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ENVIRONMENTAL IMPACT ASSESSMENT REPORT

TEN-T Priority Route Improvement Project, Donegal

Chapter 6: Traffic and Transportation Assessment

TT_MGT0337-RPS-P3-ZZ-RP-E-EN0001

EIAR

March 2026

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List of Abbreviations

The following is a list of abbreviations used within this chapter of the Environmental Impact Assessment Report (EIAR).

TEN-T List of the 'Traffic and Transportation' Abbreviations

List of Abbreviations	
AADT	Annual Average Daily Traffic
ANPR	Automatic Number Plate Recognition
ATC	Automated Traffic Counts
CMILT	Chartered Member from the Chartered Institute of Logistics and Transport
COBA-LT	Cost and Benefit to Accidents – Light Touch
DM	Do Minimum
DS	Do Something
HGV	Heavy Goods Vehicle
LGV	Light Goods Vehicle
MCC	Manual Classified Counts
NB	Northbound
PAG	Project Appraisal Guidelines
PCU	Passenger Car Unit
RSI	Roadside Interview
SATURN	Simulation and Assignment of Traffic in Urban Road Networks
SB	Southbound
TMU	Traffic Monitoring Unit
WTC	Western Transport Corridor

6 TRAFFIC AND TRANSPORTATION ASSESSMENT

6.1 Introduction

This chapter presents the traffic and transport impacts that are likely to arise from the proposed Trans-European Transport Network (TEN-T) Priority Route Improvement Project, Donegal (hereafter referred to as the 'Proposed Development'). This chapter outlines the transport assessment of the Proposed Development based on the updated, calibrated and validated base model of the study area as well as the future year forecast scenarios. Details of the modelling undertaken is discussed in the Traffic Modelling Report (TMR), in Appendix C6.01 of Volume C of the EIAR, that forms one of the required deliverables at the Phase 3 Design and Environmental Evaluation stage of the Transport Infrastructure Ireland (TII) Project Appraisal Guidelines (PAG).

The strategic and local traffic and transport impacts associated with the Proposed Development are discussed, assessed and evaluated in this chapter which is set out as follows:

- Methodology
- Existing Environment
- Predicted Impacts
- Mitigation Measures
- Residual Impacts
- Conclusion

6.1.1 Guidelines Utilised

The traffic and transport assessment has been prepared with reference to the following documents:

- Project Appraisal Guidelines (PAG) for National Roads – Transport Infrastructure Ireland
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR), 2022
- Traffic and Transport Assessment Guidelines (PE-PDV-02045) – Transport Infrastructure Ireland (2014)

6.1.2 Key Assessment Terminology

- **HGVs -** Classification covering both OGV1 and OGV2
- **OGV1 -** Other Goods Vehicle 1 Classification Includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles
- **OGV2** - Other Goods Vehicle 2 Classification Vehicles under this category are rigid vehicles with four or more axles and all articulated vehicles
- **LGVs -** Light Goods Vehicles
- **PCU -** Passenger Car Unit: Car and LGV equal 1 PCU OGV1 equals 1.9 PCUs and OGV2 equals 2.9 PCUs
- **AADT -** Annual average daily traffic is the total volume of vehicle traffic on a highway or road for a year divided by 365 days. AADT is a useful and simple measurement of how busy a road is.
- **Peak Hour –** The time at which the highest volume of traffic occurs. Three times were modelled:
  - **AM -** Weekday AM Peak Hour: 08:15-09:15
  - **IP -** Weekday Average hour in the inter peak between 10:00 and 16:00
  - **PM -** Weekday PM Peak Hour: 16:45-17:45
- **RSI -** Roadside Interview is an intercept survey to determine information relating to a journey
- **ATC -** Automated Traffic Counts are a quick and inexpensive way of collecting, traffic volume, speed and classification
- **MCC -** Manual Classified Counts break down traffic flows by vehicle type. This information is particularly important in an urban area, where the mixture of vehicle types may vary significantly by direction as well as at different times of day

- **GEH-** The GEH ("Heaver") Statistic is a formula used in traffic engineering, traffic forecasting, and traffic modelling to compare two sets of traffic volumes
- **PAG** for National Roads - Project Appraisal Guidelines (https://www.tiipublications.ie/) – a set of documents that provide guidelines on project appraisal to ensure consistency in approach across TII projects to comply with DoT and TAF requirements.
- **DM -** Do Minimum
- **DS –** Do Something

6.1.3 Competent Experts

The traffic modelling is undertaken by a team of experts led by Hariharan Thogulava and Karan Monga supported by Paul Bradley and Munir Lalldin

Hariharan Thogulava: B.Arch, M.Planning (Transport), MSc (Transport Engineering and Operations), Chartered Member Institute of Logistics and Transport (CMILT), 24 years' experience. – Modelling and Appraisal Lead

Dr. Paul Bradley: PhD, Chartered Mathematician (MIMA), 8 years' experience – Modelling support

Karan Monga, BA (Hons) Economics, MSc (Business and Information Technology), Member (Institute of Economic Development, 2006), 24 years' experience – Active Model Appraisal Lead

Munir Lalldin, BA (Hons) Economics, MSc Economics, 8 years' experience - Active Model Appraisal support

6.2 Methodology

A summary of the modelling undertaken is given here. For a full and detailed description please refer to the Traffic Modelling Report (included in Appendix C6.01).

The methodology for the traffic and transportation assessment can be summarised as follows:

- Undertake a baseline review and assessment of the existing traffic situation.
- Develop a traffic model to calibrate and validate baseline conditions based on observed traffic data.
- Undertake traffic modelling to assess future year scenarios, with the Proposed Development (DS) and without the Proposed Development (DM) in place.
- Evaluate the traffic modelling results which forecast the impact of existing and future traffic on the road network in the DM and DS options to inform the economic appraisal.
- Identify any traffic impacts and any subsequent mitigation measures required to remove and/or reduce any identified negative traffic impacts of major significance.

6.2.1 Baseline Traffic Review and Assessment

As a first step, a desk-based baseline review was produced to determine the existing traffic conditions in the study area. The baseline review, contained within chapter 2 of the TMR (included in Appendix C6.01) and summarised in Section 6.4 includes a review of the existing road network and the operating transport conditions for vehicular traffic. Traffic surveys were commissioned to determine the existing traffic levels and conditions to inform the calibration and validation of the strategic traffic model.

6.2.2 Traffic Modelling

6.2.2.1 Traffic Model Development

Two main source models were identified as the starting point for the development of one overall strategic model (the TEN-T model) to assess the Proposed Development. These were:

- The N13/N14/N15 strategic traffic model with a base year of 2013
- The Letterkenny Model with a 2009 base year.

The following methodology was adopted during the development of the highway network coding in the Proposed Development model:

- Both network models were reviewed to identify coding inconsistencies and identify areas where highway networks had changed since the respective development periods.
- The existing N13/N14/N15 Simulation and Assignment of Traffic in Urban Road Networks (SATURN), model was identified as the optimum source model for the main strategic elements of the Proposed Development model and was updated accordingly.
- The Letterkenny model had a far denser network and zone system within the main urban area which was deemed more suitable for the assessment of the strategic improvements around Letterkenny. The Letterkenny model network was, therefore, incorporated into the TEN-T model with both the highway network and internal traffic demands developed for Letterkenny sourced from the 2009 Letterkenny Transport Model.
- The external to internal (Letterkenny zones) and internal to external movements were derived from the N13/N14/N15 model.
- The area to the north including Derry was not updated or removed from the model to avoid any structural change having an adverse impact on vehicle routing elsewhere. It should be noted, however, that no additional calibration of the model in this area was undertaken.
- Following network development, the consideration of assignment method was confirmed and the generalised costs for the assignment process calculated.

The TEN-T model was developed for 2017 base year to inform the Phase 2 stage of the project and refined with observed Origin-destination data for the Phase 3 stage of the project.

6.2.2.2 Software

The model software used was SATURN, version 11.5.05H.

6.2.2.3 Future Year Model Development

In order to assess the traffic impacts of the Proposed Development, two future year models were developed to represent the Proposed Development Opening Year (2032) and Design Year (2047), 15 years after opening. The future year 'Do-Minimum' networks include the base year network plus all schemes that are already built, are committed to be built or likely to be built by 2032 and 2047. The list of schemes to be included was developed in coordination with Donegal County Council. The future year 'Do-Something' network includes the 'Do-Minimum' schemes plus the Proposed Development.

Low Growth, Central Growth and High Growth forecast scenarios were used on this project in line with the Project Appraisal Guideline requirements.

6.2.3 Evaluation of the Traffic Modelling Results

The traffic model is used to inform various aspects of the EIAR including but not limited to air quality and climate, noise, human beings, population and health and material assets as well as being used to determine traffic impacts associated with the Proposed Development (which is the main focus of this chapter).

The AADT flows within the study area were supplied to the design team including environmental experts and used to assess the likely environmental impact of the traffic from the Proposed Development. (i.e. air quality and climate, noise, etc.).

Journey times on key routes have been considered to determine the traffic impact of the Proposed Development on the strategic road network. In addition, model network statistics give an overall, general, assessment of the performance of the entire model network

The impacts of the Proposed Development, both at the strategic and at local levels, are rated as positive, neutral or negative and these categories are described as follows:

- **Positive:** A change which improves the quality of the environment
- **Neutral:** No effects or effects that are imperceptible, within normal bounds of variation or within a margin of forecasting error
- **Negative:** A change which reduces the quality of the environment.

The likelihood (likely or unlikely) and duration (short, medium or long term) of the predicted impacts is also assessed and noted. As per EPA guidelines, short-term equates to one to seven years, medium term is between 7 and 15 years and long term is between 15 and 60 years. This method of rating impacts allows the traffic modelling scenarios to be compared in a clear, concise and measurable way.

Mitigation measures of traffic impacts of major significance identified are developed and are further evaluated if required.

The remaining residual impacts are also considered.

6.3 Existing Environment

The project is divided into three sections as illustrated in Figure 6-1.

- **Section 1:** N15/N13 Ballybofey / Stranorlar Urban Region
- **Section 2:** N56/N13 Letterkenny to Manorcunningham
- **Section 3:** N14 Manorcunningham to Lifford / Strabane / A5 Link

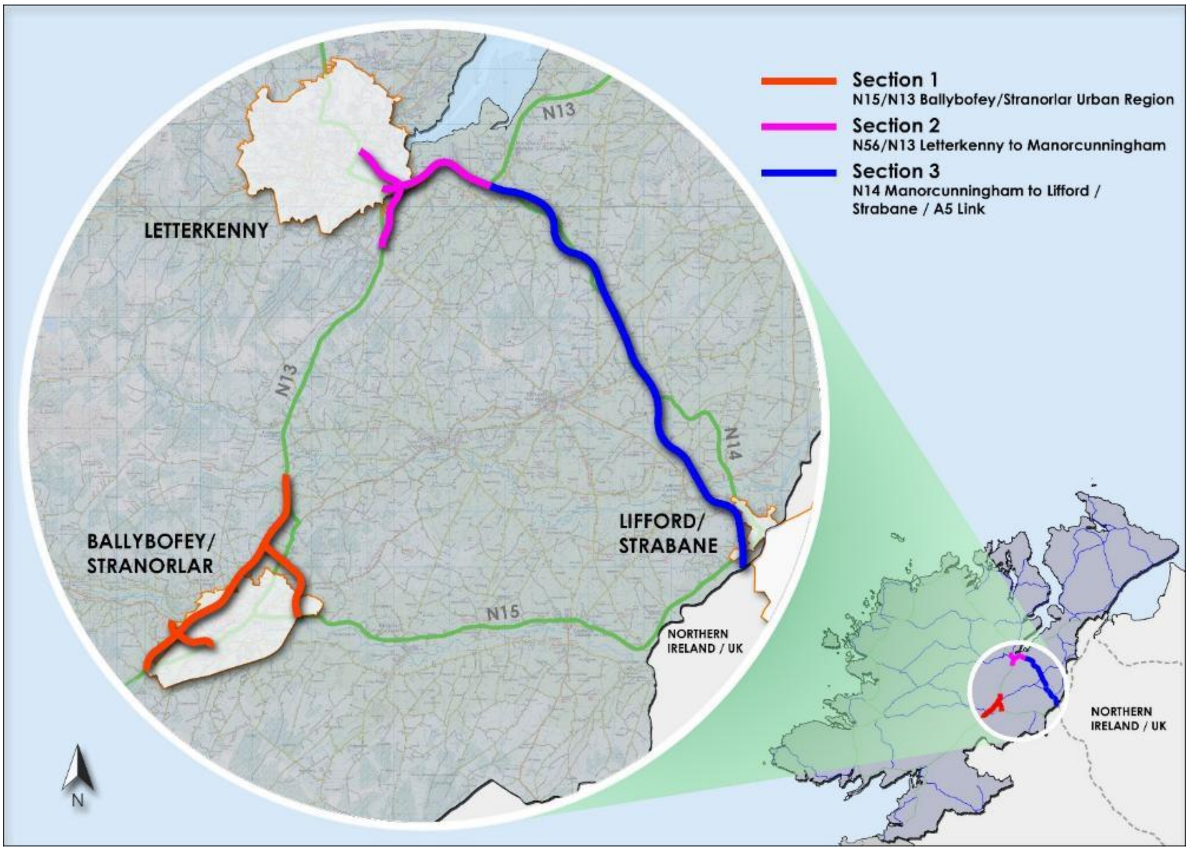

Figure 6-1: TEN-T Priority Route Improvement Project, Donegal

6.3.1 Section 1 Existing Road Network

This section of the existing N13/N15 in the vicinity of Ballybofey/Stranorlar is approximately ten kilometres in length and passes through the twin towns of Ballybofey/Stranorlar which are connected over the River Finn by a multi-span arch bridge carrying the N15.

Currently the N15 that links Donegal to the rest of the Republic of Ireland via Leitrim and Sligo bisects the town centres of Ballybofey/Stranorlar and is the key link on the Atlantic Corridor in Donegal. The current condition of the N15 at this location is inadequate and inappropriate for strategic traffic, having a varying single carriageway cross-section width of six to seven metres, numerous retail frontages, on-street car parking, junctions with side-roads, a bus stop and traffic lights all adding to congestion, and reducing the average speed, as commercial and private vehicles drive through Ballybofey/Stranorlar in both directions. The section also includes 9.30 kms of on-road cycle track next to traffic lanes. There is no existing provision of off-road segregated cycle tracks.

6.3.2 Section 2 Existing Road Network

This section of the TEN-T network is approximately 6.5 km in length and incudes the road network between the Polestar Roundabout in Letterkenny and the N13/N14 Pluck Roundabout at Manorcunningham.

The N56, a coastal route that connects south, west, northwest, and north Donegal, enters Letterkenny as a single carriageway route that traverses around the outskirts of the town and widens to a two-lane carriageway on approach to the Polestar roundabout. From the Polestar roundabout, traffic travels eastwards over a bridge on the River Swilly using a four-lane road (N56) as far as the Dry Arch Roundabout where it meets the N13 from Stranorlar and the N13 from Manorcunningham. The River Swilly bridge crossing is one of two crossings of the River Swilly in Letterkenny but is the only crossing that provides for a national route and forms the only national road link from Letterkenny to the rest of the primary road network. A 4.3 km section of dual carriageway (N13) connects the Dry Arch Roundabout with the Pluck Roundabout. The section also includes the section of the N13 from the Dry Arch Roundabout, south to the top of the hill at Lurgybrack which is at a very steep gradient. This section is deficient by the absence of active travel infrastructure provision, although there are committed schemes being implemented between Dry Arch and Polestar roundabouts and other parts of Letterkenny.

6.3.3 Section 3 Existing Road Network

This section of road which is approximately 17.3 km in length commences at the Pluck Roundabout, the junction between the N13 and N14 near Manorcunningham, and continues as a single carriageway in a south easterly direction to Lifford. There is a border crossing at Lifford into Strabane, County Tyrone, Northern Ireland, across the River Foyle. The N14 is the key route for both commercial and private vehicles travelling to Belfast and Dublin, in addition to buses travelling to Dublin via the A5 in Northern Ireland and the N2 in County Monaghan. Similar to Section 2, this section too is deficient by lack of any active travel infrastructure provision.

6.3.4 Summary of Existing Road Network Deficiencies

Some of the key issues for the sections of the National Road corridors forming the TEN-T Priority Route Project, Donegal for which this project is being developed to rectify include:

- Poor network resilience to and from Letterkenny due to an over reliance on the existing N56 (four lane road) between the Polestar and the Dry Arch roundabouts. Heavy traffic volumes and frequent delays result for traffic from Derry, Strabane and Dublin to the east and/or Ballybofey/Stranorlar, Donegal, Sligo and Galway to the south.
- Conflicts between strategic and non-strategic users resulting in traffic congestion, higher collision rates and unreliable journey times along the national road network.
- Poor collision history: higher than national average rates for similar roads along much of the three sections.
- Poor journey time reliability for public transport operators from Letterkenny to Dublin via the N14 and to Sligo and Galway via the N13 and N15 through Ballybofey/Stranorlar.

- Poor cross-sectional characteristics of the N15 through Ballybofey/Stranorlar and the N14 from Manorcunningham to Lifford which do not correlate with those of national primary routes.
- The N56 between Polestar and Dry Arch roundabouts and the N15 through Ballybofey/Stranorlar are currently operating beyond capacity.
- Excessive gradients on the N13 southern approach to Letterkenny (locally known as Lurgybrack).
- Numerous at-grade junctions and access conflict points on the existing N13 dual carriageway east of Letterkenny and on the N14 Manorcunningham to Lifford section that do not align with the characteristics of a TEN-T strategic corridor and do not meet current national road design standards.
- Unsustainable number of direct accesses onto the existing N56 between the Polestar and Dry Arch roundabout, and the N13 south of Dry Arch Roundabout (including St Patrick’s School).
- Poor provision for pedestrians and cyclists in all three priority sections. This is aggravated by poor alignment characteristics on the road network and insufficient cross-section to safely accommodate non-motorised users.

6.3.5 Accident Data Analysis

The local accident data for the study area, during the period 2014 to 2016 inclusive, was available from the Road Safety Authority.

There were a number of personal injury accidents over this period, with several fatal and serious accidents occurring within the study area, between 2014 and 2016 inclusive. Figure 6-2 to Figure 6-4 show the location of these accidents that involved cars.

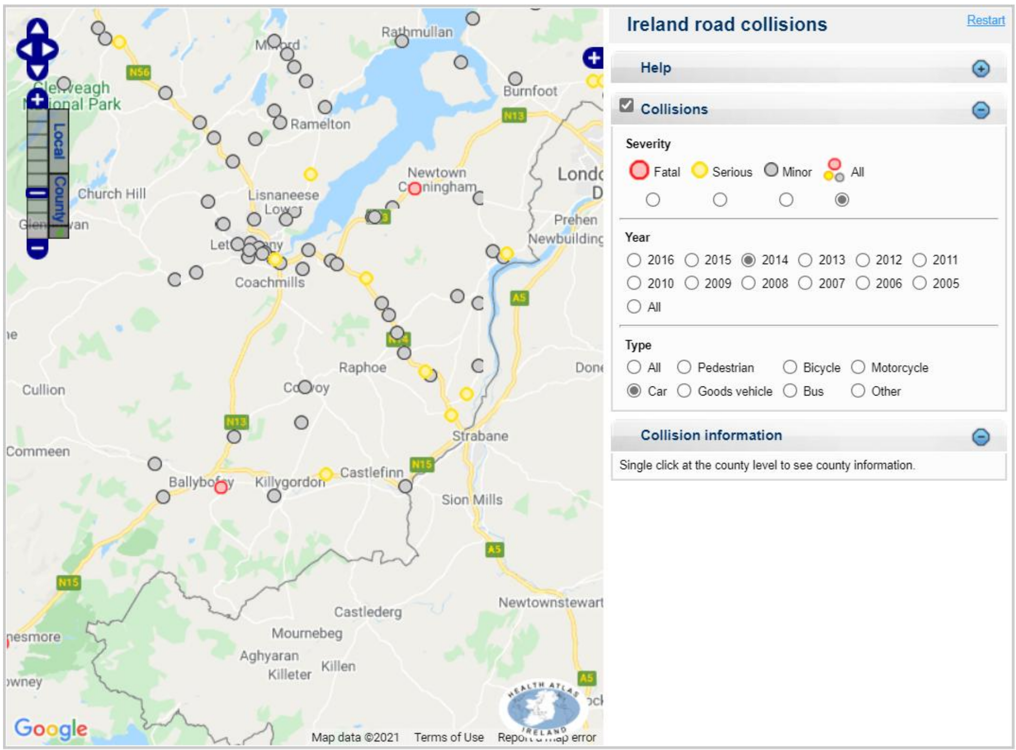

Figure 6-2: Road Collisions Involving Cars Across the Modelled Area 2014

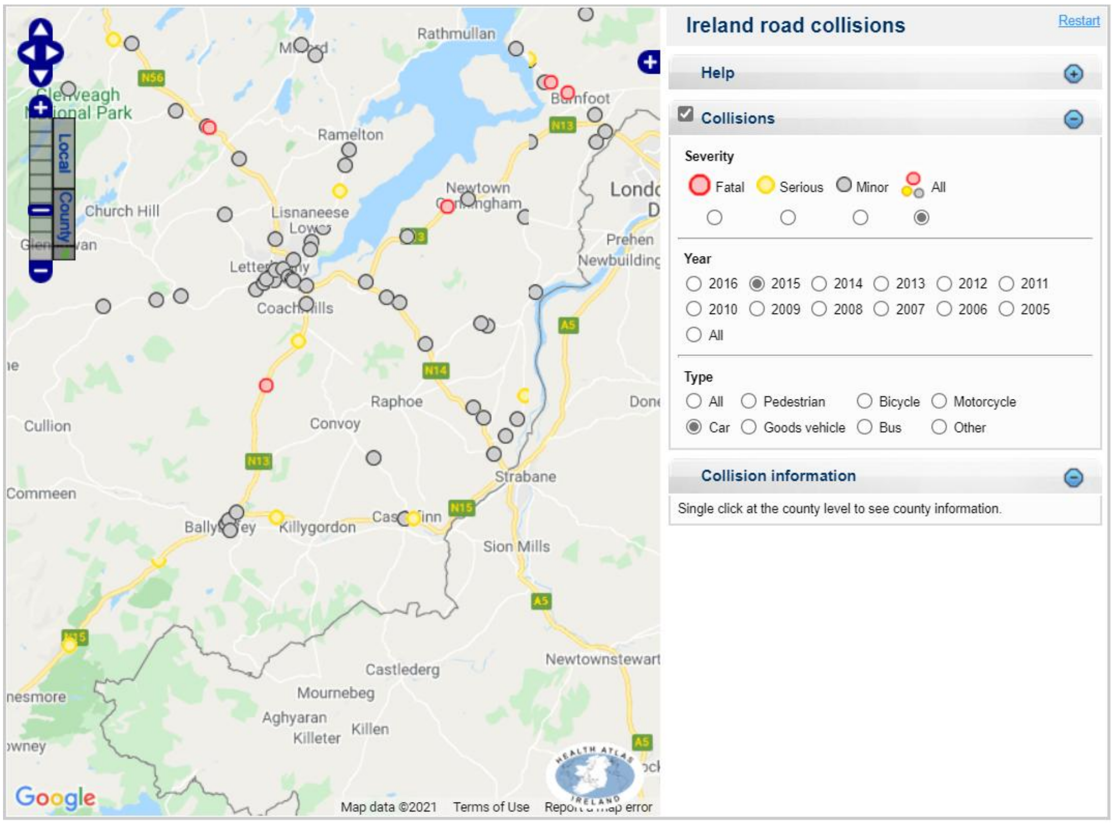

Figure 6-3: Road Collisions Involving Cars Across the Modelled Area 2015

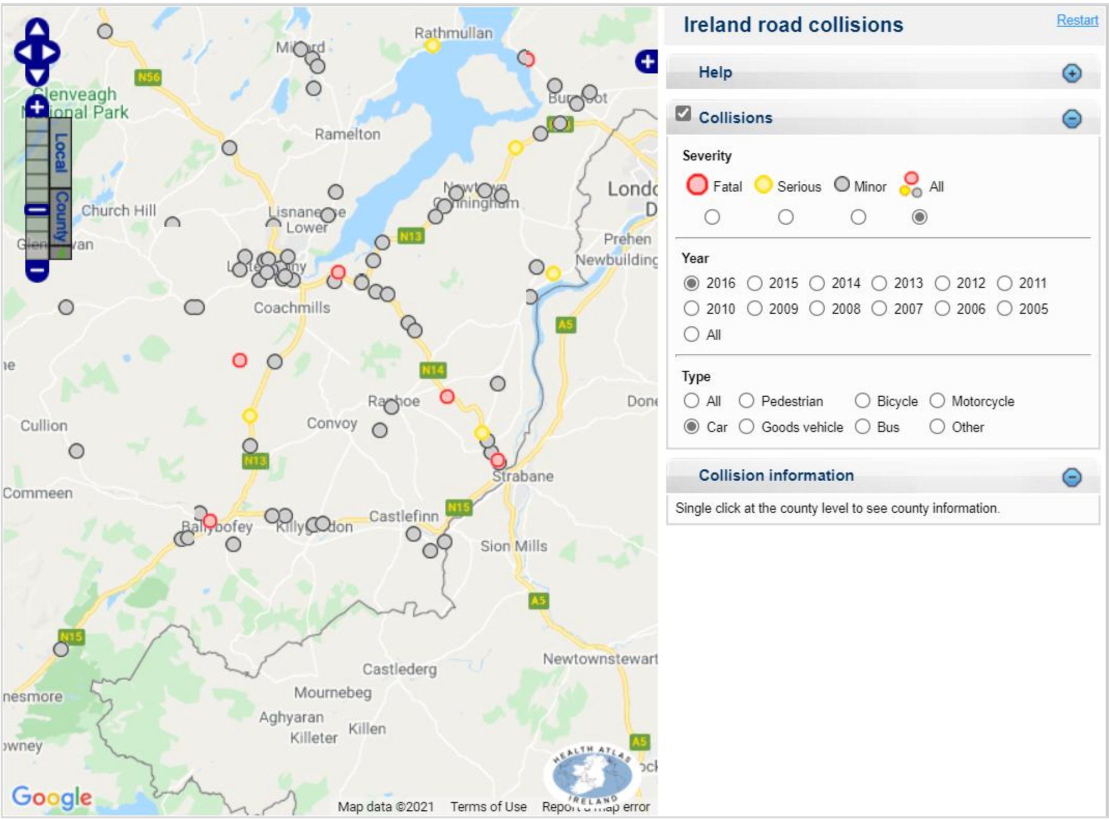

Figure 6-4: Road Collisions Involving Cars Across the Modelled Area 2016

6.3.6 Alternative Modes

6.3.6.1 Public Transport

There is no train line within the study area. Given there is no existing rail line within or near the study area with the closest train stations in Sligo and Derry, a rail-based solution is unlikely to be feasible in the short to medium term. It would require significant costs in terms of the infrastructure and planning required.[1] Given the low density and dispersed nature of population and job centres within the surrounding area, a rail-based option is unlikely to have sufficient demand to make it viable. Additionally, there are no plans identified by Irish Rail (https://www.irishrail.ie/en-ie/about-us/iarnrod-eireann-projects-and-investments) to create a new line that can serve as an alternative to the proposed corridors.

As such, public transport access is provided solely by buses. The majority of bus services are ones which pass through the N13/N15 corridors on route to Strabane and/or Derry. Consequently, the residential area close to the N13/N15 have a good level of Public Transport access, with the surrounding areas having sparse, or no, coverage, reflective of low demand for public transport services.

Bus provision in this area is predominantly provided between Ballybofey, Letterkenny and Lifford along the N13, N14 and N15. The national roads are used by some short and long-distance bus services operators, including the following:

- Bus Eireann
- Expressway
- Local Link
- Bus Feda Teoranta
- John McGinley
- McGeehan Coaches

Letterkenny, Ballybofey/Stranorlar and Lifford as well as the areas along the N13/N15 have a good level of public transport access, with the exception of the area along N14 which is not well covered. This generally reflects the dispersed settlements with low population levels along the N14.

Potential enhancements of public transport in the study area would include increased frequency and extended hours of operation for existing local/inter-city lines, as well as introducing dedicated bus corridors/lanes. The National Transport Authority (NTA) plans to introduce two new routes in Letterkenny with a bus every half hour in each direction. Whilst these are likely to increase usage of public transport locally within Letterkenny, the impact of mode-shift away from cars for inter-city travel that the Proposed Development caters for will likely be negligible. Currently, the bus service frequencies in the study area are at every 2-hours or more for various routes.[2] Since evidence points out that there won't be any significant increase in demand on inter-city routes due to the expected population growth, increasing the frequency of existing bus lines would be questionably feasible to make it an attractive alternative to car use. There would be other components on first mile and last mile connectivity from/to bus stops, the likely need for transfer between services, interchanges etc. to significantly attract people away from cars.

As part of the provision of new infrastructure with shorter travel times, park and ride provision helps address the first mile connectivity to make bus travel more attractive and promote mode transfer from car to bus.

[1] All Island Strategic Rail Review (https://www.gov.ie/en/department-of-transport/publications/all-island-strategic-rail-review/) looked at various options and recommended a single track between Derry and Letterkenny with an estimate of delivering it by 2050 at a cost of Euro 200-300 million in 2021 prices.

[2] https://bustimes.org/localities/letterkenny-donegal

6.3.6.2 Existing Active Travel Facilities

There is minimal infrastructure provision for active travel within the study area indicating that cyclists have to mix with general traffic on the roads into and around the study area. Survey data collected at various junctions in 2017 across the study area show that cyclists represented 0.01% of total traffic on average. This is influenced by many junctions along the National Roads that were surveyed where there were no observation of cyclists. The share of cyclists at few junctions surveyed in Letterkenny varied between 0% to 0.9%. Census 2022 data shows that cyclists cater for 0.5% of total commuters in County Donegal, 0.8% in Letterkenny, 1.2% in Lifford and 0.5% in Ballybofey-Stranorlar.[3] There is existing pedestrian provision in the urban areas of Ballybofey / Stranorlar, Letterkenny and Lifford. Census 2022 data shows people commuting to work on foot make up 6.1% of total commuters in County Donegal, 11.5% in Letterkenny, 10.6% in Lifford and 10.5% in Ballybofey-Stranorlar most of which are likely to be short distance trips within the settlements. Generally, throughout the study area there is poor provision for pedestrians and cyclists due to poor alignment characteristics and insufficient cross-section to safely accommodate non-motorised users.

6.3.6.3 Demand Management

Transport Demand Management programmes are primarily demand oriented to reduce car usage rather than supply oriented i.e. they attempt to manage/reduce people's travel by car rather than seeking to provide more physical capacity for travel (such as more roads). Transport Demand Management programmes can, however, complement supply-oriented programmes to increase active travel and/or public transport usage. An example would be where on-street parking availability is reduced as a demand management measure, and the space is reallocated to provide for cycle facilities or improved pedestrian environment or public transport priority. Demand Management measures investigated included:

- Land Use measures
- Counter commuting strategy
- Increased parking charges / levies
- Signals / Traffic Management
- On-street parking controls
- Flexible working
- Workplace / area wide mobility management plans

It was concluded that while these measures would be beneficial to some people, they are unlikely to affect the levels of strategic traffic that flow through the area and may result in longer journey times and strategic traffic using more unsuitable local and regional roads.

6.4 Baseline Traffic Assessment and Base Year Model Operation

6.4.1 Traffic Surveys

As an input to the traffic model, a programme of traffic surveys was undertaken in December 2017. The traffic surveys included Automatic Traffic Counts (ATC), Junction Turning Counts (JTC), Automatic Number Plate Recognition (ANPR) and Moving Car Observer (MCO) journey time data. A summary of the traffic survey data used within the development to the Proposed Development model is shown in Table 6-1. Full details of the traffic counts including locations are detailed in the Traffic Modelling Report in Appendix C6.01.

Data from the Transport Infrastructure Ireland (TII) Traffic Monitoring Unit (TMU) database was also collated for use. The TMU data provided information on the longer-term trends within the study area. The December 2017 traffic survey data was compared to longer term averages from the TMU database to confirm that it was suitable for use in the development of a traffic model of the study area.

[3] https://www.cso.ie/en/releasesandpublications/ep/p-cpp7/censusofpopulation2022profile7-employmentoccupationsandcommuting/commutingtowork/

In addition to the data collected in December 2017, a series of Road-side interviews (RSI) were conducted in April 2018 along with associated link MCC and ATC. Road-side interviews requested information on journey origin location and time as well as return time, journey purpose and vehicle type.

Table 6-1: Traffic Survey Data Collection

Survey Type	Number of Locations	Date of Survey
ATCs	26	ATCs carried out between the 29 November and the 12 December 2017. One site was resurveyed between 7 and the 20 December.
MCC Junction Turning Counts (JTC)	28	07:00-19:00 on 5 December 2017.
ANPR	12	07:00-19:00 on 5 December 2017
MCO Journey Times	3	07:00-10:00, 12:00-14:00 and 16:00-19:00 on 5 December 2017.

Journey time data was also procured from TomTom for five major routes across the area of interest. Data on speeds and timings for vehicles was obtained. This data was collected over the entire month of October 2017. Data was recorded between 7 am and 10 am and between 3 pm and 7 pm for Tuesday to Thursday. These routes were then able to cover seven of the eight ANPR validation routes used in the Phase 2 stage of the study. There was also a diversion in place in Letterkenny Town Centre which disrupted the collection of data for one of the routes and hence was deemed unusable. In addition to TomTom and ANPR data, journey times using Moving Car Observer (MCO) were collected in December 2017 for two routes in Letterkenny (Figure 2.4 of TMR). Data for these two routes through Letterkenny were unaffected by roadwork disruption and therefore provided valuable information for validation along the route where there was road work disruption and a large increase in journey times during the TomTom data collection. An advantage of the TomTom data over ANPR data is the guarantee of route choice.[4]

A summary of the additional data used for the Phase 3 model is given in Table 6-2.

Table 6-2: Traffic Survey Data Collection

Survey Type	Number of Locations	Date of Survey
RSIs	Eight	Two weeks beginning 11 April 2018 07:00 - 10:00, 12:00 - 14:00 & 16:00 - 19:00
ATCs	Eight	Two weeks coinciding with RSI Dates
MCC	Eight	Coincides with RSI Dates
TomTom	Five Routes	October 2017

[4] Tom Tom (https://www.tomtom.com/traffic-index/about/) is one of multiple providers that travel time data for specific timeframes can be procured from. Other providers include INRIX, Teletrac Navman, HERE etc. Other free map-based sources such as Google maps, Bing maps, Apple maps provide travel time information based on historic trends, but cannot be procured for specific timeframes.

6.4.2 Base Year Model Performance Results

A total of 185 MCC links flows and 66 ATC link flows were used for the model calibration process. The MCC links flows were either the approach or exit flows on the arms of junctions. There is a good match between the model and observed flow counts in all time periods for all vehicles as shown below in Table 6-3.

Table 6-3: Link Flow Calibration Summary - All Vehicles

	Total Counts	AM		IP		PM	
		Counts with Flow or GEH Pass	% Pass	Counts with Flow or GEH Pass	% Pass	Counts with Flow or GEH Pass	% Pass
MCC Links	185	165	89%	162	88%	158	85%
ATCs	66	61	92%	63	95%	61	92%
All Count Totals	251	226	90%	225	90%	219	87%

In addition, there is a close match between the surveyed and modelled flows at key checkpoints across all time periods modelled.

Overall, the model performs well against PAG criteria. This means that the base model, representing 2017 conditions, will provide a suitable basis for forecasting future year demand and network operation.

The models were validated against observed journey times along fourteen routes (seven route per direction). The model validated across all routes in the AM peak hour and twelve routes each in the average Interpeak hour and the PM peak hour satisfying the PAG criteria for journey time validation.

Overall, the calibration and validation of the model demonstrates that it meets the PAG criteria for the purpose of appraising the Proposed Development.

6.4.3 Future Year Network Development

6.4.3.1 Do-Minimum Network

As noted above, the future year Do-Minimum network includes the existing road network plus any committed infrastructure to assess the cumulative impact prior to the scheme being assessed. A series of committed infrastructure schemes have been added to the Do-Minimum modelled network in the future year scenarios, based on consultation with Donegal County Council. The committed infrastructure schemes included in the future year models are shown in Table 6-4.

Table 6-4: Committed Schemes Included in Future Year Model

Name of Scheme	Completion Date	Description
Joe Bonnar Link Road	Prior to 2028	Small Link Road, also connecting Port Road to Neil T Blaney Rd, Signalised Junction at Neil T Blaney Road. Priority Junction at Port Road.
Polestar Junction	Prior to 2028	Junction Signalisation
Justice Walsh Junction	Prior to 2028	Junction signalisation.

Name of Scheme	Completion Date	Description
Town Centre Circulation - One Way System	Prior to 2028	Two-way roads become one-way circulatory as part of public realm improvement.
N56 Four Lane Road – Safety Improvement Scheme	Completed	Introduction of 60 kph speed limit, central median and on demand pedestrian crossings between Pole Star and Dry Arch roundabouts.
N56 Letterkenny Urban Active Travel Project	Before 2032	Revised Junction arrangement and signalisation of existing Ballyraine Roundabout and Creamery Roundabout. Active travel and road reallocation.
ATU Development	Before 2032	New signalised junction (including pedestrian crossing).
Kilmacrennan Road	Before 2032	Active Travel and reallocated road space. Removal of right-hand turning lanes. Signalised pedestrian crossings.
Convent Road	2025	Pedestrian signalised crossing

6.4.3.2 Do-Something Network

The Do-Something network includes proposed upgrades to the highway network for Sections 1, 2 and 3. The proposed network interventions included within the Do-Something model of the Proposed Development are:

- **Section 1:** A bypass to the west of Ballybofey, with link roads to the N15 at the south of Ballybofey and to the N13 at the north of Stranorlar.
- **Section 2:** A new roundabout will be provided on the N13 to the east of Dry Arch. New connection between N13 and N56 at Ballyraine in Letterkenny. This section also includes a dual carriageway upgrade along N13 between Dry Arch and N14, the closure of N13 Link south of Dry Arch and a new link road between Listillion and the N13.
- **Section 3:** An offline dual carriageway link between Pluck roundabout at Manorcunningham and the N15 near Lifford. The new dual carriageway will connect to the N15 via a roundabout and will include a grade separated junctions with the R236, at Drumcairn and Ballindrait.

The Proposed Development has been coded into the Do-Something model in order to enable a comparison with the operation of the Do-Minimum network to assess the cumulative traffic impact of the Proposed Development.

6.4.3.3 Forecast Demand

Zone-based growth rates were applied across the National Traffic Model (NTpM) zone structure using growth factors from TII website in line with PAG guidance. These growth rates account for the growth in population and economic activity. The modelled zones were matched to their NTpM counterpart and factors for Central, Low and High growth were calculated. These were then applied to the base demand for all internal zones. For external zones, an average growth factor was applied. This average was calculated using all zones outside a cordon on the area of interest. Light vehicles and heavy vehicles were treated separately. Interpolation was used to determine factors for 2017 to each future year. In line with the guidance, no growth was assumed past 2050.

These factors were then applied and furnessed to give the final demand matrices. Furnessing is a process by which trips are dispersed across zones to balance the trips for origin and destination zones across the network. In this way, the matrix is a better representation of a future year matrix.

The central growth, low growth, and high growth demand matrix totals for each of the forecast years are presented in Table 6-5, Table 6-6 and Table 6-7.

Table 6-5: 2017 Baseline and 2032 Demands (PCUs)

Matrix	2017	2032					
		Low		Central		High	
AM Peak Car	33,178	38,184	15.09%	38,691	16.62%	39,459	18.93%
AM Peak LGV	5,582	6,421	15.03%	6,503	16.50%	6,624	18.67%
AM Peak HGV	4,511	6,917	53.34%	7,104	57.48%	7,513	66.55%
Inter Peak Car	28,241	31,454	11.38%	31,870	12.85%	32,767	16.03%
Inter Peak LGV	3,785	4,212	11.28%	4,273	12.89%	4,407	16.43%
Inter Peak HGV	4,069	6,204	52.47%	6,372	56.60%	6,744	65.74%
PM Peak Car	39,227	45,264	15.39%	45,871	16.94%	46,792	19.29%
PM Peak LGV	6,051	6,998	15.65%	7,094	17.24%	7,256	19.91%
PM Peak HGV	3,851	5,784	50.19%	5,938	54.19%	6,278	63.02%

Table 6-6: 2017 Baseline and 2047 Demands (PCUs)

Matrix	2017	2047					
		Low		Central		High	
AM Peak Car	33,178	41,327	24.56%	42,438	27.91%	44,898	35.32%
AM Peak LGV	5,582	6,980	25.04%	7,157	28.22%	7,547	35.20%
AM Peak HGV	4,511	8,589	90.40%	9,070	101.06%	10,508	132.94%
Inter Peak Car	28,241	33,523	18.70%	34,276	21.37%	36,618	29.66%
Inter Peak LGV	3,785	4,467	18.02%	4,576	20.90%	4,928	30.20%
Inter Peak HGV	4,069	7,678	88.70%	8,109	99.29%	9,415	131.38%
PM Peak Car	39,227	48,977	24.86%	50,327	28.30%	53,260	35.77%
PM Peak LGV	6,051	7,553	24.82%	7,775	28.49%	8,261	36.52%
PM Peak HGV	3,851	7,104	84.47%	7,504	94.86%	8,680	125.40%

Table 6-7: 2017 Baseline and 2062* Demands (PCUs)

Matrix	2017	2062					
		Low		Central		High	
AM Peak Car	33,178	41,983	26.54%	43,239	30.32%	46,348	39.69%
AM Peak LGV	5,582	7,097	27.14%	7,297	30.72%	7,788	39.52%
AM Peak HGV	4,511	9,022	100.00%	9,577	112.30%	11,465	154.16%
Inter Peak Car	28,241	33,944	20.19%	34,776	23.14%	37,685	33.44%
Inter Peak LGV	3,785	4,518	19.37%	4,638	22.54%	5,070	33.95%
Inter Peak HGV	4,069	8,060	98.08%	8,559	110.35%	10,257	152.08%
PM Peak Car	39,227	49,744	26.81%	51,278	30.72%	54,997	40.20%
PM Peak LGV	6,051	7,666	26.69%	7,923	30.94%	8,539	41.12%
PM Peak HGV	3,851	7,447	93.38%	7,909	105.38%	9,457	145.57%

Table 6-8 summarises the daily baseline active modes trips across all three sections for various journey purposes. The analysis undertaken reveals that more domestic leisure trips are undertaken by active modes in comparison to education and commuting across a 500-metre buffer corridor established around the Proposed Development.

Table 6-8: Daily Cycling and Pedestrians Trips Across all Three Sections by Journey Purpose

Journey Purpose	Daily Cycling Trips	Daily Pedestrian Trips
Commuting	54	772
Education	26	818
Domestic leisure	127	2,291
Tourism – domestic visitors	29	520
Tourism - international visitors	109	1,964
Total daily trips	345	6,365

6.4.3.4 Traffic Impact Assessment

Model Performance

The cumulative impact of the forecast demand on the highway network with the committed transport schemes and Proposed Development were assessed through the transport model. The convergence of the future year models has been assessed. This is to ensure that the model converges under the higher flows in the future year scenarios. This is a necessary step in ensuring that the future year models assess the impact of the Proposed Development and are not unduly affected by modelled impacts that are considered unlikely to be as a result of the proposed improvements.

The statistics demonstrate that the forecast models satisfy all PAG convergence criteria in all scenarios.

Further analysis was undertaken to determine the impact of the proposed network schemes. The following statistics give a clear (and broad) overview of the model and the network performance:

- Network statistics including total travel time, total travel distance, and average speed
- Journey times
- Traffic flow AADTs

Sensitivity tests with high and low growth scenarios were also carried out. These tests were carried out in accordance with PAG Unit 5.3 Section 3.

Additional sensitivity tests including the A5 WTC were conducted, and these models were assessed in the same way.

Total Network Statistics

Network statistics were extracted from the forecast traffic models for each of the growth scenarios and a comparison was made against the Do-Minimum scenario. The key network statistics comprise the following:

- Total Network Travel Time (PCU-hrs) for all vehicles
- Total Network Delay (PCU-hrs) for all vehicles
- Average Vehicle Speed (km/hr)

Statistics showing the overall network performance are shown in Table 6-9. The data indicates that the Do-Something scenario has lower travel times and higher average speeds in all time periods. Total travel times increase in the later year scenarios due to the higher levels of demand present in these models. Therefore, the impact of the scheme when considering Total Network Statistics is **Positive.**

Table 6-9: Network Performance Summary Statistics

Statistic	Time Period	Do-Minimum			Do-Something		
		2032	2047	2062	2032	2047	2062
Total Travel Time (PCU Hrs)	AM	8,124	8,879	9,224	7,466	8,220	8,565
	IP	5,765	6,158	6,318	5,376	5,782	5,938
	PM	9,294	10,042	10,405	8,672	9,373	9,632
Total Travel Distance (PCU KMs)	AM	311,113	346,108	354,117	318,898	352,823	361,175
	IP	243,948	270,108	276,391	245,908	272,767	279,286
	PM	337,079	375,223	383,003	343,414	382,261	390,685
Average Speed (KPH)	AM	38.3	39.0	38.4	42.7	42.9	42.2
	IP	42.3	43.9	43.7	45.7	47.2	47.0
	PM	36.3	37.4	36.8	39.6	40.8	40.6
Total Trips Loaded	AM	52,129	58,475	59,919	52,129	58,475	59,919
	IP	42,343	46,771	47,779	42,343	46,771	47,779
	PM	58,725	65,405	66,903	58,725	65,405	66,903

Journey Times

The operation of the Do-Minimum and Do-something networks have been assessed for the journey time routes shown in Figure 6-5.

Comparisons were made using identical routes in both the Do-Minimum and Do-Something scenarios. A second comparison was made where alternative routes using the scheme sections were used to travel between the same start and end points.

Route 7 is excluded from the identical routes tables as the route used is not possible in the Do-Something model, due to a road closure.

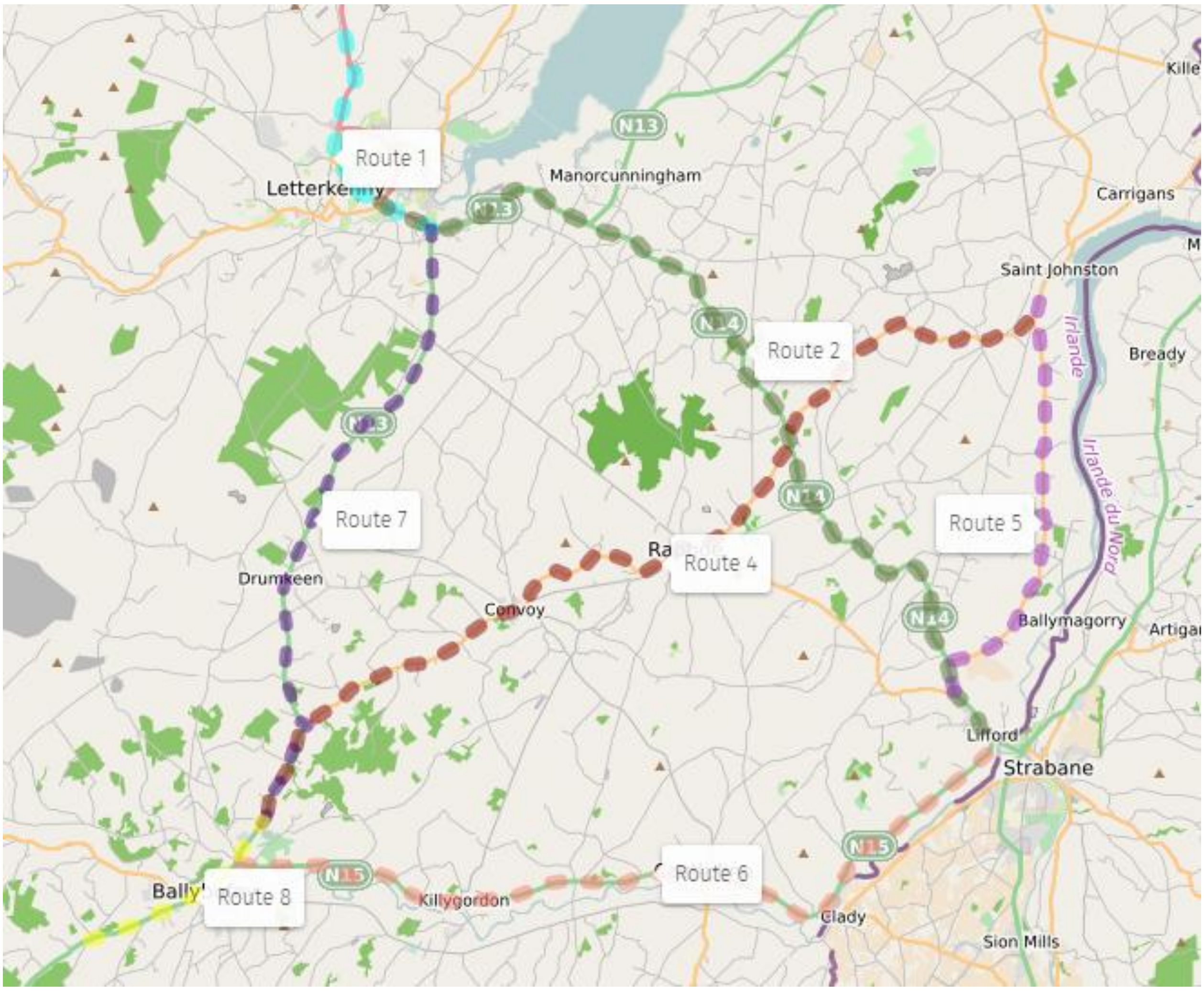

Figure 6-5: Journey Time Routes

The results in Table 6-10 show improvements across these important routes in the Do-Something case. The largest gains are Route 2 NB and Route 8. Route 2 NB in AM peak carries commuters into Letterkenny and so with the relief of the scheme this reduces congestion in this direction leading to the travel time savings shown. South bound traffic is less congested in AM peak and so there is a slight increase in time due to the extra roundabouts at the northern part of this route.

The Route 8 through Ballybofey gains from the reduction in congestion as vehicles use the Section 1 of the scheme.

Table 6-10: AM Peak Journey Times (Identical Routes)

Route		Do--Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2032	2047	2062
1	**NB**	17:04	16:08	16:32	15:47	14:19	14:37	- 01:17	- 01:49	- 01:55
	SB	23:04	21:38	22:32	20:42	19:54	20:11	- 02:21	- 01:43	- 02:21
2	**NB**	29:06	25:18	26:22	22:26	21:51	21:48	- 06:40	- 03:27	- 04:34
	SB	19:57	20:16	20:14	20:33	20:19	20:20	00:36	00:04	00:06
4	**NB**	29:51	29:56	30:01	29:08	29:01	29:05	- 00:43	- 00:55	- 00:56
	SB	30:03	30:09	30:13	29:28	29:32	29:41	- 00:35	- 00:37	- 00:32
5	**NB**	12:19	12:18	12:21	12:18	12:15	12:17	- 00:02	- 00:03	- 00:04
	SB	12:20	12:30	12:30	12:20	12:30	12:30	00:00	00:00	00:00
6	**NB**	19:52	20:06	20:07	19:30	19:40	19:41	- 00:22	- 00:26	- 00:26
	SB	20:00	20:06	20:10	19:46	19:53	19:56	- 00:14	- 00:13	- 00:13
8	**NB**	12:35	12:43	12:57	08:45	08:46	08:50	- 03:50	- 03:56	- 04:07
	SB	11:41	12:01	12:09	08:35	08:36	08:45	- 03:06	- 03:25	- 03:24

Journey times for the interpeak modelled period are shown in Table 6-11. The data demonstrates that the Proposed Development provides journey time benefits across most routes. Route 2 has a slight increase in journey time and Route 5 shows no real difference.

Table 6-11: Interpeak Journey Times (Identical Routes)

Route		Do-Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2062	2047	2062
1	**NB**	14:04	14:25	14:27	13:10	13:13	13:16	- 00:53	- 01:12	- 01:10
	SB	14:22	14:05	14:02	13:03	12:43	12:46	- 01:19	- 01:22	- 01:16
2	**NB**	20:22	20:29	20:32	19:43	19:36	19:37	- 00:40	- 00:53	- 00:56
	SB	19:45	19:49	19:50	20:08	20:08	20:09	00:23	00:19	00:19
4	**NB**	29:18	29:20	29:20	28:50	28:49	28:46	- 00:28	- 00:31	- 00:33
	SB	29:43	29:49	29:43	29:18	29:21	29:19	- 00:25	- 00:29	- 00:24
5	**NB**	12:15	12:17	12:17	12:15	12:15	12:15	- 00:01	- 00:01	- 00:02
	SB	12:12	12:12	12:13	12:12	12:12	12:13	00:00	00:00	00:00
6	**NB**	19:46	19:52	19:55	19:28	19:32	19:34	- 00:19	- 00:20	- 00:22
	SB	20:16	20:27	20:28	19:57	19:59	19:59	- 00:20	- 00:29	- 00:30
8	**NB**	11:26	11:34	11:41	08:36	08:36	08:34	- 02:50	- 02:58	- 03:07
	SB	11:48	11:53	11:56	08:51	08:52	08:51	- 02:57	- 03:02	- 03:05

Table 6-12 shows the modelled journey time for the PM peak. As with the other time periods, the Proposed Development provides a journey time benefit across all routes except Route 2 where there is a small increase in journey time.

Table 6-12: PM Peak (16:45-17:45) Journey Times (Identical Routes)

Route		Do-Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2032	2047	2062
1	**NB**	21:46	27:36	28:17	20:22	25:02	25:37	- 01:24	- 02:34	- 02:40
	SB	17:16	17:31	18:18	17:41	14:43	14:48	00:25	- 02:48	- 03:30
2	**NB**	21:02	21:22	21:10	20:14	19:52	19:55	- 00:47	- 01:30	- 01:15
	SB	20:14	20:35	20:26	20:48	20:35	20:36	00:34	00:00	00:10
4	**NB**	29:44	29:48	29:58	29:03	29:01	29:01	- 00:41	- 00:47	- 00:57
	SB	30:01	30:07	30:12	29:28	29:29	29:28	- 00:32	- 00:38	- 00:44
5	**NB**	12:27	12:29	12:29	12:22	12:22	12:23	- 00:05	- 00:07	- 00:06
	SB	12:32	13:32	13:41	12:32	13:32	13:41	00:00	00:00	00:00
6	**NB**	19:55	20:03	20:06	19:36	19:49	19:52	- 00:18	- 00:13	- 00:14
	SB	20:08	20:18	20:20	20:00	20:05	20:07	- 00:09	- 00:13	- 00:13
8	**NB**	12:05	12:47	13:03	08:35	08:35	08:34	- 03:30	- 04:12	- 04:29
	SB	11:57	11:52	11:53	08:35	08:38	08:38	- 03:22	- 03:14	- 03:15

Each of the three improvement sections considered contribute to the journey time benefits delivered by the Proposed Development. The largest journey time improvements arising from the Proposed Development occur through Ballybofey and Stranorlar. These benefits occur as the twin towns are bypassed in the Do-Something scenario.

The other main location of journey time benefits are the routes that pass through or near to the Dry Arch roundabout. The Section 2 improvement provides a bypass of Dry Arch roundabout, these leads to a reduction in delay at Dry Arch. This reduction in delay causes traffic to reassign from the surrounding local routes, such as the L1114, back onto the strategic routes through Dry Arch and onto the new Letterkenny link road. This reassignment of traffic leads to further decongestion benefits for the local road network in the vicinity of the Section 2 improvement.

Alternative Routes via Scheme sections

For a more realistic assessment of the impact comparison, the routes are compared to any alternative routes via the Proposed Development sections. Here the origins and destinations are preserved but, in the Do-Something case the scheme could be used as opposed to sticking to an identical (existing) route.

Table 6-13 to Table 6-15 Table 6-15show that in all time periods, Route 2, that was not improving when followed exactly, is improved by using the new scheme. All routes are improved except Route 7 which is much longer due to the road closure and use of the section 2 scheme.

Overall, when considering journey time savings, across all sections of the scheme for AM peak, interpeak and PM peak there is an improvement in journey times and therefore the scheme has a **Positive** impact in terms of traffic journey times.

Table 6-13: AM Peak (08:15-09:15) Journey Times (Alternative Routes)

Route		Do-Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2032	2047	2062
1	**NB**	17:04	16:08	16:32	11:34	11:13	11:30	- 05:30	- 04:55	- 05:02
	SB	23:04	21:38	22:32	19:30	17:23	18:02	- 03:33	- 04:14	- 04:30
2	**NB**	29:06	25:18	26:22	20:57	20:00	19:56	- 08:09	- 05:19	- 06:26
	SB	19:57	20:16	20:14	18:00	17:49	17:48	- 01:57	- 02:27	- 02:25
4	**NB**	29:51	29:56	30:01	29:08	29:01	29:05	- 00:43	- 00:55	- 00:56
	SB	30:03	30:09	30:13	29:28	29:32	29:41	- 00:35	- 00:37	- 00:32
5	**NB**	12:19	12:18	12:21	12:18	12:15	12:17	- 00:02	- 00:03	- 00:04
	SB	12:20	12:30	12:30	12:20	12:30	12:30	00:00	00:00	00:00
6	**NB**	19:52	20:06	20:07	19:30	19:40	19:41	- 00:22	- 00:26	- 00:26
	SB	20:00	20:06	20:10	19:46	19:53	19:56	- 00:14	- 00:13	- 00:13
7	**NB**	13:01	13:07	13:06	13:22	13:23	13:25	00:22	00:16	00:20
	SB	12:53	16:06	16:54	14:17	14:10	14:11	01:23	- 01:56	- 02:43
8	**NB**	12:35	12:43	12:57	07:10	07:10	07:11	- 05:24	- 05:32	- 05:46
	SB	11:41	12:01	12:09	06:32	06:32	06:32	- 05:09	- 05:29	- 05:37

Table 6-14: Interpeak (Average 12:00-14:00) Journey Times (Alternative Routes)

Route		Do-Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2032	2047	2062
1	**NB**	14:04	14:25	14:27	09:47	09:48	09:50	- 04:17	- 04:37	- 04:37
	SB	14:22	14:05	14:02	10:05	10:06	10:08	- 04:17	- 03:59	- 03:54
2	**NB**	20:22	20:29	20:32	17:51	17:47	17:47	- 02:31	- 02:42	- 02:45
	SB	19:45	19:49	19:50	17:37	17:36	17:37	- 02:08	- 02:13	- 02:13
4	**NB**	29:18	29:20	29:20	28:50	28:49	28:46	- 00:28	- 00:31	- 00:33
	SB	29:43	29:49	29:43	29:18	29:21	29:19	- 00:25	- 00:29	- 00:24
5	**NB**	12:15	12:17	12:17	12:15	12:15	12:15	- 00:01	- 00:01	- 00:02
	SB	12:12	12:12	12:13	12:12	12:12	12:13	00:00	00:00	00:00
6	**NB**	19:46	19:52	19:55	19:28	19:32	19:34	- 00:19	- 00:20	- 00:22
	SB	20:16	20:27	20:28	19:57	19:59	19:59	- 00:20	- 00:29	- 00:30
7	**NB**	12:33	12:43	12:44	12:59	13:02	13:03	00:26	00:19	00:19
	SB	12:57	13:13	13:29	13:59	14:03	14:05	01:03	00:50	00:35
8	**NB**	11:26	11:34	11:41	07:10	07:11	07:11	- 04:16	- 04:24	- 04:30
	SB	11:48	11:53	11:56	06:31	06:32	06:32	- 05:16	- 05:22	- 05:24

Table 6-15: PM Peak (16:45-17:45) Journey Times (Alternative Routes)

Route		Do-Minimum			Do-Something			Difference		
		2032	2047	2062	2032	2047	2062	2032	2047	2062
1	NB	21:46	27:36	28:17	19:03	22:04	22:41	- 02:43	- 05:32	- 05:36
	SB	17:16	17:31	18:18	13:48	11:31	11:40	- 03:28	- 06:00	- 06:38
2	NB	21:02	21:22	21:10	18:45	18:03	18:04	- 02:17	- 03:19	- 03:05
	SB	20:14	20:35	20:26	18:17	18:00	18:01	- 01:57	- 02:34	- 02:25
4	NB	29:44	29:48	29:58	29:03	29:01	29:01	- 00:41	- 00:47	- 00:57
	SB	30:01	30:07	30:12	29:28	29:29	29:28	- 00:32	- 00:38	- 00:44
5	NB	12:27	12:29	12:29	12:22	12:22	12:23	- 00:05	- 00:07	- 00:06
	SB	12:32	13:32	13:41	12:32	13:32	13:41	00:00	00:00	00:00
6	NB	19:55	20:03	20:06	19:36	19:49	19:52	- 00:18	- 00:13	- 00:14
	SB	20:08	20:18	20:20	20:00	20:05	20:07	- 00:09	- 00:13	- 00:13
7	NB	12:50	13:13	13:12	13:08	13:13	13:15	00:18	00:01	00:02
	SB	14:29	17:18	17:55	14:45	14:34	14:36	00:16	- 02:44	- 03:18
8	NB	12:05	12:47	13:03	07:11	07:11	07:12	- 04:54	- 05:35	- 05:51
	SB	11:57	11:52	11:53	06:32	06:32	06:32	- 05:25	- 05:21	- 05:21

6.4.4 Future Daily Traffic Flows (AADT)

Figure 6-6 to Figure 6-14 show AADTs and % OGVs for the Do-Minimum network in the Design years of 2032 and 2047. Traffic flows and % OGVs for the Do-Something networks, are shown in Figure 6-15 to Figure 6-23.

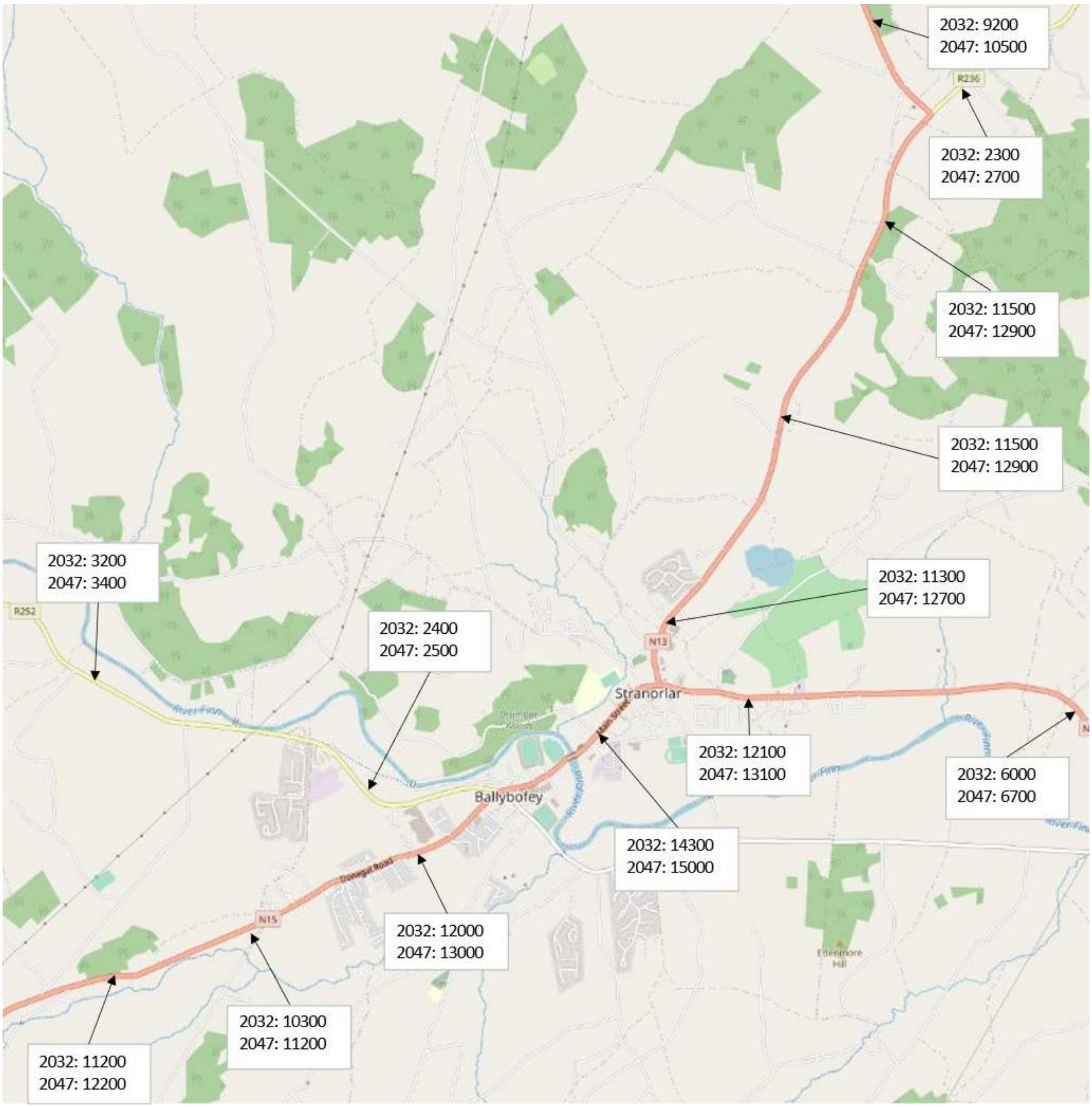

Figure 6-6: Ballybofey/Stranorlar Do-Minimum 2032 & 2047 Traffic Flows (AADT)

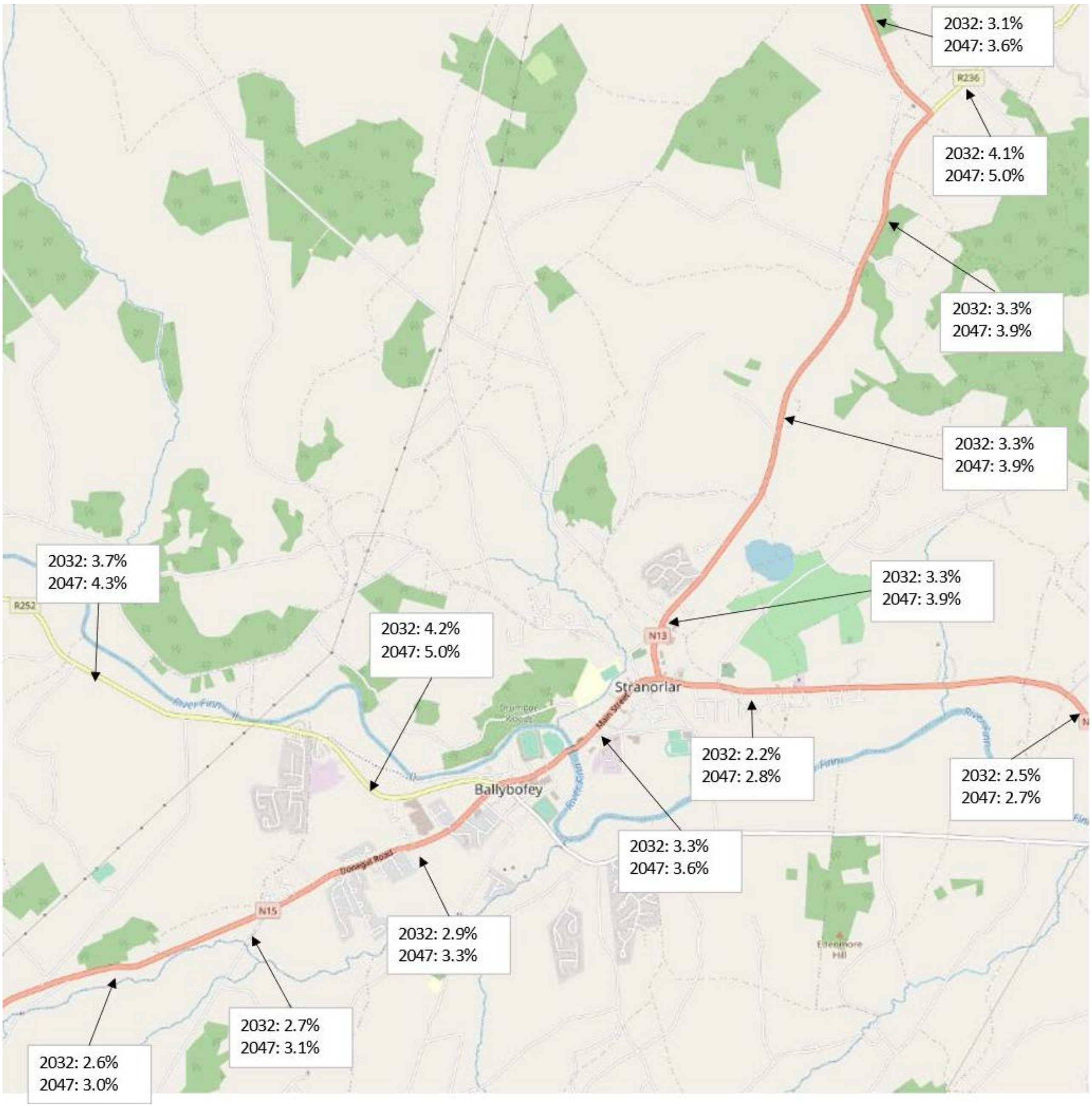

Figure 6-7 :Ballybofey/Stranorlar Do-Minimum 2032 & 2047 OGV1 %

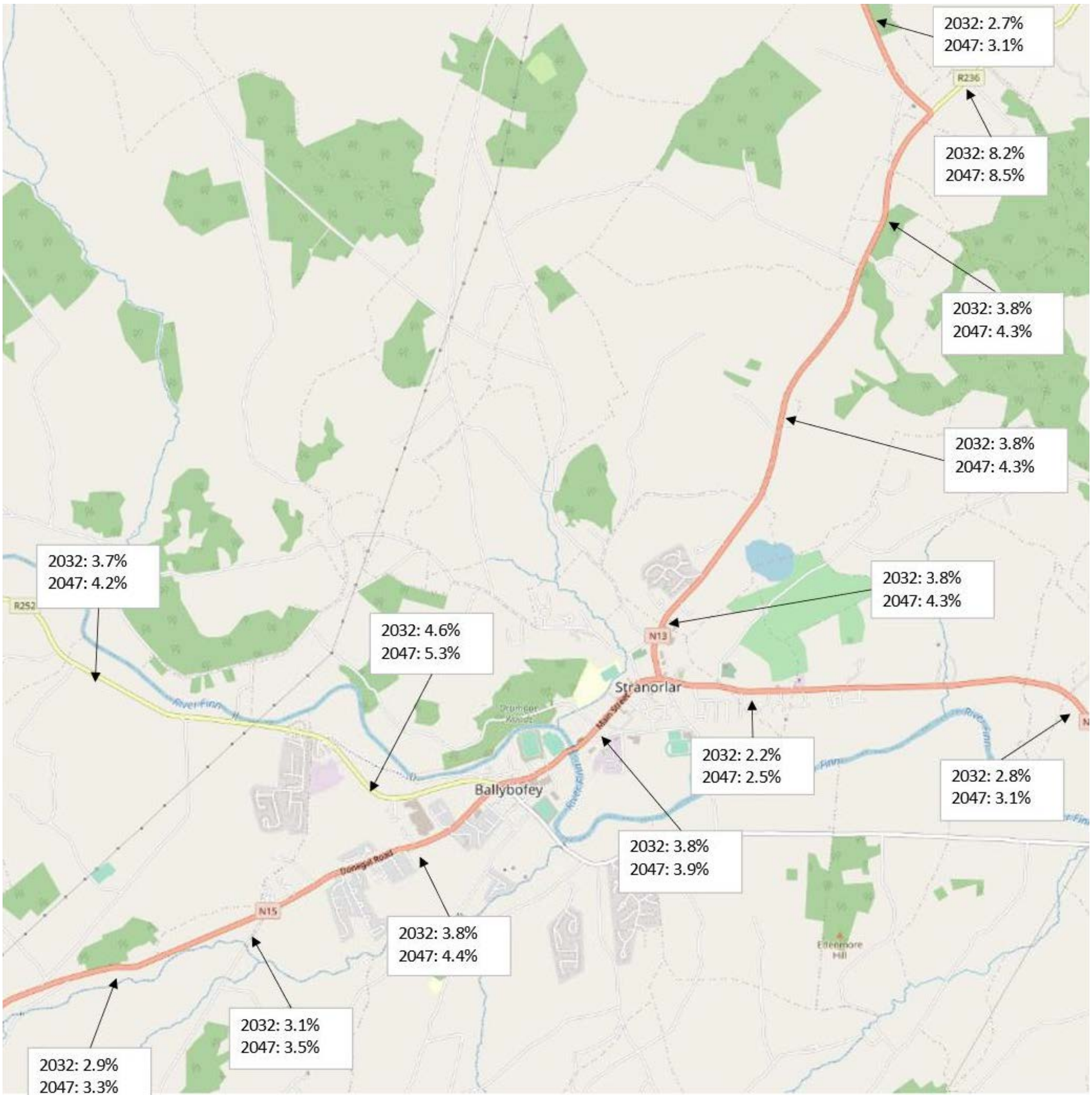

Figure 6-8: Ballybofey/Stranorlar Do-Minimum 2032 & 2047 OGV2 %

Figure 6-9: Letterkenny Do-Minimum 2032 & 2047 Traffic Flows (AADT)

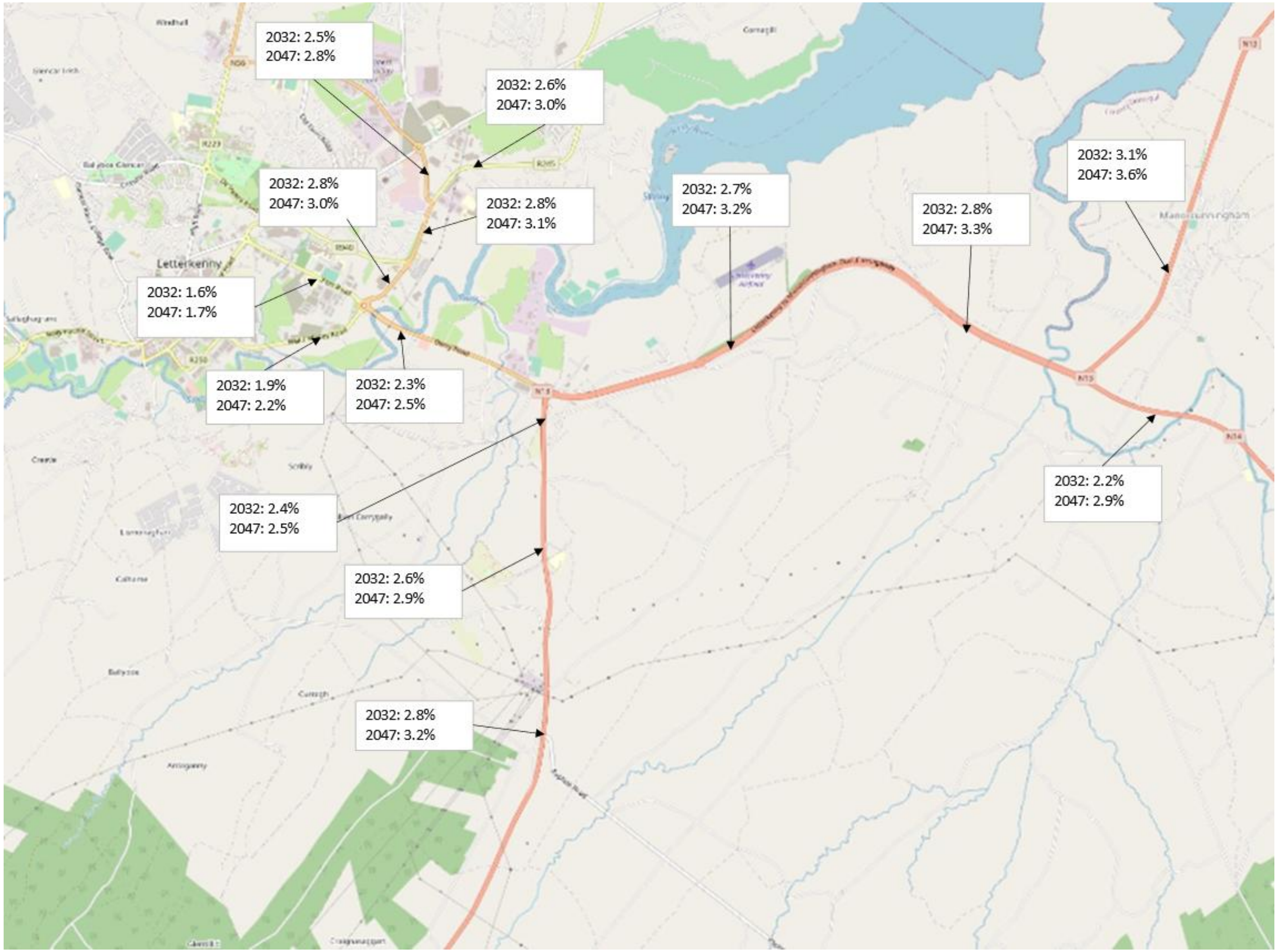

Figure 6-10: Letterkenny Do-Minimum 2032 & 2047 OGV1 %

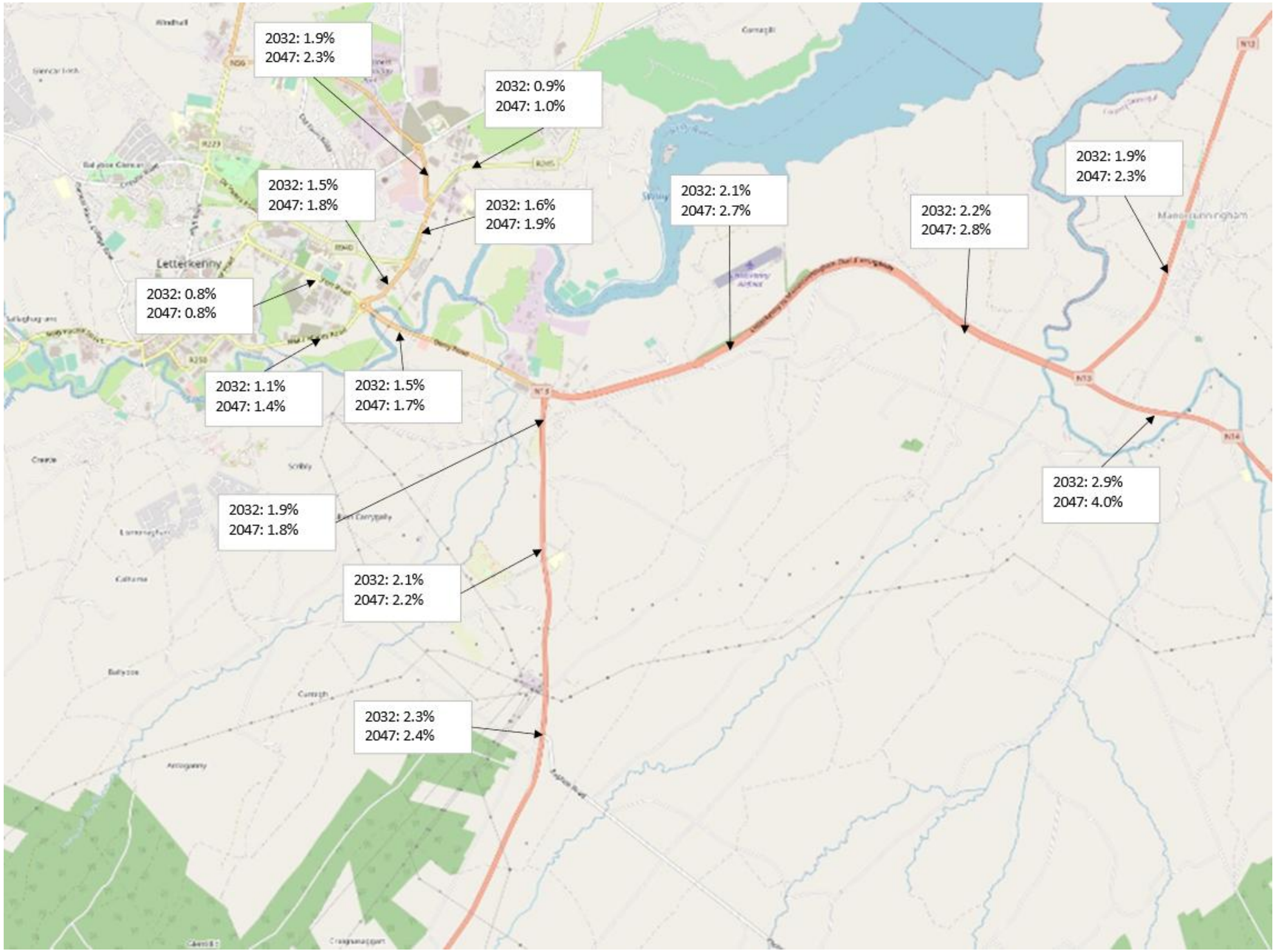

Figure 6-11: Letterkenny Do-Minimum 2032 & 2047 OGV2 %

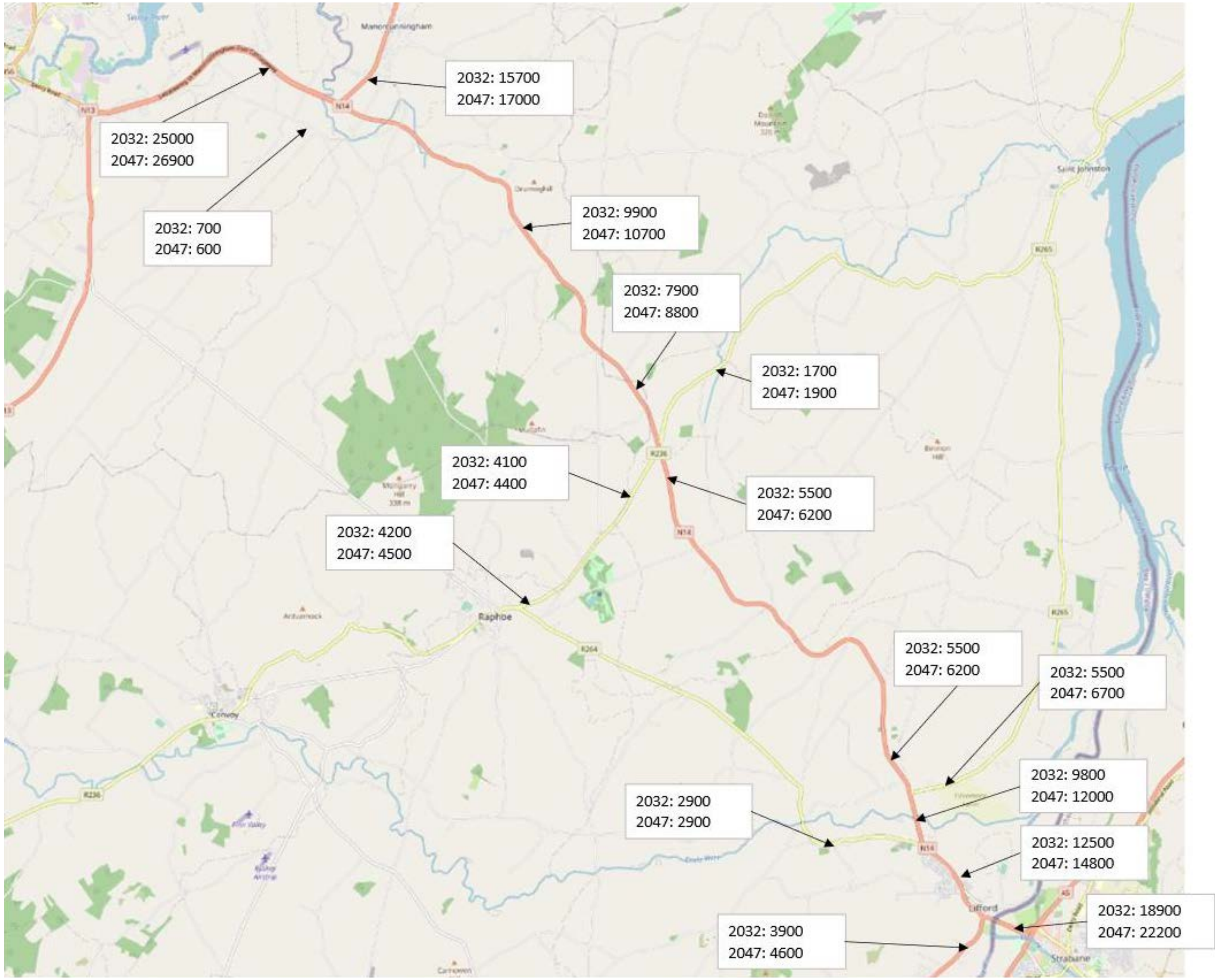

Figure 6-12: N14 Do-Minimum 2032 & 2047 Traffic Flows (AADT)

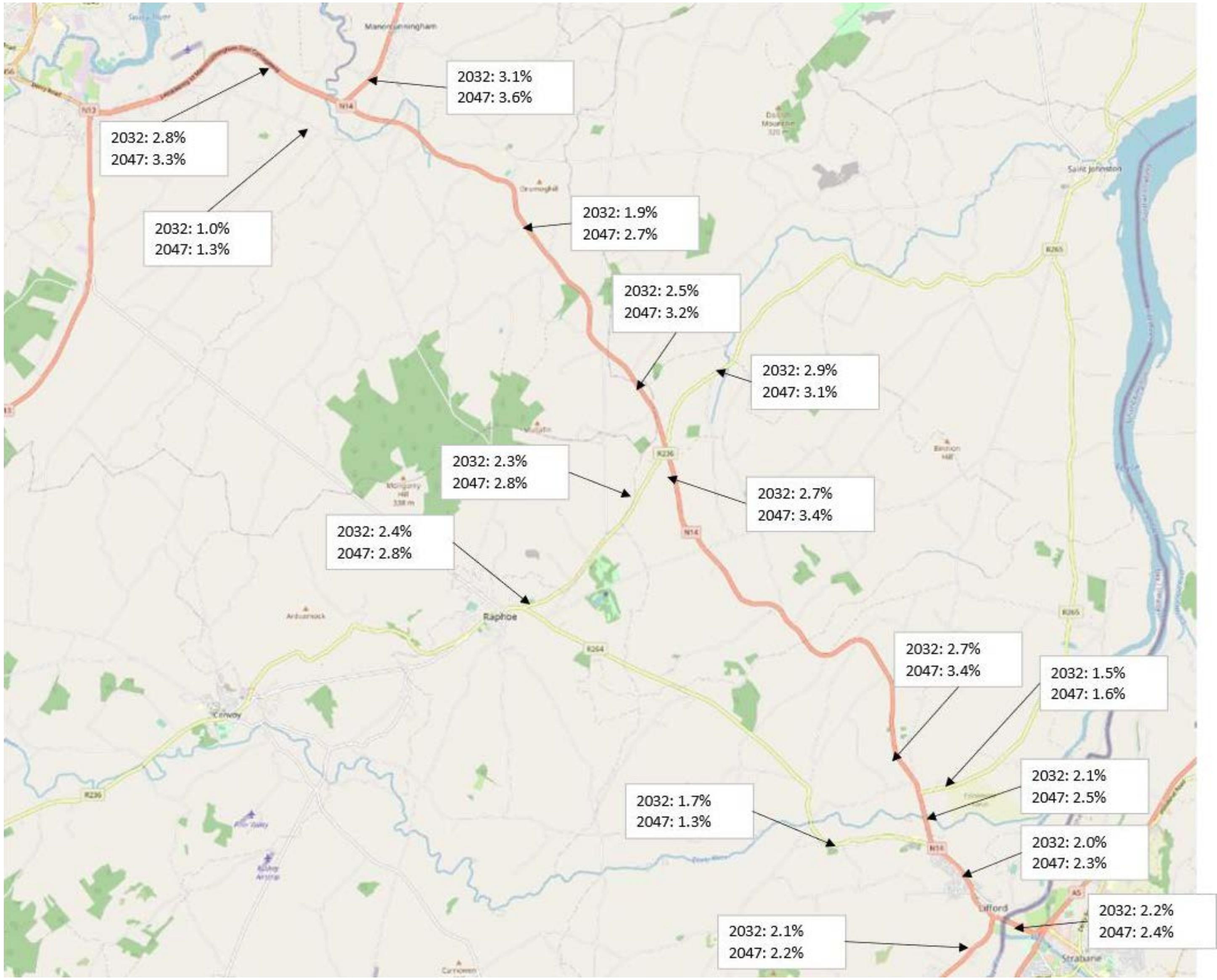

Figure 6-13: N14 Do-Minimum 2032 & 2047 OGV1 %

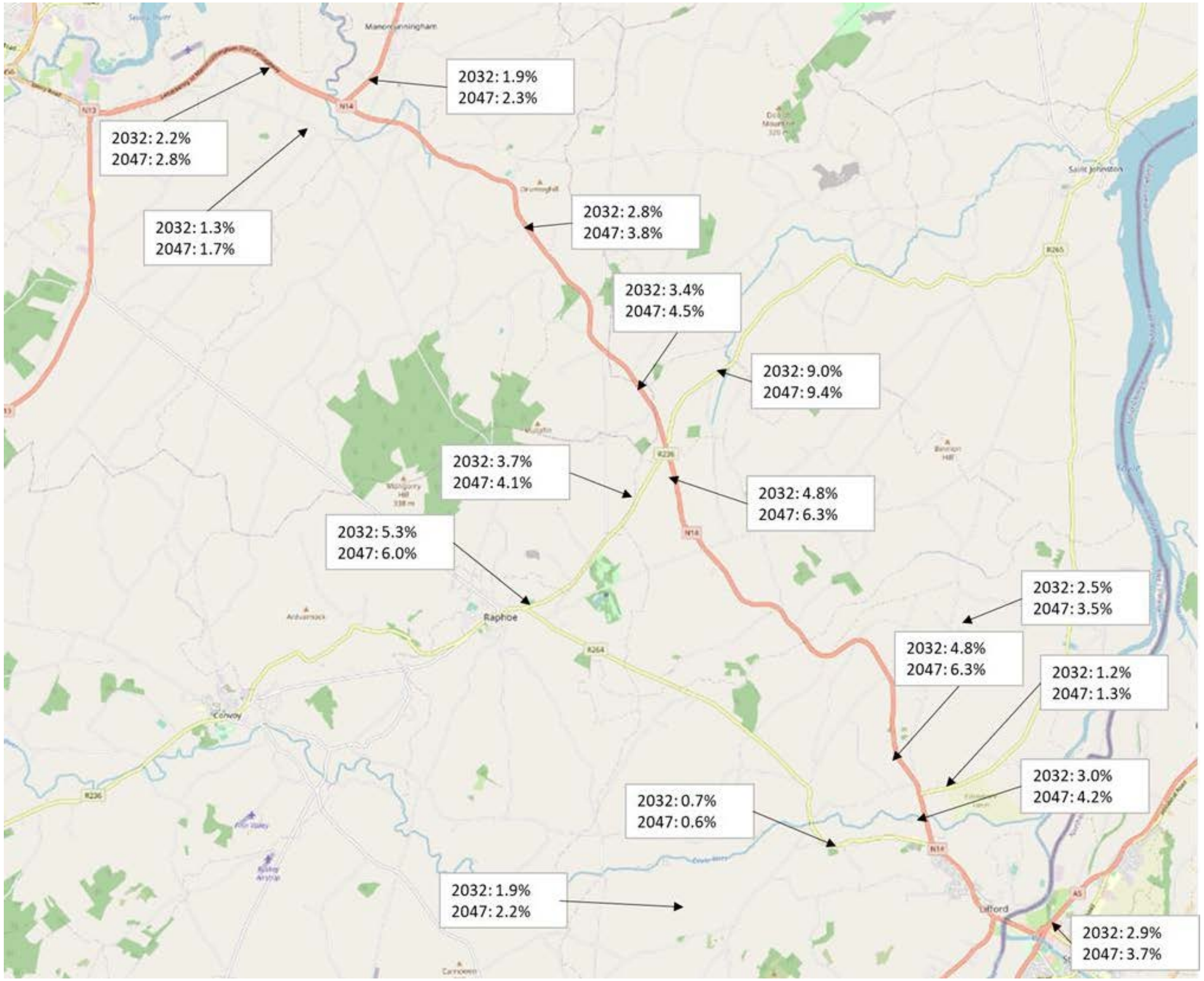

Figure 6-14: N14 Do-Minimum 2032 & 2047 OGV2 %

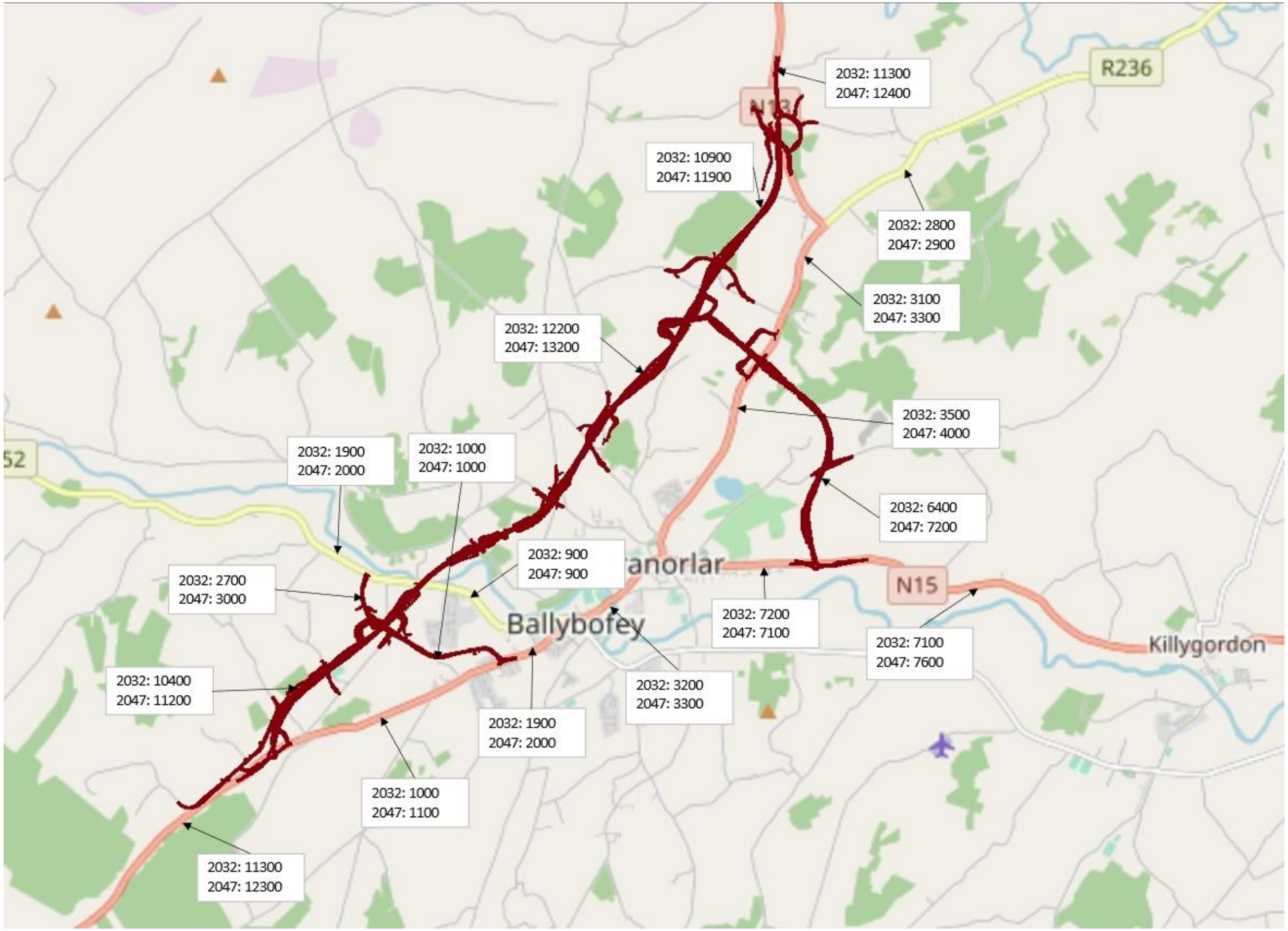

Figure 6-15: Ballybofey/Stranorlar Do-Something 2032 & 2047 Traffic Flows (AADT)

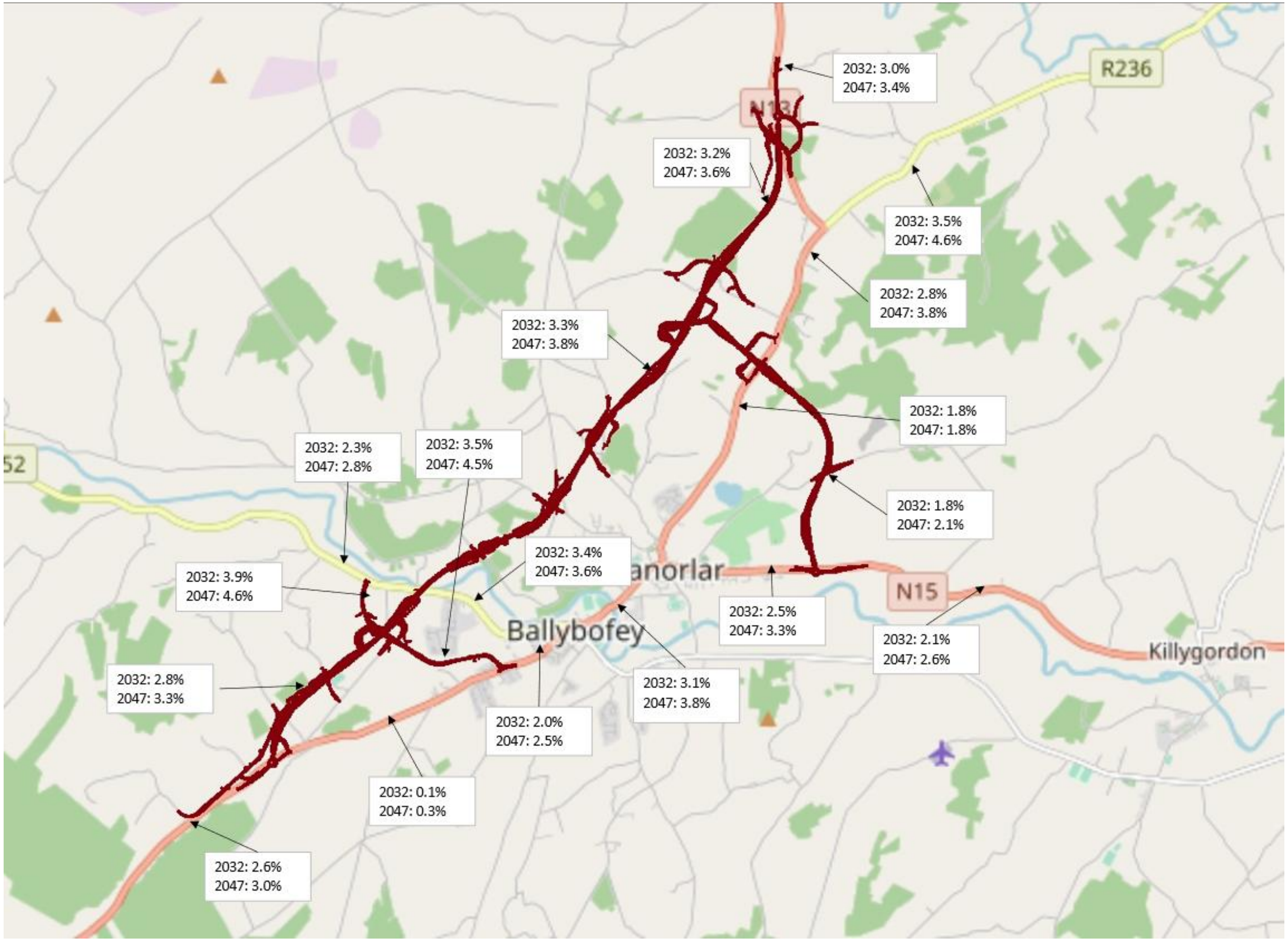

Figure 6-16: Ballybofey/Stranorlar Do-Something 2032 & 2047 OGV1 %

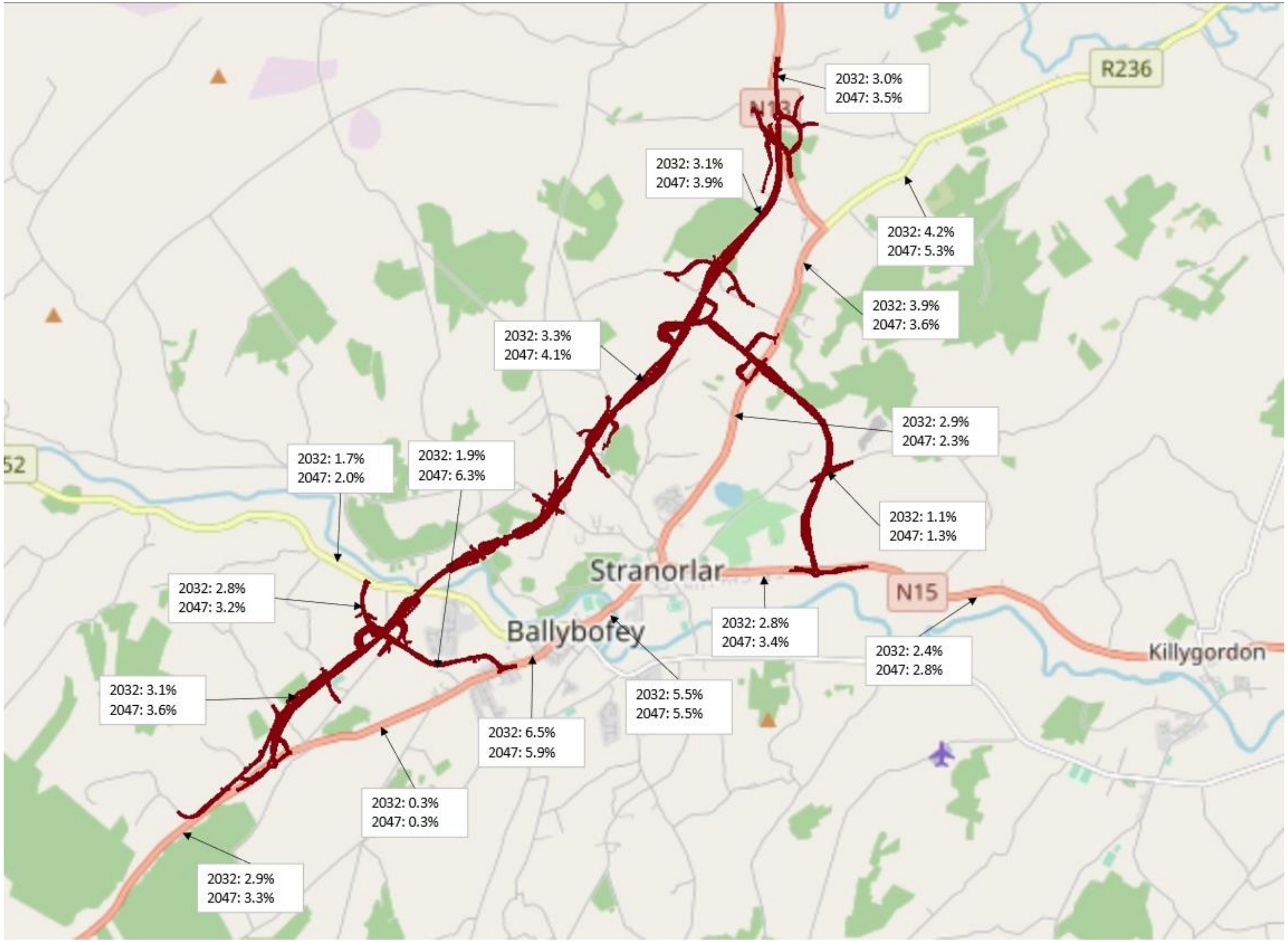

Figure 6-17: Ballybofey/Stranorlar Do-Something 2032 & 2047 OGV2 %

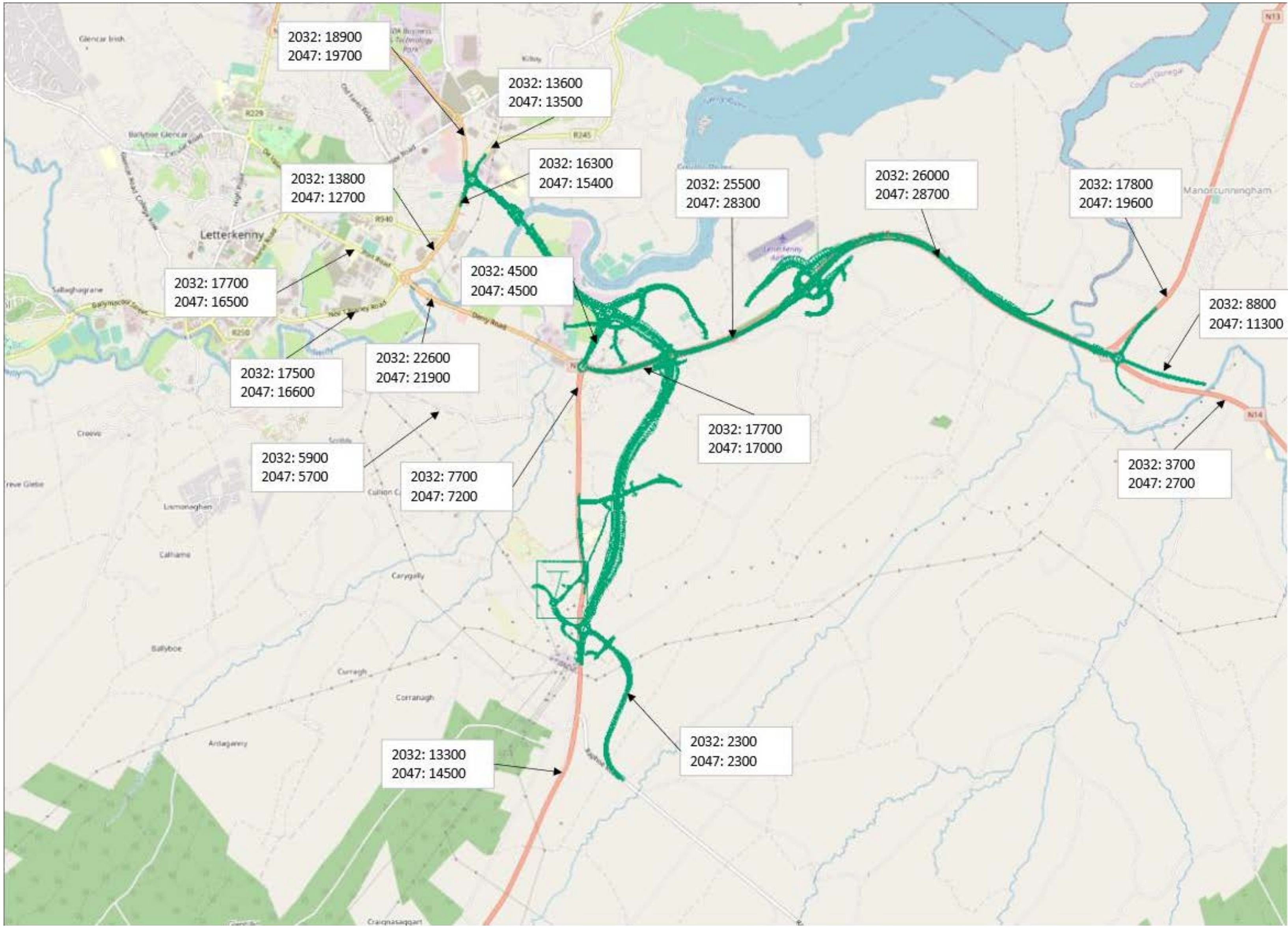

Figure 6-18: Letterkenny Do-Something 2032 & 2047 Traffic Flows (AADT)

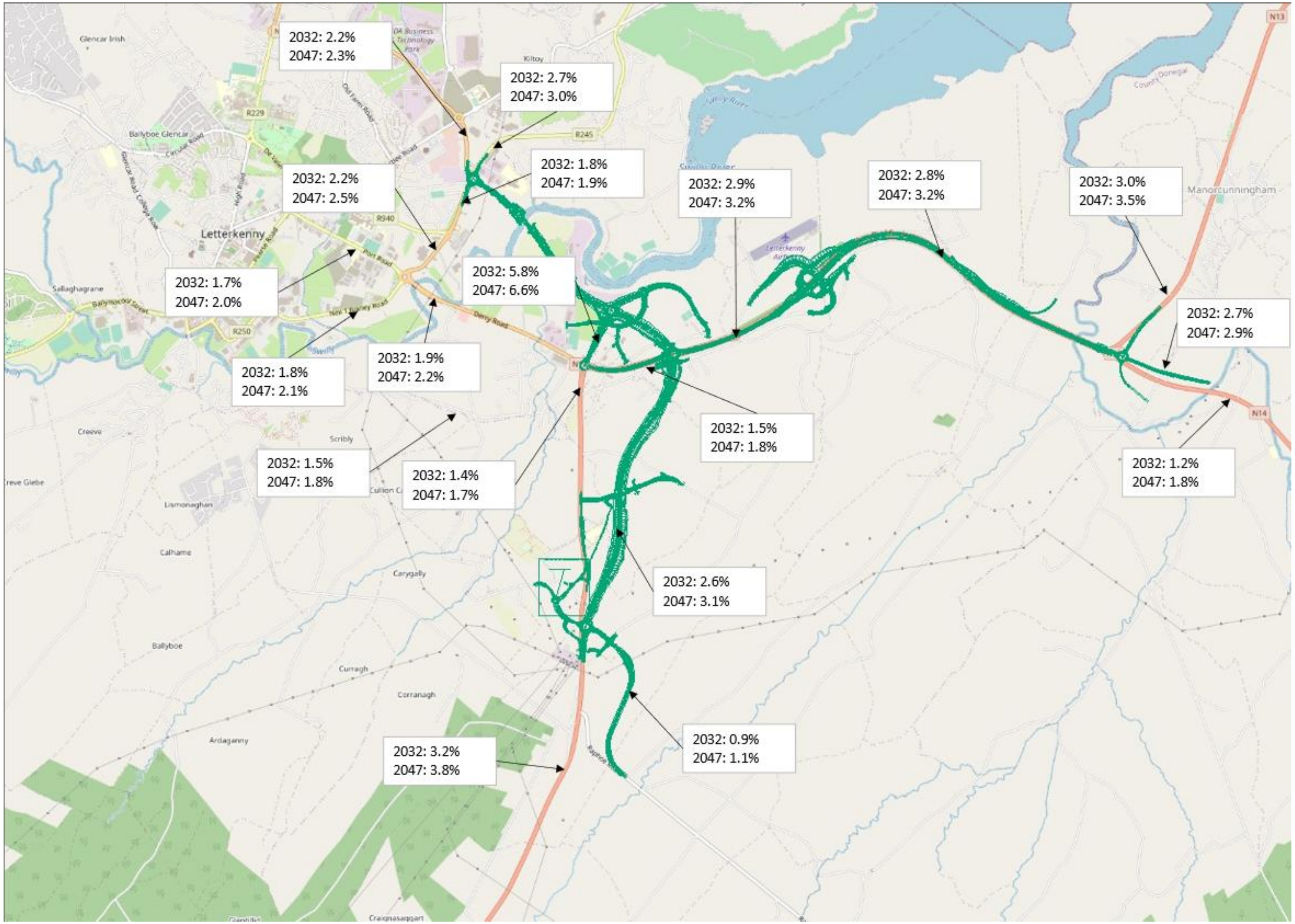

Figure 6-19: Letterkenny Do-Something 2032 & 2047 OGV1 %

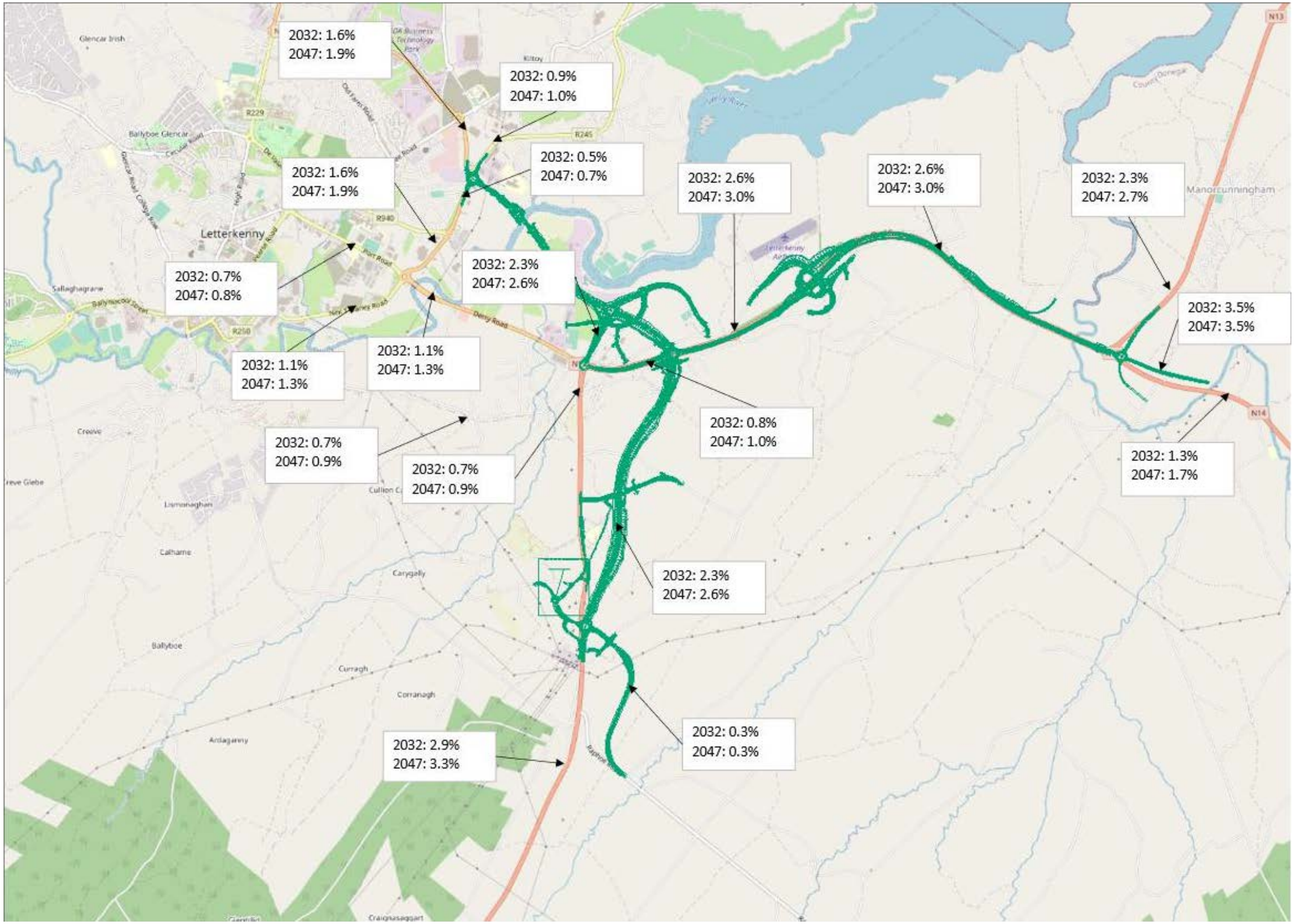

Figure 6-20: Letterkenny Do-Something 2032 & 2047 OGV2 %

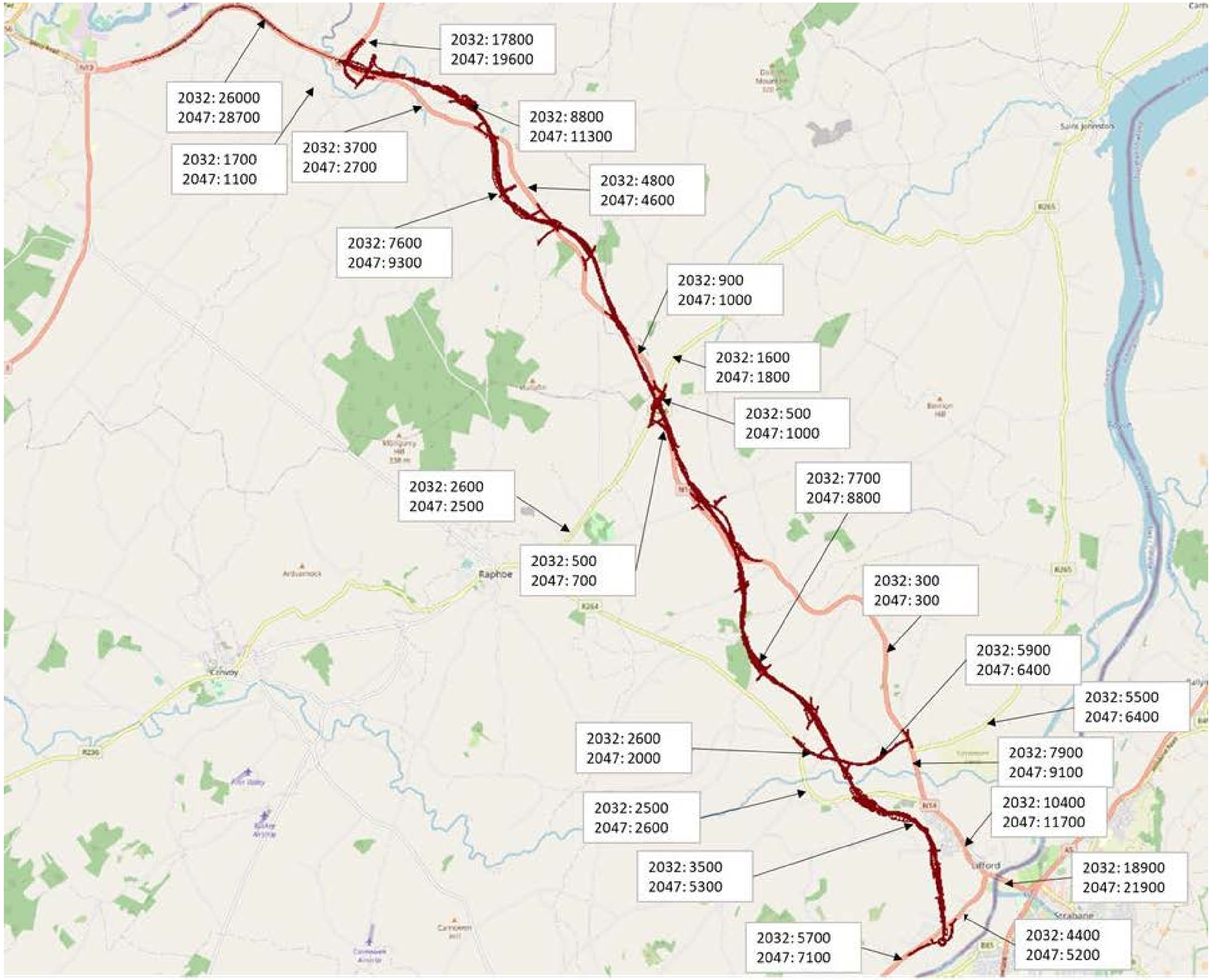

Figure 6-21: N14 Do-Something 2032 & 2047 Traffic Flows (AADT)

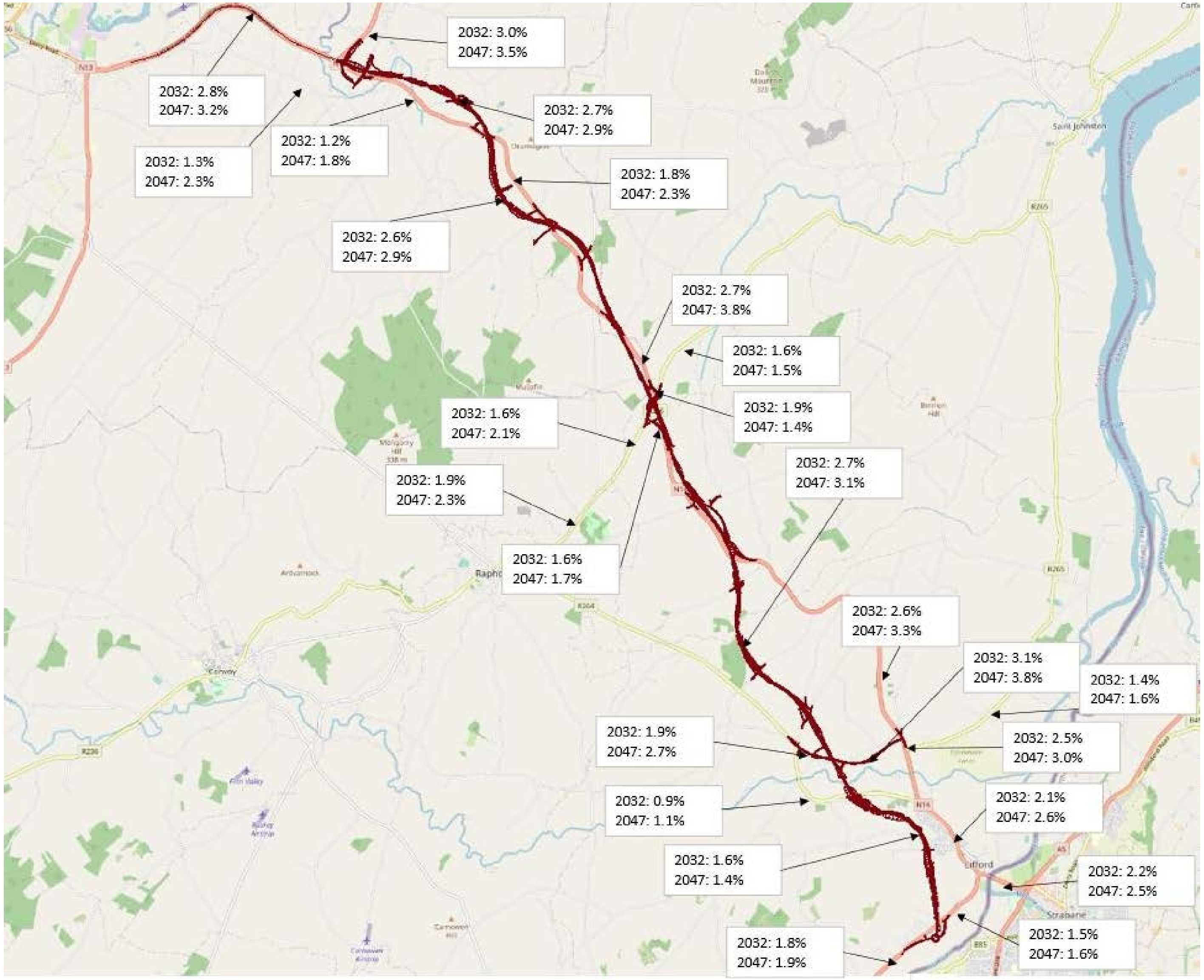

Figure 6-22: N14 Do-Something 2032 & 2047 OGV1 %

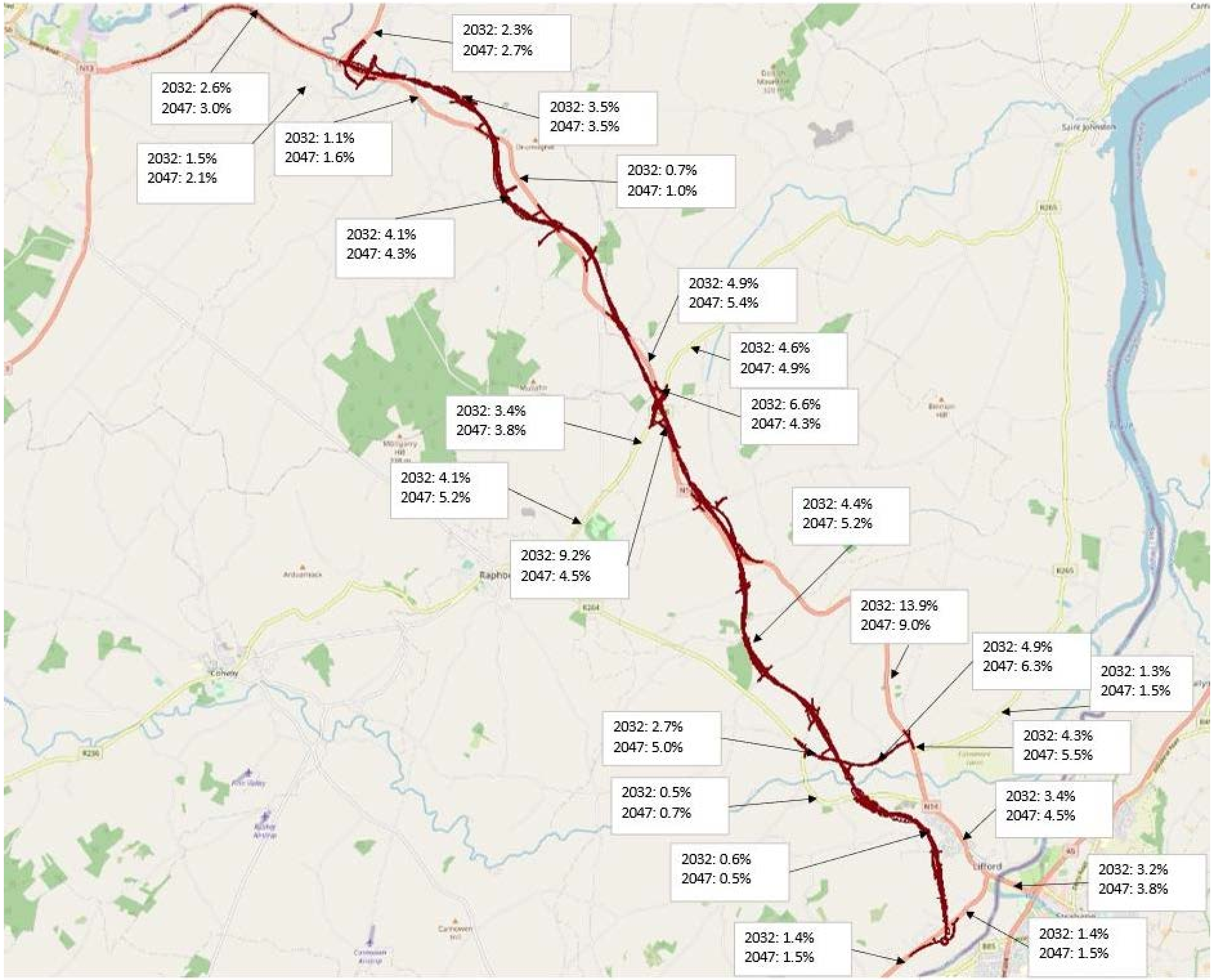

Figure 6-23: N14 Do-Something 2032 & 2047 OGV2 %

A comparison of Figure 6-6 to 6-14 compared with 6-15 to Figure 6-23 show that significant traffic reassigns from existing routes to use the new infrastructure. In particular, the following reassignment has been identified in the Do-Something network:

- **Section 1:** From the existing N15 and N13 at Ballybofey to the new bypass. The AADT on the new bypass is approximately 10,400 vehicles in 2032 and 11,200 vehicles in 2047, attracting 91% of traffic from the existing route.
- **Section 2:** At the four-lane road between Pole Star and Dry Arch, the forecast AADT in 2032 drops from 39,500 in the Do-Minimum to 22,600 in the Do-Something whilst in 2047, the AADT drops from 42,000 in the Do-Minimum to 21,900 in the Do-Something. This results in a reduction of up to 48% demand as traffic diverts to the new section.
- **Section 3:** The proposed new dual carriageway attracts traffic from the existing N14. At the northern end of the new route, the AADT is forecast to be around 8,800 vehicles in 2032 and 11,300 vehicles in 2047, attracting between 70% to 80% of the total demand across the new and existing route.

To forecast the future demand for active travel, case study evidence from the UK, Ireland and EU was used to establish the uplift factors for walking and cycling across the various journey purposes. Based on the nature of the Proposed Development, certain sections providing better linkages to amenities such as schools, leisure facilities, will receive higher uplift factors.

The future demand shown in Table 6-16 represents the demand associated with Do-Something scenario resulting from the delivery of proposed active mode infrastructure. It should be noted that the future demand is derived through a mode shift occurring from vehicular traffic to walking and cycling, as opposed to wider catchment area being adopted as a result of the new scheme provision. To establish the future demand, the same baseline demand corresponding to the 500-metre buffer described in the baseline demand section has been assumed. The uplift factors based on case study evidence have then been applied to that baseline demand.

Table 6-16: Future Daily Cycling and Pedestrians Trips Across all Three Sections by Journey Purpose

Journey Purpose	Daily Cycling Trips	Daily Pedestrian Trips
Commuting	90	1,247
Education	39	1,202
Domestic leisure	217	3,532
Tourism – domestic visitors[5]	29	520
Tourism – international visitors[6]	109	1,964
Total daily trips	484	8,465

[5] It should be noted that this figure is the same as the baseline demand value for tourists. This represents a conservative approach where no growth in visitor numbers has been estimated.

[6] It should be noted that this figure is the same as the baseline demand value for tourists. This represents a conservative approach where no growth in visitor numbers has been estimated.

6.4.5 Sensitivity Tests

Sensitivity tests were undertaken in line with PAG to assess the likely implications of variations in growth forecasts on the traffic impacts and mitigation requirements. The sensitivity tests undertaken were for Low and High growth scenarios and an additional A5 WTC sensitivity.

6.4.5.1 A5 WTC Sensitivity

The A5 Western Transport Corridor (A5 WTC) is a Northern Ireland Executive led scheme which will provide 85 kilometres of dual carriageway from south of Derry at New Buildings to the Republic of Ireland border at Aughnacloy linking to the N2. It will improve links between the urban centres in the west of the province (Strabane, Newtownstewart, Omagh, Ballygawley and Aughnacloy) at Aughnacloy. Given the uncertainty around the A5 WTC, in discussions with DCC and TII, a sensitivity test was undertaken with the A5 WTC scheme coded in both the DM and DS networks and the models run for the central growth demand scenario. No additional changes in demand have been considered as part of this sensitivity test.

A comparison of the network performance of the A5 WTC sensitivity test against the central growth scenario is given in Table 6-17 It shows that with the A5 WTC in both the DM and DS, the network travel times reduce in all model scenarios and forecast years due to people choosing to travel along longer but faster routes. This is reflected in the increase in total pcu-kms and average network speeds. However, the changes (with A5 WTC) in both the DM and DS against the central growth scenario are broadly similar indicating the presence of the A5 WTC in both the DM and DS networks does not likely add further improvements to the overall network performance brought about by the Donegal TEN-T Priority Road Improvement Project scheme. Details of the sensitivity test is discussed in Traffic Modelling Report (included in Appendix C6.01).

Table 6-17: Comparison of Network Summary Statistics Between A5 WTC Sensitivity Test and Central Growth

Statistic	Time Period	Do-Minimum			Do-Something		
		2032	2047	2062	2032	2047	2062
Total Travel Time (PCU Hrs)	AM	-2.8%	-4.6%	-4.9%	-6.2%	-7.0%	-7.5%
	IP	-3.0%	-2.7%	-2.8%	-4.6%	-4.4%	-4.8%
	PM	-4.5%	-5.7%	-5.4%	-6.5%	-7.6%	-7.5%
Total Travel Distance (PCU KMs)	AM	6.3%	7.4%	7.1%	3.1%	3.8%	3.9%
	IP	3.3%	3.9%	4.0%	3.0%	3.3%	3.4%
	PM	5.1%	5.0%	5.1%	4.3%	3.6%	3.7%
Average Speed (kph)	AM	9.4%	12.7%	12.6%	9.9%	11.6%	12.2%
	IP	6.6%	6.8%	7.0%	8.0%	8.0%	8.6%
	PM	10.0%	11.3%	11.1%	11.5%	12.1%	12.1%
Total Trips Loaded	AM	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	IP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	PM	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

6.4.6 Forecast Accident Analysis

6.4.6.1 Approach

An assessment of the forecast safety benefits of the project (for a default 30-year appraisal period) has been undertaken using the Ireland version of the Cost and Benefit to Accidents – Light Touch (COBA-LT) software. The Phase 3 Route Selection safety assessment has been undertaken using COBA-LT Version TII 2015.01 of the program (developed by TII) in accordance with the TII PAG 2016. The accident analysis is based on a comparison of collisions and their severity between the without scheme and with scheme options using details of link characteristics, collision rates, casualty costs and project traffic flows. The collision rates for different road types and the costs per casualty set out in PAG are used in the program. The COBA-LT assessment method relates to the traffic on roads and does not generate separate output for non-motorised users.

Modelled traffic volumes across the study area were extracted from the SATURN AM Peak Hour, Inter Peak and PM Peak Hour traffic models and were extrapolated to the AADT flows required for input to the COBA-LT assessment. The approach surrounding factoring of the modelled traffic volumes to AADT levels is set out in the Traffic Modelling Report prepared as part of Phase 3.

The safety assessment has been undertaken utilising a combination of observed accident rates where data was available and the default rates included with the COBALT program for the remaining links.

6.4.6.2 COBA-LT Economic Summary Results

The economic summary over the 30-year appraisal period (2032-2061) predicted by the COBA-LT assessment for the Proposed Development is presented in Table 6-18 to Table 6-20. Results are presented for central growth, low growth, and high growth scenarios with savings of €22 million plus in the central and low growth scenario and €24 million plus in the high growth scenario.

Table 6-18: Central Growth Collision Costs

Central Growth	€ 000's
Without Scheme	493,710.50
With Scheme	470,874.60
Costs savings as a result of the Scheme	22,835.90

Table 6-19: Low Growth Collision Costs

Low Growth	€ 000's
Without Scheme	475,963.00
With Scheme	453,585.20
Costs savings as a result of the Scheme	22,377.80

Table 6-20: High Growth Collision Costs

High Growth	€ 000's
Without Scheme	536,902.60
With Scheme	512,766.30
Costs savings as a result of the Scheme	24,136.30

COBA-LT Collision Results Summary Option

The number of collisions during the 30-year appraisal period predicted by the COBA-LT assessment for the Proposed Development is presented in Table 6-21 to Table 6-23. Results are presented for central growth, low growth, and high growth scenarios.

Table 6-21: Central Growth Collision Counts

Central Growth	Collisions
Without Scheme	9,745.80
With Scheme	9,151.60
Collisions Saved by Scheme	594.20

Table 6-22: Low Growth Collision Counts

Low Growth	Collisions
Without Scheme	9,367.00
With Scheme	8,793.00
Collisions Saved by Scheme	574.00

Table 6-23: High Growth Collision Counts

High Growth	Collisions
Without Scheme	10,713.90
With Scheme	10,055.30
Collisions Saved by Scheme	658.60

COBA-LT Casualty Results Summary Option

The severity of collisions during the 30-year appraisal period predicted by the COBA-LT assessment for the Proposed Development is presented in Table 6-24 to Table 6-26. Results are presented for central growth, low growth, and high growth scenarios.

As the casualties are based on the traffic flows on various link types and vehicle-kms travelled, the low growth scenario (which has the lowest traffic volumes and vehicles-kms amongst the scenarios assessed) has the lowest causalities followed by the central growth and high growth scenarios.

Table 6-24: Central Growth Casualties Counts

Central Growth	Severity	Casualty Count
Without Scheme	Fatal	198
	Serious	631.50
	Slight	13,697.00
With Scheme	Fatal	191.7
	Serious	594.60
	Slight	12,874.50
Casualties Saved by Scheme	Fatal	6.3
	Serious	36.9
	Slight	822.50

Table 6-25: Low Growth Collision Counts

Low Growth	Severity	Casualty Count
Without Scheme	Fatal	190.6
	Serious	607.20
	Slight	13,165.60
With Scheme	Fatal	184.4
	Serious	571.40
	Slight	12,370.20
Casualties Saved by Scheme	Fatal	6.3
	Serious	35.8
	Slight	795.30

Table 6-26: High Growth Collision Counts

High Growth	Severity	Casualty Count
Without Scheme	Fatal	215.9
	Serious	692.40
	Slight	15,050.90
With Scheme	Fatal	209.7
	Serious	652.40
	Slight	14,142.60
Casualties Saved by Scheme	Fatal*	6.2
	Serious	40
	Slight	908.30

* *The difference in fatalities saved is very similar to other scenarios although the absolute values are different. The total casualties saved by the scheme does not follow a linear corelation as it depends on traffic routeing through the network in response to congestion*.

COBA-LT Overall

The economic summary shows that there is a benefit of €22.3 million (low growth), €22.8 million (central growth) and €24.1 million (high growth) over the 30-year appraisal period. This benefit comes from the reduction in collisions, both in number and in severity, afforded by the scheme. The total number of collisions is reduced by 574 (low growth), 594 (central growth) and 659 (high growth) across the 30-year appraisal period. The number of fatal collisions is reduced by around 6 in all the scenarios.

In all cases and metrics, except for the fatalities saved in the high growth scenario, the benefits increase in line with the growth seen.

Therefore, the scheme has a **Positive** impact in terms of accident reduction.

6.4.7 Benefit of the Road Projects for Sustainable Transport Modes

The Proposed Development includes three key section-based improvements, which are shown below in Figure 6-24.

Section 1 aims to deliver active mode infrastructure improvements in form of a segregated active travel network (shared use cycleway/pedestrian walkways) on N13 and N15 corridor through Ballybofey and Stranorlar. The proposals aim to improve active mode connectivity to Letterkenny in the north by linking into existing infrastructure and proposed improvements around Section 2. The proposed infrastructure also aims to bring about step change in active mode connectivity across education, health and other community facilities such as Robertson National School, Saint Joseph's Hospital, Finn Valley College, St Marys Church and Stranorlar Presbyterian Church. The proposals will also deliver a significant improvement in active mode accessibility for key leisure and tourist destinations such as local town centres, Balor Art Centre, Troopers Hill and Finn Valley Centre.

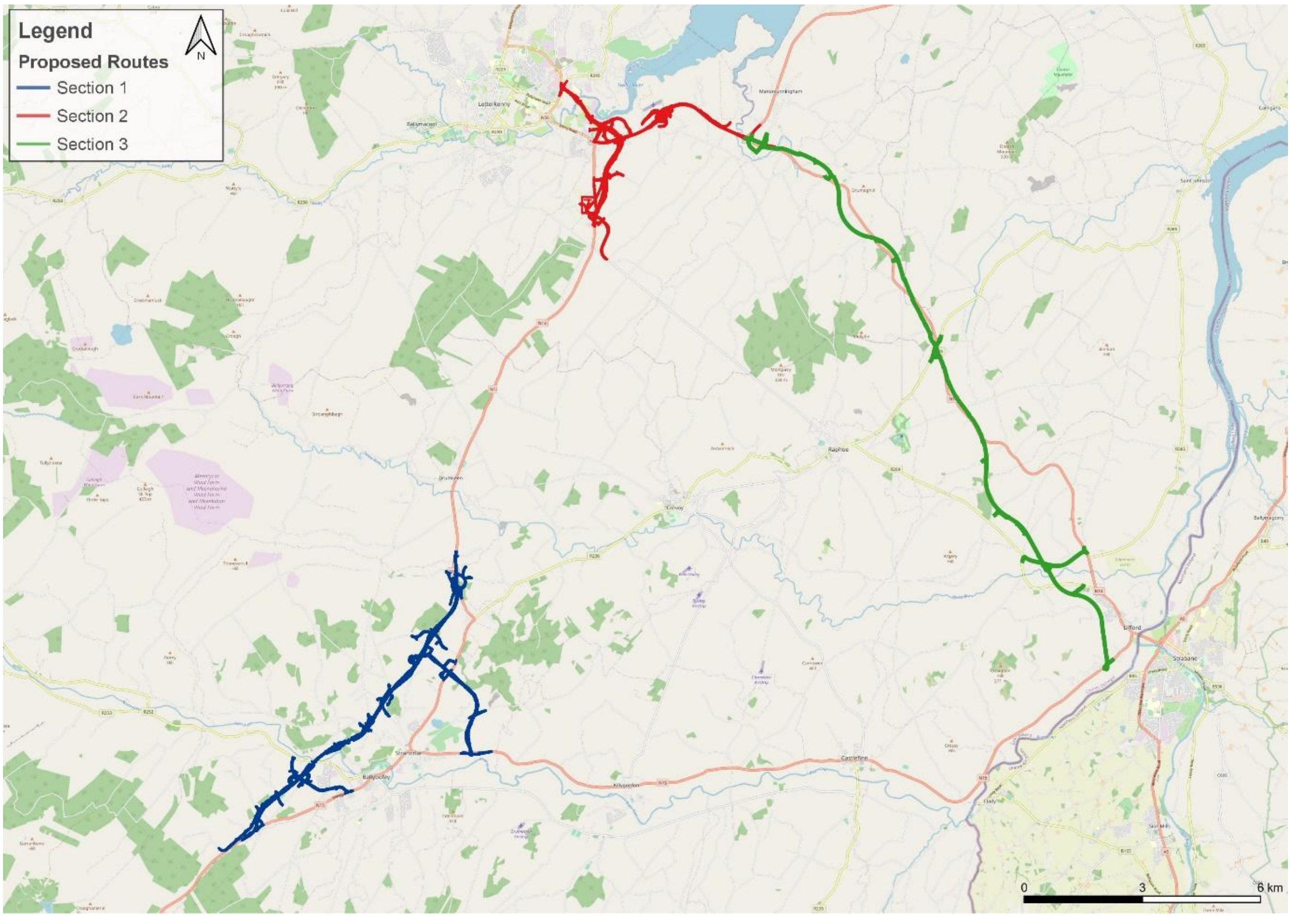

Figure 6-24: TEN-T Project – Active Mode Proposals: Sections 1, 2 and 3

Section 2 proposals aim to improve active mode infrastructure-based approach into Letterkenny urban area from both east and south. This is envisaged to be achieved by provision of segregated cycleways and pedestrian walkways around N13 and N14 inverse y-network with intersection at John Cross business park (towards Letterkenny urban area). Like Section 1, Section 2 will also enhance active mode connectivity to local education, health and other community facilities such as Letterkenny Institute of Technology, Letterkenny University Hospital and Central Library. The proposals will also deliver a significant improvement in active mode accessibility for key leisure and tourist destinations such as Letterkenny shopping centre, market square, regional cultural centre, tourist information centre and Donegal County Museum.

Section 3 proposals provide a continuation of active mode improvements in the form of a shared use segregated cycleway / pedestrian walkway from Section 2 on N14 all the way to the Ireland and Northern Ireland border. Like Sections 1 and 2, Section 3 will also enhance active mode connectivity to local education, health and other community facilities such as Ray National School, Lifford Community Hospital and St Columba's Church. The proposals will also deliver a significant improvement in active mode accessibility for key leisure and tourist destinations such as Pluck Standing Stone (National Monument) and Lifford-Strabane Eclipse Cinema.

The delivery of the attractive segregated active mode provision for both cyclists and pedestrians is required to facilitate a step change in connectivity to education, health, community facilities and local visitor attractions (leisure and tourism). The proposals for a cycleway and pedestrian way are likely to lead to an increase in active mode travel within the scheme defined corridors.

A detailed assessment of active mode impacts of the proposed cycling and pedestrian infrastructure improvements was undertaken. This assessment follows the guidance presented in Project Appraisal Guidelines for National Roads Unit 13.0 - Pedestrian and Cyclist Facilities (February 2024, PAG Unit 13), which provides a best practice framework for assessing active mode impacts. Accompanying this guidance is the TEAM (Tool for Economic appraisal of Active Modes v0.4) which has been developed by TII for undertaking cost benefit analysis of active mode infrastructure. The forecast demand of active travel users is discussed in 6.4.4 (Table 6-16). The TEAM tool quantifies the impacts of active mode infrastructure on the following:

- Vehicle operating and ownership costs: Savings for households due to a reduction in vehicle operating and ownership costs. This benefit stream is based on a mode shift to active modes and accrues to cyclists and pedestrians undertaking journeys for commuting, education and leisure purposes.
- Carbon: Lower carbon emissions due to a shift from public/private vehicles to active modes. This accrues to new users only to both cyclists and pedestrians undertaking journeys for commuting, education and leisure purposes.
- Air quality: Improved air quality and health resulting from reduced omissions of non-greenhouse gases. This impact accrues to new users only. This benefit stream is based on based on a mode shift to active modes and accrues to both cyclists and pedestrians undertaking journeys for commuting, education and leisure purposes.
- Noise: Reduction in vehicle and traffic noise due to a mode shift from private/public vehicles to active mode. This impact accrues to both cyclists and pedestrians undertaking journeys for commuting, education and leisure purposes.
- Congestion: Reduction in congestion from less dependency on private/public vehicles. This benefit stream is based on a modal shift to active modes and accrues to both cyclists and pedestrians undertaking journeys for commuting, education and leisure purposes.
- Reduced mortality: Reduction in the risk of premature mortality due to increased physical activity. Accrues to new cyclists and pedestrians only undertaking journeys for commuting, education and leisure purposes.
- Workplace absenteeism: Reduction in employers' costs relating to the number of sick days taken due to better health. This benefit accrues to new commuters only and does not accrue to any existing users or non-commuters.
- Journey time: Benefits for users from decreased journey times due to proposals offering a more direct route. This benefit accrues to both new and existing cyclists undertaking journeys for commuting, education and leisure purposes.
- Journey quality: Generated as a result of improved quality of cycling infrastructure. This benefit accrues to both new and existing cyclists (it does not accrue to pedestrians) undertaking journeys for commuting, education and leisure purposes.
- Recreation: Improved wellbeing for recreational users of the new walking and cycling infrastructure. This benefit accrues to both new and existing cyclists and pedestrians undertaking journeys for leisure and tourism purposes only.
- International visitor expenditure: This benefit relates to the value associated with increased levels of spending by international visitors whose primary reason is to visit the greenway. International visitors spend significantly more than domestic and local users (e.g., on accommodation, food and entry fees for attractions) and therefore is captured as benefits.

Overall, the largest driver of benefits from the active mode infrastructure scheme is the reduced mortality benefit stream, comprising €18.2 million (2016 prices and values) of the total benefits accrued to users of all journey purposes for Sections 1, 2 and 3. Other notable benefits are also accrued improved wellbeing for recreational users, improved journey quality for cyclists travelling for utility purposes, savings in vehicle operating and ownership costs for those travelling for utility purposes and journey time savings for those travelling for utility purposes. The total benefits accrued to users is €37.4 million (2016 prices and values). Table 6-27 outlines the individual benefits experienced by all users, by benefit category and user group.

Table 6-27: Active Mode Benefits (2016 prices and values) Sections 1, 2 and 3 Combined Impacts

Benefits	Commuting	Education	Leisure	Domestic Tourism	International Tourism	Total
Vehicle Operating & Ownership Costs	€ 130,706	€ 67,461	€ -	€ -	€ -	€ 198,167
Carbon	€ 260,860	€ 139,211	€ -	€ -	€ -	€ 400,071
Air Quality	€ 10,319	€ 5,328	€ -	€ -	€ -	€ 15,647
Noise	€ 6,937	€ 3,584	€ -	€ -	€ -	€ 10,521
Congestion	€ 69,702	€ 35,975	€ -	€ -	€ -	€ 105,677
Reduced Mortality	€ 2,517,375	€ 1,889,572	€ 13,827,509	€ -	€ -	€ 18,234,455
Workplace Absenteeism	€ 163,103	€ -	€ -	€ -	€ -	€ 163,103
Journey Time	€ 123,373	€ 32,766	€ -	€ -	€ 618,708	€ 774,847
Journey Quality	€ 465,873	€ 135,943	€ -	€ -	€ 934,188	€ 1,536,003
Recreation	€ -	€ -	€ 4,284,769	€ 813,999	€ 0	€ 5,098,768
International Visitors	€ -	€ -	€ -	€ -	€ 10,850,241	€ 10,850,241
Total	**€ 3,748,247**	**€ 2,309,839**	**€ 18,112,278**	**€ 813,999**	**€ 12,403,137**	**€ 37,387,500**

6.5 Construction Impacts

Construction of the Proposed Development will add additional traffic to the local networks for the duration of the construction works, as a result of materials supply and disposal, movement of site equipment and travel demand from site workers and visitors. Chapter 4: Project Description, Section 4.11.7 provides details on construction traffic, traffic management, road closures and temporary diversions. Section 4.12.6, Section 4.13.6 and Section 4.14.6 provides specific details on Construction traffic for Section 1, Section 2 and Section 3 respectively. The likelihood of these impacts are high but will be short-term in nature. Dedicated haulage routes were identified and are outlined in Chapter 4: Project Description. A Construction Traffic Management Plan (TMP) has been prepared and is contained in Appendix C4.02 in Volume C: Technical Appendices.

Existing traffic movements on the local and regional road network will generally not be restricted by the proposed construction works. The Proposed Development will ensure the minimum possible disturbance to local residents and existing traffic.

Existing cyclist and pedestrian movements will be facilitated throughout the construction period. During construction, detailed traffic management plans will be prepared by the appointed contractor, developed from the Construction Traffic Management Plan contained in Appendix C4.02 in Volume C of the EIAR, and in accordance with the requirements of the ‘Traffic Signs Manual Chapter 8 – Temporary Traffic Measures and Signs for Roadworks)’ published by the Department of Transport in August 2019 and the “Temporary Traffic

Management Design Guidance" 3rd Edition 2019 published also by the Department of Transport, to facilitate the safe and efficient construction of the proposed development.

6.5.1 Construction Phase

Chapter 4: Project Description, Section 4.11.7 provides details on construction traffic, traffic management, road closures and temporary diversions. Section 4.12.6, Section 4.13.6 and Section 4.14.6 provides specific details on Construction traffic for Section 1, Section 2 and Section 3 respectively. A Construction Traffic Management Plan (TMP) has been prepared and is contained in Appendix C4.02 in Volume C: Technical Appendices. As noted, the construction of the Proposed Development will cause temporary short term traffic impacts on the local road network. The Traffic Management Plan details measures to ensure that construction traffic impacts are minimised through the control of site access/ egress routes, site access locations, pedestrian/cyclist provisions, traffic management including temporary diversions, temporary signage, deliveries to site and road cleaning

6.5.2 Operational Phase

In summary, the traffic modelling indicates that for the Opening (2032) and Design (2047) Years there are no traffic impacts of major significance and therefore no mitigation measures are required. However, as the Proposed Development is a TEN-T route, which is required to cater for strategically important trips at an appropriate level of service, and to future-proof the level of service standard of the Proposed Development well into the future.

The operational phase has also considered a sensitivity test with the A5 WTC and the link to same included which adds additional traffic to the Proposed Development network and reduces traffic on the existing network and through Lifford.

6.6 Residual Impacts

6.6.1 Construction Phase

With the implementation of the mitigation measures that have been identified, the construction of the Proposed Development will cause temporary short term traffic impacts on the local road network. As such, there will be no major impacts during the construction phase of the Proposed Development.

6.6.2 Operational Phase

The Proposed Development will see changes to the local, regional and national road network and traffic flows. The modelling work undertaken to assess the traffic impacts of the Proposed Development indicates that there will be an overall positive traffic benefit associated with the Proposed Development. Further, the Proposed Development will provide benefits to existing and new public transport services and walking and cycling routes on the adjoining local and regional road network.

A sensitivity test was undertaken with the A5 WTC scheme. A comparison of the network performance of the A5 WTC sensitivity test against the central growth scenario shows that with the A5 WTC the network travel times reduce in all model scenarios and forecast years due to people choosing to travel along longer but faster routes. This is reflected in the increase in total pcu-kms and average network speeds. However, the changes (with A5 WTC) in both the DM and DS against the central growth scenario are broadly similar indicating the presence of the A5 WTC in both the DM and DS networks does not likely add further improvements to the overall network performance brought about by the Donegal TEN-T Priority Road Improvement Project scheme.

Therefore, there are no residual negative traffic impacts anticipated.

6.7 Cumulative Effects

The cumulative assessment of relevant plans and projects has been undertaken separately in Chapter 19: Interactions and Cumulative Effects in this EIAR.

6.8 Conclusion

The TEN-T Priority Route Improvement project has been appraised using a strategic model developed in SATURN. The model was developed for three time periods, an AM peak hour, an average interpeak hour and a PM peak hour. The model was calibrated to observed count data and validation to observed journey time data satisfying PAG criteria.

Forecast models for 2032, 2047 and 2062 were developed based on zonal growth factors from TII's NpTM applied to the base demand and network changes based on committed schemes (DM & DS models) and proposed TEN-T Priority Route Improvement Project scheme (DS only). The forecast models show the Proposed Development reduces the total time spent by vehicles on the network by 6.5%-8.1% during the peak hours (AM and PM) and by 6%-6.7% in the Interpeak across the future years. This results in reduced congestion in Ballybofey, Stranorlar, parts of Letterkenny leading to better air quality overall and likely reduction in greenhouse gases.

The scheme draws traffic from existing routes along the three sections resulting in AADTs as given below:

- Section 1: From the existing N15 and N13 at Ballybofey to the new bypass. The AADT on the new bypass is approximately 10,400 vehicles in 2032 and 11,200 vehicles in 2047, attracting 91% of traffic from the existing route.
- Section 2: At the four-lane road between Pole Star and Dry Arch, the forecast AADT in 2032 drops from 39,500 in the Do-Minimum to 22,600 in the Do-Something whilst in 2047, the AADT drops from 42,000 in the Do-Minimum to 21,900 in the Do-Something. This results in a reduction of up to 48% demand as traffic diverts to the new section.
- Section 3: The proposed new dual carriageway attracts traffic from the existing N14. At the northern end of the new route, the AADT is forecast to be around 8,800 vehicles in 2032 and 11,300 vehicles in 2047, attracting between 70% to 80% of the total demand across the new and existing route.

Sensitivity tests were undertaken in line with PAG to assess the likely implications of variations in growth forecasts on the traffic impacts and mitigation requirements. The sensitivity tests undertaken were for Low and High growth scenarios and an additional A5 WTC sensitivity. There were no traffic impacts of major significance in any of the sensitivity scenarios tested when compared to the core scenario.

Accident analysis was undertaken using COBA-LT across the model study area. The economic summary shows that there is a benefit of €22.3 million (low growth), €22.8 million (central growth) and €24.1 million (high growth) over the 30-year appraisal period. This benefit comes from the reduction in collisions, both in number and in severity, afforded by the scheme. The total number of collisions is reduced by between 574 (low growth), 594 (central growth) and 659 (high growth) across the 30-year appraisal period. The number of fatal collisions is reduced by around 6 in all the scenarios.

The delivery of the attractive segregated active mode provision for both cyclists and pedestrians is likely to facilitate a step change in connectivity to education, health, community facilities and local visitor attractions (leisure and tourism). The proposals for a cycleway and pedestrian way are likely to lead to an increase in active mode within the scheme defined corridors. The total benefits accrued to active mode users is €37.4 million (2016 prices and values) with the largest driver of benefits coming from the reduced mortality benefit stream, comprising €18.2 million (2016 prices and values). Other notable benefits are also accrued improved wellbeing for recreational users, improved journey quality for cyclists travelling for utility purposes, savings in vehicle operating and ownership costs for those travelling for utility purposes and journey time savings for those travelling for utility purposes.

The provision of an improved road network incorporating park and share / ride sites will facilitate car-pooling and mode transfer from car to bus and cycling.

Overall, the scheme will have a **Positive** impact in terms of traffic.

6.9 References

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