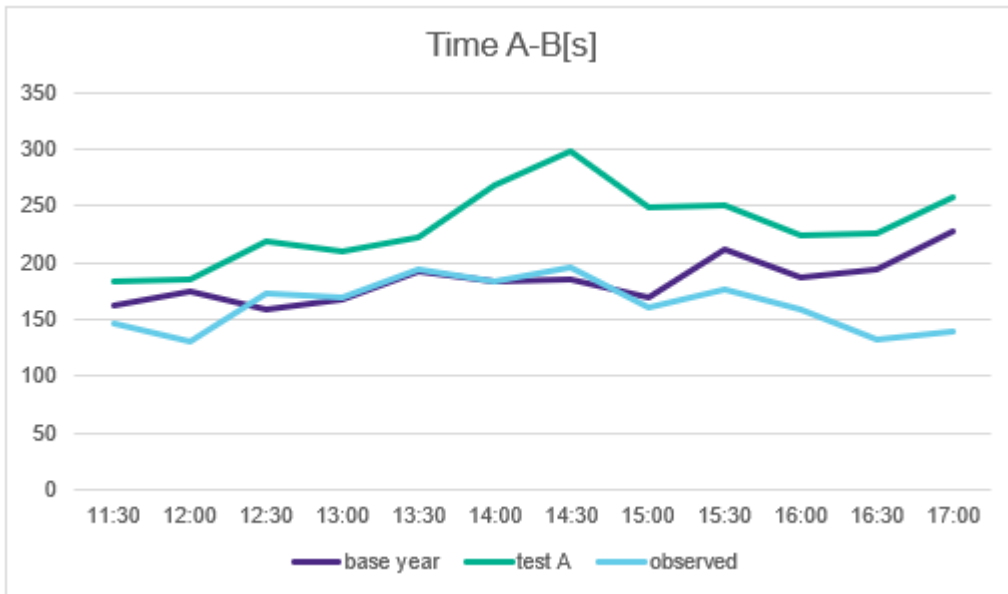
The traffic model recorded the journey times in seconds. It is noted that there are three different journey times shown, Base Year, Test A and Observed. These are described below;

- Base Year: This is the times recorded in the model using the existing traffic counts;
- Test A: This is the modelled changes to the traffic layouts within the town; and
- Observed: These are the recorded times as observed in the existing survey by the surveying team.

The Base Year and the Observed have different values. This is due to the model not being able to exactly replicate the journey times recorded in the survey. The model has been calibrated to match the Observed times as best as possible.

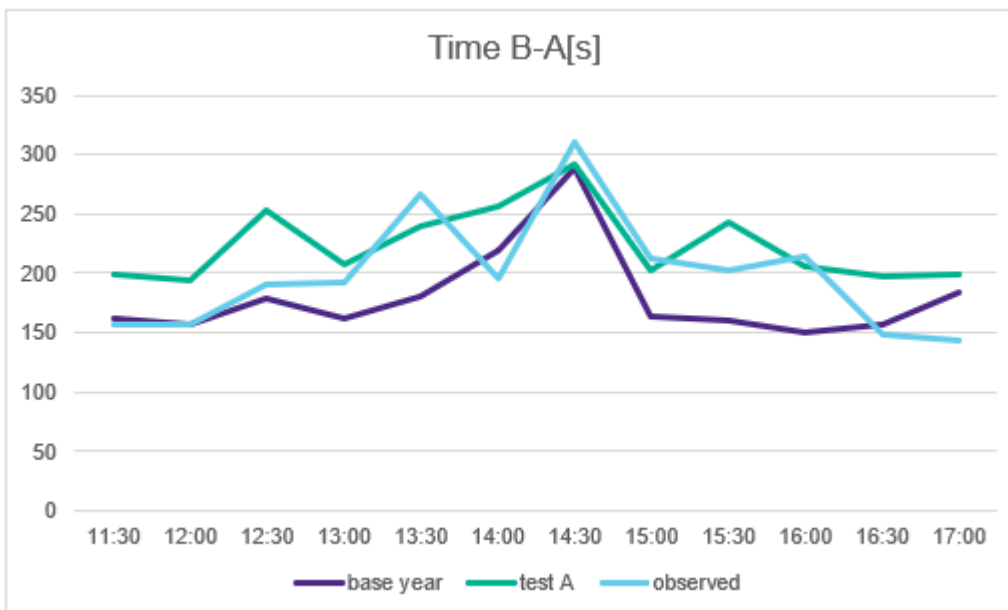
The recorded journey times are illustrated below.

Figure 4-3 Journey Times Points A-B



The above Figure shows the journey times along the north to south (Site A to Site B) route along the R173. The journey time from north to south has shown an increase at the busiest time of day from the Observed 200 seconds (3mins 20seconds) to 300 seconds (5minutes) following the traffic management strategy being implemented. This is an increase in journey time of 1min 40seconds along a route of approximately 1.5km.

Figure 4-4 Journey Times Points B-A

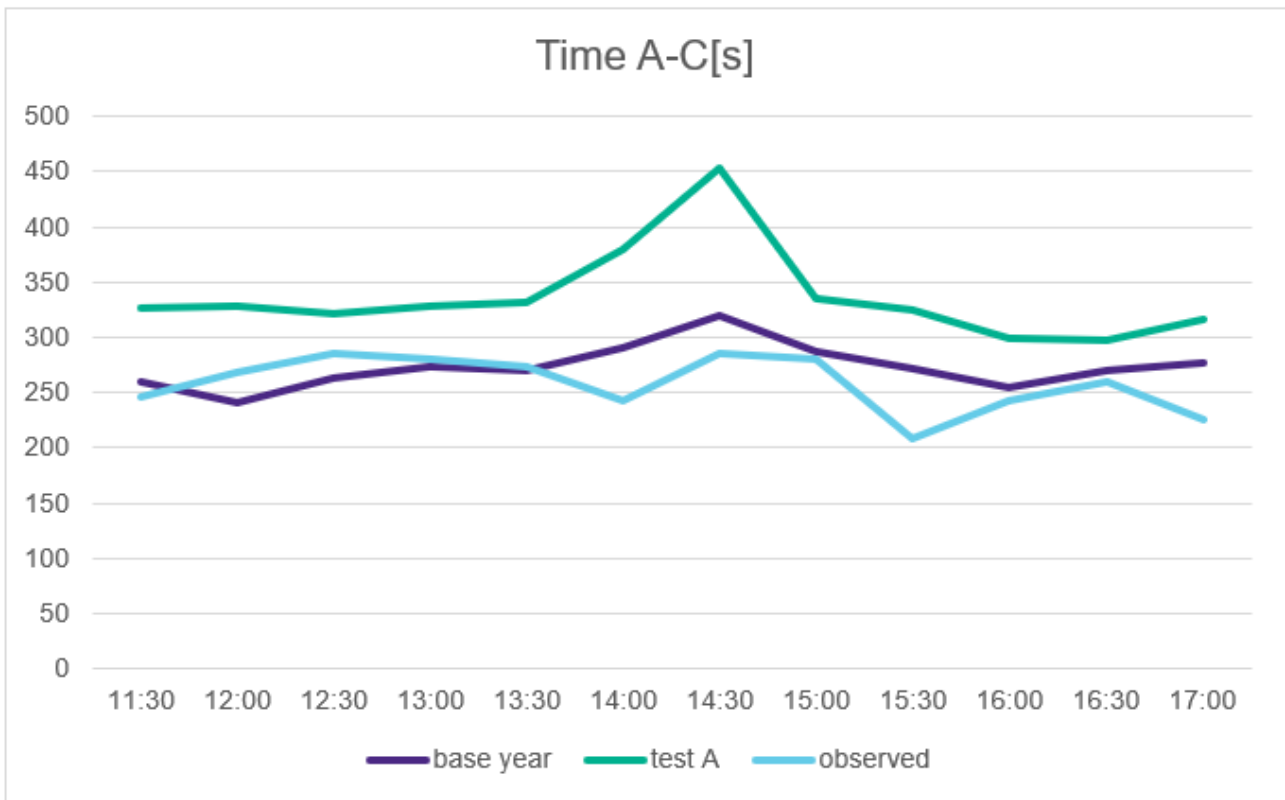


The journey time along the south to north (Site B to Site A) route has shown a decrease in journey time from the Observed 311 seconds (5mins 11seconds) to 293 seconds (4mins 53seconds) following the traffic management strategy being implemented. This is a decrease of 18 seconds along the same route.

The above changes in journey time are not considered to have an adverse effect on the proposed public realm enhancements.

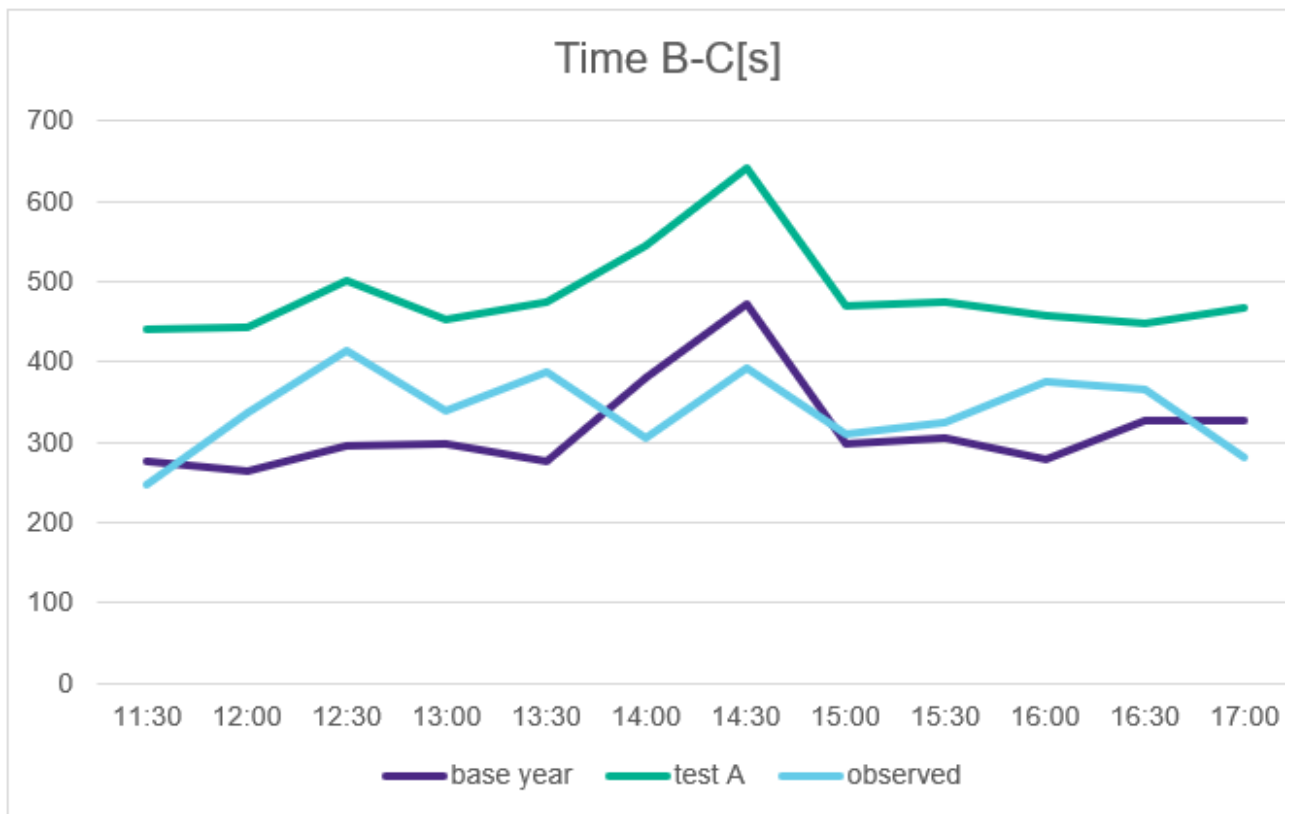
The journey times from the R173 through the town centre are illustrated below.

Figure 4-5 Journey Times Points A-C



The above Figure shows the journey times from the north (Site A) side of the town through its centre. The journey has shown an increase at the busiest time of day from the Observed 286 seconds (4mins 46sec) to 453 seconds (7minutes 30sec) following the traffic management strategy being implemented. This is an increase in journey time of 2mins 44 sec.

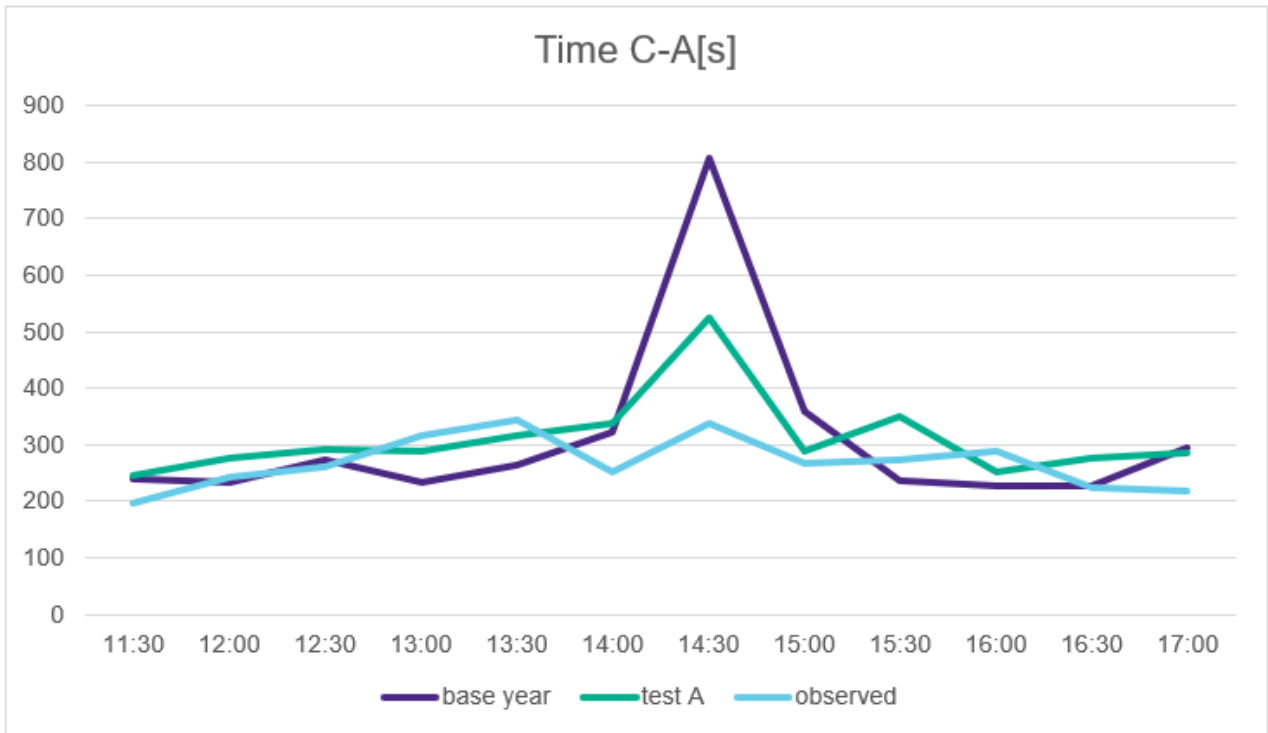
Figure 4-6 Journey Times Points B-C



The above Figure shows the journey times from the south (Site C) side of the town through its centre. The journey has shown an increase at the busiest time of day from the Observed 393 seconds (6mins 30sec) to 642 seconds (10mins 42sec) following the traffic management strategy being implemented. This is an increase in journey time of 4 mins 12 seconds.

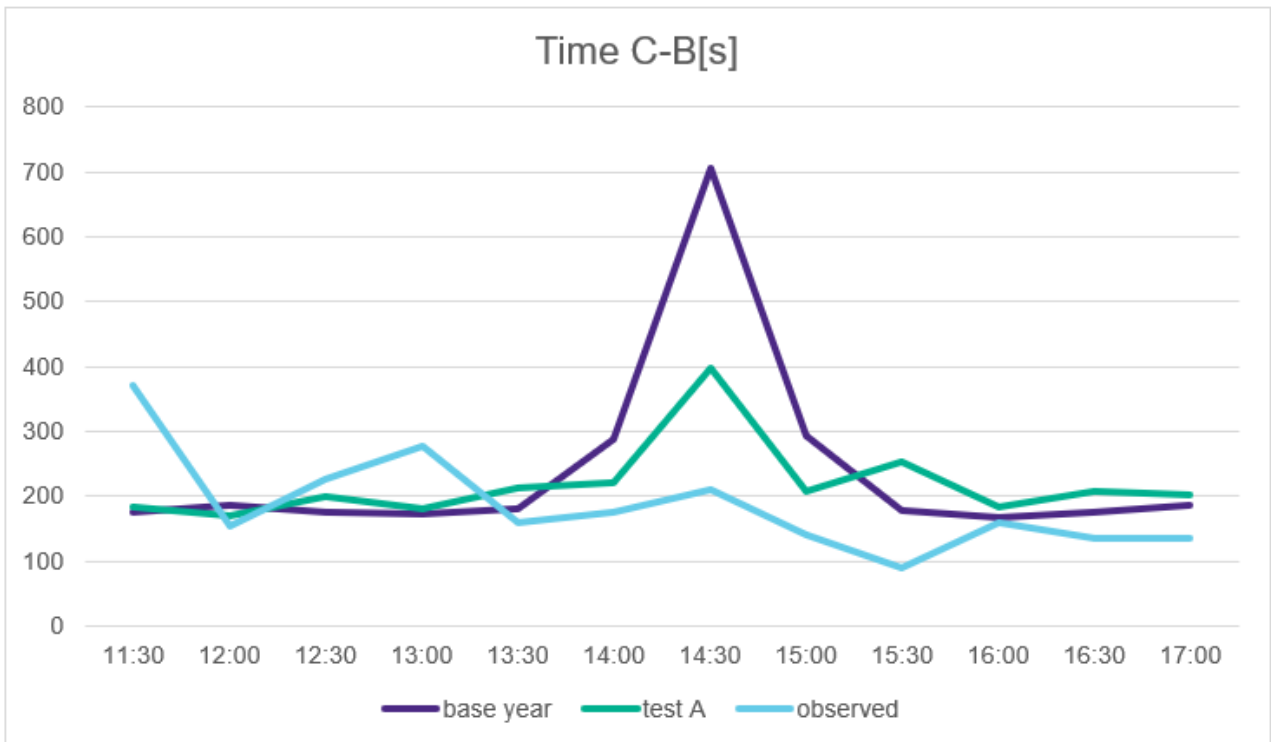
The overall increase in journey time is considered to be high in the journey from the south of the town through its centre. Whilst the overall journey time is high, the gaining of a pedestrianised area within the town centre is deemed to make this an acceptable increase in terms of meeting the Project Objectives of this scheme.

Figure 4-7 Journey Times Points C-A



The above Figure shows the journey times from the town centre to the north (Site A) of the town. The journey time has shown an increase at the busiest time of day from the Observed 339 seconds (5mins 39seconds) to 525 seconds (8mins 45seconds) following the traffic management strategy being implemented. This is an increase in journey time of 3mins 5seconds.

Figure 4-8 Journey Times Points C-B



PARKING AND TRAFFIC MANAGEMENT STRATEGY

The above Figure shows the journey times from the town centre to the south (Site B) of the town. The journey time has shown an increase at the busiest time of day from the Observed 209 seconds (3mins 30seconds) to 397 seconds (6mins 36seconds) following the traffic management strategy being implemented. This is an increase in journey time of 3mins 6seconds.

The overall increase in journey time increase is considered to be reasonable from its town centre to the north and south of the town. Whilst the overall journey time is high, the gaining of a pedestrianised area within the town centre is deemed to make this an acceptable increase in terms of meeting the Project Objectives of this scheme.

5 CONCLUSION

5.1 Parking Strategy

The existing parking volumes within the town centre and beyond are considered to be insufficient. Cars were observed parking in non-parking designated areas during busy periods due to a lack of available car parking.

Three concept options have been developed to enhance the public realm in line with the objectives of the project. In meeting these objectives, the volume of available parking in the town centre has been reduced and the pedestrianisation of a Market Square has been proposed. However, the impact motorists is offset through the identification of new parking areas close to and surrounding the town as part of an overall Traffic and Parking Management Strategy.

The proposed urban realm options will, if progressed, result in the following reduction in available parking,;

- Option 1 – Reduction of 70 Parking Spaces
- Option 2 – Reduction of 74 Parking Spaces
- Option 3 – Reduction of 69 Parking Spaces

The Parking Management Strategy has been developed as described in Section 2 of this report. This assessment identified the following car park's locations as suitable to compliment the urban design,

- Location 5 – 253 Spaces approx.
- Location 9 – 83 Spaces approx.

These car parks do not require visitors to travel through the town centre. Location 5 is the preferred option as it best aligns with the overall traffic and parking strategy. It will provide car parking outside of the town; provide direct access to the R173; it will reduce the volumes of traffic within the town centre by negating the need to travel through it to find parking; and will provide sufficient capacity to meet future demands.

To further assist the reduction of traffic within the town centre, the construction of roundabouts at the outer limits of the town and car park locations should be considered. This will allow vehicular traffic to use the R173 solely when choosing a parking location or if car parks have reached their capacity and requires drivers to seek parking elsewhere. may also benefit traffic calming within the area as they reduce vehicle speeds on approach to the town centre and within the vicinity of these proposed car parking locations. Live car parking capacity signage should also be considered to assist drivers in choosing a parking location

5.2 Traffic Management Strategy

To compliment the proposed public realm concepts, and the proposed Parking Management Strategy, a Traffic Management Strategy has also been developed.

To develop the Traffic Management Plan for the town, the existing traffic was analysed and used as a basis to assess improvements to the pedestrian landscape within the town centre.

The summary of the Traffic Management is as follows,

- Existing narrow streetscape and need for residential on street parking means that the one-way systems around the town centre at Newry St., Dundalk St. and the Waterfront Arrival Connection Road must be retained.
- Switching the direction of flows along these routes has a net increase in the length of journey and therefore will be less attractive to cyclists. A change to the traffic flow directions along these streets is not considered to be of benefit and is not included in these proposals.
- Pedestrianisation of Market Square is possible without it having a major adverse effect on journey times through Carlingford Town Centre. It is considered to be beneficial to the town to limit the pedestrianisation of this street on a temporary arrangement such as at weekends or during festivals. Shared surfaces should be used in Market Square and the Waterfront Connection St. to discourage day to day vehicle traffic use but this will not prevent it in its entirety. A reduction of parking on Market Square will reduce its attractiveness to vehicular traffic.
- The introduction of a two-way traffic flow to access the Old Quay Lane car park from the R173 is considered not to have an adverse effect on traffic congestion. A mini roundabout could be used at this junction to assist traffic flow, however, the proximity of this junction to the town centre should require greater priority to pedestrians over vehicular traffic and therefore a priority junction arrangement should also be considered although it will create increased vehicular traffic congestion.
- The re-orientation of parking and removal of parking along the R173 will likely give increase opportunity to through traffic journey times to reduce. This means there is a potential for increased speed as there are less conflicts for road space between through traffic and parking traffic. Raised tables can be used to mitigate this.

5.3 Recommendations

- Prior to proceeding with the above Parking and Traffic Management Strategies as laid out in this Report a full Road Safety Audit should be carried out. It is recommended that traffic calming measures be put in place along the R173 and a speed reduction to an urban speed limit be introduced from car parking locations and to allow for the construction of mini roundabouts at the outer limits of these car parking locations. This will mean traffic can use the R173 solely for locating parking opportunities and not have to travel through the town centre to search for parking.
- It is recommended that the pedestrianisation of Market Square be trialled before construction. This can be done using temporary traffic diversion signage.
- A full detailed design should be carried out at the proposed potential car parking locations to determine the amount of parking that can be provided inclusive of disabled parking.
- Emphasis should be placed on promoting green travel and public transport to Carlingford from the nearby towns of Dundalk and Newry.
- The R173 should be assessed for the inclusion of cycle lanes and potentially for a park and ride scheme that operates between Carlingford, Omeath and Greenore and so on. This would complement the Public Realm and proposed Greenway. A park and ride system could be set up similar to the Coca-Cola bicycle schemes in Dublin and Galway where bicycles can be hired at a low cost from these car parks., cycled into the town centre and parked elsewhere.