



BALLINA FLOOD RELIEF SCHEME

Environmental Impact Assessment Report Chapter 6: Traffic and Transportation

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Chapter 6: Traffic and Transport

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Chapter 6: Traffic and Transport

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Glossary

| Term | Meaning |
|-------------------------------|---|
| Junction capacity assessments | Standardised methods of estimating traffic capacity on links and at junctions. |
| National road | National primary roads form the major routes between the major urban centre. |
| Regional road | A regional road is a class of road not forming a major route but nevertheless forming a link in the national route network. |
| Road network | The existing and proposed public and private roads within the study area. |
| Trip | One movement, in or out of the study area by foot, cycle or vehicle. |

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Acronyms

| Term | Meaning |
|-------|--|
| AADT | Annual Average Daily Traffic (expressed in vehicles per day) |
| ATC | Automatic Traffic Counter |
| BnM | Bord na Móna |
| CIA | Cumulative Impact Assessment |
| CTMP | Construction Traffic Management Plan |
| DMRB | Design Manual for Roads and Bridges |
| DMURS | Design Manual for Urban Roads and Streets |
| DTTAS | Department of Transport, Tourism and Sport |
| EIA | Environmental Impact Assessment |
| EIAR | Environmental Impact Assessment Report |
| FRS | Flood Relief Scheme |
| HV | Heavy Vehicles |
| JTC | Junction Turning Count |
| LV | Light Vehicles |
| MCC | Mayo County Council |
| MCDP | Mayo County Development Plan 2022-2028 |
| NRA | National Roads Authority |
| OPW | Office of Public Works |
| PAG | Project Appraisal Guidelines |
| RFC | Ratio of Flow to Capacity |
| RSA | Road Safety Authority |
| TIA | Traffic Impact Assessment |
| TII | Transport Infrastructure Ireland |
| TTA | Traffic and Transportation Assessment |
| TTM | Temporary Traffic Management |
| WADT | Weekly Average Daily Traffic |

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Units

| Unit | Description |
|------|--|
| Cm | Centimetre (distance) |
| M | Metre (distance) |
| Km | Kilometre (distance) |
| km/h | Kilometres per hour (speed) |
| PCU | Passenger Car Unit (Traffic Modelling) |

6 TRAFFIC AND TRANSPORTATION

6.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents the Traffic and Transportation Assessment (TTA) of the potential effects of the Ballina Flood Relief Scheme (FRS) (hereafter referred to as 'the Proposed Scheme'). Specifically, this chapter considers the potential impact of the Proposed Scheme during the construction and operational/maintenance phases.

This chapter describes the likely effects of the Proposed Scheme on the existing road network. From a transport perspective, the key components of the Proposed Scheme are:

- The traffic generated by the staff and plant machinery associated with the construction works.
- The temporary diversions in place during construction works.

The TTA presented is informed by the following EIAR Technical Appendices in Volume III:

- Appendix 6.1: Traffic Survey Data
- Appendix 6.2: Construction Traffic Management Plan (CTMP)
- Appendix 6.3: Junction Modelling

6.2 Methodology

6.2.1 Legislation, Policy and Guidance

The TTA has followed the methodology set out in **Chapter 1: Introduction** and the following guidance documents, which are specific to TTA:

- Transport Infrastructure Ireland (TII) – Traffic and Transport Assessment Guidelines – May 2014 (Doc No: PE-PDV-02045) (hereafter 'TII Guidelines')
- Department of Transport Tourism and Sport (DTTAS) – Design Manual for Urban Roads and Streets (DMURS) – May 2019
- Department of Transport Tourism and Sport (DTTAS) - Traffic Signs Manual – August 2019

A summary of the policy provisions relevant to Traffic and Transportation in the Mayo County Development Plan (MCDP) 2022-2028 are provided in **Table 6-1**.

Table 6-1 MCDP 2022-2028 Policy Provisions Relevant to Traffic and Transport

| Summary of Relevant Policy Framework | How and Where Considered in the EIAR |
|--|--|
| MTP 23 To protect the capacity, efficiency and safety of the national road network in Mayo by complying with the 'Spatial Planning and National Roads -Guidelines for planning authorities' (2012). | This chapter of the EIAR on traffic and transportation provides information on how the proposed works may affect the local road network, what traffic management measures are going to be put in place to deal with the proposed works, and how these measures affect the capacity, efficiency, and safety of the road network. It is to be noted that although this assessment has not considered active travel plans in Ballina, Mayo County Council has plans for cycle routes within the town. Mayo County Council are currently in communication with the associated stakeholders regarding active travel plans in order to ensure that any plans that overlap with the proposed scheme are managed collaboratively and as efficiently as possible. |
| MTO 23 To ensure that developments which have the potential to generate significant traffic movements, as per the TII traffic and transportation guidelines, will be required to carry out the assessments set out in Section 7.5 of the Development Management (Volume 2). | As the Proposed Scheme has potential to generate significant traffic movements, a Traffic and Transport Assessment (TTA) will be completed (in accordance with TII requirements). |

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6.2.2 Zone of Influence

The proposed TTA study area (see **Figure 6-1**) includes Ballina Town and the roads impacted by the Proposed Scheme especially on the main streets such as Clare Street, Bunree Road, Abbey Street, Cathedral Road and Emmet Street.

The TTA study area was developed by identifying the routes that would be used by construction vehicles and employees and considering where the highest percentage of potential impact would be on background traffic flows and the routes within Ballina Town. A 5% impact threshold was used when developing the TTA study area, based on TII TTA Guidelines (Table 2.1) (2014). This resulted in the identification of the Flood Relief Scheme study area set out below in **Figure 6-1**, with the pertinent areas in red.

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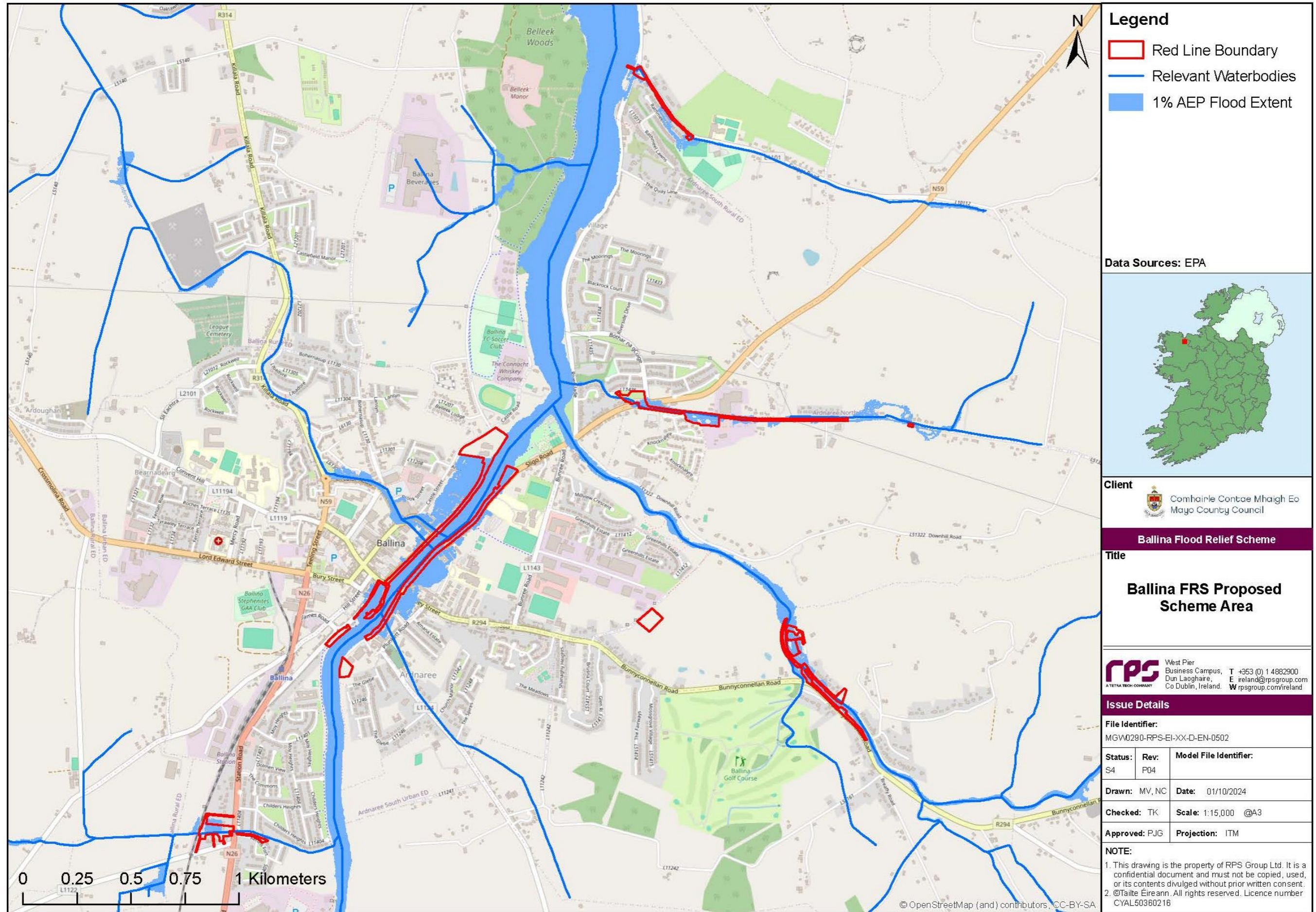


Figure 6-1: FRS Study Area.

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The following **Figure 6-2** describes the pertinent key roads in the TTA Study Area.

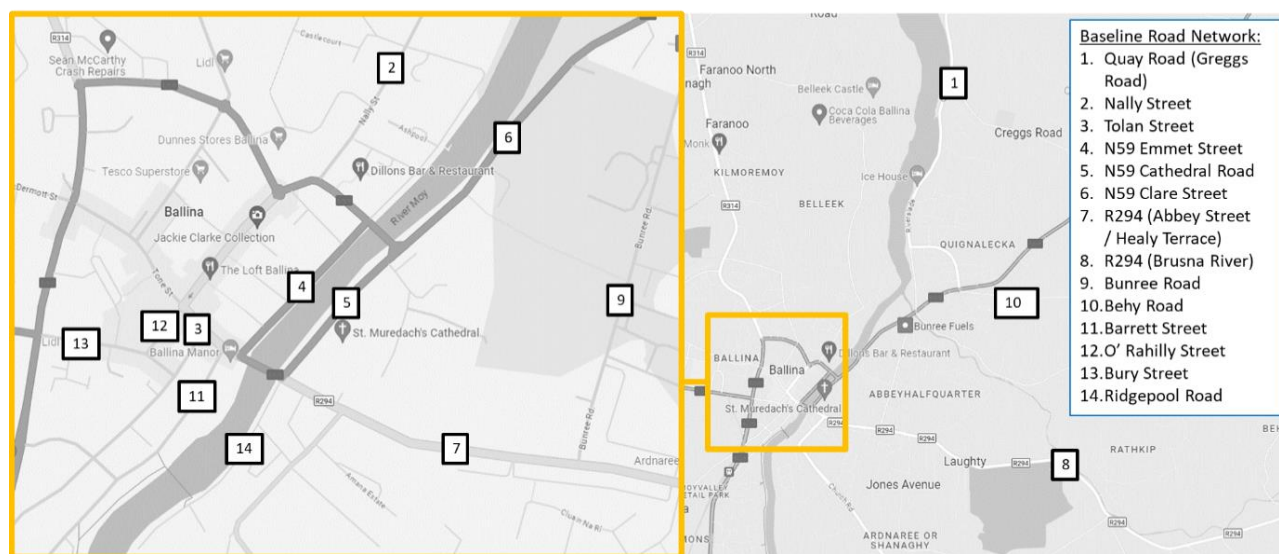


Figure 6-2: TTA Baseline Road Network Overview

6.2.3 Sources of Information to Inform the Assessment

Information on traffic and transportation within the TTA study area was collected through a site survey.

6.2.3.1 Site Specific Surveys

Table 6-2 provides a summary of the surveys undertaken to inform the TTA. Further details regarding the surveys are provided in **Section 6.3**.

Table 6-2: Sources of site-specific surveys.

| Title | Extent of survey | Overview of survey | Survey contractor | Date |
|-------------------------------|---|--|-------------------|---|
| Walkover survey | Ballina Town | A number of road widths were recorded, and photos were taken. | RPS Project Team | April 2023 |
| Automatic Traffic Surveys | The local road network | Counters were positioned at six locations where traffic flows and vehicle speeds were recorded in each direction for a seven-day period. | Tracsis | November and December 2021 respectively |
| Junction Turning Counts (JTC) | The junctions in the local road network | Cameras were positioned at the junctions to record the turning movements and volumes between 7am to 7pm on a single day. | Tracsis | November 2021 |

6.2.4 Key Parameters for Assessment

A description of the Proposed Scheme is provided in **Chapter 5: Project Description**. The key activities that have potential to result in likely significant effects on traffic and transport are outlined below:

6.2.4.1 Construction Phase

Construction traffic will include Heavy Vehicles (HV) and construction staff cars / vans (Light Vehicles (LV)). Construction traffic will travel on roads that are located adjacent to residential and retail development, and

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which also serve pedestrian movement. The scale of trips generated during the construction phase over a 36-month programme has been estimated to ensure that the receiving environment has ample capacity to cater for the HV trips and construction staff trips, and to ensure there are no safety risks to road and footpath users. This analysis is presented in **Section 6.4**.

6.2.4.2 Operational and Maintenance Phase

A new operation and maintenance programme will be agreed with the Office of Public Works (OPW) post construction works and implemented by MCC/agents on behalf of MCC for the completed FRS. Traffic will arise during the operational and maintenance phase of the Proposed Scheme. The primary type of trips will be car and ad hoc Heavy Vehicles (HV) trips, which will not have significant impact on road width/capacity. **Chapter 5: Project Description, Table 5-8** includes a description of the reasonably foreseeable maintenance activities anticipated to be required over the lifetime of the Proposed Scheme.

6.2.4.3 Growth Rates

Forecast future traffic volumes on the roads in the vicinity of the Proposed Scheme have been estimated using growth factors from TII's Project Appraisal Guidelines (PAG) for National Roads Unit 5.3, Travel Demand Projections (October 2021). The guidelines provide various growth rate factors for Mayo County that are applicable to 2016-2030, 2030-2040 and 2040-2050. Growth rate factors are provided for low sensitivity, central and high sensitivity growth rate scenarios with factors provided for both Heavy (HV) and Light Vehicles (LV).

The Central Growth factors have been applied to the 2016 Annual Average Daily Traffic (AADT) data to estimate future year traffic flows on the receiving road network. Given the location and function of the local roads the application of national growth rates is considered likely to be a robust approach. The growth factors applied are set out in **Table 6-3** for LV and HV.

Table 6-3: TII Traffic Central Growth Factors (Central) — Mayo.

| Year | Annual Growth Factor - LV | Annual Growth Factor - HV |
|-----------|---------------------------|---------------------------|
| 2016-2030 | 1.0127 | 1.0330 |

6.2.4.4 Assessment Periods

Forecast background network traffic levels were accordingly derived for each of the assessment years and are shown in **Figure 6-18**. The forecast background network traffic levels are provided for the following years:

- Construction years of operation (2026-2029) – 2026 taken for peak assessment of construction traffic.

6.2.5 Assessment Criteria and Significance

The determination of the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors.

Table 2.1 in the TII Guidelines provides a number of thresholds for when a TTA is automatically required (TII, 2014). One of these thresholds relates to the percentage impact that a new development would have on the adjoining road network, where it states the following:

'Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road. Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive.'

It is considered standard practice to reference these scale of percentage thresholds when assessing the likely long-term operational impact of large-scale trip generators such as resident, educational, health or commercial developments. Although the Proposed Scheme is not a large-scale trip generator, it is proposed

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to still take cognisance of the percentage thresholds, stated in Table 2.1 of the TII Guidelines when establishing the potential magnitude of impacts.

In addition to establishing the magnitude of the effect it is considered that the sensitivity of the receptors (receptors being the receiving road network in the context of this assessment) should also be included when establishing the level of significance of the traffic impact generated by the additional construction vehicles.

The criteria for defining magnitude of construction traffic in this chapter are outlined in **Table 6-4**. The breakdown of the magnitude of impacts is based on an expert judgement of the scale of percentage impacts of the additional traffic flows on the local road network.

Impacts of road closures, traffic diversions and temporary traffic management (**Sections 6.4.3 and 6.4.4**) are assessed when the magnitude of the effect (queues, degree of saturation, delay, and capacity) and the sensitivity of the receptor (importance of road) is high.

Table 6-4: Definition of Terms Relating to the Magnitude of an Effect

| Magnitude of effect | Definition |
|---------------------|--|
| High | The scale of additional traffic exceeds 10% of the background traffic flow on the receiving road network. |
| Medium | The scale of additional traffic is between 5% and 10% of the background traffic flow on the receiving road network. |
| Low | The scale of additional traffic is between 1.5% and 5% of the background traffic flow on the receiving road network. |
| Negligible | The scale of additional traffic is less than 1.5% of the background traffic flow on the receiving road network. |

The criteria for defining sensitivity in the TTA are outlined in **Table 6-5**.

Table 6-5: Definition of Terms Relating to the Sensitivity of the Receptor

| Sensitivity | Definition |
|-------------|--|
| High | Motorway and National Road Network. |
| Medium | Regional Road Network and local roads connecting a Regional Road to a National Road. |
| Low | Local Road Network with Access to residential and/or commercial developments. |
| Negligible | Local Road with no access to residential and/or commercial developments. |

The significance of the effect upon traffic and transportation is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in

Table 6-6. Where a range of significance of effect is presented the final assessment for each effect is based upon expert judgement. For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the Environmental Impact Assessment (EIA) Regulations.

Table 6-6: Matrix Used for the Assessment of the Significance of the Effect

| | | Magnitude of impact | | | |
|-------------------------|------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | Negligible | Low | Medium | High |
| Sensitivity of receptor | Negligible | Imperceptible | Imperceptible or slight | Imperceptible or slight | Slight |
| | Low | Imperceptible or slight | Imperceptible or slight | Slight | Slight or moderate |
| | Medium | Imperceptible or slight | Slight | Moderate | Moderate or significant |

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| Magnitude of impact | | | | |
|---------------------|--------|--------------------|-------------------------|-------------------------|
| High | Slight | Slight or moderate | Moderate or significant | Significant or Profound |

6.2.6 Junction Capacity Methodology

The priority junction capacity assessments were carried out using JUNCTIONS 9 modelling software, where the geometric parameters and peak hour traffic flows (based on various scenarios) were input into the model and the projected Ratio of Flow to Capacity (RFC) was established. To assess the non-standard junction at the intersection of Tolan Street, O’Rahilly Street, Tone Street and Pearse Street two different models were built to assess the projected traffic situations on Pearse Street and Tone Street as per **Appendix 6.3: Junction Modelling**.

An RFC of 0.85 would indicate that a junction is operating at practical capacity. It represents the point at which queuing, and delays would occur on the approach arms to a junction.

The signalized junction assessments were carried out using LinSig modelling software which enables the modelling of traffic signals and the ability to project the effect of these traffic signals on degree of saturation, queuing and delay. For the LinSig assessment any movement that is over 90% degree of saturation is considered over capacity. It is important to note that the actual signal timings for the junction of Bury Street/Teeling Street/Lord Edward Street/Kevin Barry Street were not available at the time of modelling and therefore an estimate of the signal timings was used.

The capacity analysis was undertaken for the Construction Year 2026 AM Peak Hour (08:00 to 09:00 hour) and PM Peak Hour (5:00pm – 6:00pm) ‘without Proposed Scheme’ scenario compared to the ‘with Proposed Scheme’ scenario in order to establish the scale of the impact the Proposed Scheme could have on the junctions.

The full junction modelling data is presented in **Appendix 6.3: Junction Modelling**.

6.2.7 Data Limitations

The Traffic surveys were undertaken in late November and early December 2021. This was a period where traffic volumes were lower than usual due to the Covid-19 Pandemic and readers should be mindful of this when interpreting the results. It should be noted that the period of early December is not a neutral period as is requested in the TII Guidelines. The graph in **Figure 6-3** below illustrates the difference in traffic volume between the three years at the closest TII traffic counter to Ballina.

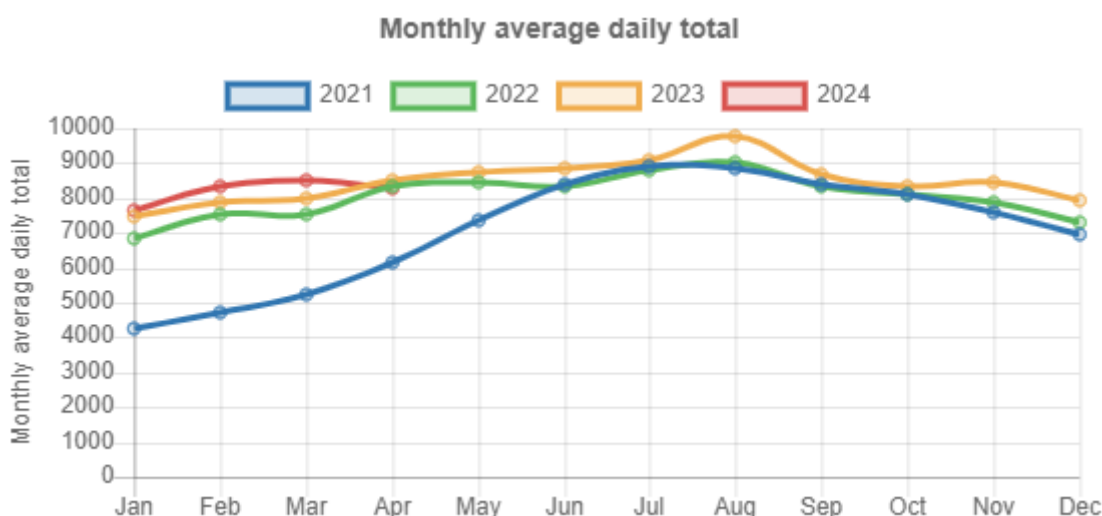


Figure 6-3: TMU N26 020.0 N Traffic Counter-Monthly average daily total (TII, 2024)

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The graph shows minor but acceptable levels of traffic volume change between the years. For the years 2021, 2022, and 2023, the following total flows were recorded at the TII traffic counter near Ballina for the same two-week period at the end of November and the beginning of December at the same traffic counter site:

- 2021 - 105,940
- 2022 - 111,951
- 2023 - 118,683

The 6% difference in traffic volume from year to year is an acceptable level of change between the years and therefore the surveys undertaken will be appropriate for this assessment.

6.2.8 Consultations

A summary of the key issues relevant to the TTA raised during consultation is presented in **Table 6-7**.

Table 6-7: Summary of Key Consultation Issues Relevant to the TTA.

| Date | Consultee | Issues raised | Locations where comments were addressed |
|----------|--------------------|--|---|
| Oct 2020 | Bord na Mona (BnM) | BnM have a windfarm in development at Oweninny Bog approx. 20 km northwest of Ballina. A section of the windfarm haul route passes through the scheme area. Information to alterations to levels or structures within the scheme area could cumulatively impact the windfarm project. | Addressed in cumulative effects chapter. |
| Mar 2023 | TII | <ul style="list-style-type: none"> • Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes in relation to the N26, national primary road, and N59, national secondary road. • Potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development. Particular focus on the N26 and N59 would be required. • Regard to TII Publications (formerly the Design Manual for Roads and Bridges (DMRB) and the Manual of Contract Documents for Road Works). • The developer is reminded of the requirements of TII Publications DN-STR-03001- Technical Acceptance of Road Structures on Motorways and Other National Roads for structures. This Standard specifies the procedures to be followed to obtain Technical Acceptance for structures on motorway and other national road schemes and for the submission of as built records. • The Technical Acceptance requirements, if any, for the assessment, alteration, modification, strengthening and repair of all road structures (national roads) shall be agreed with the Bridge Management Section of TII. • It would be important that, where appropriate, a Traffic and Transport Assessment be carried out in | <p>See below for consultation with Mayo County Council</p> <p>See Section 6.4 for Description of Significant Effects.</p> <p>There will be no material alterations to roads or bridges within the scheme. TII guidance has been considered in reinstatement of the roads. See Chapter 5: Project Description.</p> <p>Not applicable to this scheme.</p> <p>Modification to bridge structure on the Brusna is discussed in Chapter 5: Project Description.</p> <p>A Traffic and Transport assessment has carried out as part of this chapter using Transport Infrastructure Ireland (TII) –</p> |

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| Date | Consultee | Issues raised | Locations where comments were addressed |
|----------|---------------------------|--|--|
| | | <p>accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. The Authority's Traffic and Transport Assessment Guidelines (2014) should be referred to in relation to proposed development with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of the National Roads Authority (NRA)/TII TTA Guidelines which addresses requirements for sub-threshold TTA.</p> <ul style="list-style-type: none"> The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required. In the interests of maintaining the safety and standard of the national road network, methods/techniques proposed for any works traversing/in proximity to the national road network should be identified. In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Separate structure approvals/permits, and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed. | <p>Traffic and Transport Assessment Guidelines – May 2014.</p> <p>No changes to the existing road network and alignment are proposed.</p> <p>See Section 6.5 for mitigation measures.</p> <p>See Appendix 6.2: Construction Traffic Management Plan. No abnormal loads are proposed.</p> |
| Mar 2023 | Mayo County Council (MCC) | Traffic diversion routes; and Temporary traffic management (TTM) measures | Draft to be sent to MCC of initial traffic diversion routes in addition to overall TTM proposals for the Proposed Scheme that were identified and determined through consultation with MCC |

6.3 Description of the Existing Environment

This section defines the baseline environment in the TTA Study Area in terms of road network, public transport, traffic flows and AADT. The images in **Section 6.3.1** were taken by the RPS project team.

6.3.1 Baseline Environment - Road Network

The following sections describe the pertinent key roads in the TTA Study Area, as set out above in **Section 6.2.2**.

6.3.1.1 Quay Road

Quay Road will be directly impacted by the Proposed Scheme, when works are taking place on Creggs Road, Quay Road will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

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Quay Road is predominately a residential street along the banks of the River Moy with a number of pubs, restaurants, shops and a hotel. The road also provides access to Ballina Quay which provides boating access and includes boating clubs. For circa 100 m from the Creggs Road and Quay Road junction the average paved width of the road is 6.5 m with footpath on both sides of the road (average 1.8 m width). For the next circa 150 m Ballina Quay is along the western side of the road with a footpath continuing along the eastern side of the road. This section of the road permits overtaking with a broken centreline and no edge-line road markings.

For the next circa 160 m a footpath is provided along the western side of the road with pubs, restaurants and shops along the eastern side of the road. For the next circa 300 m a footpath is provided along both sides of the road and on street parking on the eastern side of the road. On the western side of the road at this location is the Ice House Hotel with perpendicular parking along the street.

Quay Road has long sections of straight horizontal alignment with some curves and sections with good visibility.

Figure 6-4 shows the characteristics of Quay Road.



Figure 6-4: Quay Road (Southbound Direction)

6.3.1.2 Nally Street

Nally Street will be directly impacted by the Proposed Scheme, when works are taking place on Bachelor's Walk, Nally Street will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Nally Street is located between the junction of Dillon Terrace (N59) and Nally Street and the junction of Nally Street, Castlecourt, Castle Road and Arbuckle Row. Nally Street is a two-way street approximately 280 m long with kerb side parking on one side of the road. Footpaths are provided on both sides of this road. Nally Street is predominately residential along the west side of the road with a small number of residential properties and walled gardens along the east side of the road.

The paved width of the street is approximately 4.6m and 2.5m paved width for parking. This section of road is relatively straight with a slight curve in horizontal alignment close to the junction of Dillon Terrace (N59) which affords good forward visibility for most of the road length. The vertical alignment has a constant slight incline in gradient from the junction of Dillon Terrace (N59).

Figure 6-5 shows the characteristics of Nally Street.

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Figure 6-5: Nally Steet (Northbound Direction)

6.3.1.3 Tolan Street

Tolan Street will be directly impacted by the Proposed Scheme, with construction taking place on Barrett Street (surface water pumping station) and Tolan Street (surface water flows from the pumping station will be pumped directly to the river). To accommodate these works, a lane closure will be implemented on Tolan Street, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**. Additionally, when works are taking place on Barrett Street, Tolan Street will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Tolan street is a two-way street approximately 130 m long that connects the N59 Ham Bridge with Pearse Street, Tone Street and O' Rahilly Street junction. The westbound traffic is free flowing up to the western end, however, as Tone Street and Pearse Street are one-way, traffic must undertake a left turn at this junction. As noted in the site visit, this left turn would be a pinch-point for HVs that should be avoided. The eastbound traffic flows towards Emmett Street, but due to on street parking in its centre, frequently becomes congested due to drop offs from delivery vehicles, reducing the lanes full capacity. Urban in nature, this street is in close proximity to all the major commercial premises. The street is trisected by Barret Street and James Connolly Street, the former in the direction away from Tolan Street and the latter towards Tolan Street. As a possible diversion route, the kerb radii from Tolan onto Barrett Street is favourable to accommodate HVs.

Figure 6-6 shows the characteristics of Tolan Street.

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Figure 6-6: Tolan Street (Westbound Direction)

6.3.1.4 N59 Emmet Street

Emmet Street (N59) will be directly impacted by the Proposed Scheme, with construction activities taking place along the River Moy adjacent to the street. To accommodate these works, a lane closure will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Emmet Street runs parallel to the west bank of the River Moy and is easily accessible as the town's main thoroughfare. The road experiences high volumes of traffic throughout the day. While the majority of the west side of the street is dedicated to commercial uses, there are also several residential properties along its length. The eastern side of the road provides an open vista of the River Moy. The vertical alignment is predominately flat over all sections of the road. It has a prolonged straight horizontal alignment and good forward visibility, the paved width of the road is approximately 6.3 m. The road encompasses 2 m car parking spaces along both sides, continuous parking bays along the open bank side and intermittent parking bays on the west side. The street is one way system with two lanes in the northbound direction. Tolan Street feeds the west lane while traffic from Ham Bridge feeds the east lane.

At the north end of Emmet Street, the road diverges in two directions with options to continue on the N59 to Co. Sligo in the right lane and to the N59 to Crossmolina in the left lane. No straight ahead is available due to a refuge island. There are clear markings separating the car parking areas in the front of the buildings and the road. Pawn Office Lane, Moy Lane and McAndrew Lane intersect Emmet Street at evenly spaced distances respectively across its length. Road markings clearly delineate the traffic restrictions upon exiting these streets onto Emmet Street.

Figure 6-7 shows the characteristics of Emmet Street.

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Figure 6-7: Emmett Street (Northbound Direction)

6.3.1.5 N59 Cathedral Road

Cathedral Road (N59) will be directly impacted by the Proposed Scheme, with construction activities taking place along the River Moy adjacent to the street. To accommodate these works, a lane closure will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Cathedral Road follows the east bank of the River Moy. Emerging at the northern end, Cathedral Road receives two lanes of traffic, one from lower bridge and the other from Clare Street, both converging into a one-way double lane carriageway along its entirety. At the southern end of cathedral road this one-way system splits off left to become the R294 to Bonniclon Road and the right lane continues around the Ham Bridge to join Emmet Street on the other side of the River Moy to continue the N59. The cathedral dominates most of the east side of the road while the west side has open vistas of the river. **Figure 6-8** shows the characteristics of Cathedral Road.



Figure 6-8: N59 Cathedral Road (Northbound Direction)

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6.3.1.6 N59 Clare Street

Clare Street (N59) will be directly impacted by the Proposed Scheme, with construction activities taking place along the River Moy adjacent to the street. To accommodate these works, a lane closure and temporary traffic diversion will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Clare Street is a key transportation route in Ballina that runs adjacent to the east bank of the River Moy, connecting the N59 and the Town Centre to Sligo and the northeast. Clare Street is a two-way system from the northeast until its terminal with Cathedral Road and Lower Bridge where the street splits in two. Southbound traffic joins a one-way system on Cathedral Road and the second lane receives northbound traffic from Lower Bridge. Clare Street has generally straight horizontal alignment and good forward visibility. It has a paved width of circa 9 m and offers ample on-street parking on the southeast side of the road, which has mostly residential housing and some businesses. St Muredach's College is also on this side of the street and is the largest receptor in the area. The northwest side of the road provides an open vista of the River Moy. **Figure 6-9** shows the characteristics of Clare Street.



Figure 6-9: Clare Street (Northbound Direction)

6.3.1.7 R294

The R294 Road starts at the N59 Ham Bridge continuing eastwards passing by the proposed works and onwards through Tubbercurry in County Sligo before terminating in Boyle, County Roscommon. The R294 is a key regional route. This chapter does not consider the R294 beyond the extents of the proposed works.

Abbey Street / Healy Terrace

R294 (Abbey Street / Healy Terrace) will be directly impacted by the Proposed Scheme, when works are taking place on Clare Street (N59), Bunree Road will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

The road is urban in nature from the N59 Ham Bridge towards the Ballina Golf Club and from the Ballina Golf Club towards the works the surrounding area is more rural. The road mainly consists of residential buildings and some commercial premises. For circa 750 m from the N59 Ham Bridge the road encompasses continuous car parking spaces along the northern side and with some sections of continuous car parking spaces on the southern side. There are sections of double yellow lines prohibiting any parking on the

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southern side. There is some intermittent on road and off-road cycle lanes provided on the southern side. The road has a width of approximately 6.6 m. From the N59 Ham Bridge towards the Ballina Golf Club the vertical alignment has an incline in gradient before it is predominantly flat towards the proposed works. The R294 has long sections of straight horizontal alignment with some curves and sections of good forward visibility. **Figure 6-10** shows the characteristics of the R294.



Figure 6-10: R294 at Healy Terrace (Westbound Direction)

6.3.1.8 R294 (Brusna River)

R294 (Brusna (Glenree) River) will be directly impacted by the Proposed Scheme, with construction activities taking place along the Brusna (Glenree) River adjacent to the road. To accommodate these works, a lane closure with stop/go or temporary traffic signals will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

The R294 is a two-way road and is circa 2 km in length from the N59 Ham Bridge to the proposed works. Along this section the R294 forms a junction with Bunree Road. From the N59 Ham Bridge, footpaths are provided on both sides up until the Ballina Golf Club. From this point towards the proposed works a footpath is only provided on the southern side with a mixture of boundary walls and grass verge along the northern side of the road. The road has a width of approximately 7.0 m and the footpath has a width of approximately 1.2 m. The section of the road at Brusna River is on a horizontal curve / bend which affords reduced visibility to the west. **Figure 6-11** shows the characteristics of the R294.

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Figure 6-11: R294 (Brusna River) (Westbound)

6.3.1.9 Bunree Road

Bunree Road will be directly impacted by the Proposed Scheme, when works are taking place on Clare Street (N59), Bunree Road will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Bunree Road in Ballina is a key transportation artery in the town, providing access to various commercial, industrial, sporting, educational and residential areas. The road connects with a junction to the N59 road at the northern end and with a junction to the R294 at the southern end. It is a two-way road and is circa 850 m in length. The road has a width of approximately 6.6 m. The vertical alignment has an incline in gradient from the junction of the N59 to the junction of the R294. It has a straight horizontal alignment with a slight curve at the northern end and overall has good forward visibility. Footpaths are provided on both sides of this road with intermittent on road and off-road cycle lanes provided on both sides. There is some on road parking provided outside residential areas towards the northern and southern ends of the road. **Figure 6-12** shows the characteristics of Bunree Road.

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Figure 6-12: Bunree Road (Southbound Direction)

6.3.1.10 Behy Road

Behy Road will be directly impacted by the Proposed Scheme, with construction activities taking place along the road. To accommodate these works, a lane closure with stop/go or temporary traffic signals will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Behy Road is a two-way road and works along the road is circa 900 m in length from the junction with the N59 National Road. From the N59 for circa 140 m a footpath is provided along the southern side of the road, with access provided to Downhill Inn Hotel and Knocknalyre housing estate, with 2 commercial accesses along the north side of the road. For the next circa 130 m, there are no direct accesses and footpaths are provided on both sides of the road. The average paved width of the road is 6.7 m with a 1.5 m footpath along the northern side of the road and a 2.0 m footpath with a 2.5 m verge separation along the southern side of the road. The remaining circa 630 m has no footpaths, with one access along the southern side of the road for Behy Road Business Park and approximately 8 residential accesses and one commercial access along the northern side of the road. This section of the road affords good forward visibility in terms of horizontal and vertical alignment. **Figure 6-13** shows the characteristics of Bunree Road.



Figure 6-13: Behy Road (Westbound Direction)

6.3.1.11 Barrett Street

Barrett Street will be directly impacted by the Proposed Scheme, with construction activities taking place along Barrett Street. To accommodate these works, a road closure will be implemented, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Barrett Street is found on the first left turn junction on Tolan Street from Ham Bridge and is primarily used for LVs Foxford bound towards the N26. The street is one-way and is circa 300 m in length. Beginning from the north end, there is on street parking along the left side, however, halfway along this changes to the right-hand side but generally a lane width of 4 m is retained along its length. Double yellow lines prohibit any parking on the opposite sides. The east side of Barrett Street is dominated by the Ballina Manor hotel and the Ballina Arts Centre with the remaining predominantly residential on both sides. The bell mouth kerbing from Tolan Street has a wide radius in front of the hotel which would easily accommodate HVs left turning onto Barrett Street. **Figure 6-14** shows the characteristics of Barrett Street.



Figure 6-14: Barrett Street (Southbound Direction) Source: Google Maps

6.3.1.12 O' Rahilly Street

O' Rahilly Street will be directly impacted by the Proposed Scheme, when works are taking place on Barrett Street, O' Rahilly Street will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

O' Rahilly Street is found on the third left turn junction on Tolan Street. At the northern end, O' Rahilly Street forms part of the junction with Tolan Street, Tone Street and Pearse Street. The street is one-way and is circa 100 m in length. Footpaths are provided on both sides of this street. O' Rahilly Street meets with Bury Street at the southern end. There is on street parking along both sides of the street. Generally, a lane width of 4 m is retained along its length. This street is dominated by commercial premises. Due to on street parking, this frequently becomes congested due to drop offs from delivery vehicles, reducing the lanes full capacity. Urban in nature, this street is in close proximity to all the major commercial premises.

During the site visit, it was noted that there are high traffic volumes on this street, while HV's were parking close to the junction at both Tolan Street and O' Rahilly Street. This caused issues for other HV movements. At the southern end, O' Rahilly Street forms part of the junction with Bury Street and Casement Street.

Figure 6-15 shows the characteristics of O' Rahilly Street.

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Figure 6-15: O' Rahilly Street (Southbound Direction) Source: Google Maps

6.3.1.13 Bury Street

Bury Street will be directly impacted by the Proposed Scheme, when works are taking place on Barrett Street, Bury Street will form part of the proposed diversion route, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Bury Street runs westwards from the junction of O' Rahilly Street/Casement Street and the junction of the N59 and the N26. The street is one-way and is circa 200 m in length. Footpaths are provided on both sides of this street. This street is a mix of residential and commercial buildings. Bury Street comprises of three sections, the first section runs between the junction of the O' Rahilly Street and Market Lane. This section of the road has a curvilinear to straight horizontal alignment, with relatively good forward visibility. The vertical alignment is predominantly flat with a slight incline in gradient noted. Double yellow lines prohibit parking on both sides of the road on this section, however, it was noted on site that cars park on the southern side on this section.

The second section runs between the junction of the Market Lane and the junction for Lidl. This section of the road has a straight horizontal alignment affording good forward visibility. The vertical alignment is flat. On street parking is available on both sides of the street.

The third section runs between the junction of Lidl and the junction of the N59 and N26. The road splits into three lanes comprising of 3.0 m lane for right turn vehicles onto the N59 towards Sligo, a 3.0 m straight ahead lane onto the N59 towards Crossmolina and a 3.3 m left turn lane onto the N26. This section of the road has a straight horizontal alignment affording good forward visibility. The vertical alignment is flat. Double yellow lines restrict any vehicle parking on both sides of the road on this section. **Figure 6-16** shows the characteristics of Bury Street.

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Figure 6-16: Bury Street (Westbound Direction) Source: Google Maps

6.3.1.14 Ridgepool Road

Ridgepool Road will be directly impacted by the Proposed Scheme, with construction activities taking place along the River Moy adjacent to the street. To accommodate these works, a road closure of the one-way section of the road will be implemented with a temporary traffic diversion. The two-way section of Ridgepool Road will have a lane closure along the River Moy with stop/go or temporary traffic signals for the duration of the works, as outlined in **Appendix 6.2: Construction Traffic Management Plan (CTMP)**.

Ridgepool Road runs parallel to the east bank of the River Moy and is found on the last left turn junction on Abbey Street just before the start of the N59 Ham Bridge. Ridgepool Road is a cul-de-sac road and has very low traffic. Vehicles can only exit at this junction with vehicles accessing Ridgepool Road via Plunkett Road (Third last turn on Abbey Street) and The Brook Road. The southern side of the street is a mix of commercial uses and residential properties along its length. The northern side of the road provides an open vista of the River Moy.

The vertical alignment is predominately flat over all sections of the road. It has a straight horizontal alignment with a slight curve and good forward visibility, the paved width of the road is approximately 6.0 m with footpaths provided on both sides of the road. The road encompasses continuous car parking spaces along the northern River Moy side and on street parking on the southern side. Beginning from the northern end (junction with Abbey Street/N59), there is continuous parking along the northern River Moy side until the junction with The Brook Road. Double yellow lines prohibit any parking on the opposite side of the road. From the junction of The Brook Road to the end of the Ridgepool Road parking is generally available on both sides of the road. The Mayo, Sligo and Leitrim Education and Training Board and a nursing home is located at the end of Ridgepool Road. **Figure 6-17** shows the characteristics of Ridgepool Road.

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Figure 6-17: Ridgepool road (Northern Direction)

6.3.2 Public Transport

Ballina Train and Bus Stations are located approximately 320 m apart along the N26 National Road. Ballina Bus Station is located on Kevin Barry Street and is located approximately 650 m from the town centre. Ballina Train Station is located on Station Road and is located approximately 900 m from Ballina Town centre.

As outlined in **Chapter 5: Project Description**, it is anticipated that 20 to 30 persons, will be involved in the construction activities with 5 to 6 persons working in different areas of the Proposed Scheme simultaneously using six vehicles (cars/vans) per area. It is anticipated that the number of construction personnel utilising public transport will be negligible.

6.3.3 Baseline Traffic Flows

Automatic Traffic Counters (ATC) were positioned on the sections of road through Ballina that are expected to be utilised by construction staff. The ATC recorded the volumes, type and speeds of vehicles travelling in both directions (see further detail on traffic count data in **Appendix 6.1: Traffic Survey Data**). These surveys provide a profile of the traffic flow over a seven-day timeframe and provide adequate baseline data to establish the AADT on each of the roads. Weekly Average Daily Traffic (WADT) is expressed as number of vehicles.

Table 6-8 to **Table 6-16** show the profile of the daily traffic flows on the following roads in Ballina. The following data is based on the second week of survey data collected from 29th November to December 5th:

- Quay Road
- Nally Street
- Tolan Street
- Emmet St
- Cathedral Rd
- Clare St
- Abbey St
- R294 (Brusna)
- Bunree Rd
- Behy Rd

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Table 6-8: Profile of the Quay Road Daily Traffic Flows

| Day | Northbound | Southbound | Total |
|-----------------------------------|--------------|--------------|--------------|
| Monday 29 November 2021 | 1,327 | 1,189 | 2,516 |
| Tuesday 30 November 2021 | 1,281 | 1,170 | 2,451 |
| Wednesday 01 December 2021 | 1,327 | 1,203 | 2,530 |
| Thursday 02 December 2021 | 1,403 | 1,247 | 2,650 |
| Friday 03 December 2021 | 1,436 | 1,323 | 2,759 |
| Saturday 04 December 2021 | 1,435 | 1,236 | 2,671 |
| Sunday 5 December 2021 | 1,019 | 843 | 1,862 |
| WADT | 1,318 | 1,173 | 2,491 |
| Average Speed | 48.4 km/h | 43.7 km/h | 46.2 km/h |
| 85 th Percentile Speed | 58.1 km/h | 52.2 km/h | 55.7 km/h |

Table 6-9: Profile of Nally Street Daily Traffic Flows

| Day | Northbound | Southbound | Total |
|-----------------------------------|--------------|------------|--------------|
| Monday 29 November 2021 | 1,094 | 934 | 2,028 |
| Tuesday 30 November 2021 | 1,071 | 898 | 1,969 |
| Wednesday 01 December 2021 | 1,165 | 997 | 2,162 |
| Thursday 02 December 2021 | 1,134 | 1,031 | 2,165 |
| Friday 03 December 2021 | 1,290 | 1,070 | 2,360 |
| Saturday 04 December 2021 | 1,020 | 896 | 1,916 |
| Sunday 5 December 2021 | 949 | 865 | 1,814 |
| WADT | 1,103 | 956 | 2,059 |
| Average Speed | 35.4 km/h | 33.9 km/h | 34.7 km/h |
| 85 th Percentile Speed | 42.5 km/h | 42.1 km/h | 42.3 km/h |

Table 6-10 Profile of Tolan Street Daily Traffic Flows

| Day | Eastbound | Westbound | Total |
|-----------------------------------|--------------|--------------|--------------|
| Monday 29 November 2021 | 3,464 | 4,402 | 7,866 |
| Tuesday 30 November 2021 | 3,514 | 4,337 | 7,851 |
| Wednesday 01 December 2021 | 3,850 | 4,511 | 8,361 |
| Thursday 02 December 2021 | 3,861 | 4,077 | 7,938 |
| Friday 03 December 2021 | 3,609 | 5,018 | 8,627 |
| Saturday 04 December 2021 | 3,681 | 5,169 | 8,850 |
| Sunday 5 December 2021 | 3,072 | 4,380 | 7,452 |
| WADT | 3,579 | 4,556 | 8,135 |
| Average Speed | 26.5 km/h | 23.2 km/h | 24.6 km/h |
| 85 th Percentile Speed | 34.2 km/h | 30.0 km/h | 32.1 km/h |

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Table 6-11: Profile of Emmet Street Daily Traffic Flows

| Day | Northbound |
|-----------------------------------|---------------|
| Monday 29 November 2021 | 12,785 |
| Tuesday 30 November 2021 | 12,465 |
| Wednesday 01 December 2021 | 13,093 |
| Thursday 02 December 2021 | 12,907 |
| Friday 03 December 2021 | 14,243 |
| Saturday 04 December 2021 | 13,192 |
| Sunday 5 December 2021 | 10,972 |
| WADT | 12,808 |
| Average Speed | 37.9 km/h |
| 85 th Percentile Speed | 46.3 km/h |

Table 6-12 Profile of Cathedral Road Daily Traffic Flows

| Day | Southbound |
|-----------------------------------|---------------|
| Monday 29 November 2021 | 11,868 |
| Tuesday 30 November 2021 | 12,018 |
| Wednesday 01 December 2021 | 11,702 |
| Thursday 02 December 2021 | 12,003 |
| Friday 03 December 2021 | 12,774 |
| Saturday 04 December 2021 | 11,537 |
| Sunday 5 December 2021 | 9,555 |
| WADT | 11,637 |
| Average Speed | 40.7 km/h |
| 85 th Percentile Speed | 49.2 km/h |

Table 6-13 Profile of Clare Street Daily Traffic Flows

| Day | Northbound | Southbound | Total |
|-----------------------------------|--------------|--------------|---------------|
| Monday 29 November 2021 | 6,738 | 6,151 | 12,889 |
| Tuesday 30 November 2021 | 6,973 | 6,233 | 13,206 |
| Wednesday 01 December 2021 | 7,003 | 5,721 | 12,724 |
| Thursday 02 December 2021 | 7,196 | 6,281 | 13,477 |
| Friday 03 December 2021 | 7,203 | 6,508* | 13,711 |
| Saturday 04 December 2021 | 6,974 | 6,273 | 13,247 |
| Sunday 5 December 2021 | 5,969 | 5,482 | 11,451 |
| WADT | 6,915 | 6,130 | 13,045 |
| Average Speed | 37.5 km/h | 35.6 km/h | 36.6 km/h |
| 85 th Percentile Speed | 43.5 km/h | 44.6 km/h | 43.9 km/h |

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Table 6-14 Profile of Abbey Street Daily Traffic Flows

| Day | Eastbound | Westbound | Total |
|-----------------------------------|--------------|--------------|--------------|
| Monday 29 November 2021 | 4,303 | 4,982 | 9,285 |
| Tuesday 30 November 2021 | 4,312 | 5,155 | 9,467 |
| Wednesday 01 December 2021 | 4,303 | 5,577 | 9,880 |
| Thursday 02 December 2021 | 4,165 | 5,206 | 9,371 |
| Friday 03 December 2021 | 4,524 | 5,349 | 9,873 |
| Saturday 04 December 2021 | 3,919 | 4,645 | 8,564 |
| Sunday 5 December 2021 | 3,226 | 3,715 | 6,941 |
| WADT | 4,107 | 4,947 | 9,054 |
| Average Speed | 41.5 km/h | 40.5 km/h | 41.0 km/h |
| 85 th Percentile Speed | 50.0 km/h | 48.7 km/h | 49.3 km/h |

Table 6-15 Profile of Bunree Road Daily Traffic Flows

| Day | Northbound | Southbound | Total |
|-----------------------------------|--------------|--------------|--------------|
| Monday 29 November 2021 | 2,248 | 2,980 | 5,228 |
| Tuesday 30 November 2021 | 2,372 | 3,140 | 5,512 |
| Wednesday 01 December 2021 | 2,416 | 3,806 | 6,222 |
| Thursday 02 December 2021 | 2,300 | 3,299 | 5,599 |
| Friday 03 December 2021 | 2,417 | 3,262 | 5,679 |
| Saturday 04 December 2021 | 2,045 | 2,899 | 4,944 |
| Sunday 5 December 2021 | 1,362 | 1,964 | 3,326 |
| WADT | 2,166 | 3,050 | 5,216 |
| Average Speed | 45.5 km/h | 46.9 km/h | 46.3 km/h |
| 85 th Percentile Speed | 54.9 km/h | 57.1 km/h | 56.2 km/h |

Table 6-16 Profile of the R294 (Brusna) Daily Traffic Flows

| Day | Eastbound | Westbound | Total |
|-----------------------------------|------------------|------------------|------------------|
| Monday 29 November 2021 | 1,757 | 1,753 | 3,510 |
| Tuesday 30 November 2021 | 1,734 | 1,778 | 3,512 |
| Wednesday 01 December 2021 | 1,683 | 1,770 | 3,453 |
| Thursday 02 December 2021 | 1,741 | 1,829 | 3,570 |
| Friday 03 December 2021 | 1,802 | 1,883 | 3,685 |
| Saturday 04 December 2021 | 1,566 | 1,629 | 3,195 |
| Sunday 5 December 2021 | 1,441 | 1,431 | 2,872 |
| WADT | 1,675 | 1,725 | 3,400 |
| Average Speed | 62.7 km/h | 66.9 km/h | 64.8 km/h |
| 85 th Percentile Speed | 72.8 km/h | 78.6 km/h | 76.0 km/h |

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Table 6-17 Profile of Behy Road Daily Traffic Flows

| Day | Eastbound | Westbound | Total |
|-----------------------------------|------------|------------|--------------|
| Monday 29 November 2021 | 649 | 663 | 1,312 |
| Tuesday 30 November 2021 | 778 | 747 | 1,525 |
| Wednesday 01 December 2021 | 841 | 832 | 1,673 |
| Thursday 02 December 2021 | 821 | 775 | 1,596 |
| Friday 03 December 2021 | 883 | 855 | 1,738 |
| Saturday 04 December 2021 | 549 | 531 | 1,080 |
| Sunday 5 December 2021 | 331 | 329 | 660 |
| WADT | 693 | 676 | 1,369 |
| Average Speed | 72.0 km/h | 64.8 km/h | 68.5 km/h |
| 85 th Percentile Speed | 86.5 km/h | 77.9 km/h | 82.6 km/h |

6.3.4 Annual Average Daily Traffic (AADT)

AADT is the term used to describe the traffic volume in both directions on a section of road, averaged over a year (total annual flow divided by 365). It is a standard industry recognised parameter for assessing traffic volumes. The traffic survey data gathered allowed a WADT flow to be determined as indicated in the previous tables. This data was expanded in accordance with TII's PAG for National Roads Unit 16.1 — *Expansion Factors for Short Period Traffic Counts* (October 2016), to derive the AADT on the key sections of the road.

As the surveys were undertaken in the end of November and beginning of December an index factor of 1.06 was applied to the WADT to estimate the AADT. The conversion factor recognizes the seasonal variation that can occur in traffic flow across the year.

The AADT are presented in **Figure 6-18**.

Table 6-18: AADT Volumes

| Road Section | Two-Way Traffic | | |
|---------------|-----------------|--|--------|
| | WADT | Monthly Index Factor (from TII PAG Unit 16.1 Annex C) – West | AADT |
| Quay Road | 2,491 | 1.06 | 2,640 |
| Nally Street | 2,059 | 1.06 | 2,183 |
| Tolan Street | 8,135 | 1.06 | 8,623 |
| Emmet St | 12,808 | 1.06 | 13,576 |
| Cathedral Rd | 11,637 | 1.06 | 12,335 |
| Clare St | 13,045 | 1.06 | 13,828 |
| Abbey St | 9,054 | 1.06 | 9,597 |
| Bunree Rd | 5,216 | 1.06 | 5,529 |
| Behy Rd | 1,369 | 1.06 | 1,451 |
| R294 (Brusna) | 3,400 | 1.06 | 3,604 |

6.3.5 Evolution of the Environment in the Absence of the Proposed Scheme

The environment of the road network without the inclusion of the Proposed Scheme will not be impacted during periods of low water levels in the River Moy, however when the River Moy floods its banks there will be a significant detrimental effect on the capacity, efficiency and safety of the road network.

6.4 Description of the Likely Significant Effects

The following sections outline the typical daily trips that are expected to be generated by the Proposed Scheme and the predicted scale of impact on the local road network. Two types of trip are considered - temporary trips generated during the construction phase and trips generated by the operational and maintenance phase.

6.4.1 Construction Phase

Magnitude of Effect

The construction phase of the Proposed Scheme will comprise a number of activities including:

- Temporary Impact of Additional Vehicles on Existing Traffic Volumes (excavation and demolition, importing materials, staff communicating and associated traffic).
- The development of flood defences i.e. flood walls, embankments and culverts including adjacent areas required for the construction of such defences.
- The upgrade of existing flood management infrastructure, including areas to be disturbed during such upgrade activities.
- Compound areas to be used during the construction phase of the Proposed Scheme and ancillary items.

It is envisaged that these works will take approximately 36 months to complete, followed by a 15-month handover period. The activities planned for each of the areas within the Proposed Scheme are yet to be scheduled, but it is assumed that activities will run simultaneously within 3 to 4 different areas of the Proposed Scheme.

Indicative daily movements for one construction team operating on site are provided below:

- Six vehicles (cars/vans) will arrive on site in the morning (07:00 – 08:00) and depart in the evening (18:00 – 19:00).
- Up to two Heavy Goods Vehicles (HVs) will arrive and depart the site per hour throughout the typical working day (07:00 – 19:00) shown in **Figure 6-19**.
- An indicative daily construction traffic flow is assumed to be 60 two-way vehicle movements per day.

The potential haul routes to the five construction compounds (Ballina Diaries site and adjacent boat club site, MCC lands on Barrett Street and Bourke Builders sites (Ridgepool Road, Behy Road and Bonniclon Road)) are outlined in **Appendix 6.2: Construction Traffic Management Plan**.

The hauling of material to site will incur the following trips presented below in **Table 6-19** and set out in **Section 3.4.2** of the **Appendix 6.2: Construction Traffic Management Plan**.

Table 6-19 Traffic Generated During Construction (Delivery of Materials to Site)

| Watercourse | Estimated Number of Trips (Round Trips) | Length of Programme (months) | Total Number of Working Days (5-day week) | Average Number of Trips Per Day |
|--------------|---|------------------------------|---|---------------------------------|
| River Moy | 802 | 25 | 500 | 2 |
| Quignamanger | 148 | 12 | 240 | 1 |
| Bunree | 170 | 18 | 360 | 1 |
| Brusna | 481 | 18 | 360 | 2 |
| Tullyegan | 173 | 6 | 120 | 2 |

The scale of percentage impacts of the additional traffic flows on local road network were quantified for each assessment year in order to establish a magnitude of effect on each of the key roads in the TTA study area and these are shown in **Table 6-20**.

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Table 6-20: Magnitude of Impact – Construction Phase

| Magnitude of Impact – Construction Stage | | | | |
|--|-----------------------------|---|-------------------|---|
| | Construction Year 2026 AADT | Peak Daily Construction Traffic (Two Way Flows) | Percentage Impact | Magnitude of Impact on Total Traffic Flow during the Construction Year 2026 |
| Quay Road | 2,817 | 60 | 2.1% | Low |
| Nally Street | 2,329 | 60 | 2.6% | Low |
| Tolan Street | 9,213 | 60 | 0.7% | Negligible |
| Emmet Street | 14,514 | 60 | 0.4% | Negligible |
| Cathedral Road | 13,191 | 60 | 0.5% | Negligible |
| Clare Street | 14,762 | 60 | 0.4% | Negligible |
| Abbey Street | 10,238 | 60 | 0.6% | Negligible |
| Bunree Road | 5,911 | 60 | 1.0% | Negligible |
| Behy Road | 1,553 | 60 | 3.9% | Low |
| R294 (Brusna) | 3,845 | 60 | 1.6% | Negligible |

Across the network, it is considered that the scale of magnitude is negligible to low due to the low percentage impact of the construction HVs, and staff vehicle trips compared to the background traffic flows in 2026.

Sensitivity of the Receptor

The sensitivity of the receptor is defined through the vulnerability of the receptor, the recoverability of the receptor, and the importance of the receptor in the context of national, regional, and localised scale. As roads are categorised as national, regional, and local the simplistic way would be to define the receptors in terms of these categories. However, some of the local roads in the TTA study area go through residential areas and adjacent to retail units so this was considered when defining the sensitivity during construction phase. **Table 6-21** outlines the sensitivity of the roads during the construction phase.

Table 6-21: Sensitivity of the Receptor – Construction Stage

| Sensitivity of the Receptor – Construction Stage | |
|--|------|
| Quay Road | Low |
| Nally Street | Low |
| Tolan Street | High |
| Emmet Street | High |
| Cathedral Road | High |
| Clare Street | High |
| Abbey Street | High |
| Bunree Road | High |
| Behy Road | Low |
| R294 (Brusna) | High |

Significance of the effect

The significance of the effect is determined by correlating the magnitude of the effect and the sensitivity of the receptor for each of the roads and are based on the method of assessment shown in **Table 6-6**. As the construction phase has a fixed duration, any effects will be temporary and the effects with a significance level of slight or less have been concluded to be **not significant** in EIA terms.

Table 6-22 outlines the significance of effect during construction stage.

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Table 6-22: Significance of effect – construction phase.

| Significance of Effect – Construction Stage | | | |
|---|---------------------|-----------------------|-------------------------|
| Section of Road | Magnitude of Impact | Sensitive of Receptor | Significance of Effect |
| Quay Road | Low | Low | Imperceptible or slight |
| Nally Street | Low | Low | Imperceptible or slight |
| Tolan Street | Negligible | High | Slight |
| Emmet Street | Negligible | High | Slight |
| Cathedral Road | Negligible | High | Slight |
| Clare Street | Negligible | High | Slight |
| Abbey Street | Negligible | High | Slight |
| Bunree Road | Negligible | High | Slight |
| Behy Road | Low | Low | Imperceptible or slight |
| R294 (Brusna) | Negligible | High | Slight |

Overall, the temporary effect on the road network during the construction phase is **imperceptible to slight** which is not significant in EIA terms.

6.4.2 Operational and Maintenance Phase

Magnitude of Impact

An Operation and Maintenance Programme will be agreed with the OPW post construction works and implemented by MCC/agents on behalf of MCC for the completed FRS. Traffic will arise during the operational and maintenance phase of the Proposed Scheme. The primary type of trips will be car trips and ad hoc HV trips, which will not have significant impact on road width/capacity.

Chapter 5: Project Description includes a description of the reasonably foreseeable maintenance activities anticipated to be required over the lifetime of the Proposed Scheme. Most of the operation and maintenance activities is anticipated to be annually or bi-annually with some quarterly and other repairs as required.

6.4.3 Impact on Junction Capacity due to Temporary Traffic Diversions

A number of junction capacity assessments were carried out at key junctions temporarily affected during the construction stage. Two main diversions and a temporary lane closure were identified to have the most potential impact on junction capacity during works, these are:

- Proposed temporary traffic diversion route for Clare Street
- Proposed temporary lane closure on Emmet Street
- Proposed temporary road closure of Barrett Street

The other diversions and lane closures at Brusna, Behy Road, Ridgepool Road, and Creggs Road are considered to have a low impact on junction capacity and therefore were not assessed.

The junction capacity assessments were carried out using JUNCTIONS 9 modelling software and LinSig as per the methodology in section 6.2.6 and the full model outputs are shown in **Appendix 6.3: Junction Modelling**.

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6.4.3.1 Proposed Temporary Traffic Diversion Route for Clare Street

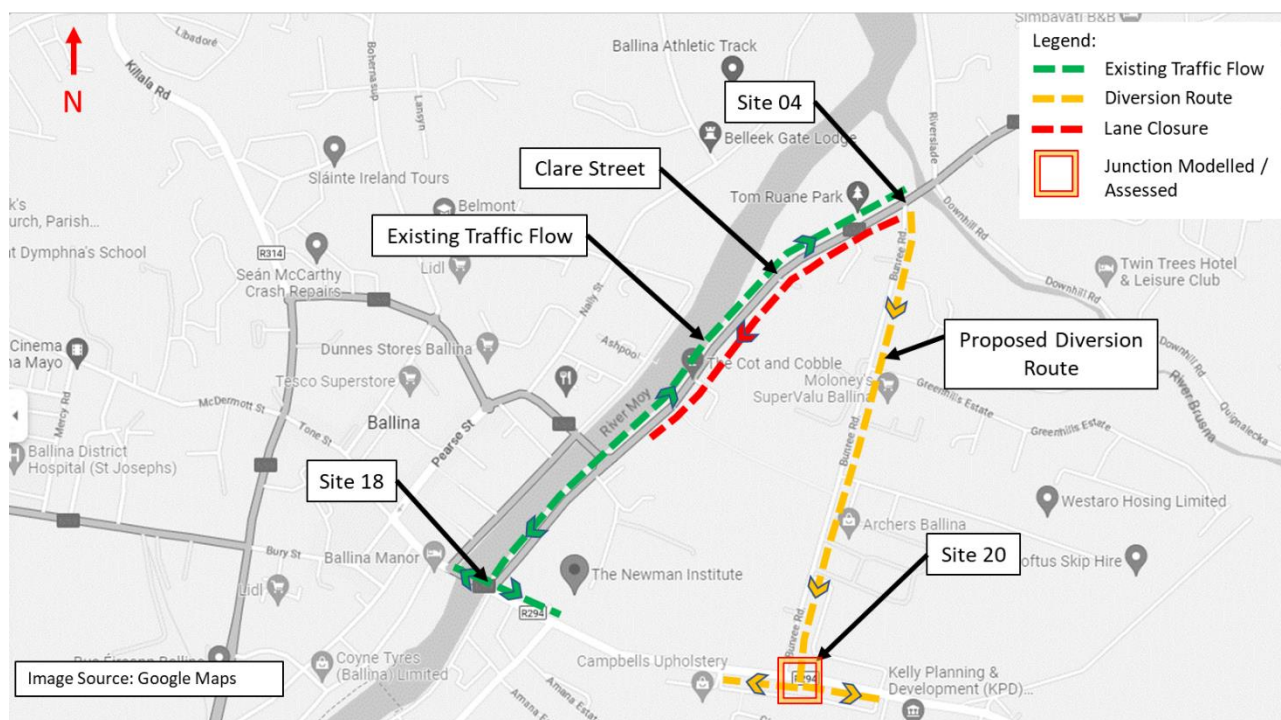


Figure 6-18: Plan of Displaced Traffic due to Clare Street Lane Closure

For the Clare Street proposed temporary traffic diversion route (refer to **Appendix 6.2: Construction Traffic Management Plan, Figure 3-4**), the primary junction affected by the temporary traffic diversion is Site 20 on the southern end of Bunree Road.

Traffic at Site 04 travelling along the N59 from the northeast to southwest will divert down Bunree Road towards Site 20. This traffic would normally travel southwest to Site 18, where in the morning, 64% turn westbound and 36% turn eastbound. In the afternoon these change to 56% turning westbound and 44% turning eastbound. These percentage turning counts were applied to the diverted traffic at Site 20 to model their impact. No double counting of traffic could be determined; therefore, the results should indicate a ‘worst case’ scenario.

Junction capacity assessments were undertaken at Site 20 (R294 (W) / Bunree Rd / R294 (E)) as it is directly impacted by the proposed diversion.

Table 6-23: Construction Year 2026 AM Peak Hour Junction Assessment – Bunree Rd / R294(E) / R294(W)

| Bunree Rd / R294(E) / R294(W) – Construction Year 2026 AM Peak Hour | | | | | | | | | |
|---|----------------|-------------|---------------|-------------|-------------|---------------|--------|-------------|---------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) |
| Bunree Road | 0.24 | 0.31 | 10.20 | 1.06 | 39.51 | 294.01 | 0.82 | 39.2 | 283.81 |
| R294 (E) | 0.22 | 0.41 | 5.49 | 0.22 | 0.41 | 5.49 | 0.00 | 0.00 | 0.00 |
| R94 (W) | 0.13 | 0.15 | 1.87 | 0.13 | 0.15 | 1.87 | 0.00 | 0.00 | 0.00 |

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Table 6-24: Construction Year 2026 PM Peak Hour Junction Assessment – Bunree Rd / R294(E) / R294(W)

| Bunree Rd / R294(E) / R294(W) – Construction Year 2026 PM Peak Hour | | | | | | | | | |
|---|----------------|-------------|---------------|-------------|-------------|---------------|--------|-------------|---------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) |
| Bunree Road | 0.47 | 0.88 | 15.14 | 1.02 | 26.51 | 213.50 | 0.55 | 25.63 | 198.36 |
| R294 (E) | 0.19 | 0.31 | 5.99 | 0.19 | 0.31 | 5.99 | 0.00 | 0.00 | 0.00 |
| R94 (W) | 0.20 | 0.25 | 2.04 | 0.20 | 0.25 | 2.04 | 0.00 | 0.00 | 0.00 |

The results of the peak hour junction capacity assessments show that the effect of the Proposed Scheme is **significant** on this junction. This is evident by RFC values of over 1.0 on Bunree Road in both peak periods.

With the Proposed Scheme being implemented, on Bunree Road in the morning Peak hour, a queue of an additional 39.2 PCU's compared to the Do-Nothing scenario is forecast along with delays of up to 294 seconds. In the afternoon peak an additional queue of 25.63 compared to the Do-Nothing scenario is forecast along with delays of 198 seconds.

6.4.3.2 Proposed Temporary Road Closure of Barrett Street

There will be a temporary traffic diversion on Barrett Street (refer to **Appendix 6.2: Construction Traffic Management Plan, Figure 3-2**), and therefore the primary junctions that will be impacted by this diversion will be junctions 16 and 21 as shown in **Figure 6-19**. Traffic that would have originally turned down Barrett Street will divert, with 90% of these trips presumed to have their destination as the N26 Southbound. Instead, these vehicles move towards Junction 16 and subsequently Junction 21. Junction capacity assessments were therefore undertaken at Junction 16 and Junction 21.

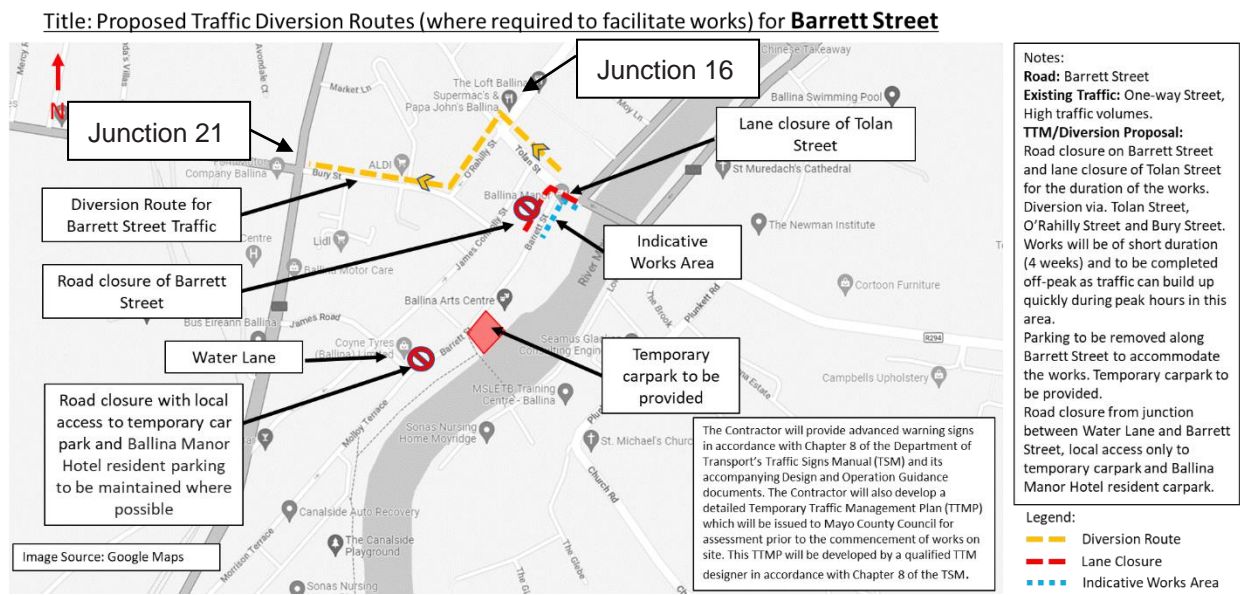


Figure 6-19: Proposed Traffic Diversion route for works on Barrett Street

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Table 6-25: Construction Year 2026 AM Peak Hour Junction Assessment - Tolan / Pearse / Tone/ O' Rahilly Streets

| Tolan / Pearse / Tone/ O' Rahilly Streets – Construction Year 2026 AM Peak Hour | | | | | | | | | |
|---|----------------|-------------|---------------|-------------|-------------|---------------|--------|-------------|---------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) | RFC | Queue (PCU) | Delays (Secs) |
| Tolan Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pearse Street | 0.74 | 13 | 34.86 | 0.84 | 24 | 59.97 | 0.10 | 11 | 25.11 |
| Tone Street | 0.43 | 4 | 19.67 | 0.50 | 5 | 26.29 | 0.07 | 1 | 6.62 |
| O' Rahilly Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 6-26: Construction Year 2026 PM Peak Hour Junction Assessment - Tolan / Pearse / Tone/ O' Rahilly Streets

| Tolan / Pearse / Tone/ O' Rahilly Streets – Construction Year 2026 PM Peak Hour | | | | | | | | | |
|---|----------------|-------------|---------------|-------------|-------------|---------------|--------|-------------|---------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | RFC | Queue (veh) | Delays (Secs) | RFC | Queue (veh) | Delays (Secs) | RFC | Queue (veh) | Delays (Secs) |
| Tolan Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pearse Street | 0.66 | 10 | 27.37 | 0.76 | 16 | 42.49 | 0.10 | 6 | 15.12 |
| Tone Street | 0.43 | 4 | 19.98 | 0.50 | 5 | 27.04 | 0.07 | 1 | 7.06 |
| O' Rahilly Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

The results of the peak hour junction capacity assessments show that the effect of the Proposed Scheme is **Slight** on this junction. This is evident by RFC value increases, but no RFC value is over the 0.85 threshold.

With the Proposed Scheme being implemented, on Pearse Street in the morning Peak hour, a queue of an additional 11 PCU's compared to the Do-Nothing scenario will be seen along with delays of up to 59.97 seconds for the proposed scheme compared to the 34.86 seconds for the Do-Nothing scenario.

The following tables describe the effect of the closing down of Barrett Street on junction 21 (Bury Street / Kevin Barry Street / Teeling Street / Lord Edward Street).

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Table 6-27: Construction Year 2026 AM Peak Hour Junction Assessment Bury Street / Kevin Barry Street / Teeling Street / Lord Edward Street

| Bury Street / Kevin Barry Street / Teeling Street / Lord Edward Street – Construction Year 2026 AM Peak Hour | | | | | | | | | |
|--|----------------|-------------|-----------------|-------------|-------------|-----------------|-----------|-------------|-----------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | Deg sat % | Queue (PCU) | Delays (PCU/hr) | Deg sat % | Queue (PCU) | Delays (PCU/hr) | Deg sat % | Queue (PCU) | Delays (PCU/hr) |
| Bury Street | 84.3% | 12 | 7 | 94.5% | 15 | 9 | 10.2% | 3 | 2 |
| Kevin Barry Street | 83.9% | 10 | 5 | 95.9% | 14 | 9 | 12% | 4 | 4 |
| Teeling Street | 44.3% | 5 | 3 | 48.9% | 6 | 3 | 4.6% | 1 | 0 |
| Lord Edward Street | 86.4% | 6 | 5 | 95.1% | 7 | 6 | 8.7% | 1 | 1 |

Table 6-28: Construction Year 2026 PM Peak Hour Junction Assessment Bury Street / Kevin Barry Street / Teeling Street / Lord Edward Street

| Bury Street / Kevin Barry Street / Teeling Street / Lord Edward Street – Construction Year 2026 PM Peak Hour | | | | | | | | | |
|--|----------------|-------------|-----------------|-------------|-------------|-----------------|-----------|-------------|-----------------|
| | Without Scheme | | | With Scheme | | | Impact | | |
| | Deg sat % | Queue (PCU) | Delays (PCU/hr) | Deg sat % | Queue (PCU) | Delays (PCU/hr) | Deg sat % | Queue (PCU) | Delays (PCU/hr) |
| Bury Street | 78.9% | 11 | 7 | 110.8% | 41 | 34 | 31.9% | 30 | 27 |
| Kevin Barry Street | 84.3% | 12 | 6 | 107.1% | 30 | 24 | 22.8% | 18 | 18 |
| Teeling Street | 50.4% | 6 | 3 | 79.8% | 7 | 4 | 29.4% | 1 | 1 |
| Lord Edward Street | 84.4% | 7 | 6 | 101.3% | 13 | 12 | 16.9% | 6 | 6 |

The results of the peak hour junction capacity assessments show that the effect of the Proposed Scheme is **significant** on this junction. This is evident by the Degree of Saturation of over 100% on three of the arms in the PM peak.

With the Proposed Scheme being implemented, on Bury Street and Kevin Barry Street in the evening Peak hour, a queue of an additional 30 and 18 PCU's respectively compared to the Do-Nothing scenario will be seen along with delays of up to 27 PCUs/hr.

6.4.3.3 Proposed Temporary Lane Closure on Emmet Street

The reduction on Emmet Street to 1 lane, which has a high flow, will see the volumes of traffic, one stream from Ham Bridge and the other from Tolan Street interact at the western end of Emmet Street. During peak hours the high level of flow and the saturation flow capacity that would be expected would suggest that queueing will occur. For example, between 8:30 and 9:30 on the survey day 640 vehicles will turn right onto Emmet Street from Ham Bridge with 504 vehicles turning left onto Emmett Street from Tolan Street, therefore there will be 1,144 vehicles using Emmett Street in total. Using **Table 6-3** the 1,144 will increase to 1,223 to account for growth up to 2026. There is a pedestrian crossing on the Tolan Street to Emmet Street arm which will reduce the capacity of that movement. The presumption is that the movement for Ham Bridge

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to Emmet Street, which is a national route, will have priority. Therefore, the expected capacity of the merging lane is estimated to be about 1,200. Exact saturation flows will depend on the dimensions of the junction layout. The flow to capacity rate is then $1,223/1,200 = 1.02$ which is above the 0.85 threshold. Therefore, it is considered that the lane closure will have a **moderate effect**.

6.4.4 Impact of diversions and road closures on local road network

6.4.4.1 Bunree Road

The additional flow along Bunree Road due to the closure of Clare Street is considered according to *Design Manual For Roads And Bridges Volume 5 Assessment and Preparation of Road Schemes Section 1 Preparation and Implementation Table 2*. Bunree Road can be classified as UAP3 which is a variable standard urban road. Considering this type, a maximum capacity of 900 vehicles/hour for 1 directional flow is indicated. The maximum hourly flow along Bunree Road is 816, 872 growth up to 2026, from 08:30 to 09:30 taken on the surveyed day, which is comprised of flows that would have used Clare Street and flows that were going to use Bunree road already. Considering Clare Street will be available for vehicles to use in a north easterly direction the northern flow along Bunree Road is considered to not change in the construction period. Therefore, it can be considered that the effect on Bunree Road is **not significant**.

6.4.4.2 Abbey Street

The additional flow along Abbey Street due to the closure of Clare Street is considered according to *Design Manual For Roads And Bridges Volume 5 Assessment and Preparation of Road Schemes Section 1 Preparation and Implementation Table 2*. Abbey Street can be classified as UAP3 which is a variable standard urban road. Considering this type, a maximum capacity of 900 vehicles/hour for 1 directional flow is indicated. The maximum hourly flow along Bunree Road is 1,160 (1,240 growth up to 2026) from 08:30 to 09:30 taken on the surveyed day, which is comprised of flows that would have used Clare Street which instead took Bunree Road and flows that were going to use Abbey Street already. Considering Clare Street will be available for vehicles to use in a north easterly direction, the northern flow along Abbey Street and then Bunree Road is considered to not change in the construction period. However, due to the westbound traffic, it can be considered that the effect on Abbey Street is **significant**.

6.4.4.3 Tolan Street

The additional flow along Tolan Street due to the closure of Barrett Street is considered according to *Design Manual For Roads And Bridges Volume 5 Assessment and Preparation of Road Schemes Section 1 Preparation and Implementation Table 2*. Abbey Street can be classified as UAP4 which is a busy high street. Considering this type, a maximum capacity of 700 vehicles/hour for 1 directional flow is indicated. The maximum hourly flow along Tolan Street is 438 without the closure of Barrett Street and 742 (793 growth up to 2026) with the closure from 08:30 to 09:30 taken on the surveyed day. The extra flow is comprised of flows that would have used Barrett Street which instead took Tolan Street and flows that were going to use Tolan Street already. Eastbound traffic will be unaffected and at 310 is well under the 700 vehicles per hour threshold. However, due to the Westbound flow it can be concluded that there will be a **moderate** effect on the capacity of Tolan Street.

6.4.4.4 Bury Street

The additional flow along Bury Street due to the closure of Barrett Street is considered according to *Design Manual For Roads And Bridges Volume 5 Assessment and Preparation of Road Schemes Section 1 Preparation and Implementation Table 2*. Bury Street is a one-way road and can be classified as UAP2 which is a busy high street. Considering this type, a maximum capacity of 1800 vehicles/hour for a two lane one directional flow is indicated. The maximum hourly flow along Bury Street is 462 without the closure of Barrett Street and 901 (963 growth up to 2026) with the closure from 08:30 to 09:30 taken on the surveyed day. Taking 900 vehicles per hour per lane Bury Street is considered slightly over capacity ($963/900=7\%$ over capacity). The extra flow is comprised of flows that would have used Barrett Street which instead took Tolan Street and flows that were going to use Tolan Street already. Eastbound traffic will be unaffected and is 310 and well under the 750 vehicles per hour threshold. It can be concluded that there will be a **moderate** effect on the capacity of Bury Street.

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6.4.4.5 Other Roads and Streets

The lane closure on Emmett Street is explained in section 6.4.2 as having a **moderate** effect. It is considered road closures (Quay Road), diversions (Quay Road, Nally Street and Ridgepool Road) will have very minor impacts on the road capacities as flows are already low on these roads. The traffic management measures (R294 (Brusna River) and Behy Road) as described in the **Appendix 6.2: Construction Traffic Management Plan (CTMP)** proposes the use of temporary traffic signals which are not restricted by maximum traffic flow in accordance with Chapter 8 of the TSM. The impact is perceived to be minor and therefore was not assessed.

With a lane closure on the N59 Cathedral Road, the road will be over capacity, considering 1,249 veh/hr in the AM peak, 1,334 veh/hr growth up to 2026, and is above the one lane capacity of 900 veh/hr (1800/2 veh/hr). However, if the lane closures on Cathedral Road and Clare Street occur simultaneously this will alleviate the capacity issues.

6.5 Mitigation Measures

6.5.1 Construction Phase

A CTMP (see volume III, **Appendix 6.2: Construction Traffic Management Plan**) has been prepared and outlines measures in detail to be implemented by the appointed contractor during the construction phase in order to reduce impacts on local communities and residents adjacent to the Proposed Scheme and wider road network. The information below provides a summary of the mitigation measures stated in the CTMP.

6.5.1.1 Proposed Diversion Routes

- Bachelors Walk works - Lane closure along the River Moy for the duration of the works. Bachelors Walk will temporarily be a one-way street with a temporary traffic diversion via Nally Street and Arbuckle Row.
- Barrett Street works - Barrett Street will be closed temporarily to facilitate the works with a temporary traffic diversion via Tolan Street, O 'Rahilly Street and Bury Street (4 weeks). An alternative temporary parking area will be provided for the duration of the works as street parking will be removed for the duration of the works. The road closure will commence at the junction of Tolan Street and Barrett Street and ends at the junction of Water Lane and Barrett Street. Local vehicular traffic will be permitted to access the alternative temporary parking and the Ballina Manor Hotel resident carpark. Advance warning signage will be provided at Abbey Street (R294) and Cathedral Road, advising all HVs to route via Emmet Street to avoid an excess of extra traffic using Tolan Street and subsequently Bury Street. This is important as when the junction of Pearse Street/Tolan Street/Rahilly Street/ Tone Street and the junction of Bury Street/Teeling Street/Lord Edward Street/Kevin Barry Street receive the extra traffic that would usually use Barrett Street, the junction runs over capacity in peak hours which will lead to delays and congestion as mentioned in Section 6.4.2.
- Ridgepool Road works – The proposed temporary traffic management to facilitate works at Ridgepool Road will be a road closure of the one-way section of the road with a temporary traffic diversion via The Brook, Plunkett Road and the R294 Regional Road. The two-way section of Ridgepool Road will have a lane closure along the River Moy with stop/go or temporary traffic signals for the duration of the works. Parking will be removed from along the riverside to accommodate the works.
- Clare Street / Howley Terrace (N59 Sligo Road) – lane closure along the River Moy for the duration of the works. Clare Street / Howley Terrace will temporarily be a one-way street northbound with a temporary traffic diversion for southbound traffic via Bunree Road and R294 Regional Road. Junction priority at the intersection of Bunree road and R294 to be changed or controlled via Stop / go, traffic signals or vehicle controller as determined by the contractors TTM designer. To alleviate capacity issues as per **Section 6.4.4.5** the lane closures on Cathedral Road and Clare Street should occur simultaneously where possible.
- Quignamanger Stream works – For the section of Creggs Road between Quay Road and Rathmeel Lawns, a section of Creggs Road will be closed with a temporary traffic diversion via Quay Road,

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Riverslade, Quignalecka, N59 National Road and Creggs Road. For the section of Creggs Road between Rathmeel Lawns and the Culvert Inlet, a section of Creggs Road will be closed with a temporary traffic diversion via Quay Road, Riverslade, Quignalecka, N59 National Road and Creggs Road. Access to local properties is to be maintained along Creggs Road.

- Bunree/Behy Road Stream – The proposed temporary traffic management to facilitate works at Behy Road comprise a lane closure along a section of Behy Road with stop/go or temporary traffic signal operation for the duration of the works. An advisory traffic diversion for through traffic will be northbound via L-10112 Local Road and Creggs Cross and southbound via L-51322 Local Road. Access to local properties is to be maintained along Behy Road.
- Brusna (Glenree) River works – The proposed temporary traffic management to facilitate works along Brusna (Glenree) River will be in two distinct sections. For the section of the Proposed Scheme along Brusna River at Shanaghy Heights, the narrow access road will be closed for the duration of the works with a temporary access road / haul route required to maintain access to the local properties. For the section of the Proposed Scheme along the R294 Regional Road a lane closure along the Brusna River with stop/go or temporary traffic signals will be in place for the duration of the works. A potential traffic diversion for through traffic will be at Bonniconlon, northbound traffic via the L6612 Local Road and R297 Regional Road and southbound via The L1125 Local Road and N26 National Road.

The following figure depicts the proposed diversion routes.

Title: Proposed Temporary Traffic Management Overview (Indicative)

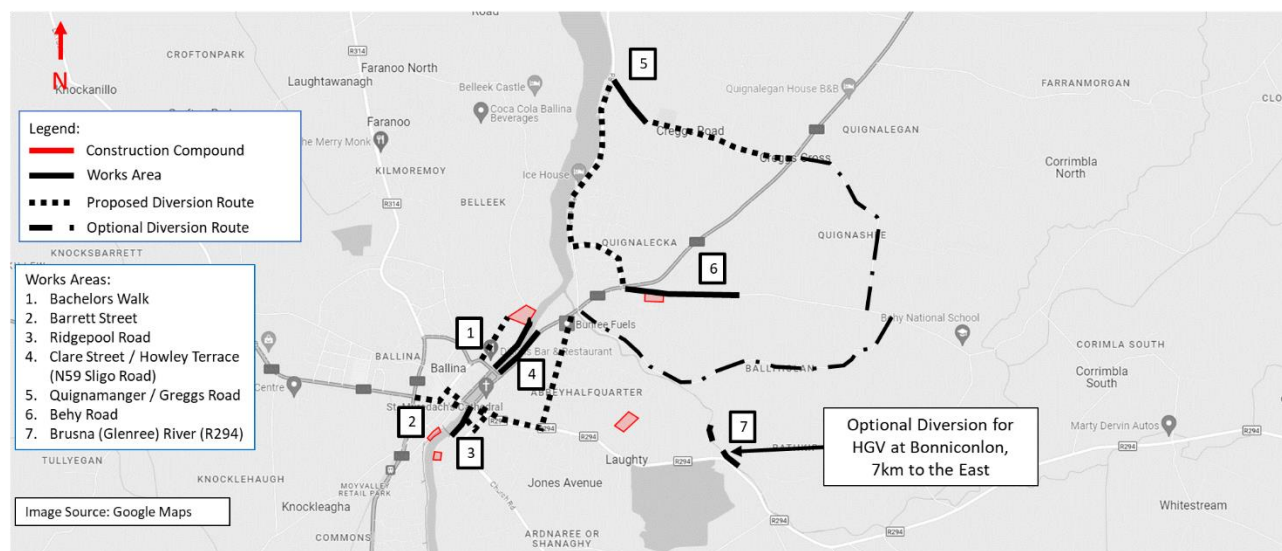


Figure 6-20: Proposed Temporary Traffic Management Overview

6.5.1.2 Proposed temporary traffic management measures

- Cathedral Road - The proposed temporary traffic management to facilitate works at Cathedral Road will be a lane closure along the Moy River for the duration of these works. Parking will be removed from along the riverside to accommodate the works.
- Emmett Street - The proposed temporary traffic management to facilitate works at Emmet Street will be a lane closure along the River Moy for the duration of the works. Parking will be removed from along the riverside to accommodate the works. It is proposed the works on Emmett Street do not occur at the same time as of those on Barrett Street.

6.5.2 Operational and Maintenance Phase

The transport measures set out in **Section 6.2.4** have been incorporated into the design of the Proposed Scheme to ensure the safe movement of all road and footpath users.

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6.6 Residual Effects

With the implementation of the mitigation measures, there will be no significant negative construction phase impacts associated with the Proposed Scheme. There will be a positive residual effect on traffic and transport during the operational stage as the flood defences will prevent the flooding of roads including Emmett Street, Cathedral Road, Clare Street, Bachelors Walk, Barrett Street, Lower bridge, Downhill Road, Creggs Road and Quay Road. Further information is provided in **Chapter 12: Water**.

6.7 Monitoring

No monitoring is considered necessary.

6.8 Interactions and Cumulative Effects

6.8.1 Interactions

Interactions between Traffic and Transport and environmental factors such as population, human health, water, biodiversity, air quality and climate, material assets, noise and vibration, landscape and visual have been addressed in **Chapter 20: Interactions and Cumulative Effects**.

6.8.2 Cumulative Effects

Potential Cumulative Effects between the Proposed Scheme and other projects with Traffic and Transport has been addressed in **Chapter 20: Interactions and Cumulative Effects**.

6.9 Schedule of Environmental Commitments

Please see **Chapter 22 Schedule of Environmental Commitments** which sets out all the mitigation and monitoring commitments to minimise the potential impacts for **Chapter 6: Traffic and Transport** during the construction and operational phase of the Proposed Scheme.

6.10 Chapter References

DCCAIE, 2017. *EIS and NIS Guidelines*, s.l.: s.n.

DTTAS, 2019. *Design Manual for Urban Roads and Streets (DMURS)*, s.l.: Department of Transport Tourism and Sport.

DTTAS, 2019. *Traffic Signs Manual*, s.l.: Department of Transport Tourism and Sport.

MTO 23, 2022. *Vol 2 Development Management Standards Mayo CDP 22-28*, s.l.: s.n.

MTP 23, 2012. *Spatial Planning and National Roads - Guidelines for Planning Authorities*, s.l.: s.n.

TII, 2014. *Traffic and Transport Assessment Guidelines Doc No: PE-PDV-02045*, s.l.: TII.

TII, 2019. *TII's Project Appraisal Guidelines (PAG) for National Roads Unit 5.3, Travel Demand Projections*, s.l.: Transportation Infrastructure Ireland.

TII, 2024. *TII Traffic Counter*. [Online]

Available at:

https://trafficdata.tii.ie/sitedashboard.asp?sgid=XZOA8M4LR27P0HAO3_SRSB&spid=E5D5FF86C850
[Accessed 2024].