Hatton Village

Transport Assessment

Inverdunning (Hatton Mains) Ltd.

Project number: 60586310

05 September 2019

Quality information

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1. Introduction

1.1 Background

1.1.1 AECOM has been commissioned by Inverdunning (Hatton Mains) Ltd. to prepare a Transport Assessment (TA) in support of a representation to the Edinburgh Local Development Plan (LDP) 2 Main Issues Report (MIR) for Hatton Village, Edinburgh (proposed development).

1.1.2 The proposed development relates to the construction of up to: 1,200 residential units, 2,500 sqm of retail space, 1,000 sqm of community / health facilities and 1,000 sqm of leisure space. The proposed development also includes for a potential 2,500 sqm primary school / nursery. The proposed development site (the site) is located to the north of the A71 opposite Dalmahoy Hotel and Country Club, south of Ratho and approximately 12 km to the south-west of Edinburgh City centre. Dalmahoy Road bisects the site.

1.1.3 Vehicular access to the site would be by means of new priority junctions formed with Dalmahoy Road and via a left-in / left-out only access with the A71. These access points would also be capable of accommodating pedestrians and cyclists, additionally a network of residential streets and dedicated paths would provide connectivity through the site to the centre of the proposed development as well as connecting to the A71 to the south and Ratho to the north. A Village Hub and Transport Hub are proposed; these facilities could include: a working from home hub, café, shop, bike rental facilities, electric vehicle (EV) charging bays and delivery collection points. **Appendix A** includes the indicative site layout. The proposed development has been designed to accommodate and facilitate public transport access and a strategy has been identified for maximising the effectiveness of public transport use. Infrastructure to support sustainable travel would be complemented through a commitment to a package of 'soft' measures to ensure behaviour change is also considered.

1.1.4 This TA is intended to set out the transport related characteristics and impacts of the proposed development, recognising that it could be over 10 years before the development is fully realised. Moreover it is important to recognise that the way people live and work is changing and that these changes are fast paced, thus the proposed development intends to consider resilience to such changes for example relating to the working from home hub.

1.1.5 The TA supports a representation to the MIR thus providing City of Edinburgh Council (CEC) and other stakeholders the opportunity to review the impacts of the proposed development within their longer term strategies for the growth of Edinburgh and the surrounding region. It is expected that the proposed development will be fully considered in terms of its overall environmental, transport and planning impacts via CEC's assessment of sites brought forward via the MIR process. Whilst the MIR presents preferred and alternative development strategies and sites, it is only once CEC receive comments to the MIR highlighting alternatives that they can prepare a wider cumulative assessment. This will then inform the next stage of the LDP process being the Proposed Plan, which is likely to be published in 2020 and will be CEC's settled position in relation to the spatial strategy for Edinburgh.

1.1.6 Inverdunning (Hatton Mains) Ltd are committed to the delivery of an innovative development and the level of detail within this TA is intended to demonstrate this commitment by providing more detail than typically associated with the MIR stage. However, it should be recognised that it is the responsibility of CEC to assess the cumulative impacts of the Proposed Plan (potentially including the proposed development). Despite this, this TA sets out an overview of potential cumulative impacts and it is hoped that this provides CEC with support in terms of their understanding of cumulative impacts which in turn can influence any mitigating strategies they may bring forward.

1.1.7 Should Inverdunning (Hatton Mains) Ltd come forward with a planning application for the proposed development, this TA would be updated accordingly to reflect the nature of a planning application, the

outcomes of the MIR process (as and when known) and any intervening changes relevant to traffic and transport.

1.1.8 AECOM has engaged with a number of transport related stakeholders to date, to discuss the scope of this TA. As previously noted as and when a planning application comes forward, a comprehensive re-engagement process would be undertaken not just with transport stakeholders but with the wider community and members of the public. AECOM would like to thank stakeholders for their time and support to date.

1.2 Site Location and Context

1.2.1 The site currently consists of farmland and is approximately 60 ha in area.

1.2.2 The site is bisected by Dalmahoy Road which is a single carriageway road connecting the A71 with Ratho village to the north. **Figure 1.1** demonstrates the location of the site, showing that although the site resides within the administrative boundary of CEC, it is close to the West Lothian Council (WLC) boundary.

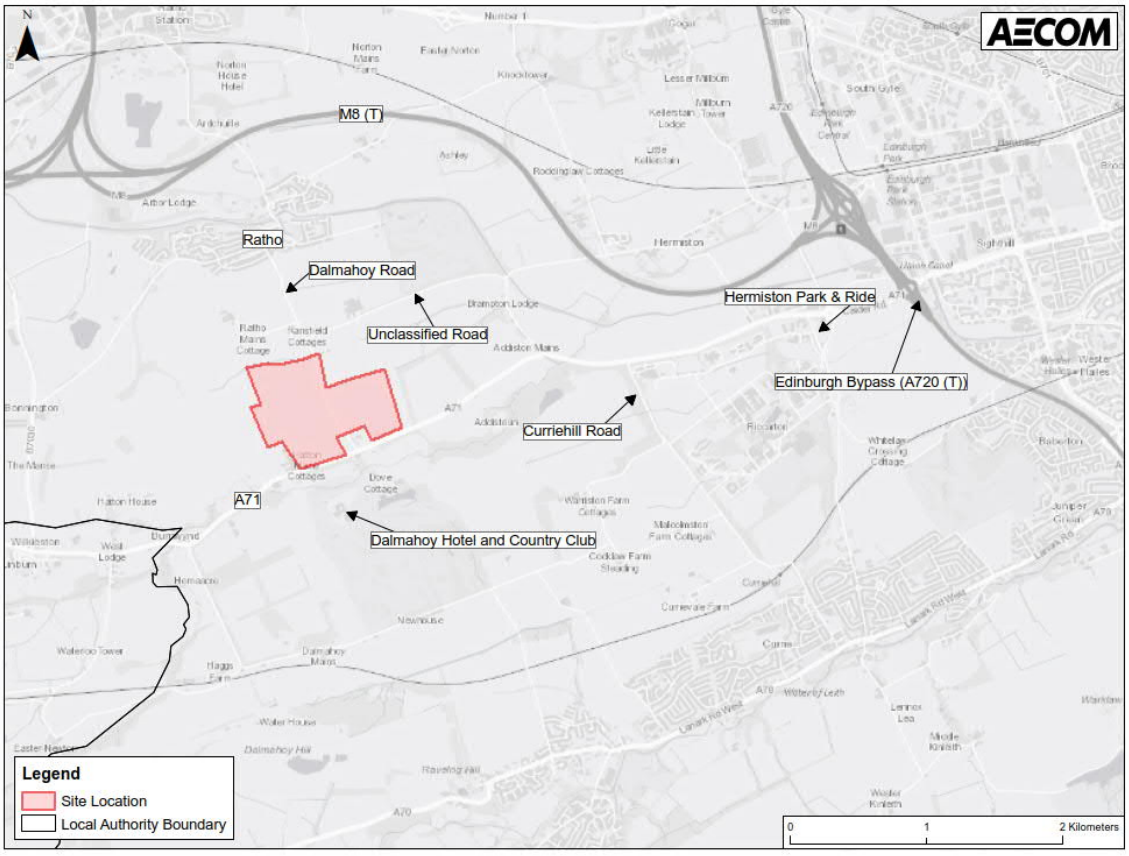


Figure 1.1: Site Location

1.3 Engagement

1.3.1 The following table sets out stakeholder engagement to date along with a summary of the key outcomes of this engagement, relevant to a TA to support a MIR.

Table 1.1: Stakeholder Engagement

Stakeholder	Engagement Methodology	Date(s)	Discussion	Comments
CEC	Meeting and scoping letter / correspondence	14 December 2018 and January 2019	To agree scope of TA including for locations for data collection in the form of traffic surveys.	CEC queried the proposed trip rates to be utilised, namely the suitability of utilising CEC Local Transport Strategy (LTS) mode share targets. This TA demonstrates the evidence base for the use of CEC's own mode share targets recognising the likely longer term delivery of the proposed development.

Stakeholder	Engagement Methodology	Date(s)	Discussion	Comments
				CEC also queried the extent of the road network for data collection and the methodology for modelling junctions along the A71 to the east of the A720 (T); again the evidence base for the extent of the study area and modelling methodology is included in this TA, where applicable to a MIR representation. Queries relating to traffic growth and committed development were also noted and a strategy to address these concerns is detailed in this TA. All other TA and traffic survey parameters were agreed with CEC. Where a query was raised relating to scope this is noted in the relevant section of the TA and addressed accordingly where applicable relevant to a TA to support a MIR representation.
WLC	Meeting and scoping letter / correspondence	26 November 2018 and January 2019	To agree scope of TA including for locations for data collection in the form of traffic surveys.	WLC noted the requirement to future proof and consider within the site layout, longer term aspirations for cycle and bus enhancement along the A71. This has been considered within the site layout and in this TA, where applicable. All other TA and traffic survey parameters were agreed with WLC including consideration to committed development trips and associated network changes.
Transport Scotland (TS)	Meeting and scoping letter / correspondence	04 December 2018 and January 2019	To agree scope of TA including for locations for data collection in the form of traffic surveys.	TS also queried the proposed trip rates to be utilised, namely the suitability of utilising CEC LTS mode share targets. This TA demonstrates the evidence base for the use of CEC mode share targets recognising the likely longer term delivery of the proposed development. Queries relating to traffic growth and committed development were also noted and a strategy to address these concerns is detailed in this TA, where applicable to a MIR representation. All other TA and traffic survey parameters, relevant to the extent of the trunk road network, were agreed with TS. Where a query was raised relating to scope this is noted in the relevant section of the TA and addressed accordingly where applicable and relevant to a TA in support of a MIR representation.
Lothian Buses	Meeting	21 January 2019	Design requirements for bus accessibility and measures to enhance the attractiveness for bus use by proposed development residents including consideration to subsidies.	Discussion focussed on ensuring that the site layout and any alterations to services provide a convenient and effective public transport experience for the passenger thus providing the mechanism to promote public transport travel over the car. For the passenger it was considered that enhancing access to and the frequency of service along the A71 would be the most effective approach to public transport. It was noted that this may need to be supported by bus penetration of the site and thus reflected within the site layout. The outcomes of this engagement are detailed further in this TA and have been considered within the site layout.
Community / Public	Events	2016	To make individuals aware of the proposed development and to gather input and comments to assist in the progression of the proposed development site layout and representation to the MIR.	Concerns were raised relating to additional traffic impacts along the A71 and in Ratho. Members of the public recognised that improvements to public transport would be key to mitigate traffic impacts and that facilities within the site could assist in reducing the need for people to travel and thus avoid 'extra' local journeys. The public also noted the importance of promoting active travel. Comments from the public have been used to inform the site layout and this TA where applicable.

1.3.2 In terms of the discussions with stakeholders to date it is important to note that the planning strategy has changed in the intervening period thus not all stakeholder comments and queries remain relevant to the

scope of this TA. In particular this relates to the approach to traffic impact assessments which focusses on a threshold assessment for the benefit of CEC in understanding the cumulative implications of the site through the MIR process followed by junction assessments at key locations only. In terms of junction impact assessments, the TA focusses on the immediate road network surrounding the site, where impacts would be most significant and at proposed new junctions recognising that key corridors, such as the A71, would be reviewed as part of CEC's cumulative assessment of the Proposed Plan. As previously noted as and when a planning application for the proposed development comes forward, further engagement will be necessary with stakeholders including reviewing the scope of transport studies to support such an application.

1.4 Guidance

Transport Assessment Guidance (2012)

1.4.1 Produced by TS, 'Transport Assessment Guidance' (TAG) contains guidance and advice as to the structure, content and methodology of TAs, Transport Statements and Travel Plans (TPs). It details the importance of noting the pre-existing transport links and travel features. TAG also identifies that TAs should identify measures that will be taken to improve infrastructure and services for travel to the proposed development, where appropriate.

1.4.2 TAG also provides guidance on the measurement of site accessibility and methods of calculation. Page 25 of TAG identifies that journey times of 20 – 30 minutes are appropriate for walking, 30 – 40 minutes for cycling and 45 minutes to an hour for door-to-door public transport journeys.

1.4.3 In terms of traffic impacts, TAG provides guidance on the identification of the study area for such impacts as well as consideration to: data collection methodology, assessment periods / parameters, traffic growth and cumulative development.

1.4.4 Scoping discussions were undertaken taking cognisance of TAG, and this TA considers TAG particularly relating to accessibility analysis.

Planning Advice Note 75 – Planning for Transport (2005)

1.4.5 'Planning Advice Note 75' (PAN 75) is a planning circular produced by the Scottish Government which provides good practice on planning and transport. This includes guidance on integrating transport, transport modelling, policy development, development management, planning agreements and environmental assessment.

1.4.6 PAN 75 provides guidance on the preparation of TPs. Paragraph 42 states that they are *"documents that set out a package of positive and complementary measures for the overall delivery of more sustainable travel patterns for a specific development."* It identifies that the TP should *"incorporate a variety of measures and targets to encourage sustainable travel, such as mode share targets, an implementation time scale and an agreed monitoring and review process."* A package of transport infrastructure / services and 'soft' measures are proposed and these are detailed in **Chapters 3 – 5**.

1.4.7 Paragraph B12 of the document also identifies good practice on the general accessibility of development sites. It states that the recommended accessibility to bus stops is 400 m. It also identifies a maximum threshold of 1,600 m for walking to local facilities. These catchments have been used by AECOM to assist the proposed development design team in the siting of development. Accessibility analysis is detailed further in **Chapter 3**.

Edinburgh Street Design Guidance (2015)

1.4.8 'Edinburgh Street Design Guidance' (ESDG) is CEC's specific guidance on street design and sets out guidance to provide the people of Edinburgh with a network of vibrant, safe and effective streets. The document aligns with the guidance and standards established in 'Designing Streets' and the 'Design Manual

for Roads and Bridges' (DMRB) and should ESDG not provide guidance on a specific issue, then the aforementioned guidance documents should be the next point of reference.

1.4.9 ESDG details CEC's principles for street design and contains guidance for matters including street layout, material choice, street furniture and street features for several types of developments including residential and employment. ESDG has and would be followed throughout the evolution of the design and planning of the proposed development. In particular should a planning application come forward ESDG would be used to inform the more specific details of the design and site layout.

1.5 Report Structure

1.5.1 As previously noted the purpose of this TA is to support a representation to the MIR for CEC's LDP 2 thus the focus of the TA is to detail the baseline characteristics of the site, set out the accessibility of the site in relation to guidance, detail measures and initiatives that would be provided to enhance accessibility and support integration while setting out the traffic impacts of the proposed development to assist CEC with the cumulative assessment of the Proposed Plan (potentially including the proposed development).

1.5.2 Following this introductory chapter the TA is structured as follows:

- **Existing Characteristics**: This chapter provides an overview of the existing characteristics of the site and the immediate transport network;
- **Proposed Development Characteristics**: This chapter provides an overview of the characteristics of the proposed development, how it would integrate with the existing transport network and the accessibility of the site considering TAG;
- **Public Transport Strategy**: Taking cognisance of the outcomes of engagement with Lothian Buses this chapter details the strategy for maximising the attractiveness and use of public transport by proposed development residents;
- **Framework TP**: This chapter sets out a package of 'soft' measures which could be provided to support sustainable travel through behaviour change;
- **Travel Demands**: A review of the anticipated multi-modal trip generation and distribution is undertaken;
- **Traffic and Junction Impact Assessment**: The impact of proposed development vehicle trips is assessed;
- **Framework Construction Traffic Management Plan (CTMP)**: This chapter sets out measures which could be implemented to mitigate and manage the impacts of construction traffic;
- **Transport Planning Policy Review**: This chapter details how the proposed development supports and compliments national, regional and local policies, strategies and guidance; and
- **Summary and Conclusions**.

Existing Characteristics

02

2. Existing Characteristics

2.1 Introduction

2.1.1 This chapter details the existing characteristics of the site and surrounding transport network. Relevant committed development which has the potential to alter the transport network, applicable to this TA, is also detailed in this chapter.

2.1.2 This chapter is informed by a desktop review and site visits carried out by AECOM on 20 September 2018 and 18 February 2019.

2.1.3 The extent of the site and surrounding transport network is shown in **Figure 2.1**.

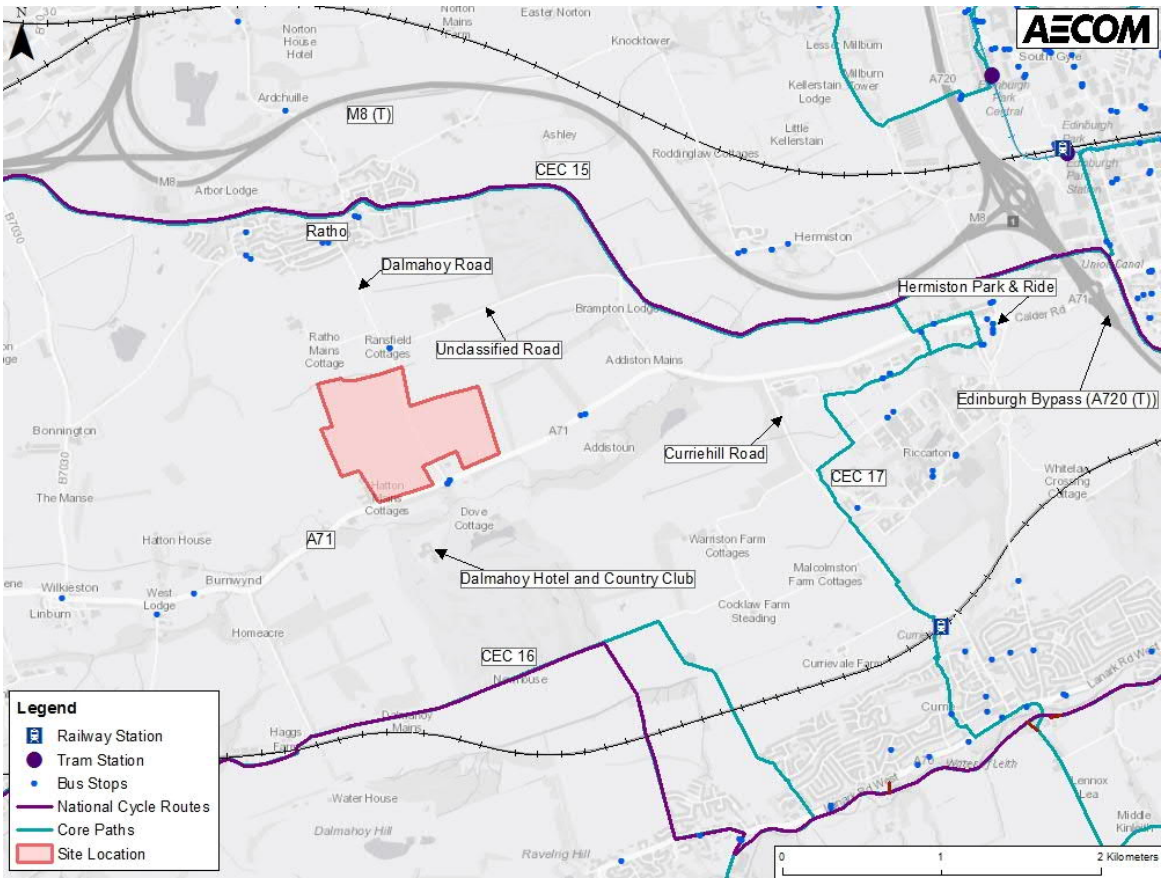


Figure 2.1: Transport Context

2.2 Site Characteristics

2.2.1 The site extends to approximately 60 ha and is comprised of farmland bound by the A71 to the south, mature woodland to the east and field boundaries / wooded tracks to north and west.

2.2.2 Hatton Mains Farm adjoins the south-west boundary and Ratho Park Carvery, private houses and the entrance to Dalmahoy Hotel and Country Club adjoins the southern boundary. Agricultural land extends to the west, north and north-east.

2.2.3 The site is bisected by Dalmahoy Road extending in a north-south direction between Ratho and the A71. There is a footpath connection between these two points on the east side of Dalmahoy Road. The road is

lined by a combination of hedgerows, trees and drystone walls. Within Ratho there are a number of local facilities including: primary school, shop / post office, café and pub.

2.2.4 The land generally falls from north-west to south / south-east with the northern part of the site falling towards an adjoining minor watercourse.

2.3 Transport Context

Pedestrians

2.3.1 Dalmahoy Road is a single carriageway road that connects the A71 to Ratho and bisects the site. There is a footway on the east side of Dalmahoy Road which extends from the junction with the A71 to the village of Ratho. This footway is narrow and in places is further restricted due to vegetation overgrowth. The characteristics of pedestrian provision along Dalmahoy Road are shown in **Figure 2.2**.

2.3.2 Street lighting is present on the north and south extents of Dalmahoy Road as it enters Ratho and adjacent to the Ratho Park Carvery near the A71. Within Ratho, pedestrian provision is in keeping with the village setting including a network of footways, paths, street lighting and dedicated crossing facilities.

2.3.3 At the Dalmahoy Road / A71 / Dalmahoy Club junction, the existing pedestrian provision is in the form of footways with dropped kerbs. There is a CEC committed scheme to improve pedestrian safety at the Dalmahoy Road / A71 / Dalmahoy Club junction. Several options were explored by CEC and the committed option is to signalise the junction and to provide dedicated pedestrian crossing facilities (see **Appendix B**). This committed scheme is considered in this TA and site layout.

Figure 2.2: Existing Footway on Dalmahoy Road

2.3.4 The A71 is a single carriageway road that links the City of Edinburgh with West Lothian, South Lanarkshire and Ayrshire. The footway on Dalmahoy Road discussed previously can be used to access a footway on the north side of the A71. Presently, the footway on the A71 extends from the A71 / B7015 junction to the west of the site until the A71 Calder Road, in the east, where it connects with an extensive network of local footways and routes in the Sighthill area of Edinburgh.

2.3.5 The A71 footway is approximately 1.5 m wide in the vicinity of the site but varies in width along the A71 with restrictions due to overgrown vegetation and a lack of general upkeep. Streetlights illuminate the footway along the A71 in built up areas and at key junctions. There are no dedicated pedestrian crossing facilities on the A71 in the vicinity of the site. However as noted the CEC committed scheme provides for a dedicated signalised pedestrian crossing at Dalmahoy Road / A71 / Dalmahoy Club junction.

2.3.6 **Figure 2.3** shows the A71 footway heading east towards Edinburgh and **Figure 2.4** the footway heading west towards Livingston.

2.3.7 In discussion with stakeholders it is understood that previous studies have been undertaken in respect of improving pedestrian and cyclist facilities along the A71. One such option was for a continuous cycleway running alongside the eastbound carriageway. Although there are no committed schemes for such improvements, the proposed development site layout has future-proofed for potential improvements as described in the following chapter.

Figure 2.3: Footway on A71 (E)

Figure 2.4: Footway on A71 (W)

Core Paths

2.3.8 Core Paths in vicinity of the site are shown in **Figure 2.5**.

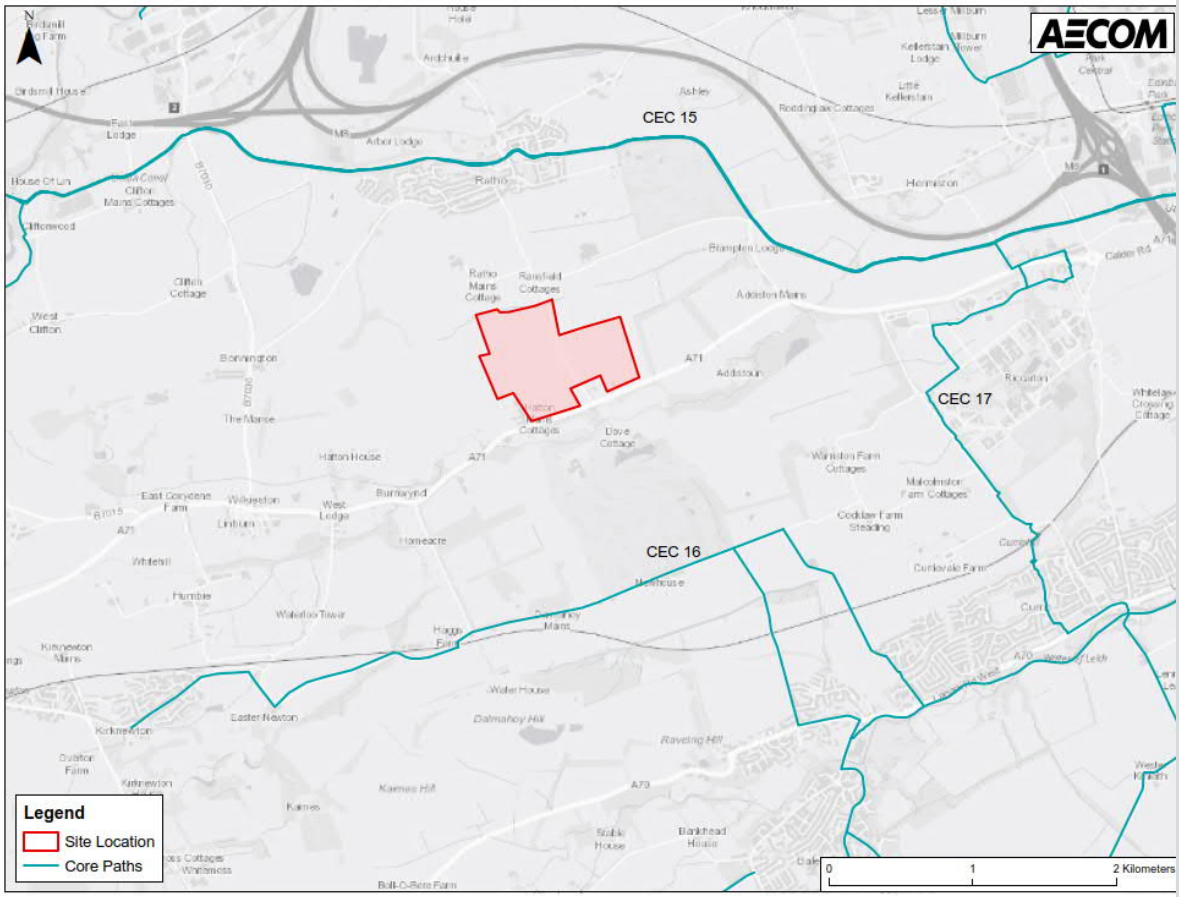


Figure 2.5: Core Paths

Source: Core Path SNH

2.3.9 CEC 15 Union Canal Towpath is the closest Core Path to the site, situated to the north and east and suitable for both pedestrians and cyclists. The route uses the towpath of the Union Canal between the Almond Aqueduct located approximately 3 km north-west of Wilkieston and continues until the Union Canal basin at Fountainbridge, Edinburgh. The Core Path spans a distance of approximately 19 km.

2.3.10 The nearest access point to the towpath from the site is at the Baird Road Bridge in Ratho to the north. **Figure 2.6** illustrates the typical characteristics of the Union Canal Towpath in the vicinity of the proposed development.

Figure 2.6: CEC 15 Union Canal Towpath

2.3.11 CEC 16 Kirknewton is located to the south of the site and provides access to Kirknewton, Balerno and Currie. Access to Core Path CEC 18 Water of Leith and several other recreational routes in the Edinburgh area can also be achieved by following CEC 16. CEC 16 spans a distance of approximately 6.5 km.

2.3.12 CEC 17 Riccarton is located to the east of the site and connects CEC 15 Union Canal Towpath with CEC 16. The characteristics of the path vary from woodland trails to illuminated asphalt paving throughout its 5.5 km long span.

Cyclists

2.3.13 Along Dalmahoy Road and the A71, in vicinity of the site, there are no dedicated cycle routes, thus cyclists are required to utilise the carriageway.

2.3.14 Quiet Routes are designed for walking and cycling and are suitable for users of all abilities who would prefer to travel on routes that are separate from busy main roads. **Figure 2.7** illustrates National Cycle Routes and Quiet Routes in vicinity of the proposed development, with some cycle routes also forming Core Paths as described in the previous section.

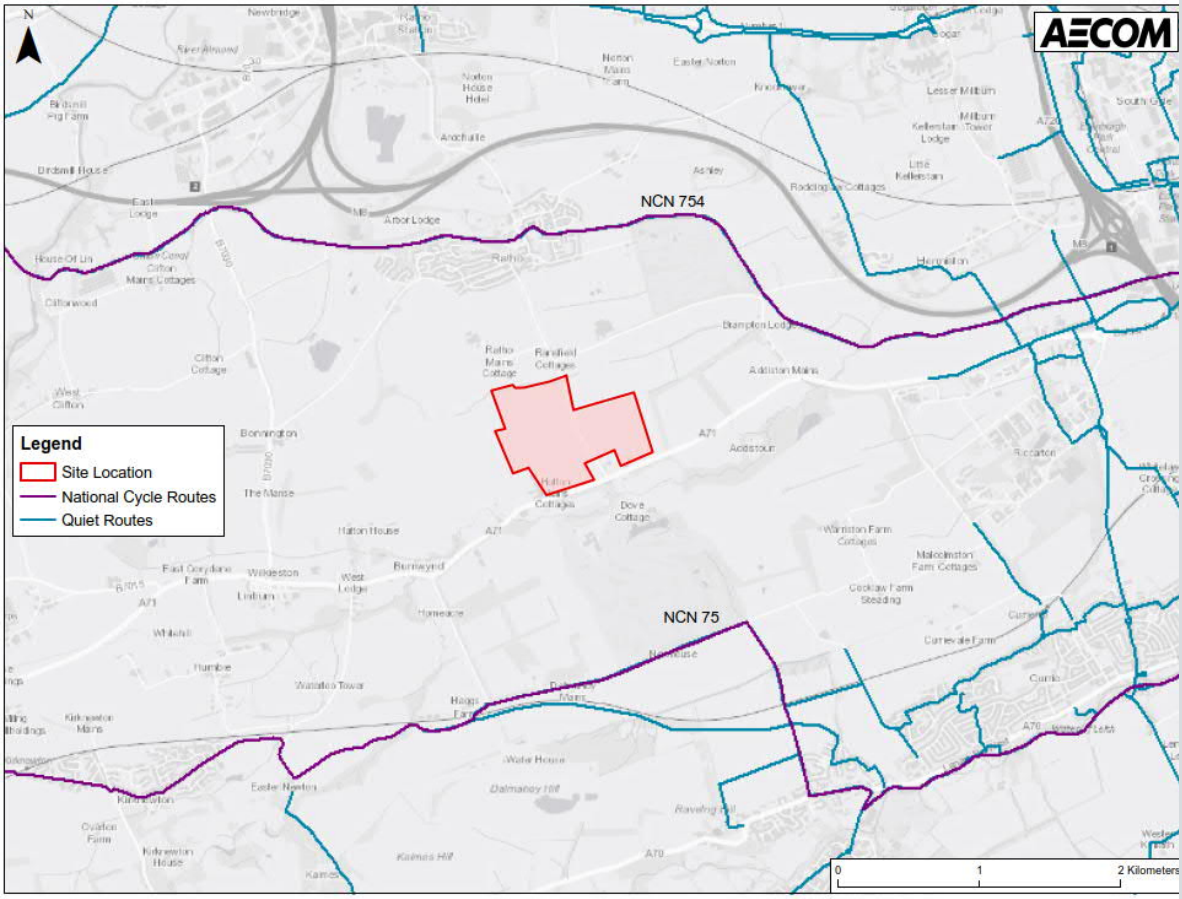


Figure 2.7: National Cycle Routes and Quiet Routes

Source: Sustrans National Cycle Network ESRI

2.3.15 National Cycle Network (NCN) Route 754 follows CEC 15 Union Canal Towpath from the Craiglockhart area of Edinburgh until the Almond Aqueduct where it diverges north towards Falkirk before terminating in Glasgow. The route is approximately 90 km in length and is primarily comprised of off-road infrastructure.

2.3.16 NCN Route 75 follows CEC 15 Union Canal Towpath from its origin at Fountainbridge, Edinburgh, diverges south from Craiglockhart towards Currie and Balerno following the Water of Leith and continues in a

westward direction towards Glasgow. The route is approximately 183 km in length and utilises shared and segregated infrastructure.

2.3.17 In 2018, Transport for Edinburgh (TfE) launched the first public bike rental scheme in Edinburgh. The nearest cycle rental stations to the site are in the City centre (shown for reference in **Figure 2.15**).

2.3.18 More detail relating to measures to promote walking and cycling within the proposed development as well as quantifying the accessibility of the proposed development by active travel modes are included in **Chapter 3**.

Bus Services

2.3.19 **Figure 2.8** shows the location of bus stops and routes in vicinity of the site.

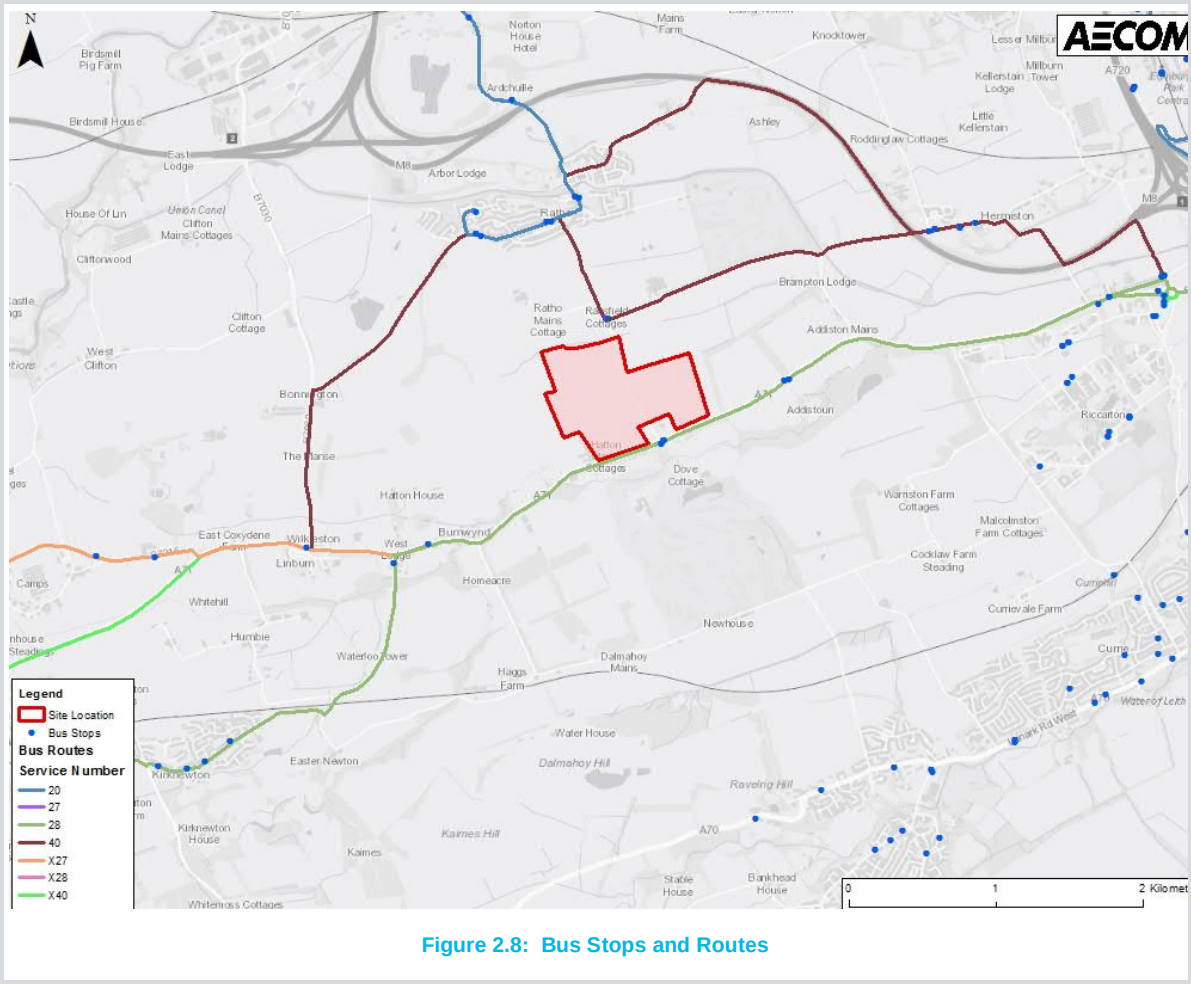


Figure 2.8: Bus Stops and Routes

Source: Basemap (does not include night service routes)

2.3.20 The nearest bus stops to the site are located at the A71 / Dalmahoy Road / Dalmahoy Club junction and both consist of flag and pole stands with timetable information. **Figure 2.9** shows the current condition of

the two bus stops. As a consequence of the committed signalisation of this junction, both bus stops would be relocated (approximately 40 m from their current positions) and the infrastructure upgraded.

Figure 2.9: Existing A71 Bus Stops at Dalmahoy Road

2.3.21 **Table 2.1** and **Table 2.2** detail the current bus services that serve the aforementioned A71 bus stops.

Table 2.1: A71 Bus Service Provision (Eastbound)

Bus Service	Operator	Route	Approximate Service Frequency		
			Mon - Fri	Saturday	Sunday
23	First South East and Central Scotland	Livingston Deans - Edinburgh	Half Hourly Service (07:29-23:57)	Half Hourly Service (07:59-23:57)	Half Hourly Service (08:57-23:57)
27	Blue Bus	Livingston or Allanton - Edinburgh	One Service (06:48)	No Service	Two Services (07:13-08:13)
N28	Lothian Country Buses	Livingston Deans North - Edinburgh	No Service	Hourly Service (00:49-03:49)	Hourly Service (00:49-03:49)
X23	First South East and Central Scotland	Broxburn - Edinburgh	Hourly Service (11:14-18:21)	Hourly Service (11:14-1814)	No Service
X27	Lothian Country Buses	Bathgate - Edinburgh	Hourly Service (05:12-23:02)	Hourly Service (05:54-23:02)	Hourly Service (07:49-23:02)
X28	Lothian Country Buses	Bathgate - Edinburgh	Hourly Service (05:38-23:28)	Hourly Service (05:20-23:28)	Hourly Service (06:45-23:28)

Data correct as of 21/01/2019

Table 2.2: A71 Bus Service Provision (Westbound)

Bus Service	Operator	Route	Approximate Service Frequency		
			Mon - Fri	Saturday	Sunday
23	First South East and Central Scotland	Livingston Deans - Edinburgh	Half Hourly Service (07:29-23:57)	Half Hourly Service (07:59-23:57)	Half Hourly Service (08:57-23:57)
27	Blue Bus	Livingston or Allanton - Edinburgh	One Service (06:48)	No Service	Two Services (07:13-08:13)
N28	Lothian Country Buses	Livingston Deans North - Edinburgh	No Service	Hourly Service (00:49-03:49)	Hourly Service (00:49-03:49)
X23	First South East and Central Scotland	Broxburn - Edinburgh	Hourly Service (11:14-18:21)	Hourly Service (11:14-18:14)	No Service
X27	Lothian Country Buses	Bathgate - Edinburgh	Hourly Service (05:12-23:02)	Hourly Service (05:54-23:02)	Hourly Service (07:49-23:02)
X28	Lothian Country Buses	Bathgate - Edinburgh	Hourly Service (05:38-23:28)	Hourly Service (05:20-23:28)	Hourly Service (06:45-23:28)

Data correct as of 21/01/2019

2.3.22 Service 23, operated by First and Services X27 / X28, operated by Lothian Country Buses, are the most frequent and operate on a half hourly frequency at weekdays and weekends. Services along the A71 provide connection to Edinburgh City centre, Livingston and Bathgate and also connect to other facilities such as Heriot Watt University.

2.3.23 East of the A720 trunk road (T), intermittent peak hour bus lanes are provided along the A71 towards Edinburgh City centre.

2.3.24 In addition to bus stops on the A71, there is an undesignated bus stop located on an Unclassified Road approximately 900 m to the north of the A71 / Dalmahoy Road / Dalmahoy Club junction. There is no formal bus stop. Service 40 operates from this location.

2.3.25 Service 20, which operates between Hermiston Gait and Ratho, serves bus stops in Ratho that are located approximately 1 km to the north of the site boundary. Service 20 bus stops comprise of either flag poles or shelters with seating. The route terminus of Service 20 is located within a residential area in Ratho. Service 20 operates on a half hour frequency Monday – Saturday and on an hourly frequency on a Sunday. **Table 2.3** illustrates timetable information from the Unclassified Road and from Ratho.

Table 2.3: Unclassified Road Bus Service Provision

Bus Service	Operator	Route	Approximate Service Frequency		
			Mon - Fri	Saturday	Sunday
40	Horsburgh Coaches	Livingston St John's Hospital - Edinburgh Royal Infirmary	4 Services per Day	3 Services Per Day	3 Services Per Day
20	Lothian Buses	Ratho – Hermiston Gait / Chesser ASDA	Half Hourly Service	Half Hourly Service	Hourly Service

Data correct as of 21/01/2019

2.3.26 Interchange is available at Hermiston Park & Ride from the services listed in **Table 2.1**. Over an average weekday a bus departs Hermiston Park & Ride every few minutes to destinations such as Leith, Queensferry and Musselburgh.

2.3.27 There are a variety of ticket types available for bus travel across the area depending on the service provider. Lothian Buses have integrated ticket options for access to their City and Country services which can also be provided in digital format.

2.3.28 **Figure 2.10** shows the terminal at Hermiston Park & Ride which includes a waiting area. Hermiston Park & Ride has parking capacity for 450 vehicles and it is noted that a planning application (12/01202/FUL) for an expansion up to approximately 1,025 spaces has been approved by CEC but is yet to commence construction. A developer contribution mechanism is in place for this.

Figure 2.10: Hermiston Park & Ride

Rail Services

2.3.29 The nearest Railway Station to the proposed development is Curriehill Railway Station. The station is located approximately 4.5 km south-east of the site and consists of two platforms with an overhead connecting footbridge. This station serves the Glasgow Central to Edinburgh line.

2.3.30 **Figure 2.11** shows the location of railway stations in vicinity of the site as-well as tram stops. Trams can be accessed via bus interchange and the tram route is programmed to be extended to Leith and Newhaven.

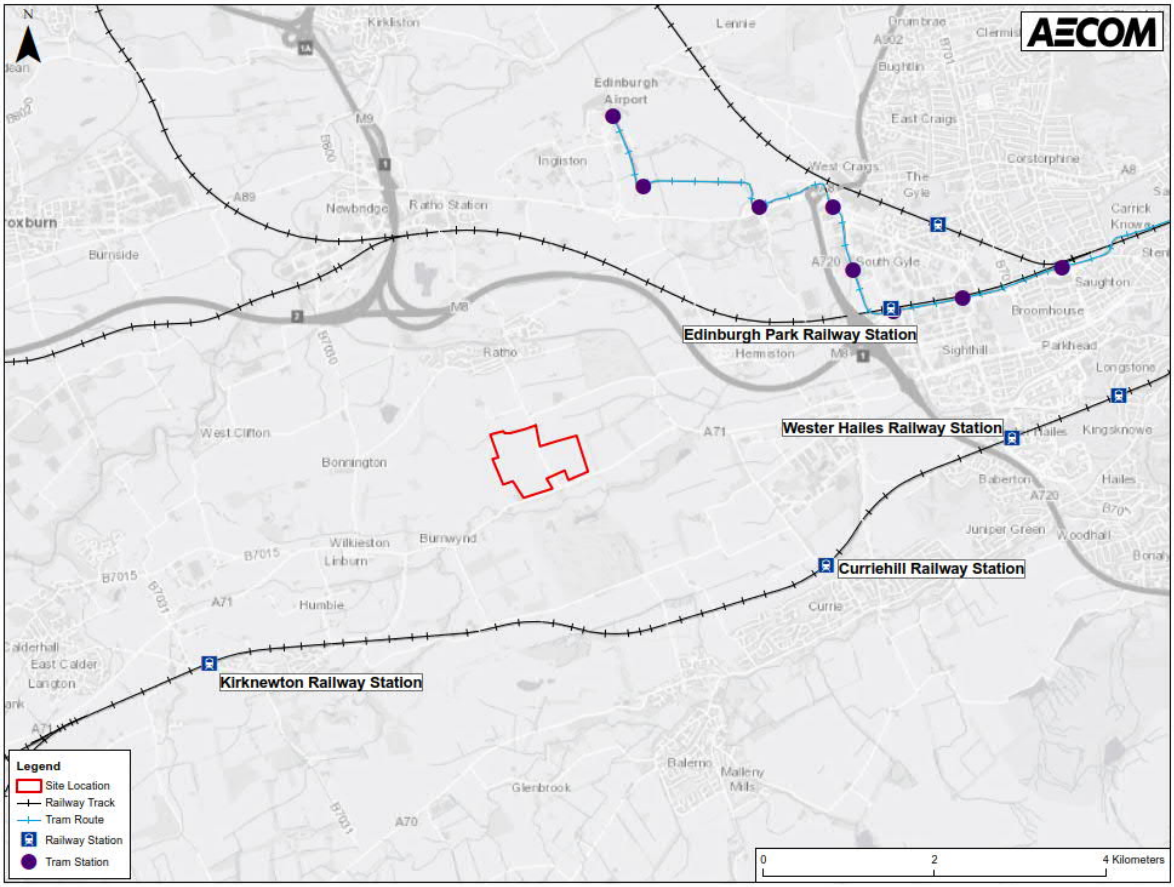


Figure 2.11: Railway / Tram Stations

2.3.31 A summary of facilities at Curriehill Railway Station and other stations in vicinity of the site are provided in **Table 2.4**.

Table 2.4: Railway Station Facilities

Station	Facilities	
	Cycle Storage Spaces	Car Parking Spaces
Curriehill	12	39
Edinburgh Park	35	No Spaces
Wester Hailes	No Spaces	38
Kirknewton	18	33

Source: National Rail Enquiries

2.3.32 **Table 2.5** provides a summary of rail services from Curriehill Railway Station.

Table 2.5: Rail Services and Timetabling Information at Curriehill Station

Operator	Route	Approximate Service Frequency		
		Mon – Fri	Saturday	Sunday
Scotrail	Curriehill - Edinburgh	Hourly Service (06:56-00:01)	Hourly Service (06:57-00:16)	2 Hourly Service (11:05-23:05)
Scotrail	Curriehill - Glasgow	Hourly Service (06:10-23:46)	Hourly Service (06:10-23:14)	No Direct Service
Scotrail	Curriehill - Bellshill	Hourly Service (06:10-23:46)	Hourly Service (06:10-23:14)	No Direct Service
Scotrail	Curriehill - Ayr	One Service (18:46)	No Direct Service	No Direct Service
Scotrail	Curriehill - Motherwell	2 Direct Services (18:46-23:31)	2 Direct Services (18:46-23:31)	No Direct Service
Scotrail	Curriehill – North Berwick	1 Direct Service (08:12)	1 Direct Service (08:00)	No Direct Service

Data Correct as of 21/01/19

2.3.33 Rail frequency along the Edinburgh to Glasgow Central line is recognised as not being as frequent as other routes in the Central belt moreover it is also recognised that facilities to accommodate interchange e.g Park & Ride are restricted. For the purposes of the proposed development, public transport is therefore focussed on bus travel with interchange to other modes. The following chapter provides detail on how the proposed

development could integrate with existing public transport provision while **Chapter 4** sets out the strategy for enhancing access to the site by bus.

Vehicular Access

2.3.34 The road network in vicinity of the site is shown in **Figure 2.12.** TS have responsibility for the trunk road network which in vicinity of the site includes the M8 (T) and the A720 (T) Edinburgh by-pass and the A71 / A720 (T) Calder Junction. CEC or WLC are responsible for other roads in vicinity of the site.

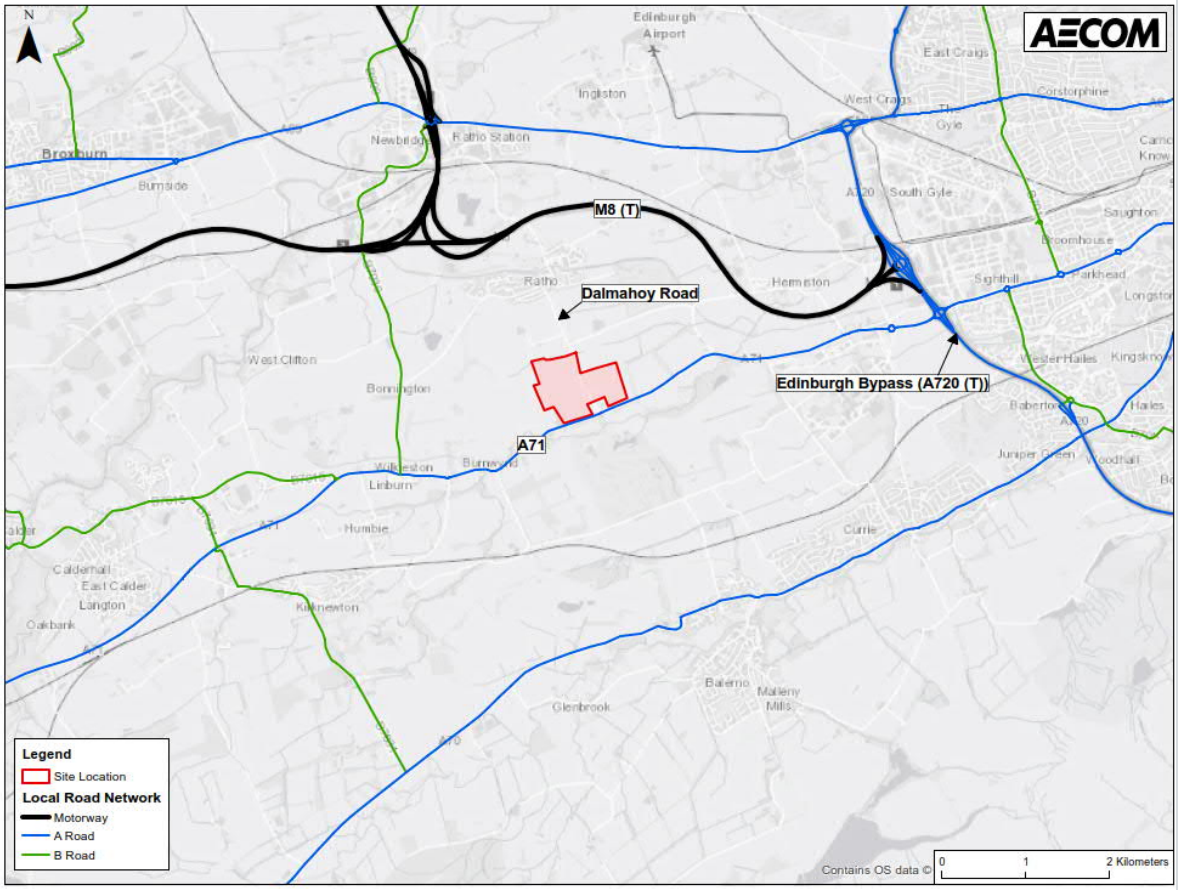


Figure 2.12: Road Network

2.3.35 Dalmahoy Road is a single carriageway of approximately 5.5 m in width and subject to the National Speed Limit.

2.3.36 **Figure 2.13** shows the characteristics of Dalmahoy Road.

Figure 2.13: Characteristics of Dalmahoy Road

2.3.37 The road network in Ratho comprises a network of residential streets and one primary distributor road which connects the village to Wilkieston and Newbridge. The road network in Ratho can be constrained due to parked vehicles.

2.3.38 The A71 is a major road that connects Edinburgh with Lanarkshire and Ayrshire. The road originates in Irvine and runs in a north-east direction towards Edinburgh and its terminus at the A71 Gorgie Road / A70 Dalry Road junction to the west of Edinburgh City centre. Although the A71 is strategic in nature it is not a trunk road.

2.3.39 The A71, in vicinity of the site, has a speed limit of 50 mph. The width of the carriageway varies, but is generally 7 m wide. To the west of the site and within WLC's boundary committed road improvements include: the signalisation of the A71 / B7031 and A71 / B7015 associated with the Calderwood development. There are also proposals for the formation of a 'bypass' west of Wilkieston. As previously noted there is a committed scheme for the signalisation of the Dalmahoy Road / A71 / Dalmahoy Club junction. These

committed improvements have been considered within the junction impact assessments of this TA where applicable.

2.3.40 **Figure 2.14** illustrates the existing characteristics of the A71 in proximity to the site.

Figure 2.14: A71 Characteristics

2.3.41 From the A71 and Dalmahoy Road access to the wider local and trunk road network is achievable namely the M8 (T) and A720 (T). Like many towns and cities, peak hour congestion occurs on the local and trunk road network and a number of schemes are being considered by CEC to mitigate this. It is understood that this includes a potential future scheme to upgrade the A71 / A720 (T) junction and that such a scheme falls within a developer contribution 'zone' although there are no detailed plans for this scheme at this stage.

2.3.42 Edinburgh has a Car Club scheme; the locations for rental of cars are focussed in the City centre and for reference a map showing these locations and the locations for bicycle rental are shown in **Figure 2.15**.

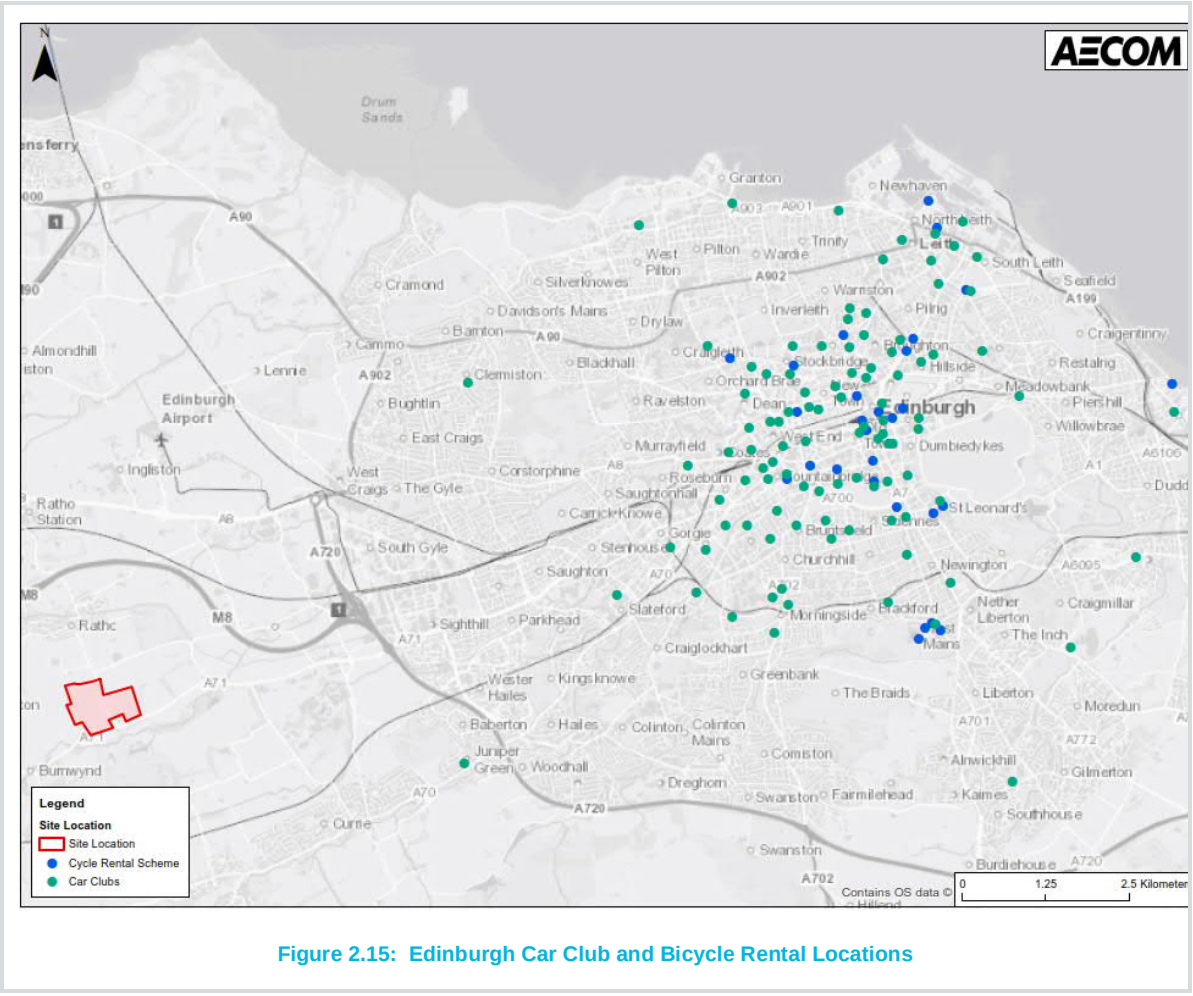


Figure 2.15: Edinburgh Car Club and Bicycle Rental Locations

2.3.43 The website Crashmap (www.crashmap.co.uk) has been used to review the number and severity of accidents that have occurred on the road network surrounding the site. A diagram showing the severity and location of accidents is found in **Figure 2.16**.

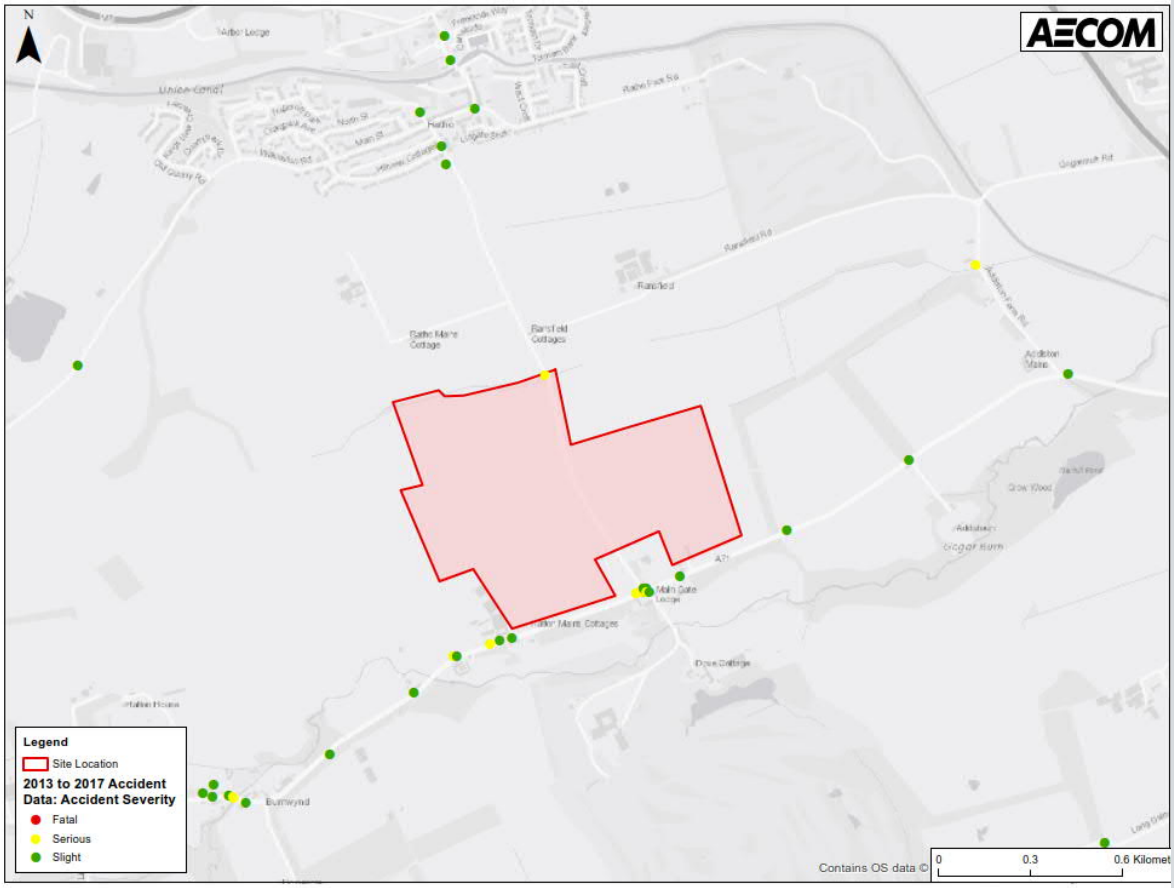


Figure 2.16: Local Road Traffic Collisions (2013-2017)

Source: www.crashmap.co.uk

2.3.44 There is a cluster of road traffic collisions at the A71 / Dalmahoy Road / Dalmahoy Club junction. The committed upgrade to this junction could result in a decrease in traffic collisions at this location by removing the priority form of the junction in favour of signalised control.

2.4 Summary

2.4.1 The site is located approximately 12 km to the south-west of Edinburgh City centre and approximately 1 km to the south of Ratho village. The site is approximately 60 ha in area and currently consists of farmland. The site is bisected by Dalmahoy Road.

2.4.2 Dalmahoy Road is a single carriageway road subject to the National Speed Limit; pedestrian provision is in the form of a continuous footway (with width restriction) running alongside the southbound carriageway. Dalmahoy Road connects the site to Ratho in the north where there are a variety of local facilities and amenities such as shops as well as a network of footways, paths, dedicated pedestrian crossing facilities and bus stops. Dalmahoy Road forms a bus route at its northern extremity.

2.4.3 The A71 is located to the south of the site and serves as a strategic route, although not a trunk road, connecting Edinburgh to the west of Scotland. The A71 is single carriageway of approximately 7 m in width and in vicinity of the site the speed limit is 50 mph. Pedestrian provision along the A71 is in the form of a footway which runs alongside the eastbound carriageway, this footway is approximately 1.5 m however varies in width due to vegetation overgrowth. Street lighting is provided at key locations along the A71.

2.4.4 There is a CEC committed scheme to improve pedestrian safety at the Dalmahoy Road / A71 / Dalmahoy Club junction. Several options were explored by CEC and the committed option is to signalise the junction and to provide dedicated pedestrian crossing facilities. This would provide a safer crossing facility in comparison to the existing priority arrangement and enhance accessibility to the A71 westbound bus stop

and Dalmahoy Hotel and Country Club. Moreover this scheme could have a benefit in terms of reducing road traffic incidents at this location. This committed scheme is considered in the junction impact assessments of this TA.

2.4.5 In discussion with stakeholders it is understood that previous studies have been undertaken in respect of improving pedestrian and cyclist facilities along the A71. One such option was for a continuous route running alongside the eastbound carriageway. Although there are no committed schemes for such improvements, the proposed development site layout has future-proofed for such an improvement.

2.4.6 A network of off-road pedestrian and cycle facilities are provided in West Edinburgh, the nearest such route is accessible from Ratho in the north. This route forms NCN Route 754 / CEC 15 Union Canal Towpath and connects Ratho to Edinburgh City centre. Cycling along the A71 and Dalmahoy Road is achievable on the carriageway.

2.4.7 The nearest bus stops to the site are located at the A71 / Dalmahoy Road / Dalmahoy Club junction and both currently consist of flag and pole stands with timetable information. As a consequence of the committed signalisation of this junction, both bus stops would be slightly relocated and the infrastructure upgraded. From these stops the service frequency is every 30 minutes (or better when considering all operating services). A71 bus stops serve Edinburgh City centre as well as West Lothian. Interchange is available at Hermiston Park & Ride for connectivity to the wider Lothian bus and tram network. Additional bus services are accessible from the site from an Unclassified Road to the north as well as from Ratho. The nearest railway station to the site is in Currie (4.5 km to the south-east) and resides on the Edinburgh – Glasgow Central line with an average hourly service. Given the location of the nearest railway station and existing rail frequency at this station, in respect of the proposed development and public transport, the focus is on the bus and subsequent interchange, **Chapter 4** details the strategy in this respect.

2.4.8 Dalmahoy Road and the A71 provide connectivity to the wider trunk and local road network including the M8 (T) and A720 (T). It is recognised that these trunk routes as well as local routes can be congested in peak periods. Several schemes are being considered by CEC to mitigate this. It is understood that this includes a potential future scheme to upgrade the A71 / A720 (T) junction.

2.4.9 The following chapter details transport infrastructure and strategies to integrate the proposed development with the existing transport network as well as detailing the accessibility of the site by all travel modes.

Proposed Development Characteristics

03

3. Proposed Development Characteristics

3.1 Introduction

3.1.1 This chapter provides an overview of the characteristics of the proposed development as well as detailing the accessibility (in accordance with TAG) and integration of the proposed development with the existing transport network as described in the previous chapter. **Appendix A** includes the indicative site layout which is also shown in **Figure 3.1**.

Figure 3.1: Indicative Site Layout

Source: Inverdunning (Hatton Mains) Ltd

3.2 Proposed Development Characteristics

3.2.1 The proposed development relates to the construction of up to: 1,200 residential units, 2,500 sqm of retail space, 1,000 sqm of community / health facilities and 1,000 sqm of leisure space. Vehicular access to the site would be by means of new priority junctions formed with Dalmahoy Road and via a left-in / left-out only access with the A71, situated approximately 320 m to the east of the Dalmahoy Road / A71 / Dalmahoy Club junction.

3.2.2 The proposed development would integrate with the CEC committed scheme to signalise the Dalmahoy Road / A71 / Dalmahoy Club junction for the betterment of pedestrian safety and accessibility. A network of streets and paths would facilitate pedestrian and cycling access through the site and to bus stops on the

A71 and Ratho to the north. The centre of the site is intended to act as the Village Hub where local amenities and key transport infrastructure would be provided.

3.2.3 Subject to necessary approvals the proposed development could be complete by 2031 with a build out of approximately 100 - 150 units a year. More detail relating to construction is included in **Chapter 8**.

3.2.4 At this stage in the process, specific developer(s) of the proposed development have yet to be confirmed. The purpose of the representation to the MIR is to set out the indicative design of the site so this may be considered by CEC and other stakeholders. However, it is anticipated that should the proposed development come forward to planning application stage a Masterplan and Development Framework would be prepared. These documents would set out the principles for the build out of the site for example relating to siting, material choice etc. More importantly these documents would provide the framework for the identification of a process for financial contribution to the delivery of transport infrastructure and services including consideration to phasing. Any financial contribution would be appropriate and proportionate to the anticipated impacts of the proposed development based on the outcomes of necessary supporting studies and engagement with stakeholders including for example a refreshed TA to include the outcomes of the MIR process.

3.2.5 In terms of residential provision, a mix of housing types are proposed including high density flatted development which would be situated in proximity to the proposed Village centre and Dalmahoy Road. At ground floor, commercial space could be provided. Moving away from the Village centre the density of housing would change to medium and low provision. The specific tenure of housing would require consideration of commercial viability with housebuilders as well as engagement with CEC and stakeholders relating to housing need in the area.

3.2.6 It is important to note that non-residential land uses are intended to support and enhance the proposed development and in respect of transport these would support a local function and reduce the need for residents to travel out-with the site.

3.2.7 The proposed development also includes for a potential 2,500 sqm primary school / nursery. In respect of education provision, a comprehensive report has been prepared by Clarendon Planning and Development Ltd on this matter which notes that until such a time as a school is deemed necessary at the site, non-denomination education for proposed development children would be provided in Balerno at Dean Park Primary School and Balerno High School. Balerno is approximately 7 km to the south of the site.

3.2.8 It is recognised that there is a requirement for the proposed development to complement and support existing national and local policy which emphasises that priority is given to sustainable travel. Moreover, given there is a need to consider anticipated changes to how people live and work, it is important to consider resilience to change within the site layout. Artist impressions of the proposed development can be found in the Design Statement. The following transport related interventions and strategies form part of the proposed development:

- Provision of a network of footways and paths throughout the site and the considered siting of development to reduce walk distances to key facilities such as the Village centre, bus stops along A71, Ratho and Dalmahoy Hotel and Country Club.
- Provision of open green space to support active travel for recreational purposes thus complementing national and local environmental and health policies for encouraging healthier lifestyles.
- Safeguarding land along the frontage of the site with the A71 to future proof for longer term aspirations (by others) to improve pedestrian and cycling infrastructure along the A71.
- Improving the Dalmahoy Road footway to enhance connectivity to Ratho.
- Design of active travel routes and facilities, including cycle parking provision, in accordance with ESDG.

- Inclusion of a working from home hub that would seek to reduce the number of private car trips associated with commuting to / from work.
- Provision of local amenities and services such as shops and a primary school to reduce the need for travel out-with the site and to encourage active travel for short journeys.
- The inclusion of a Public Transport Strategy (**Chapter 4**) to identify the opportunities to maximise the attractiveness of public transport use for residents of the proposed development.
- Site design, in accordance with ESDG and the requirements of operators, to allow for penetration of the site by bus.
- Provision of a Transport Hub in the Village centre, the Hub could include but not be limited to the provision of:
  - Timetable, service and wayfinding information;
  - Lockers for collection of deliveries;
  - Cycle parking;
  - TfE Cycle Hire Provision;
  - Cycle maintenance station;
  - Pop-up style café;
  - Bus turning area and bus stop;
  - EV charging points; and
  - Car Club parking spaces.
- Discussion with operators would be required relating to the services which could be available at the Transport Hub and in this respect, it is important to recognise the longer term nature of the proposed development build out.
- Design of vehicle infrastructure, in accordance with ESDG, however recognising the potential to support the effectiveness of sustainable travel through a package of measures which could include, for example, reduced car parking provision in the most accessible locations of the site.
- Framework TP (**Chapter 5**) to set out 'soft' measures to support sustainable travel behaviour change.
- Through the Masterplan and Development Framework an appropriate and proportionate financial contribution to improved and enhanced transport infrastructure and services within the site. Given the stage of the proposed development there are opportunities to seek buy in to allow individual developer(s) to conform to the ethos of the site and the transport strategy namely to consider innovative measures to provide resilience in how we design new developments and provide transport to ensure that a different development concept is achieved.
- Based on the outcomes of the MIR / LDP process, appropriate and proportionate financial contribution to transport infrastructure and services out-with the site based on a robust appraisal (by CEC) of cumulative impacts.

3.3 Accessibility and Integration

3.3.1 TAG identifies that a journey time of 20 to 30 minutes is acceptable for walking whilst PAN 75 states that a walking distance of 1,600 m for walking (approximately 20 minutes) is acceptable for accessing local facilities and 400 m for access to bus stops. Taking cognisance of this guidance, **Figure 3.2** illustrates

pedestrian access within 400 m (approx. 5 minute walk), 800 m (approx. 10 minute walk) and 1,600 m (approx. 20 minute walk) of the centre of the proposed development.

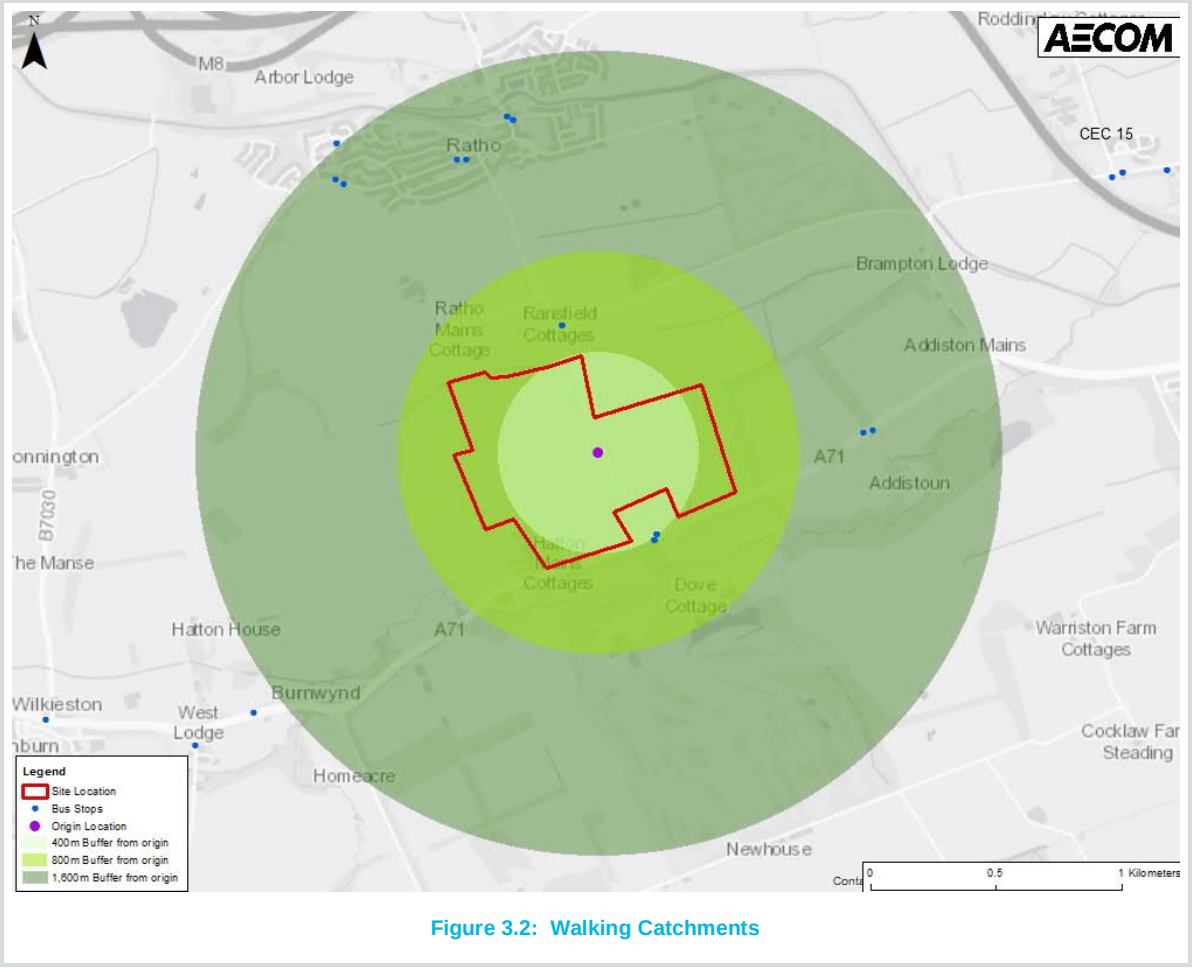


Figure 3.2: Walking Catchments

3.3.2 The accessibility analysis shows that Ratho Park Carvery, Dalmahoy Hotel and Country Club and the village of Ratho are all within 1,600 m or a 20 minute walk of the site. Bus stops on the A71 at Dalmahoy Hotel and Country Club are within 400 m (or a 5 minute walk) of parts of the site. Naturally walk times and distances would vary depending on starting points within the site. As previously noted the siting of development and

the network of footways / paths proposed would assist in integrating development to the existing transport network in an efficient and accessible manner to promote walking.

3.3.3 **Figure 3.3** shows cycling catchments from the centre of the site for journeys of up to 40 minutes thus corresponding to TAG guidance.

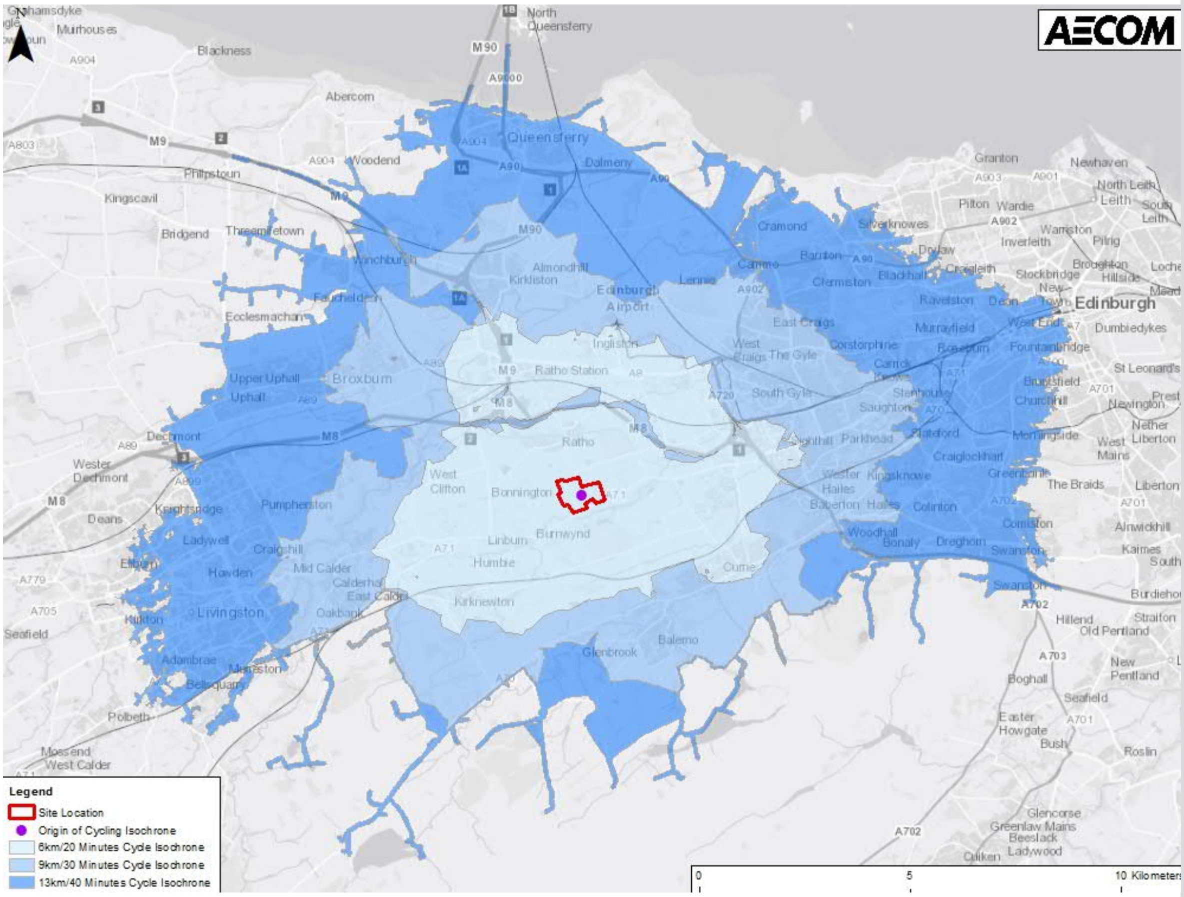


Figure 3.3: Cycle Catchments

3.3.4 From the site it is possible to access Heriot Watt University and Ratho Station within an approximate 20 minute journey time. Cycle journey times to Edinburgh City centre and Livingston are approximately 40

minutes. Again, development would be sited to maximise integration / accessibility and infrastructure such as cycle parking provided in accordance with CEC standards.

3.3.5 **Figure 3.4** shows public transport journey times, mapped using TRACC. TRACC has been used to establish typical journey times, include walk times to bus stops and any interchange on a typical Tuesday morning between 07:00 and 09:00 from the centre of the proposed development.

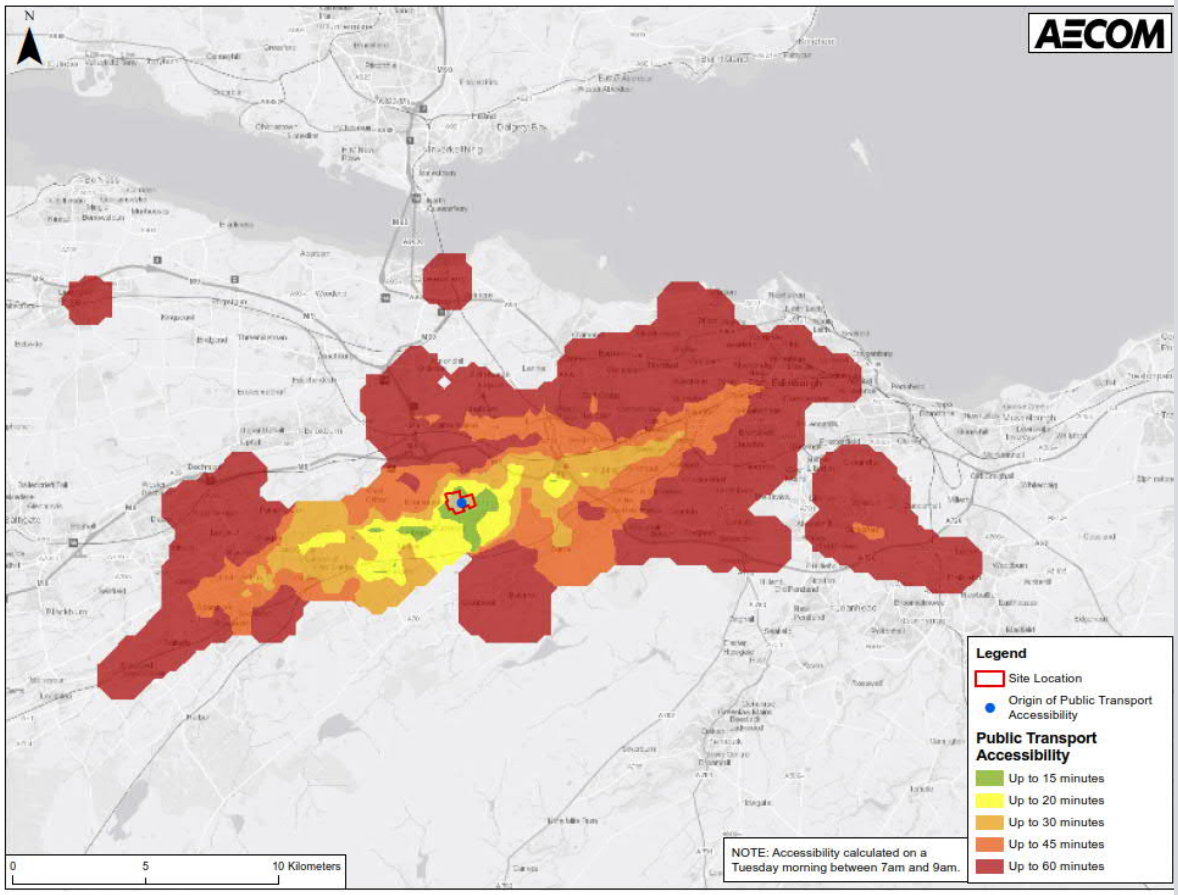


Figure 3.4: Public Transport Journey Times

3.3.6 As can be seen from the TRACC accessibility mapping, a variety of destinations are accessible within the TAG public transport journey time catchment of between 45 minutes and an hour including Livingston, Edinburgh International Airport, Gogar, South Gyle and Edinburgh City centre.

3.3.7 An important aspect of integrating the proposed development with existing bus provision and maximising accessibility would be through careful siting of development and the provision of good quality walking and cycling routes, in particular to the A71. A71 bus services provide for an efficient journey time as well as the opportunity for interchange with other bus and tram services in particular at Hermiston Park & Ride.

3.3.8 As noted previously, bus penetration has been considered within the site layout and the proposed Transport Hub would include for a bus stop and turning facility. The public transport strategy, detailed in the following chapter, sets out ways to make best use of A71 services to provide a quality service for potential residents of the proposed development as well as considering strategies for bus operation along Dalmahoy Road including for school children travelling to Balerno.

3.3.9 **Figure 3.5** shows a 400 m catchment (5 minute walk) from the existing bus stops and from the proposed Transport Hub, illustrating the extent of accessibility across the site.

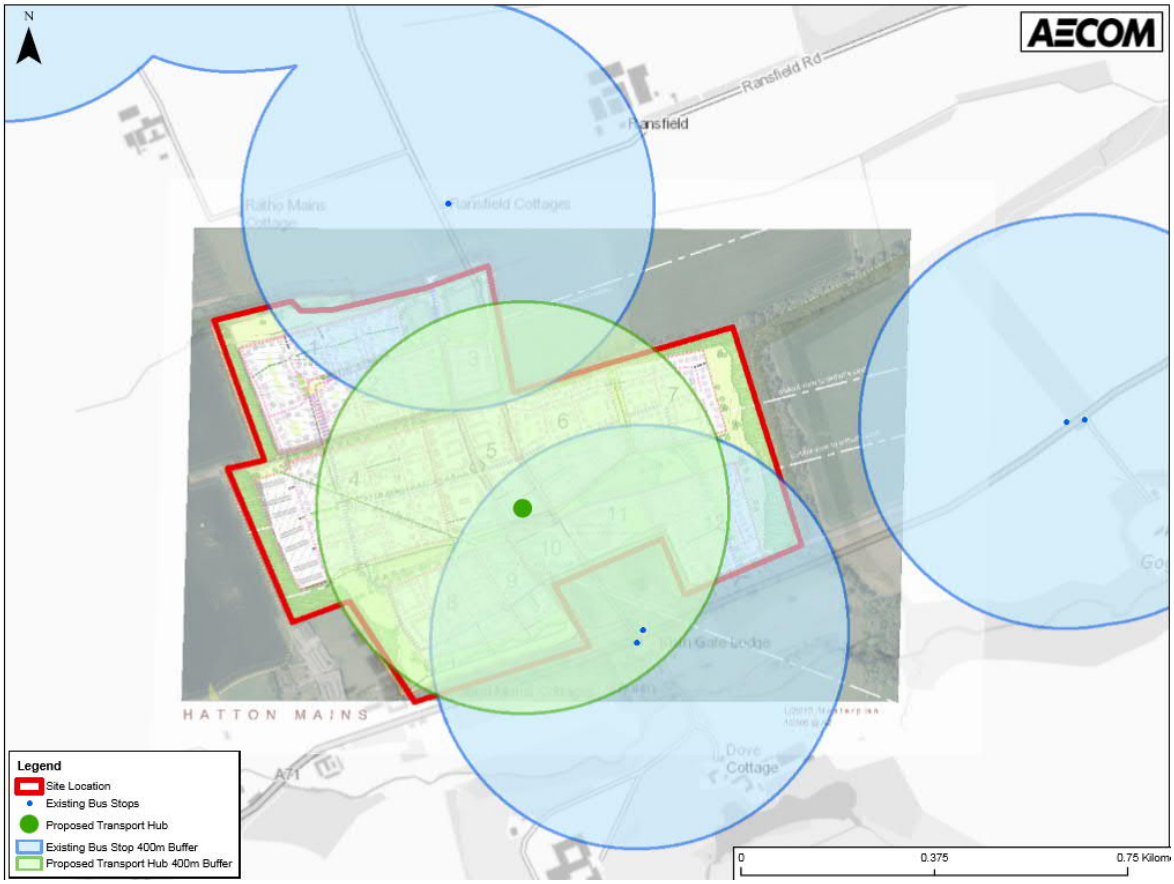


Figure 3.5: Existing and Proposed Bus Stop Catchments

3.3.10 Cars, delivery and servicing vehicles associated with the proposed development would integrate with the existing local and trunk road network via Dalmahoy Road and the A71. Within the site, ESDG would be utilised to inform the detailed design of the site layout.

3.3.11 For reference, and to allow for a comparison with public transport (**Figure 3.4**), journey times by car along the A71 from the site to Edinburgh City centre are typically between 25 minutes and 1 hour[1].

3.4 Summary

3.4.1 The proposed development is intended to provide for an innovative, resilient and differing spatial concept comprising of: 1,200 residential units, 2,500 sqm of retail space, 1,000 sqm of community / health facilities, 1,000 sqm of leisure space and a potential 2,500 sqm primary school / nursery. The specific tenure of the land uses would be agreed with stakeholders. Subject to necessary approvals the proposed development could be complete by 2031 with a build out of approximately 100 - 150 units a year.

3.4.2 Accessed from new priority junctions formed with Dalmahoy Road and via a new left-in / left-out arrangement with the A71 the proposed development would integrate with the existing transport network. The site complies with the accessibility criteria of TAG. Accessibility would however be maximised through considered development siting and through the provision of a number of transport relating strategies including: provision of on-site local amenities, a working from home hub, network of active travel routes, Transport Hub, a Public Transport Strategy (focussed on the bus) and a Framework TP.

3.4.3 At this stage in the process specific developer(s) of the proposed development have yet to be confirmed. The purpose of the representation to the MIR is to set out the indicative design of the site so this may be considered by CEC and other stakeholders. Should the proposed development come forward to planning

[1] *Leaving Dalmahoy Hotel and Country Club on Tuesday 30 April at 08:00 and calculated using Google maps*

application stage a Masterplan and Development Framework would be prepared. Given the stage of the proposed development there are opportunities to seek buy in and support to allow individual developer(s) to conform to the ethos of the site and the transport strategy namely to consider innovative measures.

3.4.4 Through the Masterplan and Development Framework an appropriate and proportionate financial contribution to improved and enhanced transport infrastructure and services within and out-with the site would be identified based on supporting studies. Naturally on-going engagement would be required with stakeholders through the MIR process and thereafter.

Public Transport Strategy

04

4. Public Transport Strategy

4.1 Introduction

4.1.1 This chapter sets out the proposed strategy for maximising public transport accessibility to / from the proposed development, in particular by bus. The proposed strategy has been informed by an initial discussion with Lothian Buses. AECOM would like to thank Lothian Buses for their input to date and note that should the proposed development progress to planning application stage; further engagement would be undertaken with all relevant public transport operators.

4.2 Travel Demands

4.2.1 As described in more detail in **Chapter 6** the anticipated volume of two-way public transport trips that the proposed development could generate in the weekday morning peak hour is 325.

4.2.2 An assessment of the trip distribution of weekday peak hour journeys, also described in **Chapter 6**, indicates that there would be a demand for approximately 70% of trips to travel to destinations east of the site towards Edinburgh.

4.2.3 It is recognised that there would be differing travel patterns during other times of the day and at the weekend, however for the purposes of this TA the focus is on the weekday peak periods as these provide for a robust case. In terms of public transport, the strategy described in this chapter can also translate to travel behaviour across the week, not just the weekday peak periods.

4.3 Existing Public Transport Characteristics

4.3.1 The existing public transport provision has been described in detail within **Section 2.3**, however, for ease of reference a brief description has been provided below.

4.3.2 The nearest bus stops to the site are located at the A71 / Dalmahoy Road / Dalmahoy Club junction and both currently consist of flag and pole stands with timetable information. These bus stops are within 400 m of the centre of the proposed development. As a consequence of the committed signalisation of this junction, both bus stops would be slightly relocated and the infrastructure upgraded. Service frequency from these stops is every 30 minutes (or better when considering all operating services). Journey times along the A71 corridor by bus are good and conform to TAG journey time criteria and are considered comparable to equivalent journey times by car.

4.3.3 A71 bus stops serve Edinburgh City centre as well as West Lothian. Interchange is available at Hermiston Park & Ride for connectivity to the wider bus, tram and rail network. Additional bus services are accessible from the site from an Unclassified Road to the north as well as from Ratho (Lothian Buses Service 20).

4.3.4 **Table 4.1** and **Table 4.2** illustrate the frequency of existing bus services in the weekday morning and evening peak hours, respectively.

Table 4.1: Peak Hour Bus Service Frequency – Morning

Bus Stop	Distance from centre of Site	23	X23	X27	X28	20	40
A71 Eastbound to City from West Lothian	Approx. 400 m	07:26 07:56 08:26 08:54	07:01 07:31 08:06	08:32	07:18 07:52	N/A	N/A
A71 Westbound from City to West Lothian	Approx. 400 m	07:29 07:59 08:29 08:59	0	07:50 08:50	07:21 08:21	N/A	N/A
Unclassified Road Eastbound from Hermiston to City	Approx. 620 m	N/A	N/A	N/A	N/A	N/A	08:12
Ratho Eastbound from Ratho to City	Approx. 1,420 m	N/A	N/A	N/A	N/A	07:27 08:07 08:37	08:11
Ratho Westbound from City to Ratho	Approx. 1,460 m	N/A	N/A	N/A	N/A	07:15 07:56 08:28 08:54	NA

Source: https://bustimes.org/ - Accessed April 2019

Table 4.2: Peak Hour Bus Service Frequency - Evening

Bus Stop	Distance from centre of Site	23	X23	X27	X28	20	40
A71 Eastbound to City from West Lothian	Approx. 400 m	16:24 16:54 17:24 17:54	16:05 16:21 17:05	16:37 17:39	16:06 17:08	N/A	N/A
A71 Westbound from City to West Lothian	Approx. 400 m	16:29 17:07 17:37	16:14 16:51 17:21 17:51	16:57	16:26 17:33	N/A	N/A
Unclassified Road Eastbound from Hermiston to City	Approx. 620 m	N/A	N/A	N/A	N/A	N/A	17:42
Ratho Eastbound from Ratho to City	Approx. 1,420 m	N/A	N/A	N/A	N/A	16:32 17:12 17:47	17:41
Ratho Westbound from City to Ratho	Approx. 1,460 m	N/A	N/A	N/A	N/A	16:18 16:55 17:30 18:00	NA

Source: https://bustimes.org/ - Accessed April 2019

4.3.5 In the morning between 07:00 and 09:00 the following services are available:

- From the A71 eastbound (West Lothian to City) and A71 westbound (City to West Lothian) there are services approximately every 15 minutes.
- There is one service from the Unclassified Road for travel to Edinburgh City centre.
- From Ratho there is a bus approximately every 30 minutes.

4.3.6 In the evening between 16:00 and 18:00 the same service frequency as the morning applies.

4.3.7 It is therefore considered that from the A71 bus service frequency is good in the peak periods; however services operating to the north of the site have a comparable reduced frequency.

4.4 Proposed Public Transport Characteristics

4.4.1 As noted in the previous chapter in respect of the proposed development the following infrastructure is proposed to maximise public transport accessibility:

- Siting of development to reduce walk distance / time to existing A71 bus stops;
- Network of footways / paths to provide connection to existing bus stops on the A71;
- Improvements to the existing Dalmahoy Road footway to provide opportunity for access to existing bus services operating on the Unclassified Road to the north of the site and in Ratho;
- Provision of a Transport Hub in the Village centre which would include bus stop and turning area;
- Design of interal site roads to accommodate buses; and
- 'Soft' measures to promote behaviour change (**Chapter 5**).

4.4.2 Although it is recognised that the site is presently accessible by public transport and that infrastructure is proposed to enhance this accessibility it is considered that to make public transport a more effective, convenient and attractive mode choice for the anticipated travel demands of the proposed development a public transport strategy is required.

4.4.3 The provision of a public transport strategy confirms Inverdunning (Hatton Mains) Ltd commitment to providing a resilient and different land use concept and the mechanism to deliver the public transport strategy would be through the Masterplan and Development Framework, as described in **Chapter 3**.

4.5 Summary of Lothian Buses Engagement

4.5.1 It is considered that the key to the success of the public transport strategy is early engagement with bus operators and to this effect AECOM met with Lothian Buses on 21 January 2019. The purpose of this meeting was to make the operator aware of the representation to the MIR and to discuss issues and opportunities for maximising the attractiveness of the bus for proposed development residents and visitors. The outcomes of this meeting were used to inform the site layout design. The key outcomes of engagement with Lothian Buses can be summarised as follows, relevant to the proposed development:

- Lothian Buses are expanding into West Lothian and note this is considered as an area of growth for their business and at present there is residual capacity for increased demand.
- Lothian Buses operating model is based on corridors with interchange.
- Recognition that the A71 provides strategic and direct access to Edinburgh City centre and is a strong opportunity for the residents of the proposed development which would be further complimented by CEC committed scheme to signalise the Dalmahoy Road / A71 / Dalmahoy Club junction for the betterment of accessing upgraded bus stops.
- The A71 is a strong corridor and in respect of the proposed development there are opportunities to interchange for other north / south services at either Hermiston Park & Ride or along Calder Road. Existing ticketing allows for interchange of this nature.
- Lothian Buses noted that the most successful routes are ones in which a 'turn up and go' service is provided.

- Lothian Buses noted that it would be more effective for proposed development residents to access bus services at / near the site and then interchange as opposed to driving to Hermiston Park & Ride.
- Considered that phasing of development would be most effective by constructing south to north to make the most of the A71 and for residents in the north of the site to thereafter consider accessing existing Services (Nos. 40 and 20) from Ratho and / or consider a diversion of these services to the proposed Transport Hub. Lothian Buses noted these services are subsidised at present by CEC.
- Subsidies could be a mechanism to enhance services to cater for the proposed development.

4.5.2 Although not discussed with Lothian Buses at the aforementioned meeting, AECOM are aware through our involvement with other projects in Edinburgh that operators are considering future changes to how buses are operated which may involve demand responsive 'ring and ride' type provision via a web based app as opposed to fixed routes and timetables.

4.6 School Travel

4.6.1 CEC provide free school bus transport to some pupils providing they meet the following criteria:

- Pupil is attending their catchment school;
- Distance from home to school is greater than two miles for primary schools;
- Distance from home to school is greater than three miles for secondary schools; and
- Pupil has a medical condition which prevents them from walking to school.

4.6.2 The calculated distance is based upon *"the shortest safe walking route"* from home to the school entrance. Only routes *"that are well lit and pavements throughout"* are considered which are based on advice from Police Scotland and road safety experts.

4.6.3 The current walking route to Dean Park Primary School and Balerno High School would be located out with these prescribed distances and would not be on lit footways throughout. There would therefore likely be a requirement to provide school bus transport for pupils living within the site.

4.7 Issues and Opportunities

4.7.1 **Table 4.3** summarises the issues and opportunities associated with public transport and the proposed development.

Table 4.3: Summary of Public Transport Issues and Opportunities

Issues	Opportunities
Securing bus penetration of the Transport Hub.	A71 bus stops are accessible from the site within 400 m and a good service frequency is available for travel to Edinburgh City centre and Livingston within TAG journey time criteria.
Need to consider access to buses for school children travelling to Balerno.	The A71 corridor provides for interchange to wider bus, tram and rail network.
Confirmation of residual capacity for A71 services is required.	CEC committed scheme at the Dalmahoy Road / A71 / Dalmahoy Club junction (signals) includes for improved bus stop infrastructure and a safer pedestrian crossing system compared to the existing situation.
	The proposed Transport Hub would include a bus stop and turning facility.
	Development would be sited to maximise accessibility to existing and proposed bus stops.
	Proposed development road network has been designed to accommodate buses.
	To provide a critical mass of passengers to support services which are currently subsidised by CEC through consideration to route amendments.
	Masterplan and Development Framework could provide mechanism for delivery of public transport improvements.

4.8 Proposed Public Transport Strategy

4.8.1 Based on the identified issues and opportunities the proposed public transport strategy is detailed as follows:

- To provide an additional bus stop on the A71 (bus lay-by is already in place) to the east of the Dalmahoy Road / A71 / Dalmahoy Club junction in proximity to the proposed left-in / left-out junction to reduce walk distance for access to services from residents in the east of the site. A bus stop at this location for westbound services is not proposed as this could introduce a conflict for pedestrians trying to cross the A71;
- Review of the need to upgrade the frequency / increase capacity of existing bus services that currently route along the A71;
- Re-routing of Service 20, to its current frequency, to / from the proposed Transport Hub. Provision of an additional bus stop on Dalmahoy Road at the northern extent of the site boundary to reduce walk times to bus stops for residents in the west / north of the site;
- Consideration of school bus travel to pick up / drop off at the proposed Transport Hub; and
- Consideration to the provision of a yearly season ticket for Lothian Buses for each household as part of the wider TP measures.

4.8.2 Any amendment to bus routing would require a proportionate and appropriate consideration to the implications of the proposed development along with cumulative impacts across the region in consultation with CEC and public transport operators.

4.9 Summary

4.9.1 Although it is recognised that the proposed development site is presently accessible by public transport and that infrastructure is proposed to enhance this accessibility, to make public transport an attractive mode choice for the 325 public transport passengers the proposed development could generate in the morning peak, a public transport strategy has been prepared. This strategy has been informed by early engagement with Lothian Buses and includes for:

- A new bus stop on the A71 near the proposed left-in / left-out junction;
- Review of available demand on existing A71 services;
- Re-routing of Service 20 to the proposed Transport Hub, which could also cater for school bus travel; and
- Consideration to provision of bus ticket for new residents.

4.9.2 Any amendment to services would require being proportionate to the implications of the proposed development considering cumulative impacts across the region. Should a planning application come forward further detail would be provided relating to the public transport strategy which could be delivered through the Masterplan / Development Framework for the site.

Framework Travel Plan

05

5. Framework Travel Plan

5.1 Background

5.1.1 This chapter sets out a Framework for the provision and implementation of a TP in support of the proposed development. This Framework TP sets out 'soft' measures which could be provided. As and when a planning application comes forward for the proposed development such measures would be discussed and agreed in consultation with stakeholders such as CEC, public transport operators and other transport providers.

5.1.2 A TP is a management tool designed to enable the users of a site to make more informed decisions about their travel while minimising the adverse impacts of a development on the environment. This is achieved by setting out a strategy for eliminating the barriers keeping users of the site from using sustainable travel modes and managing single occupancy car use.

5.1.3 If well-designed and properly managed, the implementation of a TP can lead to a decrease in the proportion of users reaching the site by private car and an increase in the proportion reaching the site by sustainable modes, including public transport, walking and cycling.

5.1.4 TPs can also:

- reduce the carbon footprint of a development;
- reduce the traffic impact on the local road network;
- improve health and wellbeing through the formation of active travel patterns; and
- reduce adverse impacts on local residents and businesses.

5.1.5 TPs support guidance such as TAG and PAN 75; they also have the ability to support policies and strategies such as Scottish Planning Policy (SPP) and the LTS as well as agendas such as those relating to climate change and public health. More detail relating to how the proposed development supports and complies with policy is detailed in **Chapter 9**.

5.1.6 Eliminating barriers to the use of sustainable travel and managing single occupancy car use at the proposed development would be addressed through 'hard' infrastructure measures as detailed in **Chapter 3** and **Chapter 4** e.g. new footways, the Transport Hub, enhanced public transport etc and 'soft' measures as detailed in this chapter. These 'soft' measures are focussed on the behaviour change of residents of the proposed development given they would comprise the vast majority of travel demands. Some of the 'soft' measures can also translate to the other proposed land uses however it would be recommended that differing TPs would be provided for these land uses for example the proposed primary school should have its own standalone TP.

5.1.7 Given the stage of the proposed development there are excellent opportunities to embed a culture and ethos which aligns with sustainable travel and Inverdunning (Hatton Mains) Ltd are committed to the necessary behaviour change to accommodate this. The mechanism for delivery of the proposed development Masterplan / Development Framework would embed behaviour change in the principles of the site's spatial strategy and support buy in from individual developer(s).

5.2 'Soft' Measures

5.2.1 **Table 5.1** summarises the 'soft' measures which could be implemented at the proposed development to encourage behaviour change.

Table 5.1: Proposed Development 'Soft' Measures

Measure
Development Website and Travel 'Brand'
Travel Plan Pocket Guide
Travel Options Leaflet
Welcome Pack
Signage Points
Cycling Events
Walking Buddy Scheme
Bicycle User Group

5.3 Targets

5.3.1 Targets are essential for monitoring the progress and success of a TP and should be 'SMART' – specific, measurable, achievable, realistic and time-related.

5.3.2 Targets come in two forms. 'Action' type targets are non-quantifiable actions that need to be achieved by a certain time, while 'Aim' type targets are quantifiable and generally relate to the degree of modal shift the TP is trying to achieve.

5.3.3 The 'Aim' type targets for the proposed development are to replicate modal shift identified by CEC LTS mode share targets as shown in **Figure 5.1**. More detail on mode share is included in **Chapter 6**.

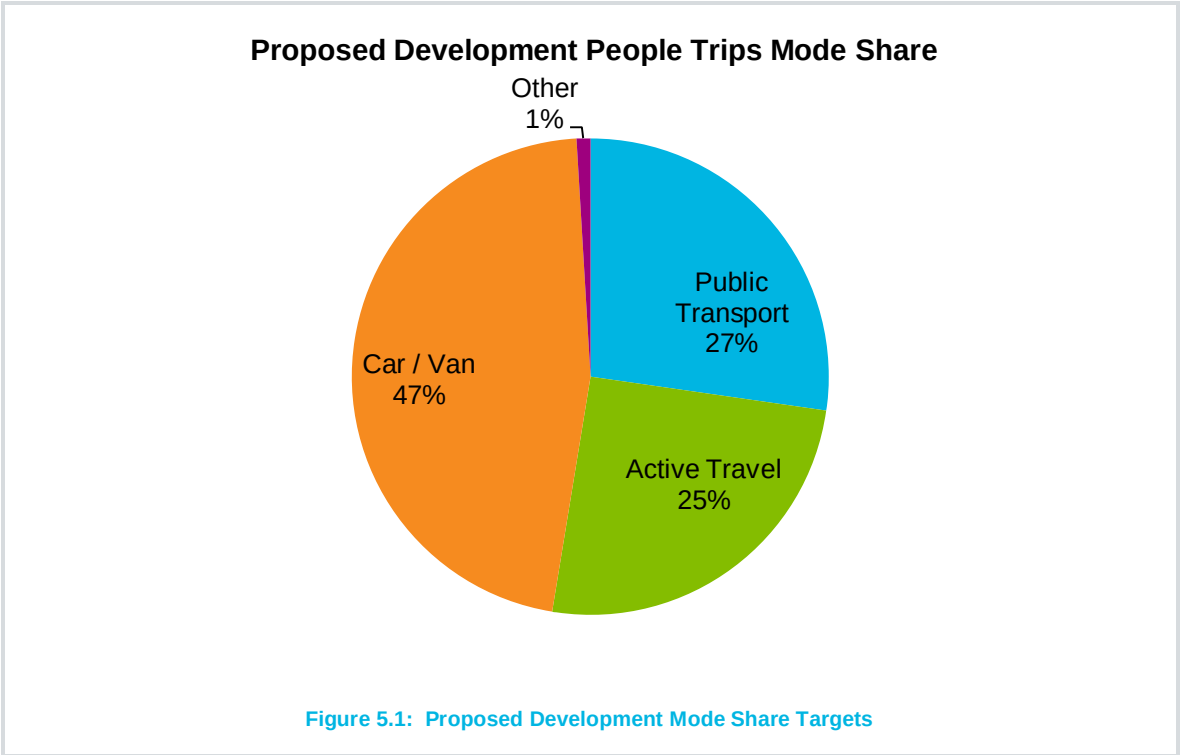


Figure 5.1: Proposed Development Mode Share Targets

5.3.4 The target mode share is to achieve approximately 52% of journeys to work / place of study by sustainable modes.

5.4 Monitoring and Managing the TP

5.4.1 A TP is an evolving document requiring monitoring, review and revision to ensure that it remains relevant to all users of a site. Monitoring of a TP could be undertaken by a mix of quantitative and qualitative methods including:

- Survey of residents and visitors;
- Transport surveys to record journeys by all modes;
- Bus patronage information; and
- Uptake in schemes such a bicycle rental and Car Club.

5.4.2 The outcomes of the monitoring would be collated and reported accordingly to key stakeholders.

5.4.3 The successful implementation of the TP would require resources to manage delivery, implementation, monitoring and reporting. It is recommended that a TP Coordinator(s) is appointed; this would likely be a representative of the developer(s).

5.4.4 Should a planning application come forward it would be an expectation of any consent that a TP is implemented and monitored. The Masterplan / Development Framework would provide the framework for individual developers including financial obligations.

Travel Demands

06

6. Travel Demands

6.1 Introduction

6.1.1 As TAG identifies, there is a requirement to undertake a multi-modal assessment for new development sites to provide an indication as to the extent to which the development will impact on the surrounding transport network and in order to gauge the development's ability to influence sustainable travel behaviours.

6.1.2 This chapter therefore identifies the likely multi-modal trip generation and distribution to and from the residential elements of the proposed development in the weekday morning and evening peak hours. Travel demand parameters and assumptions have been agreed with WLC, CEC and TS. Where stakeholders, during the scoping process, queried a parameter / assumption this is noted and addressed accordingly in the following paragraphs.

6.2 People Based Trip Generation

Residential Land Use

6.2.1 The anticipated multi-modal trip demand to and from the residential element of the proposed development in the weekday morning and evening peak hours has been calculated using the TRICS database version 7.5.4 (2018). TRICS is a database of trip rates, across a variety of land uses, used to quantify the trip generation of new developments.

6.2.2 The following criteria has been applied / comprises the parameters available in TRICS:

- Survey Type: Multi-Modal;
- Land Use Category: Residential Houses, Privately Owned;
- Survey Day: Weekday;
- Date Range: 01/01/10 to 05/07/18;
- Number of Dwellings: 151 – 805 dwellings;
- Selected Location: Edge of Town; and
- Total number of sites considered: Nine Sites

6.2.3 The outputs from TRICS are contained in **Appendix C**.

6.2.4 It is worth noting that it has been assumed that 100% of dwellings would be privately owned houses. In reality, it would be likely that there would be a requirement for a proportion of dwellings to be affordable as well as a proportion of flatted homes.

6.2.5 The total people based trip generation in the weekday morning and evening peak hours (as identified by TRICS) is summarised in **Table 6.1**.

Table 6.1: People Based Multi-Modal Demand (Based Upon 1,200 Dwellings)

Peak Hour	Arrivals	Departures	Totals
Morning Peak Hour (08:00 – 09:00)	236	980	1,215
Evening Peak Hour (17:00 – 18:00)	708	361	1,068

Source: TRICS Database V7.5.4 (2018)

6.2.6 As previously noted, the proposed development would incorporate a working from home hub to reflect changing working practices which offer greater opportunities for flexible and agile working. The establishment of this facility would therefore offer the potential for prospective residents to reduce their need to travel to work. Accordingly, it is considered likely that the number of generated weekday peak hour people

based trips from the site would be marginally lower than other similar residential sites which do not offer such a facility.

6.2.7 A 2% reduction has therefore been applied to the total number of generated people trips reported from the TRICS database to account for this marginally higher additional proportion of residents opting to use such a facility as opposed to travelling to their place of work in the peak hours. The revised people based multi-modal demand incorporating this reduction is identified in **Table 6.2.**

Table 6.2: People Based Multi-Modal Demand (Based Upon 1200 Dwellings) with 2% Working from Home Hub Reduction

Peak Hour	Arrivals	Departures	Totals
Morning Peak Hour (08:00 – 09:00)	231	960	1,191
Evening Peak Hour (17:00 – 18:00)	694	354	1,047

Source: TRICS Database V7.5.4 (2018)

6.2.8 AECOM would consider these people-based trips to be reflective of the proposed development's characteristics and on-site facilities that would be present.

Other Ancillary Land Uses

6.2.9 It is anticipated that vehicle movements associated with the proposed primary school and community, retail and leisure facilities would be considered as linked internal trips and thus result in a negligible increase in movements on the wider transport network. No assessment of the impact of these facilities on the surrounding network has therefore been considered as agreed with stakeholders.

6.3 Modal Split

6.3.1 It was agreed at the scoping discussions with CEC that the likely modal split for trips to and from the proposed residential element of the development should consider the following sources:

- 2011 Census Travel to Work and Study Behaviour;
- CEC Adopted 2016 LDP Transport Appraisal mode share for South-West Edinburgh (2016); and
- CEC LTS mode share targets (2012 – 2019).

2011 Census Travel to Work and Study Behaviour

6.3.2 The method of travel to work or study data has been extracted from the 2011 Census for the Ratho village locality. Ratho is considered to be broadly reflective of the proposed development's characteristics given its similar scale and proximity (**Table 6.3**).

Table 6.3: Modal Split from 2011 Census for Ratho Locality

Mode of Travel	Proportion of Residents
Underground, metro, light rail or tram	0.0%
Train	0.4%
Bus, minibus or coach	23.9%
Taxi or minicab	0.4%
Driving a car or van	51.9%
Passenger in a car or van	6.7%
Motorcycle, scooter or moped	0.4%
Bicycle	2.6%
On foot	13.3%
Other	0.5%
Total	**100.0%**

Mode of Travel	Proportion of Residents

Notes:

1 This excludes those who reported they worked from home.

2 As Edinburgh Tram was completed in 2014, it is not reflected in these modal splits and therefore there is the potential that these modal splits may have a higher proportion of residents who reported they travelled by Underground, metro, light rail or tram.

3 Census modal splits constitute the "the method of travel used for the longest part, by distance, of the usual journey to work or place of study[2]". This means that the proportions do not accurately capture scenarios whereby two modes are taken (e.g. car and bus, bicycle and train).

Source: 2011 Scotland Census QS702SC – Method of travel to work or study – Ratho Locality [Aged 4 – 74]

CEC Adopted LDP Transport Appraisal Mode Share Targets

6.3.3 The CEC Adopted LDP incorporates two volumes of Transport Appraisals which undertake a cumulative assessment of all allocated residential development sites on the transport network.

6.3.4 The proposed development is located within the 'South-West' corridor area of the City which comprises of both the A71 and A70. The "do something" modal splits for the five allocated residential development sites in the South-West corridor area are identified in **Table 6.4**.

Table 6.4: Do Something Modal Shares identified for South-West Corridor in CEC Adopted LDP (2016)

Mode of Travel	Riccarton Mains Road	Curriemuirend	Newmills, Balerno	Curriehill Road, Currie	Ravelrig Road, Balerno
Car Driver + Taxi	52.9%	55.9%	51.9%	53.9%	51.9%
Car Passenger	6.0%	6.0%	6.0%	6.0%	6.0%
Train / Tram	1.7%	1.7%	2.7%	3.2%	2.7%
Bus	25.6%	22.6%	25.1%	23.1%	25.1%
Cycle	3.0%	3.1%	3.5%	3.0%	3.5%
Walk	8.8%	8.7%	8.8%	8.8%	8.8%
Other	2.0%	2.0%	2.0%	2.0%	2.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Table 12, Edinburgh LDP Transport Appraisal Addendum (November 2016)

6.3.5 The modal splits identified in the Transport Appraisal for sites in the South-West corridor area, particularly those on the A71, are broadly similar to existing travel behaviours exhibited within Ratho identified in the 2011 Census. The 2011 Census data for Ratho has therefore been used to inform the proposed development's modal splits given this offers the advantage of taking cognisance of a more local context.

CEC Local Transport Strategy Modal Split Targets

6.3.6 CEC has several policies to promote lower car use and greater future use of sustainable transport modes across the City in future.

6.3.7 Both the CEC LTS (2012 – 2019) and the CEC Transport 2030 Vision (2010) identify the mechanisms for achieving this which include new infrastructure measures such as active travel routes and the tram extension, policy measures such as the establishment of the Low Emission Zone (LEZ) and travel planning measures.

6.3.8 To reflect these changes, the CEC LTS (2012 – 2019) sets out modal split targets both for all journey purposes (**Table 6.5**) and for journeys to and from work specifically (**Table 6.6**).

[2] https://www.scotlandscensus.gov.uk/variables-classification/transport-place-work-or-study

Table 6.5: Modal Share Targets in CEC LTS (All Journey Purposes)

Mode of Travel	2010 Baseline	Mode Share Targets and Comparison with Baseline	
		2015	2020
Walk	35%	35.5% (+0.5%)	36% (+1.0%)
Cycle	2%	5% (+3.0%)	10% (+8.0%)
Public Transport	17%	20% (+3.0%)	21% (+4.0%)
Car	43%	37.5% (-6.5%)	31% (-12.0%)
Other (including Motorcycle)	2%	2% (NC)	2% (NC)

Source: Page 11, CEC LTS (2012 – 2019)

Table 6.6: Modal Share Targets in CEC Local LTS (Journeys to Work Only)

Mode of Travel	2010 Baseline	Mode Share Targets and Comparison with Baseline	
		2015	2020
Walk	19%	20.5% (+1.5%)	21% (+2.0%)
Cycle	7%	10% (+3.0%)	15% (+8.0%)
Public Transport	30%	31% (+1.0%)	32% (+2.0%)
Car	42%	35.5% (-7.5%)	29% (-13.0%)
Other (including Motorcycle)	2%	2% (NC)	2% (NC)

Source: Page 11, CEC LTS (2012 – 2019)

6.3.9 The future mode share targets are to achieve a 12% reduction in car use in favour of increased walking, cycling and the use of public transport for all journey purposes and a 13% reduction in car use for journeys specifically to work by 2020.

6.3.10 The projected future travel behaviour identified in the LTS has been considered to inform the proposed development's modal split to take cognisance of these future changes. By applying the anticipated modal shift identified in the LTS to the 2011 Census modal splits for Ratho, **Table 6.7** reflects the proposed development's modal share target.

Table 6.7: Proposed Development Modal Share Target

Mode of Travel	Proportion of Journeys and Net Change from 2011 Census
Underground, metro, light rail or tram	0.0% (No Change)
Train	0.4% (No Change)
Bus, minibus or coach [2]	26.9% (+3.0%)
Taxi or minicab	0.4% (No Change)
Driving a car or van	40.8% (-11.1%)
Passenger in a car or van [3]	5.3% (-1.4%)
Motorcycle, scooter or moped	0.4% (No Change)
Bicycle	10.6% (+8.0%)
On foot	14.7% (+1.5%)
Other	0.5% (No Change)

Notes

For clarity, this incorporates the Ratho 2011 Mode of Travel to Work or Study with a modal shift towards more sustainable modes promoted by the CEC LTS (2011 – 2019) as per the 2020 targets. The modal shift represents the combined average for all journey purposes and journeys specifically to and from work.

The CEC LTS does not distinguish between different Public Transport modes. The shift has therefore been applied proportionally based on 2011 Census data.

Mode of Travel	Proportion of Journeys and Net Change from 2011 Census

The CEC LTS modal share targets does not distinguish between those driving and travelling as a passenger in a car or van. Accordingly, the modal shifts have been applied proportionality.

It has been assumed that the modal split associated with walking trips will mainly be associated with those assessing a local school / local community facilities

Source: 2011 Scotland Census QS702SC – Method of travel to work or study – Ratho Locality; CEC LTS 2020 Modal Share Targets

6.3.11 AECOM would consider these modal split targets to be a realistic target for the proposed development. During the scoping discussions, CEC and TS, felt that these mode shares were not robust enough in terms of vehicles, AECOM would note the following in this respect:

- By the time the proposed development is ever fully realised, the 2011 Census data could be 20 years old, this is considered to therefore represent a historical data set not reflective of changes to the transport network (e.g. already does not include Edinburgh's tram network).
- CEC have identified the mode share targets for journeys in the City and have identified mechanisms to assist in the delivery of such targets. The proposed development should seek to replicate these targets to support national, regional and local paradigm shifts away from predict and provide rhetoric to sustainable travel. To this effect and as demonstrated in **Chapters 3 – 5** a comprehensive package of innovative and resilient transport infrastructure / services and 'soft' measures are proposed to realise these mode share targets underpinned by a potential delivery mechanism should the development come to fruition.
- A more robust car driver mode share is already considered given that the proposed development car mode share applies the mode shift targets from the LTS to 2011 Census Data. If LTS mode shares were applied in isolation, this would equate to a car mode share of circa 30%. AECOM would agree that this is a low mode share given the proposed development's location hence why a higher mode share of 41% is proposed. Thus as a comparison with the LTS mode shares it is considered that the car mode share is robust yet still represents a target in terms of supporting a change in travel behaviour.

6.3.12 **Figure 6.1** summarises the proposed development mode share: by: active travel modes, public transport and by car.

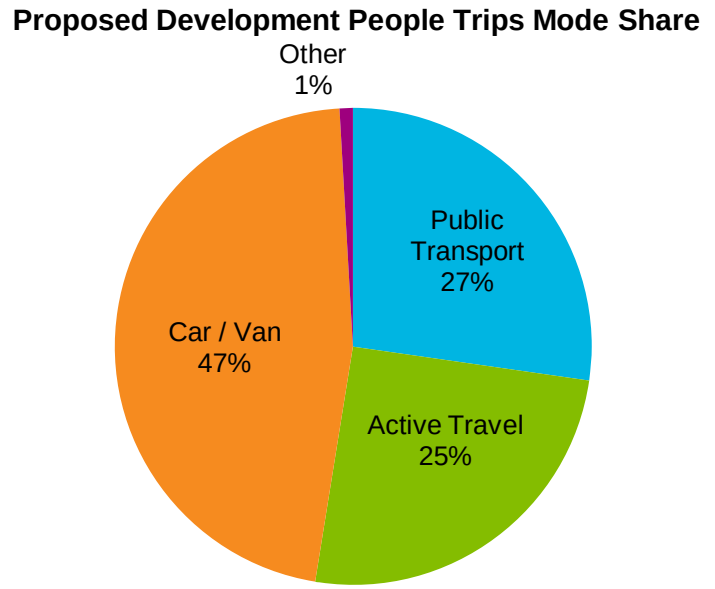


Figure 6.1: Proposed Development Mode Share

6.4 Multi-Modal Trip Generation

6.4.1 By applying the modal splits contained within **Table 6.7** to the people trip generation previously outlined within **Table 6.2**, **Table 6.8** identifies the projected multi-modal trip generation to and from the proposed development in the weekday morning and evening peak hours.

Table 6.8: Proposed Development Multi-Modal Trip Generation (1,200 Residential Units)

Mode of Travel	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	In	Out	Total	In	Out	Total
Underground, metro, light rail or tram	0	0	**0**	0	0	**0**
Train	1	4	**5**	3	1	**4**
Bus, minibus or coach	62	258	**320**	187	95	**282**
Taxi or minicab	1	4	**5**	3	1	**4**
Driving a car or van	94	392	**486**	283	144	**427**
Passenger in a car or van	12	51	**63**	37	19	**55**
Motorcycle, scooter or moped	1	4	**5**	3	1	**4**
Bicycle	24	102	**126**	74	38	**111**
On foot	34	141	**175**	102	52	**154**
Other	1	5	**6**	3	2	**5**
Total	**231**	**960**	**1,191**	**694**	**354**	**1,047**

Source: 2011 Scotland Census QS702SC – Method of travel to work or study – Ratho Locality; CEC LTS 2020 Modal Share Targets; TRICS Database v7.5.4 (2018)

6.4.2 **Table 6.8** demonstrates that the majority of trips expected to be generated by the site would be from sustainable modes with most travelling by bus followed by cycling and then trips on foot.

6.4.3 **Figure 6.2** summarises proposed development people trips by mode.

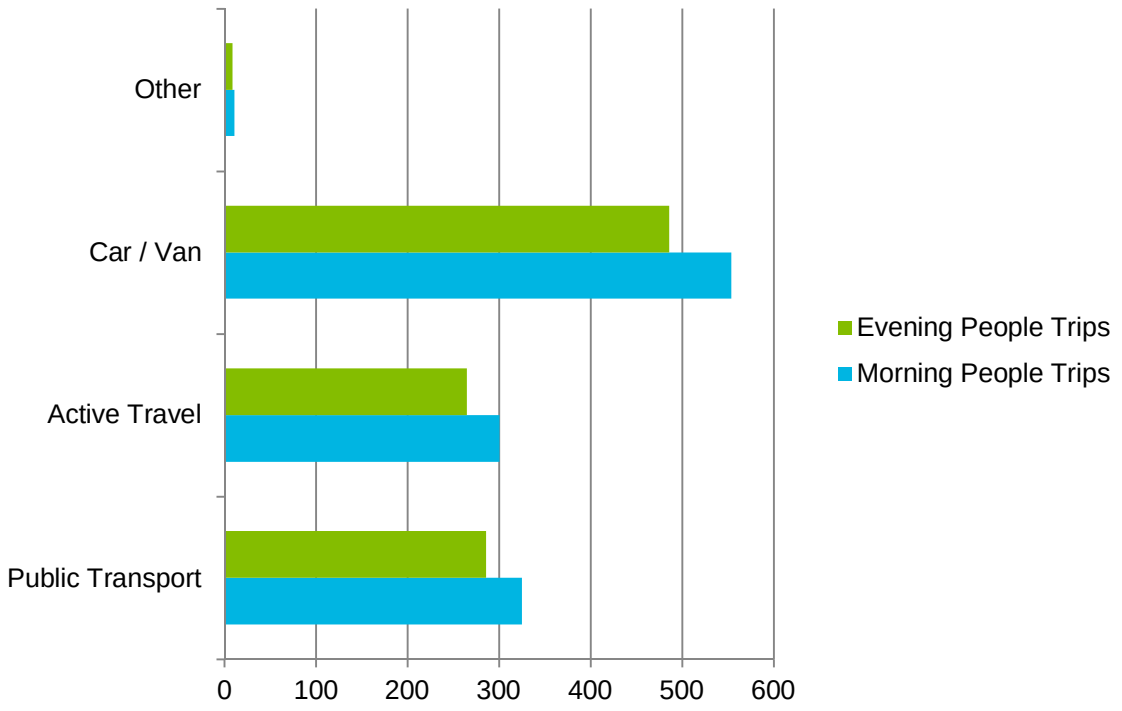


Figure 6.2: Proposed Development People Trips by Mode

6.4.4 The anticipated volume of people trips by active travel modes (301 total trips in the morning and 265 total trips in the evening peaks) are anticipated to be accommodated by the proposed development including for upgrades and enhancements to existing routes, through the provision of infrastructure such as cycle parking and the 'soft' measures identified in **Chapter 5**.

6.4.5 In terms of public transport there are anticipated to be 325 total trips in the morning peak hour and 286 total trips in the evening peak hour, this volume of potential public transport passengers would be accommodated

via the infrastructure provided e.g. Transport Hub and the implementation of the Public Transport Strategy (**Chapter 4**).

6.4.6 It is predicted that there would be 491 and 431 two-way vehicular trips (including cars, vans / taxis and excluding vehicle passengers) generated in the morning and evening peak hour, respectively. The anticipated impact of these vehicle trips are assessed in **Chapter 7**.

6.5 Trip Distribution and Assignment

6.5.1 2011 Census data contained on the DataShine Scotland Commute resource has been reviewed to determine workplace destinations that residents currently living in the Ratho, Ingilston and Gogar Output Area currently travel to (see **Figure 6.3**).

6.5.2 It is worth noting that this resource does not reflect journeys for other purposes, however, it is considered this would be broadly reflective of distributions for all journeys to and from the proposed development in the weekday peak hours.

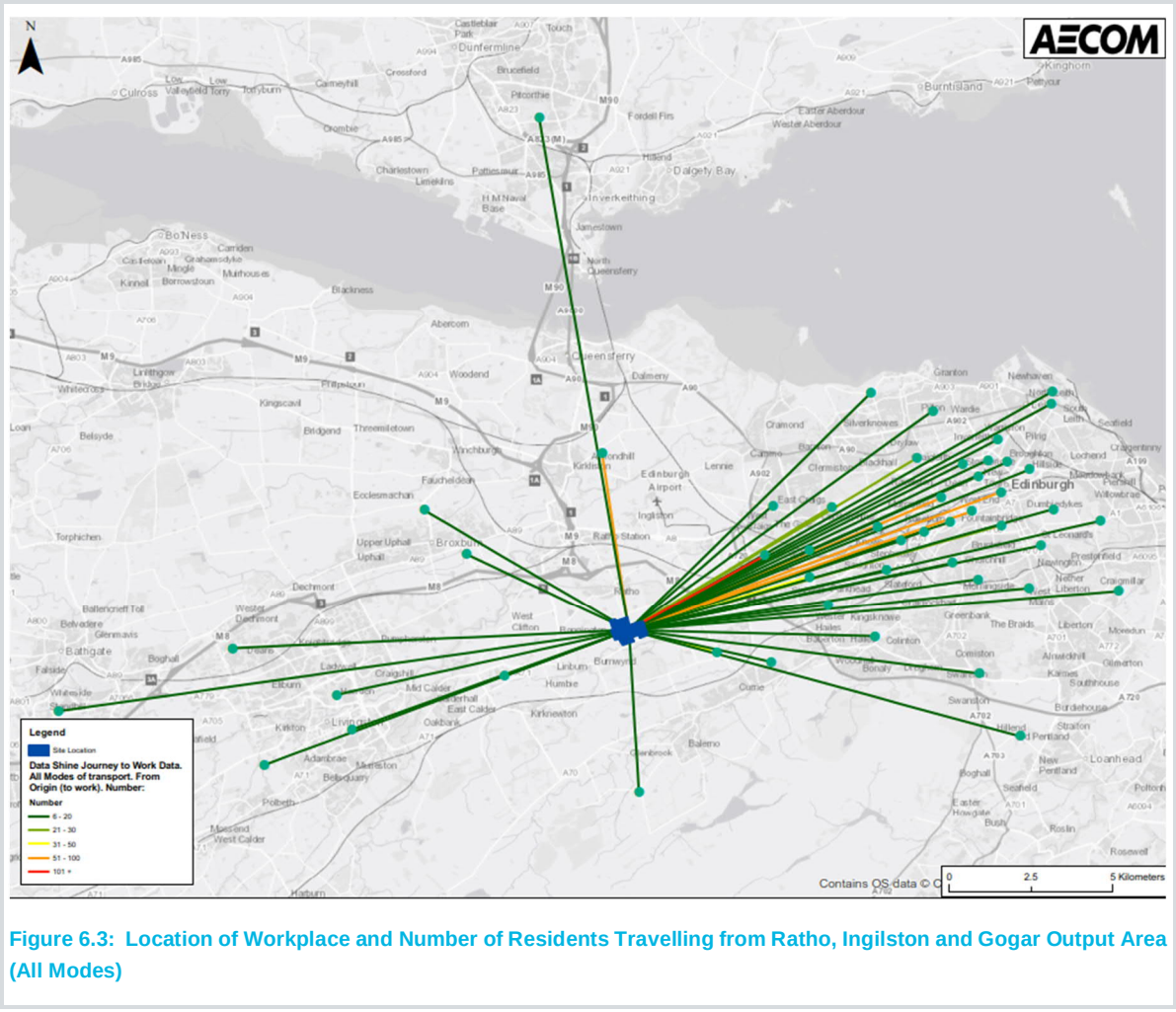


Figure 6.3: Location of Workplace and Number of Residents Travelling from Ratho, Ingilston and Gogar Output Area (All Modes)

Source: Scotland Datashine Commute

6.5.3 **Figure 6.3** identifies that most journeys (approximately 70%) would likely travel to destinations located to the east of the site within Edinburgh. The City centre (approximately 20% of residents) and South Gyle (approximately 11% of residents) are the most popular destinations for those travelling out with the local

area. The remainder of those who do not travel east travel either west towards Livingston or north towards Kirkliston. A summary of destinations is provided in **Table 6.9**.

Table 6.9: Location of Workplaces for Commuters Travelling from Ratho, Ingilston and Gogar

Destination	Percentage of Journeys
Ratho, Ingliston and Gogar [Internal]	16.4%
South Gyle	11.4%
Deans Village (City Centre)	6.7%
Dalmeny, Kirkliston and Newbridge	5.4%
Old Town, Princes Street and Leith Street (City Centre)	5.2%
Tollcross (City Centre)	5.2%
Currie West	3.6%
Broomhouse and Bankhead	3.5%
Craigleith, Orchard Brae and Crewe Toll	2.7%
Corstorphine	2.3%
Meadows and Southside (City Centre)	2.1%
New Town West (City Centre)	1.7%
Bellsquarry, Adambrae and Kirkton	1.6%
Craigmillar	1.4%
Granton West and Salvesen	1.3%
Dedridge East	1.2%
Howden	1.2%
Broxburn East	1.2%
Slateford and Chesser	1.2%
Knightsridge and Deans North	1.1%
Merchiston and Greenhill	1.0%
Newington and Dalkeith Road	1.0%
Other Destinations	21.3%

Source: Datashine Commute Scotland

6.5.4 These distributions have been applied within both the traffic modelling assessment (**Chapter 7**) as well as to inform the Public Transport Strategy. For the purposes of the traffic modelling assessment, online journey planning tools have been used to establish the likely route assignment of these trips both in the morning and evening peak hours.

6.5.5 A summary of the trip distribution by key route has been provided in **Table 6.10**.

Table 6.10: Summary of Key Routing Distributions

Route	Approximate Percentage of Journeys
A71 West	15%
A71 East	70%
Dalmahoy Road (North)	15%

6.5.6 Traffic associated with the proposed development was distributed on the road network using the Datashine Commute locations as end destinations in order to select the optimal route using Google Maps during the

morning and evening peak hours. Evening peak hour traffic was distributed using the inverse of the morning peak hour distribution.

6.5.7 **Appendix D** illustrates the morning and evening peak hour traffic distribution for traffic travelling to and from the proposed development. The distribution is illustrated as a total percentage of inbound and outbound movements.

6.6 Summary

6.6.1 This chapter has identified the projected travel demands by all modes and distribution of demands associated with the proposed development on the surrounding transport network

6.6.2 Modal splits derived from a combination of the 2011 Census for Ratho Village and from the CEC LTS modal split targets have been applied to people based trip rates extracted from the TRICS database to calculate the likely multi-modal trip generation for the proposed development. This suggests that the majority (approximately 52%) of trips would be by sustainable modes with the remainder by private vehicular based modes.

6.6.3 These mode shares are considered to be appropriate considering the long term timescale of the proposed development, the potential for modal shift associated with national, regional and local paradigm shifts to prioritise sustainable travel and the proposed site specific measures to support the delivery of the development.

6.6.4 The application of these modal splits results in a total of approximately 1,200 total people trips generated in the morning peak hour and 1,100 total people trips generated in the evening peak hour. Of these, it is predicted that there would be 491 and 431 two-way vehicular trips (including cars, vans and taxis) generated in the morning and evening peaks respectively. Active and public transport trips are anticipated to equate to 626 two-way trips and 551 two-way trips in the morning and evening peak periods respectively. The infrastructure, services and ‘soft’ measures identified to support the proposed development are anticipated to be capable of accommodating sustainable journeys.

6.6.5 The DataShine Scotland Commute resource has been reviewed to determine the likely distribution of journeys for prospective residents of the site. This suggests that most journeys (approximately 70%) would likely travel to destinations located to the east of the site within Edinburgh with the remainder travelling to destinations located to the west and north.

6.6.6 The anticipated vehicle trips and distribution will be used to assess the impact of the proposed development on the local and trunk road network.

Traffic and Junction Impact Assessment

07

7. Traffic and Junction Impact Assessment

7.1 Introduction

7.1.1 **Figure 7.1** and **Table 7.1** illustrate the extent of the study area for the purposes of the traffic impact assessment. This shows the locations of traffic surveys which include Automatic Traffic Counts (ATC) and Junction Turning Counts (JTC). The extent of the study area includes three junctions in the WLC area, one junction which falls within the jurisdiction of TS and nine CEC junctions.

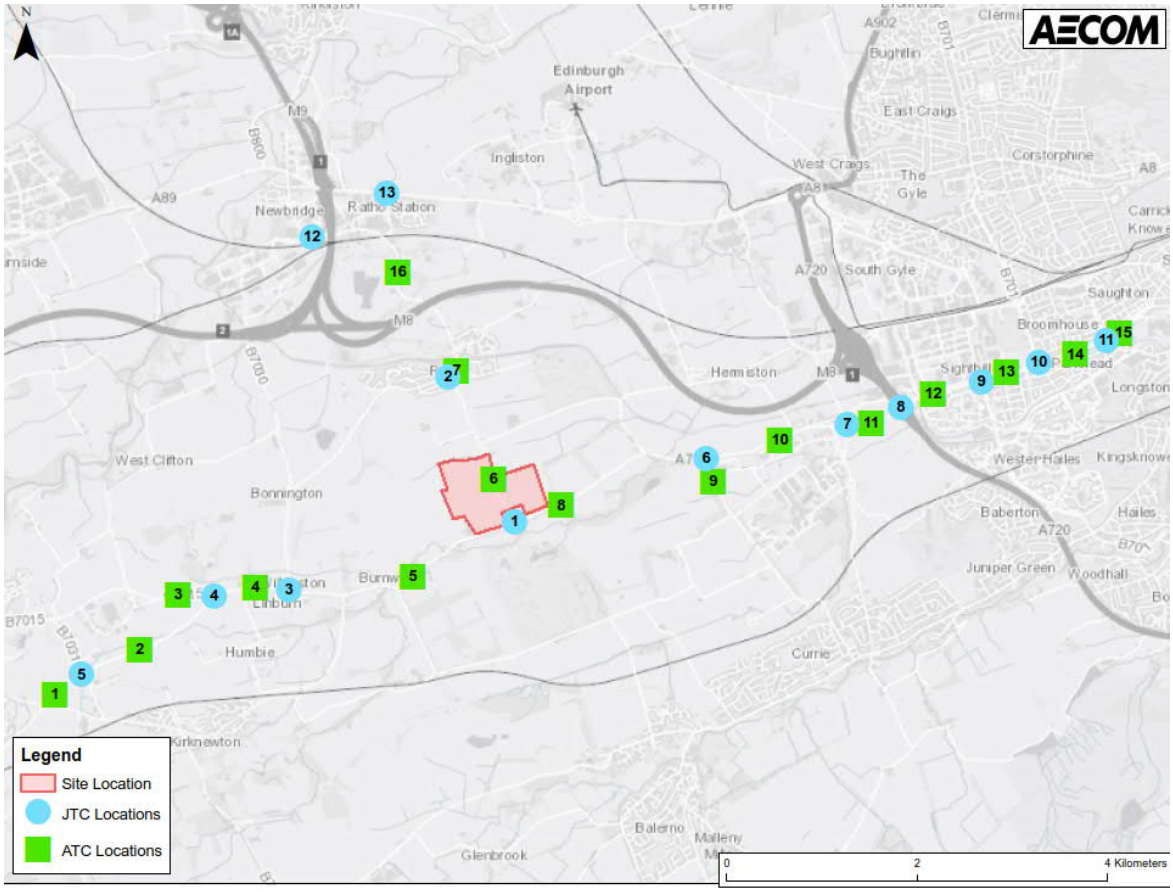


Figure 7.1: Study Area Extent and Data Collection Locations

Table 7.1: Study Area Junctions

Junction Reference Number (See Figure 7.1)	Junction	Existing Junction Form	Future Junction Form	Authority
1A	Dalmahoy Road / A71 / Dalmahoy Club	Priority Junction	Signalised Junction*	CEC
1B	A71 / Site Access	N/A	Left-In Left-Out Priority Junction**	CEC
2	Dalmahoy Road / Ratho Main Street	Priority Junction	Existing Junction Form	CEC
3	A71 / Bonnington Road	Signalised Junction	Existing Junction Form	WLC
4	A71 / B7015	Priority Junction	Signalised Junction***	WLC

Junction Reference Number (See Figure 7.1)	Junction	Existing Junction Form	Future Junction Form	Authority
5	A71 / B7031	Staggered Crossroads	Signalised Junction***	WLC
6	A71 / Curriehill Road	Priority Junction	Existing Junction Form	CEC
7	A71 / Riccarton Mains Road / Gogar Station Road	Roundabout	Existing Junction Form	CEC
8	A720 (T) / A71 Calder Road	Roundabout	Existing Junction Form	TS
9	Calder Road / B701 / Bankhead Avenue	Roundabout	Existing Junction Form	CEC
10	Calder Road / B701 / Sighthill Avenue	Roundabout	Existing Junction Form	CEC
11	Calder Road / Longstone Road / Saughton Road	Roundabout	Existing Junction Form	CEC
12	Harvest Road / Cliftonhall Road	Priority Junction	Existing Junction Form	CEC
13	Station Road / A8 Glasgow Road	Priority Junction	Existing Junction Form	CEC

** CEC Committed Improvement Scheme*
***Potential secondary site access junction*
****WLC Committed Improvement Scheme*

7.1.2 CEC requested that in addition to the junctions shown in **Figure 7.1** that data was collected for the following junctions:

- Curriehill Road / A70 Lanark Road West
- Riccarton Mains Road / A70 Lanark Road West

7.1.3 Data was not collected at these junctions as the anticipated impact of proposed development traffic at these locations would be unlikely to trigger the thresholds for an assessment as per the methodology agreed with stakeholders (see following section) nor is it considered proportionate to a TA to support a representation to the MIR. As previously noted should a planning application be submitted for the proposed development, the parameters of supporting studies would be agreed with stakeholders which could include for a refresh to this TA.

7.2 Methodology

Data Collection

7.2.1 ATC surveys, primarily used to inform the Environmental Assessment Report (EAR) for the proposed development were undertaken for a continuous 24 hour seven day period between Tuesday 29 January 2019 and Monday 04 February 2019. The survey schedule was agreed with all stakeholders and avoided holiday periods or road works that would have otherwise influenced traffic flows. The survey results are therefore considered to be generally representative of typical conditions.

7.2.2 JTC surveys including queue surveys were undertaken as follows:

- Tuesday 29 January 2019 between 06:30 and 09:30 and 15:00 – 18:30.

7.2.3 The JTC surveys established the network peak hours to be:

- Morning peak hour: 08:00 – 09:00; and
- Evening peak hour: 17:00 – 18:00.

7.2.4 Turning counts within these peak hours were converted to Passenger Car Units (PCUs) assuming the following uniform factors:

- 0.2 for Bicycles;
- 0.4 for Motorcycles;

- 1.0 for Cars and LGVs;
- 1.5 for OGV1;
- 2.3 for OGV2 (HGV); and
- 2.0 for Buses.

7.2.5 The 2019 'Base' traffic flows for the morning and evening peaks are contained in **Appendix E**.

Traffic Flow Scenarios

7.2.6 Subject to the necessary consents the proposed development could be fully realised in 2031. The traffic flow projections incorporate the following scenarios, described in more detail in the following paragraphs:

1. 2031 Baseline (including traffic change as a consequence of LDP allocations & cross-boundary flows) (Scenario 1);
2. 2031 Baseline + Proposed Development (Scenario 2); and
3. 2031 Baseline + Proposed Development + Cumulative Development Sensitivity (Scenario 3).

Scenario 1 - 2031 Baseline including LDP Allocations and Cross-Boundary Flows

7.2.7 Scenario 1 represents the surveyed 2019 traffic flows with the inclusion of anticipated traffic growth to 2031.

7.2.8 A Transport Appraisal was initially undertaken by CEC to inform the currently adopted LDP in 2013, which was followed by an Addendum in 2016[3]. This appraisal assessed the cumulative impact of the LDP on the transport network which included a consideration of the development allocations within Edinburgh as well as cross-boundary traffic changes.

7.2.9 CEC have requested that the outcomes of this cumulative assessment are considered within the TA in the scoping meeting held in December 2018. It should be reiterated that the intention is that the site is now being promoted through a representation to the forthcoming LDP 2 MIR and not a planning application at this stage. Naturally, CEC would have a requirement to undertake a comprehensive cumulative assessment of any allocated developments as part of the Proposed Plan process.

7.2.10 CEC requested Transport Planning Ltd. consider the currently adopted LDP Transport Appraisal outcomes for their TA to support a new village in Riccarton (Planning Ref: 16/05217/PPP) in respect of accounting for traffic changes along the A71 Corridor to account for growth / LDP. Transport Planning Ltd. identified that along the A71 Corridor during the morning peak, traffic flows are anticipated to reduce. In the evening traffic flows were predicated to increase at a rate comparable to National Road Traffic Forecasts (NRTF) *'central'* growth.

7.2.11 In addition to the request from CEC to consider the calculated Transport Appraisal impacts, TS also advised during scoping discussions that *'high'* NRTF growth rates are applied to trunk road links.

7.2.12 To represent a robust case for this TA to consider growth and LDP allocations, NRTF '*high*' growth has been applied to every turning movement at all junctions considered on both the trunk road and the local road during the morning and evening peak hours. The use of '*high*' growth rates from 2019 to 2031 equates to a 16.1% increase in traffic flows and therefore this is considered to represent a very robust approach.

7.2.13 **Appendix F** illustrates traffic flows for Scenario 1.

[3] http://www.edinburgh.gov.uk/downloads/download/2082/ldp_transport_appraisal

Scenario 2 - 2031 Baseline + Proposed Development

7.2.14 Scenario 2 encompasses the 2031 Baseline Traffic Flows (Scenario 1) with the inclusion of proposed development traffic flows.

7.2.15 **Appendix G** shows the total traffic flows for Scenario 2 and illustrates the percentage change of traffic when compared to Scenario 1.

Scenario 3 – 2031 Baseline + Proposed Development + Cumulative Development (Sensitivity)

7.2.16 It is recognised that there are other developments not allocated in the Adopted LDP which are at varying stages of the planning process which may or may not be granted planning consent in future. Should future planning consent be granted, this could result in an additional impact at junctions on the surrounding road network.

7.2.17 To increase the robustness of the assessment, the following developments have been included in the cumulative assessment:

- Garden City, Gogar (15/04318/PPP) – under consideration from Scottish Ministers; and
- Riccarton Mains Village (16/05217/PPP) – Planning Permission in Principle (PPiP) refused.

7.2.18 The associated TAs for these developments have been reviewed in order to establish their expected peak hour traffic flows. In situations where the study area for potential cumulative developments does not overlap into the proposed development's study area, traffic flows have been distributed on to the study area using the same approach that has been used to distribute traffic associated with the proposed development. This has been carried out to provide a robust assessment.

7.2.19 **Appendix H** shows the total traffic flows for Scenario 3 and illustrates the percentage increase in traffic at each junction.

Approach

7.2.20 A threshold assessment has been undertaken at each of the junctions shown in **Figure 7.1** as a comparison between Scenario 1, Scenario 2 and Scenario 3. It should be noted that junctions often experience day to day variations in traffic. The IHT Guidelines (1994) note that there can be daily fluctuations in traffic volumes of +/- 10%. The purpose of the threshold assessment is to assist CEC in their review of cumulative impacts of the Proposed Plan (which may include the proposed development) by identifying locations on the road network which are due to experience significant changes in traffic flows, a threshold of 10% is typically used to quantify the significance of this change (or 5% on the trunk road as noted by TS during scoping discussions).

7.2.21 Junctions in the immediate vicinity of the site, which are likely to experience the most significant increase in traffic as a consequence of the proposed development have been subject to a standalone junction assessment. Proposed junctions (1 no.) e.g. the proposed left-in / left-out have also been subject to a standalone junction modelling assessment.

7.2.22 Junction modelling assessments have been undertaken using standalone junction modelling packages which encompasses Junctions 9 and LinSig. During the scoping discussions, CEC requested that modelling of some junctions along the A71 corridor was undertaken using a different modelling methodology (presumed preference for micro-simulation). AECOM would note this methodology is not considered proportionate to a TA to support a representation to the MIR.

Junction Modelling

7.2.23 The Transport Research Laboratory's (TRL) computer programme Junctions 9 has been used to assess priority junctions and roundabouts.

7.2.24 The performance of the junctions has been measured using the standard Junctions 9 outputs; Ratio of Flow to Capacity (RFC) and Maximum Queuing (Q), which is measured in Passenger Car Units (PCUs).

7.2.25 RFC is used as a means of assessing the viability of designs under future year traffic load. A predicted 'practical' RFC of 0.85 is usually considered an acceptable coefficient for new priority and roundabout junction design. Advice Note TA 23 / 81 from the DMRB states that, if the RFC is 0.85 then queuing will theoretically be avoided in the chosen design year in the peak hour in five out of six cases i.e. queuing delays will not be excessive and there will be no capacity problems.

7.2.26 The industry standard software developed by JCT Consultancy Ltd., LinSig V3.2.39 has be used to assess the capacity of the signalised junctions.

7.2.27 The performance of the junctions, using LinSig, has been assessed through the degree of saturation flows (DoS) measured in percentage terms, Mean Max Queue (Q), delay in seconds per PCU and Practical Reserve Capacity (PRC). Typically, any individual arm of a signalised junction operating with a DoS of above 90% would be considered to be above capacity.

7.2.28 Signal phasing, staging and timing information has been provided by CEC.

7.2.29 All critical geometric parameters of the junctions under assessment were measured using a combination of OS mapping or gathered from on-site inspection.

7.3 Threshold Impact Assessment

7.3.1 As previously identified, the proposed development's morning and evening peak hour traffic flows were distributed on to the study area using an evidence-based approach in order to determine the magnitude of any traffic increase and consequently whereby CEC and TS may seek to review such locations as part of the Proposed Plan cumulative assessments. **Appendix I** illustrates the results of the threshold impact assessment for each of the junctions in the study area for both Scenario 2 and Scenario 3.

7.3.2 **Table 7.2** summarises the traffic flows for Scenarios 1, 2 and 3 and **Table 7.3** illustrates the increase in traffic as a percentage difference. These percentage increases represent the worst case increase on any one arm of the junction.

Table 7.2: Threshold Impact Assessment Traffic Flow Comparison

Junction		Scenario 1 Traffic Flows					Scenario 2 Traffic Flows					Scenario 3 Traffic Flows				
		N	E	S	SW	W	N	E	S	SW	W	N	E	S	SW	W
Dalmahoy Road / A71 / Dalmahoy Club	AM PEAK HOUR	106	640	21	-	1260	367	704	21	-	1270	367	704	21	-	1270
A71 / Site Access (proposed new junction)	AM PEAK HOUR	-	640	-	-	1206	67	704	-	-	1410	67	704	-	-	1410
Dalmahoy Road / Ratho Main Street	AM PEAK HOUR	42	221	113	-	310	42	234	168	-	310	42	234	168	-	310
A71 / Bonnington Road	AM PEAK HOUR	201	543	-	-	1255	201	601	-	-	1265	201	601	-	-	1265
A71 / B7015	AM PEAK HOUR	397	550	-	-	886	397	607	-	-	896	397	607	-	-	896
A71 / B7031	AM PEAK HOUR	68	469	39	-	966	68	526	39	-	976	68	526	39	-	976
A71 / Curriehill Road	AM PEAK HOUR	-	520	174	-	1119	-	581	178	-	1388	-	581	195	-	1401
A71 / Riccarton Mains Road / Gogar Station Road	AM PEAK HOUR	468	1441	799	56	531	468	1502	799	56	784	689	1517	900	56	810
A720 (T) / A71 Calder Road	AM PEAK HOUR	1548	1667	1093	-	1466	1557	1714	1097	-	1720	1557	1729	1097	-	1993
Calder Road / B701 / Bankhead Avenue	AM PEAK HOUR	444	1318	933	-	1896	453	1355	934	-	2067	453	1370	934	-	2277
Calder Road / B701 / Sighthill Avenue	AM PEAK HOUR	569	1334	322	-	1337	572	1369	322	-	1492	572	1384	322	-	1658
Calder Road / Longstone Road / Saughton Road	AM PEAK HOUR	526	1428	764	-	1245	526	1463	764	-	1386	526	1478	764	-	1539
Harvest Road / Cliftonhall Road	AM PEAK HOUR	791	129	404	-	-	802	184	404	-	-	810	195	404	-	-
Station Road / A8 Glasgow Road	AM PEAK HOUR	-	1590	150	-	-	-	1593	140	-	-	-	1601	140	-	-
Dalmahoy Road / A71 / Dalmahoy Club	PM PEAK HOUR	147	1158	41	-	784	243	1352	41	-	814	243	1352	41	-	814
A71 / Site Access (proposed new junction)	PM PEAK HOUR	-	1158	-	-	896	25	1352	-	-	976	25	1352	-	-	976
Dalmahoy Road / Ratho Main Street	PM PEAK HOUR	20	318	178	-	89	20	358	198	-	89	20	358	198	-	89
A71 / Bonnington Road	PM PEAK HOUR	383	1026	-	-	812	383	1040	-	-	842	383	1040	-	-	842
A71 / B7015	PM PEAK HOUR	107	1192	-	-	706	107	1207	-	-	736	107	1207	-	-	736
A71 / B7031	PM PEAK HOUR	48	868	17	-	730	48	883	17	-	760	48	883	17	-	760
A71 / Curriehill Road	PM PEAK HOUR	-	1166	64	-	945	-	1349	75	-	1044	-	1349	75	-	1044
A71 / Riccarton Mains Road / Gogar Station Road	PM PEAK HOUR	510	1398	929	48	825	510	1581	929	48	919	576	1811	950	48	932
A720 (T) / A71 Calder Road	PM PEAK HOUR	1406	1690	909	-	1456	1434	1831	924	-	1975	1466	2012	941	-	2058
Calder Road / B701 / Bankhead Avenue	PM PEAK HOUR	632	963	775	-	2195	659	1074	777	-	2258	695	1217	779	-	2324
Calder Road / B701 / Sighthill Avenue	PM PEAK HOUR	702	961	165	-	1683	710	1064	165	-	1740	721	1196	165	-	1792

Junction	Scenario 1 Traffic Flows					Scenario 2 Traffic Flows					Scenario 3 Traffic Flows				
	N	E	S	SW	W	N	E	S	SW	W	N	E	S	SW	W
Calder Road / Longstone Road / Saughton Road	532	1125	721	-	1414	532	1228	721	-	1466	532	1357	724	-	1514
Harvest Road / Cliftonhall Road	457	283	236	-	-	489	303	236	-	-	489	303	236	-	-
Station Road / A8 Glasgow Road	-	2917	421	-	-	-	2924	421	-	-	-	2924	421	-	-

Table 7.3: Threshold Impact Assessment Percentage Impact

Junction		Scenario 2 % Impact					Scenario 3 % Impact				
		N	E	S	SW	W	N	E	S	SW	W
Dalmahoy Road / A71 / Dalmahoy Club	AM PEAK HIOUR	**247%**	10%	0%	-	1%	**247%**	10%	0%	-	1%
A71 / Site Access (proposed new junction)	AM PEAK HIOUR	N/A	10%	-	-	**17%**	N/A	10%	-	-	17%
Dalmahoy Road / Ratho Main Street	AM PEAK HIOUR	0%	6%	**49%**	-	0%	0%	6%	**49%**	-	0%
A71 / Bonnington Road	AM PEAK HIOUR	0%	10%	-	-	1%	0%	10%	-	-	1%
A71 / B7015	AM PEAK HIOUR	0%	10%	-	-	1%	0%	10%	-	-	1%
A71 / B7031	AM PEAK HIOUR	0%	12%	0%	-	1%	0%	12%	0%	-	1%
A71 / Curriehill Road	AM PEAK HIOUR	-	12%	2%	-	24%	-	12%	2%	-	24%
A71 / Riccarton Mains Road / Gogar Station Road	AM PEAK HIOUR	0%	4%	0%	0%	**48%**	0%	4%	0%	0%	**46%**
A720 (T) / A71 Calder Road	AM PEAK HIOUR	1%	3%	0%	-	17%	1%	3%	0%	-	15%
Calder Road / B701 / Bankhead Avenue	AM PEAK HIOUR	2%	3%	0%	-	9%	2%	3%	0%	-	8%
Calder Road / B701 / Sighthill Avenue	AM PEAK HIOUR	1%	3%	0%	-	12%	1%	3%	0%	-	10%
Calder Road / Longstone Road / Saughton Road	AM PEAK HIOUR	0%	2%	0%	-	11%	0%	2%	0%	-	10%
Harvest Road / Cliftonhall Road	AM PEAK HIOUR	1%	**43%**	0%	-	-	1%	**43%**	0%	-	-
Station Road / A8 Glasgow Road	AM PEAK HIOUR	-	1%	0%	-	-	-	1%	0%	-	-
Dalmahoy Road / A71 / Dalmahoy Club	PM PEAK HOUR	**65%**	**17%**	0%	-	4%	**65%**	**17%**	0%	-	4%
A71 / Site Access (proposed new junction)	PM PEAK HOUR	N/A	17%	-	-	9%	N/A	17%	-	-	9%
Dalmahoy Road / Ratho Main Street	PM PEAK HOUR	0%	12%	11%	-	0%	0%	12%	11%	-	0%
A71 / Bonnington Road	PM PEAK HOUR	0%	2%	-	-	4%	0%	2%	-	-	4%
A71 / B7015	PM PEAK HOUR	0%	1%	-	-	4%	0%	1%	-	-	4%

Junction	Scenario 2 % Impact					Scenario 3 % Impact				
	N	E	S	SW	W	N	E	S	SW	W
A71 / B7031	0%	2%	0%	-	4%	0%	2%	0%	-	4%
A71 / Curriehill Road	-	16%	17%	-	10%	-	16%	17%	-	10%
A71 / Riccarton Mains Road / Gogar Station Road	0%	13%	0%	0%	11%	0%	11%	0%	0%	11%
A720 (T) / A71 Calder Road	2%	8%	2%	-	5%	2%	7%	2%	-	5%
Calder Road / B701 / Bankhead Avenue	4%	12%	0%	-	3%	4%	10%	0%	-	3%
Calder Road / B701 / Sighthill Avenue	1%	11%	0%	-	3%	1%	9%	0%	-	3%
Calder Road / Longstone Road / Saughton Road	0%	9%	0%	-	4%	0%	8%	0%	-	4%
Harvest Road / Cliftonhall Road	7%	7%	0%	-	-	7%	7%	0%	-	-
Station Road / A8 Glasgow Road	-	1%	0%	-	-	-	1%	0%	-	-

7.3.3 Due to the increase in the baseline traffic flows, it was found that in Scenario 3, the percentage increase at several junctions was lower than what was observed in Scenario 2.

7.3.4 As can be seen in **Table 7.3** there are four existing junctions which are anticipated to experience a significant increase in traffic as a comparison between Scenario 2 and Scenario 1. Although not commemorate to a TA to support a MIR, the junctions in the immediate vicinity of the site, those with a significant increase in traffic and proposed new junctions have been subject to a junction modelling assessment. These junctions are:

- Dalmahoy Road / A71 / Dalmahoy Club junction
- A71 / Site Access (proposed left-in / left-out)
- Dalmahoy Road / Ratho Main Street / School Wynd
- Gogar Station Road / Calder Road / Riccarton Mains roundabout
- Harvest Road / Cliftonhall Road

7.3.5 It is important to note that in the evening, the majority of these junctions are not subjected to the same intensity of traffic change as is anticipated in the morning.

7.3.6 As previously noted the A720 (T) / A71 Calder Road junction is already identified for improvement and a developer contribution mechanism is in place, thus this junction is not considered any further.

7.4 Junction Modelling

Dalmahoy Road / A71 / Dalmahoy Club Junction

7.4.1 **Figure 7.2** contains a schematic layout whilst **Table 7.4** contains the modelling results summary for the Dalmahoy Road / A71 junction. This reflects the proposed future signalised junction, as has been originally designed by CEC.

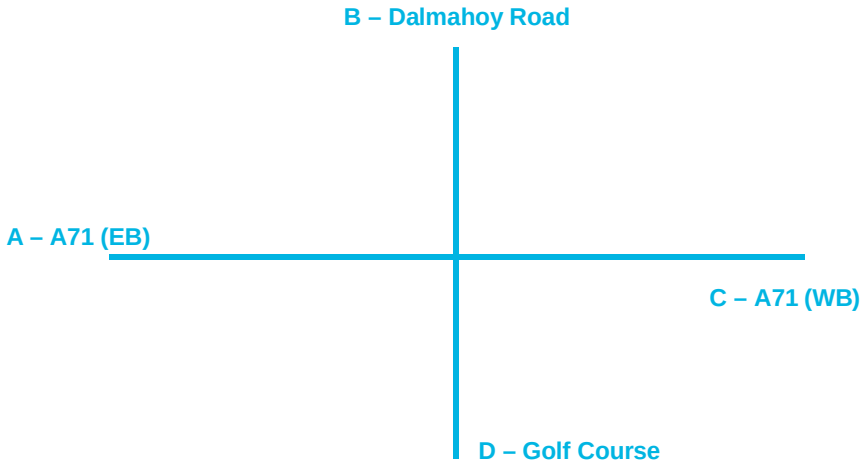


Figure 7.2 Dalmahoy Road / A71 Junction Schematic Layout

Table 7.4 Dalmahoy Road / A71 Modelling Summary

Scenario	Time	Arm A		Arm B		Arm C		Arm D	
		DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Scenario 1	AM Peak	104.7%	87.8	69.6%	4.6	93.6%	19.8	17.9%	0.8
	PM Peak	66.5%	20.5	81.0%	7.4	131.8%	215.2	28.3%	1.6
Scenario 2	AM Peak	105.9%	95.2	242.2%	155.5	149.9%	175.3	17.4%	0.8
	PM Peak	71.3%	24.7	114.8%	32.9	305.3%	639.0	26.2%	1.6
Scenario 3	AM Peak	118.1%	168.9	139.6%	82.0	149.9%	174.1	15.0%	0.7
	PM Peak	80.9%	27.6	76.5%	10.1	304.9%	638.6	19.9%	1.4

7.4.2 The junction (as designed by CEC) is predicted to operate significantly over capacity in the base case. AECOM has made CEC aware of the capacity concerns of this junction in its current form and based on base traffic flows (without growth) completed for another development in vicinity of the site. Consideration has therefore been given to mitigation measures that could be incorporated at this junction within **Section 7.5**.

A71 / Proposed Site Access Junction

7.4.3 **Figure 7.3** contains a schematic layout whilst **Table 7.5** contains the modelling results summary for the proposed left in / left out priority access junction on the A71.

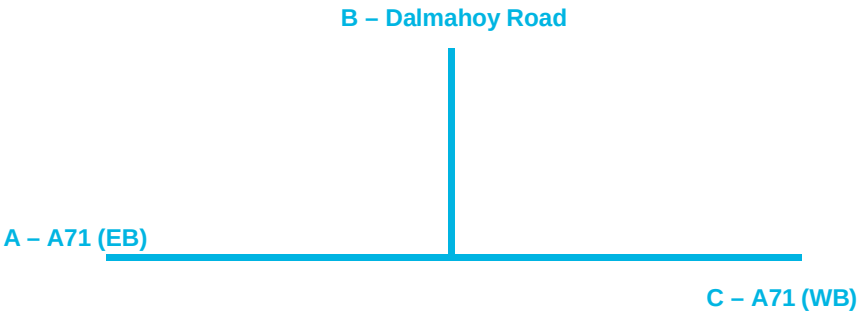


Figure 7.3 Dalmahoy Road / A71 Junction Schematic Layout

Table 7.5: Dalmahoy Road / A71 Modelling Summary

Scenario	Time	Stream B-AC		Stream C-B	
		RFC	Queue (PCU)	RFC	Queue (PCU)
Scenario 2	AM Peak	0.24	0.3	0.00	0.0
	PM Peak	0.06	0.1	0.00	0.0
Scenario 3	AM Peak	0.24	0.3	0.00	0.0
	PM Peak	0.06	0.1	0.00	0.0

7.4.4 The left-in / left-out site access junction is predicted to operate within capacity in both future scenarios.

Main Street / Dalmahoy Road / School Wynd Junction

7.4.5 **Figure 7.4**: contains a schematic layout whilst **Table 7.6** contains the modelling results summary for the Dalmahoy Road / Main Street priority junction north of the proposed development in Ratho.

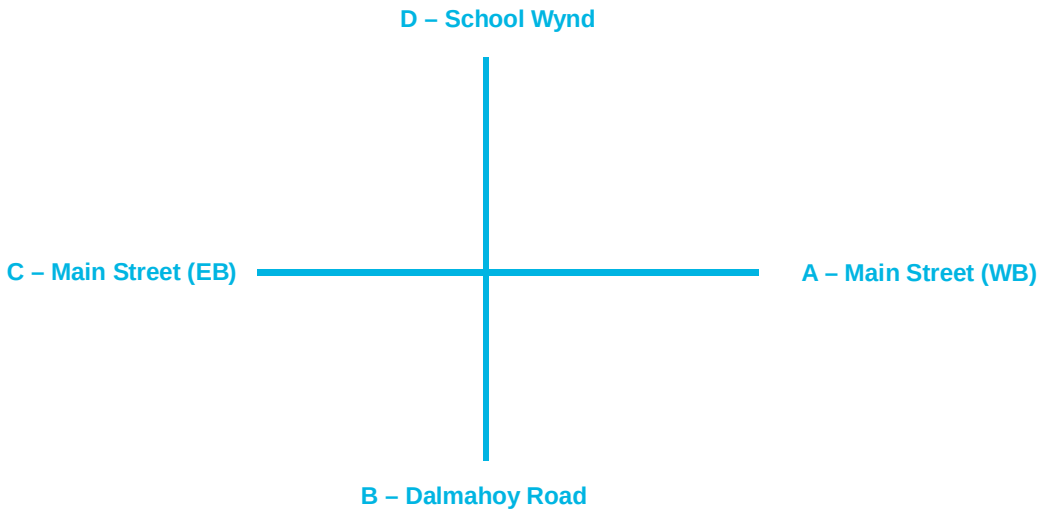


Figure 7.4: Main Street / Dalmahoy Road / School Wynd Priority Junction Schematic Layout

Table 7.6: Gogar Station Road / Calder Road / Riccarton Mains Roundabout Junction Modelling Results Summary

Scenario	Time	Stream B-ACD		Stream A-BCD		Stream D-ABC		Stream C-ABD	
		RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Scenario 1	AM Peak	0.27	0.4	0.08	0.1	0.11	0.1	0.38	0.7
	PM Peak	0.38	0.6	0.02	0.0	0.05	0.0	0.09	0.1
Scenario 2	AM Peak	0.43	0.7	0.08	0.1	0.11	0.1	0.38	0.7
	PM Peak	0.44	0.8	0.02	0.0	0.05	0.0	0.09	0.1
Scenario 3	AM Peak	0.43	0.7	0.08	0.1	0.11	0.1	0.38	0.7
	PM Peak	0.44	0.8	0.02	0.0	0.05	0.0	0.09	0.1

7.4.6 The results of the junction modelling indicate that the junction has sufficient residual capacity in all three scenarios. A maximum queue length of 0.7 PCUs is predicted.

Gogar Station Road / Calder Road / Riccarton Mains Roundabout

7.4.7 **Table 7.5** contains a schematic layout whilst

7.4.8 **Table** 7.7 contains the modelling results summary for the Calder Road (A71) / Gogar Station Road / Riccarton Mains Road Roundabout.

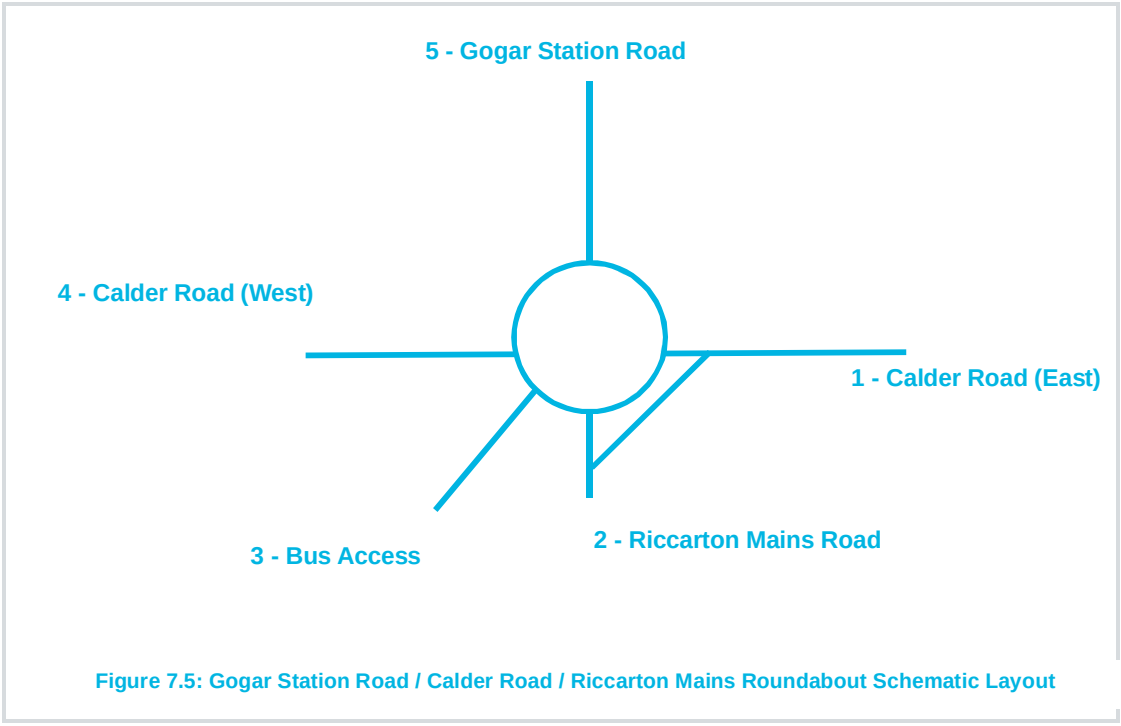


Figure 7.5: Gogar Station Road / Calder Road / Riccarton Mains Roundabout Schematic Layout

Table 7.7: Gogar Station Road / Calder Road / Riccarton Mains Roundabout Junction Modelling Results Summary

Scenario	Time	Arm 1		Arm 2		Arm 3		Arm 4		Arm 5	
		RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Scenario 1	AM Peak	0.61	1.5	0.83	4.6	0.81	2.8	1.17	51.3	0.83	4.5
	PM Peak	0..72	2.6	0.96	14.5	0.77	2.3	0.90	7.5	0.89	6.4
Scenario 2	AM Peak	0.67	2.0	0.85	5.2	0.84	3.1	1.73	300.8	0.83	4.5

Scenario	Time	Arm 1		Arm 2		Arm 3		Arm 4		Arm 5	
		RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
	PM Peak	0.86	5.6	1.03	31.6	0.88	3.3	0.99	19.4	0.92	7.9
Scenario 3	AM Peak	0.66	1.9	0.95	12.9	0.86	3.3	1.81	344.5	1.24	83.9
	PM Peak	1.01	32.3	1.14	69.5	1.01	4.8	1.06	42.2	0.99	15.3

7.4.9 This junction is anticipated to operate over capacity as a consequence of Scenario 1. With the addition of the proposed development an exponential increase in RFC and queues is anticipated which is an outcome of the modelling methodology and not necessarily reflective of 'real life' scenario. It is expected that this junction along with other along the A71 would form part of the Proposed Plan cumulative assessment, whereby mitigation may be identified along with a suitable developer contribution mechanism.

Cliftonhall Road / Harvest Road Priority Junction

7.4.10 **Figure 7.6** contains a schematic layout whilst **Table 7.8** contains the modelling results for the Cliftonhall Road / Harvest Road priority junction.

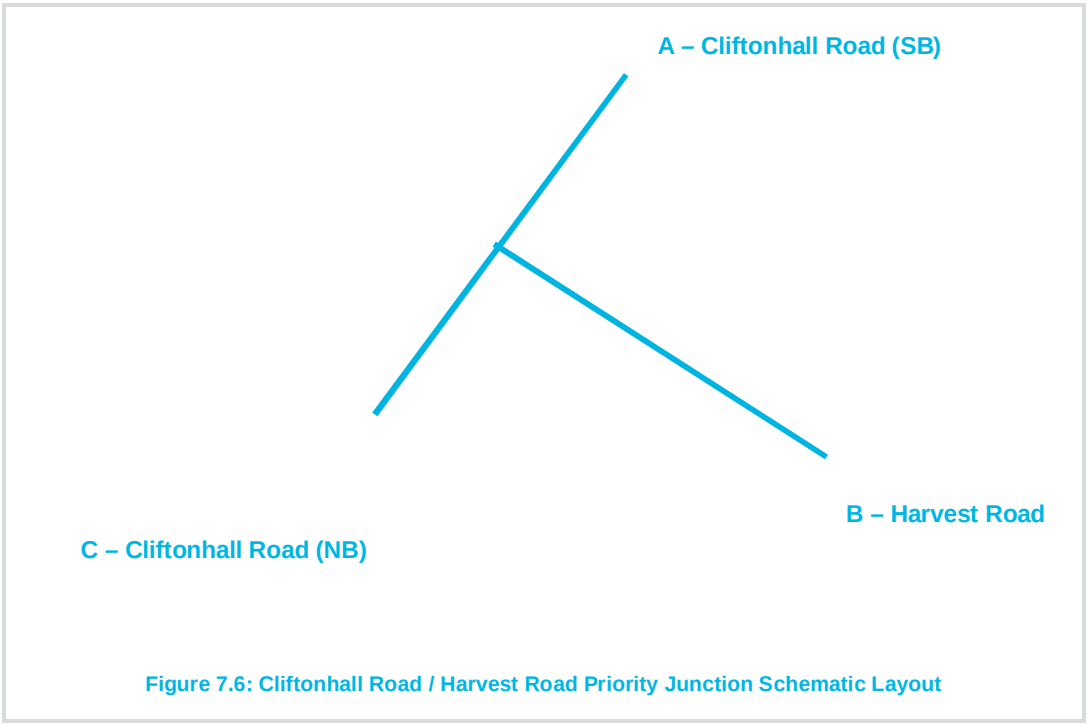


Figure 7.6: Cliftonhall Road / Harvest Road Priority Junction Schematic Layout

Table 7.8: Cliftonhall Road / Harvest Road Priority Junction Modelling Summary

Scenario	Time	Arm A		Arm B		Arm C	
		Delay (s)	Q (PCU)	Delay (s)	Q (PCU)	Delay (s)	Q (PCU)
Scenario 1	AM Peak	0.00	0.0	12.36	0.6	11.86	1.6
	PM Peak	0.00	0.0	13.42	1.4	5.12	0.4
Scenario 2	AM Peak	0.00	0.0	16.63	1.0	12.02	1.5
	PM Peak	0.00	0.0	15.97	1.8	5.47	0.5
Scenario 3	AM Peak	0.00	0.0	16.54	1.0	12.09	2.3
	PM Peak	0.00	0.0	15.23	1.4	5.61	0.5

7.4.11 The junction would remain within capacity in all future scenarios.

7.5 Proposed Junction Mitigation

7.5.1 The junction modelling results indicated that the A71 / Dalmahoy Road / Golf Club junction would operate notably overcapacity with the incorporation of traffic from the proposed development. Consideration has therefore been given to mitigation measures to the proposed signalised junction designed by CEC that could be incorporated at this junction to address this.

7.5.2 The following amendments have been made to the junction:

- Increase in number of approach lanes on Dalmahoy Road from one to two lanes;
- Increase in right turn provision on the A71 for vehicles travelling to Dalmahoy Road; and
- Changes to the signal phasing and staging to incorporate dedicated provision for right turning vehicles from A71 to Dalmahoy Road and for left turning vehicles from Dalmahoy Road to A71.

7.5.3 The revised modelling results for this junction have been provided in **Table 7.9**.

Table 7.9: A71 / Dalmahoy Road / Golf Course Junction with Potential Mitigation Modelling Summary

Link	Description	Scenario 1				Scenario 2				Scenario 3			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
1/1+1/2	A71 West Approach Left Ahead Right	101.7	79.4	62.6	19.5	102.6	83.9	65.2	20.8	102.6	82.8	65.2	20.8
3/1+3/2	Dalmahoy Road Right Left Ahead	23.7	2.8	33.8	3.8	81.4	13.4	55.5	6.5	81.5	13.2	55.5	7.4
5/1+5/2	A71 East Approach Ahead Right Left	50.3	12.2	91.0	42.7	58.2	12.9	104.3	96.0	58.2	12.9	104.3	96.0
7/1	Dalmahoy Hotel Approach Left Ahead Right	17.2	0.8	33.1	1.5	17.2	0.9	33.1	1.5	17.2	0.9	33.1	1.7

7.5.4 The incorporation of the suggested mitigation would significantly reduce queuing traffic and generally result in an improvement in junction performance in comparison to Scenario 1.

7.5.5 Any other junction improvements would be identified by CEC through the Proposed Plan cumulative appraisal and where applicable developer contributions appropriate and proportionate to the proposed development would be provided.

7.6 Summary

7.6.1 This chapter details the anticipated change in traffic flows at 13 junctions on study network. This threshold assessment is based on a comparison of different traffic flow scenarios including:

1. 2031 Baseline (including traffic change as a consequence of LDP allocations & cross-boundary flows) (Scenario 1);
2. 2031 Baseline + Proposed Development (Scenario 2); and
3. 2031 Baseline + Proposed Development + Cumulative Development Sensitivity (Scenario 3).

7.6.2 The traffic flow scenarios have been designed to represent a robust case.

7.6.3 Although not commemorate to a TA to support a MIR, the junctions in the immediate vicinity of the site, those with a significant increase in traffic and proposed new junctions have been subject to a junction modelling assessment. These junctions are:

- Dalmahoy Road / A71 / Dalmahoy Club junction
- A71 / Site Access (proposed left-in / left-out)
- Dalmahoy Road / Ratho Main Street / School Wynd
- Gogar Station Road / Calder Road / Riccarton Mains roundabout
- Harvest Road / Cliftonhall Road

7.6.4 The A720 (T) / A71 Calder Road junction is already identified for improvement and a developer contribution mechanism is in place, thus this junction is not considered any further.

7.6.5 The results of the traffic modelling demonstrate that the Dalmahoy Road / A71 / Dalmahoy Club junction is anticipated to operate over capacity in all scenarios, AECOM have already made CEC aware of the capacity constraints at this location utilising their preferred scheme without any traffic growth. Mitigation at this junction in the form of changes to lane and signal timing does however significantly improve capacity at this location.

7.6.6 Other junctions with the exception of the Gogar Station Road / Calder Road / Riccarton Mains roundabout are anticipated to operate satisfactorily. It is anticipated that this junction, along with others along the A71 would form important parts of CEC's cumulative assessment of the Proposed Plan.

Framework Construction Traffic Management Plan

08

8. Framework Construction Traffic Management Plan

8.1 Introduction

8.1.1 The purpose of this Framework CTMP is to provide indicative details of the high level management strategy associated with traffic generated during the construction phase of the proposed development. As previously noted the commencement of construction would be subject to necessary planning approvals, during which time additional information would be provided to stakeholders for example relating to the anticipated volume and type of construction vehicles. Until such a time as planning approval is granted and a contractor appointed this chapter represents a Framework for the CTMP.

8.1.2 Given the stage of the proposed development key to managing potential construction traffic impacts would be to consider how the site would be built out, considering the potential for differing developers on site. As such managing construction impacts should be considered by the proposed development design team.

8.2 Summary of Proposed Construction Works

8.2.1 It would be the responsibility of the appointed contractor to update the CTMP with information such as, but not limited to: construction working times, staff compounds, staff parking etc. for the agreement of stakeholders.

8.2.2 Within the CTMP, to be prepared by the appointed contractor the following information should be provided in detail:

- Project Description – A description of the proposed development including what is to be developed and any temporary arrangements that are to be put in place. Operational characteristics such as working times and number of staff should also be provided.
- Construction Programme – The key stages of the construction programme should be outlined, including duration of each task, estimated start and finish date and working hours.
- Construction Traffic – Details of the vehicle types involved in the construction should be outlined including the activity each vehicle type would be undertaking. This section would also outline if any oversized abnormal load vehicles with regards to length over 18.3 m or width over 2.9 m, are required. Any dedicated areas for access or construction staff car parking requirements would also be detailed.
- Construction Transport Routes and Site Access Points – The routes to site that each construction vehicle utilises would be reviewed. Detailed drawings would be provided in order to show the local and trunk roads that would be directly affected by the construction vehicles as well as the site access points. The suitability of the existing road network to accommodate the construction traffic would be summarised. It should be noted that the canal bridge in Ratho has a 24t weight limit; therefore it may be unsuitable for construction traffic routing.
- Trip Generation Estimate - An estimate of trip generation by vehicle type would be undertaken and assigned to the road network based on access points and routing along suitable roads.
- Mitigation Strategy – A series of measures would be identified to mitigate impacts of construction with specific consideration to maintaining access to local residential and business properties. Some indicative mitigation measures are identified in the following paragraphs.
- Communications Strategy – The methodology for communicating the key details and impacts of the construction programme would be set out.

8.3 Indicative Mitigation Measures

8.3.1 In order to ensure that the impact of construction works on pedestrian, traffic and public transport is minimised, mitigation measures should be outlined within the CTMP to be prepared by the appointed

contractor. This information would outline, in detail, mitigation measures which would be applied during construction works.

8.3.2 Some indicative mitigation measures, which could be used to inform the CTMP (to be prepared by the appointed contractor) are as follows:

- CTMP Management: A site Liaison Officer (LO) could be appointed to the proposed development who would be responsible for implementing, managing and monitoring the CTMP. The site LO would be appointed by the contractor and should consider cumulative impacts of construction traffic in consultation with others.
- Minimise the Volume of Imported and Exported Material: The appointed contractor would be required to commit to a 'reduce-reuse-recycle' policy associated with construction.
- Delivery Control: The appointed contractor would be required to plan and manage deliveries and collections from the site so far as possible to minimise the impact on the surrounding road network and on the local community.
- The number of delivery trips should be reduced through a combination of consolidated ordering, rationalising suppliers and consolidated deliveries.
- Staged deliveries to the site and staged release of vehicles from the site could be introduced to prevent convoys of vehicles.
- Sustainability: The contractor should plan and execute the construction of the proposed development with a high regard to sustainability. In particular the contractor would be required to operate to the following objectives:
    - Minimisation of vehicle movements to / from the site including consideration to shared construction staff travel and / or provision of a mini bus.
    - Thorough pre-planning of operations on site to optimise the redistribution of materials together with minimisation of haul distances.
    - Reduction in the amount of aggregates used on site by means of alternative construction techniques (so as to reduce deliveries of aggregates).
    - Conforming to construction / building codes of practice in relation to sustainability objectives and procedures and compliance with the Code of Construction Practice (CoCP).
- Designated Demolition / Construction Route:
    - Consideration of a designated route to / from the site for construction vehicles.
    - Consideration if necessary to diversionary routes should a temporary road closure be required or traffic management measures such as temporary signal controls.
    - The contractor would be required to ensure that the route is adhered to by directly instructing its own drivers and advising sub-contractors via conditions of contract.
    - The contractor would be responsible for on-site manoeuvring of vehicles including consideration to banksmen.
- Wheel Washing: In order to reduce mud and debris being deposited onto the local road network a wheel washing facility may be installed on-site.
- Speed Limit: The contractor could impose a voluntary reduced speed limit for all construction related traffic in the vicinity of the proposed development. The speed limit would be reinforced via temporary construction traffic speed limit signs. Local businesses / residents should be able to report any instances of speeding to the site LO who would take any necessary action to prevent a repeat.
- Signage: Temporary construction site signage may be erected on the transport network in the vicinity of the proposed development to warn people of activities and associated vehicles. The purpose of such signage is to provide driver information and to maintain road safety along the agreed vehicle route. Moreover signage would be provided within the site with regard to warning of construction vehicles.

- Staff Induction: The contractor would be required to regularly inform site staff about measures to manage construction traffic related impacts and to promote site safety for all.
- CoCP:
    - The CoCP sets out general construction principles and requirements.
    - Full compliance with the CoCP would be required of all contractors associated with the proposed development.
    - As required by the CoCP the contractor would be required to operate a Health and Safety Quality and the Environment system, part of which would be an Environmental Management System and the production of an Environmental Management Plan.
    - Topical Environmental Management Plans would also be prepared and implemented by the contractor.
- Emergency and Servicing Access:
    - The appointed contractor would be responsible for ensuring and managing access to the site and adjacent properties for emergency and servicing vehicles during construction.
    - The contractor would be responsible for preparing an emergency plan relating to the proposed development and emergency vehicle turning space would be kept clear at all times.

8.4 Summary

8.4.1 This Framework CTMP sets out indicative measures to mitigate construction impacts. The proposed development design team have a responsibility to mitigate and manage construction traffic impacts in respect of development siting and phasing.

8.4.2 The CTMP would be formally updated by the appointed contractor and submitted and reviewed with relevant stakeholders should planning consent be granted.

Transport Planning Policy Review

09

9. Transport Planning Policy Review

9.1 Introduction

9.1.1 This chapter provides a review of relevant transport policies and strategies related to the proposed development / the site. Policies and strategies under review include those produced at a national level as well as those produced locally by CEC. This chapter highlights areas in which the proposed development complies with these policies and strategies.

9.2 National Transport Planning Policy

Scottish Planning Policy (2014)

9.2.1 SPP produced in June 2014 by the Scottish Government identifies the main priorities for the planning system from a national perspective. SPP identifies three major ways in which it should be used: for the preparation of development plans, the design of new developments as well as the determination of planning appeals.

9.2.2 SPP is a non-statutory planning document which sits in a suite of wider planning policy documents including National Planning Framework 3 (2014), Creating Places (2013) and Designing Streets (2010).

9.2.3 As part of its placemaking agenda, SPP incorporates four key principles that new developments should adhere to:

1. A successful, sustainable place;
2. A natural, resilient place;
3. A connected place; and
4. A low carbon place.

9.2.4 Of these four policy principles, transportation elements are contained within the 'a connected place' element. The key transport priorities are identified in Paragraph 270 and state:

- Optimise the use of existing infrastructure;
- Reduce the need to travel;
- Provide safe and convenient opportunities for walking and cycling for both active travel and recreation and facilitate travel by public transport; and
- Enable the integration of transport modes.

9.2.5 Where a development is projected to generate a notable uplift in the number of trips, Paragraph 286 identifies that a TA should be produced in accordance with TAG (2012). Paragraph 290 of SPP goes on to state that TAs should consider that *"where existing infrastructure has the capacity to accommodate a development without adverse impacts on safety or unacceptable impacts on operational performance, further investment is not likely to be required. Where such investment is required, the cost of mitigation measures required to ensure the continued safe and effective operation of the network will have to be met by the developer."*

9.2.6 A further key element of SPP in terms of transportation is in ensuring that new development sites are accessible by sustainable modes including on foot and by bike (Paragraph 273). Amongst other mechanisms, Paragraph 287 also identifies that new developments should facilitate travel by public transport, including, where appropriate, the provision of bus stop facilities within a 400 m walking distance.

A consideration of the sustainable transport and accessibility of the site has been considered within **Chapter 3** of this report.

9.3 Regional Transport Planning Policies and Strategies

South East of Scotland Transport Partnership (SEStran) Regional Transport Strategy Refresh 2015-2025 (2016)

9.3.1 SEStran is one of seven Regional Transport Partnerships in Scotland and covers eight local authority areas. As part of their statutory obligations, SEStran originally produced a Regional Transport Strategy (RTS) which was approved by the Scottish Government in 2008. This has recently been refreshed in 2016 and provides a strategic framework for transport provision over the next 10 year period.

9.3.2 The RTS Refresh outlines the main priorities across the eight local authorities as:

- Integrating land use and transport planning;
- Increasing the rate of walking and cycling;
- Improve road safety;
- Reduce the greenhouse gas emissions and improve air quality; and
- Improve accessibility for those who are disadvantaged.

9.3.3 Section 4.4.6 of the RTS Refresh identifies that *"new developments are [should be] sustainable and residents are able to travel without having to use a car."* Section 4.4.8 goes on to state that *"active travel modes are crucial and should be promoted through design and implementation of all new development and transport interventions…"*

SESplan Strategic Development Plan (2013)

9.3.4 SESplan includes six member authorities (City of Edinburgh, East Lothian, Fife, Midlothian, Scottish Borders and West Lothian) that make up the SESplan Strategic Development Planning Authority (SDPA). This Strategic Development Plan (SDP) intends to set out a vison for the SDPA's views for future developments along with Spatial Stategy on future development and land use in the area. The SDP was approved in June 2013.

9.3.5 Part of the SESplan SDP vision is for the Edinburgh City Region to become *"a healthier, more prosperous and sustainable place".*

9.3.6 The SESplan SDP aims to:

- Enable growth in the economy;
- Set out a strategy to enable delivery of housing requirements to support growth and meet housing needs;
- Integrate land use and sustainable modes of transport
- Promote the development of urban brownfield land for appropriate uses.
- Promote green networks

9.3.7 The SDP contains various policies. Of relevance to this TA is Policy 8 which is entitled "Transportation" This specifies that developments should be *"capable of being well served by public transport and that are accessible by foot and cycle, to reduce the need to travel by private car".* In order to promote the development of a sustainable transport network, Local Development Plans will:

- Ensure that development likely to generate significant travel demand is directed to locations that support travel by public transport, foot and cycle;
- Ensure that new development minimises the generation of additional car traffic:
- Relate density and type of development to public transport accessibility;

- Ensure that the design and layout of new development demonstrably promotes non-car modes of travel; and
- Consider the merits of protecting existing and potential traffic-free cycle and walking routes such as disused railways affected by any development proposal.

9.4 Local Transport Planning Policies and Strategies

Edinburgh Local Development Plan (2016)

9.4.1 The Edinburgh LDP was adopted by the City of Edinburgh Council in November 2016 and replaces the Edinburgh City Local Plan and Rural West Edinburgh Local Plan.

9.4.2 The vision of the LDP is to *"help make Edinburgh the best place it can be, for everyone, now and in the future."*

9.4.3 In term of Edinburgh, the LDP aims to:

1. Support the growth of the city economy
2. Help increase the number and improve the quality of new homes being built
3. Help ensure that the citizens of Edinburgh can get around easily by sustainable transport modes to access jobs and services
4. Look after and improve our environment for future generations in a changing climate and
5. Help create strong, sustainable and healthier communities, enabling all residents to enjoy a high quality of life.

9.4.4 The TA takes cognisance of these aims and contains a consideration of the accessibility of the proposed site by sustainable modes in **Chapter 3.**

Edinburgh Local Transport Strategy 2014-2019

9.4.5 The LTS for Edinburgh 2014 -19 was produced in order to set out policies and plans that will help work towards an integrated and sustainable transport system.

9.4.6 The LTS has objective to: *"To work positively in partnership with all organisations that can help deliver our outcomes"* and *"to be responsive to the needs and concerns of all our users and customers."*

9.4.7 Section 4 of the LTS is titled "Sustaining a thriving city" and has a main focus of Edinburgh becoming more sustainable and contributing to a successful Scotland.

9.4.8 It identifies a series of key objectives including:

- Supporting the economic vitality of the city centre, traditional centres and local shops;
- Supporting development in the growth areas of the city through facilitating provision of necessary transport infrastructure;
- Help improve quality of life in Edinburgh's residential areas; and
- Minimise the need for car use.

9.4.9 Actions set out within the LTS in terms of transport include:

- Minimising the distances people need to travel;
- Promoting and prioritising travel by sustainable means i.e. walking, cycling and public transport;
- Minimising the detrimental effects of traffic and parking on communities and the environment; and
- Ensuring that developments do not prejudice the implementation of future road, public transport and cycle and footpath proposals.

9.4.9 Mode share targets from the LTS are described in **Chapter 6**.

9.4.10 Although the current LTS will not be applicable after the planned completion of construction in 2031, the planning and design of the proposed development takes cognisance of the targets, objectives and actions

it establishes. Namely, the actions that are proposed in order to reduce private car usage and promote sustainable travel.

9.5 Summary

9.5.1 **Table 9.1** provides a summary of the relevant transport related policies and strategies and whether the proposed development aligns with these policies.

Table 9.1: Summary of Policy and Strategy Alignment from a Transportation Perspective

Policy / Strategy	Proposed Development Alignment
SPP (2014)	✓
SEStran Regional Transport Strategy Refresh (2016)	✓
SESplan Strategic Development Plan (2013)	✓
Adopted Edinburgh LDP (2016)	✓
Edinburgh LTS (2014-2019)	✓

9.5.2 This chapter demonstrates that the proposed development complements and supports national, regional and local transport policies and guidance. The proposed development satisfies key elements of SPP, SESplan as well as CEC's LTS in order to ensure that its planning and design are accessible by sustainable modes of transport. This will further be complemented through the production of a TP for residents; a framework for which is included in this TA.

Summary and Conclusions

10

10. Summary and Conclusions

10.1 Summary

10.1.1 AECOM has been commissioned by Inverdunning (Hatton Mains) Ltd. to prepare a Transport Assessment (TA) in support of a representation to the Edinburgh Local Development Plan (LDP) 2 Main Issues Report (MIR) for Hatton Village, Edinburgh (proposed development). It is expected that the proposed development will be fully considered in terms of its overall environmental, transport and planning impacts via City of Edinburgh Council's (CEC) assessment of sites brought forward via the MIR process. Whilst the MIR presents preferred and alternative development strategies and sites, it is only once CEC receive comments to the MIR highlighting alternatives that they can prepare a wider cumulative assessment. This will then inform the next stage of the LDP process being the Proposed Plan, which is likely to be published in 2020 and will be CEC's settled position in relation to the spatial strategy for Edinburgh.

10.1.2 Inverdunning (Hatton Mains) Ltd are committed to the delivery of an innovative development and the level of detail within this TA is intended to demonstrate this commitment by providing more detail than typically associated with the MIR stage. This TA sets out an overview of potential cumulative impacts and it is hoped that this provides CEC with support and assistance in informing the next stage of the LDP process.

10.1.3 This TA is intended to set out the transport related characteristics and impacts of the proposed development, recognising that it could be over 10 years before the development is fully realised. Moreover it is important to recognise that the way people live and work is changing thus the proposed development intends to consider resilience to such changes.

10.1.4 AECOM has engaged with a number of transport related stakeholders to date, to discuss the scope of this TA. AECOM would like to thank stakeholders for their time and support to date.

10.1.5 Should Inverdunning (Hatton Mains) Ltd come forward with a planning application for the proposed development, this TA would be updated accordingly to reflect the nature of a planning application, the outcomes of the MIR process (as and when known) and any intervening changes relevant to traffic and transport. Further engagement would also be undertaken with key transport stakeholders.

Guidance

10.1.6 This TA and the proposed site layout has been prepared taking cognisance of Transport Assessment Guidance (TAG) (2012), Planning Advice Note (PAN) 75 (2005) and Edinburgh Street Design Guidance (ESDG) (2015).

Existing and Committed Transport Characteristics

10.1.7 Dalmahoy Road is a single carriageway road subject to the National Speed Limit; pedestrian provision is in the form of a continuous footway (with width restriction) running alongside the southbound carriageway. Dalmahoy Road connects the site to Ratho in the north where there are a variety of local facilities and amenities such as shops as well as a network of footways, paths, dedicated pedestrian crossing facilities and bus stops. Dalmahoy Road forms a bus route at its northern extremity.

10.1.8 The A71 is located to the south of the site and serves as a strategic route, although not a trunk road, connecting Edinburgh to the west of Scotland. The A71 is single carriageway of approximately 7 m in width and in vicinity of the site the speed limit is 50 mph. Pedestrian provision along the A71 is in the form of a footway which runs alongside the eastbound carriageway, this footway is approximately 1.5 m however varies in width due to vegetation overgrowth. Street lighting is provided at key locations along the A71.

10.1.9 There is a CEC committed scheme to improve pedestrian safety at the Dalmahoy Road / A71 / Dalmahoy Club junction. This would provide a safer crossing facility in comparison to the existing priority arrangement and enhance accessibility to the A71 westbound bus stop and Dalmahoy Hotel and Country Club. Moreover this scheme could have a benefit in terms of reducing road traffic incidents at this location. This committed

scheme along with committed road schemes in the WLC area are considered in the traffic impact assessments included within this TA.

10.1.10 In discussion with stakeholders it is understood that previous studies have been undertaken in respect of improving pedestrian and cyclist facilities along the A71. One such option was for a continuous route running alongside the eastbound carriageway. Although there are no committed schemes for such improvements, the proposed development site layout has future-proofed for such an improvement.

10.1.11 A network of off-road pedestrian and cycle facilities are provided in West Edinburgh, the nearest such route is accessible from Ratho in the north. This route forms NCN Route 754 / CEC 15 Union Canal Towpath and connects Ratho to Edinburgh City centre. Cycling along the A71 and Dalmahoy Road is achievable on the carriageway.

10.1.12 The nearest bus stops to the site are located at the A71 / Dalmahoy Road / Dalmahoy Club junction and both currently consist of flag and pole stands with timetable information. As a consequence of the committed signalisation of this junction, both bus stops would be slightly relocated and the infrastructure upgraded. From these stops the service frequency is every 30 minutes (or better when considering all operating services). A71 bus stops serve Edinburgh City centre as well as West Lothian. Interchange is available at Hermiston Park & Ride for connectivity to the wider Lothian Bus and tram network. Additional bus services are accessible from the site from an Unclassified Road to the north as well as from Ratho. The nearest railway station to the site is in Currie (4.5 km to the south-east) and resides on the Edinburgh – Glasgow Central line with an average hourly service. Given the location of the nearest railway station and existing rail frequency at this station, in respect of the proposed development and public transport, the focus is on the bus and subsequent interchange.

10.1.13 Dalmahoy Road and the A71 provide connectivity to the wider trunk and local road network including the M8 (T) and A720 (T). It is recognised that these trunk routes as well as local routes can be congested in peak periods.

Proposed Development Characteristics

10.1.14 The proposed development relates to the construction of up to: 1,200 residential units, 2,500 sqm of retail space, 1,000 sqm of community / health facilities and 1,000 sqm of leisure space. The proposed development also includes for a potential 2,500 sqm primary school / nursery. The proposed development site (the site) comprises approximately 60 ha of farmland and is located to the north of the A71 opposite Dalmahoy Hotel and Country Club, south of Ratho and approximately 12 km to the south-west of Edinburgh City centre. Dalmahoy Road bisects the site. Subject to necessary consents the proposed development could be complete by 2031 at a build out rate of between 100 and 150 units a year.

10.1.15 Vehicular access to the site would be by means of new priority junctions formed with Dalmahoy Road and via a left-in / left-out only access with the A71.

10.1.16 The following transport related interventions and strategies form part of the proposed development:

- Provision of a network of footways and paths throughout the site and the considered siting of development to reduce walk distances to key facilities such as the Village centre, bus stops along A71, Ratho and Dalmahoy Hotel and Country Club.
- Provision of open green space to support active travel for recreational purposes thus complimenting national and local environmental and health policies for encouraging healthier lifestyles.
- Safeguarding land along the frontage of the site with the A71 to future proof for longer term aspirations (by others) to improve pedestrian and cycling infrastructure along the A71.
- Improving the Dalmahoy Road footway connection to the north of the site to enhance connectivity to Ratho.
- Design of active travel routes and facilities, including cycle parking provision, in accordance with ESDG.

- Inclusion of a working from home hub that would seek to reduce the number of private car trips associated with commuting to / from work.
- Provision of local amenities and services such as shops and a primary school to reduce the need for travel out-with the site and to encourage active travel for short journeys.
- The inclusion of a Public Transport Strategy to identify the opportunities to maximise the attractiveness of public transport use for residents of the proposed development.
- Site design, in accordance with ESDG and the requirements of operators, to allow for penetration of the site by bus.
- Provision of a Transport Hub in the Village centre, the Hub could include but not be limited to the provision of:
    - Timetable, service and wayfinding information;
    - Lockers for collection of deliveries;
    - Cycle parking;
    - Just Eat Cycles;
    - Cycle maintenance station;
    - Pop-up style café;
    - Bus turning area and bus stop;
    - EV charging points; and
    - Car Club parking spaces.
- Discussion with operators would be required relating to the services which could be available at the Transport Hub and in this respect it is important to recognise the longer term nature of the proposed development build out.
- Design of vehicle infrastructure, in accordance with ESDG, however recognising the potential to support the effectiveness of sustainable travel through a package of measures which could include, for example, reduced car parking provision in the most accessible locations of the site.
- Framework Travel Plan (TP) to set out 'soft' measures to support sustainable travel behaviour change.
- Should the site come forward to planning application stage the provision of a Masterplan and Development Framework which would detail an appropriate and proportionate financial contribution to improved and enhanced transport infrastructure and services within the site. Given the stage of the proposed development there are opportunities to seek buy in to allow individual developer(s) to conform to the ethos of the site and the transport strategy namely to consider innovative measures to provide resilience in how we design new developments and provide transport to ensure that a different development concept is achieved.
- Based on the outcomes of the MIR / LDP process, appropriate and proportionate financial contribution to transport infrastructure and services out-with the site based on a robust appraisal (by CEC) of cumulative impacts.

Site Integration and Accessibility

10.1.17 Accessed from new priority junctions formed with Dalmahoy Road and via a new left-in / left-out arrangement with the A71 the proposed development would integrate with the existing transport network. Moreover the site complies with the accessibility criteria of TAG in respect of active and sustainable modes of travel.

Public Transport Strategy

10.1.18 Although it is recognised that the proposed development site is presently accessible by public transport and that infrastructure is proposed to enhance this accessibility, to make public transport a more attractive

a public transport strategy has been prepared. This strategy has been informed by early engagement with Lothian Buses and includes for:

- A new bus stop on the A71 near the proposed left-in / left-out junction;
- Review of available demand on existing A71 services;
- Re-routing of Service 20 to the proposed Transport Hub, which could also cater for school bus travel; and
- Consideration to provision of free bus tickets for new residents.

10.1.19 Any amendment to services would require being proportionate to the implications of the proposed development considering cumulative impacts across the region. Should a planning application come forward further detail would be provided relating to the public transport strategy which could be delivered through the Masterplan / Development Framework for the site.

Framework TP

10.1.20 Should a planning application come forward it would be an expectation of any consent that a TP is implemented and monitored. A Framework TP is included in this TA, setting out indicative 'soft' measures primarily focussed on behaviour change in the form of awareness raising.

Travel Demands

10.1.21 Modal splits derived from a combination of the 2011 Census for Ratho Village and from the CEC Local Transport Strategy (LTS) modal split targets have been applied to people based trip rates extracted from the TRICS database to calculate the likely multi-modal trip generation for the proposed development. This suggests that the majority (approximately 52%) of trips would be by sustainable modes with the remainder by vehicular based modes.

10.1.22 The application of these modal splits results in a total of approximately 1,200 total trips generated in the morning peak hour and 1,100 total trips generated in the evening peak hour. Of these, it is predicted that there would be 491 and 431 two-way vehicular trips (including cars, vans and taxis) generated, respectively. Active and public transport trips are anticipated to equate to 626 two-way trips and 551 two-way trips in the morning and evening peak periods respectively. The infrastructure, services and 'soft' measures identified to support the proposed development are anticipated to be capable of accommodating sustainable journeys.

10.1.23 The DataShine Scotland Commute resource has been reviewed to determine the likely distribution of journeys for prospective residents of the site. This suggests that most journeys (approximately 70%) would likely travel to destinations located to the east of the site within Edinburgh with the remainder travelling to destinations located to the west and north.

Traffic and Junction Impact

10.1.24 A comprehensive study network incorporating 14 junctions located within CEC and WLC as well as a junction on the trunk road network has been considered to ascertain what the predicted traffic impact of the proposed development site would be on the surrounding road network.

10.1.25 Subject to the necessary consents the proposed development could be fully realised in 2031. The traffic flow projections incorporate the following scenarios, which include a consideration of traffic flows from the currently adopted CEC LDP Transport Appraisal:

1. 2031 Baseline (including traffic change as a consequence of LDP allocations & cross-boundary flows) (Scenario 1);
2. 2031 Baseline + Proposed Development (Scenario 2); and
3. 2031 Baseline + Proposed Development + Cumulative Development Sensitivity (Scenario 3).

10.1.26 The traffic flow scenarios have been designed to represent a robust case.

10.1.27 Although not commemorate to a TA to support a MIR, the junctions in the immediate vicinity of the site, those with a significant increase in traffic and proposed new junctions have been subject to a junction modelling assessment. These junctions are:

- Dalmahoy Road / A71 / Dalmahoy Club junction
- A71 / Site Access (proposed left-in / left-out)
- Dalmahoy Road / Ratho Main Street / School Wynd
- Gogar Station Road / Calder Road / Riccarton Mains roundabout
- Harvest Road / Cliftonhall Road

10.1.28 The A720 (T) / A71 Calder Road junction is already identified for improvement and a developer contribution mechanism is in place, thus this junction is not considered any further.

10.1.29 The results of the traffic modelling demonstrate that the Dalmahoy Road / A71 / Dalmahoy Club junction is anticipated to operate over capacity in all scenarios, AECOM have already made CEC aware of the capacity constraints at this location utilising their preferred scheme without any traffic growth. Mitigation at this junction in the form of changes to lane and signal timing does however significantly improve capacity at this location.

10.1.30 Other junctions with the exception of the Gogar Station Road / Calder Road / Riccarton Mains roundabout are anticipated to operate satisfactorily. It is anticipated that this junction, along with others along the A71 would form important parts of CEC's cumulative assessment of the Proposed Plan.

Construction Traffic Management Plan (CTMP)

10.1.31 A Framework CTMP has been prepared setting out indicative measures to mitigate construction impacts. The proposed development design team have a responsibility to mitigate and manage construction traffic impacts in respect of development siting and phasing.

10.1.32 The CTMP would be formally updated by the appointed contractor and submitted and reviewed with relevant stakeholders should planning consent be granted.

Policy and Guidance

10.1.33 The proposed development complements and supports national, regional and local transport policies and guidance. The proposed development satisfies key elements of Scottish Planning Policy (SPP), SESplan as well as CEC's LTS in order to ensure that its planning and design are accessible by sustainable modes of transport.

10.2 Conclusions

10.2.1 It is considered that the proposed development site is accessible by active and sustainable travel modes; moreover a commitment is in place to maximise and enhance the accessibility of the proposed development through a package of infrastructure and 'soft' measures. In terms of traffic impacts this TA concludes that these would not have a significant impact on the local and strategic trunk, where impacts are anticipated these can be addressed through mitigation subject to an appropriate and proportionate contribution mechanism based on the outcomes of CEC's appraisal of the Proposed LDP.

Appendix A Indicative Site Layout

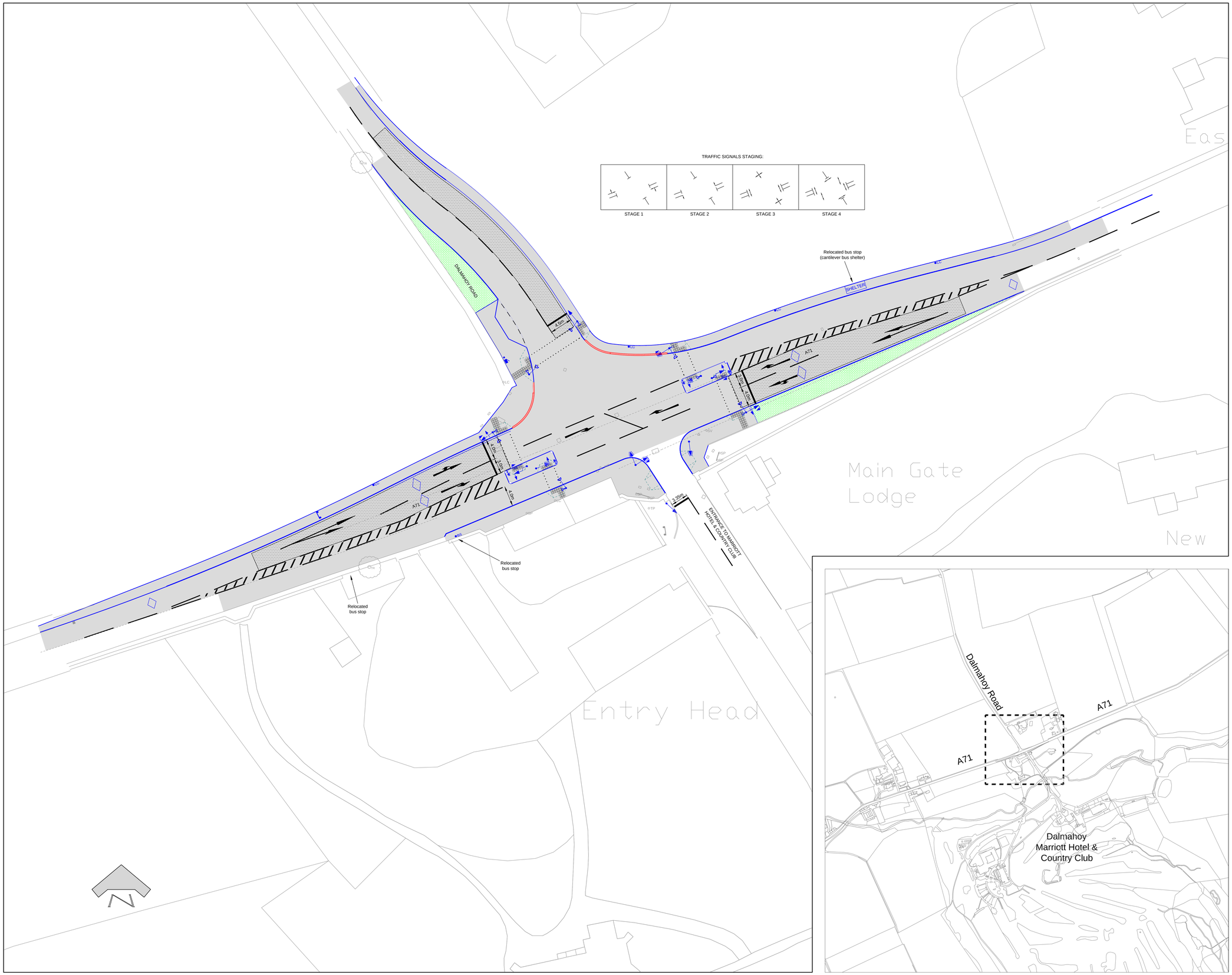
HATTON MAINS

L(2)01D Masterplan
1/2500 @ A2

Appendix B CEC Committed Signalisation Layout

TRAFFIC AND ENGINEERING

DRG. NO. TDD/636718/2/05



LOCATION PLAN
Scale 1:10,000

NOTES:

KEY:

- New kerbline
- New edging kerbline
- New drainage kerbline
- New carriageway & footway
- High friction surfacing
- Verge
- White road markings
- Stainless steel studs
- White direction arrows
- Traffic signals
- Tactile paving
- Drop kerb crossing

REVISION	DETAILS	BY	DATE	CHECKED

EDINBVRGH
THE CITY OF EDINBURGH COUNCIL

The City of Edinburgh Council
Waverley Court
4 East Market Street
Edinburgh, EH8 8BG
Telephone: 0131 200 2000

PLACE
PLANNING & TRANSPORT
TRAFFIC & ENGINEERING
TRANSPORT DESIGN & DELIVERY

A71 / Dalmahoy Road Junction
Signalisation
General Layout

Date: 1 June 2016	Job. No. 636718	Drawn by: A Parkinson
Scale: 1:250 @A1		Checked by: D Wilson
		Reviewed by:

DRG. NO. TDD/636718/2/05

Drawing Name: G:\SfC\Transport Design & Delivery\TDD\636718 A71 Dalmahoy Signals\CAD\2 series\Issued\TDD-636718-2-05 (I 2016-06-01).dwg

DRG. NO. TDD/636718/2/05

Appendix C TRICS Outputs

Calculation Reference: AUDIT-204601-181220-1249

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
	KC	KENT	1 days
	WS	WEST SUSSEX	3 days
06	WEST MIDLANDS		
	ST	STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
17	ULSTER (NORTHERN IRELAND)		
	AR	ARMAGH	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 151 to 805 (units:)
Range Selected by User: 125 to 2000 (units:)

Parking Spaces Range: Selected: 12 to 1726 Actual: 12 to 1726

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 05/07/18

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Tuesday	2 days
Wednesday	2 days
Thursday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	9

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	8
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	9 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	2 days
10,001 to 15,000	6 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	4 days
75,001 to 100,000	3 days
125,001 to 250,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	7 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	3 days
No	6 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	9 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 AR-03-A-01 MIXED HOUSES ARMAGH
BIRCHDALE MANOR
LURGAN

Edge of Town
Residential Zone
Total Number of dwellings: 153
Survey date: TUESDAY *15/06/10* *Survey Type: MANUAL*

2 ES-03-A-03 MIXED HOUSES & FLATS EAST SUSSEX
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total Number of dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

3 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total Number of dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

4 NE-03-A-02 SEMI DETACHED & DETACHED NORTH EAST LINCOLNSHIRE
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total Number of dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

5 ST-03-A-07 DETACHED & SEMI-DETACHED STAFFORDSHIRE
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total Number of dwellings: 248
Survey date: WEDNESDAY *22/11/17* *Survey Type: MANUAL*

6 WA-03-A-04 DETACHED WATERFORD
MAYPARK LANE
WATERFORD

Edge of Town
Residential Zone
Total Number of dwellings: 280
Survey date: TUESDAY *24/06/14* *Survey Type: MANUAL*

7 WS-03-A-04 MIXED HOUSES WEST SUSSEX
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total Number of dwellings: 151
Survey date: THURSDAY *11/12/14* *Survey Type: MANUAL*

8 WS-03-A-06 MIXED HOUSES WEST SUSSEX
ELLIS ROAD
WEST HORSHAM
S BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total Number of dwellings: 805
Survey date: THURSDAY *02/03/17* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9 WS-03-A-08 MIXED HOUSES WEST SUSSEX
ROUNDSTONE LANE
ANGMERING

Edge of Town
Residential Zone
Total Number of dwellings: 180
Survey date: THURSDAY *19/04/18* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

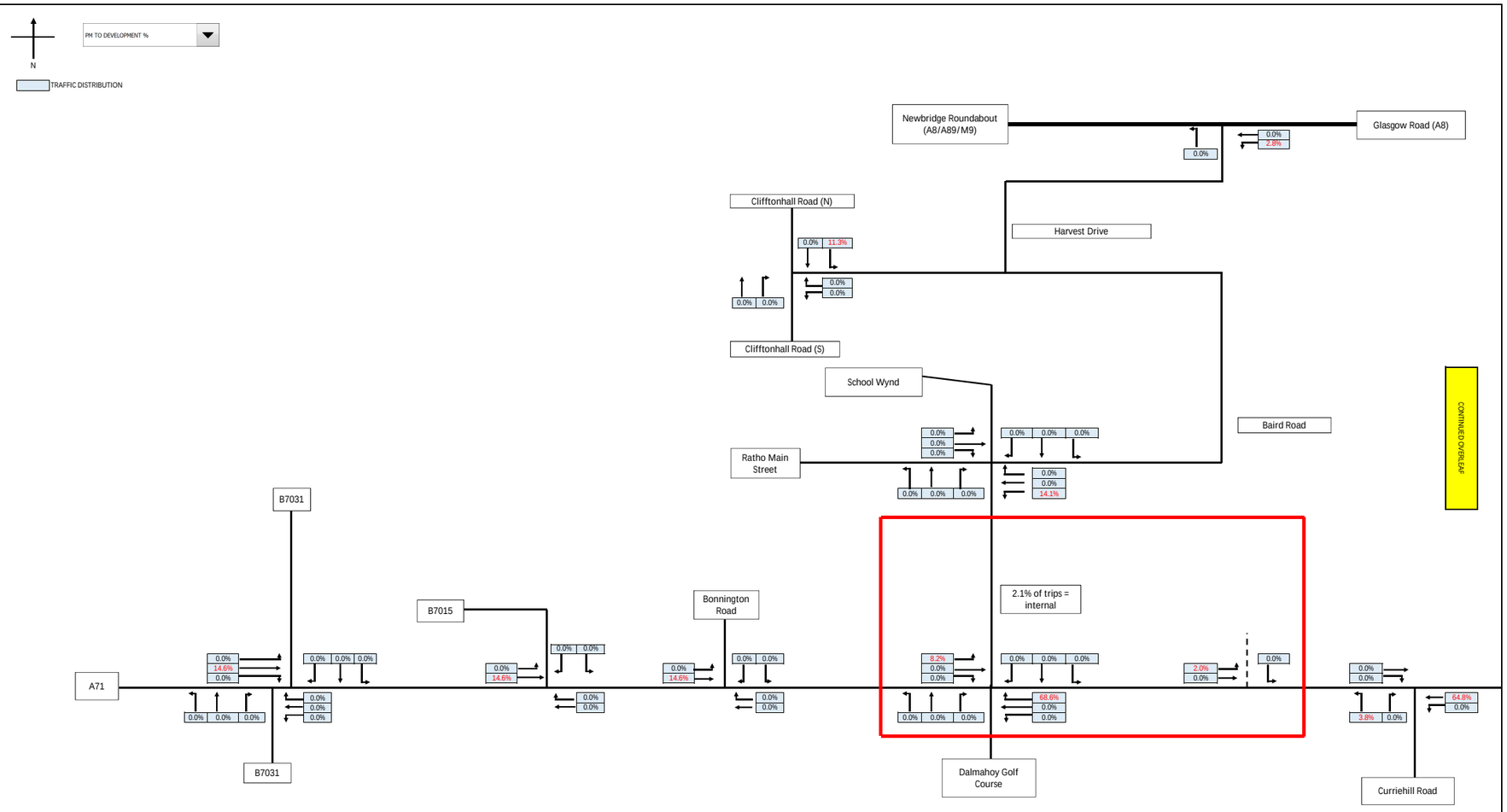
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
Estimated TRIP rate value per 1200 DWELLS shown in shaded columns
BOLD print indicates peak (busiest) period

	ARRIVALS				DEPARTURES				TOTALS			
Time Range	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate
00:00 - 01:00												
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00												
07:00 - 08:00	9	305	0.124	148.418	9	305	0.467	560.495	9	305	0.591	708.913
08:00 - 09:00	9	305	0.196	235.722	9	305	0.816	979.556	9	305	1.012	1215.278
09:00 - 10:00	9	305	0.221	265.406	9	305	0.286	342.670	9	305	0.507	608.076
10:00 - 11:00	9	305	0.190	228.301	9	305	0.244	293.343	9	305	0.434	521.644
11:00 - 12:00	9	305	0.205	245.762	9	305	0.258	309.058	9	305	0.463	554.820
12:00 - 13:00	9	305	0.254	304.693	9	305	0.250	299.454	9	305	0.504	604.147
13:00 - 14:00	9	305	0.265	318.225	9	305	0.265	318.225	9	305	0.530	636.450
14:00 - 15:00	9	305	0.315	377.592	9	305	0.324	388.505	9	305	0.639	766.097
15:00 - 16:00	9	305	0.591	708.912	9	305	0.302	362.314	9	305	0.893	1071.226
16:00 - 17:00	9	305	0.544	652.601	9	305	0.298	357.075	9	305	0.842	1009.676
17:00 - 18:00	9	305	0.590	707.603	9	305	0.300	360.567	9	305	0.890	1068.170
18:00 - 19:00	9	305	0.509	610.695	9	305	0.362	434.776	9	305	0.871	1045.471
19:00 - 20:00												
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
Total Rates:			4.004	4803.930			4.172	5006.038			8.176	9809.968

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Appendix D Trip Distribution



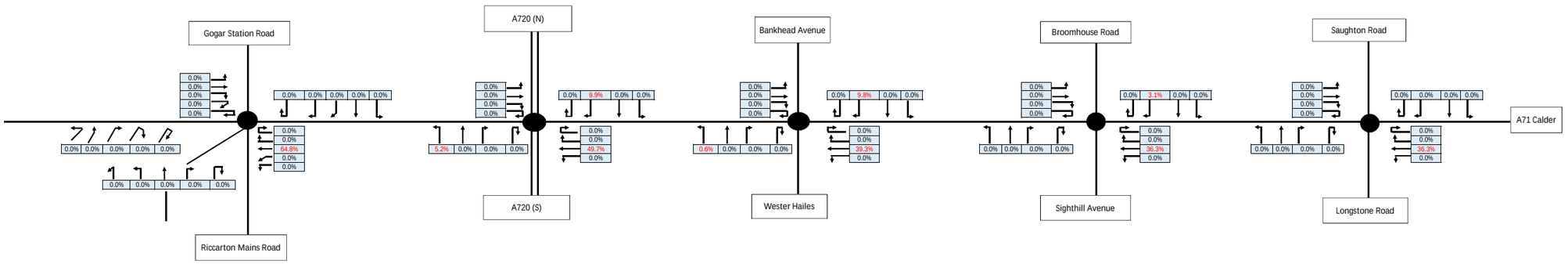
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		PM TO DEVELOPMENT %

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

TRAFFIC DISTRIBUTION

CONTINUED OVERLEAF



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		PM TO DEVELOPMENT %

Job Number	Produced	Checked	Date
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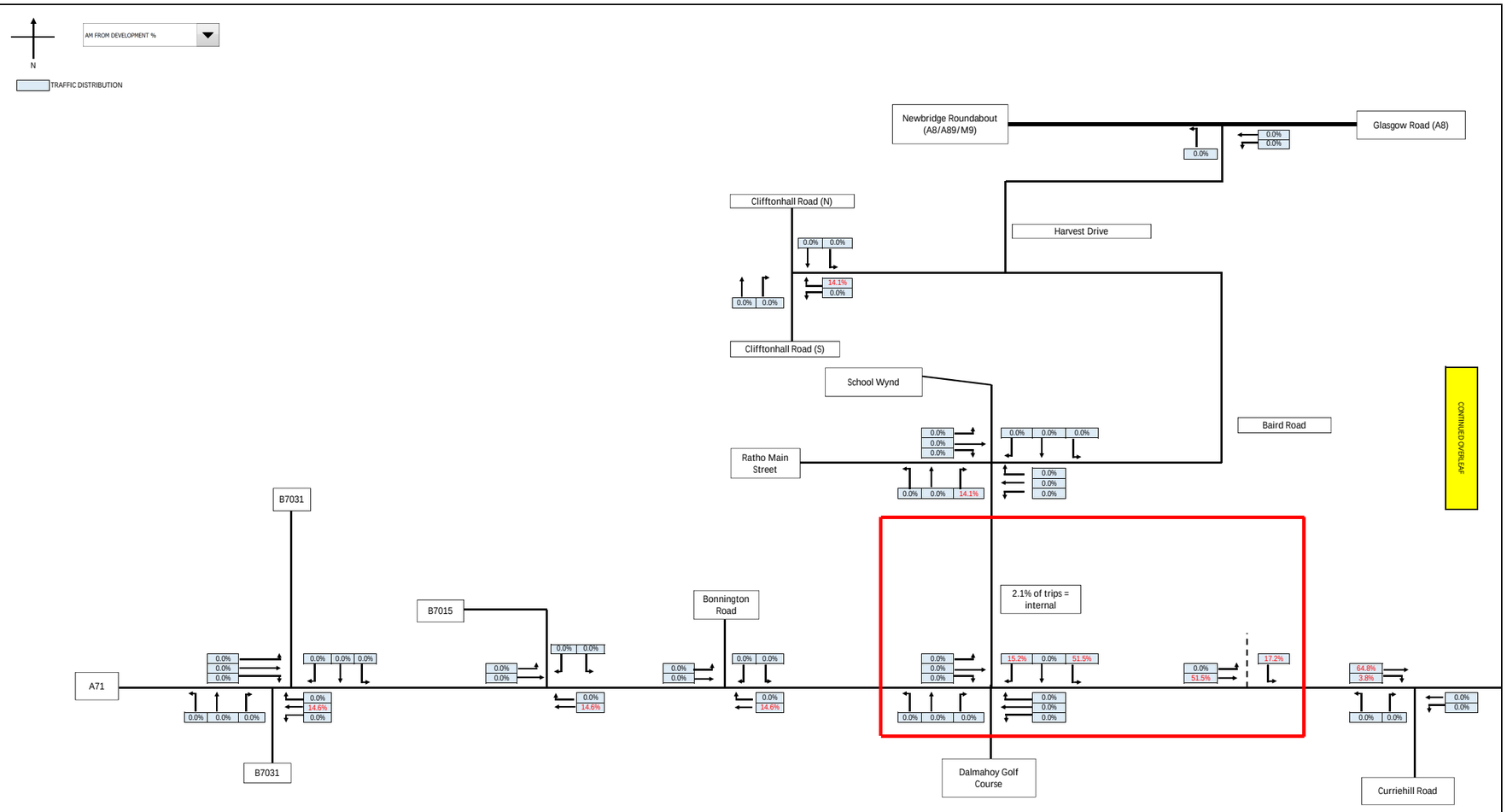

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Job Number	Produced	Checked	Date
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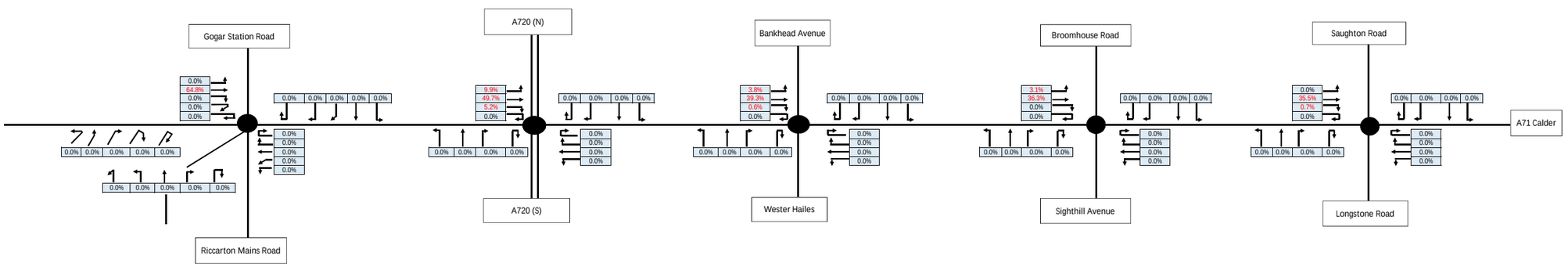

Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		AM FROM DEVELOPMENT %

Job Number	Produced	Checked	Date
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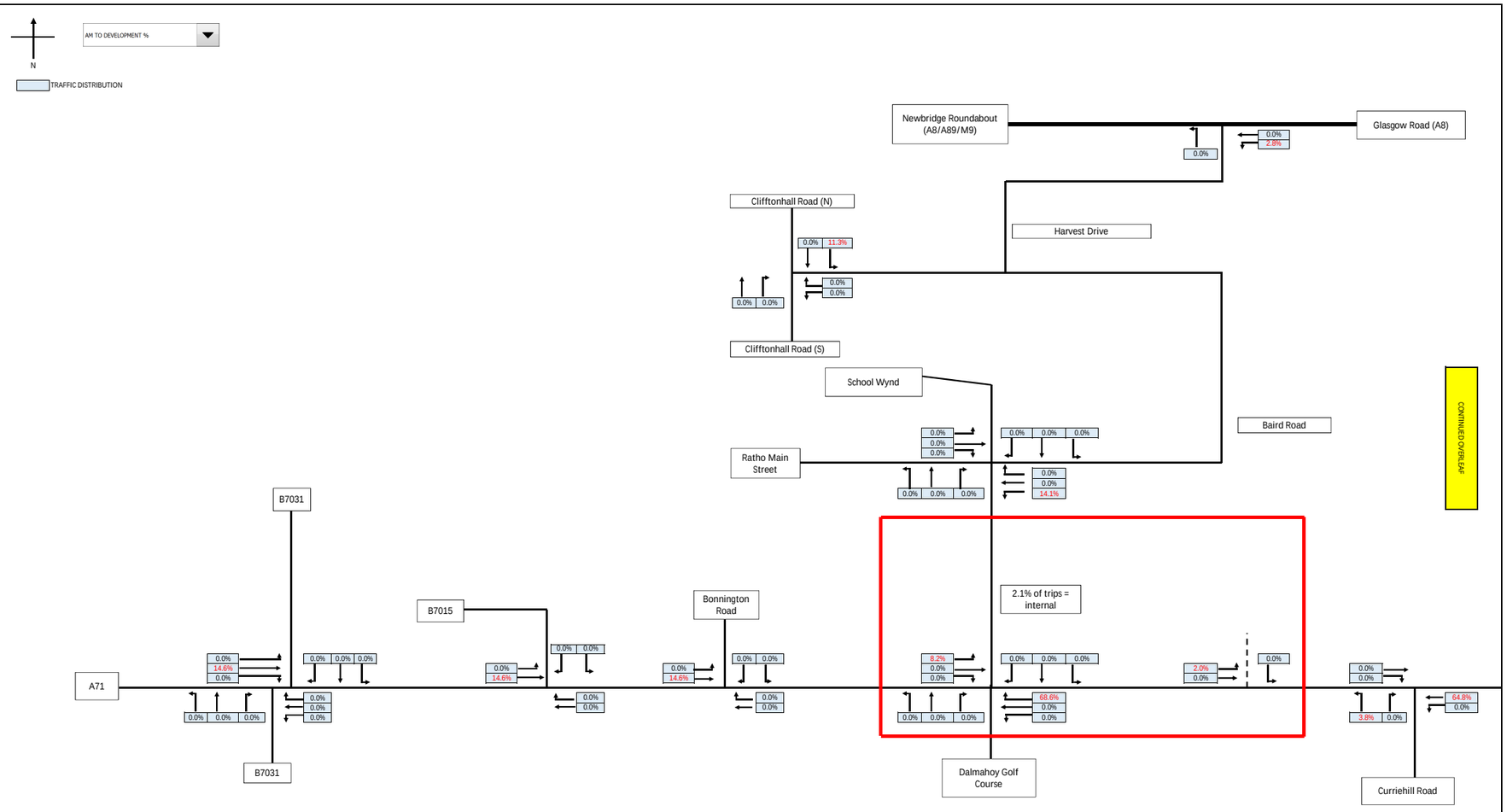


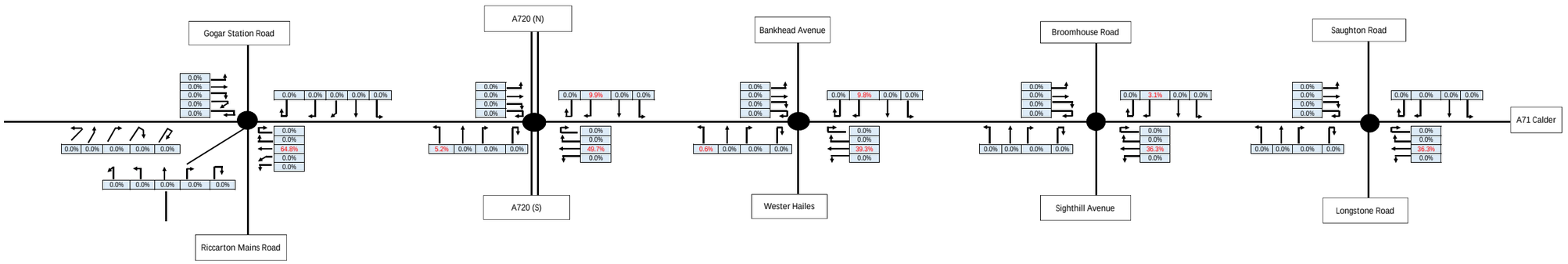
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		AM TO DEVELOPMENT %

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

TRAFFIC DISTRIBUTION

CONTINUED OVERLEAF



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		AM TO DEVELOPMENT %

Job Number	Produced	Checked	Date
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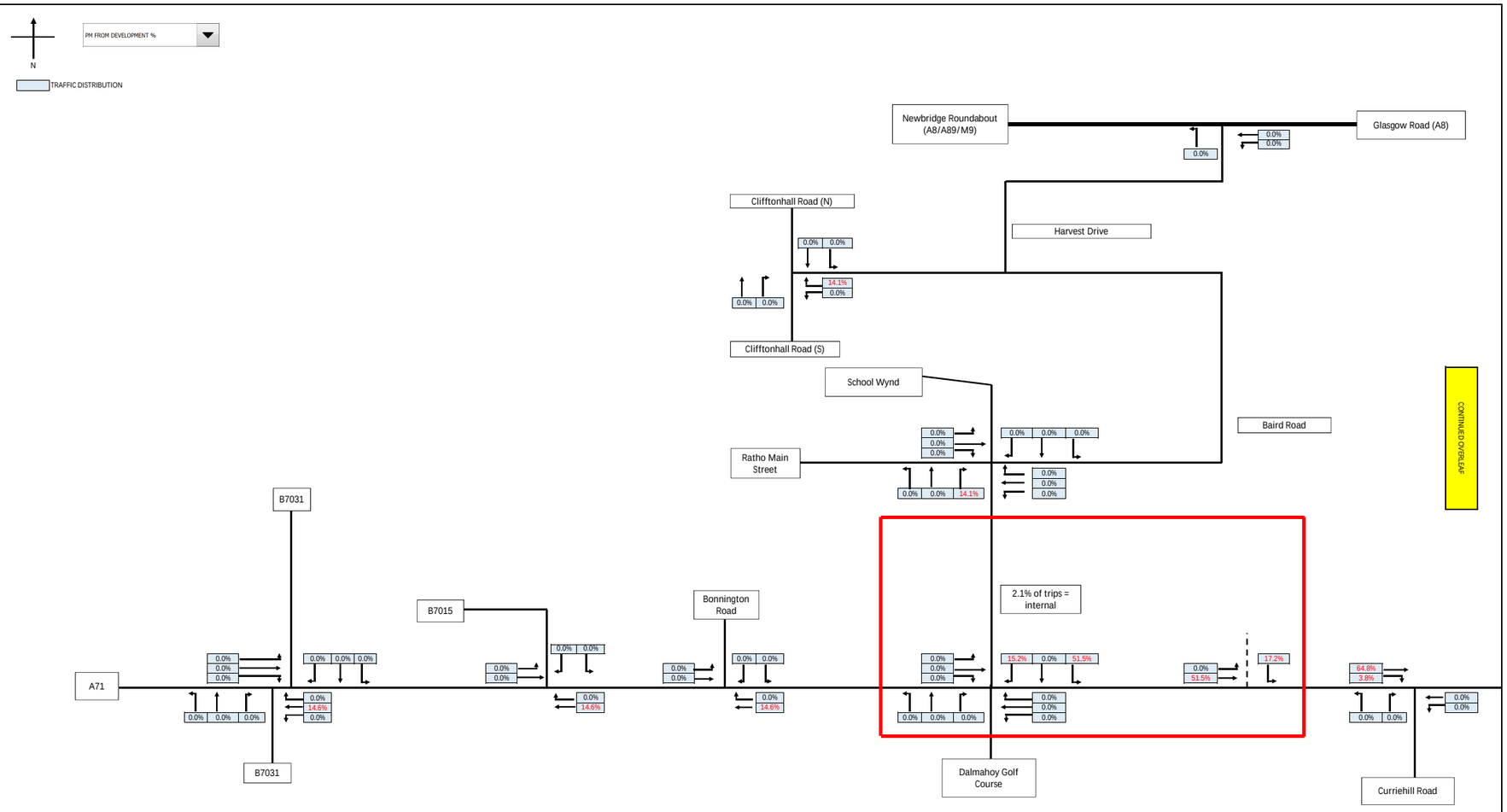


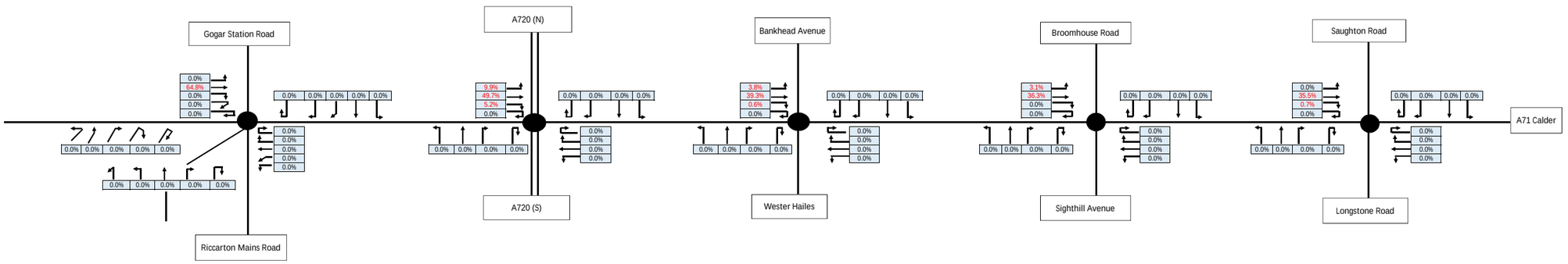
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		PM FROM DEVELOPMENT %

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

TRAFFIC DISTRIBUTION

CONTINUED OVERLEAF



Client	Project			Title
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Job Number	Produced	Checked	Date
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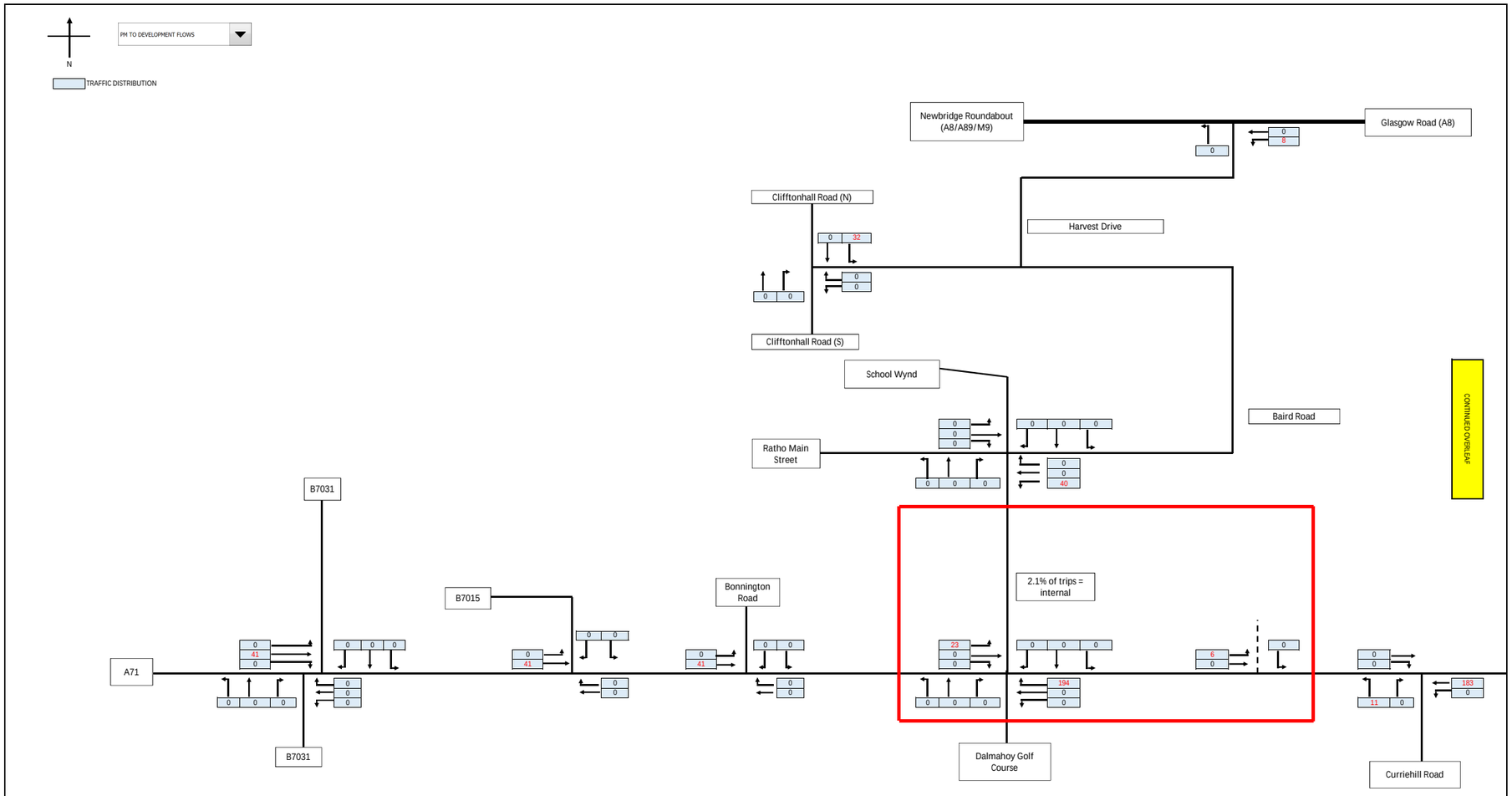


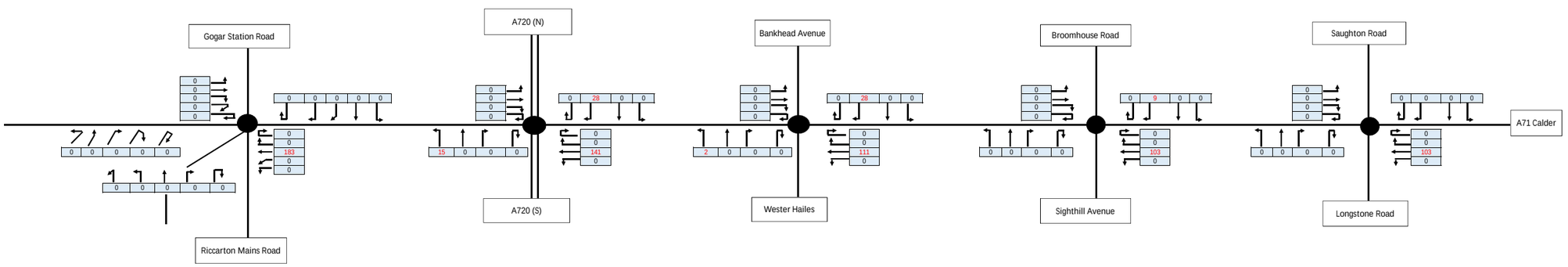
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		PM TO DEVELOPMENT FLOWS

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

TRAFFIC DISTRIBUTION

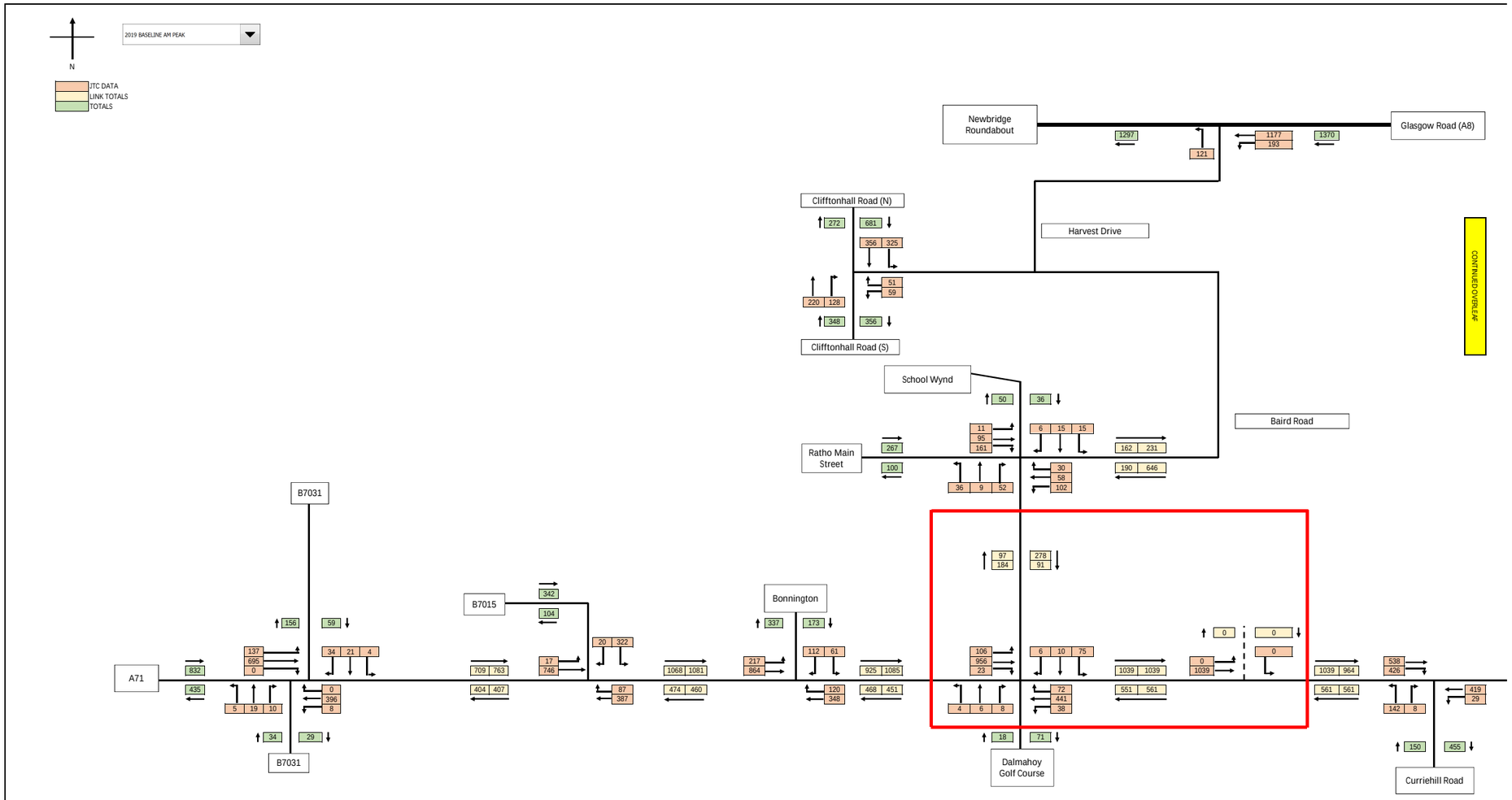
CONTINUED OVERLEAF



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		PM TO DEVELOPMENT FLOWS

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

Appendix E Base Traffic Flows



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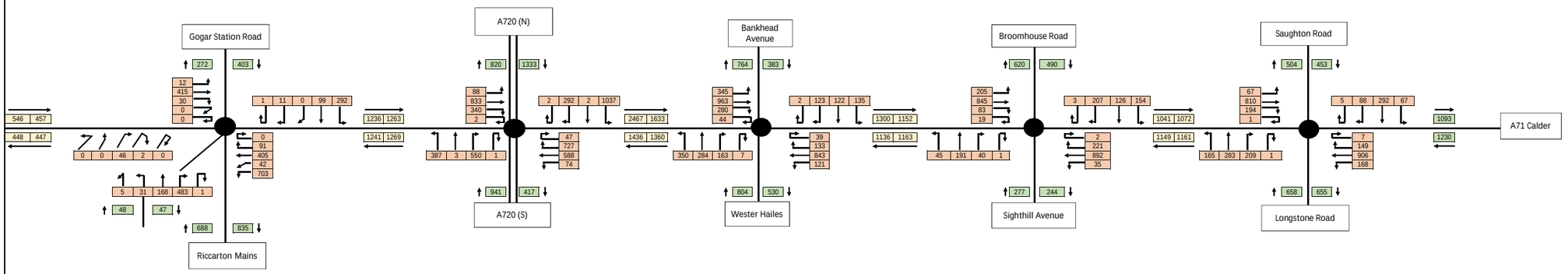
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		2019 BASELINE AM PEAK

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

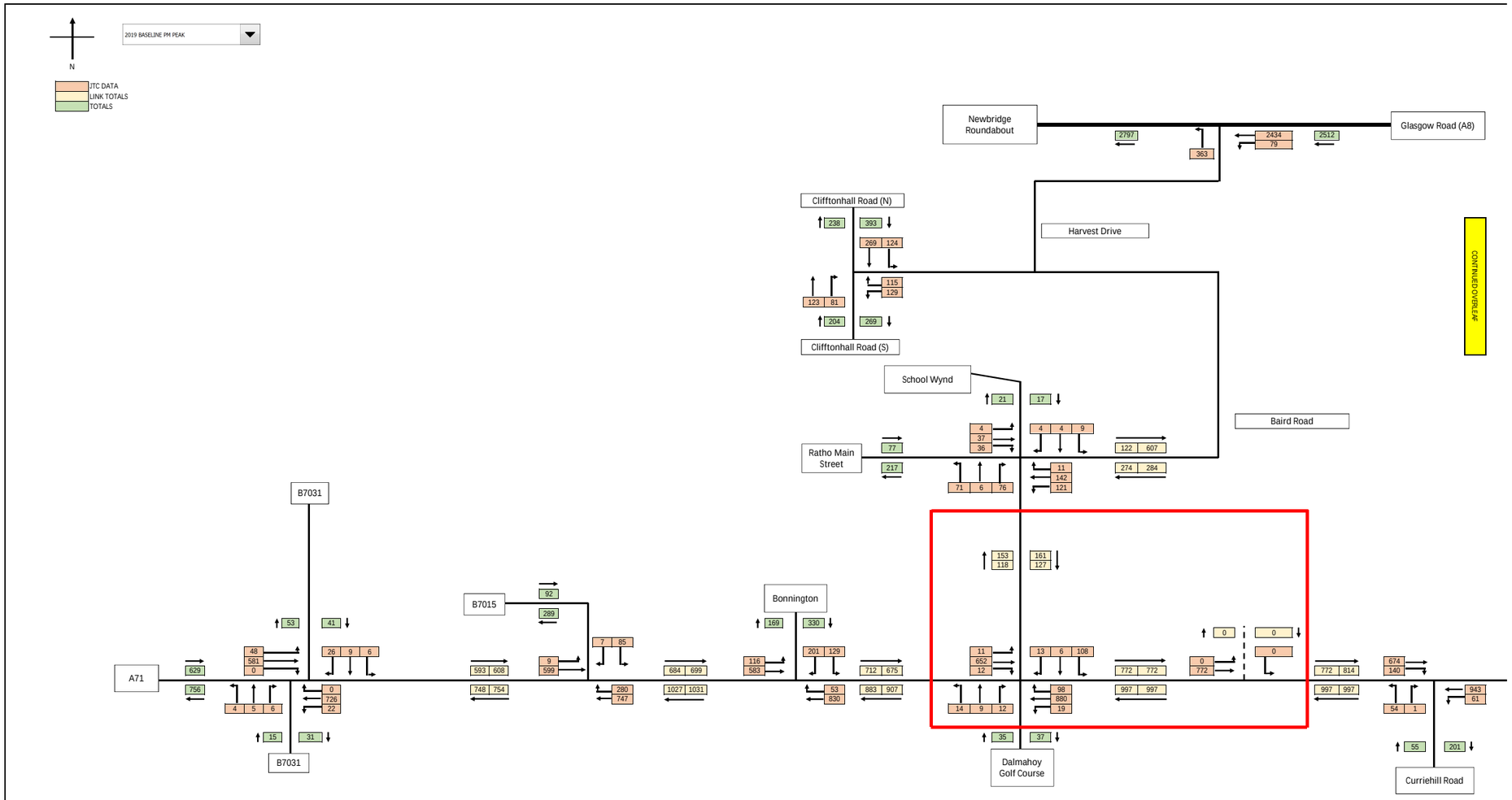
JTC DATA
LINK TOTALS
TOTALS

CONTINUED OVERLEAF



Client	Project		Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM	2019 BASELINE AM PEAK

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		2019 BASELINE PM PEAK

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

JTC DATA
LINK TOTALS
TOTALS

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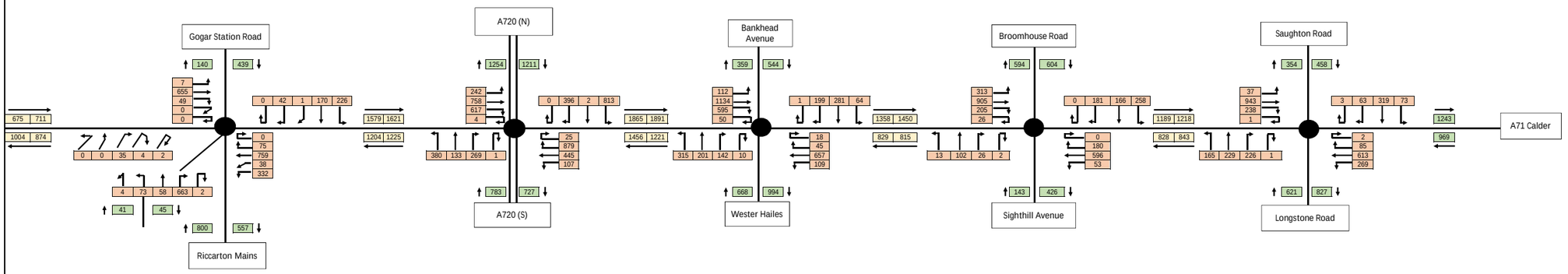
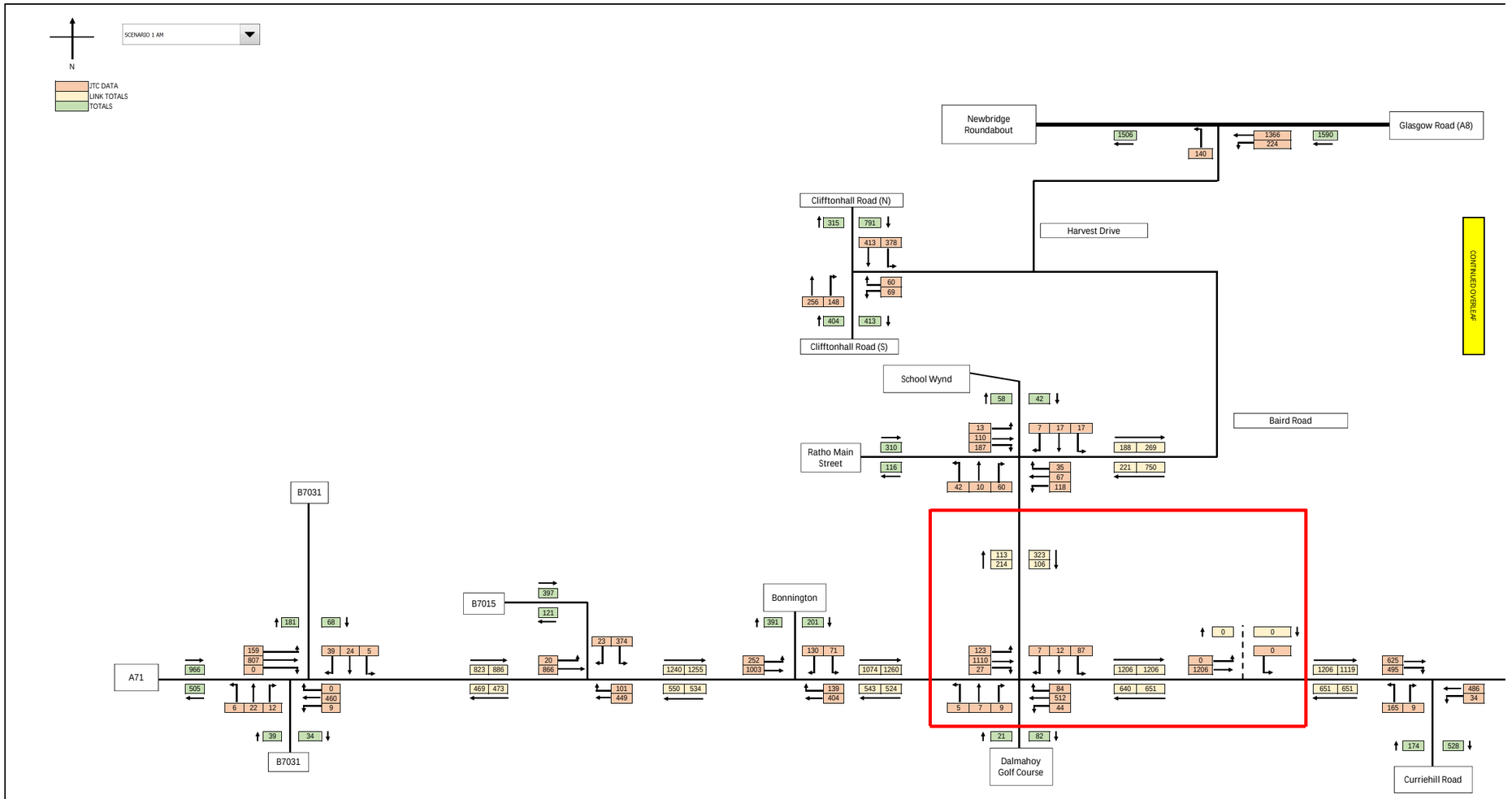


Client	Project		Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM	2019 BASELINE PM PEAK

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

Appendix F Scenario 1 Traffic Flows



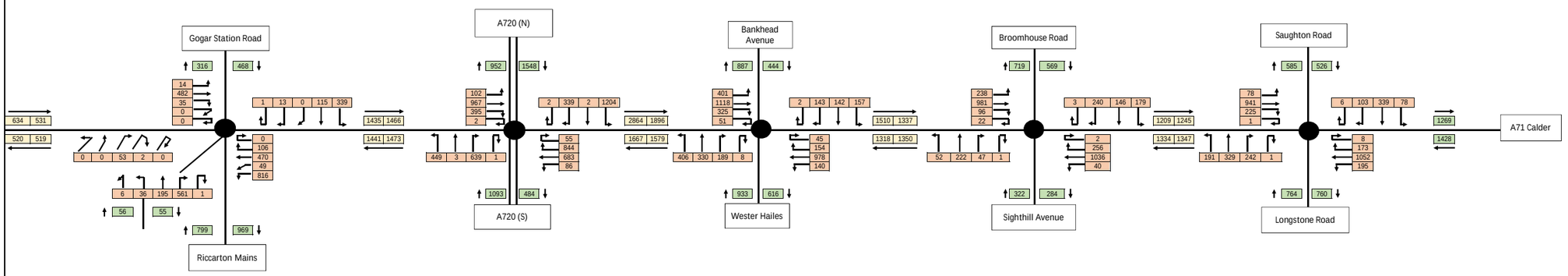
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 1 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

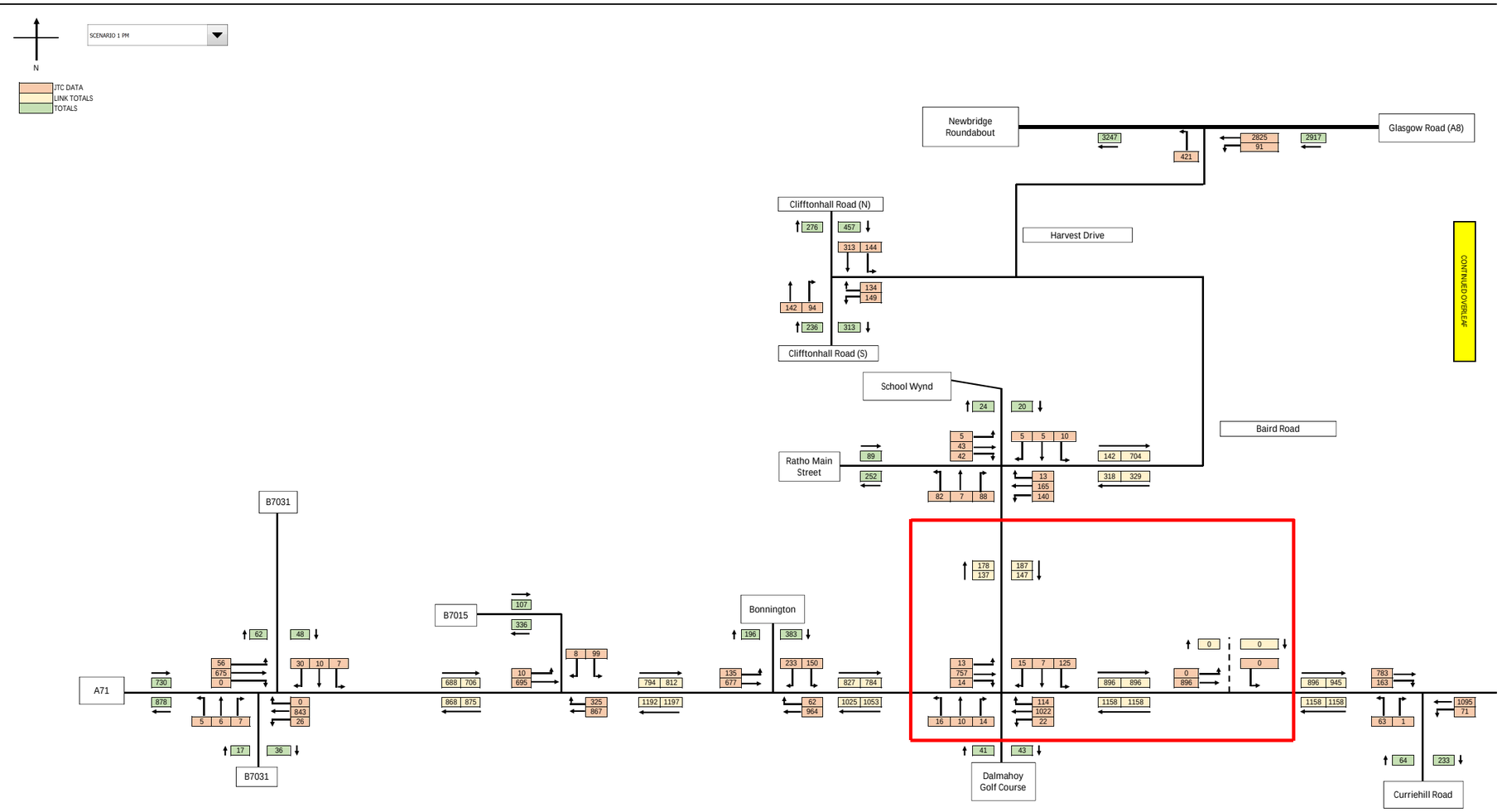
JTC DATA
LINK TOTALS
TOTALS

CONTINUED OVERLEAF



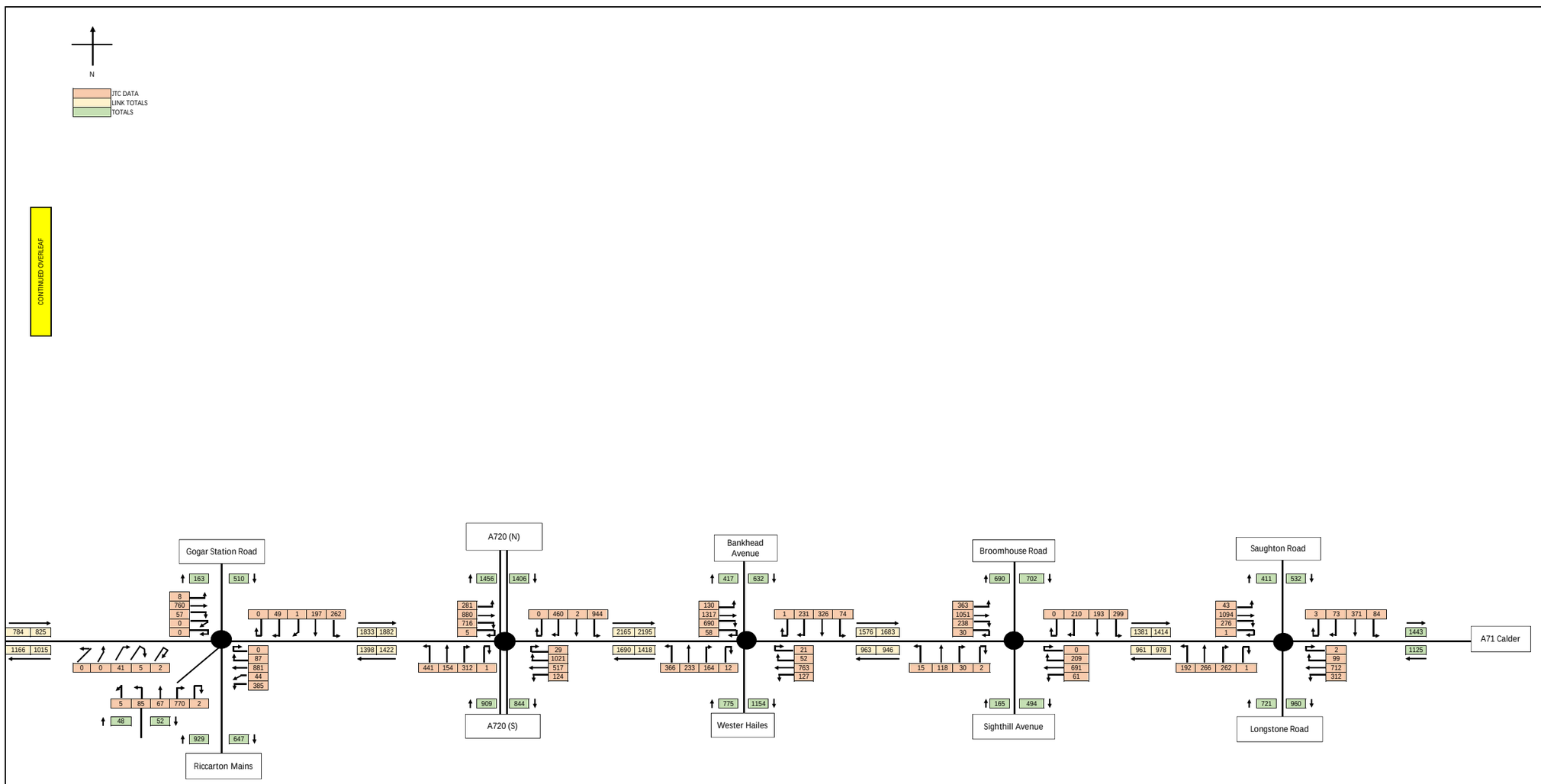
Client	Project		Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM	SCENARIO 1 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 1 PM

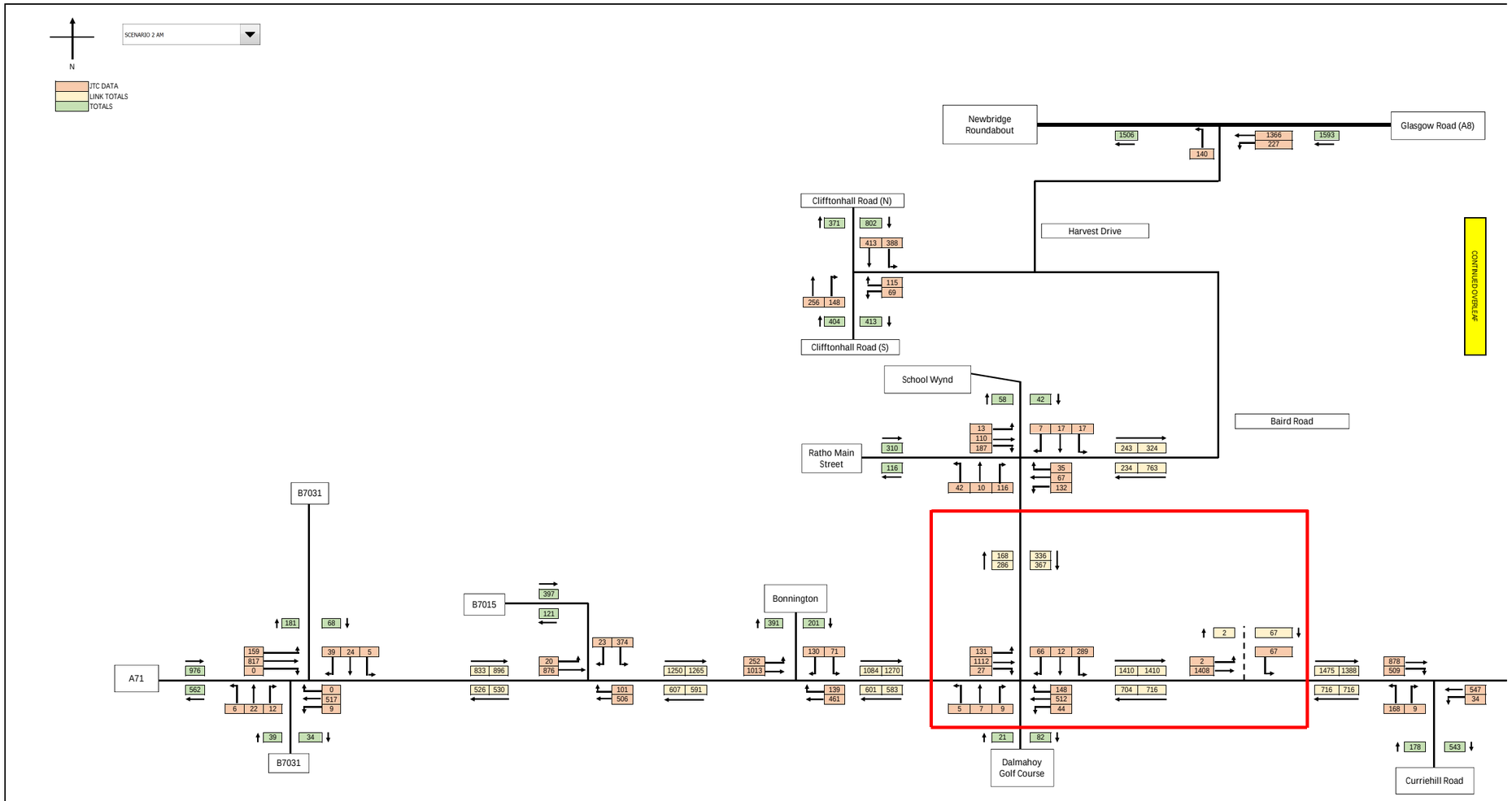
Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 1 PM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

Appendix G Scenario 2 Traffic Flows



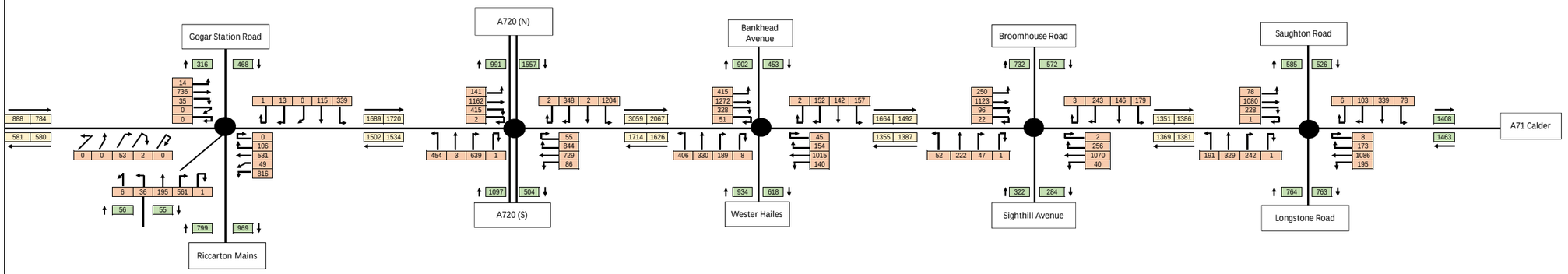
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 2 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

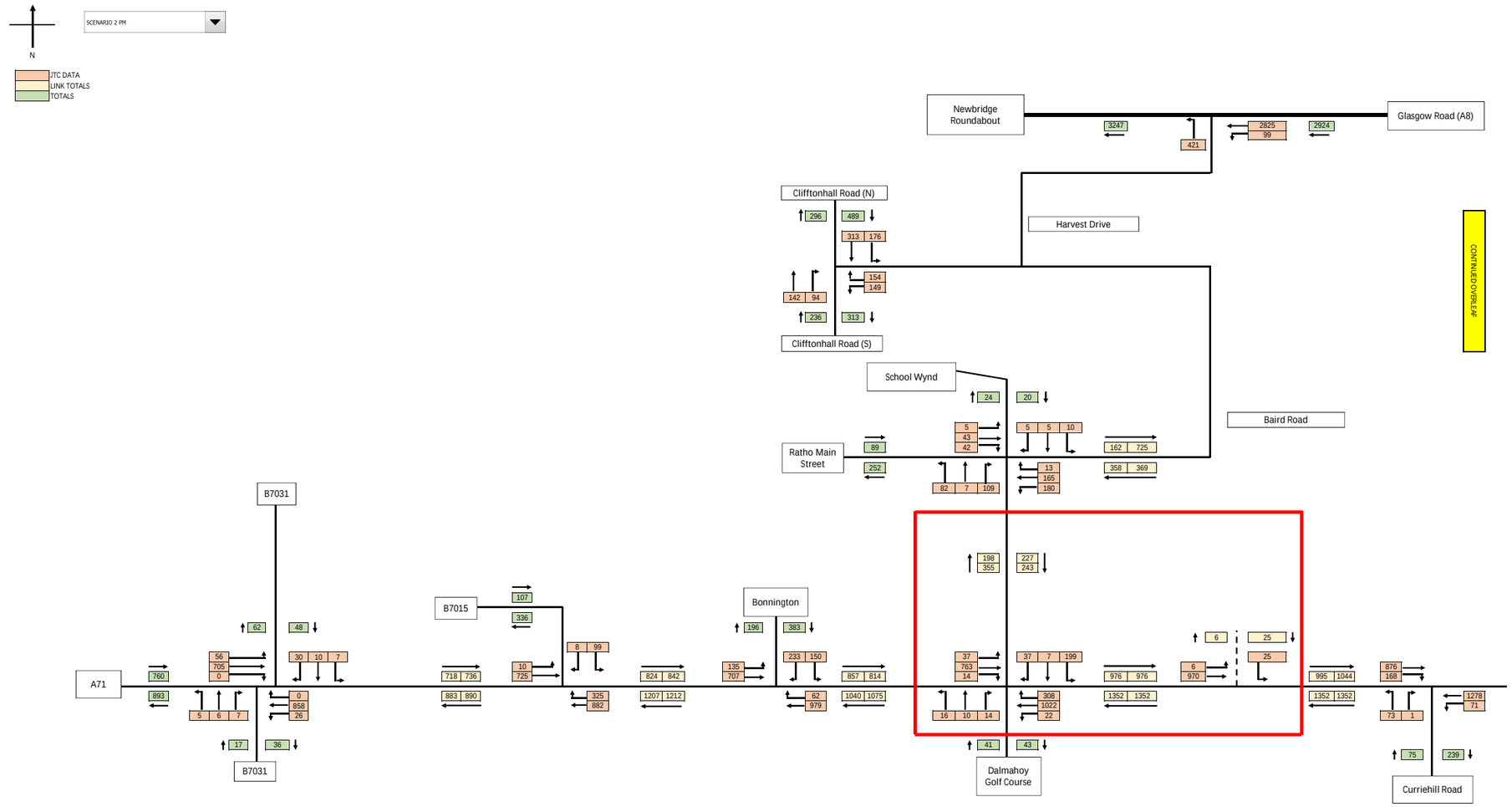
JTC DATA
LINK TOTALS
TOTALS

CONTINUED OVERLEAF



Client	Project		Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM	SCENARIO 2 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



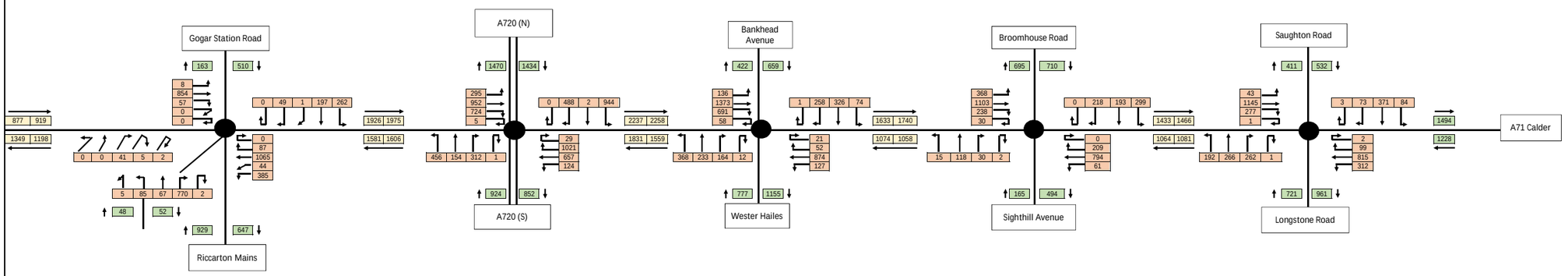
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 2 PM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

N

JTC DATA
LINK TOTALS
TOTALS

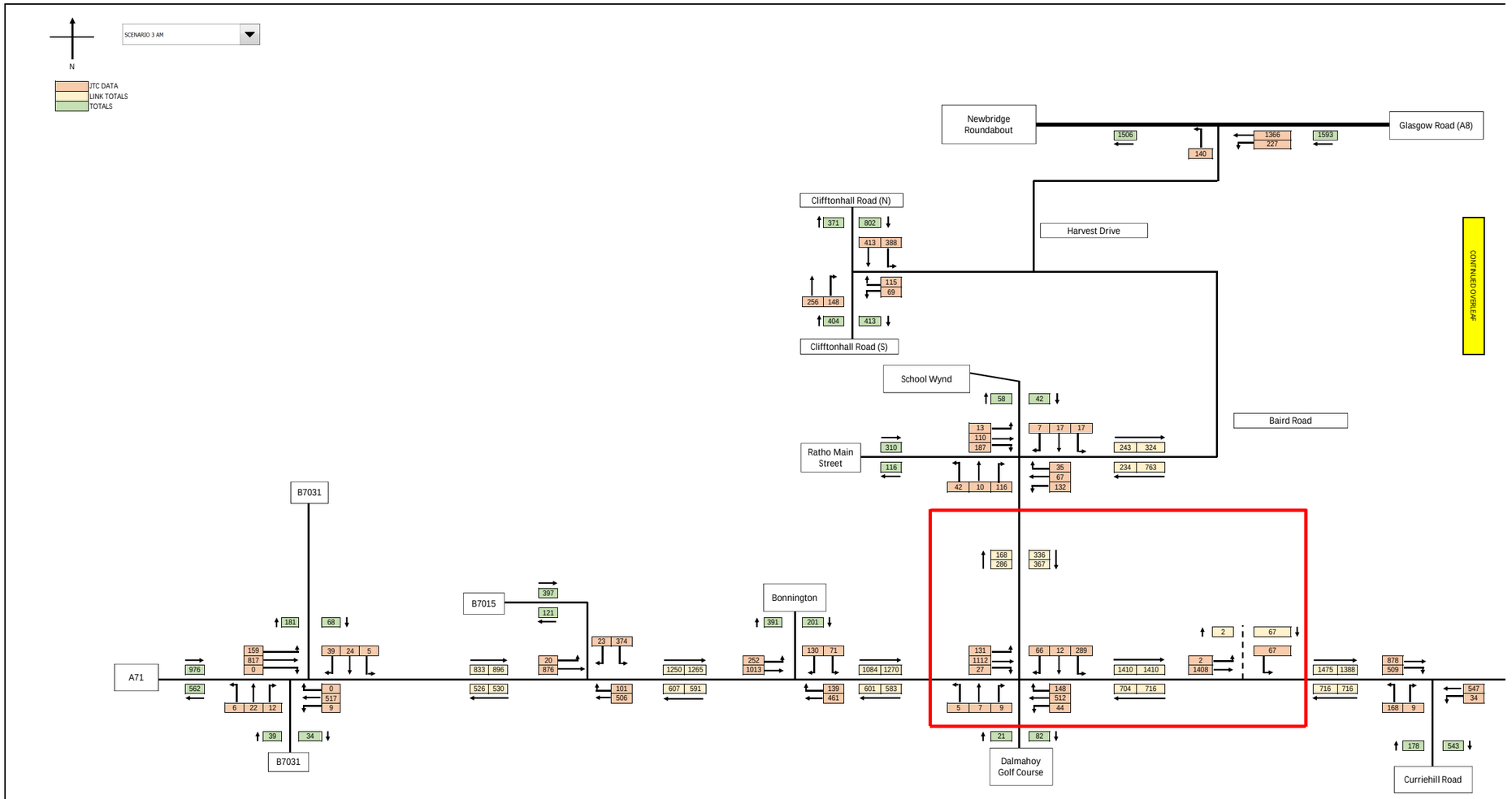
CONTINUED OVERLEAF



Client	Project		Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM	SCENARIO 2 PM

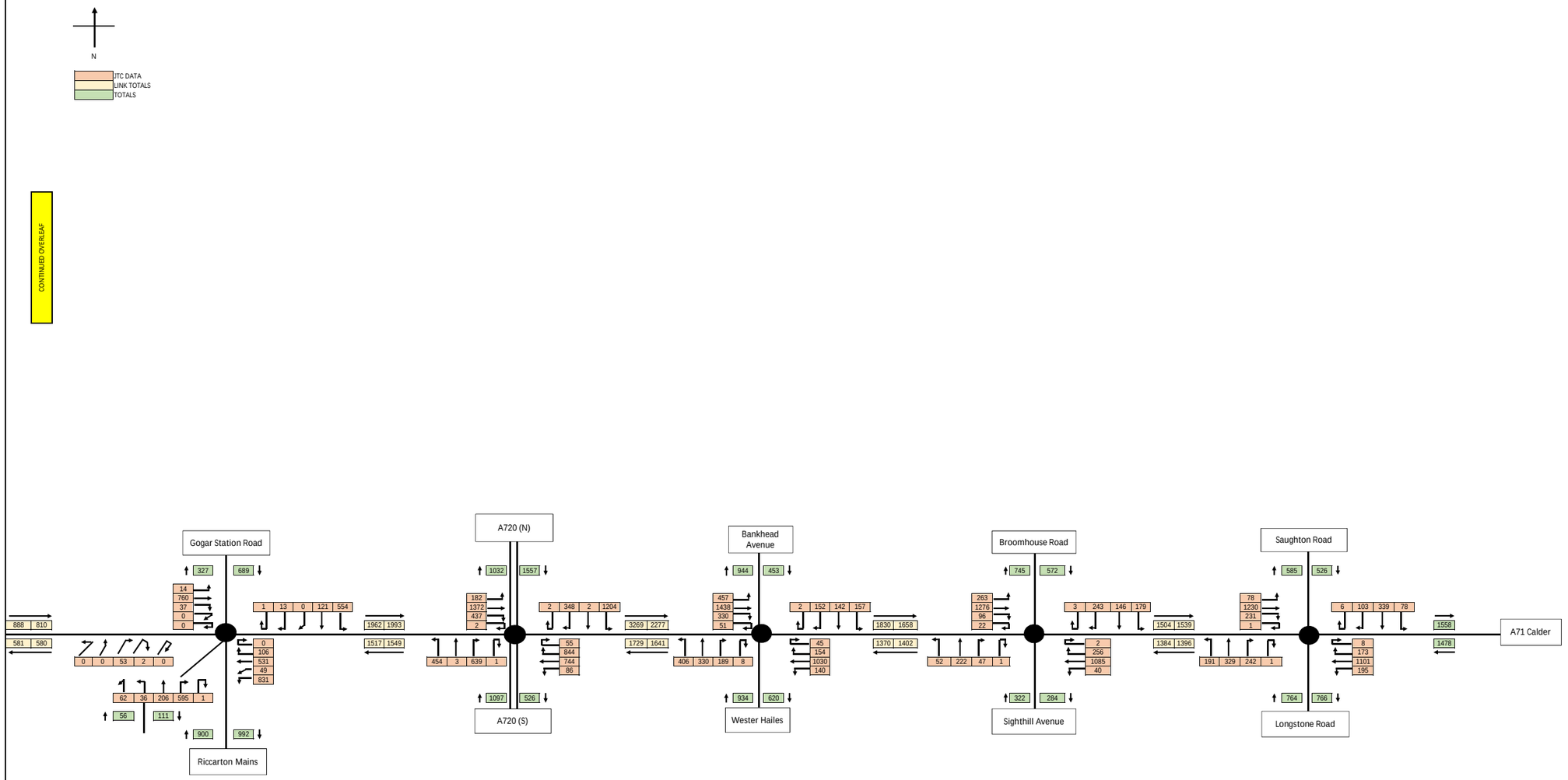
Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019

Appendix H Scenario 3 Traffic Flows



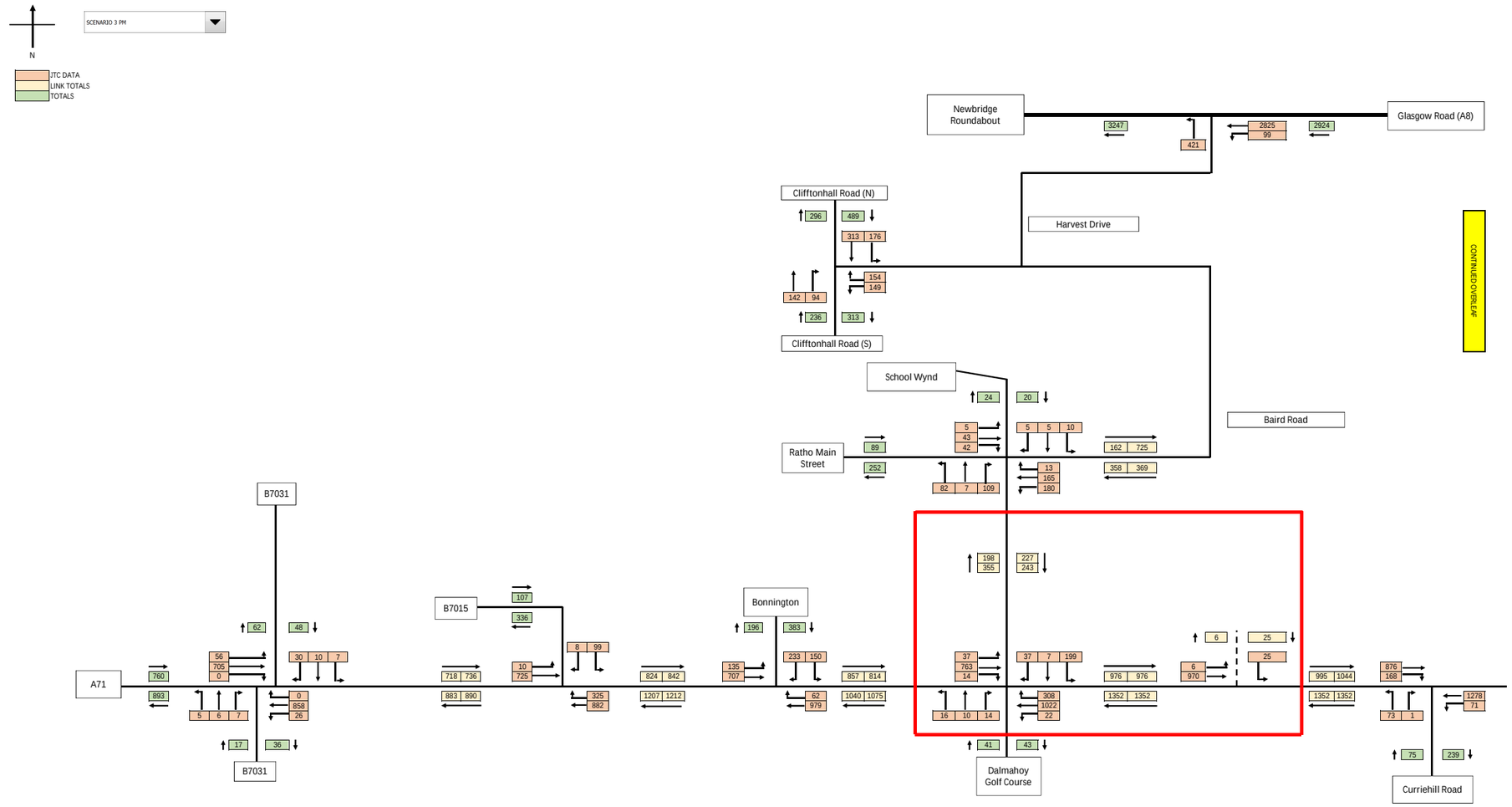
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 3 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



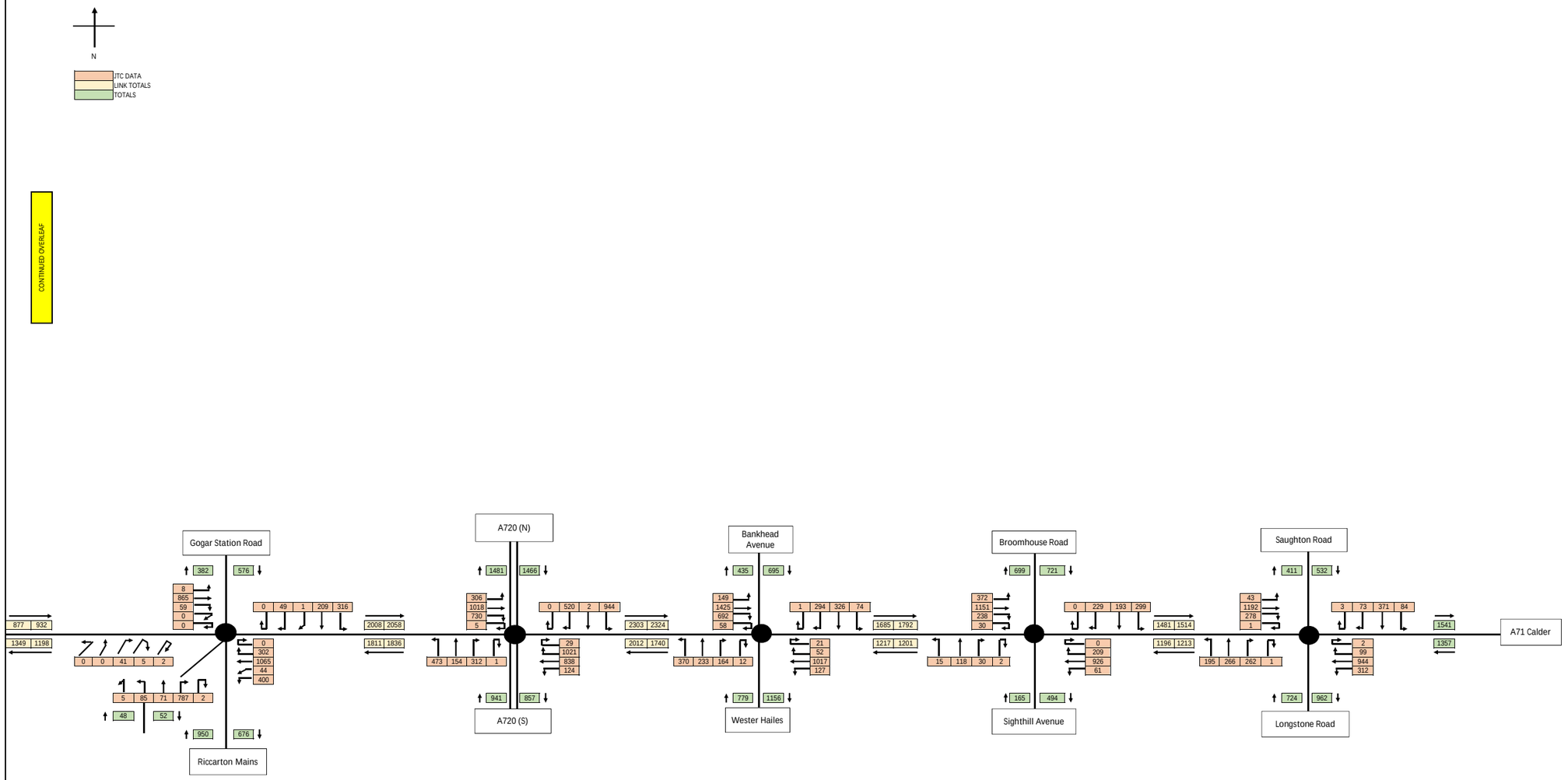
Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 3 AM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 3 PM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019



Client	Project			Title
INVERDUNNING (HATTON MAINS) LTD	HATTON VILLAGE	AECOM		SCENARIO 3 PM

Job Number	Produced	Checked	Date
60586310	BM	CR	01/05/2019