Appendix A.6.1

Traffic Modelling Report

A.6.1 Traffic Modelling Report

Galway County Council

N6 Galway City Ring Road

Updated Traffic Modelling Report

Reference: Appendix A.6.1

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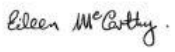
		Signature			
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Contents

Tables

Figures

Drawings

Pictures

Photographs

Attachments

Appendices

1. Introduction

1.1 Introduction

The purpose of this Traffic Modelling Report (TMR) is to describe the traffic forecasting that has been undertaken for the N6 Galway City Ring Road (GCRR). It outlines the development of the base year transport model, the methodology for forecasting future year travel demands and the testing of the scheme.

1.2 Background

Galway County Council and Galway City Council are fully committed to providing a transportation solution to the existing transportation issues in both Galway City and its environs.

The Galway City Outer Bypass, an earlier scheme, was previously developed and submitted to An Bord Pleanála (ABP) in 2006 for approval. However the scheme was ultimately quashed by the Supreme Court based on an interpretation of the Habitats Directive delivered by the Court of Justice of the European Union (CJEU) in April 2013. The process of developing a transportation solution for Galway city and environs therefore recommenced at Phase 1, feasibility and concept stage.

Arup have been appointed to provide multi-disciplinary engineering consultancy services for delivery of Phases 1, 2, 3 and 4 in compliance with TII Project Management Guidelines (TII PMG) for the N6 Galway City Transport Project (GCTP). Arup have appointed SYSTRA Ltd. to undertake the transport modelling elements of the project.

The conclusion of Phase 1 was that there is a strong justification for advancing a scheme which includes construction works to provide infrastructure to deliver a solution to the transportation issues in Galway. The conclusion of Phase 2 was to adopt the preferred route corridor (shown in the figure below, Plate 1.1) for the N6 Galway City Transport Project as the road component of the overall solution, as analysis showed an additional crossing of River Corrib was required. However, it was noted that this would be reviewed in conjunction with the wider integrated management transport programme for Galway, which is known as the Galway Transport Strategy (GTS).

The Galway Transport Strategy (2016) was concluded in parallel and determined that a strategic relief road or orbital route is required in order to implement the level of service requirements for each mode of transport, including walking, cycling, public transport and private vehicle i.e. to deliver an integrated transport solution. This Strategy has identified an inner city centre access network and identified the preferred route corridor of the N6 Galway City Ring Road as the orbital route. The need and function of this route is defined in the Strategy, and therefore, it is appropriate to move ahead to the next phase of design of this road infrastructure.

Plate 1.1 Preferred Route Corridor

Phase 3 Design and Phase 4 EIA/EAR & The Statutory Processes were complete and the orbital road was identified as a necessary component of an overall transport solution. The title of the road component of the N6 Galway City Transport Project was selected to reflect the function of the road and its spatial location. Therefore, the road project is known as **N6 Galway City Ring Road (N6 GCRR)**.

In 2020, an oral hearing was undertaken for the scheme and An Bord Pleanála (ABP) granted approval for the scheme on 6 December 2021. Those approvals were challenged in the High Court by way of Judicial Review and ABP conceded to an order quashing the approvals on limited grounds and the applications for approval of the proposed N6 GCRR was remitted back to ABP by the High Court on 30 January 2023.

On 7 December 2023, ABP requested further information (Ref: ABP-318220-23[1]) from Galway County Council in relation to the application for approval of the proposed N6 GCRR. As part of a Request for Further Information (RFI) from ABP, the 2018 EIAR was required to be updated. As such, the traffic modelling needs to be updated and the purpose of this report is to detail that work.

1.3 Proposed N6 GCRR Description

1.3.1 Overview

The latest design of the proposed N6 GCRR is illustrated in Plate 1.2 below. The proposed N6 GCRR is approximately 16.4km in length and will link the R336 west of Bearna with the M6 near Coolagh to the east of Galway City.

[1] It is noted that the reference numbers for the application in 2018, ABP-302848 and ABP-302885 has since been updated by ABP to HA07.318220 and MA07.318217 respectively

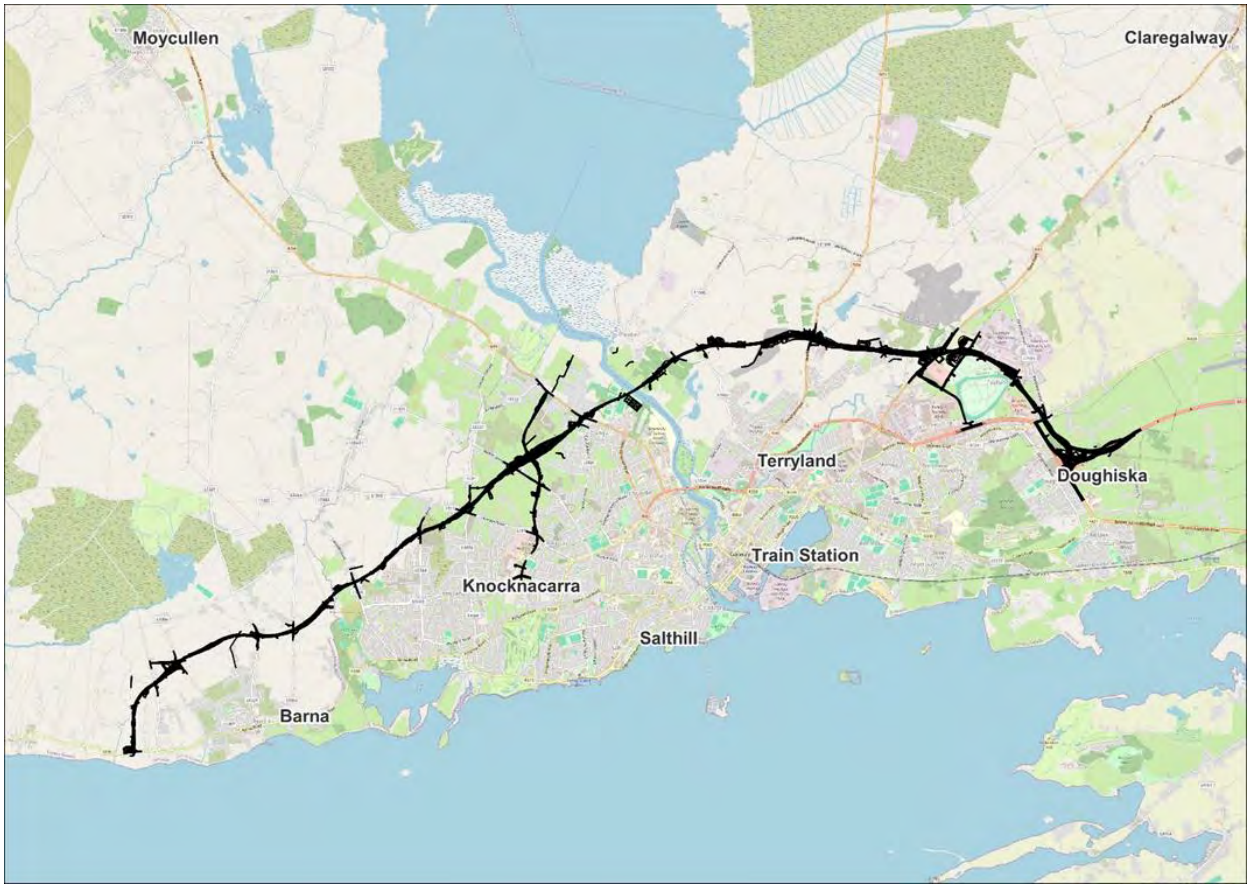

Plate 1.2 Proposed N6 GCRR

The proposed N6 GCRR ties into the existing R336 Coast Road in An Baile Nua with an at-grade roundabout junction approximately 2km to the west of Bearna Village and then proceeds north and east as a single carriageway to the north of Bearna Village and onwards towards Letteragh. An at-grade roundabout is proposed at the Bearna to Moycullen Road L1321, and at-grade signalised junctions are proposed at Cappagh Road and Ballymoneen Road.

To the east of the Ballymoneen Road junction the proposed N6 GCRR is a dual carriageway and continues east to the grade separated N59 Letteragh Junction. The junction connects to the N59 Moycullen Road via the proposed N59 Link Road North, and to the Letteragh Road and Rahoon Road via the proposed N59 Link Road South. The proposed N6 GCRR continues eastwards to cross the existing N59 Moycullen Road at Dangan and travels on a viaduct over the UoG Recreational Facilities before crossing the River Corrib on a bridge structure.

To the east of the River Corrib the proposed N6 GCRR continues east on embankment toward the Menlough Viaduct. It crosses over Bóthar Nua and Sean Bóthar in the townland of Menlough, adjacent to Menlough Viaduct before entering a section of cut preceding Lackagh Tunnel immediately west of Lackagh Quarry and exits the tunnel in the quarry. The proposed N6 GCRR continues east with a grade separated junction located at the N84 Headford Road Junction at Ballinfoyle and continues east through the townland of Castlegar to the grade separated junction at N83 Tuam Road. This junction provides access to both the N83 Tuam Road and the proposed Parkmore Link Road between the Ballybrit Business Park and the Parkmore Industrial Estate via the proposed City North Business Park Link Road to provide full connectivity at this location.

The proposed N6 GCRR then continues eastwards entering the Galway Racecourse Tunnel at Ballybrit to the north of the racetrack. On emerging from the tunnel the proposed N6 GCRR continues south, crossing over R339 Monivea Road on embankment and continuing south to enter a cutting as it reaches its junction with the existing N6 at Coolagh Junction. The proposed Coolagh Junction will be a fully grade separated junction with partial free flow on the major movements.

1.3.2 Proposed Road Type and Cross-Section

From the R336 to Ballymoneen the mainline carriageway of the proposed N6 GCRR is a Type 1 Single Carriageway in accordance with TII DMRB DN-GEO-03036 (Cross-Sections and Headroom). The design speed of the mainline carriageway over this area is 80km/h, and the cross section is as follows:

Offside Verge Width (minimum):	3.0m
Offside Hard Shoulder:	2.5m
Carriageway Width:	7.3m (2 x 3.65m lanes)
Nearside Hard Shoulder:	2.5m
Nearside Verge Width (minimum):	3.0m
Total Width (minimum):	18.3m
Total Length:	5,610m

From Ballymoneen Road to the eastern tie in with the existing N6 at Coolagh, the mainline carriageway of the proposed N6 GCRR is a Standard Dual Carriageway Urban Motorway (D2UM) in accordance with TII DMRB DN-GEO-03036. The design speed of the mainline over this area is 100km/h and cross section is as follows:

Offside Verge Width (minimum):	3.0m
Offside Hard Shoulder Width (minimum):	2.5m
Offside Carriageway Width:	7.0m (2 x 3.5m lanes)
Central Reserve Width (minimum):	2.6m (including 2 x 0.5m offside hardstrip)
Nearside Carriageway Width:	7.0m (2 x 3.5m lanes)
Nearside Hard Shoulder Width (minimum):	2.5m
Nearside Verge Width (minimum):	3.0m
Total Width (minimum):	27.6m
Total Length:	10,840m

The cross-sections at the River Corrib Bridge and Menlough Viaduct consists of the same as described above with the exception of the hard shoulder width which is reduced to 0.6m (excluding widening requirements for visibility). The River Corrib Bridge connects to a viaduct and its total length will be 620m.

The cross-sections of the Lackagh Tunnel and the Galway Racecourse Tunnel differ from that required for a Standard Dual Carriageway Urban Motorway in accordance with TII DMRB DN-GEO-03036. The cross-sections of these tunnels is dictated by national and international best practice with respect to tunnel layouts, geometric parameters such as stopping sight distance, the provision of space for operational equipment and the provision of safe access and egress in cases of emergency.

Cross-sections of both tunnels consist of 2 x 3.75m lanes in both directions, minimum nearside and offside 0.5m hard strip (excluding widening requirements for visibility) and 1.2m walkways nearside and offside. The Lackagh Tunnel will be 250m in length and the Racecourse Tunnel will be approximately 230m long.

The section of the N6 GCRR between the N83 and N84 junctions will be a 3 lane dual carriageway. The total length of this section is approximately 1,850m.

1.3.3 N6 GCRR Mainline Junctions

In total there will be 15 junctions along the length of the N6 GCRR these are summarised in the table below.

Table 1.1 GCRR Mainline Junction Summary

Junction Type	Number
Roundabout	2
Signalised	2 plus additional signals on link roads at junctions
Grae Separated	4

1.4 Existing Conditions

1.4.1 Existing Road Network

The N6 is a National Primary route which connects the M6 / N6 on the east side of Galway at Ardaun to the N59 and the R338 on the north-west side of Galway at Newcastle, a total distance of 7.3km approximately. The existing N6 is a four lane carriageway from the N6 at-grade roundabout junction to the at-grade roundabout junction with the N59 at the western end.

The N6 terminates at the R338 at the at-grade roundabout junction with the N59/R338. The R338 then continues as a two lane single carriageway of varying width, including bus lanes on certain sections, to the R336, the coast road, thus completing a circumferential route around Galway City to the north of the city. See Plate 1.3 for a general layout of the existing road network.

There are eight at-grade junctions on the N6 between the M6 and the N59 at the intersections with the M6, R339, R865 Ballybane Road, N83 Tuam Road, N84, Bodkin Junction, Newcastle Road and N59. Some of these are roundabouts and others are recently upgraded signalised junctions. There are various forms of at-grade junctions including roundabouts, signals and priority junctions on the R338 from its junction with the N59 to the R336.

1.4.2 Existing Natural Constraints

Plate 1.3 below, shows that Galway City is physically constrained as it is divided by the River Corrib and a sea inlet known as Lough Atalia and it is bounded along the entire southern boundary by Galway Bay, all of which are natural barriers to free movement and development. There are currently four bridges crossing the river, which in 2023 cumulatively carried approximately 80,000 vehicles per day.

Three of the four bridges are in very close proximity to the city centre, thus drawing traffic into the city for the sole purpose of crossing the river.

Galway County and Connemara as far west as Clifden and onto Letterfrack are equally dependent on this narrow funnel for access as access to this area is restricted by the extents of Lough Corrib heading north, the Twelve Bens mountains, the Maamturk mountains and the many smaller lakes. Plate 1.4 highlights that access to this area is via the bridges across the River Corrib in Galway City due to the physical natural constraints. This is further compounded by the fact that a significant portion of this area is designated of environmental importance and therefore the options to provide multiple other access points are not readily available.

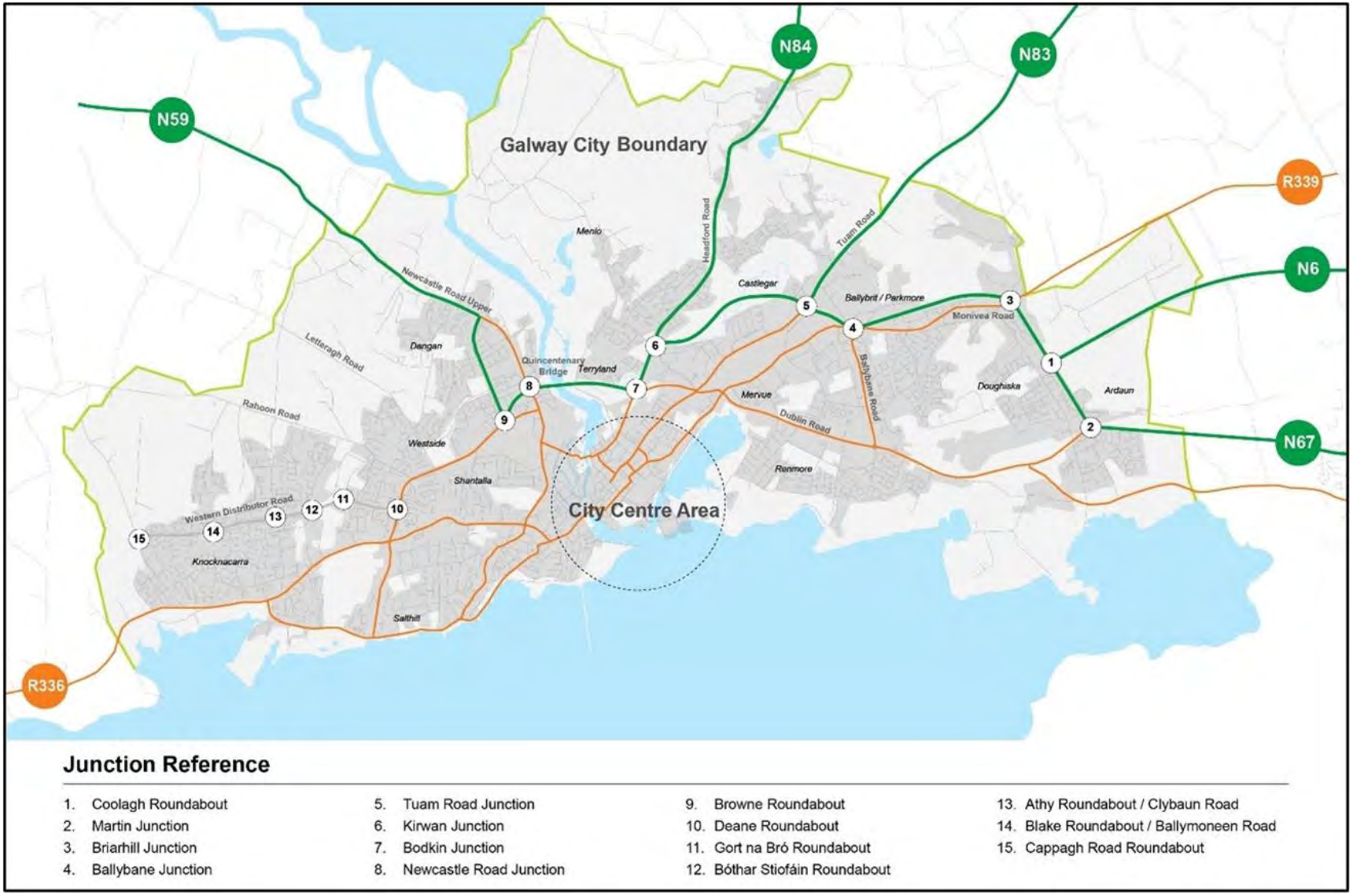

Plate 1.3 Existing Road Network

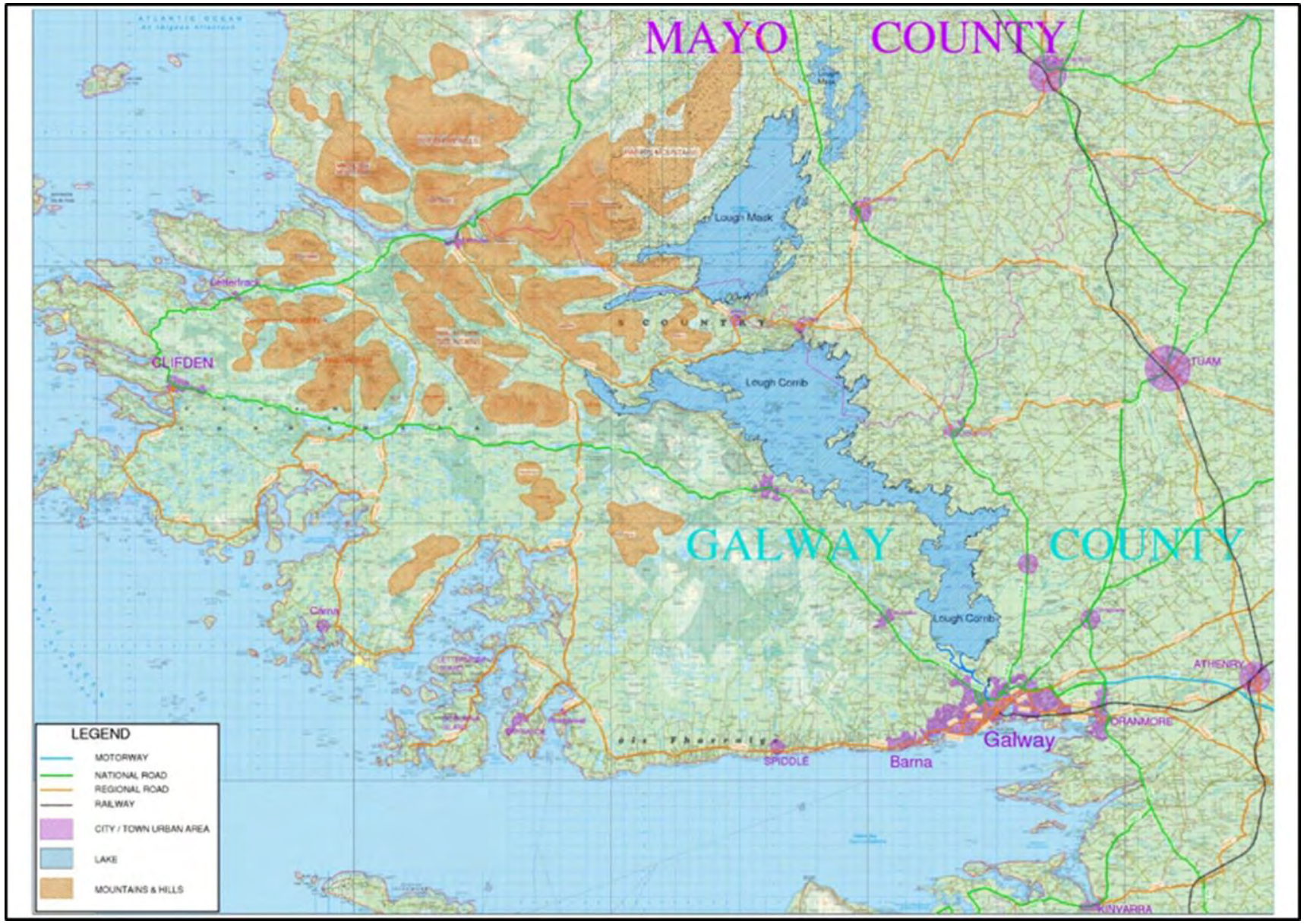

Plate 1.4 Existing Natural Constraints

1.4.3 Existing Road Capacity

Table 6/1 of TII standard DN-GEO-03031 (formerly National Roads Authority (TII) TD9/12) 'Road Link Design' indicates that the Annual Average Daily Traffic (AADT) flow of a Type 2 Dual operating at Level of Service D (LOS) would not exceed 20,000 AADT. The TII Project Appraisal Guidelines (PAG Unit 4: Consideration of Alternatives and Options) suggests that the AADT flow outlined in TII standard DN-GEO-03031 should only be treated as a guideline and not as a definitive means in the selection of carriageway type.

Notwithstanding this, the following AADT flows were estimated based on traffic counts along the existing N6 undertaken by Galway City Council during the month of November 2024:

- N6 between Coolagh Roundabout and Monivea Road – 35,900 AADT
- N6 at Galway Racecourse (between Briarhill and Ballybrit Business Park junctions) – 34,500 AADT
- N6 between N83 Tuam Road and N84 Kirwan Junction – 22,800 AADT
- N6 Quincentenary Bridge – 41,300 AADT

At present, 24hr weekday flows on a number of sections of the N6 exceed the suggested AADT value of 20,000 for LOS D, noting that sections of this N6 are smaller than that required of a Type 2 Dual cross-section.

1.4.4 Peak Hour Flows

TA 79/99 of the UK DMRB is used to determine the capacity of urban roads. This standard is not formally implemented in Ireland but is considered as background reading which indicates good practice. Within this standard, classifications such as Urban Motorways or Urban All Purpose roads are used, with further sub-classification of Urban All Purpose Roads as UAP1 to UAP4. The N6 in Galway can be defined as a UAP2 which refers to a "good standard single/dual carriageway road with frontage access and two side roads per km".

The N6 Bóthar na dTreabh is generally a four lane undivided carriageway from the R338 Seamus Quirke Road to the R865 Ballybane Road junction. The N6 then becomes a dual carriageway between the R865 Ballybane Road and the Coolagh Roundabout. From TA 79/99, a 2 lane UAP2 road has a capacity of approximately 1,470 vehicles per hour for a 7.3m wide 2 lane single carriageway. This capacity increases to 3,200 vehicles per hour for a 7.3m wide 2 lane dual carriageway.

Average weekday peak hour traffic flows on the N6, within the Galway urban area have been derived from the November 2024 traffic surveys and are presented in Table 1.2.

Table 1.2 N6 Peak Hour Traffic Volumes (November 2024)

Road	Carriageway	Direction	AM Peak (08:00 - 09:00)	PM Peak (17:00 - 18:00)
Parkmore Road	Single	Northbound	555	239
		Southbound	432	796
Wolfe Tone Bridge	Single	Eastbound	876	411
		Westbound	710	847
Tuam Road	Single	Northbound	692	752
		Southbound	671	576
Salmon Weir Bridge	Singe	Eastbound	412	427
		Westbound	683	663

Road	Carriageway	Direction	AM Peak (08:00 - 09:00)	PM Peak (17:00 - 18:00)
Old Dublin Road	Single	Eastbound	434	517
		Westbound	373	579
N6 Bothar na dTreabh	Dual	Eastbound	922	1200
		Westbound	1657	937
Headford Road	Dual	Northbound	450	608
		Southbound	519	452
N6 (East of Coolagh Roundabout)	Dual	Eastbound	557	1661
		Westbound	1552	844
N6 Quincentenary Bridge	Dual	Eastbound	1604	1264
		Westbound	1435	1506

When the existing volumes are compared against the theoretical capacity, the 4 lane single carriageway section of the existing N6 over the Quincentenary Bridge has a morning peak hour volume of approx. 3,100 vehicles which is just below the capacity threshold defined in TA 79/99, which results in congestion on the route and a reduced level of service. This bridge is a key part of the city network, which enables users to cross the city each day and may come under more pressure when the National Transport Authority's (NTA) BusConnects Cross City Link (currently before ABP, Case reference: HA61.314597) is in place, as this scheme restricts access to general traffic during the hours of 7a.m. and 7p.m in other areas of the city, including over the Salmon Weir Bridge.

1.4.5 Journey Time Reliability Assessment

Junction capacity issues, results in increased journey times in peak periods in Galway. This leads to a reduction in journey time reliability in the city during these periods.

An analysis of journey times on several key routes around Galway and its environs was carried out to show the variance in journey times between the peak and off-peak periods in the base year. The analysis was undertaken using Google Map's API function. The key routes are shown on Plate 1.5. The difference between the peak and off-peak journey times is a measure of the level of congestion during the peak, and increasing congestion results in worsening journey time reliability.

Travel times on each of the routes in the inbound direction in the morning peak period versus the off-peak period are tabulated in Table 1.3 below.

This assessment of journey time shows that the travel times on these key routes in the morning peak hour can show up to 40% increase on their off-peak travel times counterparts.

Table 1.3 Journey Time Reliability

		2024 Observed Journey Times (minutes)			
		Off-peak average hour	Morning peak hour	Difference	% Difference
Inbound	Route 1 IN	9 - 18	10 - 24	1 - 6	5 - 15%
	Route 2 IN	12 - 16	16 - 35	4 - 19	14 - 37%
	Route 3 IN	7 - 12	12 - 24	5 - 12	26 - 33%
	Route 4 IN	7 - 12	9 - 22	2 - 10	13 - 29%
	Route 5 IN	6 - 12	8 - 26	2 - 14	14 - 37%
	Route 6 IN	6 - 7	8 - 16	1 - 9	7 - 39%

Plate 1.5 Journey Time Reliability Routes

1.4.6 Existing Travel Patterns

Plate 1.6 below shows the population density across Galway city in 2022 for each Census Small Area boundary. Population density is calculated by dividing the population (according to the 2022 Census) by the area. It shows that both sides of the city have a high population density, but the western side is more densely populated than the eastern side.

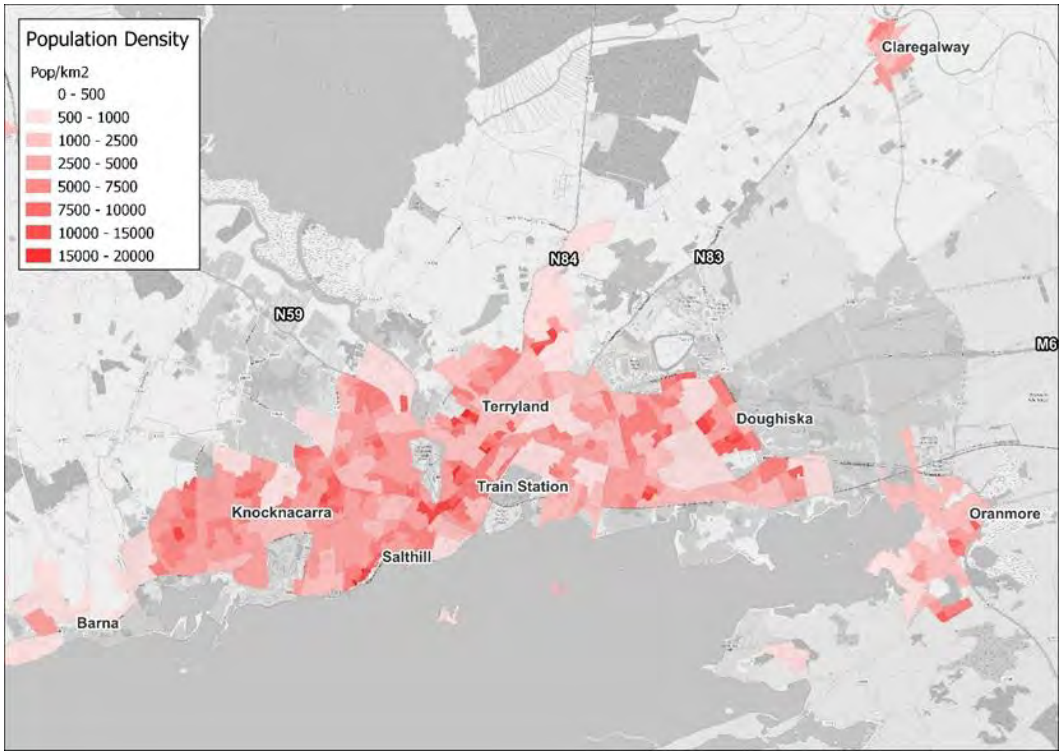

Plate 1.6 2022 Population Density

Plate 1.7 below shows the level of jobs across Galway City in 2022 for each Census Small Area boundary. It shows that the majority of jobs are located on the eastern side of the city, with the major business parks like Parkmore and Ballybrit, having the highest level of jobs. This creates a problem in terms of transport as the large number of people living on the western side of the city, need to cross the River Corrib each day, which places an importance on the river crossings, particularly the Quincentenary Bridge.

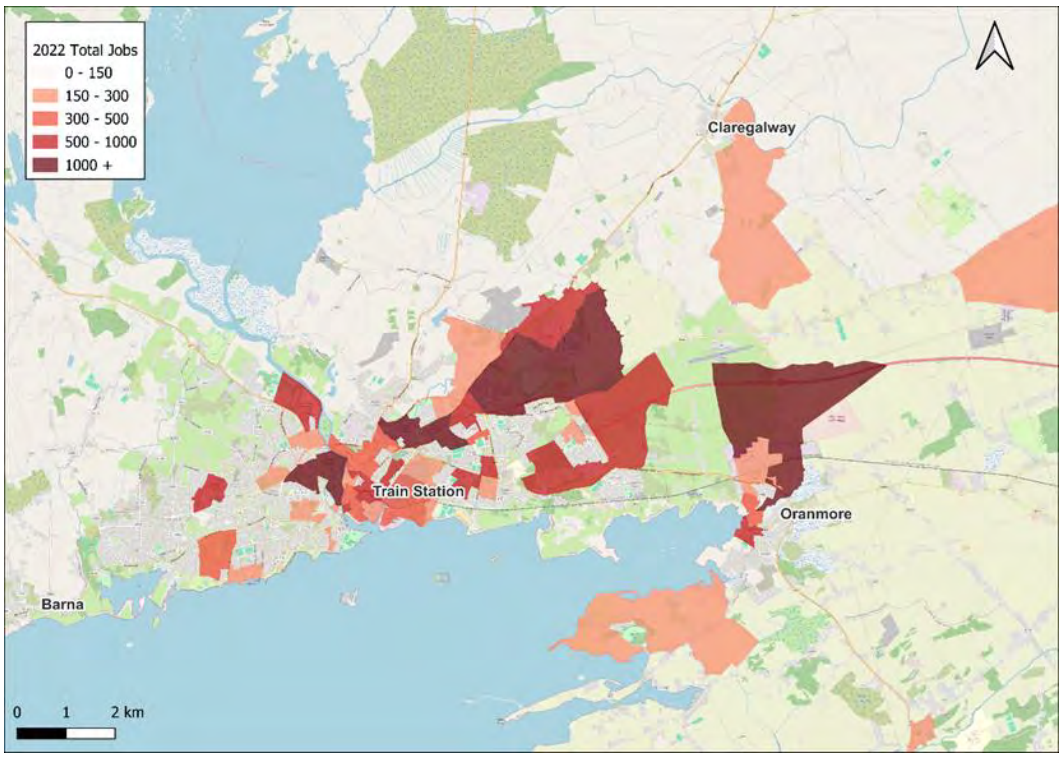

Plate 1.7 2022 Job Levels

Plate 1.8 below shows the car mode share for the city area according to the 2022 Census. It shows that there is a high dependency on cars as a mode of transport, for those who live on the edge of the city, particularly on the western side. It also shows that there is a high dependency on cars, for those who live outside the city boundary. This highlights the importance of the national road network around Galway City as a means of travel, for those who live within the metropolitan area and wider county area but work within Galway City

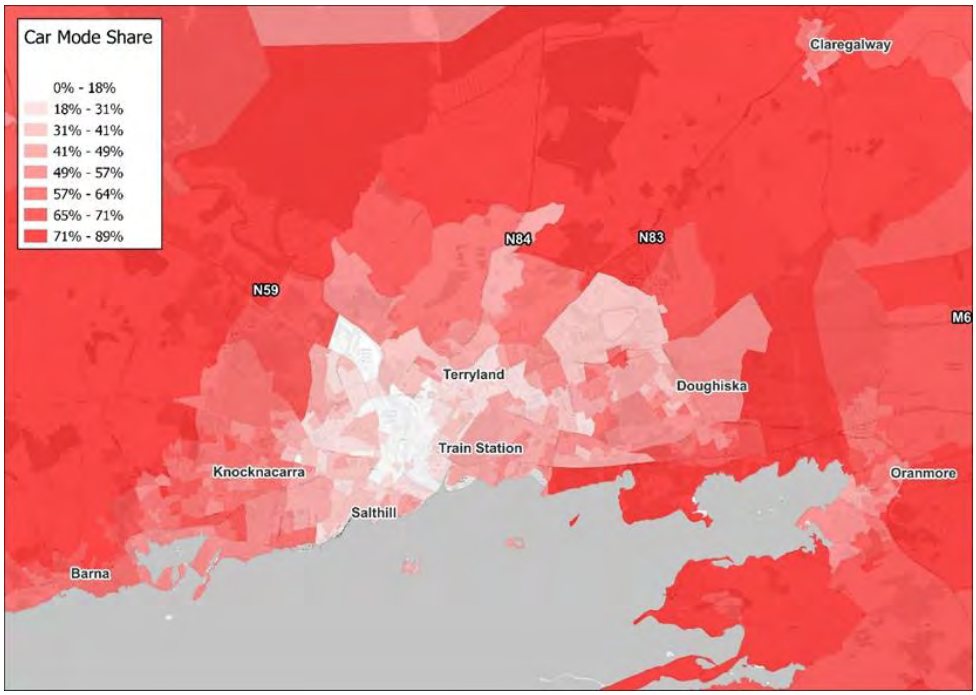

Plate 1.8 2022 Car Mode Share

Plate 1.9 below shows the public transport mode share for the city area according to the 2022 Census. It shows that public transport use is currently relatively low across the study area. On the eastern side of the city, public transport use on average is between 10% - 15%, although some areas have increased levels of 20%. On the western side of the city, public transport use on average is below 10%.

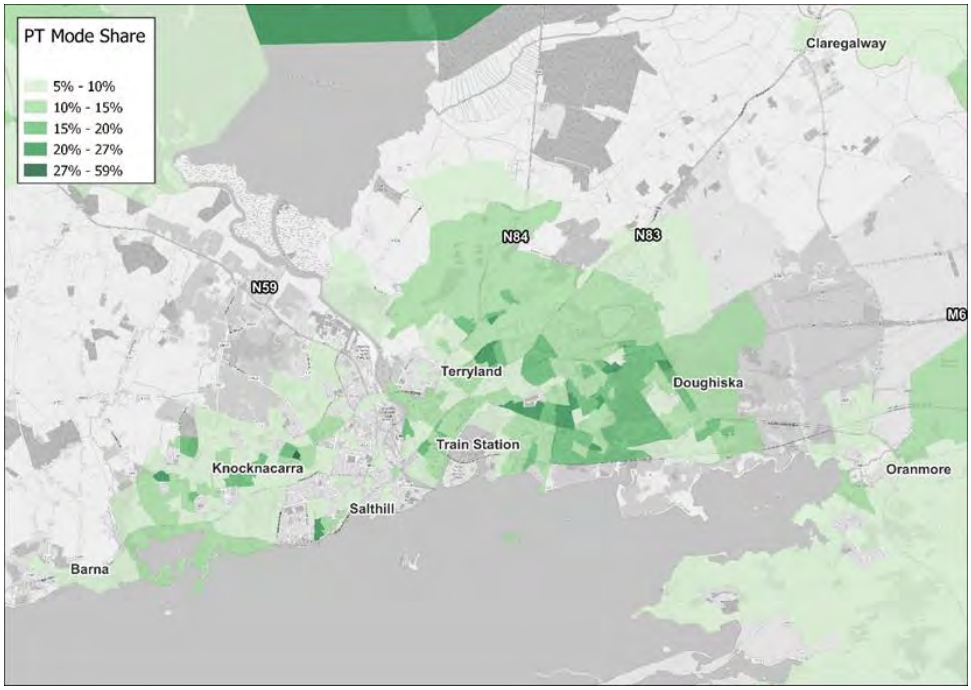

Plate 1.9 2022 Public Transport (PT) Mode Share

Plate 1.10 below shows the walking mode share for the city area according to the 2022 Census. As expected, the walking mode share is quite high in the centre of the city, given its central location and access to services, facilities etc. The highest walking mode share is observed on the UoG campus, where students would live on site near the university. On the western edge of the city, there are large areas which have a walking mode share of less than 6% and do not show up on the map. Again, this highlights the low number of jobs within a reasonable walking distance, for those living on the western side of the city and the importance of other modes, for those needing to cross the city each day.

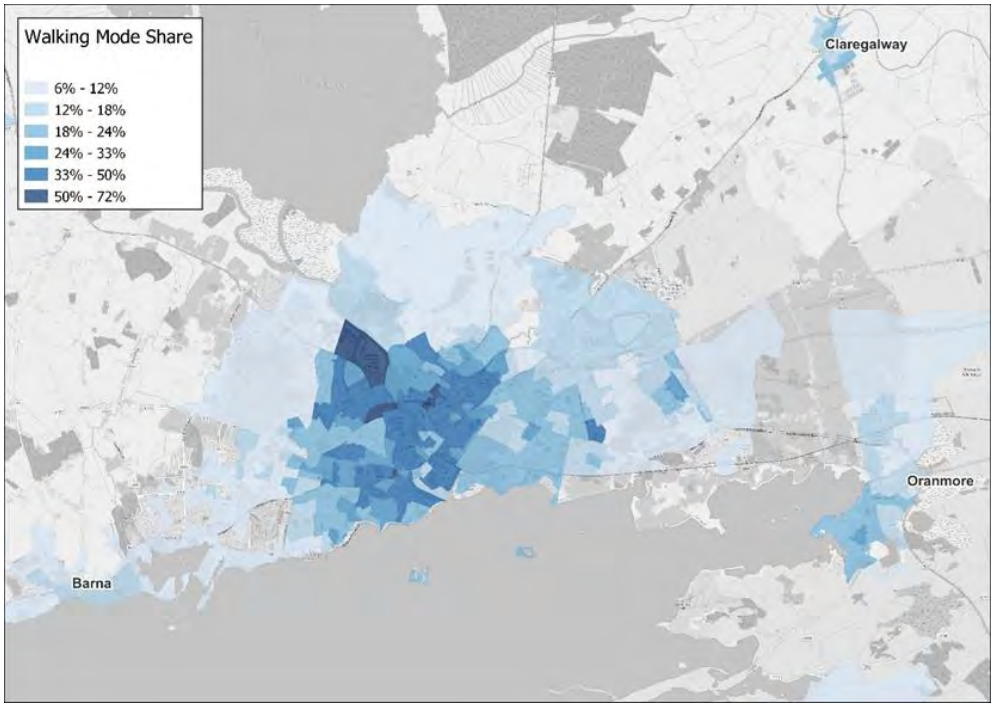

Plate 1.10 2022 Walking Mode Share

1.5 Modelling Overview

Western Regional Model (WRM)

The West Regional Model (WRM) is a strategic transport multi-modal model for the counties Galway, Mayo, Roscommon, Sligo, Leitrim and Donegal, with a focus on the city of Galway. It is part of a hierarchical multi-modal transport modelling system for Ireland (known as the 'Regional Modelling System' RMS) that allows the appraisal of a wide range of potential future transport and land use options. The regional models are focussed on the travel-to-work areas of major population centres (e.g. Dublin, Cork, Galway, Limerick, and Waterford).

Local Area Model

The WRM was used as a starting point in order to build the Local Area Model (LAM) which was developed for the scheme. The objective in developing the LAM was to develop a traffic model that accurately reflects existing traffic conditions in the study area at a sufficient level of detail to allow for an accurate traffic assessment. The model software used for the highway assignment element of the model is the SATURN (Simulation Assignment of Traffic to Urban Road Networks) suite of transportation modelling programs.

The LAM was developed using surveys from November 2023 and is therefore representative of current traffic levels and conditions. Given the current available WRM has a base year of 2016 (aligned to the 2016 Census), the Census 2022 Place of Work, School, College or Childcare - Census of Anonymised Records (POWSCCAR) data was also used to inform movements within the city and ensure the modelling is reflective of the latest available data.

Three time period models were developed in line with standard practice as follows:

- AM Morning peak hour (08:00 – 09:00)

- Average Inter-peak hour (Average hour model of 10:00 – 16:00)
- PM Evening peak period (16:00 – 17:00)

It should be noted that the modelling approach in the 2018 EIAR, used the WRM to model each mode of transport (road, public transport, active). The WRM has four time periods (AM peak hour, PM peak hour and two interpeak models). In this update, the WRM was only used to model public transport and active travel and also estimate the level of traffic growth as per the opening and design year land use forecasts. As mentioned, a project specific Local Area Model (LAM) was built to model all road traffic to a more accurate level of detail than the WRM, in accordance with common practice when appraising major transport schemes.

This model has three time periods as opposed to four within the WRM. The difference being that the WRM has two interpeak models and the LAM only has one. One interpeak model (an average hour inter-peak model) is a common practice in line with best practice as outlined in TII's PAG Unit 5.1.

The approach of building a project specific LAM was taken as the existing available WRM has a base year of 2016. By building a LAM with traffic surveys undertaken in 2023, it ensures that the traffic assessment is representative of current traffic levels and conditions within Galway City. The LAM also incorporated POWSCCAR data from the 2022 Census (not yet in the WRM) and is therefore representative of current traffic movements in the study area.

The completion of the refinement process resulted in models of the area of influence of the Project, which meet the TII PAG criteria for model development. The demand for these models is derived from the WRM Demand Model, using forecasts developed by the National Transport Authority (NTA) and are discussed later within this chapter. The full model structure is illustrated in Plate 1.11 below.

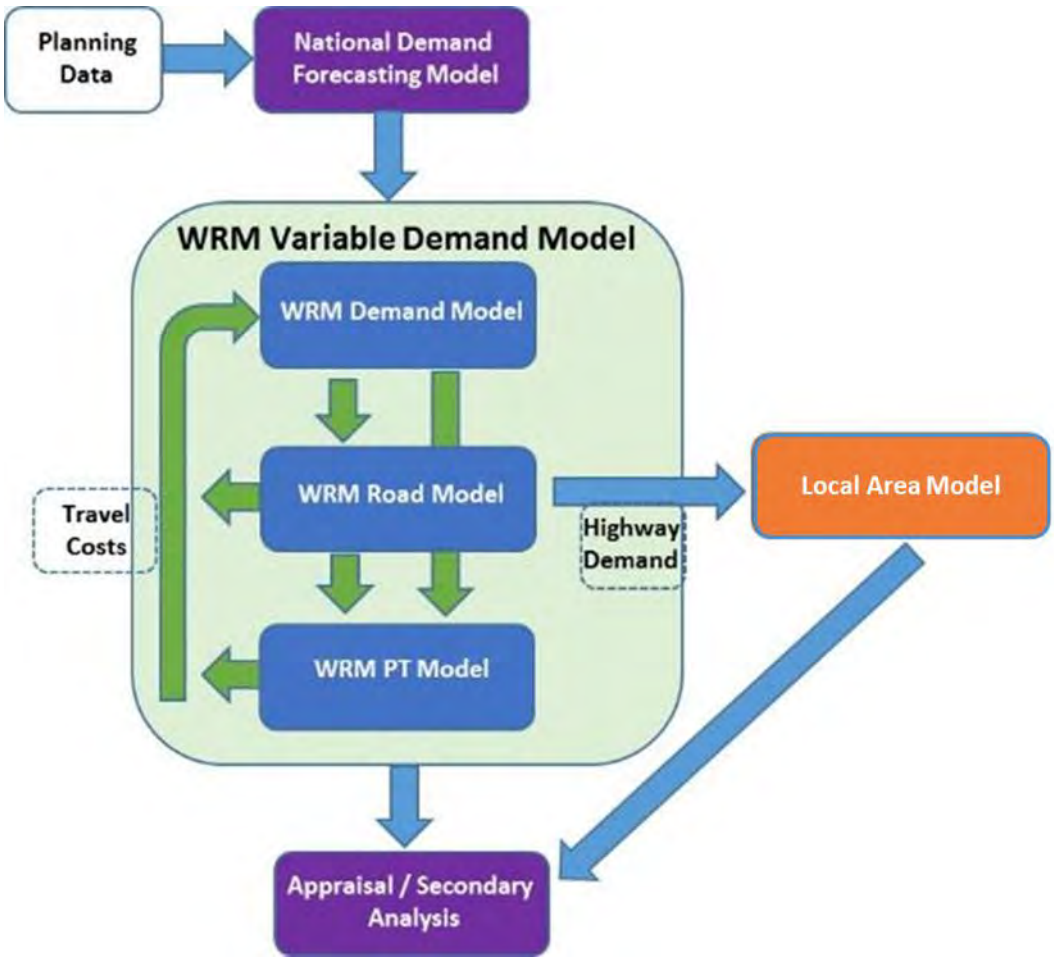

Plate 1.11 WRM Structure

The objective in developing the N6 GCRR Model was to develop a traffic model that accurately reflects existing traffic conditions in the study area at a sufficient level of detail to allow for an accurate traffic assessment. The model software used for the highway assignment element of the model is the SATURN (Simulation Assignment of Traffic to Urban Road Networks) suite of transportation modelling programs.

The NTA's National Demand Forecasting Model (**NDFM)** (see Section 3.2 for further detail) is a separate modelling system that estimates the total quantity of travel demand generated by and attracted to every Census Small Area zone on a daily basis. The level of demand from, and to, each zone (referred to as trip-ends) is related to characteristics such as population, number of employees and land-use data. The trip ends form a consistent basis for modelling travel demand across Ireland and therefore allow consistent forecasts to be produced across all of the regional models. The NDFM provides forecasts for input to the regional model and into the demand model.

The **Demand Model** is implemented in Cube Voyager and models travel behaviour. The demand model processes all-day travel demand data from the NDFM through several choice models to represent combined mode, time of day, destination and parking decision making. The outputs of the demand model are assigned to the Road and Public Transport models to determine the route-choice of trips.

The **Road Model** is implemented in SATURN and includes capacity restraint whereby travel times are recalculated in response to changes in assigned flows.

The **Public Transport Model** is implemented in Voyager to allocate public transport (PT) users to services between their origin and destination zones. The model is representative of the public transport services (the transport network) for each represented PT sub-mode throughout the modelled area.

The **Secondary Analysis Utilities** efficiently and consistently use outputs from the model to calculate indicators of the impacts of transport and transport related interventions. The following impacts can be informed by model outputs (travel costs, demands and flows):

- social, economic and financial appraisal
- road safety and accidents
- environmental impacts: noise, local air quality and carbon
- fitness benefits of more use of active travel modes
- change in fare revenue for PSO services and tax revenue from fuel oil

2. Data Collection

2.1 Introduction

A comprehensive set of traffic count data was collected and used to calibrate and validate the N6 GCRR LAM. This chapter provides an overview of the data collection exercise undertaken to facilitate this model development process.

The majority of these traffic surveys were carried out in November 2023 and in summary, included the following:

- Junction Turning Counts (JTC) data at 108 locations
- Automatic Turning Counts (ATC) data at 32 locations
- Journey Time Surveys along 8 routes in the study area

2.2 JTCs and ATCs

In total 140 JTCs and ATCs were used to inform the development of the base year Local Area Model. The majority of the surveys were undertaken during the one week period between the 4 of November and the 10 of November 2023. Transport Infrastructure Ireland (TII) have permanent traffic counters on the strategic road network, which count traffic 24 hours a day, 7 days a week all year. So data from a number of these sites was also incorporated into the base year LAM.

The JTCs were undertaken on the 7 of November and were summarised by 15 minute intervals. All the main junctions within the study area were surveyed and provide information on the volume, and types of vehicles, making turning movements at each location. This data is utilised within the LAM calibration to ensure that the flow of vehicles through the main junctions on the network is being represented accurately.

The ATC sites was surveyed for a one week period and provide information on:

- The daily and weekly profile of traffic within the study area
- Busiest time periods and locations of highest traffic demand on the network
- Any issues on the network during the survey period e.g. accidents, road closures etc.
- Typical speed of traffic on the network

Plate 2.1 below indicates the location of traffic count data within the study area.

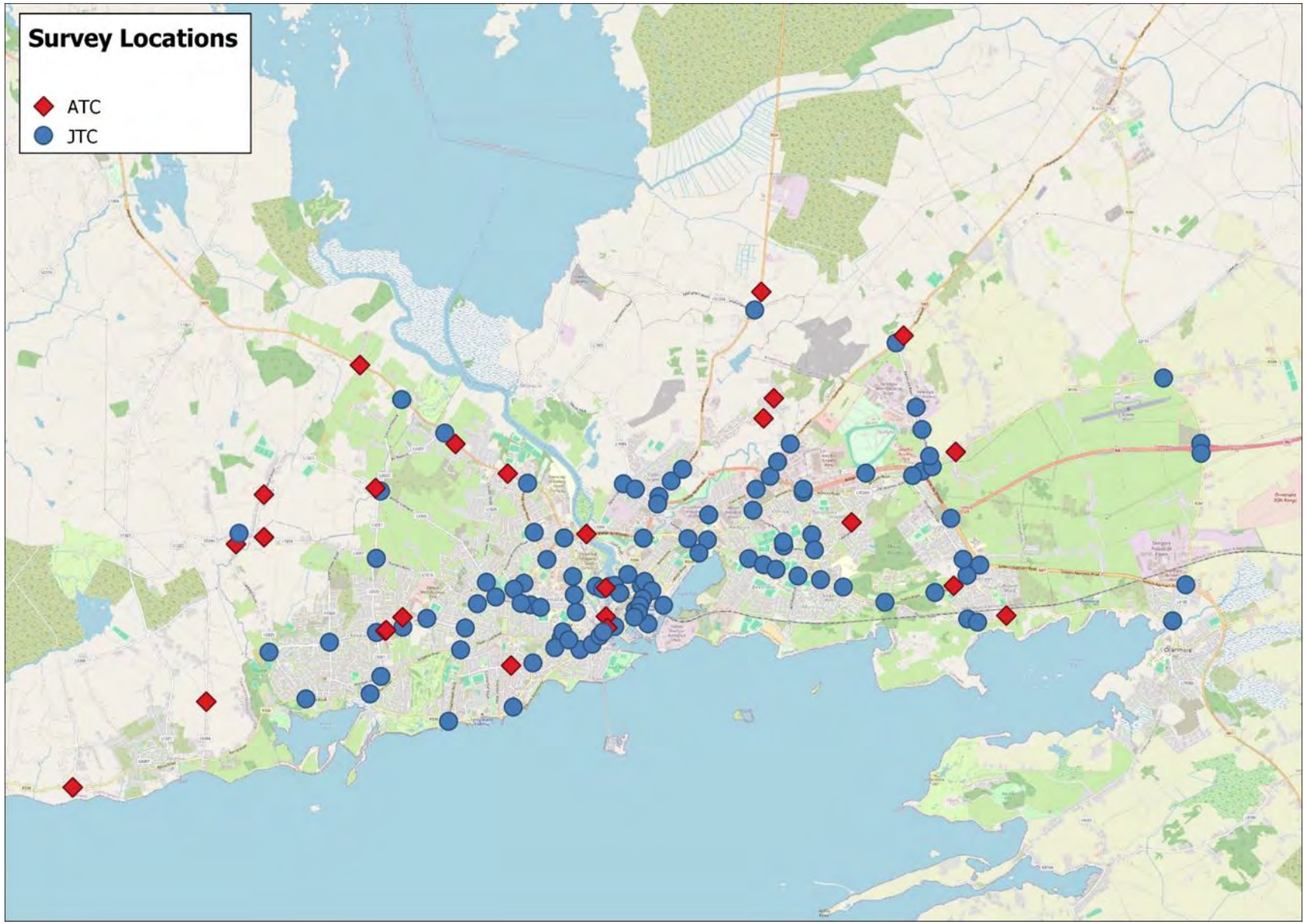

Plate 2.1 Location of Traffic Counts

2.3 Journey Time Surveys

Journey time data was also undertaken during the same period as the surveys mentioned above, the one week period between the 4 of November and the 10 of November 2023. This journey time data was collected using moving car observer data.

There was a minor accident in the morning period on a small section of the network and as a result of this, it was decided to use TomTom data instead for that section of the network. This TomTom data covered the month of November in 2022. TomTom data is an alternative data source which can provide a larger, more robust dataset on journey times. These allow the journey time data to be classed as statistically valid through the provision of increased observations. This has the advantage of reducing variability in the data and TomTom is a provider of such data.

Plate 2.2 below indicates the journey time routes within the study area.

Plate 2.2 Journey Time Routes for Model Validation

3. Model Development

3.1 Introduction

This chapter describes the development of the base year Local Area Model (LAM) with reference to the following aspects:

- Modelling software used
- Model time periods
- Network development

3.2 Western Regional Model

The WRM is a strategic multi-modal transport model representing travel by all the primary surface modes – including, walking and cycling (active modes), and travel by car, bus, rail, tram, light goods and heavy goods vehicles, and broadly covers the western side of the country with a focus on Galway.

General Model Structure

The WRM sits within the overall NTA Regional Modelling System which comprises of the following three main components, namely:

- The National Demand Forecasting Model (NDFM)
- 5 Regional Models (including the WRM)
- A suite of Appraisal Modules

The NDFM takes input land-use attributes such as population, no. of employees etc., and estimates the total quantity of daily travel demand produced by, and attracted to, each of the approx. 18,000 Census Small Areas in Ireland.

The WRM is comprised of the following key elements:

- Trip End Integration: The Trip End Integration module converts the 24 hour trip ends output by the NDFM into the appropriate zone system and time period disaggregation for use in the Full Demand Model (FDM)
- The Full Demand Model (FDM): The FDM processes travel demand, carries out mode and destination choice, and outputs origin-destination travel matrices to the assignment models. The FDM and assignment models run iteratively until an equilibrium between travel demand and the cost of travel is achieved
- Assignment Models: The Road, Public Transport, and Active Modes assignment models receive the trip matrices produced by the FDM and assign them in their respective transport networks to determine route choice and the generalised cost for each origin and destination pair

Destination and mode choice parameters within the WRM have been calibrated using two main sources: Census 2016 Place of Work, School or College - Census of Anonymised Records (2016 POWSCAR), and the Irish National Household Travel Survey (2016 NHTS). As mentioned in Section 1.5, a a project specific Local Area Model (LAM) was built to model all road traffic. The approach of building a project specific LAM was taken to account for the existing available WRM having a base year of 2016. By building a LAM with traffic surveys undertaken in 2023, it ensures that the traffic assessment is representative of current traffic levels and conditions within Galway City. The LAM also incorporated POWSCCAR data from the 2022 Census and is therefore representative of current traffic movements in the study area. Given this, the WRM was only used to model public transport and active travel and also estimate the level of traffic growth as per the opening and design year land use forecasts.

3.3 LAM Software Platform: SATURN

The model software used to develop the LAM is the SATURN (Simulation Assignment of Traffic to Urban Road Networks) suite of transportation modelling programs.

SATURN has 6 basic functions:

1. As a combined traffic simulation and assignment model for the analysis of road-investment schemes ranging from traffic management schemes over relatively localised networks (typically of the order of 100 to 200 nodes) through to major infrastructure improvements where models with over 1,000 junctions are not infrequent
2. As a "conventional" traffic assignment model for the analysis of much larger networks (e.g., up to 6,000 links in the standard PC version, 37,500 in the largest)
3. As a simulation model of individual junctions
4. As a network editor, database and analysis system
5. As a matrix manipulation package for the production of, for example, trip matrices
6. As a trip matrix demand model covering the basic elements of trip distribution, modal split, etc.

3.4 Model Time Periods and User Classes

The standard model time period for traffic simulation and assignment models is one hour and therefore model development and data collection was carried out based on this assumption.

Through a review of survey data, it was noted that the highest traffic flows entering and leaving the area were experienced from 08:00 to 09:00 in the AM, 17:00 to 18:00 in the PM and the average hour between 10:00 to 16:00 for the IP period. Therefore, the LAM was developed, calibrated and validated to represent the following time periods:

- AM Morning peak period: 08:00 to 09:00
- PM Evening peak period: 16:00 to 17:00
- Average Inter-peak period: Average hour model of 10:00 to 16:00

The trip demand matrices for these time periods, representing a base year of 2023, were developed for the LAM using extractions from the WRM combined with survey data.

The demand matrices are the same as in the WRM and are segregated into three vehicle types and ten user classes (or trip purposes), as follows:

- User Class 1 – Business Trips (Car)
- User Class 2 – Commute Trips (Car)
- User Class 3 – Other Trips (Car)
- User Class 4 – Education Trips (Car)
- User Class 5 – Retired Trips (Car)
- User Class 6 – Taxi Trips (Car)
- User Class 7 – Light Goods Vehicles (LGV)
- User Class 8 – Ordinary Goods Vehicles 1 (Heavy Goods Vehicles)
- User Class 9 – Ordinary Goods Vehicles 2 Permit Required (Heavy Goods Vehicles)
- User Class 10 – Ordinary Goods Vehicles 2 No. Permit Required (Heavy Goods Vehicles)

3.5 Road Network Development

The goal in developing the LAM was to create a model that accurately reflects current traffic conditions in the traffic model study area for the 2023 base year, and to a sufficient level of detail to allow the appraisal of each option. To achieve this goal, the model must be defined in terms of road network and trip demand representation.

The WRM was utilised as a donor model for generating the initial highway network for the LAM. Additional network and junction detail was then added to Local Area Model Network where required. Given the study area was already covered by the main focus area of the WRM, only minor additions were required. The figure below shows the extents of the Local Area Model. In addition to Galway City, it covers Headford and Tuam to the north, Athenry, Ballinsloe and Loughrea to the east and Gort to the south. This study area was defined from a forecast WRM run with the proposed N6 GCRR included and the Area of Influence or the area at which the proposed N6 GCRR adjusted travel patterns, was selected for the LAM area. Plate 3.1 below shows the LAM extents.

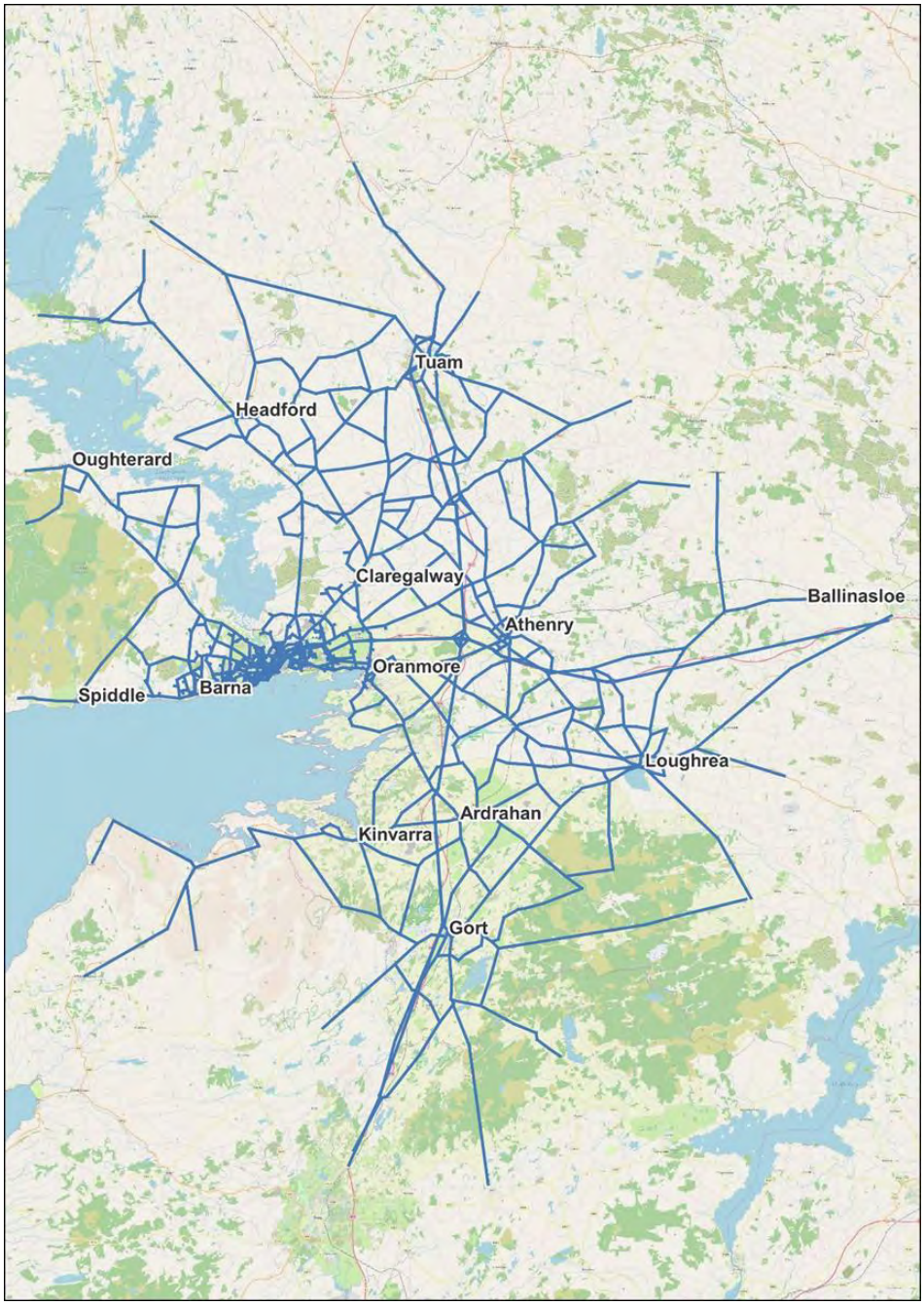

Plate 3.1 Local Area Model Extents

3.6 Model Zone System

By using the WRM as donor model for the LAM, the same zone system was adopted. This zone system was very detailed given it fell into the main focus area of the WRM and thus only minor adjustments were made. The WRM's zone system was defined by aggregating Small Areas (SAs) such that the activity levels of each zone fall within a certain range, where activity levels are measured from POWSCAR data. Other criteria taken into account in determining the zone size and shapes include:

- Electoral District (ED) boundaries
- Large individual attractors
- Physical barriers and connectivity to the network

The LAM zone system around Galway City is shown in the Plate 3.2 below.

Plate 3.2 Local Area Model Zone System in Galway City

3.7 Prior Matrix Development

As noted previously in Section 3.2, the Full Demand Model carries out mode and trip destination choice for all zones within the WRM. The FDM has been calibrated using Census 2016 data. But as Census 2022 data was available from the CSO, it was used here to adjust the demand within the study area, based upon the latest trip patterns. Hence the prior matrices are robust and provide an accurate representation of trip distributions across the study area.

4. Model Calibration & Validation

4.1 Overview of the Calibration and Validation Process

Once the base year prior matrix is created, calibration is used to improve agreement in the model between observed and modelled traffic characteristics. Generally, the components of the model that may be adjusted on the demand side are trip distribution and trip production and generation levels. This adjustment usually involves trip matrix estimation.

On the supply side (network), modelled junction and link characteristics may be altered if sufficient new information is available to justify changes to the existing network.

The LAM was calibrated and validated in accordance with Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines (PAG) for National Roads Unit 5.1 – Construction of Transport Models. This is a widely accepted standard in Ireland that provides robust calibration and validation criteria to which certain types of highway models should adhere.

The following sections of this chapter detail the calibration process undertaken to ensure that the LAM accurately reflects baseline conditions, including information on:

- Traffic Count Data
- Calibration Steps
- Matrix Estimation
- Calibration Statistics i.e. GEH

4.2 Calibration Steps

As an initial calibration step, all modelled movements with corresponding junction turning counts were examined to determine if the count exceeded modelled capacity. Remedial steps were then taken to permit realistic flows in the model.

Similarly, the capacity and speeds of modelled links were also checked to ensure they were broadly in line with survey information.

As the LAM was coded based on best practice approaches developed during the NTA Regional Model Scoping Process, the network coded was an accurate and up-to date representation of the existing road network. If required however, the following network model parameters were adjusted if there was clear reason for doing so:

- Junction type (Priority, Signalised, Roundabout)
- Road lengths
- Signal timings
- Link free flow travel speed
- The number of approach lanes at each junction arm
- Traffic lane width per junction approach, and the lane discipline adopted (including prohibited turns)
- Saturation flow through junctions
- Assumed road capacities
- Link based flow-delay relationships
- Any other traffic management measures that may impact on capacity, such as bus lanes, traffic calming, parking controls and cycle-lanes

- Zone co-ordinates
- Zone loading points (connections to the network)

4.2.1 Trip Demand Adjustment

Following calibration of the network, trip demand is adjusted in line with count data, so that there is an improved agreement between counts and modelled flows. The base prior matrix is fed into a SATURN programme called ME2. ME2 then adjusts origin-destination patterns to produce a trip demand matrix that better replicates traffic counts when assigned to the network. When this replication is satisfactory the matrix is said to be calibrated.

The prior matrix is adjusted only after all options for improving the network are exhausted. Any matrix adjustment must significantly improve the match between observed and modelled flows, and not introduce more trips into a zone than could realistically be expected. Controls are placed on zones to ensure that the trip demand generated is sensible and in line with census population and employment statistics.

The algorithm driving the ME2 estimation process tends to reduce long trips in place of chains of short trips, especially when counts are spread over the entire area, which may not fully reflect reality. Constraints are therefore placed on the adjustment process to protect the number of movements and distribution of the through trips contained within the original car trip matrix. By restricting such long through trips, the matrix adjustment algorithm is forced to create or re-distribute short trips.

Detailed constraints were developed for all zones within the study area to ensure that the ME2 process did not unrealistically alter trips entering/exiting the main areas of assessment. Census Small Area Population Statistics (SAPS) 2016 and land-use data (Geo-directory) were utilised to determine a range of the likely number of trips that would originate, or end, in each zone and these were used as constraints in the matrix estimation process. In Summary:

- Residential Zones: The trip generation values from the prior matrix (Cordoned WRM) were utilised as minimum constraints for residential zones. Land use information identified through the creation of the LAM zone system gave a breakdown on the approximate number of housing units in each residential zone.
- Employment Zones: Minimum constraints based on employment attractions, within the NTA planning sheet for the WRM cordon run were utilised to encourage employment zones as destinations. Maximum constraints were applied to areas within Galway to reflect the amount of on-street parking available.
- Schools: Minimum constraints were applied to school zones based on the NTA planning sheet. For the PM peak, constraints were applied to ensure that no trips were attracted to school zones to reflect the fact that all schools would be closed at this time.
- Heavy Vehicles: Constraints were applied on all residential and unsuitable zones to ensure that HV traffic was not assigned to inappropriate zones in the LAM. For key HV generators/attractors in the area, a possible range of values were defined based on the surveys carried out in the area.

4.2.2 Calibration Statistics: GEH

The GEH statistic is a measure that considers both absolute and proportional differences in flows. Thus, for high levels of flow a low GEH may only be achieved if the percentage difference in flow is small. For lower flows, a low GEH may be achieved even if the percentage difference is relatively large. GEH is formulated as:

$$\mathbf{GEH} = \sqrt{\frac{(\mathbf{observed\ flow} - \mathbf{modelled\ flow})^2}{\mathbf{0.5}.(\mathbf{observed\ flow} + \mathbf{modelled\ flow})}}$$

The reason for introducing such a statistic is the inability of either the absolute difference or the relative difference to cope over a wide range of flows. For example, an absolute difference of 100 pcu/h may be considered a big difference if the flows are of the order of 100 pcu/h, but would be unimportant for flows in the order of several thousand pcu/h. Equally a 10% error in 100 pcu/h would not be important, whereas a 10% error in, for example, 3000 pcu/h might mean the difference between adding capacity to a road or not.

In general, the GEH parameter is less sensitive to the above statistical biases since a modeller would probably feel that an error of 20 in 100 would be roughly as bad as an error of 90 in 2,000, and both would have a GEH statistic of roughly 2.

As a rule of thumb in comparing assigned volumes with observed flows, a GEH parameter of 5 or less would be an acceptable fit, while GEH parameters greater than 10 would require closer attention.

TII's Project Appraisal Guidelines (PAG) Unit 5.1 – Construction of Transport Models, provides extremely robust validation criteria to which certain types of highway models should adhere. This document sets a guideline that 85% of links should have a GEH less than 5 (when measured in vehicles per hour).

4.3 Trip Matrix Calibration

Screenlines represent an amalgamation of count sites that capture key movements across the model network. TII guidelines suggest that an additional check on the quality of trip matrices should be undertaken by comparing modelled and observed flows across screenlines by vehicle type and modelled time period using the following criteria:

Table 4.1 Screenline Calibration Criteria

Criteria	TII PAG Criteria
Total screenline flows (>5 links) to be within 5%	> 85% of cases
GEH stastistic: screenline total < 4	> 85% of cases

Plate 4.1 below illustrates the screenlines used in model calibration.

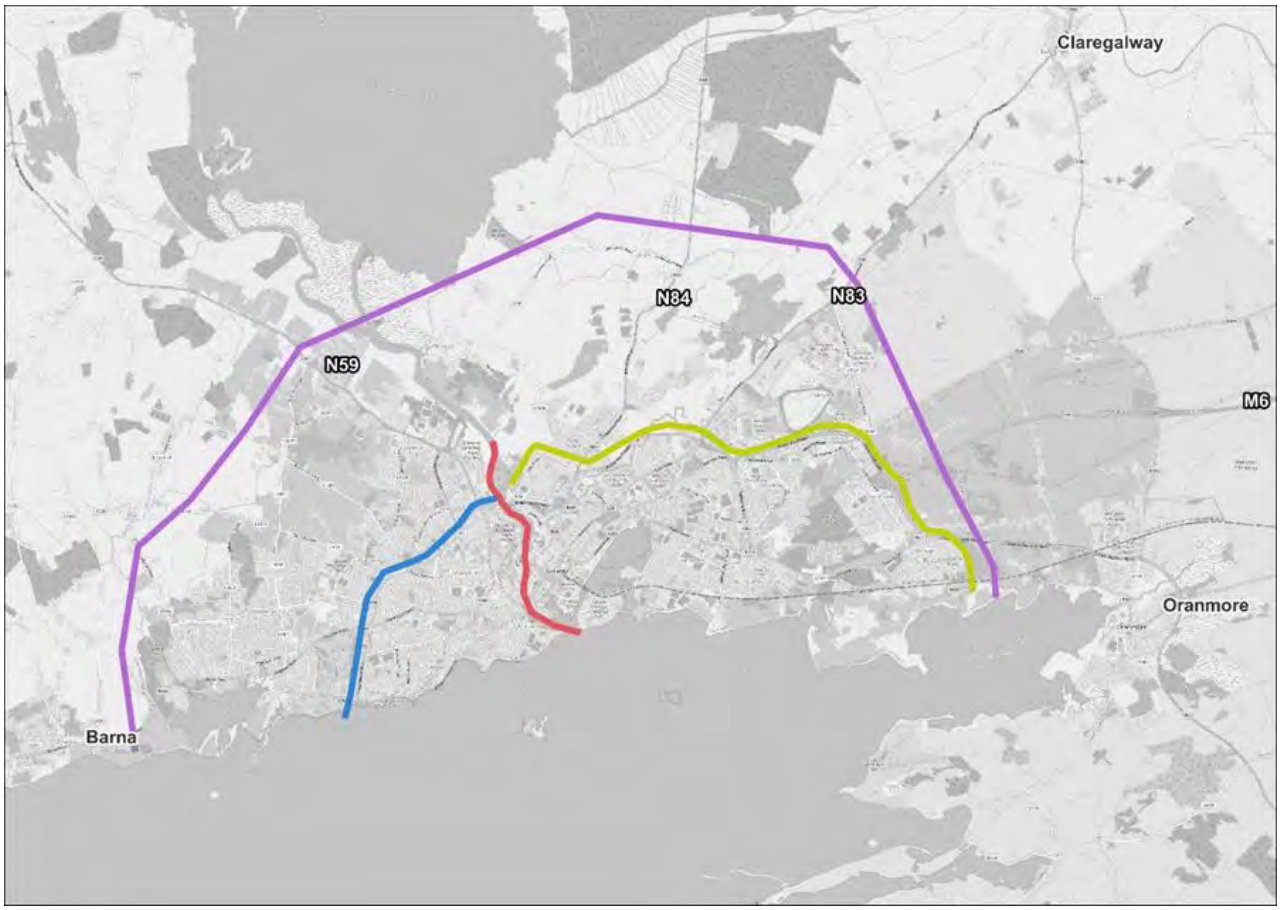

Plate 4.1 Traffic Count Screen Lines

Table 4.2 shows the screenline results for each modelled period. All three time periods pass the GEH criteria which require at least 85% of screenlines to have a GEH less than 4. But the PM period is the only period which passes the Total screenline flow criteria, which requires at least 85% of screenlines to have a modelled flows within 5% of observed flows. The AM and IP period (both 75%), fall just short of the 85% requirement. These results are further discussed below and Table 4.3 to Table 4.5 show the results for each individual screenline and time period.

Table 4.2 Screenline Results per Time Period

Criteria	AM	IP	PM
Total screenline flows (>5 links) to be within 5%	75%	75%	88%
GEH statistic: screenline total < 4	88%	100%	88%

Table 4.3 below shows the AM results for each individual screenline. As mentioned above, the AM period falls short of the total screenline flow criteria. The two screenlines which fail to meet this criteria are Eastern Inner Cordon (Inbound) and the Outer Cordon (Inbound). The Eastern Inner Cordon (Inbound) falls just short of both criteria, by having a percentage difference of 6%, which is just marginally above the 5% requirement. The GEH statistic also falls marginally short of meeting the less than four requirement, with a GEH of 4.37. Given both of these fall marginally short of meeting both criteria, they comparison between modelled flows and observed flows is still deemed acceptable.

The Outer Cordon (Inbound) marginally falls short of meeting screenline flow comparison by having a percentage difference of 6%, which is just marginally above the 5% requirement. Although the GEH statistic is 3.40, which is within the less than four requirement. Given this, the comparison between modelled flows and observed flows is still deemed acceptable.

Table 4.3 Screenline Comparison - AM Peak

Screenline	Direction	Observed	Modelled	Diff. (%)	GEH
River Corrib	Westbound	2,312	2,251	-3%	1.27
River Corrib	Eastbound	2,958	3,029	2%	1.29
Eastern Inner Cordon	Inbound	4,923	4,621	-6%	4.37
Eastern Inner Cordon	Outbound	3,596	3,490	-3%	1.79
Western Inner Cordon	Inbound	3,935	3,853	-2%	1.31
Western Inner Cordon	Outbound	1,861	1,833	-2%	0.66
Outer Cordon	Inbound	3,734	3,944	6%	3.40
Outer Cordon	Outbound	1,333	1,365	2%	0.87

Table 4.4 below shows the IP results for each individual screenline. As mentioned above, the IP period falls short of the total screenline flow criteria. The two screenlines which fail to meet this criteria are Outer Cordon in both directions. The Outer Cordon (Inbound) marginally falls short of meeting screenline flow comparison by having a percentage difference of 7%, which is just marginally above the 5% requirement. Although the GEH statistic is 3.00, which is within the less than four requirement. Given this, the comparison between modelled flows and observed flows is still deemed acceptable.

The Outer Cordon (Outbound) marginally falls short of meeting screenline flow comparison by having a percentage difference of 6%, which is just marginally above the 5% requirement. Although the GEH statistic is 2.47, which is well within the less than four requirement. Given this, the comparison between modelled flows and observed flows is still deemed acceptable.

Table 4.4 Screenline Comparison - IP

Screenline	Direction	Observed	Modelled	Difference (%)	GEH
River Corrib	Westbound	2,118	2,054	-3%	1.40
River Corrib	Eastbound	2,122	2,057	-3%	1.43
Eastern Inner Cordon	Inbound	3,368	3,307	-2%	1.05
Eastern Inner Cordon	Outbound	3,344	3,278	-2%	1.15
Western Inner Cordon	Inbound	2,360	2,238	-5%	2.53
Western Inner Cordon	Outbound	2,384	2,259	-5%	2.58
Outer Cordon	Inbound	1,707	1,585	-7%	3.00
Outer Cordon	Outbound	1,787	1,684	-6%	2.47

Table 4.5 below shows the PM results for each individual screenline. As mentioned above, the PM period meets both the GEH and screenline flow comparison criteria.

Only one screenline fails on either criteria. The Outer Cordon (Inbound) falls short of both criteria, by having a percentage difference of 11%, which is above the 5% requirement. The GEH statistic also falls marginally short of meeting the less than four requirement, with a GEH of 4.63. The actual difference between the observed and modelled flows is 180 pcus, against a total observed figure of 1,603. Given this actual difference and that the dominant flow in the PM, for this screenline is in the opposite direction (in the outbound, leaving the city in the evening), the comparison between modelled flows and observed flows is still deemed acceptable.

Table 4.5 Screenline Comparison - PM Peak

Screenline	Direction	Observed	Modelled	Difference (%)	GEH
River Corrib	Westbound	2,544	2,574	1%	0.60
River Corrib	Eastbound	2,297	2,263	-1%	0.71
Eastern Inner Cordon	Inbound	4,453	4,563	2%	1.64
Eastern Inner Cordon	Outbound	5,095	4,814	-5%	3.99
Western Inner Cordon	Inbound	2,321	2,433	5%	2.30
Western Inner Cordon	Outbound	3,667	3,902	5%	3.82
Outer Cordon	Inbound	1,603	1,423	-11%	4.63
Outer Cordon	Outbound	3,605	3,604	0%	0.01

4.4 Link and Turn Flow Calibration

PAG (Unit 5.1 Table 5.1.2) says that the following two criteria should be met in 85% of cases:

- Criteria 1: links should have a GEH value of less than 5
- Criteria 2:
  - where modelled flows are less than 700, the model flow should be within 100 vehicles of the count

- where modelled flows are between 700 and 2700 the modelled flows should be within 15% of observed flows
- where modelled flows are greater than 2700 the modelled flows should be within 400 vehicles of the observed flows

Table 4.6 to Table 4.8 present the summary statistics for the LAM Calibration for each modelled time period. The results demonstrate that the model is calibrated as per the requirements of PAG. In total 493 counts or 70%, out of a total of 705, were used during calibration. The remaining 212, or 30% were keep for validation purposes. The tables in Appendix A present the full calibration results.

Table 4.6 AM Traffic Flow Calibration

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	85%	94%	96%
Link Flow	> 85%	92%	100%	100%

Table 4.7 IP Traffic Flow Calibration

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	90%	96%	97%
Link Flow	> 85%	98%	100%	100%

Table 4.8 PM Traffic Flow Calibration

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	86%	92%	97%
Link Flow	> 85%	94%	100%	100%

4.5 Journey Time Validation

PAG (Unit 5.1 Table 5.1.2) says that modelled times along routes should be within 15% of surveyed times (or 1 minute if higher) for more than 85% of routes.

The journey time routes are shown in Plate 2.2. Table 4.9 shows the overall journey time validation for each time period. As shown in the table, all three time periods pass the PAG criteria, by having greater than 85% of routes passing. In the morning peak 93% of routes pass the validation criteria, 93% pass the criteria in the inter-peak period and 86% passing the criteria in the PM peak period.

The overall journey time in all peaks is within acceptable thresholds with some periods showing slightly faster overall journey times and some showing slightly slower overall journey times, which demonstrates that the model is not systematically biased towards being too fast or slow.

The slightly lower journey times in the more congested morning and evening peaks are logical, as it can be difficult to replicate large observed delays in SATURN due to the assignment procedure's tendency to re-route traffic away from junctions with large delays.

Table 4.9 Journey Time Validation Summary

Time Period	PAG Criteria	Results
AM	> 85%	93%
IP	> 85%	93%
PM	> 85%	86%

Table 4.10 below shows the journey comparison for all routes in the AM peak. Only one route in the AM, is outside of the PAG criteria. The Western Distributor Road/Quincentenary Bridge route in the westbound direction falls marginally outside, of the less than 15% criteria, at 16%. For this route, which is quicker than the observed time, a decision was made to prioritise matching the observed flows along the route. It can be difficult to replicate large observed delays in SATURN due to the assignment procedure's tendency to re-route traffic away from junctions with large delays. As such, the route falls marginally outside the criteria, but is still deemed acceptable for forecasting purposes as the level of traffic passing through the corridor matches the observed levels.

Table 4.10 Journey Time Validation AM Peak

Route	Modelled (sec)	Observed (sec)	Difference (sec)	Difference (%)	Pass
N83 Tuam Road/Bohermore (SW)	936	1,020	-84	-8%	Yes
N83 Tuam Road/Bohermore (NE)	617	579	38	7%	Yes
Dublin Road (WB)	924	989	-65	-7%	Yes
Dublin Road (EB)	551	610	-59	-10%	Yes
N6 (WB)	1,122	1,230	-108	-9%	Yes
N6 (EB)	848	802	45	6%	Yes
Western Distributor Road/Quincentenary Bridge (EB)	1,367	1,384	-17	-1%	Yes
Western Distributor Road/Quincentenary Bridge (WB)	909	1,081	-172	-16%	No
Upper and Lower Salthill Road (EB)	725	650	75	12%	Yes
Upper and Lower Salthill Road (WB)	674	749	-75	-10%	Yes
N84 Headford Road (SB)	895	970	-75	-8%	Yes
N84 Headford Road (NB)	292	296	-4	-1%	Yes
N59 (EB)	481	450	31	7%	Yes
N59 (WB)	346	300	46	15%	Yes

Table 4.11 below shows the journey comparison for all routes in the Inter-peak. Only one route in the IP, is outside of the PAG criteria. The Dublin Road route in the westbound direction falls outside, of the less than 15% criteria, at 25% faster. For this route, which is quicker than the observed time, a decision was made to prioritise matching the observed flows along the route. It can be difficult to replicate large observed delays in SATURN due to the assignment procedure's tendency to re-route traffic away from junctions with large delays. As such, the route falls outside the criteria, but is still deemed acceptable for forecasting purposes as the level of traffic passing through the corridor matches the observed levels.

Table 4.11 Journey Time Validation IP

Route	Modelled (sec)	Observed (sec)	Difference (sec)	Difference (%)	Pass
N83 Tuam Road/Bohermore (SW)	841	807	34	4%	Yes
N83 Tuam Road/Bohermore (NE)	786	696	90	13%	Yes
Dublin Road (WB)	463	618	-155	-25%	No
Dublin Road (EB)	577	651	-74	-11%	Yes
N6 (WB)	859	791	68	9%	Yes
N6 (EB)	856	803	53	7%	Yes
Western Distributor Road/Quincentenary Bridge (EB)	977	1,140	-163	-14%	Yes
Western Distributor Road/Quincentenary Bridge (WB)	913	1,071	-158	-15%	Yes
Upper and Lower Salthill Road (EB)	703	780	-77	-10%	Yes
Upper and Lower Salthill Road (WB)	671	777	-106	-14%	Yes
N84 Headford Road (SB)	581	509	71	14%	Yes
N84 Headford Road (NB)	308	305	3	1%	Yes
N59 (EB)	303	305	-2	-1%	Yes
N59 (WB)	358	314	44	14%	Yes

Table 4.12 below shows the journey comparison for all routes in the PM peak. Two routes in the PM, is outside of the PAG criteria. The Dublin Road route in both direction falls marginally outside, of the less than 15% criteria, at 21% (WB) and 25% (EB), both faster. For these routes, which are quicker than the observed time, a decision was made to prioritise matching the observed flows along the route. It can be difficult to replicate large observed delays in SATURN due to the assignment procedure's tendency to re-route traffic away from junctions with large delays. As such, the route falls marginally outside the criteria, but is still deemed acceptable for forecasting purposes as the level of traffic passing through the corridor matches the observed levels.

Table 4.12 Journey Time Validation PM

Route	Modelled (sec)	Observed (sec)	Difference (sec)	Difference (%)	Pass
N83 Tuam Road/Bohermore (SW)	904	863	41	5%	Yes
N83 Tuam Road/Bohermore (NE)	824	965	-141	-15%	Yes
Dublin Road (WB)	471	598	-127	-21%	No
Dublin Road (EB)	649	870	-221	-25%	No
N6 (WB)	1035	961	74	8%	Yes
N6 (EB)	1128	1269	-141	-11%	Yes
Western Distributor Road/Quincentenary Bridge (EB)	1,133	1,133	0	0%	Yes
Western Distributor Road/Quincentenary Bridge (WB)	1,302	1,353	-51	-4%	Yes
Upper and Lower Salthill Road (EB)	704	816	-112	-14%	Yes

Route	Modelled (sec)	Observed (sec)	Difference (sec)	Difference (%)	Pass
Upper and Lower Salthill Road (WB)	775	864	-89	-10%	Yes
N84 Headford Road (SB)	584	600	-16	-3%	Yes
N84 Headford Road (NB)	487	540	-53	-10%	Yes
N59 (EB)	281	300	-19	-6%	Yes
N59 (WB)	467	420	47	11%	Yes

4.6 Validation against Independent Counts

A set of counts were excluded from the counts used in matrix estimation so they could be used to carry out an independent check on the model to see how well the model flows match the observed counts. In total 212 counts or 30%, out of a total of 705, were used during validation.

Table 4.13 to Table 4.15 show the validation results for the independent counts excluded from matrix estimation for each modelled time period. These tables show that the three time periods show an excellent level of calibration for LGVs and HGVs but for cars, only meet one of the two criteria. For cars, all three time periods fall slightly below the 85% GEH <5 criteria (75% in the AM and 80% in the IP and PM) but all three surpass the link flow criteria (88% in the AM, 97% in the IP and 94% in the PM). Whilst the three time periods fall slightly below the GEH criteria, when the GEH criteria is increased to 6, rather than 5, the AM increases to 84%, the IP increases to 87% and the PM increases to 88%. If the GEH criteria was increased to 6, both the IP and PM would meet the 85% threshold, while the AM would fall marginally short on 84%. Therefore while the three models fall short on the GEH criteria, they are still deemed to show a good level of validation.

Table 4.13 AM Traffic Flow Validation

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	75%	91%	95%
GEH < 6	N/A	84%	96%	98%
Link Flow	> 85%	88%	99%	100%

Table 4.14 IP Traffic Flow Validation

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	80%	97%	97%
GEH < 6	N/A	87%	98%	99%
Link Flow	> 85%	97%	100%	100%

Table 4.15 PM Traffic Flow Validation

Criteria	PAG Criteria	Car	LGV	HGV
GEH < 5	> 85%	80%	90%	95%
GEH < 6	N/A	88%	94%	98%
Link Flow	> 85%	94%	100%	99%

4.7 Impact of Matrix Estimation on Trip Length Distribution

A further calibration step recommended by PAG is to compare trip length distributions for the prior and post calibrated matrices to ensure they have not been distorted to any great extent by the matrix estimation process. ME2 can sometimes generate increased short distance trips to match count information, thus distorting the profile of trip making on the network. PAG suggests that the coincidence ratio should be used to compare trip length distributions before and after estimation, with a desirable range between 0.7 and 1.0.

Table 4.16 below outlines the coincidence ratios for each time period.

Table 4.16 Trip Length Analysis - Coincidence Ration

Measure of Fit	AM	IP	PM
Coincidence Ratio	0.88	0.90	0.87

The coincidence ratios suggest that, while there has been some changes in trip lengths, the changes made during matrix estimation are within acceptable limits.

The graphs below graphically present the change in trip length distribution for each model period as a result of matrix estimation. These figures show that there have been some changes to the trip length distributions, with a slight pattern of changes shown across the time periods. The changes overall are not large and therefore it is considered that Matrix Estimation has not overly distorted the trip length distribution of the prior matrix.

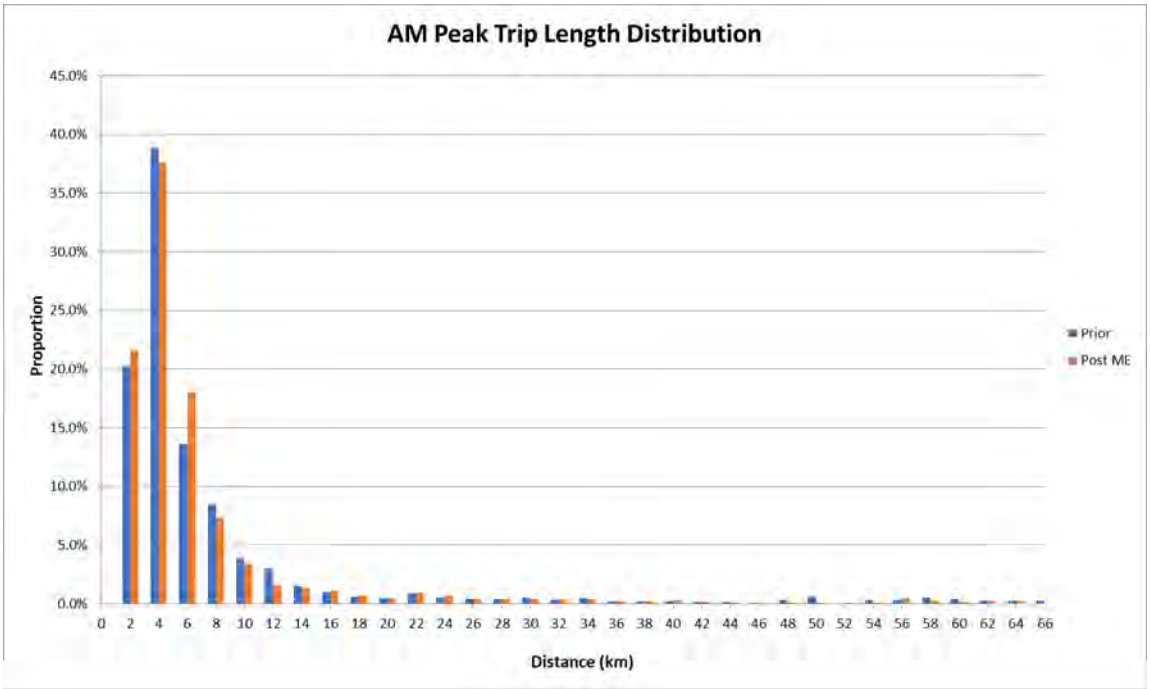

Plate 4.2 Trip Length Distribution Analysis - AM

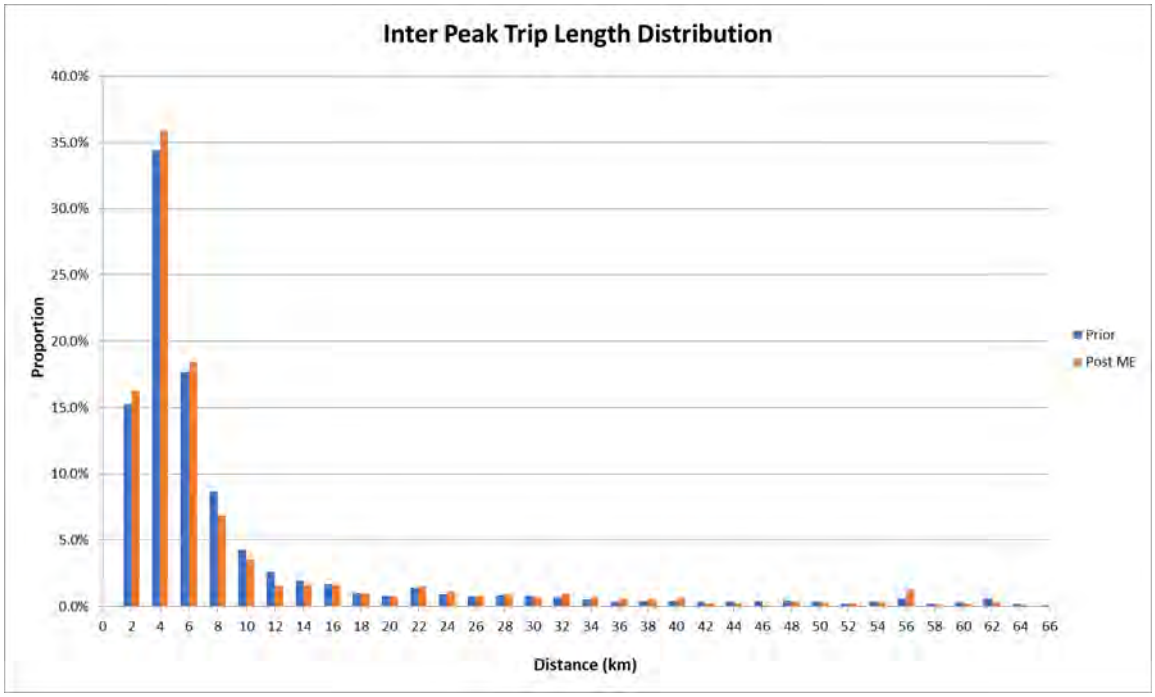

Plate 4.3 Trip Length Distribution Analysis - IP

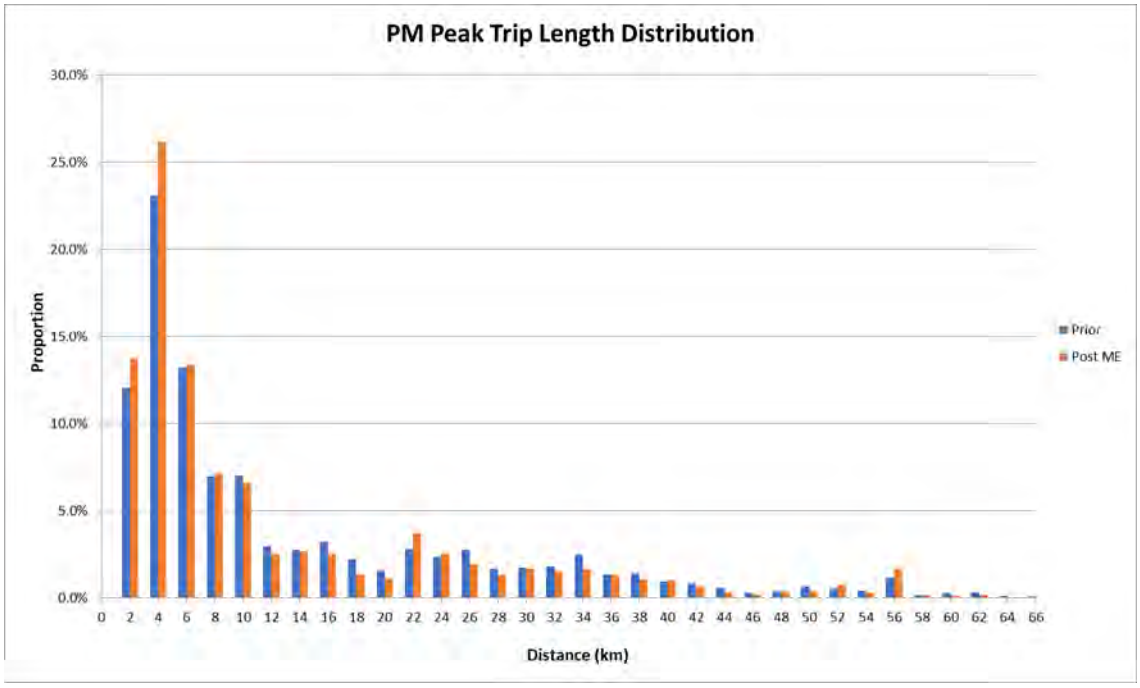

Plate 4.4 Trip Length Distribution Analysis – PM

5. Future Year Model Development

5.1 Introduction

This section sets out the development of the forecast LAM runs for the scheme Opening Year (2031) and Design Year (2046). These forecast years will be used for assessing the performance of the scheme.

5.2 Future Year Network Development

5.2.1 Core Tests

The future year 'Do-Minimum' network includes the 2023 base network plus all of the schemes (highway and PT) that are already built, or are committed, or likely to be built by 2031 and 2046. The list of schemes to be included was developed in coordination with Galway City Council, Galway County Council, TII and NTA and is included in Appendix B.

The future year 'Do-Something' networks include the Do-Minimum schemes plus the N6 GCRR. In addition to the validated 2023 base year network, the future year networks developed are:

- 2031 Opening Year Do-Minimum
- 2031 Opening Year Do-Something
- 2046 Design Year Do-Minimum
- 2046 Design Year Do-Something

5.3 Future Year Matrix Development

5.3.1 Population and Employment Forecasts

A detailed approach to forecasting travel demand has been developed in order to capture the planned growth in population and employment at a local level in Galway.

The following forecast scenario (and associated demographic forecasts) have been used on this Project in order to create future year travel demand:

- NTA Reference Case Forecasts- These forecasts are based on the NTA High Growth scenario and follow the National Planning Framework (NPF)/Regional Spatial Economic Strategy (RSES) distribution. These are the same forecasts which are being used by the NTA, in the update of the Galway Metropolitan Area Transport Strategy (GMATS). Given these forecasts are a high growth scenario, they are the worst case used for the EIA.

In the 2018 EIAR, three land use forecasts were assessed. These are as follows:

- NTA Reference Case
- TII Central Case
- TII High

The three scenarios above, contained pre-NPF land use forecasts. Normally only one scenario would be assessed in the EIAR, but these three scenarios were assessed as all three scenarios were already developed and required as part of the Cost Benefit Analysis (CBA) of the project and for input into the Detailed Business Case. As part of the Business Case, multiple scenarios with varying levels of population/jobs would be assessed, in order to give a greater level of confidence in the CBA results and rationale for investment.

After the Government had published the NPF, which contained higher levels of growth for the 5 cities (including Galway) across the country, An Bord Pleanala requested further information and asked for the NPF forecasts to be assessed. In the RFI in 2019, two land use forecasts were assessed. These are as follows:

- TII NPF Central Case
- NTA/GCC NPF (these were developed by the NTA with some input from Galway City Council)

Table 5.1 below shows a comparison of the design year population forecasts for Galway City, for each scenario. It should be noted that the first five scenarios had a Design Year of 2039, as that was the original Design Year assumed for the project. As part of the update to the 2018 EIAR, the Design Year has been revised to 2046 to account for time passed. The figures below show that the new NTA Reference Case scenario, which is being assessed in this updated EIAR, has the highest population forecasts, approx. 135k (a more than 10% increase on the NTA/GCC NPF forecasts assessed in the 2019 RFI), relative to the previously assessed forecasts.

These new NTA NPF forecasts has been adopted for the traffic impact assessment as they are the NTA's current reference case. They are also the same forecasts which are being used by the NTA as part of the GMATS update and are therefore considered the most appropriate to use in the traffic impact assessment.

Table 5.1 Population Forecast Comparison for Galway City

Scenario	Forecast Year	Population Forecasts (Galway City)
NTA Reference Case (2018 EIAR)	2039	83,339
TII Central (2018 EIAR)	2039	77,666
TII High (2018 EIAR)	2039	78,304
TII NPF Central Case (RFI 2019)	2039	90,000
NTA/GCC NPF (RFI 2019)	2039	121,741
NTA NPF Reference Case (Updated EIAR)	2046	135,339

5.3.2 Overview of Method to Develop Future Year Matrices

The process to develop future year matrices based on the demographic forecasts can be summarised as follows:

- Generate future year trip ends using the version of the National Trip End Model (NTEM) developed specifically for Regional Modelling Suite
- Person Trip Ends are run through the WRM Demand Model to determine destination and mode choice
- Future Year trips by mode are output from the WRM Demand Model
- Trip End Growth is calculated from a 2023 WRM run and the forecast model run (Opening and Design Year). That trip end growth is applied to the LAM base year matrices, using the same distribution as the LAM base year matrices. For any big new developments, the distribution is taken from the WRM

5.4 Future Year Matrix Analysis

The PAG (Unit 5.3) requires a quantitative assessment of the impact of the traffic forecasting process to be undertaken upon the following criteria:

- Trip Length Distribution
- Trip End Growth
- Zone to Zone Growth

5.4.1 Trip Length Distribution

Plate 5.1 to Plate 5.3 below show the change in trip length distribution between the 2023 Base and 2046 Do-Minimum, Design Year for car trips in the modelled time periods. In general the 2023 trip length distribution closely matches the 2046 Do-Minimum trip length distribution. The AM period shows a near exact profile, while the IP and PM periods shows there has been a very slight increase in the proportion of 6 - 12km distance trips within the model area.

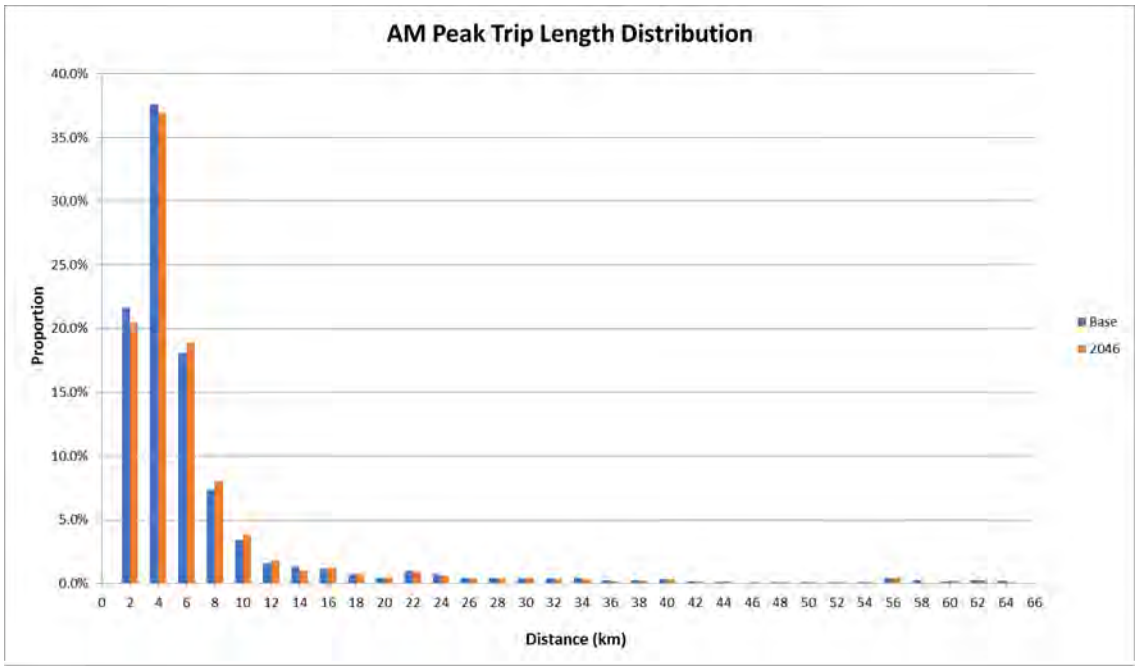

Plate 5.1 Change in Trip Length Distribution - Morning Peak Hour

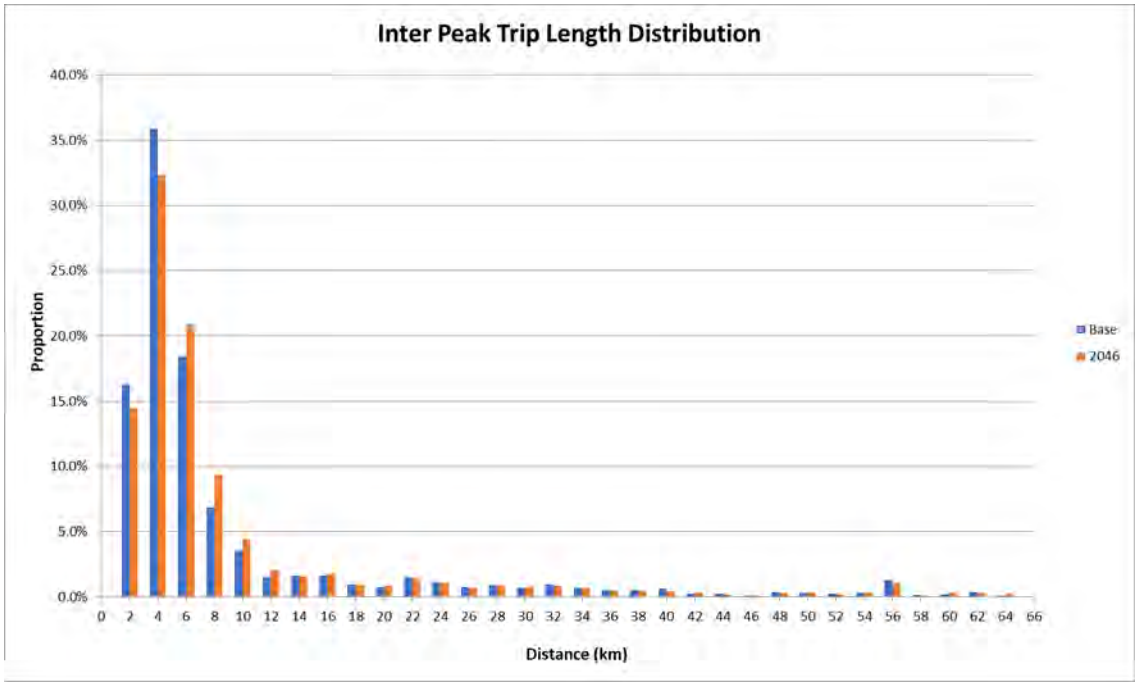

Plate 5.2 Change in Trip Length Distribution - IP

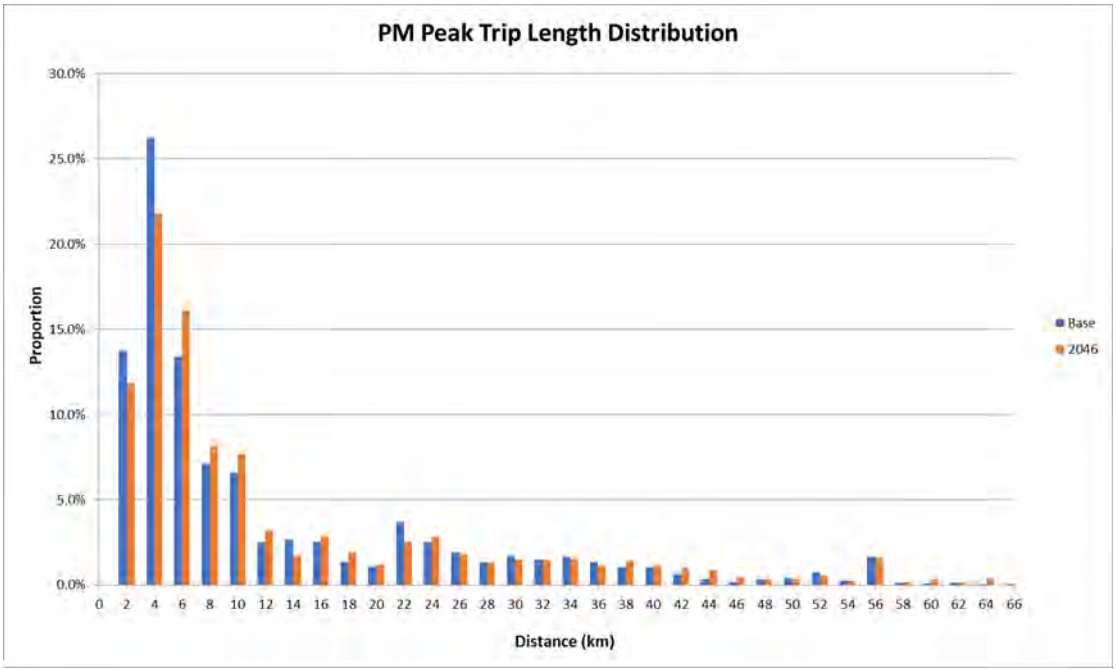

Plate 5.3 Change in Trip Length Distribution - PM

5.4.2 Trip End Growth

An assessment of the Trip End Growth (TEG) between the Base and Design Year demand in the Peak Hours was undertaken to assess if there were any significant changes in demand at trip end level when compared to the overall growth between the Base and Design Year demand.

The assessment indicated that the percentage increase between several trip ends in the Base and Design Year demand was significant, as the land use forecasts have been developed as per the NTA's NPF growth scenario and include for significant growth across Galway City by the Design Year of 2046. In order to assess the true magnitude of TEG, the GEH statistic was applied to the Base and Design Year trip ends in order to take account of not only the difference between the Base and Design Year demand, but also the magnitude of the difference.

The Plates below illustrate the GEH between the Base and Design Year (2046) demand in the modelled time periods. The PAG guidance on the GEH statistic indicates that any GEH statistic above 10 warrants further investigation or checking. A GEH greater than 10 does not mean there is an issue but can mean there is significant growth or development in a zone, in the design year, relative to the base year. Greenfield sites which are currently undeveloped but are earmarked for significant developments (either residential or employment), are examples where we would see a GEH greater than 10. This is caused by having no or very little traffic in the base year but in the design year, there is a significant volume of traffic leaving the zone, due to the site being developed. Other examples may include external zones which represent entry or exit points, at the edges of the model. These can represent the strategic road network like motorways or national roads and may see a growth in the volume of traffic using them, mainly relating to the expected growth in HGVs, delivering goods as the population grows in line with National Planning Framework targets. The figures show the zones with a GEH statistic above 10 in any of the time periods.

Plate 5.4 and Plate 5.5 show the TEG GEH values for the AM period, separated by cars and goods vehicles. For cars, approx. 5% of origin/destination zones have a GEH above 10 and those are shown below as a dot in the figures. For Plate 5.4, all of the zones have been checked but a high-level summary of some of the dots/areas represented, are shown below –

- The proposed Ardaun development to the east of the city, which is a greenfield site currently but is earmarked for significant levels of housing in the future. The Ardaun development is broken up into multiple zones in the model, given it's size and therefore represented by multiple dots in the below figure

- The University of Galway's campus on the Upper Newcastle Road which is being proposed to develop further
- Other greenfield sites on the western side of the city, which are earmarked for development, like on Letteragh Road and Rahoon Road
- Multiple zones in the model, in the Athenry area are also represented. These are zoned for development in the Local Area Plan for the town.

For goods vehicles, less than 0.5% of origin/destination zones have a GEH above 10. The zones which have a GEH above 10, include those which are earmarked for development like Galway Harbour (covers multiple zones in the figure below) and the site of the former airport in Galway. This site has plans to be redeveloped as an Innovation, Business and Technology Campus.

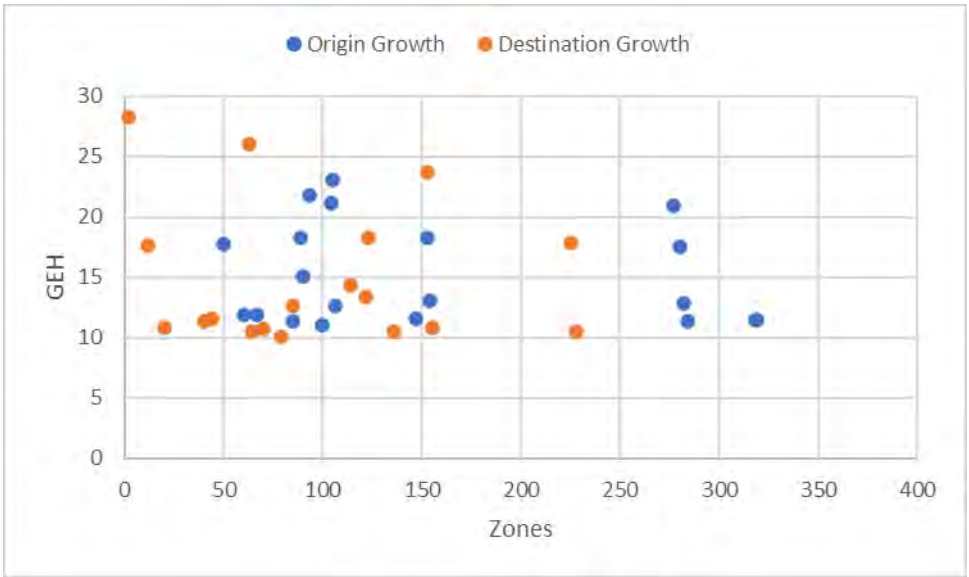

Plate 5.4 AM Car Trip End Growth (2023 to 2046)

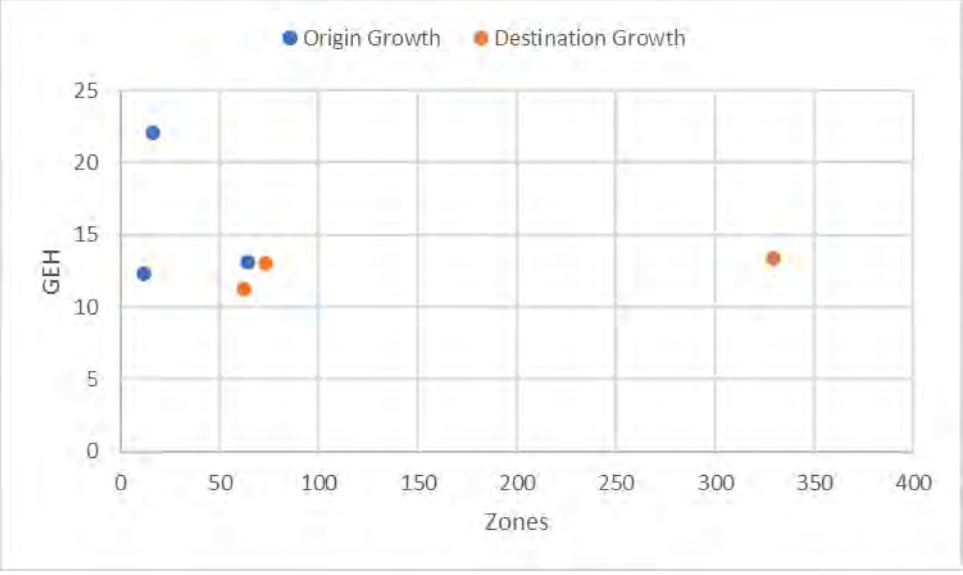

Plate 5.5 AM Goods Trip End Growth (2023 to 2046)

Plate 5.6 and Plate 5.7 show the TEG GEH values for the IP period, separated by cars and goods vehicles. The same sites which have been mentioned above, for the AM, also show up as having a GEH above 10 in

the IP. For cars, less than 3% of origin/destination zones have a GEH above 10. Again, all of the zones have been checked but a high-level summary of some of the dots/areas represented, are shown below –

- The proposed Ardaun development to the east of the city, which is a greenfield site currently but is earmarked for significant levels of housing in the future. The Ardaun development is broken up into multiple zones in the model, given it's size and therefore represented by multiple dots in the below figure
- Other greenfield sites on the western side of the city, which are earmarked for development, like on Letteragh Road and Rahoon Road
- Multiple zones in the model, in the Athenry area are also represented. These are zoned for development in the Local Area Plan for the town.

For goods vehicles, less than 1% of origin/destination zones have a GEH above 10. The zones which have a GEH above 10, include those which are earmarked for development like Galway Harbour (covers multiple zones in the figure below) and the site of the former airport in Galway. This site has plans to be redeveloped as an Innovation, Business and Technology Campus.

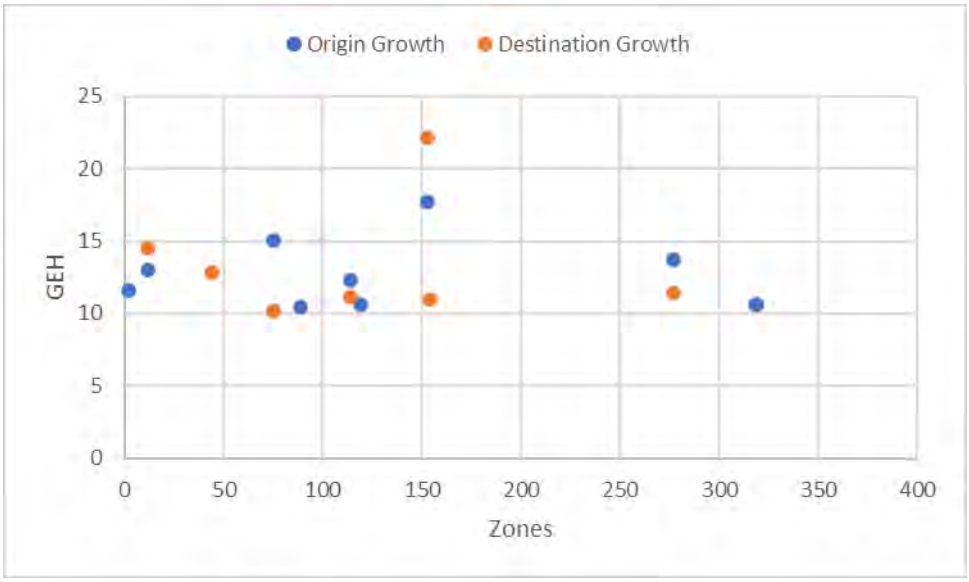

Plate 5.6 IP Car Trip End Growth (2023 to 2046)

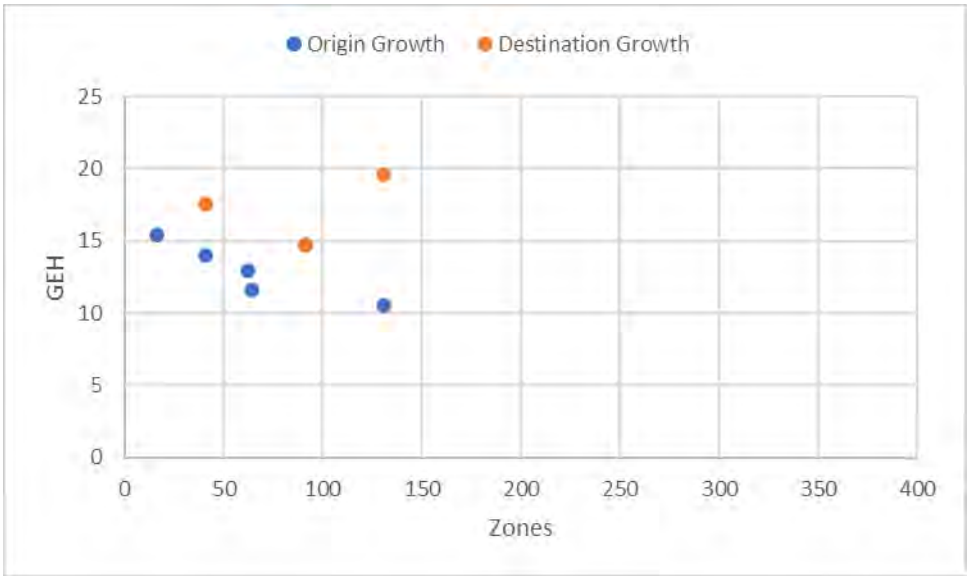

Plate 5.7 IP Goods Trip End Growth (2023 to 2046)

Plate 5.8 and Plate 5.9 show the TEG GEH values for the PM period, separated by cars and goods vehicles. The same sites which have been mentioned above, for the AM and IP, also show up as having a GEH above 10 in the PM. For cars, approx. 6% of origin/destination zones have a GEH above 10. Again, all of the zones have been checked but a high-level summary of some of the dots/areas represented, are shown below –

- The proposed Ardaun development to the east of the city, which is a greenfield site currently but is earmarked for significant levels of housing in the future. The Ardaun development is broken up into multiple zones in the model, given it's size and therefore represented by multiple dots in the below figure
- Other greenfield sites on the western side of the city, which are earmarked for development, like on Letteragh Road and Rahoon Road
- Multiple zones in the model, in the Athenry area are also represented. These are zoned for development in the Local Area Plan for the town.

For goods vehicles, less than 1% of origin/destination zones have a GEH above 10. The zones which have a GEH above 10, include those which are earmarked for development like Galway Harbour (covers multiple zones in the figure below) and the site of the former airport in Galway. This site has plans to be redeveloped as an Innovation, Business and Technology Campus.

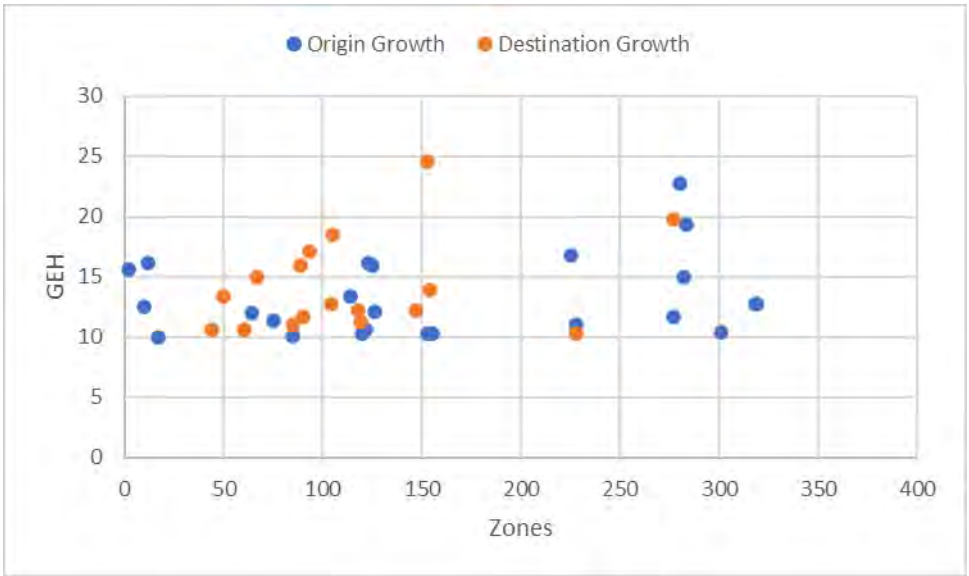

Plate 5.8 PM Car Trip End Growth (2023 to 2046)

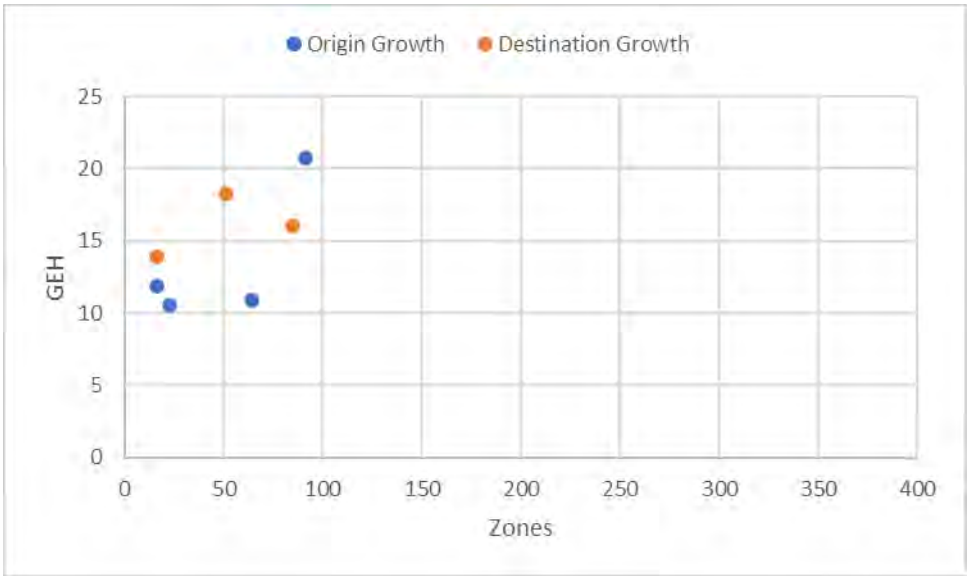

Plate 5.9 PM Goods Trip End Growth (2023 to 2046)

5.4.3 Zone to Zone Growth

The same procedure for TEG was also undertaken for zone to zone growth. The GEH statistic for each origin-destination pair was assessed to show any significant outliers or issues in the modelled time periods.

The GEH statistic on a zone to zone basis for each period is shown in the Figures below.

Plate 5.10 and Plate 5.11 show the zone to zone growth for the AM period, separated by cars and goods vehicles. For cars, 30 zone to zone movements (or 0.03%) have a GEH above 10. These movements cover several movements from greenfield sites like Ardaun and Garraun, which are earmarked for significant development and a number of the remaining movements, also cover external to external zone movements (zones which cover entry/exit points for the LAM) which represent points on the national road network like the N83 and N84 etc.

For goods vehicles, 6 zone to zone movements (or 0.005%) have a GEH above 10. These cover external zones movements (zones which cover entry/exit points for the LAM) which represent points on the national road network like the R336 to the west of the city, the N17, the N83, the N84, the N63 and the M6.

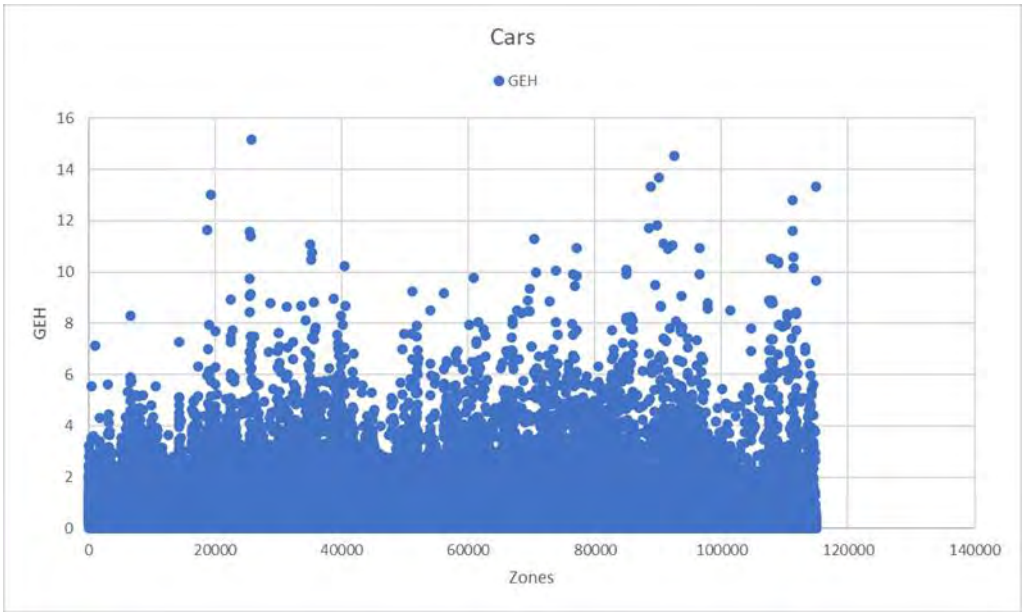

Plate 5.10 AM Car Zone to Zone Growth (2023 to 2046)

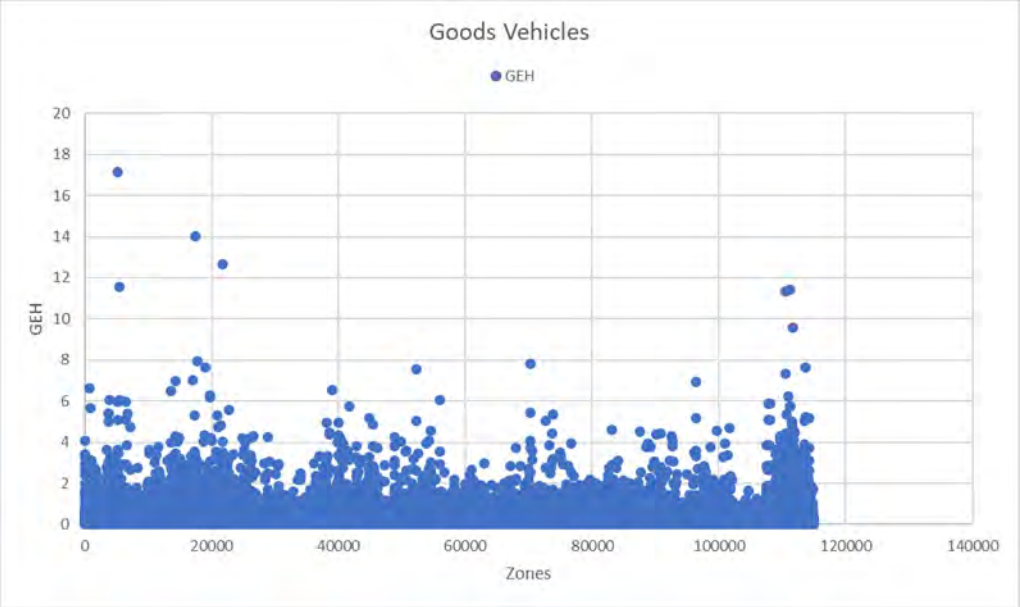

Plate 5.11 AM Goods Vehicles Zone to Zone Growth (2023 to 2046)

Plate 5.12 and Plate 5.13 show the zone to zone growth for the IP period, separated by cars and goods vehicles. For cars, 1 zone to zone movement has a GEH above 10. This covers a movement from Ardaun to the city centre.

For goods vehicles, 3 zone to zone movements have a GEH above 10. These cover movements from Galway Harbour and external zones movements (zones which cover entry/exit points for the LAM) which represent points on the national road network like the M6.

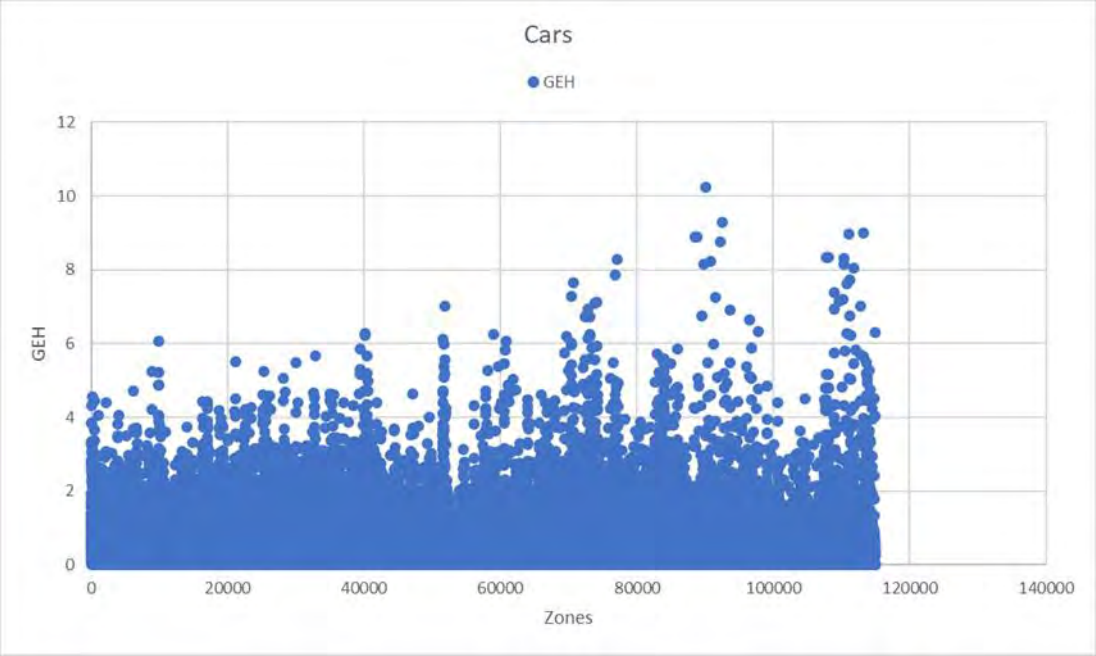

Plate 5.12 IP Car Zone to Zone Growth (2023 to 2046)

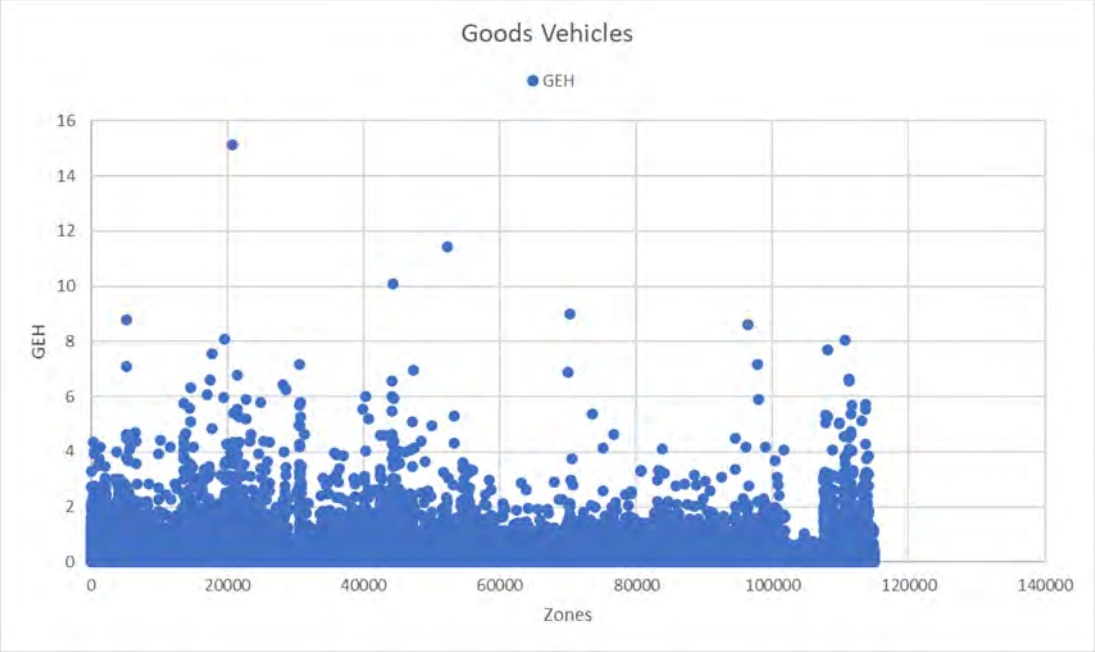

Plate 5.13 IP Goods Vehicles Zone to Zone Growth (2023 to 2046)

Plate 5.14 and Plate 5.15 show the zone to zone growth for the PM period, separated by cars and goods vehicles. For cars, 14 zone to zone movements (or 0.01%) have a GEH above 10. These movements are mainly covered by external zone movements (zones which cover entry/exit points for the LAM) which represent points on the national road network like the N83 and N84 etc.

For goods vehicles, 3 zone to zone movements have a GEH above 10. These cover external zones movements (zones which cover entry/exit points for the LAM) which represent points on the national road network like the N83 and N84.

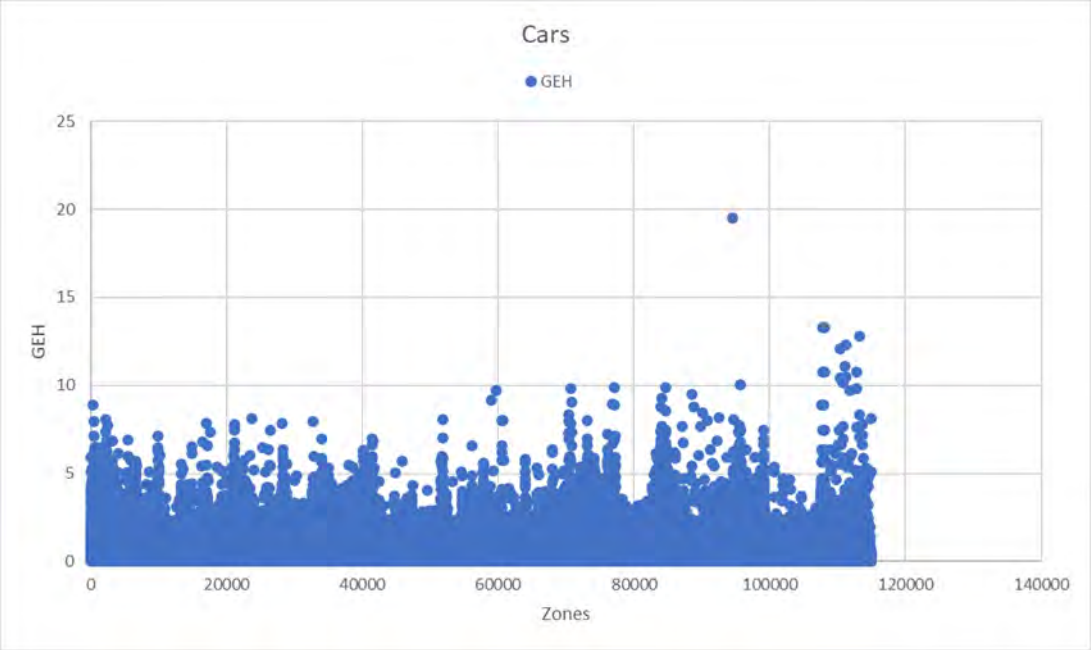

Plate 5.14 PM Car Zone to Zone Growth (2023 to 2046)

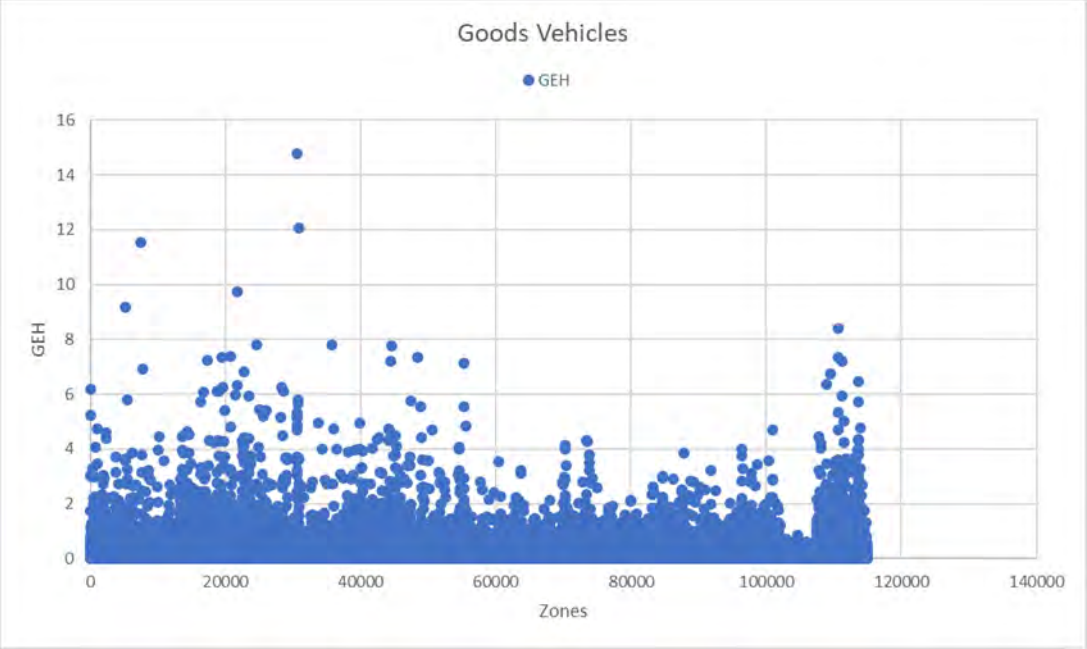

Plate 5.15 PM Goods Vehicles Zone to Zone Growth (2023 to 2046)

6. Analysis

6.1 Introduction

This section provides a summary of the performance of the scheme, based on the following analysis:

- Network Performance Indicators
- Journey Times
- V/C at major junctions
- Mode Share

6.2 Network Performance Indicators

Network performance indicators for the 2031 (Opening Year) and 2046 (Design Year) are outlined in the tables below, for the morning and evening peak hours.

These statistics provide information on the following parameters (averaged):

- Average Speed – Measured in kilometres per hour (km/h)
- Average Delay – Measured in total delay for all vehicles
- Total Network Travel Time – Measures in total travel time for all vehicles
- Total Vehicle Distance Travelled – Measured in total kilometres for all vehicles

This KPI therefore presents an indication of the overall performance of the model network.

Table 6.1 Network Performance Indicators - Morning Peak Hour

Scenario	Total Vehicle Distance (pcu. Kms)	Total Network Travel Time (pcu. Hrs)	Total Network Delay (pcu. Hrs)	Average Vehicle Speed (kph)
2031 Do-Minimum	234,792	11,062	5,567	19.0
2031 Do-Something	252,674	9,271	3,560	27.0
2046 Do-Minimum	264,575	13,831	7,870	16.0
2046 Do-Something	280,109	12,110	5,672	23.0

Table 6.2 Network Performance Indicators - Evening Peak Hour

Scenario	Total Vehicle Distance (pcu. Kms)	Total Network Travel Time (pcu. Hrs)	Total Network Delay (pcu. Hrs)	Average Vehicle Speed (kph)
2031 Do-Minimum	229,153	9,442	4,240	21.9
2031 Do-Something	240,733	7,825	2,450	30.8
2046 Do-Minimum	255,354	11,343	5,672	19.6
2046 Do-Something	268,746	9,695	3,599	27.7

The tables above demonstrate that the Do-Something scenario reduces the network delay considerably relative to the Do-Minimum and provides a higher average speed in all time periods in both the Opening and Design Year. The reduction in delay allows traffic to travel further in a shorter period of time, which is illustrated in the increase in vehicle Km's and decrease in Total Travel time in all Do-Something Scenarios.

This analysis indicates that the scheme will have a significantly positive impact in both Opening and Design Years.

6.3 Journey Times

To develop an understanding of the potential impact of the proposed N6 GCRR on key routes serving Galway, the projected change in vehicular journey times were assessed. Journey times represent a good basis for strategic traffic impact assessment as they provide a mechanism to quantify the traffic impact along a full route. This KPI will be based on a comparison between the 'Do-Minimum' journey times (i.e. without the N6 GCRR) and the 'Do-Something' journey times (i.e. with the N6 GCRR). Both the percentage change and absolute change in journey times (seconds) is considered in order to determine the impact, as shown in Plate 6.1 below.

The journey time routes used for the assessment of impact are shown in Plate 6.1. This KPI, therefore, assesses the strategic traffic impact of the proposed N6 Galway City Ring Road.

Plate 6.1 Journey Time Routes

The tables below detail the results of the journey time comparison as extracted from the 2031 and 2046 traffic models for the morning and evening peak hours.

Table 6.3 2031 AM Peak Journey Time Results (mins.)

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
1	Route 1 - Inbound	21.2	14.2	-7.0	-33%	Positive
2	Route 1 - Outbound	11.1	10.9	-0.2	-2%	Positive
3	Route 2 - Inbound	24.9	20.3	-4.6	-18%	Positive
4	Route 2 - Outbound	37.1	30.5	-6.6	-18%	Positive
5	Route 3 - Inbound	7.8	5.0	-2.8	-36%	Positive

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
6	Route 3 - Outbound	5.1	5.0	-0.1	-2%	Positive
7	Route 4a - Inbound	30.4	15.7	-14.7	-48%	Positive
8	Route 4a - Outbound	27.1	16.0	-11.1	-41%	Positive
9	Route 4b - Inbound	19.9	12.6	-7.3	-37%	Positive
10	Route 4b - Outbound	14.0	10.5	-3.5	-25%	Positive
11	Route 5 - Inbound	48.3	39.2	-9.2	-19%	Positive
12	Route 5 - Outbound	19.3	18.5	-0.8	-4%	Positive
13	Route 6 - Inbound	33.7	26.6	-7.1	-21%	Positive
14	Route 6 - Outbound	28.3	25.6	-2.7	-9%	Positive
15	Route 7 - Inbound	12.6	14.9	-2.4	19%	Moderate
16	Route 7 - Outbound	13.5	11.0	-2.5	-18%	Positive
17	Route 8 - Inbound	17.6	16.4	-1.1	-6%	Positive
18	Route 8 - Outbound	12.4	12.0	-0.3	-3%	Positive
19	Route 9 - Inbound	9.5	9.5	-	-0%	Negligible
20	Route 9 - Outbound	9.5	9.5	-	-0%	Negligible
21	Route 10 - Inbound	12.0	11.3	-0.8	-6%	Positive
22	Route 10 - Outbound	17.5	11.0	-6.5	-37%	Positive
23	Route 11 - Inbound	22.6	18.3	-4.3	-19%	Positive
24	Route 11 - Outbound	21.9	17.0	-4.9	-22%	Positive

Table 6.4 2031 PM Peak Journey Time Results (mins.)

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
1	Route 1 - Inbound	12.0	10.9	-1.1	-9%	Positive
2	Route 1 - Outbound	16.8	12.9	-4.0	-24%	Positive
3	Route 2 - Inbound	20.4	21.9	1.5	7%	Minor
4	Route 2 - Outbound	22.7	21.6	-1.1	-5%	Positive
5	Route 3 - Inbound	5.0	4.8	-0.2	-3%	Positive
6	Route 3 - Outbound	5.5	5.2	-0.3	-6%	Positive
7	Route 4a - Inbound	26.3	13.9	-12.3	-47%	Positive
8	Route 4a - Outbound	30.4	15.6	-14.8	-49%	Positive
9	Route 4b - Inbound	10.9	10.1	-0.8	-7%	Positive

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
10	Route 4b - Outbound	20.2	15.1	-5.1	-25%	Positive
11	Route 5 - Inbound	29.6	23.1	-6.5	-22%	Positive
12	Route 5 - Outbound	19.8	16.7	-3.1	-16%	Positive
13	Route 6 - Inbound	25.8	23.7	-2.1	-8%	Positive
14	Route 6 - Outbound	26.3	27.5	1.2	5%	Negligible
15	Route 7 - Inbound	15.5	9.2	-6.3	-40%	Positive
16	Route 7 - Outbound	22.1	18.8	-3.3	-15%	Positive
17	Route 8 - Inbound	19.9	12.8	-7.1	-36%	Positive
18	Route 8 - Outbound	20.8	19.2	-1.6	-8%	Positive
19	Route 9 - Inbound	9.5	9.5	0.0	0%	Negligible
20	Route 9 - Outbound	9.5	9.5	0.0	0%	Negligible
21	Route 10 - Inbound	15.5	10.4	-5.1	-33%	Positive
22	Route 10 - Outbound	10.2	11.5	1.3	12%	Minor
23	Route 11 - Inbound	14.2	12.8	-1.4	-10%	Positive
24	Route 11 - Outbound	20.0	16.8	-3.1	-16%	Positive

The 2031 AM peak results above show that, in general, the opening of the N6 GCRR has a significant positive impact on the majority of journey time routes analysed. Meanwhile the Route 9 journey times show no change compared to the Do-Minimum.

In this regard it should be noted that the impact of the N6 GCRR is hugely beneficial for reducing traffic congestion in Galway City in the AM Peak and for reducing journey times.

The 2031 PM peak results show a similar trend to the AM peak, in that the opening of the N6 GCRR has a significant positive impact on the majority of journey time routes analysed.

A number of routes (9, 6) show negligible impacts, with increases in journey times of less than 5% across the entire route. Route 2 inbound and Route 10 outbound experience a minor impact, where the journey time has increased by 60 seconds across the entire route. The increase on Route 2 is caused by the addition of signalised junctions, which require traffic to slow down where previously it was not necessary. The increase on Route 10 is caused by more traffic passing through the network in the Do-Something LAM due to improvements in congestion. Along this route, there is a higher level of traffic heading outbound at the R339/Parkmore Road junction in the Do-Something, as traffic in the Do-Minimum scenario is queued upstream and cannot progressed along it's intended route. Therefore while there is an increase in journey time, it is the result of the project relieving a bottleneck within the city, which means traffic can progress more smoothly across the city.

In this regard it should be noted that the impact of the N6 GCRR is hugely beneficial for reducing traffic congestion in Galway City in the PM Peak and for reducing journey times.

Table 6.5 2046 AM Peak Journey Time Results (mins.)

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
1	Route 1 - Inbound	27.3	18.1	-9.2	-34%	Positive
2	Route 1 - Outbound	11.3	11.0	-0.2	-2%	Positive
3	Route 2 - Inbound	29.7	24.3	-5.4	-18%	Positive
4	Route 2 - Outbound	44.5	33.5	-11.0	-25%	Positive
5	Route 3 - Inbound	16.3	7.3	-9.0	-55%	Positive
6	Route 3 - Outbound	5.5	5.1	-0.4	-6%	Positive
7	Route 4a - Inbound	36.9	16.7	-20.2	-55%	Positive
8	Route 4a - Outbound	25.9	18.8	-7.1	-27%	Positive
9	Route 4b - Inbound	25.7	15.3	-10.4	-41%	Positive
10	Route 4b - Outbound	17.2	11.8	-5.4	-31%	Positive
11	Route 5 - Inbound	58.0	50.1	-7.9	-14%	Positive
12	Route 5 - Outbound	20.1	21.4	1.3	-7%	Minor
13	Route 6 - Inbound	41.2	30.2	-10.9	-27%	Positive
14	Route 6 - Outbound	29.9	27.6	-2.3	-8%	Positive
15	Route 7 - Inbound	13.9	16.5	2.6	19%	Moderate
16	Route 7 - Outbound	20.1	13.4	-6.7	-33%	Positive
17	Route 8 - Inbound	21.7	18.5	-3.2	-15%	Positive
18	Route 8 - Outbound	15.1	12.8	-2.3	-15%	Positive
19	Route 9 - Inbound	10.5	9.5	-1.0	-9%	Positive
20	Route 9 - Outbound	9.5	9.5	0.0	0%	Positive
21	Route 10 - Inbound	12.6	15.2	2.7	21%	Major
22	Route 10 - Outbound	15.4	11.5	-4.0	-26%	Positive
23	Route 11 - Inbound	22.6	20.2	-2.4	-11%	Positive
24	Route 11 - Outbound	26.8	20.2	-6.6	-25%	Positive

Table 6.6 2046 PM Peak Journey Time Results (mins.)

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
1	Route 1 - Inbound	12.4	10.9	-1.5	-12%	Positive
2	Route 1 - Outbound	19.6	13.8	-5.8	-29%	Positive
3	Route 2 - Inbound	22.2	24.2	2.0	9%	Minor
4	Route 2 - Outbound	26.2	23.1	-3.1	-12%	Positive

Route #	Description	DM	DS	Difference (s)	% Difference	Impact
5	Route 3 - Inbound	5.1	4.9	-0.2	-5%	Positive
6	Route 3 - Outbound	5.9	5.3	-0.6	-9%	Positive
7	Route 4a - Inbound	30.3	16.4	-13.9	-46%	Positive
8	Route 4a - Outbound	35.3	17.6	-17.7	-50%	Positive
9	Route 4b - Inbound	12.7	10.4	-2.3	-18%	Positive
10	Route 4b - Outbound	22.9	17.4	-5.5	-24%	Positive
11	Route 5 - Inbound	32.2	24.9	-7.3	-23%	Positive
12	Route 5 - Outbound	20.4	17.0	-3.4	-17%	Positive
13	Route 6 - Inbound	28.1	23.9	-4.2	-15%	Positive
14	Route 6 - Outbound	28.7	29.0	0.4	1%	Negligible
15	Route 7 - Inbound	16.2	10.3	-5.9	-36%	Positive
16	Route 7 - Outbound	26.1	22.7	-3.4	-13%	Positive
17	Route 8 - Inbound	21.9	13.0	-8.8	-40%	Positive
18	Route 8 - Outbound	22.2	20.0	-2.3	-10%	Positive
19	Route 9 - Inbound	9.5	9.5	0.0	0%	Negligible
20	Route 9 - Outbound	9.5	9.5	0.0	0%	Negligible
21	Route 10 - Inbound	15.0	11.0	-4.0	-27%	Positive
22	Route 10 - Outbound	13.1	13.3	0.2	2%	Negligible
23	Route 11 - Inbound	17.7	13.2	-4.5	-25%	Positive
24	Route 11 - Outbound	23.4	21.1	-2.3	-10%	Positive

The 2046 AM peak results above show that, in general, the opening of the N6 GCRR has a significant positive impact on the majority of journey time routes analysed.

The increase on Route 10 is caused by more traffic passing through the network in the Do-Something LAM. Along this route there is a higher level of traffic heading inbound at the R339/Parkmore Road junction in the DS, as traffic in the Do-Minimum scenario is queued upstream and cannot progress along it's intended route. Therefore while there is an increase in journey time, it is the result of the scheme relieving a bottleneck within the city, which means traffic can progress more smoothly across the city. Route 5 outbound experiences a minor impact, where the journey time has increased by 79 seconds across the entire route. The increase on Route 5 is caused by the addition of signalised junctions on the N83, which require traffic to slow down where previously it was not necessary.

In this regard it should be noted that the impact of the N6 GCRR is hugely beneficial for reducing traffic congestion in Galway City in the AM Peak and for reducing journey times.

The 2046 PM peak results show a similar trend to the AM peak, in that the opening of the N6 GCRR has a significant positive impact on the majority of journey time routes analysed.

A number of routes (6, 9, 10) show negligible impacts, with increases in journey times of less than 5% across the entire route. Route 2 inbound experiences a minor impact, where the journey time has increased by 120

seconds across the entire route. The increase on Route 2 is caused by the addition of signalised junctions, which require traffic to slow down where previously it was not necessary.

In this regard it should be noted that the impact of the N6 GCRR is hugely beneficial for reducing traffic congestion in Galway City in the PM Peak and for reducing journey times.

6.4 Ratio of Flow to Capacity

6.4.1 Strategic modelling results

To further understand the potential impact on junction operations of the proposed scheme, the ratio of flow (of traffic) over capacity (RFC) at key junctions along the N6 corridor have been analysed and compared across scenarios.

RFC is a standard reference for measuring traffic congestion at a junction. It is standard practice to consider that a junction is congested when traffic flows are at 85% of the estimated capacity of a priority junction, or 90% of a signalised junction. At traffic flows above 90% of capacity the delays at a junction become erratic and are difficult to control. A value of 100% means that demand and capacity are equal and no further traffic is able to progress through the junction without experiencing significant delays.

A Ratio of Flow to Capacity analysis has been undertaken using information from the LAM and is presented below. This analysis considered the number of links at Key Junctions along the N6 /R338 corridor with an RFC over 90% and also the number of links in the entire City area with an RFC over 90%. Plate 6.2 below, illustrates the location of the Key Junctions on the N6 / R338 Corridor.

Plate 6.2 N6 / R338 Key Junctions

Table 6.7 and Table 6.8 below summarise these junction evaluations for the 2031 and 2046 morning and evening peak hour scenarios.

Table 6.7 Number of Junction Approaches at or over Capacity - AM Peak

		2024			2039		
		DM	DS	Impact	DM	DS	Impact
Key Junctions (N6 / R338)	RFC > 90%	22	17	Positive	28	23	Positive
Entire Network	RFC > 90%	147	107	Positive	207	166	Positive

Table 6.8 Number of Junction Approaches at or over Capacity - PM Peak

		2024			2039		
		DM	DS	Impact	DM	DS	Impact
Key Junctions (N6 / R338)	RFC > 90%	22	16	Positive	24	20	Positive
Entire Network	RFC > 90%	104	76	Positive	143	121	Positive

The above tables show that with the introduction of the project there is a large decrease in the number of links in the network which have an RFC of over 90%. In 2031, we see a decrease of approx. 25% across both peak hours, in the number of number of links in the network which have an RFC over 90%. For the key junctions, we see an equivalent decrease of approx. 30% in both peak hours.

In 2046, we see a decrease of approx. 20% across both peak hours, in the number of number of links in the network which have an RFC over 90%. For the key junctions, we see an equivalent decrease of between 15% - 20% across both peak hours.

6.5 Mode Share

Table 6.9 and Table 6.10 below present the mode share between private vehicle, public transport, walking and cycling for the 2031 Opening Year and 2046 Design Year, extracted from the model for the AM and PM periods.

As can be seen below, the impact of the Do-Something options on mode share is minimal, with Car Mode share increasing by circa 2% in both 2031 and 2046 as a result of the opening of the N6 GCRR.

Table 6.9 2046 AM Mode Share Percentages

Option	% Car	% PT	% Walk	% Cycle
Do-Minimum	50.1%	15.1%	29.8%	5.0%
Do-Something	52.0%	14.3%	29.2%	4.6%

Table 6.10 2046 PM Mode Share Percentages

Option	% Car	% PT	% Walk	% Cycle
Do-Minimum	57.6%	12.9%	25.1%	4.4%
Do-Something	59.5%	11.8%	24.6%	4.1%

7. Annual Average Daily Traffic (AADT)

7.1 Introduction

The information in this Chapter presents the methodology adopted to estimate AADT values from the modelled flows and also illustrates the estimated AADT values on key sections of the Galway network, with and without the scheme in place. This methodology has been based on the TII Project Appraisal guidelines. Unit 16.0: Estimating AADT on National Roads.

7.2 AADT Estimation Methodology

7.2.1 Permanent Counter Method

According to the PAG, the preferable method of estimating AADT is the Permanent counter method. Currently in Galway there are several TII Traffic Monitoring Units (TMUs) around Galway. They are located on all the national road approaches to Galway City, including one within the city itself on the N6, as illustrated in Plate 7.1 below.

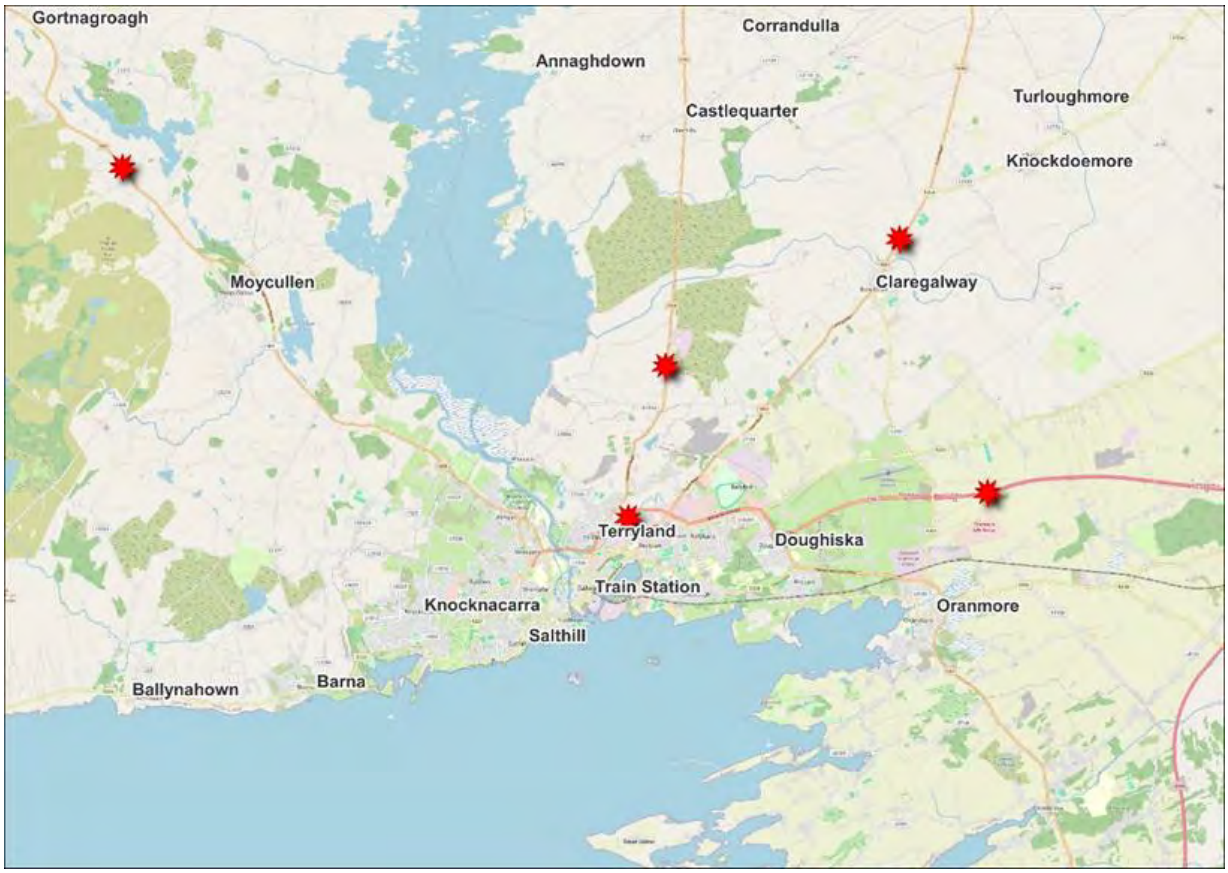

Plate 7.1 TII Permanent Counter Locations

7.3 AADT Estimation Process

Step 1 - 12hour Mid-Week Flow Calculation

The first step in the AADT estimation process is to apply expansion factors to each of the model time periods to estimate 12 hour (07:00 – 19:00) weekday flows. The peak hour factors were calculated to determine the relationship between the modelled peak hour (e.g. 08:00 – 09:00) and the entire, three hour, peak period (e.g. 07:00 – 10:00).

These factors were calculated using data from the TII TMUs around Galway City during the month of November in 2023. Based on the PAG Unit 16.0 methodology for multiple counts, a linear regression has

been performed based on the data in order to estimate these expansion factors. These factors can then be used to calculate the peak period flows as follows:

- AM Peak assigned flows * peak hour factor = 07:00 – 10:00 flows
- IP assigned flows * peak hour factor = 10:00 – 16:00 flows
- PM Peak assigned flows * peak hour factor = 16:00 – 19:00 flows

Utilising the above factors therefore allows us to estimate 12 hour (07:00 – 19:00) weekday flows from the three hour models. Separate factors were calculated for cars, light good vehicles (LGVs) and heavy goods vehicles (HGVs). These calculations resulted in the following expansion factors:

Table 7.1 Hour to Period Expansion Factors

Time Period	Car	LGV	HGV
AM	3.51	3.84	4.14
IP	6.00	6.00	6.00
PM	3.40	2.89	2.83

Step 2 – WADT Calculation

The second step in the process requires expanding the 12 hour weekday counts, estimated above, to 24 hour Monday to Sunday flows (Weekly Average Daily Traffic, WADT). This is done by calculating an expansion factor based on the existing relationship between 12 hour Monday – Friday flows and 24 hour Monday – Sunday Flows. The formula for this factor is:

$$F1 = \frac{Average\ 24h\ Monday - Sunday}{Average\ 07{:}00 - 19{:}00\ Monday - Friday}$$

Based on the PAG Unit 16.0 methodology for multiple counts, a linear regression has again been performed, in order to estimate this WADT factor. As different vehicle types display different mid-week and weekend travel patterns, separate factors were calculated for cars, light good vehicles (LGVs) and heavy goods vehicles (HGVs). These calculations resulted in the following WADT factors:

$$WADT_{Nov2023} = 1.19 \times 12hr_{WD}\ for\ cars$$
$$WADT_{Nov2023} = 1.05 \times 12hr_{WD}\ for\ LGVs$$
$$WADT_{Nov2023} = 0.98 \times 12hr_{WD}\ for\ HGVs$$

Where:

$WADT_{Nov2023}$ is the weekly average daily traffic for November 2023,

$12hr_{WD}$ is the average 07:00 – 19:00 weekday (Monday – Friday) traffic for the same month.

Step 3 – AADT Calculation

The final step in the process is to convert the WADT figures calculated above into Annual Average Daily Traffic (AADT) figures. This is done in order to take into account the seasonality of traffic flows. To do so, the period when the counts have been performed has been compared with the rest of the year.

A linear regression has been performed based on the data to estimate the seasonal expansion factor (F2).

This extrapolation factor, F2, is calculated using the formula below:

$$F2 = \frac{WADT_{Nov}}{AADT}$$

Where:

$WADT_{Nov2023}$ is the weekly average daily traffic for the month November of the considered year and $AADT$ is the annual average daily traffic for the considered year. The seasonality factors calculated for each vehicle type are:

$$AADT = 1.01 \times WADT_{Nov}\ for\ cars$$
$$AADT = 0.96 \times WADT_{Nov}\ for\ LGVs$$
$$AADT = 0.96 \times WADT_{Nov}\ for\ HGVs$$

7.4 AADT Estimates

The AADT flows were calculated using demand flows from the LAM. This method was used as the overall level of congestion in the Do-Minimum scenario was very high, with the increased levels of population in Galway City, as per NPF targets which include a 50% increase to 2040, from 2016 levels. Also, the Do-Minimum scenario includes transport schemes like BusConnects Cross City Link which restricts access to general traffic on the Salmon Weir Bridge during the hours of 7a.m. and 7p.m. This places an increased pressure on the other bridges, particularly the Quincentenary Bridge. As mentioned in 1.4.4. the capacity of the Quincentenary Bridge is currently just below the capacity of a road of it's type in the morning peak hour. So, in the forecast Do-Minimum scenarios, there is a high level of latent demand which cannot travel to it's destination in the hours modelled. This traffic would get pushed into the next hour but as these next hours aren't modelled, demand flows were necessary in the AADT calculations to not underrepresent the total traffic demand in the Do-Minimum scenario. The demand flow output includes the level of latent demand which is queued at a point in the network but would use a certain route. The forecast AADT flows, are presented in the tables below.

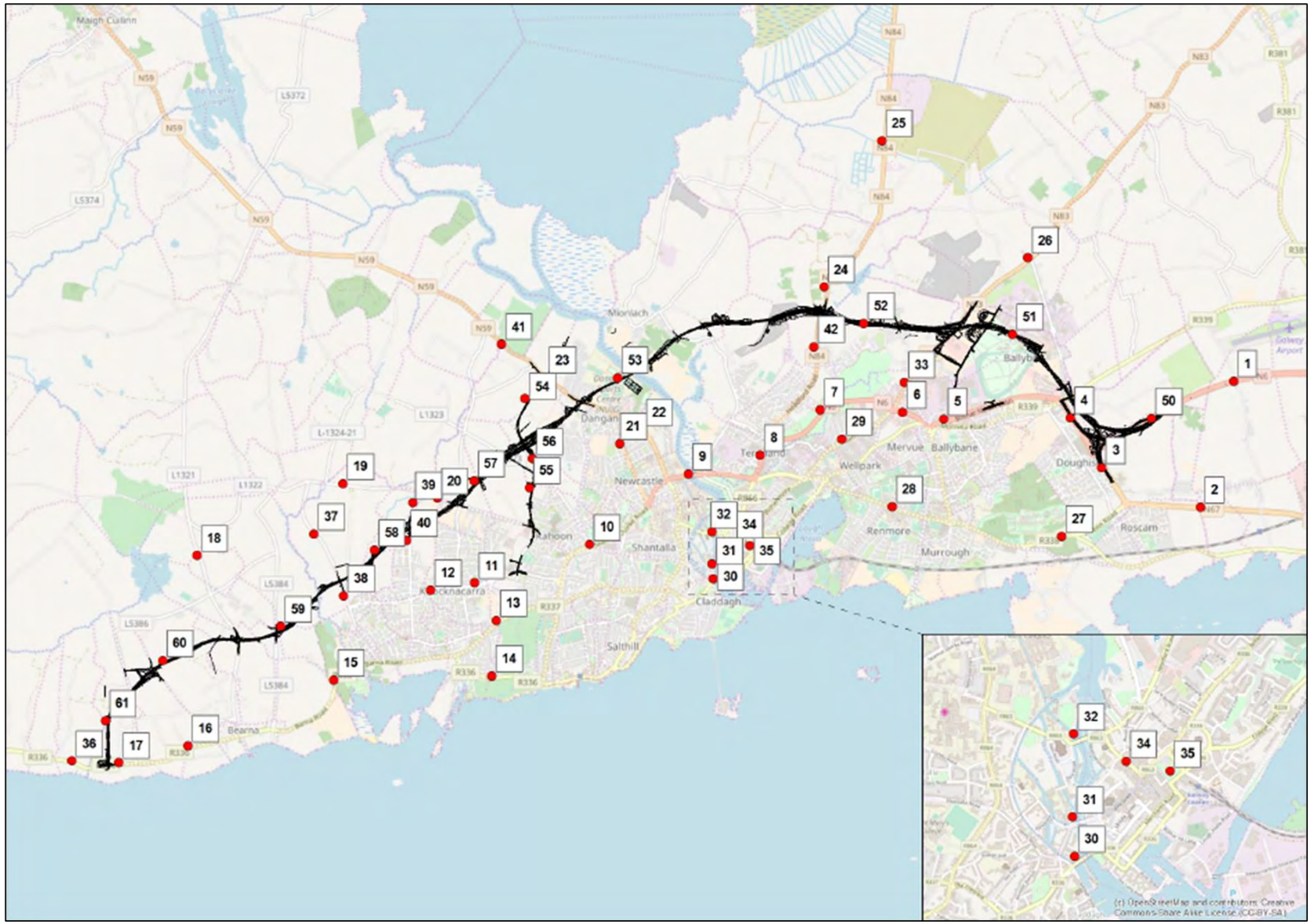

Plate 7.2 N6 GCRR AADT Locations

Table 7.2 N6 GCRR AADT 2031 Opening Year

AADT Point	Location	2031 Do-Minimum		2031 Do-Something	
		AADT	%HGV	AADT	%HGV
1	N6 South of Galway Airport	33,853	4%	45,170	4%
2	R446 West of Oranmore Business Park	26,657	2%	26,517	2%
3	R446 South of N6 Roundabout	26,605	2%	29,498	2%
4	N6 South of Briarhill	45,607	3%	26,867	4%
5	N6 Near Ballybrit Business Park	46,579	3%	35,318	3%
6	N6 Between N17 and R865	37,129	2%	26,298	2%
7	N6 Between N84 and N17	31,523	2%	22,495	2%
8	N6 East of Quincentenary Bridge	35,528	3%	28,487	3%
9	N6 - On Quincentenary Bridge	60,136	2%	41,140	1%
10	R338 at Westside Playing fields	21,838	2%	14,997	2%
11	Western Distributor Road between Clybaun Road and R338	16,466	1%	9,407	1%
12	Western Distributor Road between Clybaun Road and Ballymoneen Road	13,653	1%	10,224	1%
13	R337 Kingston Road. Kingston	16,356	1%	9,465	1%
14	R336. Salthill Road Upper. Galway Golf Course.	15,365	1%	13,550	1%
15	R336. Barna Road. Barna Woods	18,126	1%	8,295	2%
16	R336. Barna Road. Barna. Creagan Bus Stop	13,503	2%	6,669	2%
18	L1321. At Loughinch. South East of Bearna Golf Club	3,164	0%	4,126	0%

AADT Point	Location	2031 Do-Minimum		2031 Do-Something	
		AADT	%HGV	AADT	%HGV
19	Boleybeg Road. Between Cappagh Road and Ballymoneen Road	5,255	0%	4,083	0%
20	Rahoon Road. Between Clybaun Road and Bothar Stiofain	6,945	1%	5,375	1%
21	N59. Thomas Hynes Road. Between Hazel Park and Cherry Park	8,319	2%	6,902	0%
22	N59. Upper Newcastle Road. Between R338 and Corrib Village	12,386	2%	10,363	1%
23	N59. Barnacranny. Between Chestnut Lane and Circular Road	18,342	2%	16,680	1%
24	N84. South of Ballindooly. Ballindooly Lough	11,962	4%	17,911	4%
25	N84. North of Ballindooly	15,888	4%	17,721	4%
26	N17. Tuam Road. North East of Parkmore Road	22,196	4%	22,230	3%
27	R338. Dublin Road. West of Junction with Coast Road	20,359	3%	18,744	2%
28	R338. Dublin Road. Between Renmore Road and Michael Collins Road	24,358	3%	20,750	3%
29	R336. Tuam Road. Mervue Business Park	21,876	2%	16,308	3%
30	Wolfe Tone Bridge	24,930	2%	18,324	3%
31	O'Briens Bridge	12,381	1%	9,259	1%
32	Salmon Weir Bridge	394	100%	376	100%
33	N17. Tuam Road. North East of School Road	22,289	3%	21,177	3%
34	Eglington Street	403	100%	393	100%
35	R336 South of Eyre Square	9,957	3%	9,495	4%
36	R336 West of N6	13,574	1%	15,506	1%

AADT Point	Location	2031 Do-Minimum		2031 Do-Something	
		AADT	%HGV	AADT	%HGV
37	Cappagh Road - North of GCRR	5,038	0%	3,327	0%
38	Cappagh Road - South of GCRR	5,038	0%	10,581	1%
39	Ballymoneen Road - North of GCRR	3,470	0%	7,051	1%
40	Ballymoneen Road - South of GCRR	3,470	0%	9,217	0%
41	N59 - North of GCRR Link Road	17,973	2%	19,599	2%
42	N84 South of GCRR	11,962	4%	14,342	3%
50	GCRR - Briarhill Junction			45,134	4%
51	GCRR - Parkmore			35,428	2%
52	GCRR - Between N17 and N84			43,111	2%
53	GCRR - New Corrib Crossing			41,167	2%
54	GCRR - N59 Link Road			12,037	2%
55	GCRR - Rahoon Link Road			8,100	1%
56	GCRR - Letteragh Link Road			18,090	1%
57	GCRR - Between Ballymoneen and N59 Interchange			23,137	1%
58	GCRR - Between Ballymoneen and Cappagh Road			16,407	1%
59	GCRR - Between Moycullen Road and Cappagh Road			16,770	0%
60	GCRR - At Truskey West			9,469	1%
61	GCRR - North of R336 Junction			9,469	1%

Table 7.3 N6 GCRR AADT 2046 Design Year

AADT Point	Location	2046 Do-Minimum		2046 Do-Something	
		AADT	%HGV	AADT	%HGV
1	N6 South of Galway Airport	40,292	5%	59,654	4%
2	R446 West of Oranmore Business Park	31,323	1%	28,939	2%
3	R446 South of N6 Roundabout	29,541	2%	31,799	2%
4	N6 South of Briarhill	51,991	4%	30,207	4%
5	N6 Near Ballybrit Business Park	51,724	3%	41,464	3%
6	N6 Between N17 and R865	42,433	2%	31,487	2%
7	N6 Between N84 and N17	36,522	3%	26,486	2%
8	N6 East of Quincentenary Bridge	37,385	4%	31,889	3%
9	N6 - On Quincentenary Bridge	65,637	2%	43,967	1%
10	R338 at Westside Playing fields	23,037	3%	16,014	2%
11	Western Distributor Road between Clybaun Road and R338	18,703	1%	10,651	0%
12	Western Distributor Road between Clybaun Road and Ballymoneen Road	14,339	1%	11,668	0%
13	R337 Kingston Road. Kingston	18,105	1%	9,986	0%
14	R336. Salthill Road Upper. Galway Golf Course.	17,082	1%	14,753	1%
15	R336. Barna Road. Barna Woods	19,148	1%	9,083	1%
16	R336. Barna Road. Barna. Creagan Bus Stop	14,060	1%	6,894	2%
18	L1321. At Loughinch. South East of Bearna Golf Club	4,180	0%	4,608	0%

AADT Point	Location	2046 Do-Minimum		2046 Do-Something	
		AADT	%HGV	AADT	%HGV
19	Boleybeg Road. Between Cappagh Road and Ballymoneen Road	6,865	0%	4,187	0%
20	Rahoon Road. Between Clybaun Road and Bothar Stiofain	8,134	1%	7,095	1%
21	N59. Thomas Hynes Road. Between Hazel Park and Cherry Park	8,174	2%	7,562	0%
22	N59. Upper Newcastle Road. Between R338 and Corrib Village	14,148	2%	10,452	1%
23	N59. Barnacranny. Between Chestnut Lane and Circular Road	19,316	2%	17,816	0%
24	N84. South of Ballindooly. Ballindooly Lough	12,690	4%	18,705	4%
25	N84. North of Ballindooly	16,794	4%	18,805	4%
26	N17. Tuam Road. North East of Parkmore Road	24,455	4%	23,944	5%
27	R338. Dublin Road. West of Junction with Coast Road	22,577	3%	20,963	3%
28	R338. Dublin Road. Between Renmore Road and Michael Collins Road	27,189	3%	22,526	4%
29	R336. Tuam Road. Mervue Business Park	24,141	3%	17,905	3%
30	Wolfe Tone Bridge	26,863	2%	19,647	2%
31	O'Briens Bridge	12,947	1%	9,517	1%
32	Salmon Weir Bridge	381	100%	368	100%
33	N17. Tuam Road. North East of School Road	26,446	4%	23,371	3%
34	Eglington Street	393	100%	383	100%
35	R336 South of Eyre Square	11,772	2%	10,544	3%
36	R336 West of N6	14,110	1%	16,258	1%

AADT Point	Location	2046 Do-Minimum		2046 Do-Something	
		AADT	%HGV	AADT	%HGV
37	Cappagh Road - North of GCRR	6,847	0%	4,863	0%
38	Cappagh Road - South of GCRR	6,847	0%	13,158	1%
39	Ballymoneen Road - North of GCRR	4,089	0%	9,260	1%
40	Ballymoneen Road - South of GCRR	4,089	0%	9,496	0%
41	N59 - North of GCRR Link Road	18,936	2%	20,308	2%
42	N84 South of GCRR	12,690	4%	17,085	2%
50	GCRR - Briarhill Junction			59,618	4%
51	GCRR - Parkmore			46,719	2%
52	GCRR - Between N17 and N84			54,936	2%
53	GCRR - New Corrib Crossing			52,758	2%
54	GCRR - N59 Link Road			14,473	3%
55	GCRR - Rahoon Link Road			9,320	1%
56	GCRR - Letteragh Link Road			20,803	1%
57	GCRR - Between Ballymoneen and N59 Interchange			29,270	1%
58	GCRR - Between Ballymoneen and Cappagh Road			18,534	1%
59	GCRR - Between Moycullen Road and Cappagh Road			18,425	0%
60	GCRR - At Truskey West			10,040	1%
61	GCRR - North of R336 Junction			10,040	1%

The tables above illustrate that, in both Do-Something scenarios, there is significant demand for the scheme with AADTs in excess of 40,000 in 2031 and 50,000 in 2046 forecast. This table also shows that traffic in the city centre is reduced as a result of the introduction of the N6 GCRR, as evidenced by the reduction in AADTs on Quincentenary Bridge (approx. 33% reduction across both years).

Appendix A

Calibration and Validation Results

A.1

Appendix A - AM Results

		Observed				Modelled				Difference			
Site	Ref	Car	LGV	OGV	Total	Car	LGV	OGV	Total	Car	LGV	OGV	Total
Site 1	Site 1_1	74	19	6	99	80	19	6	105	6	0	0	7
Site 1	Site 1_2	365	25	6	396	350	25	0	376	-15	0	-6	-20
Site 1	Site 1_3	117	3	4	124	94	0	0	94	-23	-3	-4	-30
Site 1	Site 1_4	53	3	7	63	75	5	9	88	22	2	2	25
Site 1	Site 1_6	296	18	2	316	316	18	0	334	20	0	-2	18
Site 1	Site 1_7	171	14	4	189	175	13	0	187	4	-1	-4	-1
Site 1	Site 1_8	22	1	0	23	22	1	0	23	0	0	0	0
Site 1	Site 1_9	17	0	0	17	9	0	0	9	-8	0	0	-8
Site 1	Site 1_11	110	7	4	121	160	5	0	165	50	-2	-4	44
Site 1	Site 1_12	61	1	0	62	65	1	0	65	4	0	0	3
Site 4	Site 4_2	148	12	6	166	140	2	0	143	-8	-10	-6	-23
Site 4	Site 4_3	361	39	24	424	350	36	24	410	-11	-3	1	-14
Site 4	Site 4_4	55	2	2	59	45	5	0	50	-10	3	-2	-8
Site 4	Site 4_6	1,063	92	50	1,205	1,047	85	41	1,173	-16	-7	-9	-32
Site 4	Site 4_7	153	22	4	179	151	22	4	176	-2	0	0	-3
Site 4	Site 4_8	31	2	10	43	31	10	10	51	0	8	0	8
Site 4	Site 4_11	739	176	102	1,017	747	175	98	1,019	8	-1	-4	2
Site 4	Site 4_12	365	35	8	408	366	25	3	394	1	-10	-5	-14
Site 5	Site 5_1	692	144	81	917	588	134	60	782	-104	-10	-20	-135
Site 5	Site 5_2	244	31	22	297	238	20	22	280	-6	-11	0	-17
Site 5	Site 5_3	33	4	0	37	119	27	0	147	86	23	0	110
Site 5	Site 5_4	716	65	64	845	802	89	49	940	86	24	-15	95
Site 5	Site 5_5	95	7	2	104	184	16	4	203	89	9	2	100
Site 5	Site 5_6	626	39	10	675	412	15	12	440	-214	-24	2	-235
Site 5	Site 5_7	172	24	28	224	172	18	27	218	0	-6	0	-6
Site 5	Site 5_8	107	8	6	121	121	8	5	134	14	0	0	14
Site 5	Site 5_9	100	9	10	119	65	8	0	73	-35	-1	-9	-45

Site 5	Site 5_10	24	9	2	35	26	10	0	36	2	1	-2	1
Site 5	Site 5_11	376	59	29	464	405	57	35	497	29	-2	6	33
Site 5	Site 5_12	68	9	2	79	77	10	4	91	9	1	2	12
Site 6	Site 6_2	372	59	21	452	154	29	33	215	-218	-30	11	-237
Site 6	Site 6_3	247	32	18	297	244	32	0	276	-3	0	-18	-21
Site 6	Site 6_4	121	15	12	148	135	21	12	167	14	6	0	19
Site 6	Site 6_5	161	28	15	204	161	32	21	214	0	4	6	10
Site 6	Site 6_6	40	6	6	52	41	9	0	49	1	3	-6	-2
Site 6	Site 6_8	74	14	6	94	71	14	0	85	-3	0	-6	-9
Site 6	Site 6_9	638	50	63	751	709	44	55	808	71	-6	-8	58
Site 6	Site 6_10	83	12	12	107	55	0	0	55	-28	-12	-12	-52
Site 6	Site 6_11	23	10	13	46	60	8	45	112	37	-2	32	66
Site 6	Site 6_13	14	3	4	21	20	2	4	26	6	-1	0	5
Site 6	Site 6_14	57	6	13	76	80	6	13	99	23	0	0	23
Site 6	Site 6_15	498	100	62	660	518	108	37	662	20	8	-25	3
Site 6	Site 6_16	28	6	8	42	31	2	8	42	3	-4	0	-1
Site 6.1	Site 6.1_1	6	1	0	7	122	6	0	128	116	5	0	121
Site 6.1	Site 6.1_2	539	85	38	662	374	73	38	485	-165	-12	0	-177
Site 6.1	Site 6.1_3	7	3	0	10	7	3	0	10	0	0	0	0
Site 6.1	Site 6.1_4	182	29	13	224	158	9	7	174	-24	-20	-7	-51
Site 6.1	Site 6.1_5	272	37	38	347	266	36	32	334	-6	-1	-6	-12
Site 6.1	Site 6.1_6	44	9	2	55	29	2	2	33	-15	-7	0	-22
Site 7	Site 7_2	128	44	30	202	142	44	30	216	14	0	1	14
Site 7	Site 7_3	272	62	41	375	206	22	32	260	-66	-40	-9	-115
Site 7	Site 7_4	83	7	16	106	88	13	16	117	5	6	0	10
Site 7	Site 7_5	218	35	20	273	213	20	14	247	-5	-15	-6	-26
Site 7	Site 7_7	23	3	0	26	114	2	0	117	91	-1	0	91
Site 7	Site 7_8	518	40	61	619	537	44	56	638	19	4	-5	19
Site 7	Site 7_9	225	44	27	296	221	44	26	291	-4	0	-1	-5

Site 7	Site 7_10	8	1	3	12	7	0	0	7	-1	-1	-3	-4
Site 7	Site 7_12	237	31	15	283	181	27	6	215	-56	-4	-8	-67
Site 7	Site 7_13	72	15	15	102	98	17	15	130	26	2	1	29
Site 7	Site 7_14	467	83	57	607	475	75	29	579	8	-8	-28	-28
Site 7	Site 7_15	337	61	25	423	384	67	39	490	47	6	14	67
Site 8	Site 8_2	26	3	6	35	26	0	0	26	0	-3	-6	-9
Site 8	Site 8_3	87	20	8	115	51	0	0	51	-36	-20	-8	-64
Site 8	Site 8_4	12	6	0	18	0	0	0	0	-12	-6	0	-18
Site 8	Site 8_5	131	1	0	132	133	0	0	133	2	-1	0	1
Site 8	Site 8_7	147	21	20	188	177	24	20	222	30	3	1	34
Site 8	Site 8_8	492	56	51	599	486	58	58	602	-6	2	6	2
Site 8	Site 8_9	173	19	10	202	151	0	2	153	-22	-19	-8	-49
Site 8	Site 8_10	116	19	9	144	133	14	0	146	17	-5	-9	2
Site 8	Site 8_12	201	26	36	263	209	26	36	272	8	0	0	9
Site 8	Site 8_13	321	45	18	384	218	2	10	230	-103	-43	-9	-155
Site 8	Site 8_14	655	95	82	832	800	145	82	1,027	145	50	0	195
Site 8	Site 8_15	357	45	37	439	388	57	32	477	31	12	-5	38
Site 9	Site 9_1	69	7	10	86	72	7	2	81	3	0	-8	-5
Site 9	Site 9_2	460	56	67	583	448	58	76	583	-12	2	9	-1
Site 9	Site 9_3	239	36	21	296	243	36	22	301	4	0	1	5
Site 9	Site 9_4	126	15	6	147	202	23	4	228	76	8	-2	82
Site 9	Site 9_5	41	7	14	62	42	8	6	56	1	1	-8	-6
Site 9	Site 9_6	159	18	8	185	149	0	8	157	-10	-18	0	-28
Site 9	Site 9_7	956	123	106	1,185	961	128	117	1,206	5	5	11	21
Site 9	Site 9_8	136	20	20	176	124	9	1	133	-12	-11	-19	-43
Site 9	Site 9_9	205	19	17	241	220	33	17	269	15	14	0	28
Site 9	Site 9_10	301	43	37	381	344	66	13	423	43	23	-23	42
Site 9	Site 9_11	207	18	14	239	206	26	17	249	-1	8	3	11
Site 9	Site 9_12	71	12	20	103	89	16	19	125	18	4	-1	22
Site 11	Site 11_2	142	20	8	170	102	12	3	117	-40	-8	-5	-53

Site 11	Site 11_3	139	31	19	189	177	37	23	238	38	6	4	49
Site 11	Site 11_4	98	6	0	104	98	6	0	104	0	0	0	0
Site 11	Site 11_5	72	4	4	80	76	12	5	93	4	8	0	13
Site 11	Site 11_7	310	36	21	367	267	28	11	306	-43	-8	-10	-61
Site 11	Site 11_8	57	2	0	59	57	0	0	57	0	-2	0	-2
Site 11	Site 11_9	391	45	11	447	404	36	22	461	13	-9	10	14
Site 11	Site 11_10	389	61	25	475	387	49	13	449	-2	-12	-12	-27
Site 11	Site 11_12	85	6	0	91	82	5	0	88	-3	-1	0	-3
Site 11	Site 11_13	18	2	0	20	18	2	0	20	0	0	0	0
Site 11	Site 11_14	57	16	2	75	57	0	0	57	0	-16	-2	-18
Site 11	Site 11_15	12	1	0	13	18	1	0	19	6	0	0	6
Site 13	Site 13_2	99	9	0	108	124	10	15	149	25	1	15	41
Site 13	Site 13_3	294	47	35	376	293	26	29	348	-1	-21	-7	-28
Site 13	Site 13_4	12	2	2	16	12	0	2	14	0	-2	0	-2
Site 13	Site 13_5	164	9	6	179	227	11	7	245	63	2	0	66
Site 13	Site 13_8	364	28	14	406	423	34	13	471	59	6	-1	65
Site 13	Site 13_9	224	19	25	268	193	9	33	234	-31	-10	8	-33
Site 13	Site 13_10	50	10	12	72	27	1	0	28	-23	-9	-12	-43
Site 13	Site 13_12	308	21	6	335	193	18	6	217	-115	-3	0	-119
Site 13	Site 13_14	306	31	16	353	298	38	12	349	-8	7	-3	-4
Site 13	Site 13_15	418	48	17	483	436	66	27	529	18	18	10	46
Site 15	Site 15_1	333	19	2	354	322	0	0	322	-11	-19	-2	-32
Site 15	Site 15_2	152	26	12	190	128	12	2	142	-24	-14	-10	-48
Site 15	Site 15_3	48	1	0	49	48	1	0	49	0	0	0	0
Site 15	Site 15_4	60	5	2	67	0	0	0	0	-60	-5	-2	-67
Site 15	Site 15_5	31	4	0	35	31	4	1	36	0	0	1	1
Site 15	Site 15_6	155	5	2	162	167	1	0	169	12	-4	-2	7
Site 16	Site 16_1	192	26	18	236	188	30	18	236	-4	4	0	-1
Site 16	Site 16_2	460	88	33	581	442	62	40	544	-18	-26	7	-37
Site 16	Site 16_3	103	26	27	156	100	26	7	132	-3	0	-20	-23

Site 16	Site 16_4	26	7	8	41	56	22	0	78	30	15	-8	37
Site 16	Site 16_5	481	51	18	550	419	51	18	487	-62	0	0	-62
Site 16	Site 16_6	96	18	4	118	103	22	0	125	7	4	-4	7
Site 19	Site 19_1	82	15	3	100	81	15	0	96	-1	0	-2	-4
Site 19	Site 19_2	469	59	41	569	452	55	42	549	-17	-4	1	-20
Site 19	Site 19_3	29	4	0	33	0	0	0	0	-29	-4	0	-33
Site 19	Site 19_4	25	8	4	37	25	8	0	33	0	0	-4	-4
Site 19	Site 19_5	399	23	37	459	302	20	37	359	-97	-3	0	-99
Site 19	Site 19_6	35	6	4	45	115	9	7	132	80	3	3	86
Site 20	Site 20_1	390	23	9	422	297	4	0	301	-93	-19	-9	-122
Site 20	Site 20_2	550	44	23	617	549	44	23	615	-1	0	0	-1
Site 20	Site 20_3	144	55	32	231	152	56	29	237	8	1	-3	6
Site 20	Site 20_4	50	5	4	59	72	3	0	75	22	-2	-3	16
Site 20	Site 20_5	102	17	8	127	93	15	4	112	-9	-2	-4	-14
Site 20	Site 20_6	47	7	2	56	48	7	9	63	1	0	7	7
Site 21	Site 21_1	292	27	6	325	24	27	0	51	-268	0	-6	-274
Site 21	Site 21_2	236	51	43	330	218	50	32	300	-18	-1	-10	-29
Site 21	Site 21_3	301	38	11	350	334	40	21	394	33	2	10	44
Site 21	Site 21_4	13	5	0	18	3	5	0	8	-10	0	0	-10
Site 21	Site 21_5	3	1	0	4	1	1	0	2	-2	0	0	-2
Site 21	Site 21_6	24	3	3	30	6	3	1	10	-18	0	-2	-19
Site 21	Site 21_7	127	18	21	166	127	18	21	166	0	0	0	-1
Site 21	Site 21_8	44	6	0	50	1	0	0	1	-43	-6	0	-49
Site 21	Site 21_9	68	9	2	79	11	1	2	13	-57	-8	0	-66
Site 21	Site 21_10	31	10	0	41	32	1	1	33	1	-9	1	-8
Site 21	Site 21_11	47	9	0	56	10	9	0	19	-37	0	0	-37
Site 21	Site 21_12	21	3	0	24	13	0	0	13	-8	-3	0	-11
Site 22	Site 22_1	391	79	32	502	359	65	58	481	-32	-14	27	-20
Site 22	Site 22_2	647	51	17	715	570	46	33	649	-77	-5	16	-66
Site 22	Site 22_3	230	32	18	280	232	32	33	298	2	0	16	18

Site 22	Site 22_4	214	18	13	245	301	27	1	329	87	9	-12	84
Site 22	Site 22_5	20	4	6	30	34	6	8	49	14	2	2	18
Site 22	Site 22_6	25	2	6	33	24	4	0	28	-1	2	-6	-5
Site 23	Site 23_1	123	5	0	128	105	0	0	105	-18	-5	0	-23
Site 23	Site 23_2	159	12	4	175	161	12	0	173	2	0	-4	-1
Site 23	Site 23_3	158	3	0	161	110	3	0	113	-49	0	0	-49
Site 23	Site 23_4	485	25	4	514	454	13	3	470	-31	-12	-1	-43
Site 23	Site 23_5	113	13	4	130	113	13	0	126	0	0	-4	-4
Site 23	Site 23_6	255	45	36	336	264	35	28	327	9	-10	-8	-9
Site 24	Site 24_1	435	56	29	520	442	55	38	535	7	-1	9	15
Site 24	Site 24_2	64	8	16	88	35	8	5	47	-29	0	-12	-41
Site 24	Site 24_3	405	30	18	453	341	7	39	387	-64	-23	21	-66
Site 24	Site 24_4	28	7	11	46	22	23	3	48	-6	16	-8	2
Site 24	Site 24_5	16	6	25	47	76	23	5	105	60	17	-20	57
Site 24	Site 24_6	4	4	13	21	3	23	0	26	-1	19	-13	5
Site 25	Site 25_2	237	49	30	316	317	64	12	392	80	15	-19	76
Site 25	Site 25_3	431	39	22	492	180	22	30	232	-251	-17	8	-260
Site 25	Site 25_12	421	58	42	521	427	72	53	552	6	14	10	31
Site 27	Site 27_2	426	61	51	538	382	56	26	464	-44	-5	-25	-74
Site 27	Site 27_3	110	23	4	137	111	38	28	177	1	15	24	40
Site 27	Site 27_4	631	50	16	697	586	38	16	641	-45	-12	1	-56
Site 27	Site 27_6	14	1	2	17	0	2	0	2	-14	1	-2	-15
Site 27	Site 27_7	166	5	4	175	187	21	7	215	21	16	2	40
Site 27	Site 27_8	18	2	4	24	11	1	5	16	-7	-1	1	-7
Site 28	Site 28_1	12	0	0	12	8	0	1	9	-4	0	1	-3
Site 28	Site 28_2	102	6	0	108	134	6	1	141	32	0	1	33
Site 28	Site 28_3	49	1	0	50	28	1	0	29	-21	0	0	-21
Site 28	Site 28_4	366	16	6	388	330	13	5	348	-36	-3	0	-39
Site 28	Site 28_5	107	10	6	123	114	10	17	141	7	0	11	18
Site 28	Site 28_6	227	35	38	300	213	35	13	261	-14	0	-25	-39

Site 29	Site 29_1	33	3	0	36	48	3	0	52	15	0	0	16
Site 29	Site 29_2	129	7	2	138	129	10	7	146	0	3	5	8
Site 29	Site 29_3	29	0	0	29	6	0	0	6	-23	0	0	-23
Site 29	Site 29_5	22	1	0	23	26	1	0	28	4	0	0	5
Site 29	Site 29_6	225	7	2	234	267	8	2	277	42	1	0	43
Site 29	Site 29_7	281	10	13	304	248	3	5	256	-33	-7	-8	-49
Site 29	Site 29_8	26	3	0	29	26	4	0	30	0	1	0	1
Site 29	Site 29_9	151	7	2	160	56	7	0	63	-95	0	-2	-97
Site 29	Site 29_10	44	6	0	50	40	5	11	56	-4	-1	11	6
Site 29	Site 29_11	98	8	6	112	98	10	6	113	0	2	0	2
Site 29	Site 29_12	61	4	2	67	45	4	2	51	-16	0	0	-16
Site 30	Site 30_1	25	9	2	36	48	9	0	57	23	0	-2	21
Site 30	Site 30_2	174	11	2	187	190	11	9	210	16	0	7	23
Site 30	Site 30_3	58	4	2	64	58	4	2	64	0	0	0	0
Site 30	Site 30_4	22	0	0	22	53	4	0	58	31	4	0	36
Site 30	Site 30_5	34	0	2	36	34	0	0	34	0	0	-2	-2
Site 30	Site 30_6	208	12	4	224	247	12	6	265	39	0	1	40
Site 30	Site 30_7	267	4	4	275	400	16	5	422	133	12	1	147
Site 30	Site 30_8	32	1	4	37	32	1	0	33	0	0	-4	-4
Site 30	Site 30_9	16	4	0	20	28	4	0	32	12	0	0	12
Site 30	Site 30_10	32	3	0	35	32	2	4	38	0	-1	4	3
Site 30	Site 30_11	58	7	2	67	57	7	0	65	-1	0	-2	-2
Site 30	Site 30_12	21	2	0	23	13	2	0	15	-8	0	0	-8
Site 31	Site 31_1	37	3	0	40	37	3	0	40	0	0	0	0
Site 31	Site 31_2	194	21	10	225	193	21	10	224	-1	0	0	-1
Site 31	Site 31_3	338	18	10	366	335	24	3	362	-3	6	-6	-3
Site 31	Site 31_4	12	4	0	16	13	0	0	13	1	-4	0	-3
Site 31	Site 31_5	88	2	4	94	2	0	0	2	-86	-2	-4	-92
Site 31	Site 31_6	78	4	4	86	78	0	3	81	0	-4	-1	-5
Site 31	Site 31_7	215	21	2	238	295	21	5	321	80	0	3	83

Site 31	Site 31_8	112	3	4	119	121	3	0	124	9	0	-4	5
Site 31	Site 31_9	222	6	0	228	230	7	13	251	8	1	13	23
Site 31	Site 31_10	143	12	8	163	181	12	8	201	38	0	0	38
Site 31	Site 31_11	57	2	0	59	60	2	0	62	3	0	0	3
Site 31	Site 31_12	128	12	2	142	144	12	3	159	16	0	1	17
Site 33	Site 33_1	194	23	11	228	196	23	13	231	2	0	1	3
Site 33	Site 33_2	549	71	41	661	533	70	43	645	-16	-1	2	-16
Site 33	Site 33_3	151	15	6	172	137	8	2	147	-14	-7	-5	-26
Site 33	Site 33_5	415	34	37	486	276	20	37	333	-139	-14	0	-152
Site 33	Site 33_6	4	1	0	5	26	0	0	26	22	-1	0	21
Site 34	Site 34_1	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 34	Site 34_2	195	9	0	204	270	17	8	294	75	8	8	90
Site 34	Site 34_3	101	18	0	119	92	14	1	107	-9	-4	1	-12
Site 34	Site 34_4	0	0	0	0	0	0	0	0	0	0	0	0
Site 34	Site 34_5	87	2	0	89	43	0	0	43	-44	-2	0	-46
Site 34	Site 34_6	23	0	0	23	43	0	0	43	20	0	0	20
Site 34	Site 34_7	340	27	10	377	268	31	23	323	-72	4	14	-53
Site 34	Site 34_8	43	1	2	46	32	1	0	32	-11	0	-2	-14
Site 34	Site 34_9	61	3	0	64	71	1	0	72	10	-2	0	8
Site 34	Site 34_10	27	6	6	39	44	3	2	49	17	-3	-3	10
Site 34	Site 34_11	3	1	0	4	4	0	0	4	1	-1	0	0
Site 34	Site 34_12	8	1	8	17	1	0	0	1	-7	-1	-8	-16
Site 35	Site 35_3	207	27	13	247	123	12	1	136	-84	-15	-12	-110
Site 35	Site 35_5	481	75	32	588	629	99	42	771	148	24	11	183
Site 35	Site 35_6	49	11	8	68	28	3	0	31	-21	-8	-8	-36
Site 36	Site 36_2	351	75	50	476	355	77	48	481	4	2	-2	5
Site 36	Site 36_3	487	69	21	577	546	78	21	645	59	9	0	68
Site 36	Site 36_4	201	33	22	256	207	33	22	262	6	0	0	6
Site 37	Site 37_1	308	84	51	443	321	90	37	448	13	6	-14	5
Site 37	Site 37_2	65	7	4	76	66	7	0	73	1	0	-4	-3

Site 37	Site 37_3	179	14	10	203	185	14	2	200	6	0	-8	-3
Site 37	Site 37_8	64	16	11	91	117	21	11	149	53	5	0	58
Site 37	Site 37_9	19	3	2	24	1	0	0	1	-18	-3	-2	-23
Site 37	Site 37_11	151	26	11	188	159	33	3	195	8	7	-9	6
Site 37	Site 37_12	8	4	2	14	6	2	0	8	-2	-2	-2	-6
Site 39	Site 39_1	60	1	2	63	30	6	20	56	-30	5	18	-7
Site 39	Site 39_2	90	8	4	102	90	8	4	102	0	0	0	0
Site 39	Site 39_3	60	1	2	63	60	2	2	64	0	1	0	1
Site 39	Site 39_4	424	71	31	526	391	70	31	491	-33	-1	0	-35
Site 39	Site 39_5	72	6	6	84	32	2	0	34	-40	-4	-6	-50
Site 39	Site 39_6	435	41	21	497	379	39	19	437	-56	-2	-2	-60
Site 40	Site 40_1	82	7	0	89	82	7	0	89	0	0	0	0
Site 40	Site 40_2	64	7	0	71	64	7	0	71	0	0	0	0
Site 40	Site 40_3	342	17	6	365	344	17	2	364	2	0	-4	-1
Site 40	Site 40_4	418	65	32	515	400	66	31	498	-18	1	-1	-18
Site 40	Site 40_5	64	3	0	67	19	3	0	22	-45	0	0	-45
Site 40	Site 40_6	433	42	21	496	375	36	20	431	-58	-6	0	-65
Site 41	Site 41_1	220	14	9	243	58	10	0	68	-162	-4	-9	-175
Site 41	Site 41_2	13	2	3	18	40	6	1	47	27	4	-1	30
Site 41	Site 41_3	153	9	9	171	155	3	10	169	2	-6	2	-2
Site 41	Site 41_4	432	39	15	486	434	49	17	500	2	10	2	14
Site 41	Site 41_5	32	2	0	34	172	15	0	187	140	13	0	153
Site 41	Site 41_6	864	83	37	984	841	66	22	929	-23	-17	-15	-55
Site 43	Site 43_1	16	7	2	25	24	7	0	31	8	0	-2	6
Site 43	Site 43_2	62	4	0	66	45	4	0	49	-17	0	0	-17
Site 43	Site 43_3	131	15	9	155	130	15	1	146	-1	0	-8	-9
Site 43	Site 43_4	158	14	2	174	93	14	0	107	-65	0	-2	-67
Site 43	Site 43_5	37	4	0	41	37	4	0	41	0	0	0	0
Site 43	Site 43_6	223	27	13	263	210	25	13	248	-13	-2	0	-15
Site 43	Site 43_7	221	12	0	233	193	12	0	204	-28	0	0	-29

Site 43	Site 43_8	35	11	0	46	1	0	0	1	-34	-11	0	-45
Site 43	Site 43_9	82	3	2	87	59	1	2	62	-23	-2	0	-25
Site 43	Site 43_10	295	40	10	345	247	15	5	267	-48	-25	-5	-78
Site 43	Site 43_11	268	50	15	333	265	43	11	320	-3	-7	-4	-13
Site 43	Site 43_12	29	10	6	45	33	2	0	36	4	-8	-6	-9
Site 46	Site 46_1	215	32	6	253	248	30	24	302	33	-2	18	49
Site 46	Site 46_2	46	3	0	49	179	28	0	206	133	25	0	157
Site 46	Site 46_3	47	14	2	63	47	0	2	49	0	-14	0	-13
Site 46	Site 46_4	368	38	31	437	373	40	41	454	5	2	10	18
Site 46	Site 46_5	10	6	0	16	19	6	1	26	9	0	1	10
Site 46	Site 46_6	355	82	39	476	336	64	58	459	-19	-18	20	-17
Site 47	Site 47_1	182	5	2	189	65	0	0	65	-117	-5	-2	-124
Site 47	Site 47_2	2	1	0	3	7	0	0	7	5	-1	0	4
Site 47	Site 47_3	22	2	2	26	23	0	0	23	1	-2	-2	-3
Site 47	Site 47_4	136	39	29	204	252	77	33	362	116	38	4	158
Site 47	Site 47_5	3	0	0	3	2	0	0	2	-1	0	0	-1
Site 48	Site 48_1	95	6	0	101	9	0	0	9	-86	-6	0	-92
Site 48	Site 48_2	195	28	9	232	167	24	0	192	-28	-4	-9	-40
Site 48	Site 48_3	11	2	0	13	33	2	0	34	22	0	0	21
Site 48	Site 48_4	18	0	0	18	32	2	1	35	14	2	1	17
Site 48	Site 48_5	354	47	9	410	348	40	4	393	-6	-7	-5	-17
Site 48	Site 48_6	321	15	0	336	181	0	0	181	-140	-15	0	-155
Site 49C	Site 49C_1	106	5	0	111	67	0	0	67	-39	-5	0	-44
Site 49C	Site 49C_2	529	31	10	570	488	31	18	538	-41	0	8	-33
Site 49C	Site 49C_3	189	4	0	193	209	5	0	214	20	1	0	21
Site 49C	Site 49C_4	30	5	2	37	221	3	0	224	191	-2	-2	187
Site 49C	Site 49C_5	194	8	3	205	157	13	6	176	-37	5	3	-29
Site 49C	Site 49C_6	6	3	0	9	0	0	0	0	-6	-3	0	-9
Site 50	Site 50_1	10	1	0	11	0	0	0	0	-10	-1	0	-11
Site 50	Site 50_2	36	3	0	39	13	1	0	14	-23	-2	0	-25

Site 50	Site 50_4	416	33	15	464	443	31	6	480	27	-2	-10	15
Site 50	Site 50_6	531	39	17	587	500	32	15	547	-31	-7	-2	-40
Site 51	Site 51_1	107	9	2	118	107	8	2	117	0	-1	0	-1
Site 51	Site 51_2	422	29	15	466	393	24	13	429	-29	-5	-2	-37
Site 51	Site 51_3	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 51	Site 51_4	2	1	0	3	12	4	1	17	10	3	1	14
Site 51	Site 51_5	413	34	15	462	443	31	6	480	30	-3	-10	17
Site 51	Site 51_6	152	10	2	164	144	9	11	163	-8	-1	9	0
Site 52	Site 52_1	0	0	0	0	28	7	8	44	28	7	8	44
Site 52	Site 52_2	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_3	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_4	25	3	2	30	23	1	1	24	-3	-2	-1	-6
Site 52	Site 52_5	18	2	0	20	107	11	0	118	89	9	0	98
Site 52	Site 52_6	379	27	11	417	276	15	13	305	-103	-12	1	-113
Site 52	Site 52_7	3	0	2	5	0	0	0	0	-3	0	-2	-5
Site 52	Site 52_8	59	7	0	66	138	12	2	152	79	5	2	86
Site 52	Site 52_9	7	0	0	7	0	0	0	0	-7	0	0	-7
Site 52	Site 52_10	5	0	0	5	0	0	0	0	-5	0	0	-5
Site 52	Site 52_11	507	36	17	560	421	21	6	447	-86	-15	-11	-113
Site 52	Site 52_12	20	0	0	20	18	7	1	26	-2	7	1	6
Site 53	Site 53_1	13	2	4	19	0	0	0	0	-13	-2	-4	-19
Site 53	Site 53_2	368	26	8	402	276	15	13	305	-92	-11	5	-97
Site 53	Site 53_3	184	22	11	217	110	11	3	123	-74	-11	-9	-94
Site 53	Site 53_4	9	1	2	12	0	0	0	0	-9	-1	-2	-12
Site 53	Site 53_5	335	14	4	353	328	17	4	350	-7	3	0	-3
Site 53	Site 53_6	2	1	4	7	0	0	0	0	-2	-1	-4	-7
Site 56	Site 56_5	357	38	23	418	349	38	23	410	-8	0	0	-9
Site 56	Site 56_9	0	0	0	0	0	0	0	0	0	0	0	0
Site 56	Site 56_10	0	0	0	0	0	0	0	0	0	0	0	0
Site 56	Site 56_13	257	79	27	363	317	89	14	421	60	10	-13	58

Site 56	Site 56_14	268	52	38	358	281	55	37	372	13	3	-1	14
Site 58	Site 58_1	307	42	44	393	289	33	30	353	-18	-9	-13	-40
Site 58	Site 58_2	53	5	2	60	60	19	0	79	7	14	-2	19
Site 58	Site 58_3	420	27	6	453	435	18	9	462	15	-9	3	9
Site 58	Site 58_4	43	0	0	43	32	1	0	34	-11	1	0	-9
Site 58	Site 58_5	8	1	2	11	36	13	3	52	28	12	1	41
Site 58	Site 58_6	39	3	0	42	45	13	0	58	6	10	0	16
Site 59	Site 59_1	55	3	6	64	54	8	9	70	-1	5	3	7
Site 59	Site 59_2	21	1	0	22	0	0	0	0	-21	-1	0	-22
Site 59	Site 59_3	176	16	10	202	175	16	7	199	-1	0	-3	-3
Site 59	Site 59_4	34	2	4	40	60	7	3	70	26	5	-1	30
Site 59	Site 59_5	2	0	0	2	0	0	0	0	-2	0	0	-2
Site 59	Site 59_6	385	27	8	420	411	24	9	444	26	-3	1	24
Site 59	Site 59_7	38	3	0	41	0	0	0	0	-38	-3	0	-41
Site 59	Site 59_8	4	0	0	4	0	0	0	0	-4	0	0	-4
Site 59	Site 59_9	69	1	0	70	0	0	0	0	-69	-1	0	-70
Site 59	Site 59_10	114	21	11	146	98	12	9	119	-16	-9	-3	-27
Site 59	Site 59_11	299	45	40	384	295	45	22	362	-4	0	-18	-22
Site 59	Site 59_12	11	0	0	11	0	0	0	0	-11	0	0	-11
Site 60	Site 60_1	19	2	0	21	0	0	0	0	-19	-2	0	-21
Site 60	Site 60_2	116	3	2	121	24	6	0	31	-92	3	-2	-90
Site 60	Site 60_3	407	18	15	440	274	13	0	287	-133	-5	-15	-153
Site 60	Site 60_4	9	0	0	9	0	0	0	0	-9	0	0	-9
Site 60	Site 60_5	2	0	0	2	0	0	0	0	-2	0	0	-2
Site 60	Site 60_6	40	2	0	42	38	0	5	43	-2	-2	5	1
Site 60	Site 60_7	89	7	0	96	72	1	3	75	-17	-6	3	-21
Site 60	Site 60_8	9	0	0	9	0	0	0	0	-9	0	0	-9
Site 60	Site 60_9	9	1	0	10	19	0	0	19	10	-1	0	9
Site 60	Site 60_10	175	11	8	194	154	12	4	170	-21	1	-3	-23
Site 60	Site 60_11	32	2	0	34	38	3	4	46	6	1	4	12

Site 60	Site 60_12	17	0	0	17	8	1	0	9	-9	1	0	-8
Site 62	Site 62_2	21	0	2	23	86	0	0	87	65	0	-2	64
Site 62	Site 62_3	239	16	4	259	293	13	4	310	54	-3	0	52
Site 62	Site 62_4	6	1	0	7	18	1	0	19	12	0	0	12
Site 62	Site 62_6	528	41	15	584	544	40	16	600	16	-1	2	17
Site 62	Site 62_7	128	11	6	145	128	11	2	141	0	0	-4	-4
Site 62	Site 62_8	359	76	24	459	363	84	21	468	4	8	-3	9
Site 67	Site 67_1	15	2	4	21	37	0	0	37	22	-2	-4	16
Site 67	Site 67_2	198	28	25	251	191	35	27	252	-7	7	2	2
Site 67	Site 67_3	91	7	2	100	130	0	2	131	39	-7	0	31
Site 67	Site 67_4	116	20	8	144	86	15	4	104	-31	-5	-4	-39
Site 67	Site 67_5	165	14	4	183	236	16	3	254	71	2	-1	71
Site 67	Site 67_6	237	20	13	270	87	20	7	114	-150	0	-6	-155
Site 69	Site 69_1	13	12	10	35	39	21	9	68	26	9	-1	33
Site 69	Site 69_2	9	8	2	19	4	0	0	4	-5	-8	-2	-15
Site 69	Site 69_3	48	16	4	68	153	31	1	186	105	15	-3	118
Site 69	Site 69_4	347	23	28	398	438	10	29	477	91	-13	2	80
Site 69	Site 69_5	44	12	0	56	123	23	0	146	79	11	0	90
Site 69	Site 69_6	409	55	43	507	315	50	44	409	-94	-5	1	-98
Site 71	Site 71_1	60	15	10	85	67	17	7	91	7	2	-3	6
Site 71	Site 71_2	703	73	83	859	696	84	94	874	-7	11	11	15
Site 71	Site 71_3	1,384	182	149	1,715	1,406	203	124	1,733	22	21	-25	19
Site 72	Site 72_2	140	44	4	188	240	20	6	266	100	-24	3	78
Site 72	Site 72_3	133	56	18	207	25	0	0	25	-108	-56	-18	-182
Site 72	Site 72_4	492	8	11	511	468	2	12	481	-24	-6	1	-29
Site 72	Site 72_5	0	0	0	0	6	0	0	6	6	0	0	6
Site 72	Site 72_6	109	26	11	146	77	0	0	77	-32	-26	-11	-69
Site 75	Site 75_1	5	2	0	7	0	0	0	0	-5	-2	0	-7
Site 75	Site 75_2	362	37	22	421	377	37	22	435	15	0	0	15
Site 75	Site 75_6	252	55	34	341	256	58	33	346	4	3	-1	5

Site 77	Site 77_1	8	0	0	8	8	0	0	8	0	0	0	0
Site 77	Site 77_2	28	2	2	32	34	12	0	46	6	10	-2	14
Site 77	Site 77_3	64	5	3	72	50	3	0	53	-14	-2	-3	-18
Site 77	Site 77_4	320	17	0	337	11	0	0	11	-309	-17	0	-326
Site 77	Site 77_5	24	3	0	27	71	0	0	71	47	-3	0	44
Site 77	Site 77_6	286	15	4	305	224	3	0	227	-62	-13	-4	-78
Site 77	Site 77_7	125	9	2	136	118	1	0	118	-7	-8	-2	-18
Site 77	Site 77_8	11	0	0	11	23	0	0	23	12	0	0	12
Site 77	Site 77_9	34	2	0	36	44	0	0	44	10	-2	0	8
Site 77	Site 77_10	102	5	0	107	24	0	0	24	-78	-5	0	-83
Site 77	Site 77_11	64	2	0	66	35	0	2	37	-29	-2	2	-29
Site 77	Site 77_12	23	3	0	26	27	0	0	27	4	-3	0	1
Site 79	Site 79_1	320	20	2	342	269	8	2	279	-51	-12	0	-63
Site 79	Site 79_2	493	31	4	528	360	21	0	381	-133	-10	-4	-148
Site 79	Site 79_3	88	14	2	104	47	6	3	56	-41	-8	2	-48
Site 79	Site 79_4	114	7	2	123	170	11	1	181	56	4	-1	59
Site 79	Site 79_5	44	5	0	49	34	3	3	40	-10	-2	3	-9
Site 79	Site 79_6	41	4	0	45	59	12	1	73	18	8	1	28
Site 80	Site 80_1	111	7	7	125	98	7	0	105	-13	0	-7	-19
Site 80	Site 80_2	254	21	15	290	296	18	10	324	42	-3	-5	34
Site 80	Site 80_3	27	1	0	28	0	0	0	0	-27	-1	0	-28
Site 80	Site 80_4	513	26	15	554	529	52	31	611	16	26	16	58
Site 80	Site 80_5	53	8	8	69	61	8	0	69	8	0	-8	0
Site 80	Site 80_6	208	68	22	298	255	67	23	345	47	-1	1	47
Site 81	Site 81_1	80	14	8	102	65	8	7	81	-15	-6	0	-21
Site 81	Site 81_2	66	5	4	75	61	5	4	70	-5	0	0	-6
Site 81	Site 81_3	11	6	6	23	16	6	0	22	5	0	-6	-1
Site 81	Site 81_4	46	7	9	62	46	7	7	60	0	0	-2	-2
Site 81	Site 81_5	105	12	4	121	42	5	0	48	-63	-7	-4	-74
Site 81	Site 81_6	231	19	28	278	240	19	36	295	9	0	8	17

Site 81	Site 81_7	114	13	2	129	65	7	2	74	-49	-6	0	-55
Site 81	Site 81_8	254	22	0	276	111	22	0	133	-143	0	0	-143
Site 81	Site 81_9	4	1	2	7	7	1	0	9	3	0	-2	2
Site 81	Site 81_10	38	1	4	43	5	0	0	6	-33	-1	-4	-37
Site 81	Site 81_11	344	47	23	414	355	51	23	429	11	4	0	15
Site 81	Site 81_12	6	4	5	15	14	1	0	15	8	-3	-5	0
Site 102	Site 102_2	50	3	2	55	50	4	0	55	0	1	-2	0
Site 102	Site 102_3	398	64	30	492	413	69	32	514	15	5	2	22
Site 102	Site 102_4	63	5	2	70	10	3	0	13	-53	-2	-2	-57
Site 102	Site 102_6	86	8	0	94	33	2	0	36	-53	-6	0	-58
Site 102	Site 102_7	416	38	17	471	384	36	20	441	-32	-2	3	-30
Site 102	Site 102_8	61	4	6	71	25	9	18	52	-36	5	12	-18
Site 106	Site 106_2	87	10	2	99	0	0	0	0	-87	-10	-2	-99
Site 106	Site 106_3	495	86	40	621	408	65	33	506	-87	-21	-7	-115
Site 106	Site 106_4	23	5	2	30	0	0	0	0	-23	-5	-2	-30
Site 106	Site 106_6	3	2	0	5	0	0	0	0	-3	-2	0	-5
Site 106	Site 106_7	268	38	38	344	202	33	21	255	-66	-5	-17	-88
Site 106	Site 106_8	4	1	0	5	0	0	0	0	-4	-1	0	-5
Site 109	Site 109_1	70	4	4	78	70	2	0	72	0	-2	-4	-6
Site 109	Site 109_2	95	2	2	99	98	0	2	100	3	-2	0	1
Site 109	Site 109_3	150	13	6	169	104	8	0	111	-46	-5	-6	-58
Site 109	Site 109_4	247	37	17	301	291	57	8	356	44	20	-9	55
Site 109	Site 109_5	60	5	3	68	60	0	1	61	0	-5	-1	-6
Site 109	Site 109_6	304	50	30	384	347	50	30	428	43	0	0	44
Site 110	Site 110_2	24	4	0	28	36	1	0	37	12	-3	0	9
Site 110	Site 110_3	288	19	8	315	261	13	0	274	-27	-6	-7	-41
Site 110	Site 110_4	16	2	0	18	29	0	0	29	13	-2	0	11
Site 110	Site 110_6	61	4	0	65	6	0	0	6	-55	-4	0	-59
Site 110	Site 110_7	52	3	4	59	58	0	2	60	6	-3	-2	1
Site 110	Site 110_8	21	2	0	23	14	0	0	14	-7	-2	0	-9

Site 111	Site 111_1	25	2	0	27	48	15	0	63	23	13	0	36
Site 111	Site 111_3	22	3	0	25	114	1	0	115	92	-2	0	90
Site 111	Site 111_4	23	4	0	27	19	0	0	19	-4	-4	0	-8
Site 111	Site 111_5	126	41	24	191	248	77	32	358	122	36	8	167
Site 111	Site 111_6	8	0	5	13	10	0	1	11	2	0	-4	-2
Site 120	Site 120_1	41	8	2	51	41	6	0	47	0	-2	-2	-4
Site 120	Site 120_2	160	18	20	198	152	8	4	164	-8	-10	-16	-34
Site 120	Site 120_3	16	1	0	17	58	5	0	63	42	4	0	46
Site 120	Site 120_4	183	22	6	211	228	23	10	261	45	1	4	51
Site 120	Site 120_5	264	24	34	322	234	24	5	263	-30	0	-29	-59
Site 120	Site 120_6	126	13	10	149	130	13	11	153	4	0	1	4
Site 125	Site 125_1	37	2	0	39	0	0	0	0	-37	-2	0	-39
Site 125	Site 125_2	49	9	2	60	31	3	16	50	-18	-6	14	-10
Site 125	Site 125_3	74	4	2	80	0	0	0	0	-74	-4	-2	-80
Site 125	Site 125_4	269	30	20	319	291	30	1	322	22	0	-19	3
Site 125	Site 125_5	218	22	0	240	100	16	1	118	-118	-6	1	-122
Site 125	Site 125_6	346	25	27	398	393	25	25	443	47	0	-2	45
Site 126	Site 126_1	91	7	0	98	58	5	0	63	-33	-2	0	-35
Site 126	Site 126_2	21	2	0	23	22	2	0	24	1	0	0	1
Site 126	Site 126_3	162	17	0	179	60	1	0	61	-102	-16	0	-118
Site 126	Site 126_4	318	33	22	373	269	28	1	298	-49	-5	-21	-75
Site 126	Site 126_5	31	2	2	35	9	1	2	11	-22	-1	0	-24
Site 126	Site 126_6	353	24	25	402	384	24	23	431	31	0	-2	30
Site 130	Site 130_2	13	5	2	20	16	2	0	17	3	-3	-2	-3
Site 130	Site 130_3	86	13	0	99	97	25	3	125	11	12	3	26
Site 130	Site 130_4	32	4	2	38	67	8	0	76	35	4	-2	38
Site 130	Site 130_6	480	27	8	515	540	17	5	563	60	-10	-3	48
Site 130	Site 130_7	139	14	4	157	30	6	0	36	-109	-8	-4	-121
Site 130	Site 130_8	194	28	2	224	161	14	4	180	-33	-14	2	-44
Site 134	Site 134_3	2	1	0	3	15	1	0	15	13	0	0	12

Site 134	Site 134_4	173	12	4	189	183	14	7	204	10	2	3	15
Site 134	Site 134_5	13	2	2	17	0	0	0	0	-13	-2	-2	-17
Site 134	Site 134_6	421	15	13	449	472	17	16	505	51	2	3	56
Site 135	Site 135_2	12	3	0	15	48	2	0	51	36	-1	0	36
Site 135	Site 135_3	13	1	0	14	7	1	1	9	-6	0	1	-5
Site 135	Site 135_4	13	0	0	13	20	0	0	20	7	0	0	7
Site 135	Site 135_6	375	13	4	392	310	15	2	327	-65	2	-2	-65
Site 135	Site 135_7	6	0	0	6	37	1	0	37	31	1	0	31
Site 135	Site 135_8	185	13	8	206	135	17	19	170	-50	4	11	-35
Site 137	Site 137_1	11	2	0	13	2	0	0	2	-9	-2	0	-11
Site 137	Site 137_2	90	3	2	95	39	0	0	40	-51	-3	-2	-55
Site 137	Site 137_3	37	1	0	38	34	0	0	34	-3	-1	0	-4
Site 137	Site 137_4	479	33	17	529	404	11	9	424	-75	-22	-8	-105
Site 137	Site 137_5	154	12	0	166	43	0	0	43	-111	-12	0	-123
Site 137	Site 137_6	242	63	43	348	221	58	28	307	-21	-5	-15	-40
Site 200	Site 200_2	45	6	0	51	40	0	0	40	-5	-6	0	-11
Site 200	Site 200_3	240	8	2	250	232	2	0	234	-8	-6	-2	-16
Site 200	Site 200_4	111	5	2	118	44	0	0	44	-67	-5	-2	-74
Site 200	Site 200_6	238	10	2	250	238	0	0	238	0	-10	-2	-12
Site 200	Site 200_7	153	13	4	170	144	0	0	144	-9	-13	-4	-25
Site 200	Site 200_8	92	5	0	97	71	7	0	78	-21	2	0	-19
Site 12	Site 12_1	434	37	25	496	466	30	25	522	32	-7	1	26
Site 12	Site 12_2	642	52	22	716	460	1	1	462	-182	-51	-21	-254
Site 12	Site 12_3	482	46	21	549	457	42	21	520	-25	-4	0	-29
Site 12	Site 12_4	782	86	38	906	744	84	34	862	-38	-2	-4	-44
Site 12	Site 12_5	305	19	6	330	305	19	4	329	0	0	-1	-1
Site 12	Site 12_6	285	18	8	311	188	18	5	212	-97	0	-2	-99
Site 12	Site 12_7	1,077	104	44	1,225	869	73	21	964	-208	-31	-23	-262
Site 12	Site 12_8	589	50	28	667	589	53	27	669	0	3	-1	2
Site 44	Site 44_1	877	71	35	983	880	73	34	987	3	2	-1	4

Site 44	Site 44_2	38	7	15	60	57	10	9	76	19	3	-6	16
Site 44	Site 44_3	78	15	16	109	78	0	16	94	0	-15	0	-15
Site 44	Site 44_4	464	30	30	524	467	0	30	497	3	-30	0	-27
Site 44	Site 44_5	317	31	30	378	333	10	29	371	16	-21	-1	-6
Site 44	Site 44_6	530	71	43	644	533	73	41	647	3	2	-3	2
Site 44	Site 44_7	19	8	11	38	29	0	5	34	10	-8	-6	-5
Site 44	Site 44_8	259	17	4	280	262	0	4	266	3	-17	0	-14
Site 113	Site 113_1	349	20	2	371	281	11	0	292	-68	-9	-2	-79
Site 113	Site 113_2	418	23	4	445	189	0	0	190	-229	-23	-4	-255
Site 113	Site 113_3	423	29	10	462	363	9	7	379	-60	-20	-3	-82
Site 113	Site 113_4	251	22	8	281	251	15	8	274	0	-7	0	-7
Site 113	Site 113_5	254	22	6	282	210	25	0	234	-44	3	-6	-47
Site 113	Site 113_6	361	29	8	398	361	29	0	390	0	0	-8	-8
Site 113	Site 113_7	404	37	10	451	405	33	8	446	1	-4	-2	-4
Site 113	Site 113_8	400	34	8	442	458	34	7	498	58	0	-1	57
Site 121	Site 121_1	314	24	2	340	299	13	0	312	-15	-11	-1	-28
Site 121	Site 121_2	210	25	2	237	210	5	3	217	0	-20	1	-20
Site 121	Site 121_3	449	32	8	489	440	34	7	481	-9	2	-1	-8
Site 121	Site 121_4	386	33	11	430	383	33	8	424	-3	0	-3	-6
Site 121	Site 121_5	310	18	8	336	273	0	0	274	-37	-18	-7	-62
Site 121	Site 121_6	282	17	2	301	234	15	0	249	-48	-2	-2	-52
Site 121	Site 121_7	428	39	8	475	426	44	11	481	-2	5	3	6
Site 121	Site 121_8	623	38	10	671	611	38	7	656	-12	0	-2	-14
Site 112	Site 112_1	61	5	2	68	104	2	0	106	43	-3	-2	38
Site 112	Site 112_2	81	6	2	89	136	6	0	142	55	0	-2	53
Site 112	Site 112_3	280	21	4	305	224	8	7	238	-56	-13	3	-66
Site 112	Site 112_4	195	14	4	213	159	2	8	168	-36	-12	4	-44
Site 112	Site 112_5	231	14	4	249	231	6	8	245	0	-8	4	-4
Site 112	Site 112_6	296	20	4	320	264	8	7	279	-32	-12	3	-41
Site 2	Site 2_1	364	71	20	455	455	85	21	562	91	14	1	107

Site 2	Site 2_2	493	39	15	547	566	41	16	624	73	2	2	77
Site 2	Site 2_3	670	44	11	725	624	42	8	673	-46	-2	-4	-52
Site 2	Site 2_4	271	50	11	332	262	50	11	323	-9	0	1	-8
Site 2	Site 2_5	57	3	0	60	0	0	0	0	-57	-3	0	-60
Site 2	Site 2_6	38	2	0	40	0	0	0	0	-38	-2	0	-40
Site 2	Site 2_7	229	17	11	257	250	17	9	276	21	0	-2	19
Site 2	Site 2_8	542	47	15	604	525	44	6	575	-17	-3	-9	-30
Site 2	Site 2_9	50	4	0	54	50	4	0	54	0	0	0	0
Site 2	Site 2_10	26	1	2	29	26	13	4	44	0	12	2	15
Site 3	Site 3_1	769	201	107	1,077	778	185	108	1,071	9	-16	1	-6
Site 3	Site 3_2	1,132	96	33	1,261	1,092	90	41	1,224	-40	-6	8	-38
Site 3	Site 3_3	779	65	8	852	683	27	1	711	-96	-38	-7	-141
Site 3	Site 3_4	379	105	50	534	321	60	32	413	-58	-45	-19	-122
Site 3	Site 3_5	838	60	35	933	849	63	36	949	11	3	1	16
Site 3	Site 3_6	488	117	60	665	429	112	76	617	-59	-5	16	-48
Site 3	Site 3_7	138	9	2	149	138	10	6	154	0	1	4	5
Site 3	Site 3_8	420	17	13	450	418	17	0	435	-2	0	-13	-16
Site 3	Site 3_9	163	19	10	192	157	19	7	183	-6	0	-2	-8
Site 3	Site 3_10	268	19	4	291	284	19	5	309	16	0	2	18
Site 10	Site 10_1	539	87	104	730	579	82	101	763	40	-5	-2	33
Site 10	Site 10_2	1,226	162	133	1,521	1,304	170	134	1,608	78	8	2	88
Site 10	Site 10_3	469	50	24	543	498	50	26	574	29	0	2	31
Site 10	Site 10_4	370	58	26	454	377	55	26	458	7	-3	0	4
Site 10	Site 10_5	949	140	118	1,207	983	146	117	1,246	34	6	-1	39
Site 10	Site 10_6	361	57	87	505	379	53	84	517	18	-4	-3	11
Site 14	Site 14_1	188	27	25	240	126	25	12	163	-62	-2	-13	-77
Site 14	Site 14_2	126	20	21	167	109	11	15	134	-17	-9	-6	-33
Site 14	Site 14_3	775	51	22	848	596	51	13	660	-179	0	-9	-188
Site 14	Site 14_4	557	90	35	682	507	77	39	623	-50	-13	4	-59
Site 14	Site 14_5	495	68	25	588	578	77	25	680	83	9	0	92

Site 14	Site 14_6	369	64	21	454	375	72	26	472	6	8	5	18
Site 14	Site 14_7	492	64	25	581	447	50	27	524	-45	-14	2	-57
Site 14	Site 14_8	740	50	31	821	650	45	20	716	-90	-5	-11	-105
Site 14	Site 14_9	447	91	41	579	484	84	40	608	37	-7	-1	29
Site 14	Site 14_10	605	77	30	712	561	77	16	655	-44	0	-14	-58
Site 65	Site 65_1	165	20	13	198	165	15	1	181	0	-5	-12	-17
Site 65	Site 65_2	275	21	15	311	273	15	0	288	-2	-6	-15	-23
Site 65	Site 65_3	705	37	11	753	610	37	4	651	-95	0	-8	-103
Site 65	Site 65_4	385	54	46	485	300	54	35	389	-85	0	-10	-95
Site 65	Site 65_5	275	49	42	366	262	49	36	346	-13	0	-6	-19
Site 65	Site 65_6	485	31	6	522	464	33	5	501	-21	2	-1	-20
Site 26	Site 26_2	819	65	22	906	760	65	23	849	-59	0	1	-58
Site 26	Site 26_3	782	60	18	860	773	60	23	856	-9	0	5	-5
Site 26	Site 26_4	548	94	54	696	493	94	54	641	-55	0	0	-55
Site 26	Site 26_5	585	99	58	742	571	96	66	734	-14	-3	8	-8
Site 63	Site 63_1	360	21	2	383	328	21	3	352	-32	0	2	-31
Site 63	Site 63_2	205	23	2	230	217	17	4	237	12	-6	2	7
Site 63	Site 63_3	765	57	18	840	856	62	23	940	91	5	4	100
Site 63	Site 63_4	477	94	30	601	491	94	23	608	14	0	-7	7
Site 63	Site 63_5	66	4	2	72	60	17	12	89	-6	13	10	17
Site 63	Site 63_6	23	2	2	27	23	5	1	29	0	3	-1	2
Site 63	Site 63_7	184	22	4	210	183	16	3	203	-1	-6	0	-6
Site 63	Site 63_8	469	24	4	497	514	24	5	543	45	0	1	46
Site 63	Site 63_9	308	75	27	410	354	75	23	452	46	0	-4	42
Site 63	Site 63_10	509	36	15	560	529	52	31	611	20	16	16	52
Site 119	Site 119_1	320	19	8	347	104	0	0	104	-216	-19	-8	-243
Site 119	Site 119_2	352	12	4	368	10	0	0	10	-342	-12	-4	-358
Site 119	Site 119_3	631	37	10	678	611	38	7	656	-20	1	-2	-21
Site 119	Site 119_4	425	48	8	481	426	44	11	481	1	-4	3	0
Site 119	Site 119_5	148	1	6	155	148	14	0	162	0	13	-6	7

Site 119	Site 119_6	142	4	7	153	89	6	1	95	-53	2	-6	-58
Site 119	Site 119_7	208	34	4	246	274	43	11	328	66	9	7	82
Site 119	Site 119_8	388	27	10	425	611	46	7	665	223	19	-3	240
SYSTRA Site 11	SYSTRA Site 11_1	456	60	48	564	452	51	61	564	-4	-9	13	0
SYSTRA Site 11	SYSTRA Site 11_2	451	82	74	607	429	76	63	568	-22	-6	-11	-39
SYSTRA Site 11	SYSTRA Site 11_4	277	47	58	382	259	47	60	365	-18	0	1	-17
SYSTRA Site 11	SYSTRA Site 11_5	625	111	112	848	609	109	112	830	-16	-2	0	-18
SYSTRA Site 11	SYSTRA Site 11_6	394	48	50	492	391	48	50	490	-3	0	0	-2
SYSTRA Site 11	SYSTRA Site 11_7	41	6	22	69	17	11	0	28	-24	5	-22	-41
SYSTRA Site 12	SYSTRA Site 12_1	495	104	85	684	448	115	37	600	-47	11	-48	-83
SYSTRA Site 12	SYSTRA Site 12_3	489	86	99	674	487	86	96	669	-2	0	-3	-5
SYSTRA Site 12	SYSTRA Site 12_4	672	110	98	880	670	110	72	852	-2	0	-27	-28
SYSTRA Site 12	SYSTRA Site 12_6	83	17	21	121	48	30	0	77	-35	13	-21	-44
SYSTRA Site 12	SYSTRA Site 12_7	392	48	48	488	391	48	50	490	-1	0	2	2
SYSTRA Site 12	SYSTRA Site 12_8	621	111	112	844	609	109	112	830	-12	-2	0	-14
SYSTRA Site 13	SYSTRA Site 13_1	545	120	81	746	545	111	81	736	0	-9	0	-10
SYSTRA Site 13	SYSTRA Site 13_2	746	89	58	893	745	55	58	858	-1	-34	0	-35
SYSTRA Site 13	SYSTRA Site 13_3	1,179	97	80	1,356	1,195	127	89	1,411	16	30	9	55
SYSTRA Site 13	SYSTRA Site 13_4	511	95	79	685	639	150	104	893	128	55	25	208
SYSTRA Site 13	SYSTRA Site 13_5	317	36	8	361	364	35	8	407	47	-1	0	47
SYSTRA Site 13	SYSTRA Site 13_6	433	44	14	491	309	44	14	367	-124	0	0	-124
SYSTRA Site 13	SYSTRA Site 13_7	465	62	44	571	463	66	34	563	-2	4	-10	-8
SYSTRA Site 13	SYSTRA Site 13_8	816	87	62	965	873	90	35	998	57	3	-27	32
SYSTRA Site 14	SYSTRA Site 14_1	398	35	14	447	273	10	7	291	-125	-25	-7	-156
SYSTRA Site 14	SYSTRA Site 14_2	281	28	2	311	300	14	1	315	19	-14	-1	4
SYSTRA Site 14	SYSTRA Site 14_3	772	40	6	818	766	40	12	818	-6	0	6	0
SYSTRA Site 14	SYSTRA Site 14_4	671	25	10	706	529	13	5	547	-142	-12	-4	-159
SYSTRA Site 14	SYSTRA Site 14_5	513	21	6	540	494	19	6	520	-19	-2	0	-20
SYSTRA Site 14	SYSTRA Site 14_6	731	43	14	788	705	43	19	767	-26	0	5	-21
SYSTRA Site 15	SYSTRA Site 15_2	131	23	16	170	131	23	16	170	0	0	0	-1

SYSTRA Site 15	SYSTRA Site 15_3	175	36	11	222	192	21	0	213	17	-15	-11	-8
SYSTRA Site 15	SYSTRA Site 15_4	95	13	2	110	82	0	0	83	-13	-13	-2	-27
SYSTRA Site 15	SYSTRA Site 15_5	61	16	18	95	62	13	11	86	1	-3	-7	-9
SYSTRA Site 15	SYSTRA Site 15_7	74	18	8	100	72	18	8	98	-2	0	1	-2
SYSTRA Site 15	SYSTRA Site 15_8	300	48	42	390	295	45	44	383	-6	-3	2	-6
SYSTRA Site 15	SYSTRA Site 15_9	74	13	11	98	74	4	5	82	0	-9	-7	-16
SYSTRA Site 15	SYSTRA Site 15_10	66	11	20	97	54	2	22	78	-12	-9	2	-18
SYSTRA Site 15	SYSTRA Site 15_12	60	8	7	75	45	0	1	46	-15	-8	-6	-29
SYSTRA Site 15	SYSTRA Site 15_13	24	10	3	37	24	1	0	25	0	-9	-3	-12
SYSTRA Site 15	SYSTRA Site 15_14	258	27	14	299	267	26	23	316	9	-1	9	17
SYSTRA Site 15	SYSTRA Site 15_15	60	17	8	85	232	6	0	238	172	-11	-8	153
ATC 6	ATC 6_1	74	14	2	89	35	0	0	35	-39	-14	-2	-54
ATC 6	ATC 6_2	50	10	1	61	50	1	0	51	0	-9	-1	-10
ATC 7	ATC 7_1	92	17	2	111	92	0	2	94	0	-17	0	-17
ATC 7	ATC 7_2	395	72	6	473	394	13	0	407	-1	-59	-6	-67
ATC 8	ATC 8_1	7	1	1	9	0	0	0	0	-7	-1	-1	-9
ATC 8	ATC 8_2	102	25	3	130	0	0	0	0	-102	-25	-3	-130
ATC 9	ATC 9_1	188	40	33	260	258	77	33	368	71	38	0	108
ATC 9	ATC 9_2	637	53	37	727	1,101	76	25	1,202	464	23	-12	476
ATC 10	ATC 10_1	175	28	22	225	162	24	22	207	-13	-5	0	-18
ATC 10	ATC 10_2	725	218	105	1,048	575	116	53	745	-150	-101	-52	-303
ATC 11	ATC 11_1	250	35	34	319	266	38	42	346	16	3	8	28
ATC 11	ATC 11_2	969	178	117	1,265	929	111	91	1,130	-41	-67	-27	-135
ATC 12	ATC 12_1	177	29	18	224	135	31	19	184	-43	2	0	-40
ATC 12	ATC 12_2	287	40	16	343	501	43	0	544	215	2	-16	201
ATC 13	ATC 13_1	963	50	163	1,176	983	146	117	1,246	20	96	-46	70
ATC 13	ATC 13_2	443	16	97	556	379	53	84	517	-64	36	-12	-40
ATC 14.1	ATC 14.1_1	369	70	62	502	463	66	34	563	94	-5	-28	61
ATC 14.2	ATC 14.2_1	669	145	86	900	873	90	35	998	204	-56	-51	97
ATC 15	ATC 15_1	569	83	25	677	555	31	18	604	-14	-52	-6	-72

ATC 15	ATC 15_2	354	50	9	413	368	17	5	390	14	-33	-4	-23
ATC 18	ATC 18_1	190	9	6	205	160	8	5	173	-30	-1	-1	-32
ATC 18	ATC 18_2	373	52	8	433	201	15	0	215	-172	-37	-8	-217
ATC 19	ATC 19_1	257	23	19	299	245	72	33	349	-12	48	14	50
ATC 19	ATC 19_2	799	68	38	904	846	48	23	916	47	-20	-15	12
ATC 20	ATC 20_1	203	35	25	264	275	77	33	384	71	42	7	121
ATC 20	ATC 20_2	792	61	32	885	1,164	76	25	1,265	372	15	-7	380
ATC 21.1	ATC 21.1_1	456	64	31	550	426	44	11	481	-29	-20	-20	-70
ATC 21.2	ATC 21.2_1	525	79	41	645	611	38	7	656	86	-41	-34	11
ATC 2023 Add 1	ATC 2023 Add 1_1	817	95	105	1,017	730	99	39	868	-87	4	-66	-149
ATC 2023 Add 1	ATC 2023 Add 1_2	631	53	30	714	556	50	21	627	-75	-3	-9	-87
ATC 2023 Add 2	ATC 2023 Add 2_1	511	60	60	631	463	73	32	569	-47	13	-28	-62
ATC 2023 Add 2	ATC 2023 Add 2_2	520	47	34	602	395	39	20	454	-125	-9	-14	-148
ATC 2023 Add 5.1	ATC 2023 Add 5.1_1	386	36	35	456	340	43	13	396	-46	7	-22	-61
ATC 2023 Add 5.1	ATC 2023 Add 5.1_2	321	51	47	419	290	50	11	352	-30	-1	-36	-68
ATC 2022 Add 7	ATC 2022 Add 7_1	44	13	7	65	44	1	1	46	0	-12	-6	-18
ATC 2022 Add 7	ATC 2022 Add 7_2	190	35	20	245	300	41	24	365	110	7	3	120
ATC 2022 Add 8	ATC 2022 Add 8_1	243	56	50	349	320	52	26	398	77	-4	-24	48
ATC 2022 Add 8	ATC 2022 Add 8_2	316	59	31	406	326	55	7	388	10	-3	-25	-18
ATC 1	ATC 1_1	1,046	177	97	1,320	1,112	200	101	1,413	66	23	4	93
ATC 1	ATC 1_2	1,324	108	61	1,493	1,398	120	65	1,583	74	12	4	90
ATC 2	ATC 2_1	622	36	16	674	587	40	16	643	-35	4	1	-31
ATC 2	ATC 2_2	377	25	11	412	406	28	13	447	29	3	3	34
ATC 3	ATC 3_1	59	13	11	84	59	7	0	66	0	-6	-11	-18
ATC 3	ATC 3_2	456	43	19	518	453	21	17	490	-3	-23	-2	-28
ATC 4	ATC 4_1	585	70	40	695	493	94	54	641	-92	24	14	-54
ATC 4	ATC 4_2	802	54	23	879	773	60	23	856	-29	6	0	-23

IP Results

		Observed				Modelled				Difference			
Site	Ref	Car	LGV	OGV	Total	Car	LGV	OGV	Total	Car	LGV	OGV	Total
Site 1	Site 1_1	119	24	20	163	119	24	20	163	1	0	0	0
Site 1	Site 1_2	193	16	6	215	194	16	0	210	1	0	-6	-5
Site 1	Site 1_3	67	6	3	75	67	6	0	74	0	1	-3	-2
Site 1	Site 1_4	122	24	23	169	121	24	25	169	-1	0	2	1
Site 1	Site 1_6	137	10	4	151	137	10	0	147	-1	1	-4	-4
Site 1	Site 1_7	186	16	6	208	185	16	0	201	-1	0	-6	-7
Site 1	Site 1_8	29	2	1	32	29	0	0	29	0	-2	-1	-3
Site 1	Site 1_9	11	1	0	12	15	1	0	15	4	0	0	4
Site 1	Site 1_11	144	9	3	156	144	9	3	156	0	0	-1	0
Site 1	Site 1_12	25	2	1	28	6	0	0	6	-19	-2	-1	-22
Site 4	Site 4_2	128	14	3	145	128	14	3	145	0	0	0	0
Site 4	Site 4_3	236	38	41	315	239	36	38	313	3	-2	-3	-2
Site 4	Site 4_4	54	2	3	59	55	30	0	85	1	27	-3	26
Site 4	Site 4_6	775	127	88	989	774	123	86	982	-1	-4	-2	-7
Site 4	Site 4_7	201	21	6	228	154	21	6	181	-47	0	0	-47
Site 4	Site 4_8	46	7	2	55	48	8	0	56	2	1	-2	1
Site 4	Site 4_11	832	126	103	1,061	834	129	103	1,066	2	3	0	4
Site 4	Site 4_12	198	23	6	227	199	20	3	222	1	-2	-3	-5
Site 5	Site 5_1	550	88	84	722	449	82	65	596	-101	-6	-20	-126
Site 5	Site 5_2	321	26	7	354	321	23	2	345	0	-3	-5	-9
Site 5	Site 5_3	22	3	2	27	22	3	0	24	-1	0	-2	-3
Site 5	Site 5_4	550	93	107	750	551	92	115	758	1	-1	8	8
Site 5	Site 5_5	156	10	3	169	156	10	0	166	0	0	-3	-3
Site 5	Site 5_6	304	55	18	377	306	57	9	371	2	1	-9	-6
Site 5	Site 5_7	291	25	11	328	290	25	11	326	-2	0	0	-2
Site 5	Site 5_8	147	12	5	164	198	11	0	209	51	-1	-5	45
Site 5	Site 5_9	169	17	8	193	173	17	1	191	4	0	-6	-2

Site 5	Site 5_10	102	13	8	123	97	16	15	128	-5	4	6	5
Site 5	Site 5_11	334	50	21	405	386	55	41	483	52	5	21	78
Site 5	Site 5_12	121	14	5	140	124	15	4	143	3	1	-1	2
Site 6	Site 6_2	226	32	24	282	327	45	49	421	101	13	25	139
Site 6	Site 6_3	122	22	17	160	24	1	0	25	-97	-21	-17	-136
Site 6	Site 6_4	80	13	27	120	79	18	18	115	-1	5	-9	-5
Site 6	Site 6_5	185	26	34	245	205	26	53	284	20	0	18	38
Site 6	Site 6_6	62	7	6	74	84	7	0	91	22	0	-6	16
Site 6	Site 6_8	64	13	8	85	50	3	1	53	-14	-11	-7	-32
Site 6	Site 6_9	497	86	76	659	564	88	86	738	67	2	10	79
Site 6	Site 6_10	132	20	20	172	50	1	0	51	-82	-19	-20	-121
Site 6	Site 6_11	74	9	8	92	8	0	0	8	-66	-9	-8	-83
Site 6	Site 6_13	35	5	1	41	35	5	1	41	0	0	0	0
Site 6	Site 6_14	58	10	21	89	123	13	21	157	65	3	-1	68
Site 6	Site 6_15	493	73	58	624	465	63	47	576	-28	-10	-11	-49
Site 6	Site 6_16	37	6	2	44	37	6	3	47	0	1	2	2
Site 6.1	Site 6.1_1	22	2	1	25	9	0	0	10	-12	-2	-1	-15
Site 6.1	Site 6.1_2	314	49	58	421	322	47	58	427	8	-1	-1	6
Site 6.1	Site 6.1_3	25	2	2	29	13	1	0	13	-12	-1	-2	-16
Site 6.1	Site 6.1_4	110	17	9	137	108	17	9	134	-2	0	-1	-3
Site 6.1	Site 6.1_5	307	45	69	420	310	34	67	411	4	-11	-2	-9
Site 6.1	Site 6.1_6	67	11	7	85	68	6	7	81	0	-5	0	-4
Site 7	Site 7_2	174	31	25	230	182	31	23	235	8	0	-2	5
Site 7	Site 7_3	259	56	28	343	216	44	21	282	-43	-12	-6	-61
Site 7	Site 7_4	68	15	16	98	69	16	2	88	2	2	-14	-11
Site 7	Site 7_5	176	40	32	247	200	54	42	296	24	15	10	48
Site 7	Site 7_7	20	2	7	29	22	2	0	24	2	0	-7	-5
Site 7	Site 7_8	403	55	63	521	452	53	64	569	50	-2	1	48
Site 7	Site 7_9	247	64	26	337	165	46	10	222	-82	-17	-16	-115

Site 7	Site 7_10	17	2	3	22	3	0	0	4	-14	-1	-3	-18
Site 7	Site 7_12	214	40	23	277	132	25	22	179	-82	-15	-1	-97
Site 7	Site 7_13	118	23	19	159	117	32	15	163	0	9	-4	4
Site 7	Site 7_14	400	53	53	506	394	41	51	485	-6	-12	-2	-21
Site 7	Site 7_15	248	43	26	316	254	46	28	328	6	3	3	12
Site 8	Site 8_2	114	12	7	133	112	0	0	112	-1	-12	-7	-21
Site 8	Site 8_3	115	27	6	148	84	0	6	90	-32	-27	0	-58
Site 8	Site 8_4	34	7	3	44	0	0	0	0	-34	-7	-3	-44
Site 8	Site 8_5	51	7	4	63	62	0	0	62	11	-7	-4	0
Site 8	Site 8_7	133	24	12	169	83	22	0	105	-50	-2	-12	-64
Site 8	Site 8_8	513	77	87	677	508	72	89	668	-6	-5	2	-9
Site 8	Site 8_9	110	34	12	155	109	22	2	133	-1	-12	-10	-22
Site 8	Site 8_10	148	23	12	182	142	22	12	175	-6	-1	0	-7
Site 8	Site 8_12	241	31	31	303	257	54	38	349	17	23	7	46
Site 8	Site 8_13	130	33	18	181	65	26	10	101	-64	-7	-9	-80
Site 8	Site 8_14	506	85	78	670	512	96	81	689	6	11	3	20
Site 8	Site 8_15	187	30	26	243	234	37	26	298	48	7	0	55
Site 9	Site 9_1	116	14	12	142	98	14	0	112	-18	1	-12	-29
Site 9	Site 9_2	546	97	103	745	568	95	122	785	22	-2	19	40
Site 9	Site 9_3	250	49	29	327	250	49	20	319	1	1	-9	-7
Site 9	Site 9_4	97	14	8	118	97	16	0	112	0	1	-8	-6
Site 9	Site 9_5	98	13	24	134	94	7	2	103	-3	-6	-22	-32
Site 9	Site 9_6	168	22	11	201	150	15	14	180	-18	-6	3	-21
Site 9	Site 9_7	499	93	89	680	498	95	95	688	-1	2	7	8
Site 9	Site 9_8	124	19	23	165	121	11	8	140	-2	-8	-15	-26
Site 9	Site 9_9	120	21	26	168	117	17	26	160	-3	-4	-1	-8
Site 9	Site 9_10	204	41	26	272	217	49	21	287	13	7	-5	15
Site 9	Site 9_11	194	24	12	230	188	24	12	224	-6	0	0	-6
Site 9	Site 9_12	142	23	31	195	141	22	30	193	-1	0	-1	-3
Site 11	Site 11_2	145	17	15	177	152	17	14	183	7	0	-1	6

Site 11	Site 11_3	271	36	31	337	277	47	34	358	7	11	3	21
Site 11	Site 11_4	86	5	1	91	87	5	0	92	2	0	-1	1
Site 11	Site 11_5	172	24	17	213	126	18	11	154	-47	-6	-6	-58
Site 11	Site 11_7	198	25	19	242	196	21	16	233	-1	-4	-4	-9
Site 11	Site 11_8	35	4	2	41	39	0	0	39	4	-4	-2	-3
Site 11	Site 11_9	237	36	22	295	233	40	31	304	-4	4	9	9
Site 11	Site 11_10	201	25	15	241	200	27	15	242	-1	2	0	1
Site 11	Site 11_12	27	3	0	30	25	2	0	28	-1	0	0	-2
Site 11	Site 11_13	70	6	2	77	119	9	2	129	49	3	0	52
Site 11	Site 11_14	39	3	1	43	48	2	0	50	9	-2	-1	6
Site 11	Site 11_15	39	3	2	44	43	3	0	47	4	0	-1	3
Site 13	Site 13_2	153	22	8	184	150	22	10	181	-4	-1	2	-3
Site 13	Site 13_3	210	31	26	267	209	33	26	268	-1	2	0	1
Site 13	Site 13_4	29	6	4	39	5	1	0	5	-24	-5	-4	-34
Site 13	Site 13_5	154	33	11	198	166	37	15	218	12	4	4	20
Site 13	Site 13_8	360	44	15	419	351	42	15	408	-9	-2	0	-11
Site 13	Site 13_9	166	25	20	210	172	24	26	222	6	0	6	12
Site 13	Site 13_10	63	8	15	85	73	10	15	98	10	3	0	13
Site 13	Site 13_12	226	22	17	265	123	20	5	148	-103	-2	-11	-117
Site 13	Site 13_14	291	29	16	336	301	28	14	344	10	-1	-1	7
Site 13	Site 13_15	284	32	12	328	277	33	13	322	-7	1	1	-5
Site 15	Site 15_1	70	4	1	75	70	8	0	78	0	4	-1	4
Site 15	Site 15_2	35	6	7	48	34	4	6	45	-2	-1	-1	-3
Site 15	Site 15_3	53	4	1	57	44	4	0	48	-9	0	-1	-9
Site 15	Site 15_4	69	7	1	77	0	0	0	0	-69	-7	-1	-77
Site 15	Site 15_5	46	6	9	61	46	6	2	54	1	0	-7	-6
Site 15	Site 15_6	80	8	2	89	28	0	0	28	-52	-8	-2	-61
Site 16	Site 16_1	172	38	14	224	171	38	16	224	-1	0	2	0
Site 16	Site 16_2	378	65	17	460	360	70	32	462	-18	5	15	2
Site 16	Site 16_3	195	44	16	254	192	44	16	253	-2	1	0	-1

Site 16	Site 16_4	78	16	4	97	116	32	1	149	38	16	-3	52
Site 16	Site 16_5	345	64	20	429	342	34	2	378	-3	-29	-19	-51
Site 16	Site 16_6	106	16	7	130	127	41	0	167	20	25	-7	38
Site 19	Site 19_1	43	7	0	50	21	1	0	22	-23	-5	0	-28
Site 19	Site 19_2	372	43	34	448	396	51	34	480	24	7	0	32
Site 19	Site 19_3	30	4	0	33	0	0	0	0	-30	-4	0	-33
Site 19	Site 19_4	32	7	9	47	32	7	0	39	0	0	-9	-8
Site 19	Site 19_5	288	38	44	370	250	39	39	328	-38	1	-5	-42
Site 19	Site 19_6	30	6	3	39	31	18	4	52	1	12	0	13
Site 20	Site 20_1	118	14	12	143	102	1	0	103	-16	-13	-12	-40
Site 20	Site 20_2	258	41	40	339	258	37	38	332	-1	-5	-2	-7
Site 20	Site 20_3	224	39	37	300	181	1	37	219	-42	-39	0	-81
Site 20	Site 20_4	24	2	2	28	23	1	0	24	-2	0	-2	-4
Site 20	Site 20_5	155	15	6	176	140	37	3	180	-16	22	-3	3
Site 20	Site 20_6	41	3	2	46	41	4	0	45	0	1	-2	-1
Site 21	Site 21_1	17	2	1	20	1	0	0	2	-15	-2	-1	-18
Site 21	Site 21_2	183	27	42	252	182	26	47	255	-2	-1	5	3
Site 21	Site 21_3	83	16	16	115	43	17	6	66	-40	0	-9	-49
Site 21	Site 21_4	24	4	0	28	2	0	0	2	-22	-3	0	-26
Site 21	Site 21_5	5	2	1	8	0	0	0	0	-5	-2	-1	-8
Site 21	Site 21_6	15	3	3	21	2	1	1	4	-14	-2	-2	-17
Site 21	Site 21_7	187	30	55	272	190	27	52	270	3	-3	-3	-2
Site 21	Site 21_8	14	3	2	19	0	0	0	1	-13	-3	-2	-18
Site 21	Site 21_9	29	6	4	38	2	1	0	4	-26	-4	-4	-35
Site 21	Site 21_10	89	21	16	126	85	15	9	109	-4	-6	-7	-17
Site 21	Site 21_11	17	3	2	22	4	3	0	7	-12	0	-2	-15
Site 21	Site 21_12	20	5	3	28	35	4	0	39	15	-1	-3	11
Site 22	Site 22_1	277	38	37	352	272	25	47	344	-4	-13	10	-8
Site 22	Site 22_2	101	13	11	125	106	16	14	136	5	3	3	11
Site 22	Site 22_3	304	57	44	405	306	57	50	412	2	0	5	7

Site 22	Site 22_4	80	16	18	114	79	28	14	121	0	12	-4	7
Site 22	Site 22_5	111	11	13	135	114	11	14	139	3	0	1	5
Site 22	Site 22_6	94	18	15	126	89	21	1	111	-4	3	-14	-15
Site 23	Site 23_1	63	6	1	70	63	0	0	63	0	-6	-1	-6
Site 23	Site 23_2	108	8	2	119	107	10	0	117	-2	2	-2	-2
Site 23	Site 23_3	65	4	3	71	65	0	0	65	0	-4	-3	-6
Site 23	Site 23_4	276	31	12	318	276	18	12	306	1	-13	0	-12
Site 23	Site 23_5	100	7	2	108	71	7	0	78	-29	0	-2	-30
Site 23	Site 23_6	326	33	13	372	325	32	13	370	-1	-1	0	-2
Site 24	Site 24_1	363	43	27	432	416	51	34	501	53	8	7	69
Site 24	Site 24_2	41	10	18	69	11	7	0	18	-30	-3	-18	-51
Site 24	Site 24_3	266	33	28	327	170	25	38	233	-97	-8	10	-95
Site 24	Site 24_4	19	10	10	39	24	33	1	58	5	23	-9	19
Site 24	Site 24_5	47	14	21	83	111	32	5	148	64	18	-17	65
Site 24	Site 24_6	28	7	9	43	7	8	0	15	-21	2	-9	-28
Site 25	Site 25_2	272	48	14	333	224	45	12	281	-48	-2	-2	-53
Site 25	Site 25_3	273	43	28	344	138	52	22	212	-136	9	-6	-133
Site 25	Site 25_12	380	46	34	459	430	75	31	535	50	29	-3	76
Site 27	Site 27_2	365	61	23	449	308	58	17	383	-57	-4	-6	-66
Site 27	Site 27_3	128	15	4	147	183	20	13	217	55	6	9	69
Site 27	Site 27_4	363	50	25	438	332	53	24	409	-31	4	-1	-28
Site 27	Site 27_6	18	2	1	21	1	0	0	1	-17	-2	-1	-19
Site 27	Site 27_7	58	7	4	69	96	9	12	117	39	2	9	49
Site 27	Site 27_8	16	3	0	19	1	0	0	1	-15	-3	0	-18
Site 28	Site 28_1	13	1	0	15	8	0	0	8	-6	-1	0	-7
Site 28	Site 28_2	84	10	4	98	83	18	5	106	-1	7	1	8
Site 28	Site 28_3	21	1	1	22	20	4	0	24	0	3	-1	2
Site 28	Site 28_4	214	32	17	263	214	18	17	249	0	-14	0	-14
Site 28	Site 28_5	102	11	3	117	102	17	3	121	0	6	-1	5
Site 28	Site 28_6	215	29	11	255	214	28	8	250	-1	0	-4	-5

Site 29	Site 29_1	50	4	0	53	50	4	0	54	0	1	0	1
Site 29	Site 29_2	162	16	5	182	163	17	5	184	1	1	0	2
Site 29	Site 29_3	26	3	0	29	1	0	0	1	-24	-3	0	-27
Site 29	Site 29_5	22	3	0	25	22	1	0	23	0	-2	0	-2
Site 29	Site 29_6	110	10	4	124	110	24	4	138	0	14	0	14
Site 29	Site 29_7	138	19	5	162	139	19	3	162	1	0	-1	0
Site 29	Site 29_8	27	3	0	30	27	3	0	30	0	0	0	0
Site 29	Site 29_9	57	7	1	65	14	7	0	21	-43	0	-1	-44
Site 29	Site 29_10	34	5	0	39	33	5	0	38	0	0	0	-1
Site 29	Site 29_11	91	8	3	102	92	15	3	110	2	7	-1	8
Site 29	Site 29_12	42	5	1	48	42	5	1	48	0	0	0	0
Site 30	Site 30_1	23	2	1	26	53	7	0	60	30	5	-1	34
Site 30	Site 30_2	198	19	5	222	199	20	5	223	0	1	0	1
Site 30	Site 30_3	41	7	3	51	40	5	3	47	-2	-2	0	-4
Site 30	Site 30_4	26	2	2	30	25	2	0	27	-1	0	-2	-3
Site 30	Site 30_5	28	5	0	33	21	4	0	25	-7	-1	0	-8
Site 30	Site 30_6	86	11	3	100	86	11	2	99	0	0	-1	-1
Site 30	Site 30_7	195	20	5	219	216	20	5	241	21	0	0	22
Site 30	Site 30_8	27	7	1	35	27	5	0	32	0	-2	0	-2
Site 30	Site 30_9	9	0	0	10	9	2	0	11	0	1	0	1
Site 30	Site 30_10	40	4	2	46	27	2	3	33	-13	-2	1	-13
Site 30	Site 30_11	68	9	3	80	55	9	4	69	-13	0	1	-11
Site 30	Site 30_12	14	2	0	16	14	4	1	18	0	2	0	2
Site 31	Site 31_1	38	2	3	43	101	6	2	110	63	4	-1	66
Site 31	Site 31_2	172	20	4	196	172	21	9	202	0	1	5	6
Site 31	Site 31_3	172	15	2	189	172	15	0	187	1	0	-2	-2
Site 31	Site 31_4	33	3	0	36	68	0	0	68	35	-3	0	32
Site 31	Site 31_5	43	2	3	47	1	0	0	1	-42	-2	-3	-46
Site 31	Site 31_6	70	6	3	79	70	0	3	73	1	-6	-1	-6
Site 31	Site 31_7	156	20	5	181	154	20	6	180	-1	0	1	-1

Site 31	Site 31_8	46	3	1	50	46	3	0	49	0	0	-1	-1
Site 31	Site 31_9	137	14	6	157	136	14	6	156	-1	0	0	-2
Site 31	Site 31_10	125	14	2	141	145	15	4	163	20	0	2	22
Site 31	Site 31_11	51	4	1	56	53	4	0	57	2	0	-1	1
Site 31	Site 31_12	144	17	4	165	145	18	4	167	1	1	0	2
Site 33	Site 33_1	79	14	5	98	69	14	5	88	-10	0	0	-10
Site 33	Site 33_2	419	48	34	501	417	52	34	503	-2	4	0	2
Site 33	Site 33_3	131	16	7	154	131	16	7	154	0	0	0	-1
Site 33	Site 33_5	313	40	43	396	237	39	39	315	-76	-1	-4	-81
Site 33	Site 33_6	2	1	0	3	13	0	0	13	11	0	0	10
Site 34	Site 34_1	0	0	0	0	0	0	0	0	0	0	0	0
Site 34	Site 34_2	263	26	5	294	225	22	3	250	-38	-3	-2	-44
Site 34	Site 34_3	107	9	1	117	168	11	1	180	61	2	0	63
Site 34	Site 34_4	3	0	0	4	0	0	0	0	-3	0	0	-4
Site 34	Site 34_5	69	4	1	75	38	1	0	39	-31	-3	-1	-36
Site 34	Site 34_6	15	1	0	17	14	0	0	14	-2	-1	0	-3
Site 34	Site 34_7	277	27	12	315	353	27	10	390	77	0	-2	75
Site 34	Site 34_8	55	4	1	60	28	1	0	29	-27	-3	-1	-31
Site 34	Site 34_9	40	4	0	44	45	4	0	49	5	0	0	5
Site 34	Site 34_10	89	7	2	97	71	10	0	81	-18	3	-2	-16
Site 34	Site 34_11	18	1	0	19	12	0	0	12	-5	-1	0	-6
Site 34	Site 34_12	23	4	1	27	0	0	0	0	-23	-4	-1	-27
Site 35	Site 35_3	185	30	7	223	129	19	2	150	-56	-11	-6	-72
Site 35	Site 35_5	331	82	28	441	415	94	30	540	84	12	2	98
Site 35	Site 35_6	93	12	3	108	36	12	0	48	-57	0	-3	-60
Site 36	Site 36_2	242	43	22	307	252	41	17	309	9	-3	-5	2
Site 36	Site 36_3	320	69	23	412	349	69	24	442	29	0	1	30
Site 36	Site 36_4	196	44	12	252	196	44	8	248	0	1	-5	-3
Site 37	Site 37_1	276	58	18	352	286	60	18	364	10	2	0	12
Site 37	Site 37_2	59	9	9	78	58	9	0	67	-1	0	-9	-10

Site 37	Site 37_3	103	19	7	128	103	19	0	122	1	1	-7	-6
Site 37	Site 37_8	63	10	4	77	58	10	4	72	-5	0	0	-5
Site 37	Site 37_9	22	2	0	24	22	6	1	28	0	4	0	4
Site 37	Site 37_11	75	16	5	96	65	16	6	88	-9	0	1	-9
Site 37	Site 37_12	10	2	0	11	1	1	0	3	-8	0	0	-8
Site 39	Site 39_1	60	7	3	69	11	6	0	17	-49	-1	-3	-52
Site 39	Site 39_2	81	8	4	93	73	8	0	81	-8	0	-4	-12
Site 39	Site 39_3	60	5	1	66	57	2	4	62	-3	-3	2	-4
Site 39	Site 39_4	469	51	22	542	466	51	22	540	-2	0	0	-2
Site 39	Site 39_5	53	5	3	61	27	5	3	35	-25	0	0	-26
Site 39	Site 39_6	436	57	31	524	412	60	35	507	-24	2	5	-17
Site 40	Site 40_1	38	6	3	46	40	7	3	50	2	2	0	4
Site 40	Site 40_2	34	2	2	37	23	1	0	24	-10	-1	-2	-13
Site 40	Site 40_3	112	11	5	128	110	11	5	126	-2	0	0	-2
Site 40	Site 40_4	493	52	23	567	494	52	26	572	2	0	3	5
Site 40	Site 40_5	34	3	3	40	8	3	0	11	-26	0	-3	-28
Site 40	Site 40_6	472	62	33	567	403	57	32	492	-69	-5	0	-75
Site 41	Site 41_1	77	10	8	94	65	9	9	84	-11	-1	2	-10
Site 41	Site 41_2	76	5	3	84	54	0	1	55	-22	-5	-2	-29
Site 41	Site 41_3	82	10	9	101	99	20	9	127	17	10	0	27
Site 41	Site 41_4	525	69	29	622	476	59	24	560	-49	-10	-4	-63
Site 41	Site 41_5	49	5	4	58	41	0	5	46	-8	-5	1	-12
Site 41	Site 41_6	524	59	20	603	564	58	17	638	40	-2	-3	35
Site 43	Site 43_1	54	5	3	62	54	5	0	59	0	0	-3	-3
Site 43	Site 43_2	61	6	1	68	50	1	0	50	-12	-5	-1	-18
Site 43	Site 43_3	77	13	11	100	81	13	11	105	5	0	0	5
Site 43	Site 43_4	58	11	3	72	59	11	0	70	0	0	-3	-2
Site 43	Site 43_5	43	9	1	54	39	9	3	52	-4	0	2	-2
Site 43	Site 43_6	282	33	22	337	200	18	15	233	-82	-15	-7	-104
Site 43	Site 43_7	55	5	1	61	21	2	0	22	-35	-4	-1	-39

Site 43	Site 43_8	45	7	1	52	31	0	1	32	-14	-7	0	-21
Site 43	Site 43_9	46	8	5	59	79	8	0	88	34	0	-5	29
Site 43	Site 43_10	49	8	11	67	49	7	10	65	0	-1	-1	-2
Site 43	Site 43_11	284	30	16	330	286	30	16	331	2	0	-1	1
Site 43	Site 43_12	52	8	4	63	57	8	3	68	5	1	-1	4
Site 46	Site 46_1	112	19	11	143	105	13	6	124	-7	-7	-5	-19
Site 46	Site 46_2	33	8	7	47	33	8	6	47	0	0	-1	-1
Site 46	Site 46_3	104	24	9	137	100	27	9	136	-3	2	0	-1
Site 46	Site 46_4	368	74	52	493	369	74	52	495	2	0	0	2
Site 46	Site 46_5	35	7	4	46	37	7	2	46	1	0	-1	0
Site 46	Site 46_6	365	55	45	464	355	47	45	447	-10	-7	0	-17
Site 47	Site 47_1	24	3	1	27	53	0	0	53	29	-3	-1	25
Site 47	Site 47_2	4	1	0	5	5	0	0	5	1	-1	0	0
Site 47	Site 47_3	23	2	1	26	22	0	0	22	-1	-2	-1	-5
Site 47	Site 47_4	351	46	44	441	330	44	40	414	-21	-2	-4	-27
Site 47	Site 47_5	6	1	1	8	2	0	0	2	-5	-1	-1	-6
Site 48	Site 48_1	7	1	0	8	9	0	0	9	2	-1	0	1
Site 48	Site 48_2	184	22	11	218	144	9	1	154	-40	-14	-10	-64
Site 48	Site 48_3	7	1	0	8	7	1	1	8	0	-1	1	0
Site 48	Site 48_4	7	1	0	9	41	10	10	61	34	9	9	52
Site 48	Site 48_5	149	19	11	179	75	19	10	104	-74	0	-1	-75
Site 48	Site 48_6	7	2	0	8	53	0	0	53	46	-2	0	45
Site 49C	Site 49C_1	49	4	2	55	22	0	0	22	-27	-4	-2	-33
Site 49C	Site 49C_2	160	20	3	183	163	15	4	183	3	-4	1	0
Site 49C	Site 49C_3	56	7	2	65	56	0	0	56	0	-7	-2	-9
Site 49C	Site 49C_4	11	3	1	15	67	4	0	71	56	1	-1	56
Site 49C	Site 49C_5	175	20	5	200	219	20	7	245	44	0	1	45
Site 49C	Site 49C_6	13	3	1	16	0	0	0	0	-12	-3	-1	-16
Site 50	Site 50_1	13	1	1	15	0	0	0	0	-13	-1	-1	-15
Site 50	Site 50_2	18	2	0	20	27	9	0	35	9	7	0	15

Site 50	Site 50_4	312	34	8	354	308	32	8	348	-4	-2	0	-6
Site 50	Site 50_6	352	33	12	397	376	28	9	413	24	-5	-3	16
Site 51	Site 51_1	80	7	0	88	80	7	0	87	0	0	0	-1
Site 51	Site 51_2	282	28	12	321	296	21	9	326	14	-7	-3	5
Site 51	Site 51_3	16	1	0	17	0	0	0	0	-16	-1	0	-17
Site 51	Site 51_4	22	1	0	23	23	6	0	29	1	5	0	7
Site 51	Site 51_5	295	33	7	334	308	32	8	348	14	0	1	14
Site 51	Site 51_6	160	22	4	186	165	18	5	187	4	-4	1	1
Site 52	Site 52_1	0	0	0	0	19	1	7	27	19	1	7	27
Site 52	Site 52_2	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_3	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_4	14	1	1	16	18	0	0	18	3	-1	-1	2
Site 52	Site 52_5	9	1	0	10	71	6	0	77	62	4	0	66
Site 52	Site 52_6	281	26	11	318	230	22	9	261	-50	-4	-2	-57
Site 52	Site 52_7	2	0	0	2	0	0	0	0	-1	0	0	-2
Site 52	Site 52_8	52	8	1	61	94	9	1	105	42	1	0	43
Site 52	Site 52_9	7	1	1	8	0	0	0	0	-7	-1	-1	-8
Site 52	Site 52_10	1	0	0	2	0	0	0	0	-1	0	0	-2
Site 52	Site 52_11	402	46	10	458	359	40	5	404	-43	-6	-6	-54
Site 52	Site 52_12	15	3	2	20	51	5	1	57	36	2	-1	37
Site 53	Site 53_1	11	3	3	17	0	0	0	0	-11	-3	-3	-17
Site 53	Site 53_2	273	23	9	306	230	22	9	261	-43	-2	0	-45
Site 53	Site 53_3	94	16	4	115	94	16	3	113	0	0	-1	-1
Site 53	Site 53_4	22	3	1	26	0	0	0	0	-22	-3	-1	-26
Site 53	Site 53_5	315	32	7	355	316	29	3	348	1	-3	-5	-7
Site 53	Site 53_6	9	2	2	12	0	0	0	0	-9	-2	-2	-12
Site 56	Site 56_5	261	44	17	322	265	46	21	332	4	2	4	10
Site 56	Site 56_9	0	0	0	0	0	0	0	0	0	0	0	0
Site 56	Site 56_10	2	2	0	4	0	0	0	0	-2	-2	0	-4
Site 56	Site 56_13	173	37	10	219	173	37	10	220	1	0	0	1

Site 56	Site 56_14	234	46	17	297	236	49	18	303	2	3	1	6
Site 58	Site 58_1	289	40	13	342	253	37	10	301	-36	-2	-3	-41
Site 58	Site 58_2	18	3	2	22	49	8	0	57	30	5	-2	34
Site 58	Site 58_3	280	39	19	339	189	26	20	235	-91	-13	0	-104
Site 58	Site 58_4	19	2	1	22	48	5	4	57	29	3	3	35
Site 58	Site 58_5	19	1	1	21	63	9	0	72	44	8	-1	51
Site 58	Site 58_6	28	3	1	32	63	8	0	71	35	5	-1	39
Site 59	Site 59_1	48	4	0	52	48	8	0	56	0	4	0	4
Site 59	Site 59_2	16	1	1	17	0	0	0	0	-16	-1	-1	-17
Site 59	Site 59_3	106	16	5	127	106	16	5	127	0	0	-1	0
Site 59	Site 59_4	39	6	1	46	43	2	0	45	4	-4	-1	0
Site 59	Site 59_5	3	1	0	3	0	0	0	0	-3	-1	0	-3
Site 59	Site 59_6	254	36	20	309	210	33	20	262	-44	-3	0	-47
Site 59	Site 59_7	16	1	1	17	3	0	0	3	-13	-1	-1	-15
Site 59	Site 59_8	5	1	0	6	0	0	0	0	-5	-1	0	-6
Site 59	Site 59_9	16	3	1	19	18	4	0	22	2	2	-1	3
Site 59	Site 59_10	101	22	7	130	55	20	7	82	-46	-2	0	-48
Site 59	Site 59_11	255	38	15	309	254	37	10	301	-1	-1	-5	-7
Site 59	Site 59_12	8	2	1	11	0	0	0	0	-8	-2	-1	-11
Site 60	Site 60_1	5	1	1	7	0	0	0	0	-5	-1	-1	-7
Site 60	Site 60_2	53	4	2	58	14	1	0	15	-39	-3	-2	-44
Site 60	Site 60_3	194	21	4	220	142	27	1	171	-52	6	-4	-49
Site 60	Site 60_4	6	1	0	7	0	0	0	0	-6	-1	0	-7
Site 60	Site 60_5	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 60	Site 60_6	15	3	1	18	15	0	3	18	0	-3	2	0
Site 60	Site 60_7	56	7	2	65	4	0	0	4	-52	-7	-2	-61
Site 60	Site 60_8	4	1	0	5	0	0	0	0	-4	-1	0	-5
Site 60	Site 60_9	13	4	1	18	23	2	0	25	10	-3	-1	7
Site 60	Site 60_10	178	19	5	202	183	18	4	205	5	0	-2	3
Site 60	Site 60_11	29	3	1	32	29	2	1	32	0	-1	0	0

Site 60	Site 60_12	12	3	1	16	14	3	2	19	3	0	1	3
Site 62	Site 62_2	22	3	1	26	19	0	0	20	-2	-3	-1	-6
Site 62	Site 62_3	208	30	17	254	205	30	5	240	-2	0	-12	-14
Site 62	Site 62_4	14	2	1	17	14	2	0	16	0	0	-1	-1
Site 62	Site 62_6	455	74	47	576	456	72	48	576	1	-1	0	0
Site 62	Site 62_7	160	21	9	190	166	21	0	187	6	0	-9	-3
Site 62	Site 62_8	532	80	46	658	525	78	50	654	-6	-2	4	-4
Site 67	Site 67_1	23	3	1	26	80	0	6	86	57	-3	5	60
Site 67	Site 67_2	184	20	10	214	184	32	13	229	0	13	3	16
Site 67	Site 67_3	19	2	1	21	47	0	4	51	29	-2	3	30
Site 67	Site 67_4	156	24	21	200	129	24	16	169	-26	0	-5	-31
Site 67	Site 67_5	155	18	11	183	155	18	12	185	0	0	1	2
Site 67	Site 67_6	185	26	22	233	129	21	14	163	-56	-5	-8	-69
Site 69	Site 69_1	35	13	9	56	58	27	3	89	23	15	-6	33
Site 69	Site 69_2	18	8	6	32	18	9	0	26	0	0	-6	-6
Site 69	Site 69_3	35	16	11	63	73	34	2	110	38	18	-9	47
Site 69	Site 69_4	274	44	44	361	307	24	49	380	33	-20	5	19
Site 69	Site 69_5	16	7	4	27	13	0	0	13	-2	-7	-4	-14
Site 69	Site 69_6	339	43	47	429	371	44	52	468	32	1	6	39
Site 71	Site 71_1	154	33	24	211	151	33	16	200	-2	-1	-9	-11
Site 71	Site 71_2	777	125	120	1,022	765	126	126	1,017	-13	1	7	-5
Site 71	Site 71_3	798	149	123	1,070	812	159	117	1,087	13	10	-6	18
Site 72	Site 72_2	165	56	22	242	204	43	13	260	39	-13	-9	17
Site 72	Site 72_3	126	56	17	199	111	43	4	158	-15	-13	-13	-40
Site 72	Site 72_4	166	18	17	201	125	4	8	138	-40	-14	-9	-64
Site 72	Site 72_5	0	0	0	0	26	0	0	26	26	0	0	26
Site 72	Site 72_6	242	40	16	297	196	0	6	202	-46	-40	-10	-95
Site 75	Site 75_1	11	2	1	14	0	0	0	0	-11	-2	-1	-14
Site 75	Site 75_2	250	42	17	308	261	42	20	323	11	0	3	15
Site 75	Site 75_6	223	50	16	288	223	50	18	291	0	1	2	3

Site 77	Site 77_1	20	3	0	23	7	0	0	7	-13	-3	0	-17
Site 77	Site 77_2	40	4	3	47	48	7	0	55	9	3	-3	9
Site 77	Site 77_3	28	2	4	34	11	5	0	16	-17	3	-4	-18
Site 77	Site 77_4	26	4	1	32	7	0	0	7	-19	-4	-1	-25
Site 77	Site 77_5	15	2	0	17	14	0	0	14	-1	-2	0	-3
Site 77	Site 77_6	82	10	5	96	60	1	4	65	-22	-9	-1	-32
Site 77	Site 77_7	37	3	2	41	67	13	0	81	31	11	-2	39
Site 77	Site 77_8	14	2	0	16	13	0	0	13	-1	-2	0	-3
Site 77	Site 77_9	23	4	2	28	45	2	0	47	22	-2	-2	18
Site 77	Site 77_10	34	4	3	41	19	1	0	21	-14	-3	-3	-20
Site 77	Site 77_11	65	6	4	74	59	0	0	59	-6	-6	-4	-15
Site 77	Site 77_12	21	3	2	26	32	1	0	33	11	-3	-2	7
Site 78	Site 78_1	2	0	0	2	0	0	0	0	-2	0	0	-2
Site 78	Site 78_2	54	5	3	62	64	13	0	77	11	7	-3	15
Site 78	Site 78_3	3	1	1	5	1	0	0	1	-2	-1	-1	-3
Site 78	Site 78_4	2	1	0	3	0	0	0	0	-2	-1	0	-3
Site 78	Site 78_5	5	1	2	7	0	0	0	0	-5	-1	-2	-7
Site 78	Site 78_6	7	1	1	9	0	0	0	0	-7	-1	-1	-9
Site 78	Site 78_7	59	5	3	67	94	15	0	108	35	9	-3	41
Site 78	Site 78_8	6	1	1	7	0	0	0	0	-6	-1	-1	-7
Site 78	Site 78_9	30	4	1	34	0	0	0	0	-30	-4	-1	-34
Site 78	Site 78_10	3	1	1	4	0	0	0	0	-2	-1	-1	-4
Site 78	Site 78_11	8	2	1	11	0	0	0	0	-8	-2	-1	-11
Site 78	Site 78_12	27	3	1	31	1	0	0	1	-26	-3	-1	-30
Site 79	Site 79_1	100	13	6	119	70	9	0	79	-30	-5	-6	-40
Site 79	Site 79_2	109	15	4	128	43	2	16	61	-65	-13	12	-67
Site 79	Site 79_3	68	14	6	88	41	13	4	58	-27	-1	-2	-30
Site 79	Site 79_4	69	10	5	84	157	53	0	211	88	43	-5	127
Site 79	Site 79_5	135	17	5	156	62	9	9	81	-72	-7	4	-76
Site 79	Site 79_6	83	7	5	95	110	12	0	122	27	5	-5	28

Site 80	Site 80_1	93	8	3	104	46	8	0	54	-47	0	-3	-49
Site 80	Site 80_2	159	15	4	178	98	8	0	105	-61	-7	-4	-72
Site 80	Site 80_3	68	6	1	75	5	0	0	5	-62	-6	-1	-70
Site 80	Site 80_4	459	77	58	594	438	48	53	539	-20	-29	-5	-55
Site 80	Site 80_5	168	14	6	188	90	0	0	90	-78	-14	-6	-97
Site 80	Site 80_6	421	68	45	533	469	69	50	588	49	1	6	55
Site 81	Site 81_1	62	14	18	93	61	9	0	70	-1	-5	-18	-23
Site 81	Site 81_2	65	10	5	80	37	10	0	47	-28	0	-5	-34
Site 81	Site 81_3	36	5	3	44	68	16	3	87	33	11	0	43
Site 81	Site 81_4	53	11	10	74	58	11	2	70	4	0	-8	-4
Site 81	Site 81_5	124	15	8	147	25	4	0	29	-99	-11	-8	-118
Site 81	Site 81_6	289	50	31	370	308	55	31	394	19	5	0	24
Site 81	Site 81_7	60	12	4	76	44	14	0	59	-16	3	-4	-17
Site 81	Site 81_8	104	13	4	120	45	5	0	50	-59	-8	-4	-70
Site 81	Site 81_9	8	1	2	10	9	1	0	11	2	0	-2	0
Site 81	Site 81_10	35	3	3	41	20	5	0	24	-15	1	-3	-17
Site 81	Site 81_11	251	38	22	311	251	43	26	321	0	6	4	10
Site 81	Site 81_12	9	3	4	15	9	0	0	10	1	-3	-4	-5
Site 102	Site 102_2	32	4	2	38	17	2	0	20	-15	-2	-2	-18
Site 102	Site 102_3	479	49	22	550	500	51	26	576	21	2	4	27
Site 102	Site 102_4	52	9	4	65	5	3	0	8	-47	-6	-4	-58
Site 102	Site 102_6	48	6	2	55	23	2	0	25	-24	-4	-2	-30
Site 102	Site 102_7	445	55	30	530	406	57	32	496	-39	2	2	-34
Site 102	Site 102_8	51	9	3	62	17	8	3	28	-34	-1	0	-34
Site 106	Site 106_2	18	2	1	20	0	0	0	0	-18	-2	-1	-20
Site 106	Site 106_3	294	47	57	398	291	38	57	386	-3	-9	0	-12
Site 106	Site 106_4	24	3	1	28	0	0	0	0	-24	-3	-1	-28
Site 106	Site 106_6	6	2	0	8	0	0	0	0	-6	-2	0	-8
Site 106	Site 106_7	296	45	69	410	256	31	52	339	-40	-14	-16	-70
Site 106	Site 106_8	7	2	0	9	0	0	0	0	-7	-2	0	-9

Site 109	Site 109_1	45	5	7	57	45	5	0	50	0	0	-7	-7
Site 109	Site 109_2	34	2	4	40	46	2	4	52	12	0	0	12
Site 109	Site 109_3	53	7	6	66	53	7	0	60	0	0	-6	-6
Site 109	Site 109_4	275	43	38	355	281	43	22	346	6	1	-16	-10
Site 109	Site 109_5	28	4	4	36	41	0	4	45	12	-4	0	9
Site 109	Site 109_6	289	39	36	363	302	56	25	383	14	17	-11	19
Site 110	Site 110_2	8	0	0	9	12	1	0	13	4	1	0	4
Site 110	Site 110_3	58	7	4	69	45	1	4	49	-14	-6	0	-20
Site 110	Site 110_4	18	2	1	22	14	0	0	14	-4	-2	-1	-8
Site 110	Site 110_6	9	1	1	11	2	0	0	2	-8	-1	-1	-9
Site 110	Site 110_7	55	8	4	67	40	0	0	41	-14	-8	-4	-26
Site 110	Site 110_8	10	1	0	11	1	0	0	1	-8	-1	0	-9
Site 111	Site 111_1	28	3	1	33	49	13	0	62	21	9	-1	29
Site 111	Site 111_3	35	6	3	43	82	15	0	97	48	9	-3	54
Site 111	Site 111_4	9	0	1	11	9	0	0	9	0	0	-1	-1
Site 111	Site 111_5	320	50	42	411	324	44	40	408	4	-6	-2	-3
Site 111	Site 111_6	8	1	1	10	11	0	0	11	3	-1	-1	1
Site 120	Site 120_1	35	6	2	43	31	6	1	38	-4	0	-1	-5
Site 120	Site 120_2	183	24	26	233	182	18	3	203	0	-6	-24	-30
Site 120	Site 120_3	23	3	3	28	10	1	0	11	-13	-2	-3	-17
Site 120	Site 120_4	140	18	13	172	140	18	13	171	0	0	0	-1
Site 120	Site 120_5	205	29	31	264	201	29	4	234	-4	0	-27	-30
Site 120	Site 120_6	183	18	15	216	181	18	15	214	-2	0	0	-2
Site 125	Site 125_1	41	6	3	50	0	0	0	0	-41	-6	-3	-50
Site 125	Site 125_2	83	10	3	95	21	3	3	27	-61	-7	0	-68
Site 125	Site 125_3	35	4	1	40	0	0	0	0	-35	-4	-1	-40
Site 125	Site 125_4	280	42	22	344	282	41	21	344	2	-1	-1	0
Site 125	Site 125_5	72	11	5	88	26	11	0	37	-46	0	-5	-51
Site 125	Site 125_6	240	32	17	289	249	39	8	296	9	7	-9	7
Site 126	Site 126_1	90	11	3	104	47	3	3	53	-43	-8	0	-51

Site 126	Site 126_2	21	5	1	27	6	3	1	10	-16	-2	0	-18
Site 126	Site 126_3	61	9	2	73	41	3	0	45	-20	-6	-2	-28
Site 126	Site 126_4	291	42	21	354	276	38	20	334	-15	-3	-1	-19
Site 126	Site 126_5	20	3	1	24	12	0	1	13	-9	-3	0	-11
Site 126	Site 126_6	260	35	19	314	237	39	7	283	-23	4	-13	-31
Site 130	Site 130_2	30	7	5	41	12	8	0	20	-18	1	-5	-21
Site 130	Site 130_3	101	10	4	114	78	11	8	98	-23	2	5	-17
Site 130	Site 130_4	23	7	3	33	14	7	0	21	-10	0	-3	-12
Site 130	Site 130_6	143	23	8	173	150	12	2	165	8	-10	-5	-8
Site 130	Site 130_7	111	8	3	121	134	11	2	147	23	3	0	26
Site 130	Site 130_8	136	23	7	166	118	15	4	137	-18	-8	-3	-29
Site 134	Site 134_3	3	1	0	5	9	3	0	13	6	2	0	8
Site 134	Site 134_4	234	21	5	261	214	21	5	240	-20	0	0	-21
Site 134	Site 134_5	7	1	0	8	0	0	0	0	-7	-1	0	-8
Site 134	Site 134_6	236	26	5	268	248	31	4	283	12	5	-2	15
Site 135	Site 135_2	10	2	1	12	34	3	1	38	24	2	0	26
Site 135	Site 135_3	10	2	0	12	6	2	1	9	-4	0	1	-3
Site 135	Site 135_4	7	1	0	8	10	6	0	16	3	5	0	8
Site 135	Site 135_6	187	18	5	210	116	25	4	145	-71	7	-1	-65
Site 135	Site 135_7	6	2	1	8	10	2	0	12	4	0	-1	4
Site 135	Site 135_8	155	16	4	176	134	22	3	158	-21	6	-2	-17
Site 137	Site 137_1	4	0	0	5	9	0	0	9	5	0	0	5
Site 137	Site 137_2	38	4	0	42	37	0	0	37	-2	-4	0	-6
Site 137	Site 137_3	7	0	0	7	4	0	0	4	-2	0	0	-3
Site 137	Site 137_4	223	24	17	264	147	5	0	152	-76	-19	-17	-112
Site 137	Site 137_5	24	4	0	28	37	0	0	37	13	-4	0	9
Site 137	Site 137_6	323	47	44	413	218	2	37	257	-105	-45	-7	-156
Site 200	Site 200_2	34	3	2	38	34	0	0	34	0	-2	-2	-3
Site 200	Site 200_3	150	14	4	168	84	1	0	84	-67	-13	-4	-84
Site 200	Site 200_4	47	4	2	52	47	1	0	48	0	-3	-2	-4

Site 200	Site 200_6	109	7	3	119	100	7	0	107	-9	0	-3	-13
Site 200	Site 200_7	195	13	5	214	119	0	2	121	-77	-13	-3	-92
Site 200	Site 200_8	135	11	3	149	132	4	0	136	-3	-6	-3	-12
Site 12	Site 12_1	372	40	21	433	367	40	21	428	-5	0	0	-5
Site 12	Site 12_2	329	42	20	391	319	33	23	375	-10	-9	3	-16
Site 12	Site 12_3	508	68	35	611	442	64	35	542	-65	-4	0	-69
Site 12	Site 12_4	604	63	28	695	604	63	31	698	0	0	3	3
Site 12	Site 12_5	194	20	6	220	194	20	6	220	0	0	0	0
Site 12	Site 12_6	128	14	5	147	128	14	2	143	-1	0	-3	-3
Site 12	Site 12_7	605	71	28	704	630	67	26	722	25	-4	-2	19
Site 12	Site 12_8	618	80	38	735	574	80	33	687	-44	0	-5	-48
Site 44	Site 44_1	183	33	29	245	186	44	28	258	3	12	-1	13
Site 44	Site 44_2	210	32	28	269	205	32	14	252	-4	0	-13	-17
Site 44	Site 44_3	301	30	28	359	300	0	20	321	0	-30	-7	-38
Site 44	Site 44_4	231	30	29	290	231	0	29	260	0	-30	0	-30
Site 44	Site 44_5	302	54	48	403	297	32	48	377	-4	-21	0	-26
Site 44	Site 44_6	357	55	48	460	359	44	49	452	2	-11	1	-8
Site 44	Site 44_7	65	11	7	83	65	0	1	66	0	-11	-7	-17
Site 44	Site 44_8	53	10	7	70	53	0	5	58	0	-10	-2	-13
Site 113	Site 113_1	151	17	5	174	129	2	0	131	-22	-15	-5	-43
Site 113	Site 113_2	163	18	7	188	113	1	0	114	-50	-17	-7	-74
Site 113	Site 113_3	208	23	8	239	208	22	8	237	0	-2	0	-2
Site 113	Site 113_4	208	26	7	241	202	26	15	243	-6	0	8	2
Site 113	Site 113_5	197	27	13	238	156	27	0	183	-42	0	-13	-55
Site 113	Site 113_6	189	20	11	219	151	20	0	172	-37	1	-11	-48
Site 113	Site 113_7	329	34	17	379	332	34	15	382	4	1	-2	3
Site 113	Site 113_8	326	37	18	381	359	37	8	404	33	0	-10	23
Site 121	Site 121_1	162	19	7	188	162	15	7	184	0	-4	0	-4
Site 121	Site 121_2	176	17	6	199	175	16	8	199	0	-2	2	0
Site 121	Site 121_3	353	45	20	419	353	37	8	398	-1	-8	-12	-21

Site 121	Site 121_4	349	39	18	406	326	34	15	375	-23	-5	-3	-31
Site 121	Site 121_5	267	23	8	297	204	9	8	221	-63	-14	0	-77
Site 121	Site 121_6	209	22	6	236	171	2	0	173	-37	-20	-6	-64
Site 121	Site 121_7	440	44	18	502	441	43	20	505	1	-1	2	3
Site 121	Site 121_8	488	54	22	564	487	53	20	560	-1	-1	-2	-4
Site 112	Site 112_1	23	2	1	26	43	2	0	45	20	0	-1	19
Site 112	Site 112_2	32	4	3	39	45	4	0	49	13	0	-3	10
Site 112	Site 112_3	152	16	7	175	134	7	8	149	-18	-9	1	-26
Site 112	Site 112_4	144	13	6	163	135	7	15	157	-9	-6	9	-6
Site 112	Site 112_5	162	17	6	185	162	9	15	187	1	-8	9	2
Site 112	Site 112_6	159	17	7	183	159	7	8	174	0	-10	1	-9
Site 2	Site 2_1	543	80	47	669	552	83	50	685	9	3	4	16
Site 2	Site 2_2	466	73	48	586	473	75	48	596	7	2	0	9
Site 2	Site 2_3	415	47	24	486	414	47	23	484	-1	0	-1	-2
Site 2	Site 2_4	422	48	24	494	422	48	21	491	0	0	-3	-3
Site 2	Site 2_5	23	2	1	26	0	0	0	0	-23	-2	-1	-26
Site 2	Site 2_6	25	1	1	27	0	0	0	0	-25	-1	-1	-27
Site 2	Site 2_7	309	40	29	378	306	40	25	370	-3	0	-5	-8
Site 2	Site 2_8	380	47	28	455	380	47	20	446	0	0	-9	-9
Site 2	Site 2_9	24	3	1	28	24	2	0	26	0	-1	-1	-1
Site 2	Site 2_10	21	2	1	24	21	2	10	33	0	0	9	9
Site 3	Site 3_1	875	139	106	1,120	882	137	103	1,122	7	-2	-3	2
Site 3	Site 3_2	823	130	90	1,043	828	153	86	1,067	6	23	-4	24
Site 3	Site 3_3	320	43	27	390	309	55	16	381	-11	12	-11	-10
Site 3	Site 3_4	480	71	53	604	473	32	46	551	-7	-39	-7	-53
Site 3	Site 3_5	615	94	68	776	621	83	68	772	7	-11	0	-4
Site 3	Site 3_6	594	84	59	736	592	85	59	736	-2	1	0	-1
Site 3	Site 3_7	180	17	8	206	180	4	2	186	0	-13	-6	-20
Site 3	Site 3_8	153	18	11	181	152	18	4	175	-1	0	-6	-7
Site 3	Site 3_9	220	24	6	250	208	23	8	239	-12	-1	2	-11

Site 3	Site 3_10	160	15	3	178	155	15	3	173	-5	0	-1	-6
Site 10	Site 10_1	789	127	158	1,073	800	124	153	1,077	12	-3	-5	4
Site 10	Site 10_2	752	128	136	1,016	736	123	129	988	-16	-5	-7	-28
Site 10	Site 10_3	477	65	41	582	454	64	41	559	-22	-1	1	-23
Site 10	Site 10_4	502	58	47	607	517	69	49	634	15	11	1	27
Site 10	Site 10_5	584	96	116	796	586	86	116	787	2	-10	0	-9
Site 10	Site 10_6	594	103	132	829	590	82	132	804	-4	-21	0	-24
Site 14	Site 14_1	148	27	19	194	149	23	14	186	1	-4	-4	-8
Site 14	Site 14_2	130	23	22	175	124	23	11	158	-6	0	-11	-17
Site 14	Site 14_3	526	77	30	633	500	76	10	587	-26	-1	-20	-46
Site 14	Site 14_4	610	82	36	728	607	87	60	753	-3	5	24	25
Site 14	Site 14_5	384	77	27	488	377	77	23	477	-7	0	-4	-11
Site 14	Site 14_6	309	53	22	384	319	53	15	387	10	0	-7	3
Site 14	Site 14_7	512	57	39	607	523	60	39	623	12	4	0	15
Site 14	Site 14_8	520	81	27	627	516	80	30	626	-4	-1	4	-1
Site 14	Site 14_9	457	83	22	562	472	86	33	592	15	4	11	30
Site 14	Site 14_10	458	81	29	569	456	81	3	539	-2	-1	-27	-30
Site 65	Site 65_1	261	36	10	306	177	15	0	192	-84	-21	-9	-114
Site 65	Site 65_2	251	28	5	284	251	16	0	267	0	-12	-4	-16
Site 65	Site 65_3	398	49	17	464	364	49	16	429	-34	0	-1	-35
Site 65	Site 65_4	462	55	18	535	362	46	13	421	-100	-9	-5	-114
Site 65	Site 65_5	294	34	12	340	294	34	13	341	-1	0	1	0
Site 65	Site 65_6	241	35	16	292	222	35	16	273	-19	0	0	-19
Site 26	Site 26_2	467	69	36	572	460	69	36	565	-7	0	0	-7
Site 26	Site 26_3	429	62	32	523	429	62	36	527	-1	0	5	4
Site 26	Site 26_4	504	75	29	608	492	78	30	599	-12	3	1	-8
Site 26	Site 26_5	541	83	33	657	541	86	33	660	0	3	0	2
Site 63	Site 63_1	180	21	11	211	180	21	0	201	0	0	-11	-10
Site 63	Site 63_2	137	23	11	171	198	66	4	268	61	43	-7	98
Site 63	Site 63_3	660	106	64	830	661	102	53	816	1	-3	-12	-14

Site 63	Site 63_4	691	99	55	844	691	99	51	841	0	0	-4	-3
Site 63	Site 63_5	29	4	2	34	29	15	2	46	0	11	0	12
Site 63	Site 63_6	27	3	2	32	27	3	0	30	0	0	-2	-2
Site 63	Site 63_7	138	23	9	171	138	24	4	166	0	1	-5	-4
Site 63	Site 63_8	147	21	7	175	164	23	2	189	17	1	-5	14
Site 63	Site 63_9	516	77	48	641	515	77	51	643	-1	0	3	2
Site 63	Site 63_10	522	84	59	666	444	48	53	544	-79	-36	-7	-122
Site 119	Site 119_1	242	17	7	267	40	1	0	41	-202	-16	-7	-226
Site 119	Site 119_2	264	26	9	299	54	0	0	54	-211	-26	-9	-245
Site 119	Site 119_3	489	52	23	564	487	53	20	560	-2	0	-2	-4
Site 119	Site 119_4	443	42	18	504	441	43	20	505	-2	1	2	1
Site 119	Site 119_5	42	4	3	49	42	13	1	56	0	9	-2	7
Site 119	Site 119_6	37	4	2	43	37	12	0	49	0	8	-2	6
Site 119	Site 119_7	268	36	18	322	392	38	20	450	123	2	3	128
Site 119	Site 119_8	298	38	21	357	429	49	21	500	131	12	0	143
SYSTRA Site 11	SYSTRA Site 11_1	233	52	69	353	242	36	66	344	9	-16	-3	-10
SYSTRA Site 11	SYSTRA Site 11_2	227	50	67	344	229	45	64	338	2	-6	-2	-6
SYSTRA Site 11	SYSTRA Site 11_4	125	31	69	225	125	18	62	205	0	-13	-7	-20
SYSTRA Site 11	SYSTRA Site 11_5	283	63	97	443	296	61	97	453	13	-2	-1	10
SYSTRA Site 11	SYSTRA Site 11_6	206	48	50	304	212	48	36	296	6	0	-14	-8
SYSTRA Site 11	SYSTRA Site 11_7	43	14	20	77	29	14	0	43	-14	0	-20	-34
SYSTRA Site 12	SYSTRA Site 12_1	111	26	63	199	105	23	63	190	-7	-3	0	-9
SYSTRA Site 12	SYSTRA Site 12_3	283	65	83	430	285	73	73	431	2	9	-10	1
SYSTRA Site 12	SYSTRA Site 12_4	262	61	77	400	262	65	75	402	0	4	-2	2
SYSTRA Site 12	SYSTRA Site 12_6	55	14	21	90	44	18	0	62	-11	5	-21	-27
SYSTRA Site 12	SYSTRA Site 12_7	206	48	50	304	212	48	36	296	6	0	-14	-8
SYSTRA Site 12	SYSTRA Site 12_8	284	63	97	444	296	61	97	453	12	-2	-1	9
SYSTRA Site 13	SYSTRA Site 13_1	398	77	56	531	398	77	56	531	0	0	0	0
SYSTRA Site 13	SYSTRA Site 13_2	388	76	80	543	389	61	69	519	1	-15	-11	-24
SYSTRA Site 13	SYSTRA Site 13_3	563	73	67	702	562	82	102	746	-1	9	35	44

SYSTRA Site 13	SYSTRA Site 13_4	614	88	64	766	619	102	91	812	5	13	28	46
SYSTRA Site 13	SYSTRA Site 13_5	289	32	14	335	289	32	14	335	1	0	0	0
SYSTRA Site 13	SYSTRA Site 13_6	293	29	10	332	291	29	15	335	-2	0	5	3
SYSTRA Site 13	SYSTRA Site 13_7	505	77	68	650	508	70	49	628	3	-7	-19	-22
SYSTRA Site 13	SYSTRA Site 13_8	459	66	52	578	459	70	46	574	-1	3	-6	-3
SYSTRA Site 14	SYSTRA Site 14_1	281	26	8	316	279	23	8	310	-2	-3	0	-5
SYSTRA Site 14	SYSTRA Site 14_2	288	28	13	329	288	25	2	315	0	-3	-11	-13
SYSTRA Site 14	SYSTRA Site 14_3	414	38	16	468	413	35	5	453	-1	-3	-11	-15
SYSTRA Site 14	SYSTRA Site 14_4	445	38	13	496	439	38	13	491	-6	0	1	-5
SYSTRA Site 14	SYSTRA Site 14_5	290	24	9	323	285	24	9	318	-5	-1	0	-5
SYSTRA Site 14	SYSTRA Site 14_6	253	23	7	283	251	18	6	275	-2	-4	-1	-8
SYSTRA Site 15	SYSTRA Site 15_2	46	11	10	67	46	10	10	66	0	-2	0	-1
SYSTRA Site 15	SYSTRA Site 15_3	104	17	15	136	104	16	1	121	0	-1	-15	-15
SYSTRA Site 15	SYSTRA Site 15_4	22	5	7	34	22	3	0	25	0	-2	-7	-9
SYSTRA Site 15	SYSTRA Site 15_5	49	10	12	70	49	10	12	71	0	1	1	1
SYSTRA Site 15	SYSTRA Site 15_7	45	11	14	70	47	7	15	68	2	-5	1	-2
SYSTRA Site 15	SYSTRA Site 15_8	133	28	36	197	133	28	37	198	0	0	1	2
SYSTRA Site 15	SYSTRA Site 15_9	118	21	16	155	118	21	16	155	0	0	0	0
SYSTRA Site 15	SYSTRA Site 15_10	59	13	20	91	59	0	21	81	0	-13	1	-11
SYSTRA Site 15	SYSTRA Site 15_12	94	16	8	118	93	2	4	99	-1	-14	-4	-19
SYSTRA Site 15	SYSTRA Site 15_13	22	7	7	35	22	4	0	26	0	-3	-7	-9
SYSTRA Site 15	SYSTRA Site 15_14	126	27	33	186	136	26	35	197	10	-1	1	10
SYSTRA Site 15	SYSTRA Site 15_15	79	12	5	95	80	4	0	83	1	-8	-5	-12
ATC 6	ATC 6_1	26	6	2	34	15	0	0	16	-11	-6	-2	-18
ATC 6	ATC 6_2	17	3	2	21	13	1	0	14	-4	-2	-2	-7
ATC 7	ATC 7_1	88	16	7	111	88	0	0	88	0	-16	-6	-23
ATC 7	ATC 7_2	88	20	5	113	88	1	4	93	0	-19	-1	-20
ATC 8	ATC 8_1	13	4	3	21	0	0	0	0	-13	-4	-3	-21
ATC 8	ATC 8_2	13	4	2	19	0	0	0	0	-13	-4	-2	-19
ATC 9	ATC 9_1	335	68	47	450	335	44	40	419	0	-24	-8	-31

ATC 9	ATC 9_2	366	40	52	457	366	40	38	444	0	0	-14	-13
ATC 10	ATC 10_1	301	59	77	436	277	42	61	381	-24	-16	-15	-55
ATC 10	ATC 10_2	245	79	74	398	226	43	54	323	-19	-36	-20	-75
ATC 11	ATC 11_1	403	78	62	544	420	68	64	552	16	-10	1	8
ATC 11	ATC 11_2	363	76	64	503	378	41	60	479	15	-35	-4	-23
ATC 12	ATC 12_1	275	53	44	371	201	29	20	250	-74	-24	-24	-122
ATC 12	ATC 12_2	234	42	35	312	180	28	18	227	-55	-14	-17	-85
ATC 13	ATC 13_1	629	33	144	806	586	86	116	787	-44	53	-28	-18
ATC 13	ATC 13_2	682	32	161	875	590	82	132	804	-91	50	-29	-71
ATC 14.1	ATC 14.1_1	404	90	83	577	508	70	49	628	104	-19	-34	51
ATC 14.2	ATC 14.2_1	417	94	77	588	459	70	46	574	41	-24	-31	-14
ATC 15	ATC 15_1	204	29	13	246	185	15	4	205	-18	-14	-9	-41
ATC 15	ATC 15_2	216	49	21	285	274	20	7	301	59	-29	-14	16
ATC 18	ATC 18_1	151	13	6	170	152	13	2	166	1	0	-4	-3
ATC 18	ATC 18_2	127	24	8	159	108	19	0	127	-19	-6	-7	-32
ATC 19	ATC 19_1	385	48	32	466	321	38	40	399	-64	-11	7	-67
ATC 19	ATC 19_2	409	43	47	499	360	38	38	435	-50	-5	-10	-64
ATC 20	ATC 20_1	344	67	41	452	352	44	40	436	8	-23	-1	-16
ATC 20	ATC 20_2	378	53	45	477	417	40	38	495	38	-13	-7	18
ATC 21.1	ATC 21.1_1	451	55	34	540	441	43	20	505	-10	-12	-14	-35
ATC 21.2	ATC 21.2_1	484	75	40	600	487	53	20	560	3	-23	-20	-39
ATC 2023 Add 1	ATC 2023 Add 1_1	645	84	61	789	579	61	27	667	-65	-23	-34	-122
ATC 2023 Add 1	ATC 2023 Add 1_2	591	71	48	711	473	61	21	555	-119	-9	-27	-155
ATC 2023 Add 2	ATC 2023 Add 2_1	529	67	53	649	517	53	26	596	-12	-13	-27	-52
ATC 2023 Add 2	ATC 2023 Add 2_2	532	66	51	649	411	60	32	504	-122	-5	-18	-145
ATC 2023 Add 5.1	ATC 2023 Add 5.1_1	404	43	59	506	298	38	18	354	-106	-5	-40	-152
ATC 2023 Add 5.1	ATC 2023 Add 5.1_2	411	36	46	493	371	35	17	422	-40	-2	-29	-71
ATC 2022 Add 7	ATC 2022 Add 7_1	75	24	19	118	120	22	9	151	46	-2	-10	33

ATC 2022 Add 7	ATC 2022 Add 7_2	79	15	17	112	45	8	7	60	-34	-7	-10	-52
ATC 2022 Add 8	ATC 2022 Add 8_1	215	61	43	318	215	61	23	299	0	0	-20	-19
ATC 2022 Add 8	ATC 2022 Add 8_2	232	50	41	323	232	50	21	303	0	0	-20	-20
ATC 1	ATC 1_1	1,078	145	97	1,321	1,033	149	106	1,288	-46	4	9	-33
ATC 1	ATC 1_2	1,047	155	118	1,320	1,013	159	124	1,295	-34	4	5	-25
ATC 2	ATC 2_1	489	51	14	554	473	50	13	535	-16	-1	-1	-18
ATC 2	ATC 2_2	336	26	11	373	319	27	9	356	-17	2	-2	-17
ATC 3	ATC 3_1	29	5	2	36	57	3	0	59	27	-2	-2	23
ATC 3	ATC 3_2	293	45	10	348	296	8	5	309	3	-37	-5	-38
ATC 4	ATC 4_1	521	72	27	620	492	78	30	599	-30	6	3	-21
ATC 4	ATC 4_2	446	57	29	532	429	62	36	527	-17	5	7	-5

PM Results

		Observed				Modelled				Difference			
Site	Ref	Car	LGV	OGV	Total	Car	LGV	OGV	Total	Car	LGV	OGV	Total
Site 1	Site 1_1	167	31	14	212	165	28	0	194	-2	-3	-14	-18
Site 1	Site 1_2	190	8	2	200	189	7	0	197	-1	-1	-2	-3
Site 1	Site 1_3	64	2	0	66	60	2	0	62	-4	0	0	-4
Site 1	Site 1_4	131	43	14	188	107	43	11	161	-24	0	-3	-27
Site 1	Site 1_6	138	9	4	151	161	8	0	169	23	-1	-4	19
Site 1	Site 1_7	234	28	2	264	257	27	2	287	23	-1	0	23
Site 1	Site 1_8	48	2	0	50	171	7	0	178	123	5	0	128
Site 1	Site 1_9	7	2	0	9	3	0	0	3	-4	-2	0	-6
Site 1	Site 1_11	346	17	6	369	329	16	1	345	-17	-1	-5	-24
Site 1	Site 1_12	13	1	0	14	1	0	0	1	-12	-1	0	-13
Site 4	Site 4_2	114	8	0	122	115	4	0	119	1	-4	0	-3
Site 4	Site 4_3	246	33	32	311	255	32	33	320	9	-1	1	9
Site 4	Site 4_4	78	5	2	85	147	13	0	160	69	8	-2	75
Site 4	Site 4_6	832	207	62	1,101	808	188	61	1,056	-24	-19	-1	-44
Site 4	Site 4_7	317	31	2	350	339	18	2	359	22	-13	0	9
Site 4	Site 4_8	45	1	0	46	58	9	1	68	13	8	1	22
Site 4	Site 4_11	1,087	117	58	1,262	1,035	98	52	1,186	-52	-19	-6	-76
Site 4	Site 4_12	255	13	4	272	236	17	0	252	-19	4	-4	-19
Site 5	Site 5_1	785	86	38	909	582	57	37	676	-203	-29	0	-233
Site 5	Site 5_2	248	17	6	271	299	49	3	351	51	32	-3	80
Site 5	Site 5_3	11	1	0	12	1	0	0	1	-10	-1	0	-11
Site 5	Site 5_4	632	183	86	901	658	119	85	862	26	-64	-1	-39
Site 5	Site 5_5	150	17	0	167	147	48	5	199	-3	31	5	32
Site 5	Site 5_6	279	54	18	351	258	54	3	315	-21	0	-15	-36
Site 5	Site 5_7	317	33	11	361	362	34	13	409	45	1	3	49
Site 5	Site 5_8	127	6	4	137	206	22	0	228	79	16	-4	91
Site 5	Site 5_9	125	10	0	135	91	9	0	101	-34	-1	0	-34

Site 5	Site 5_10	163	15	7	185	0	0	0	0	-163	-15	-7	-185
Site 5	Site 5_11	478	44	10	532	604	48	19	671	126	4	10	140
Site 5	Site 5_12	66	7	3	76	0	0	0	0	-66	-7	-3	-76
Site 6	Site 6_2	215	25	23	263	237	21	31	289	22	-4	8	25
Site 6	Site 6_3	109	6	11	126	97	5	0	102	-12	-1	-10	-23
Site 6	Site 6_4	127	17	19	163	150	24	19	193	23	7	0	31
Site 6	Site 6_5	408	83	48	539	365	83	48	496	-43	0	0	-43
Site 6	Site 6_6	79	12	6	97	75	16	5	97	-4	4	-1	-1
Site 6	Site 6_8	27	3	0	30	27	3	0	30	0	0	0	0
Site 6	Site 6_9	562	117	57	736	580	119	54	753	18	2	-3	17
Site 6	Site 6_10	162	19	4	185	164	4	4	172	2	-15	0	-13
Site 6	Site 6_11	62	9	0	71	41	9	0	50	-21	0	0	-21
Site 6	Site 6_13	45	4	2	51	94	6	3	103	49	2	1	52
Site 6	Site 6_14	100	12	8	120	80	10	3	93	-20	-2	-4	-26
Site 6	Site 6_15	708	68	29	805	657	66	12	734	-51	-2	-17	-71
Site 6	Site 6_16	42	3	2	47	40	3	0	43	-2	0	-2	-3
Site 6.1	Site 6.1_1	29	1	0	30	22	1	2	25	-7	0	2	-5
Site 6.1	Site 6.1_2	320	34	47	401	344	35	44	424	24	1	-2	23
Site 6.1	Site 6.1_3	114	12	0	126	191	8	0	200	77	-4	0	74
Site 6.1	Site 6.1_4	139	15	6	160	139	16	6	161	0	1	0	0
Site 6.1	Site 6.1_5	585	108	57	750	515	87	51	653	-70	-21	-6	-97
Site 6.1	Site 6.1_6	77	6	3	86	74	8	3	85	-3	2	0	-1
Site 7	Site 7_2	285	31	7	323	219	33	0	252	-66	2	-7	-71
Site 7	Site 7_3	270	34	8	312	261	34	2	296	-9	0	-6	-15
Site 7	Site 7_4	74	12	6	92	48	11	0	60	-26	-1	-6	-32
Site 7	Site 7_5	187	41	24	252	341	72	20	433	154	31	-4	181
Site 7	Site 7_7	17	2	5	24	16	0	0	17	-1	-2	-5	-7
Site 7	Site 7_8	467	77	54	598	494	80	59	633	27	3	5	35
Site 7	Site 7_9	268	62	15	345	174	44	9	227	-94	-18	-6	-118

Site 7	Site 7_10	28	4	0	32	1	0	0	1	-27	-4	0	-31
Site 7	Site 7_12	222	37	13	272	156	33	15	204	-66	-4	2	-68
Site 7	Site 7_13	166	20	10	196	145	20	6	171	-21	0	-4	-25
Site 7	Site 7_14	552	56	21	629	568	50	15	633	16	-6	-6	4
Site 7	Site 7_15	230	33	8	271	215	14	13	243	-15	-19	6	-28
Site 8	Site 8_2	225	24	2	251	224	0	0	224	-1	-24	-2	-27
Site 8	Site 8_3	170	21	2	193	147	0	0	147	-23	-21	-2	-46
Site 8	Site 8_4	36	7	2	45	0	0	0	0	-36	-7	-2	-45
Site 8	Site 8_5	15	2	2	19	23	3	0	26	8	1	-2	7
Site 8	Site 8_7	137	12	0	149	93	12	0	105	-44	0	0	-44
Site 8	Site 8_8	607	128	71	806	576	109	74	759	-31	-19	3	-47
Site 8	Site 8_9	117	25	6	148	109	24	3	136	-8	-2	-2	-12
Site 8	Site 8_10	205	21	6	232	198	23	4	225	-7	2	-2	-7
Site 8	Site 8_12	419	62	11	492	283	47	8	338	-136	-15	-2	-153
Site 8	Site 8_13	77	18	6	101	73	18	6	97	-4	0	0	-4
Site 8	Site 8_14	543	61	35	639	508	60	30	597	-35	-1	-6	-42
Site 8	Site 8_15	181	11	13	205	221	23	15	259	40	12	3	54
Site 9	Site 9_1	96	7	8	111	135	0	0	135	39	-7	-8	24
Site 9	Site 9_2	933	181	89	1,203	1,078	198	100	1,375	145	17	11	172
Site 9	Site 9_3	300	48	11	359	116	10	1	127	-184	-38	-10	-232
Site 9	Site 9_4	61	5	6	72	51	7	0	58	-10	2	-6	-14
Site 9	Site 9_5	159	30	11	200	181	34	13	228	22	4	1	28
Site 9	Site 9_6	200	18	11	229	192	44	9	245	-8	26	-2	15
Site 9	Site 9_7	500	58	30	588	478	61	32	572	-22	3	2	-17
Site 9	Site 9_8	113	14	19	146	103	9	8	120	-10	-5	-11	-26
Site 9	Site 9_9	126	17	16	159	123	0	15	138	-3	-17	-1	-21
Site 9	Site 9_10	215	27	18	260	273	32	18	323	58	5	0	64
Site 9	Site 9_11	250	20	4	274	258	26	3	288	8	6	-1	14
Site 9	Site 9_12	471	42	9	522	420	24	4	448	-51	-18	-5	-73
Site 11	Site 11_2	213	20	11	244	211	20	8	239	-2	0	-3	-5

Site 11	Site 11_3	467	62	27	556	476	65	26	566	9	3	-1	10
Site 11	Site 11_4	48	1	2	51	52	2	0	54	4	1	-2	3
Site 11	Site 11_5	326	43	16	385	154	1	11	166	-172	-42	-4	-218
Site 11	Site 11_7	359	42	16	417	362	15	5	381	3	-27	-12	-36
Site 11	Site 11_8	36	1	0	37	69	0	0	69	33	-1	0	32
Site 11	Site 11_9	192	19	18	229	225	26	22	273	33	7	4	44
Site 11	Site 11_10	220	23	8	251	220	16	2	238	0	-7	-5	-13
Site 11	Site 11_12	11	2	0	13	13	2	0	15	2	0	0	2
Site 11	Site 11_13	106	5	0	111	138	0	0	138	32	-5	0	27
Site 11	Site 11_14	51	0	0	51	50	0	0	50	-1	0	0	-1
Site 11	Site 11_15	58	2	0	60	59	2	0	61	1	0	0	1
Site 13	Site 13_2	197	26	2	225	191	27	2	220	-6	1	0	-5
Site 13	Site 13_3	219	12	15	246	250	16	18	284	31	4	3	38
Site 13	Site 13_4	21	1	0	22	29	5	0	34	8	4	0	12
Site 13	Site 13_5	186	28	2	216	165	29	5	200	-21	1	3	-16
Site 13	Site 13_8	226	34	10	270	213	31	6	250	-13	-3	-4	-20
Site 13	Site 13_9	214	44	9	267	200	38	14	252	-14	-6	5	-15
Site 13	Site 13_10	34	6	8	48	34	7	8	49	0	1	1	2
Site 13	Site 13_12	194	15	4	213	144	14	1	158	-50	-1	-3	-55
Site 13	Site 13_14	298	19	10	327	305	19	11	334	7	0	1	8
Site 13	Site 13_15	341	36	4	381	339	34	2	375	-2	-2	-2	-6
Site 15	Site 15_1	54	3	0	57	54	0	0	54	0	-3	0	-3
Site 15	Site 15_2	32	4	4	40	78	5	0	83	46	1	-4	43
Site 15	Site 15_3	159	19	0	178	159	19	0	178	0	0	0	0
Site 15	Site 15_4	326	39	0	365	190	8	0	198	-136	-31	0	-167
Site 15	Site 15_5	68	6	9	83	92	4	9	106	24	-2	0	23
Site 15	Site 15_6	83	7	0	90	58	5	0	63	-25	-2	0	-27
Site 16	Site 16_1	137	24	4	165	136	24	4	164	-1	0	0	-1
Site 16	Site 16_2	378	49	4	431	354	41	9	404	-24	-8	5	-27
Site 16	Site 16_3	188	26	6	220	183	26	13	221	-5	0	7	2

Site 16	Site 16_4	68	9	0	77	72	9	0	81	4	0	0	4
Site 16	Site 16_5	305	60	22	387	290	59	2	351	-15	-1	-21	-36
Site 16	Site 16_6	43	13	0	56	42	13	4	59	-1	0	4	3
Site 19	Site 19_1	51	10	0	61	51	0	0	51	0	-10	0	-10
Site 19	Site 19_2	392	34	20	446	427	44	20	491	35	10	1	45
Site 19	Site 19_3	20	0	0	20	0	0	0	0	-20	0	0	-20
Site 19	Site 19_4	31	4	5	40	31	4	0	35	0	0	-5	-5
Site 19	Site 19_5	242	35	19	296	225	34	19	278	-17	-1	0	-18
Site 19	Site 19_6	99	11	8	118	116	19	6	141	17	8	-2	22
Site 20	Site 20_1	96	27	21	144	56	7	0	63	-40	-20	-21	-81
Site 20	Site 20_2	170	35	32	237	171	35	32	238	1	0	0	2
Site 20	Site 20_3	364	33	27	424	318	1	23	343	-46	-32	-4	-81
Site 20	Site 20_4	9	0	0	9	12	0	0	12	3	0	0	3
Site 20	Site 20_5	364	30	2	396	417	36	1	454	53	6	0	58
Site 20	Site 20_6	54	2	0	56	83	2	0	85	29	0	0	29
Site 21	Site 21_1	17	5	0	22	6	5	0	11	-11	0	0	-11
Site 21	Site 21_2	164	23	31	218	165	31	31	227	1	8	0	9
Site 21	Site 21_3	82	10	4	96	66	10	4	80	-16	0	0	-15
Site 21	Site 21_4	99	17	3	119	6	16	0	22	-93	-1	-3	-96
Site 21	Site 21_5	3	0	2	5	0	0	0	0	-3	0	-2	-5
Site 21	Site 21_6	30	10	2	42	8	7	0	15	-22	-3	-2	-27
Site 21	Site 21_7	539	97	53	689	534	98	50	683	-5	1	-2	-6
Site 21	Site 21_8	10	1	3	14	1	0	0	1	-9	-1	-3	-13
Site 21	Site 21_9	49	11	7	67	2	1	0	4	-47	-10	-7	-63
Site 21	Site 21_10	237	44	10	291	232	44	5	281	-5	0	-5	-10
Site 21	Site 21_11	24	2	2	28	11	2	0	13	-13	0	-2	-15
Site 21	Site 21_12	19	6	2	27	0	0	0	1	-19	-6	-2	-26
Site 22	Site 22_1	292	40	21	353	181	40	14	236	-111	0	-7	-118
Site 22	Site 22_2	72	10	0	82	77	13	11	102	5	3	11	20
Site 22	Site 22_3	441	78	15	534	436	80	33	549	-5	2	18	16

Site 22	Site 22_4	94	15	17	126	100	30	3	134	6	15	-14	8
Site 22	Site 22_5	250	18	0	268	342	1	2	344	92	-17	2	76
Site 22	Site 22_6	381	32	4	417	248	12	0	260	-133	-20	-4	-157
Site 23	Site 23_1	145	6	0	151	144	1	0	145	-1	-5	0	-6
Site 23	Site 23_2	87	7	0	94	89	3	0	92	2	-4	0	-2
Site 23	Site 23_3	59	2	0	61	58	0	0	58	-1	-2	0	-3
Site 23	Site 23_4	264	34	2	300	264	31	2	297	0	-3	0	-3
Site 23	Site 23_5	93	7	0	100	70	6	0	75	-23	-1	0	-25
Site 23	Site 23_6	539	46	12	597	550	58	12	619	11	12	0	22
Site 24	Site 24_1	408	35	20	463	456	46	20	523	48	11	0	60
Site 24	Site 24_2	12	2	10	24	1	2	0	3	-11	0	-10	-21
Site 24	Site 24_3	271	32	20	323	199	22	25	246	-72	-10	5	-77
Site 24	Site 24_4	17	11	5	33	8	25	0	33	-9	14	-5	0
Site 24	Site 24_5	52	11	11	74	142	30	0	172	90	19	-11	98
Site 24	Site 24_6	15	9	4	28	8	9	0	17	-7	0	-4	-11
Site 25	Site 25_2	302	28	2	332	323	36	3	363	21	8	1	31
Site 25	Site 25_3	257	41	15	313	151	36	9	196	-106	-5	-6	-117
Site 25	Site 25_12	398	46	20	464	467	66	21	553	69	20	1	90
Site 27	Site 27_2	430	61	8	499	397	38	9	444	-33	-23	1	-55
Site 27	Site 27_3	175	17	2	194	271	40	12	323	96	23	10	129
Site 27	Site 27_4	351	60	14	425	336	61	13	410	-15	1	0	-15
Site 27	Site 27_6	16	5	0	21	5	1	0	6	-11	-4	0	-15
Site 27	Site 27_7	49	7	2	58	69	5	2	77	20	-2	0	19
Site 27	Site 27_8	19	2	0	21	1	5	0	6	-18	3	0	-15
Site 28	Site 28_1	23	1	0	24	7	1	0	8	-16	0	0	-16
Site 28	Site 28_2	89	5	0	94	85	5	10	101	-4	0	10	7
Site 28	Site 28_3	35	0	0	35	35	1	0	36	0	1	0	1
Site 28	Site 28_4	229	48	8	285	228	43	4	275	-1	-5	-4	-10
Site 28	Site 28_5	146	12	0	158	175	8	1	184	29	-4	1	26
Site 28	Site 28_6	281	30	4	315	238	29	6	273	-43	-1	2	-43

Site 29	Site 29_1	111	2	4	117	113	12	0	126	2	10	-4	9
Site 29	Site 29_2	233	12	0	245	225	11	1	238	-8	-1	1	-7
Site 29	Site 29_3	30	0	0	30	4	0	0	4	-26	0	0	-26
Site 29	Site 29_5	26	2	0	28	26	2	0	28	0	0	0	0
Site 29	Site 29_6	111	14	2	127	129	14	10	153	18	0	8	26
Site 29	Site 29_7	116	10	6	132	118	10	2	130	2	0	-4	-2
Site 29	Site 29_8	26	0	2	28	26	0	0	26	0	0	-2	-2
Site 29	Site 29_9	56	4	0	60	36	1	0	37	-20	-3	0	-23
Site 29	Site 29_10	27	0	0	27	27	1	0	28	0	1	0	1
Site 29	Site 29_11	181	16	2	199	154	16	1	170	-27	0	-1	-29
Site 29	Site 29_12	94	6	0	100	128	4	0	132	34	-2	0	32
Site 30	Site 30_1	33	4	0	37	54	4	0	58	21	0	0	21
Site 30	Site 30_2	286	18	0	304	294	22	1	317	8	4	1	13
Site 30	Site 30_3	50	7	0	57	27	5	0	32	-23	-2	0	-25
Site 30	Site 30_4	22	5	2	29	22	5	0	27	0	0	-2	-1
Site 30	Site 30_5	31	2	2	35	31	2	0	33	0	0	-2	-2
Site 30	Site 30_6	90	17	0	107	106	9	0	115	16	-8	0	8
Site 30	Site 30_7	164	12	4	180	211	16	2	228	47	4	-2	49
Site 30	Site 30_8	17	0	2	19	17	3	0	20	0	3	-2	1
Site 30	Site 30_9	7	2	0	9	10	3	0	13	3	1	0	4
Site 30	Site 30_10	34	5	0	39	34	5	0	39	0	0	0	0
Site 30	Site 30_11	91	10	2	103	96	11	3	110	5	1	1	7
Site 30	Site 30_12	18	0	2	20	20	2	0	22	2	2	-2	2
Site 31	Site 31_1	14	1	2	17	16	2	0	18	2	1	-2	1
Site 31	Site 31_2	189	16	2	207	195	17	2	214	6	1	0	7
Site 31	Site 31_3	151	18	0	169	156	18	2	176	5	0	2	7
Site 31	Site 31_4	26	6	0	32	69	0	0	69	43	-6	0	37
Site 31	Site 31_5	125	6	0	131	3	0	0	3	-122	-6	0	-128
Site 31	Site 31_6	112	8	4	124	112	0	0	112	0	-8	-4	-12
Site 31	Site 31_7	136	20	2	158	141	20	1	162	5	0	-1	4

Site 31	Site 31_8	57	3	2	62	53	3	0	56	-5	0	-2	-6
Site 31	Site 31_9	110	7	0	117	132	8	2	141	22	1	2	24
Site 31	Site 31_10	138	11	0	149	271	14	2	287	133	3	2	138
Site 31	Site 31_11	38	2	0	40	38	2	0	40	0	0	0	0
Site 31	Site 31_12	201	13	2	216	206	17	0	223	5	4	-2	7
Site 33	Site 33_1	112	8	0	120	112	6	0	118	0	-2	0	-2
Site 33	Site 33_2	443	39	15	497	477	44	20	541	34	5	5	44
Site 33	Site 33_3	177	30	4	211	177	30	4	211	0	0	0	0
Site 33	Site 33_5	218	28	19	265	201	29	19	249	-17	1	0	-16
Site 33	Site 33_6	1	0	0	1	24	5	0	29	23	5	0	28
Site 34	Site 34_1	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 34	Site 34_2	282	18	2	302	288	30	2	319	6	12	0	17
Site 34	Site 34_3	69	4	2	75	61	2	0	64	-8	-2	-2	-11
Site 34	Site 34_4	0	0	0	0	0	0	0	0	0	0	0	0
Site 34	Site 34_5	56	4	0	60	36	1	0	37	-20	-3	0	-23
Site 34	Site 34_6	8	1	0	9	6	0	0	6	-2	-1	0	-3
Site 34	Site 34_7	273	18	6	297	275	32	7	314	2	14	0	17
Site 34	Site 34_8	206	26	0	232	221	9	0	230	15	-17	0	-2
Site 34	Site 34_9	36	3	0	39	36	0	0	36	0	-3	0	-3
Site 34	Site 34_10	75	10	2	87	18	3	0	22	-57	-7	-2	-65
Site 34	Site 34_11	56	5	0	61	31	0	0	31	-25	-5	0	-30
Site 34	Site 34_12	16	0	0	16	0	0	0	0	-16	0	0	-16
Site 35	Site 35_3	197	25	2	224	111	32	1	144	-86	7	-1	-80
Site 35	Site 35_5	464	90	13	567	568	85	21	673	104	-5	7	106
Site 35	Site 35_6	102	11	4	117	73	5	0	77	-29	-6	-4	-39
Site 36	Site 36_2	236	26	9	271	242	27	6	275	6	1	-4	3
Site 36	Site 36_3	437	82	13	532	452	84	13	548	15	2	-1	16
Site 36	Site 36_4	228	33	2	263	227	33	8	269	-1	0	7	6
Site 37	Site 37_1	273	27	4	304	279	31	4	314	6	4	0	9
Site 37	Site 37_2	52	6	5	63	30	6	0	36	-22	0	-5	-27

Site 37	Site 37_3	157	21	2	180	157	21	0	178	0	0	-2	-2
Site 37	Site 37_8	122	13	4	139	139	14	6	159	17	1	2	19
Site 37	Site 37_9	74	4	4	82	63	2	1	66	-11	-2	-3	-16
Site 37	Site 37_11	157	11	0	168	157	11	0	168	0	0	0	0
Site 37	Site 37_12	9	2	0	11	1	0	0	1	-8	-2	0	-10
Site 39	Site 39_1	57	2	0	59	25	2	0	27	-32	0	0	-32
Site 39	Site 39_2	88	4	2	94	88	5	0	93	0	1	-2	-1
Site 39	Site 39_3	88	4	0	92	70	4	8	82	-18	0	8	-10
Site 39	Site 39_4	526	49	16	591	484	45	13	542	-42	-4	-4	-49
Site 39	Site 39_5	30	3	2	35	16	4	0	19	-14	1	-2	-15
Site 39	Site 39_6	314	30	16	360	359	30	15	404	45	0	-1	44
Site 40	Site 40_1	43	4	5	52	47	4	5	55	4	0	0	3
Site 40	Site 40_2	27	3	0	30	27	3	0	30	0	0	0	0
Site 40	Site 40_3	214	13	0	227	214	13	0	227	0	0	0	0
Site 40	Site 40_4	486	46	20	552	493	41	20	555	7	-5	0	3
Site 40	Site 40_5	27	3	3	33	5	3	0	8	-22	0	-3	-25
Site 40	Site 40_6	337	30	12	379	370	32	12	414	33	2	0	35
Site 41	Site 41_1	149	8	4	161	84	9	5	98	-65	1	1	-63
Site 41	Site 41_2	141	12	8	161	95	0	0	95	-46	-12	-7	-65
Site 41	Site 41_3	35	2	4	41	34	12	0	46	-1	10	-3	6
Site 41	Site 41_4	743	73	18	834	703	45	20	768	-40	-28	2	-66
Site 41	Site 41_5	14	1	0	15	27	1	0	28	13	0	0	13
Site 41	Site 41_6	542	53	18	613	620	48	18	685	78	-5	-1	72
Site 43	Site 43_1	29	6	4	39	22	3	0	25	-7	-3	-4	-14
Site 43	Site 43_2	131	11	0	142	68	10	0	78	-63	-1	0	-64
Site 43	Site 43_3	268	39	9	316	297	14	0	311	29	-25	-9	-5
Site 43	Site 43_4	35	2	0	37	65	3	0	68	30	1	0	31
Site 43	Site 43_5	63	4	2	69	63	4	0	67	0	0	-2	-2
Site 43	Site 43_6	406	42	16	464	243	1	15	260	-163	-41	0	-204
Site 43	Site 43_7	68	4	0	72	45	2	0	48	-23	-2	0	-24

Site 43	Site 43_8	56	12	0	68	56	6	0	62	0	-6	0	-6
Site 43	Site 43_9	51	1	6	58	52	0	1	53	1	-1	-5	-4
Site 43	Site 43_10	63	10	4	77	62	9	1	72	-1	-1	-3	-5
Site 43	Site 43_11	292	23	13	328	284	13	8	306	-8	-10	-4	-22
Site 43	Site 43_12	126	12	2	140	125	12	0	137	-1	0	-2	-3
Site 46	Site 46_1	90	12	0	102	87	4	0	91	-3	-8	0	-11
Site 46	Site 46_2	57	12	7	76	58	15	7	80	1	3	0	4
Site 46	Site 46_3	248	51	10	309	254	11	4	268	6	-40	-5	-40
Site 46	Site 46_4	473	85	34	592	473	94	34	601	0	9	0	9
Site 46	Site 46_5	116	11	11	138	264	23	11	298	148	12	0	159
Site 46	Site 46_6	533	57	8	598	459	30	2	491	-74	-27	-6	-107
Site 47	Site 47_1	20	2	2	24	20	9	0	28	0	7	-2	4
Site 47	Site 47_2	3	1	2	6	7	0	0	7	4	-1	-2	1
Site 47	Site 47_3	48	2	4	54	37	0	0	37	-11	-2	-4	-17
Site 47	Site 47_4	732	72	37	841	757	76	27	859	25	4	-9	19
Site 47	Site 47_5	1	1	0	2	8	0	0	8	7	-1	0	6
Site 48	Site 48_1	18	1	0	19	30	0	0	30	12	-1	0	11
Site 48	Site 48_2	263	32	6	301	213	25	0	238	-50	-7	-6	-63
Site 48	Site 48_3	27	3	0	30	56	1	1	58	29	-2	1	28
Site 48	Site 48_4	135	18	2	155	174	2	0	176	39	-16	-2	21
Site 48	Site 48_5	154	17	0	171	123	14	1	138	-31	-3	1	-33
Site 48	Site 48_6	17	0	0	17	49	0	0	49	32	0	0	32
Site 49C	Site 49C_1	92	3	0	95	92	0	0	92	0	-3	0	-3
Site 49C	Site 49C_2	182	16	2	200	265	25	9	299	83	9	7	99
Site 49C	Site 49C_3	85	8	0	93	66	6	0	72	-19	-2	0	-21
Site 49C	Site 49C_4	16	1	0	17	9	4	0	14	-7	3	0	-3
Site 49C	Site 49C_5	338	20	10	368	419	36	5	459	81	16	-5	92
Site 49C	Site 49C_6	27	2	2	31	0	0	0	0	-27	-2	-2	-31
Site 50	Site 50_1	11	0	0	11	0	0	0	0	-11	0	0	-11
Site 50	Site 50_2	28	0	0	28	14	4	0	18	-14	4	0	-10

Site 50	Site 50_4	372	28	0	400	377	29	2	407	5	1	2	7
Site 50	Site 50_6	374	28	4	406	436	24	6	466	62	-4	2	60
Site 51	Site 51_1	46	2	0	48	46	2	0	48	0	0	0	0
Site 51	Site 51_2	355	24	6	385	391	22	6	418	36	-2	0	34
Site 51	Site 51_3	24	4	0	28	0	0	0	0	-24	-4	0	-28
Site 51	Site 51_4	13	1	0	14	13	3	0	16	0	2	0	2
Site 51	Site 51_5	346	25	0	371	377	29	2	407	31	4	2	36
Site 51	Site 51_6	173	18	4	195	186	18	1	205	13	0	-3	11
Site 52	Site 52_1	0	0	0	0	23	1	0	24	23	1	0	24
Site 52	Site 52_2	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_3	0	0	0	0	0	0	0	0	0	0	0	0
Site 52	Site 52_4	17	1	0	18	9	0	0	9	-8	-1	0	-9
Site 52	Site 52_5	7	1	0	8	60	5	3	68	53	4	3	60
Site 52	Site 52_6	343	22	6	371	335	20	2	357	-8	-2	-4	-14
Site 52	Site 52_7	6	0	0	6	0	0	0	0	-6	0	0	-6
Site 52	Site 52_8	69	8	0	77	108	11	1	120	39	3	1	43
Site 52	Site 52_9	6	0	0	6	0	0	0	0	-6	0	0	-6
Site 52	Site 52_10	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 52	Site 52_11	450	34	4	488	432	35	2	468	-18	1	-2	-19
Site 52	Site 52_12	11	1	2	14	27	5	0	33	16	4	-2	19
Site 53	Site 53_1	3	3	2	8	0	0	0	0	-3	-3	-2	-8
Site 53	Site 53_2	350	19	2	371	335	20	2	357	-15	1	0	-14
Site 53	Site 53_3	132	9	4	145	114	9	0	123	-18	0	-4	-22
Site 53	Site 53_4	34	1	0	35	0	0	0	0	-34	-1	0	-35
Site 53	Site 53_5	324	26	2	352	345	31	2	378	21	5	0	26
Site 53	Site 53_6	6	1	0	7	0	0	0	0	-6	-1	0	-7
Site 56	Site 56_5	331	44	10	385	328	61	10	399	-3	17	0	15
Site 56	Site 56_9	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 56	Site 56_10	0	4	0	4	0	0	0	0	0	-4	0	-4
Site 56	Site 56_13	281	28	8	317	297	29	6	333	16	1	-2	16

Site 56	Site 56_14	276	23	3	302	277	27	4	308	1	4	1	6
Site 58	Site 58_1	377	47	4	428	381	33	7	420	4	-14	2	-8
Site 58	Site 58_2	17	3	0	20	31	8	0	39	14	5	0	19
Site 58	Site 58_3	293	49	8	350	219	32	10	261	-74	-17	2	-89
Site 58	Site 58_4	24	1	0	25	27	15	2	44	3	14	2	19
Site 58	Site 58_5	26	2	0	28	41	17	0	58	15	15	0	30
Site 58	Site 58_6	46	2	0	48	36	4	0	40	-10	2	0	-8
Site 59	Site 59_1	61	10	0	71	83	14	1	98	22	4	1	27
Site 59	Site 59_2	16	0	0	16	0	0	0	0	-16	0	0	-16
Site 59	Site 59_3	90	18	4	112	93	18	3	115	3	0	0	3
Site 59	Site 59_4	64	6	0	70	27	6	0	32	-37	0	0	-38
Site 59	Site 59_5	3	0	0	3	0	0	0	0	-3	0	0	-3
Site 59	Site 59_6	264	44	10	318	233	43	10	286	-31	-1	0	-32
Site 59	Site 59_7	8	0	0	8	8	0	0	8	0	0	0	0
Site 59	Site 59_8	5	0	0	5	0	0	0	0	-5	0	0	-5
Site 59	Site 59_9	14	1	0	15	14	1	0	15	0	0	0	0
Site 59	Site 59_10	105	15	4	124	70	16	3	88	-35	1	-1	-36
Site 59	Site 59_11	338	41	4	383	328	28	6	362	-10	-13	2	-21
Site 59	Site 59_12	6	0	0	6	0	0	0	0	-6	0	0	-6
Site 60	Site 60_1	5	1	0	6	0	0	0	0	-5	-1	0	-6
Site 60	Site 60_2	45	11	6	62	99	1	0	100	54	-10	-6	38
Site 60	Site 60_3	180	14	6	200	175	11	0	186	-5	-3	-5	-14
Site 60	Site 60_4	4	0	0	4	0	0	0	0	-4	0	0	-4
Site 60	Site 60_5	0	1	0	1	0	0	0	0	0	-1	0	-1
Site 60	Site 60_6	17	3	2	22	0	0	0	0	-17	-3	-2	-22
Site 60	Site 60_7	91	2	0	93	124	0	2	127	33	-2	2	34
Site 60	Site 60_8	5	0	0	5	0	0	0	0	-5	0	0	-5
Site 60	Site 60_9	4	1	0	5	5	0	1	7	1	-1	1	2
Site 60	Site 60_10	290	19	0	309	318	14	0	332	28	-5	0	23
Site 60	Site 60_11	52	0	0	52	54	3	0	57	2	3	0	5

Site 60	Site 60_12	16	1	0	17	7	1	1	9	-9	0	1	-8
Site 62	Site 62_2	14	2	0	16	11	0	0	12	-3	-2	0	-4
Site 62	Site 62_3	187	39	11	237	186	17	1	204	-1	-22	-11	-33
Site 62	Site 62_4	18	1	0	19	79	0	0	79	61	-1	0	60
Site 62	Site 62_6	426	100	22	548	391	97	22	510	-35	-3	0	-38
Site 62	Site 62_7	264	14	2	280	252	15	6	274	-12	1	4	-6
Site 62	Site 62_8	650	63	32	745	668	56	24	748	18	-7	-8	3
Site 67	Site 67_1	29	3	0	32	76	0	0	76	47	-3	0	44
Site 67	Site 67_2	381	36	8	425	443	58	12	513	62	22	4	88
Site 67	Site 67_3	32	0	0	32	51	4	0	55	19	4	0	23
Site 67	Site 67_4	284	33	12	329	163	30	0	193	-121	-3	-12	-136
Site 67	Site 67_5	160	27	2	189	160	27	2	189	0	0	0	0
Site 67	Site 67_6	209	39	18	266	154	33	11	198	-55	-6	-7	-68
Site 69	Site 69_1	91	14	4	109	124	26	13	164	33	12	9	54
Site 69	Site 69_2	32	9	2	43	46	8	0	54	14	-1	-2	11
Site 69	Site 69_3	36	3	6	45	31	3	4	37	-5	0	-2	-7
Site 69	Site 69_4	232	37	10	279	197	5	13	215	-35	-32	3	-64
Site 69	Site 69_5	15	3	3	21	4	3	0	7	-11	0	-2	-13
Site 69	Site 69_6	802	57	20	879	895	42	34	970	93	-15	14	91
Site 71	Site 71_1	425	63	23	511	470	51	19	540	45	-12	-4	29
Site 71	Site 71_2	1,031	176	85	1,292	859	157	82	1,097	-172	-19	-3	-195
Site 71	Site 71_3	782	86	54	922	802	101	51	953	20	15	-3	31
Site 72	Site 72_2	182	61	15	258	206	79	1	285	24	18	-14	27
Site 72	Site 72_3	144	40	11	195	125	40	8	173	-19	0	-4	-23
Site 72	Site 72_4	64	5	2	71	80	4	2	86	16	-1	0	15
Site 72	Site 72_5	0	0	0	0	29	0	0	29	29	0	0	29
Site 72	Site 72_6	426	52	6	484	371	0	0	372	-55	-52	-6	-112
Site 75	Site 75_1	12	2	0	14	0	0	0	0	-12	-2	0	-14
Site 75	Site 75_2	307	41	10	358	304	42	4	350	-3	1	-6	-8
Site 75	Site 75_6	275	29	4	308	290	30	4	325	15	1	-1	16

Site 78	Site 78_1	1	0	2	3	0	0	0	0	-1	0	-2	-3
Site 78	Site 78_2	95	3	0	98	180	15	0	195	85	12	0	97
Site 78	Site 78_3	1	0	0	1	2	0	0	2	1	0	0	1
Site 78	Site 78_4	1	0	0	1	0	0	0	0	-1	0	0	-1
Site 78	Site 78_5	8	1	0	9	0	0	0	0	-8	-1	0	-9
Site 78	Site 78_6	6	1	0	7	0	0	0	0	-6	-1	0	-7
Site 78	Site 78_7	113	7	4	124	93	33	0	126	-20	26	-4	1
Site 78	Site 78_8	11	0	0	11	0	0	0	0	-11	0	0	-11
Site 78	Site 78_9	11	5	0	16	0	0	0	0	-11	-5	0	-16
Site 78	Site 78_10	4	2	0	6	2	0	0	2	-2	-2	0	-4
Site 78	Site 78_11	15	3	0	18	0	0	0	0	-15	-3	0	-18
Site 78	Site 78_12	111	15	4	130	94	0	0	95	-17	-15	-4	-35
Site 79	Site 79_1	92	11	3	106	85	6	0	92	-7	-5	-3	-14
Site 79	Site 79_2	99	20	4	123	21	0	25	45	-78	-20	21	-78
Site 79	Site 79_3	118	10	4	132	64	39	2	105	-54	29	-2	-27
Site 79	Site 79_4	83	5	2	90	160	39	1	200	77	34	-1	110
Site 79	Site 79_5	290	28	8	326	257	52	0	310	-33	24	-8	-17
Site 79	Site 79_6	155	14	0	169	170	17	0	187	15	3	0	18
Site 80	Site 80_1	96	6	2	104	128	5	0	134	32	-1	-2	30
Site 80	Site 80_2	143	15	6	164	82	9	3	95	-61	-6	-2	-69
Site 80	Site 80_3	50	6	0	56	48	28	0	76	-2	22	0	20
Site 80	Site 80_4	404	118	32	554	310	23	19	352	-94	-95	-13	-203
Site 80	Site 80_5	148	11	4	163	149	4	0	153	1	-7	-3	-10
Site 80	Site 80_6	528	47	30	605	469	44	30	543	-59	-3	0	-62
Site 81	Site 81_1	59	8	7	74	59	8	2	68	0	0	-5	-5
Site 81	Site 81_2	95	6	0	101	89	7	0	96	-6	1	0	-5
Site 81	Site 81_3	29	2	2	33	116	41	2	159	87	39	0	126
Site 81	Site 81_4	89	12	4	105	73	20	4	97	-16	8	0	-9
Site 81	Site 81_5	299	33	0	332	207	29	0	236	-92	-4	0	-96
Site 81	Site 81_6	398	61	10	469	400	56	15	471	2	-5	5	2

Site 81	Site 81_7	82	8	0	90	72	7	2	81	-10	-1	2	-9
Site 81	Site 81_8	132	13	2	147	97	10	0	107	-35	-3	-2	-40
Site 81	Site 81_9	2	1	0	3	1	0	0	1	-1	-1	0	-2
Site 81	Site 81_10	27	8	4	39	37	10	0	47	10	2	-4	8
Site 81	Site 81_11	204	14	8	226	230	18	25	274	26	4	16	47
Site 81	Site 81_12	11	1	2	14	11	1	0	12	0	0	-2	-2
Site 102	Site 102_2	24	4	4	32	22	1	0	23	-2	-3	-4	-9
Site 102	Site 102_3	494	45	16	555	499	43	20	562	5	-2	4	6
Site 102	Site 102_4	68	7	0	75	51	6	0	57	-17	-1	0	-18
Site 102	Site 102_6	101	10	0	111	55	6	0	61	-46	-4	0	-50
Site 102	Site 102_7	276	27	13	316	324	29	12	365	48	2	-1	50
Site 102	Site 102_8	80	5	4	89	60	3	3	66	-20	-2	-1	-23
Site 106	Site 106_2	13	4	2	19	0	0	0	0	-13	-4	-2	-19
Site 106	Site 106_3	349	46	46	441	321	33	37	392	-28	-13	-9	-49
Site 106	Site 106_4	59	8	0	67	0	0	0	0	-59	-8	0	-67
Site 106	Site 106_6	7	2	0	9	0	0	0	0	-7	-2	0	-9
Site 106	Site 106_7	774	126	63	963	613	97	52	762	-161	-29	-11	-201
Site 106	Site 106_8	11	3	0	14	0	0	0	0	-11	-3	0	-14
Site 109	Site 109_1	58	12	0	70	49	2	0	51	-9	-10	0	-19
Site 109	Site 109_2	68	10	0	78	68	4	0	72	0	-6	0	-6
Site 109	Site 109_3	80	7	0	87	74	10	0	85	-6	3	0	-2
Site 109	Site 109_4	293	56	19	368	327	56	13	396	34	0	-6	28
Site 109	Site 109_5	97	6	2	105	98	7	0	105	1	1	-2	0
Site 109	Site 109_6	538	67	20	625	550	70	12	632	12	3	-8	8
Site 110	Site 110_2	9	2	0	11	18	1	0	18	9	-1	0	7
Site 110	Site 110_3	41	4	2	47	41	0	0	41	0	-4	-2	-6
Site 110	Site 110_4	10	4	0	14	17	0	0	17	7	-4	0	3
Site 110	Site 110_6	12	2	0	14	3	0	0	3	-9	-2	0	-11
Site 110	Site 110_7	77	12	6	95	57	0	0	57	-20	-12	-6	-38
Site 110	Site 110_8	10	2	0	12	4	0	0	4	-6	-2	0	-8

Site 111	Site 111_1	33	0	0	33	130	15	0	146	97	15	0	113
Site 111	Site 111_3	80	8	3	91	85	24	0	109	5	16	-3	19
Site 111	Site 111_4	14	0	2	16	7	0	0	8	-7	0	-1	-8
Site 111	Site 111_5	690	74	38	802	754	76	25	855	64	2	-12	53
Site 111	Site 111_6	24	1	3	28	10	0	2	12	-14	-1	-1	-16
Site 120	Site 120_1	34	7	0	41	29	4	0	33	-5	-3	0	-8
Site 120	Site 120_2	261	29	21	311	278	76	15	370	17	47	-5	59
Site 120	Site 120_3	16	2	0	18	16	1	0	17	0	-1	0	-1
Site 120	Site 120_4	121	17	6	144	136	8	6	150	15	-9	0	6
Site 120	Site 120_5	228	21	23	272	210	15	2	228	-18	-6	-20	-44
Site 120	Site 120_6	233	16	6	255	237	16	9	261	4	0	2	6
Site 125	Site 125_1	98	7	0	105	0	0	0	0	-98	-7	0	-105
Site 125	Site 125_2	224	19	2	245	200	15	1	215	-24	-4	-1	-30
Site 125	Site 125_3	39	3	0	42	0	0	0	0	-39	-3	0	-42
Site 125	Site 125_4	360	35	15	410	364	43	15	422	4	8	1	13
Site 125	Site 125_5	98	13	0	111	33	2	0	36	-65	-11	0	-75
Site 125	Site 125_6	256	21	2	279	244	23	2	269	-12	2	0	-10
Site 126	Site 126_1	188	20	4	212	126	15	1	142	-62	-5	-3	-70
Site 126	Site 126_2	28	2	2	32	10	0	2	13	-18	-2	0	-19
Site 126	Site 126_3	96	9	0	105	68	5	0	73	-28	-4	0	-32
Site 126	Site 126_4	373	37	13	423	353	43	13	410	-20	6	1	-13
Site 126	Site 126_5	24	2	0	26	12	1	0	13	-12	-1	0	-13
Site 126	Site 126_6	324	28	2	354	232	22	2	256	-92	-6	0	-98
Site 130	Site 130_2	41	1	3	45	21	1	1	23	-20	0	-2	-21
Site 130	Site 130_3	123	11	2	136	68	8	0	75	-55	-3	-2	-61
Site 130	Site 130_4	21	5	3	29	25	5	4	34	4	0	2	6
Site 130	Site 130_6	114	24	2	140	155	16	0	171	41	-8	-2	31
Site 130	Site 130_7	128	17	6	151	122	31	3	156	-6	14	-3	6
Site 130	Site 130_8	171	25	2	198	258	15	2	275	87	-10	0	77
Site 134	Site 134_3	6	1	0	7	5	1	0	6	-1	0	0	-1

Site 134	Site 134_4	364	12	4	380	342	24	1	367	-22	12	-2	-13
Site 134	Site 134_5	9	1	0	10	0	0	0	0	-9	-1	0	-10
Site 134	Site 134_6	184	13	6	203	232	15	2	248	48	2	-4	45
Site 135	Site 135_2	16	2	0	18	37	2	0	38	21	0	0	20
Site 135	Site 135_3	14	3	0	17	6	1	0	7	-8	-2	0	-10
Site 135	Site 135_4	3	0	0	3	4	1	0	5	1	1	0	2
Site 135	Site 135_6	204	19	2	225	165	14	10	189	-39	-5	8	-36
Site 135	Site 135_7	12	2	0	14	5	1	0	7	-7	-1	0	-7
Site 135	Site 135_8	284	20	2	306	272	18	1	292	-12	-2	-1	-14
Site 137	Site 137_1	0	1	0	1	35	0	0	35	35	-1	0	34
Site 137	Site 137_2	19	1	0	20	46	0	0	46	27	-1	0	26
Site 137	Site 137_3	1	0	0	1	5	0	0	5	4	0	0	4
Site 137	Site 137_4	277	35	28	340	116	9	0	125	-161	-26	-28	-214
Site 137	Site 137_5	12	1	0	13	17	0	0	17	5	-1	0	4
Site 137	Site 137_6	449	43	23	515	354	1	23	378	-95	-42	0	-137
Site 200	Site 200_2	43	6	2	51	43	6	0	49	0	0	-2	-2
Site 200	Site 200_3	194	3	0	197	106	5	0	111	-88	2	0	-86
Site 200	Site 200_4	54	5	0	59	54	5	0	59	0	0	0	0
Site 200	Site 200_6	112	7	2	121	96	7	0	103	-16	0	-2	-18
Site 200	Site 200_7	396	23	8	427	390	6	1	397	-6	-17	-7	-30
Site 200	Site 200_8	227	11	2	240	216	11	0	227	-11	0	-2	-13
Site 12	Site 12_1	537	41	8	586	462	24	7	493	-75	-17	0	-92
Site 12	Site 12_2	353	35	6	394	355	34	12	402	2	-1	6	8
Site 12	Site 12_3	365	32	16	413	417	36	17	469	52	4	0	56
Site 12	Site 12_4	700	56	20	776	707	54	20	782	7	-2	0	6
Site 12	Site 12_5	352	39	2	393	352	39	7	398	0	0	5	5
Site 12	Site 12_6	131	11	0	142	136	11	0	147	5	0	0	5
Site 12	Site 12_7	704	63	22	789	704	57	22	784	0	-6	0	-5
Site 12	Site 12_8	774	73	22	869	736	57	20	814	-38	-16	-1	-54
Site 44	Site 44_1	158	26	8	192	176	44	14	234	18	18	6	42

Site 44	Site 44_2	593	57	6	656	591	13	2	605	-2	-44	-5	-51
Site 44	Site 44_3	803	27	23	853	802	0	14	815	-1	-27	-9	-38
Site 44	Site 44_4	182	14	11	207	180	0	8	189	-2	-14	-3	-19
Site 44	Site 44_5	271	59	10	340	264	12	11	287	-7	-47	1	-52
Site 44	Site 44_6	774	61	23	858	787	44	28	860	13	-17	6	2
Site 44	Site 44_7	357	21	2	380	357	0	1	358	0	-21	-1	-22
Site 44	Site 44_8	40	1	2	43	40	0	1	41	0	-1	-1	-2
Site 113	Site 113_1	190	22	0	212	158	1	0	158	-32	-21	0	-54
Site 113	Site 113_2	291	30	2	323	294	24	0	318	3	-6	-2	-5
Site 113	Site 113_3	217	23	4	244	211	23	4	238	-6	0	0	-6
Site 113	Site 113_4	337	23	2	362	327	18	0	345	-10	-5	-2	-17
Site 113	Site 113_5	253	35	4	292	265	38	0	303	12	3	-4	11
Site 113	Site 113_6	238	33	2	273	255	12	0	267	17	-21	-2	-6
Site 113	Site 113_7	524	46	2	572	606	34	0	641	82	-12	-2	69
Site 113	Site 113_8	318	40	4	362	364	42	4	410	46	2	0	48
Site 121	Site 121_1	230	18	2	250	229	18	2	249	-1	0	0	-1
Site 121	Site 121_2	346	26	11	383	361	26	10	396	15	0	-2	13
Site 121	Site 121_3	370	42	4	416	348	42	4	394	-22	0	0	-22
Site 121	Site 121_4	591	49	4	644	593	34	0	628	2	-15	-4	-16
Site 121	Site 121_5	483	34	11	528	436	20	1	457	-47	-14	-11	-71
Site 121	Site 121_6	274	14	6	294	239	11	0	250	-35	-3	-6	-43
Site 121	Site 121_7	652	50	10	712	676	41	9	726	24	-9	-1	15
Site 121	Site 121_8	524	55	6	585	496	50	6	552	-28	-5	0	-33
Site 112	Site 112_1	33	6	0	39	34	6	0	40	1	0	0	1
Site 112	Site 112_2	42	6	0	48	43	9	0	52	1	3	0	4
Site 112	Site 112_3	142	16	2	160	137	18	4	158	-5	2	2	-2
Site 112	Site 112_4	201	14	0	215	191	6	0	197	-10	-8	0	-18
Site 112	Site 112_5	222	18	0	240	211	2	0	213	-11	-16	0	-27
Site 112	Site 112_6	154	20	2	176	148	10	4	162	-6	-10	2	-14
Site 2	Site 2_1	651	59	32	742	685	58	24	768	34	-1	-8	25

Site 2	Site 2_2	421	97	20	538	473	101	22	596	52	4	2	58
Site 2	Site 2_3	363	44	6	413	410	44	6	459	47	0	0	46
Site 2	Site 2_4	545	41	18	604	571	37	27	635	26	-4	9	31
Site 2	Site 2_5	52	1	0	53	0	0	0	0	-52	-1	0	-53
Site 2	Site 2_6	44	3	0	47	0	0	0	0	-44	-3	0	-47
Site 2	Site 2_7	354	71	16	441	365	70	13	447	11	-1	-3	7
Site 2	Site 2_8	409	35	16	460	414	38	0	452	5	3	-16	-8
Site 2	Site 2_9	32	3	0	35	32	7	6	44	0	4	6	9
Site 2	Site 2_10	33	2	0	35	34	2	0	36	1	0	0	1
Site 3	Site 3_1	1,157	113	58	1,328	1,094	107	53	1,255	-63	-6	-5	-73
Site 3	Site 3_2	927	190	62	1,179	955	201	61	1,216	28	11	-1	38
Site 3	Site 3_3	316	53	28	397	399	66	25	490	83	13	-2	93
Site 3	Site 3_4	807	80	25	912	735	37	23	795	-72	-43	-2	-117
Site 3	Site 3_5	595	130	39	764	509	115	35	660	-86	-15	-3	-104
Site 3	Site 3_6	634	46	35	715	613	56	32	701	-21	10	-2	-13
Site 3	Site 3_7	253	17	6	276	171	0	0	171	-82	-17	-6	-105
Site 3	Site 3_8	103	8	6	117	102	8	0	111	-1	0	-6	-7
Site 3	Site 3_9	267	25	0	292	302	25	3	330	35	0	3	38
Site 3	Site 3_10	117	14	2	133	41	6	0	47	-76	-8	-2	-86
Site 10	Site 10_1	1,581	247	110	1,938	1,494	228	104	1,827	-87	-19	-5	-111
Site 10	Site 10_2	740	93	63	896	704	70	56	829	-36	-23	-7	-67
Site 10	Site 10_3	626	71	33	730	492	23	28	542	-134	-48	-5	-188
Site 10	Site 10_4	742	81	38	861	738	87	34	859	-4	6	-4	-2
Site 10	Site 10_5	594	80	52	726	579	77	50	706	-15	-3	-2	-20
Site 10	Site 10_6	1,319	224	94	1,637	1,129	169	90	1,388	-190	-55	-3	-249
Site 14	Site 14_1	104	12	12	128	99	11	2	112	-5	-1	-10	-16
Site 14	Site 14_2	134	18	4	156	137	19	4	160	3	1	0	4
Site 14	Site 14_3	372	65	18	455	350	64	3	417	-22	-1	-14	-38
Site 14	Site 14_4	650	67	19	736	604	48	19	671	-46	-19	0	-65
Site 14	Site 14_5	347	62	15	424	338	62	6	407	-9	0	-9	-17

Site 14	Site 14_6	316	38	11	365	320	39	3	361	4	1	-9	-4
Site 14	Site 14_7	527	55	21	603	531	52	21	603	4	-3	0	1
Site 14	Site 14_8	385	61	13	459	379	60	11	450	-6	-1	-2	-10
Site 14	Site 14_9	464	52	2	518	447	51	9	507	-17	-1	7	-11
Site 14	Site 14_10	329	62	20	411	327	74	4	405	-2	12	-16	-6
Site 65	Site 65_1	323	26	2	351	320	24	0	344	-3	-2	-2	-7
Site 65	Site 65_2	208	25	2	235	208	25	0	234	0	0	-2	-1
Site 65	Site 65_3	350	51	4	405	324	51	6	382	-26	0	3	-23
Site 65	Site 65_4	621	62	12	695	596	70	12	678	-25	8	0	-17
Site 65	Site 65_5	386	45	14	445	391	57	12	460	5	12	-2	15
Site 65	Site 65_6	230	35	6	271	230	37	7	274	0	2	1	3
Site 26	Site 26_2	458	76	18	552	456	77	18	550	-2	1	0	-2
Site 26	Site 26_3	407	66	16	489	405	67	16	487	-2	1	0	-2
Site 26	Site 26_4	620	71	12	703	668	79	21	767	48	8	9	64
Site 26	Site 26_5	671	81	14	766	712	85	23	820	41	4	9	54
Site 63	Site 63_1	250	26	3	279	256	23	0	279	6	-3	-3	0
Site 63	Site 63_2	195	20	4	219	224	77	3	304	29	57	-1	85
Site 63	Site 63_3	615	135	34	784	578	114	23	715	-37	-21	-10	-69
Site 63	Site 63_4	910	80	34	1,024	919	71	30	1,021	9	-9	-4	-3
Site 63	Site 63_5	39	1	0	40	38	19	0	58	-1	18	0	18
Site 63	Site 63_6	41	2	0	43	41	7	0	48	0	5	0	5
Site 63	Site 63_7	193	15	4	212	235	15	2	253	42	0	-2	41
Site 63	Site 63_8	109	15	4	128	155	15	4	174	46	0	0	46
Site 63	Site 63_9	617	54	32	703	597	50	30	678	-20	-4	-2	-25
Site 63	Site 63_10	459	114	30	603	358	51	19	428	-101	-63	-12	-176
Site 119	Site 119_1	334	19	0	353	31	0	0	31	-303	-19	0	-322
Site 119	Site 119_2	317	22	4	343	69	0	16	85	-248	-22	13	-258
Site 119	Site 119_3	519	56	6	581	496	50	6	552	-23	-6	0	-29
Site 119	Site 119_4	653	53	8	714	676	41	9	726	23	-12	1	12
Site 119	Site 119_5	55	6	0	61	55	12	0	67	0	6	0	6

Site 119	Site 119_6	64	6	0	70	64	6	0	70	0	0	0	0
Site 119	Site 119_7	407	37	10	454	677	35	25	737	270	-2	16	284
Site 119	Site 119_8	281	37	4	322	450	50	6	506	169	13	2	184
SYSTRA Site 11	SYSTRA Site 11_1	360	62	64	486	352	42	66	461	-8	-20	3	-25
SYSTRA Site 11	SYSTRA Site 11_2	384	79	54	517	355	70	53	478	-29	-9	-1	-39
SYSTRA Site 11	SYSTRA Site 11_4	300	84	65	449	291	47	62	400	-9	-37	-3	-49
SYSTRA Site 11	SYSTRA Site 11_5	501	126	78	705	506	103	76	684	5	-23	-3	-21
SYSTRA Site 11	SYSTRA Site 11_6	272	44	37	353	270	32	26	329	-2	-12	-10	-24
SYSTRA Site 11	SYSTRA Site 11_7	95	19	14	128	57	5	0	62	-38	-14	-14	-66
SYSTRA Site 12	SYSTRA Site 12_1	153	40	58	251	124	37	74	235	-29	-3	15	-17
SYSTRA Site 12	SYSTRA Site 12_3	506	122	63	691	488	99	51	638	-18	-23	-12	-53
SYSTRA Site 12	SYSTRA Site 12_4	340	62	74	476	349	63	74	486	9	1	0	10
SYSTRA Site 12	SYSTRA Site 12_6	89	18	6	113	29	3	0	32	-60	-15	-6	-81
SYSTRA Site 12	SYSTRA Site 12_7	273	44	37	354	270	32	26	329	-3	-12	-10	-25
SYSTRA Site 12	SYSTRA Site 12_8	503	126	78	707	506	103	76	684	3	-23	-3	-23
SYSTRA Site 13	SYSTRA Site 13_1	564	75	31	670	575	59	31	665	11	-16	0	-5
SYSTRA Site 13	SYSTRA Site 13_2	434	98	35	567	416	94	33	543	-18	-4	-2	-24
SYSTRA Site 13	SYSTRA Site 13_3	567	99	39	705	559	120	55	734	-8	21	16	29
SYSTRA Site 13	SYSTRA Site 13_4	1,131	121	55	1,307	1,107	117	61	1,284	-24	-4	6	-22
SYSTRA Site 13	SYSTRA Site 13_5	423	30	6	459	371	36	5	412	-52	6	-1	-47
SYSTRA Site 13	SYSTRA Site 13_6	393	35	2	430	413	35	2	449	20	0	0	19
SYSTRA Site 13	SYSTRA Site 13_7	844	99	38	981	883	79	30	992	39	-20	-8	11
SYSTRA Site 13	SYSTRA Site 13_8	440	49	23	512	457	44	24	526	17	-5	1	13
SYSTRA Site 14	SYSTRA Site 14_1	374	30	2	406	393	26	0	419	19	-4	-2	13
SYSTRA Site 14	SYSTRA Site 14_2	423	35	6	464	370	33	0	403	-53	-2	-6	-61
SYSTRA Site 14	SYSTRA Site 14_3	579	48	8	635	529	26	10	565	-50	-22	1	-70
SYSTRA Site 14	SYSTRA Site 14_4	671	52	4	727	679	34	5	718	8	-18	1	-9
SYSTRA Site 14	SYSTRA Site 14_5	523	38	2	563	519	42	5	566	-4	4	3	3
SYSTRA Site 14	SYSTRA Site 14_6	382	29	2	413	392	28	9	429	10	-1	8	16
SYSTRA Site 15	SYSTRA Site 15_2	61	13	6	80	61	10	5	76	0	-3	-1	-4

SYSTRA Site 15	SYSTRA Site 15_3	102	17	15	134	103	17	0	120	1	0	-15	-14
SYSTRA Site 15	SYSTRA Site 15_4	31	6	5	42	31	4	0	35	0	-2	-5	-7
SYSTRA Site 15	SYSTRA Site 15_5	88	24	14	126	77	16	7	100	-11	-8	-7	-26
SYSTRA Site 15	SYSTRA Site 15_7	50	9	3	62	51	9	5	65	1	0	2	3
SYSTRA Site 15	SYSTRA Site 15_8	223	45	36	304	227	45	41	313	4	0	5	9
SYSTRA Site 15	SYSTRA Site 15_9	272	36	13	321	281	14	0	295	9	-22	-13	-25
SYSTRA Site 15	SYSTRA Site 15_10	100	18	10	128	110	7	22	140	10	-11	13	12
SYSTRA Site 15	SYSTRA Site 15_12	209	28	6	243	206	3	2	212	-3	-25	-4	-31
SYSTRA Site 15	SYSTRA Site 15_13	37	6	3	46	37	2	0	40	0	-4	-3	-6
SYSTRA Site 15	SYSTRA Site 15_14	195	29	43	267	181	25	40	246	-14	-4	-4	-21
SYSTRA Site 15	SYSTRA Site 15_15	87	11	2	100	59	1	0	60	-28	-10	-2	-40
ATC 6	ATC 6_1	29	7	2	39	19	0	0	20	-10	-7	-2	-19
ATC 6	ATC 6_2	22	3	1	27	22	1	0	23	0	-3	-1	-4
ATC 7	ATC 7_1	135	28	8	171	134	0	0	134	-1	-28	-8	-37
ATC 7	ATC 7_2	74	16	8	97	74	0	1	74	0	-16	-7	-23
ATC 8	ATC 8_1	25	7	6	38	0	0	0	0	-25	-7	-6	-38
ATC 8	ATC 8_2	12	4	1	18	0	0	0	0	-12	-4	-1	-18
ATC 9	ATC 9_1	706	121	42	869	764	76	27	866	57	-46	-14	-3
ATC 9	ATC 9_2	270	41	40	350	255	22	32	309	-14	-19	-8	-41
ATC 10	ATC 10_1	796	153	91	1,040	771	158	55	984	-25	5	-36	-55
ATC 10	ATC 10_2	226	63	36	325	238	45	35	318	12	-18	-1	-6
ATC 11	ATC 11_1	659	98	47	804	778	81	34	893	118	-16	-13	89
ATC 11	ATC 11_2	355	54	31	440	259	53	25	337	-96	-1	-5	-102
ATC 12	ATC 12_1	547	81	47	675	537	58	30	625	-10	-24	-16	-50
ATC 12	ATC 12_2	225	35	31	291	174	30	1	204	-51	-5	-30	-87
ATC 13	ATC 13_1	663	28	87	778	579	77	50	706	-84	49	-37	-72
ATC 13	ATC 13_2	1,437	72	193	1,702	1,129	169	90	1,388	-308	97	-103	-314
ATC 14.1	ATC 14.1_1	657	122	84	862	883	79	30	992	227	-43	-54	130
ATC 14.2	ATC 14.2_1	400	76	50	526	457	44	24	526	57	-32	-26	0
ATC 15	ATC 15_1	261	33	9	302	357	25	9	391	96	-8	1	89

ATC 15	ATC 15_2	378	69	16	463	484	43	5	531	106	-26	-11	69
ATC 18	ATC 18_1	249	13	8	270	432	22	2	456	183	9	-6	185
ATC 18	ATC 18_2	164	27	9	200	237	9	0	246	73	-18	-9	46
ATC 19	ATC 19_1	709	81	28	819	736	37	25	797	27	-45	-3	-21
ATC 19	ATC 19_2	319	48	34	401	227	42	32	301	-92	-6	-2	-99
ATC 20	ATC 20_1	697	119	32	848	794	76	27	897	97	-43	-5	48
ATC 20	ATC 20_2	290	54	30	374	267	31	32	329	-23	-23	1	-45
ATC 21.1	ATC 21.1_1	667	68	15	751	676	41	9	726	9	-27	-7	-25
ATC 21.2	ATC 21.2_1	541	91	27	660	496	50	6	552	-45	-41	-21	-108
ATC 2023 Add 1	ATC 2023 Add 1_1	653	65	42	759	619	50	13	682	-34	-14	-29	-78
ATC 2023 Add 1	ATC 2023 Add 1_2	521	42	20	583	392	46	7	445	-129	4	-13	-138
ATC 2023 Add 2	ATC 2023 Add 2_1	473	45	31	549	520	44	20	585	47	0	-11	35
ATC 2023 Add 2	ATC 2023 Add 2_2	399	29	16	445	375	35	12	422	-24	6	-4	-23
ATC 2023 Add 5.1	ATC 2023 Add 5.1_1	494	45	43	582	371	8	15	394	-123	-37	-28	-188
ATC 2023 Add 5.1	ATC 2023 Add 5.1_2	385	29	39	453	362	22	8	393	-22	-7	-31	-60
ATC 2022 Add 7	ATC 2022 Add 7_1	163	46	29	238	220	4	5	229	57	-42	-24	-9
ATC 2022 Add 7	ATC 2022 Add 7_2	71	13	9	94	72	6	4	83	1	-7	-5	-10
ATC 2022 Add 8	ATC 2022 Add 8_1	418	100	42	560	397	70	10	477	-21	-30	-32	-83
ATC 2022 Add 8	ATC 2022 Add 8_2	296	40	31	367	341	62	2	406	45	22	-29	38
ATC 1	ATC 1_1	1,308	127	46	1,481	1,271	115	52	1,438	-37	-11	6	-42
ATC 1	ATC 1_2	1,103	217	86	1,406	1,063	221	93	1,376	-40	3	7	-30
ATC 2	ATC 2_1	566	40	4	611	563	47	2	612	-3	7	-2	2
ATC 2	ATC 2_2	386	23	5	414	404	25	6	434	18	2	1	20
ATC 3	ATC 3_1	46	3	0	49	73	3	1	77	27	0	1	28
ATC 3	ATC 3_2	395	58	4	457	392	7	4	403	-4	-50	0	-54
ATC 4	ATC 4_1	624	70	15	709	668	79	21	767	44	9	6	58
ATC 4	ATC 4_2	412	61	16	490	405	67	16	487	-8	5	0	-3

Appendix B

Future Year Do-Minimum Schemes

B.1

Appendix B - Do-Minimum Schemes in 2024

Do-Minimum Schemes in 2024

Scheme	**Description**
Martin Junction	Upgrade from a roundabout to a signalised junction
Galway Cross City Link Bus Connects Scheme	Scheme to upgrade bus priority and pedestrian and cycle provision through the city centre from University Road to Dublin Road
Galway Dublin Road Bus Connects Scheme	Scheme to upgrade bus priority and pedestrian and cycle provision through the Dublin Road corridor
Bus Connects Network Redesign	New Bus Network for Galway City (See Figure 1 below for map of network redesign)
N59 Dangan Upgrade	Junction Upgrade
W4 BC2 - Tuam Road Bus Corridor	It is proposed to install an outbound shared bus/cycle lane from the junction with Wellpark Rd/Connolly Av, north to the junction with the Tuam Rd and east to the junction with Bothar na dTreabh
W6 BC4 - Father Griffin Road Corridor	It is proposed to reduce vehicle speeds to advertise the presence of pedestrians and cyclists.
W7 BC5 - Monivea Road Scheme	Add an on-road bus priority to allow buses to travel to the Briarhill Junction.
W9 BC7 - Western Distributor Road Corridor	It is proposed to transform Blake and Athy roundabouts into signalised junctions and add bus lanes in both direction along the road.
Galway City Speed Limit Changes[1]	30ph limit in city centre and other changes to speed limits on national roads
Department of Transport (DoT) Speed Limit Review	Reduction of Speed Limits on Irish Roads following DoT review