Homes England

Proposed Residential Development
Harras Moor, Whitehaven

A090070 - 410

Transport Assessment

June 2018

For Issue

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1. Introduction

1.1 Introduction

1.1.1 WYG has been commissioned by Homes England to provide transport and highways advice in relation to an outline planning application for up to 370 residential units on land at Harras Moor, Whitehaven, Cumbria.

1.1.2 The site, which is currently largely green fields, is located around 1.3km east of Whitehaven town centre on land south of Harras Road and is situated between existing residential development and an industrial development. The location of the site is shown on **Plan 1** while the site's location in relation to the immediate local highway network is shown on **Plan 2.**

1.1.3 The local planning authority (LPA) for the area where the site is located is Copeland Borough Council (CBC) while the local highway authority (LHA) is Cumbria County Council (CCC). Highways England (HE) maintain the nearby A595 which runs north to south between the site and Whitehaven town centre.

1.1.4 There is little relevant planning history on the site. There are only two relevant applications, one which relates to land on the south-west part of the site and was withdrawn in 2014 without being determined and another that relates to land, not on the site but on an adjacent parcel of land that lies just north of Harras Road. Two outline applications (application numbers 4/16/2415/001 and 4/16/2416/001) for a total of 110 residential dwellings were submitted in November 2016 for this site and have recently been approved. These applications have been taken into account in this TA and the proposed access to the site still would still be effective if they were carried out.

1.2 Scope of Assessment

1.2.1 The methodology within this report broadly adopts the guidance set out in the Department for Transport (DfT) 'Guidelines for Transport Assessment (2007)' and also takes account of more recently published policy set out in the National Planning Policy Framework (NPPF) and the supporting National Planning Practice Guidance Notes (NPPG).

1.2.2 During the preparation of this report, detailed discussions have taken place with the LHA and HE over access arrangements to the site, the general scope of the Transport Assessment (TA) and the proposed development's potential traffic generation, trip distribution, and the extent of junction

assessments required to determine the impact of the proposed development on the local highway network. This included the submission of a technical note on trip generation and distribution.

1.2.3 This TA therefore has been prepared in accordance with the scope agreed with the LHA and HE during these discussions to provide the LHA and HE with the information required to assess the proposals from a transport and highways perspective. Relevant scoping correspondence is included in **Appendix A** of this report.

1.3 Structure of the Report

1.3.1 Following this introduction, the report is structured as follows:

- **Section 2** sets out national and local transportation guidance and policies that are relevant to the development proposals.
- **Section 3** describes existing conditions on and around the site including the development's location, current use and operation, and provides a review of accident data on roads near the development.
- **Section 4** sets out the accessibility of the site by sustainable transport.
- **Section 5** provides details of the development proposals.
- **Section 6** estimates the volume of traffic that could potentially be generated by the proposed development and assigns the traffic to the local highway network.
- **Section 7** set out the results of junction capacity assessments undertaken at junctions within the agreed study area.

1.3.2 The TA is summarised and concludes in **Section 8** which describes how the proposals adhere with current policy and guidance and sets out why there are no transport or highway reasons why the proposed development should not be approved.

2. National and Local Planning Policy

2.1 Introduction

2.1.1 This section of the TA reviews the relevant transport planning policy and guidance documents in the context of the proposed development by reference to the following documents:

- National Planning Policy Framework (2012);
- National Planning Practice Guidance (2014); and
- Copeland Local Plan 2013-2028 Core Strategy and Development Policies DPD (Adopted December 2013).

2.1.2 Subsequent sections of this report demonstrate that the proposals are consistent with the above documents.

2.2 National Planning Policy Framework (2012)

2.2.1 The Department for Communities and Local Government (now the Ministry of Housing, Communities and Local Government) published its National Planning Policy Framework (NPPF) in 2012. The NPPF replaces all previous Planning Policy Guidance (PPG) Notes and Planning Policy Statements (PPS) with a single document.

2.2.2 Local authorities are expected to grant permission, using the NPPF where the local plan is absent, silent, indeterminate and where relevant policies are out of date, unless the adverse effects of granting planning permissions significantly and demonstrably outweigh the benefits of the scheme.

2.2.3 At the heart of the NPPF is:

'a presumption in the favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking' (paragraph 14)

2.2.4 The NPPF also states in paragraph 15 that:

'Policies in Local Plans should follow the approach of the presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved without delay. All plans should be based upon and reflect the presumption in favour of sustainable development, with clear policies that will guide how the presumption should be applied locally'

2.2.1 The NPPF states that development planning should:

- *'...give people a real choice about how they travel' (Paragraph 29);*
- *'ensure developments that generate significant movements are located where the need to travel will be minimised and the use of sustainable travel modes can be maximised' (Paragraph 34); and,*
- *'developments should be located and designed where practical to give priority to pedestrians and cycle movements, and have access to high quality public transport facilities' (paragraph 35).*

2.2.2 The NPPF sets out a key test in Paragraph 32 for the acceptability of planning applications in terms of highway impact. It states that:

> *'Development should only be prevented or refused on transport grounds where the residual cumulative impacts of the development are severe' (Paragraph 32).*

2.2.3 It is therefore clear from the NPPF that development:

- Should be capable of being accessed satisfactory with safe and suitable access provided for all;
- Should be sustainable, with preference given to accessibility by sustainable modes of transport; and
- Should not be prevented unless the residual cumulative impacts of the development are 'severe'.

2.2.4 It will be demonstrated in the subsequent sections of this TA that the proposed development is located close to pedestrian/cycle links and close to public transport thereby enabling future residents of the development to use sustainable modes of travel. The report also demonstrates that the impact of the development is not 'severe' thereby meeting the requirements of NPPF.

2.3 National Planning Practice Guidance (2016)

2.3.1 The National Planning Practice Guidance (NPPG) web-based resource was published on 6 March 2014 by the Department for Communities and Local Government. This resource collates relevant planning practice guidance and provides links between the NPPF, relevant legislation and guidance.

2.3.2 In terms of transportation, the guidance on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' is relevant to this application. The document essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

'Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development'.

2.3.3 Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be 'severe', which may be grounds for refusal, in accordance with the NPPF.

2.3.4 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements. It states that:

'The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may positively influence the overall nature or the detailed design of the development.'

2.4 Copeland Local Plan 2013-2028 Core Strategy and Development Management Policies DPD

2.4.1 The current development plan for the area in which the proposed development is located is the Copeland Local Plan which sets out the vision for development in Copeland between 2013 and 2018. The Core Strategy and Development Management Policies DPD sets out the development policy framework for the area within that timeframe. The relevant transport policies from that document have been identified below:

Policy ST1 – Strategic Development Principles

2.4.2 The Strategic Development Principles that inform and underpin the Borough's planning policies that specifically related to transport, are:

a) Economic and Social Sustainability

b) Environmental Sustainability

vi) Minimise the need to travel, support the provision of sustainable transport infrastructure and measures that encourage its use.

vii) Prioritise development in the main towns where there is previously developed land and infrastructure capacity

c) Protect, enhance and restore the Borough's valued assets

d) Ensure the creation and retention of quality places

iii) Accommodate traffic and access arrangements in ways that make it safe and convenient for pedestrians and cyclists to move around

Planning applications that accord with these principles and relevant Development Management policies, and do not undermine the Spatial Development Strategy, will be approved without unnecessary delay, unless material considerations indicate otherwise.'

2.5 Compliance with Policy

2.5.1 Subsequent sections of this report describe the development proposals and surrounding existing facilities such as local services, pedestrian routes and existing public transport provision while also assessing the impact of the proposals on the local transport network. As will be shown, the development proposals comply with the guidelines and policies detailed above.

3. Existing Conditions

3.1 Introduction

3.1.1 This section describes the site location, existing land use, and local highway network, including the networks safety record close to the proposed development site.

3.2 Site Location and Existing Land Use & Access

3.2.1 The proposed development site is located in the eastern part of Whitehaven and is approximately 1.3km east of the town centre. The site encompasses several parcels of land that lie between Harras Road, Red Lonning and the A595 (Loop Road South). The site is currently used for agricultural land.

3.2.2 **Plan 1** shows the location of the site in the context of Whitehaven while **Plan 2** shows the location of the site in relation to the immediate local highway network.

3.2.3 The site is bounded by existing residential properties and green fields to the north-west, Harras Road to the north-east, Red Lonning and some industrial buildings to the east, existing residential properties to the south and a row of residential properties fronting onto the A595 (Loop Road South) to the south-west.

3.2.4 The statutory development plan for the site consists of the Core Strategy and Development Management Policies DPD (adopted in 2013) and saved policies from the Copeland Local Plan 2001-2016 (adopted in 2006). A large part of the site is identified in the plans as New Housing Allocations (Policy ST2). The remainder is unallocated land.

3.2.5 Vehicular access to the site is currently via Caldbeck Road with further points of access which take the form of 'five bar gate' style access points into the fields that form the site on Harras Road and the A595 (Loop Road South).

3.3 Local Highway Network

3.3.1 The local highway network in the vicinity of the site is shown on **Plan 2** and is briefly described below.

Harras Road

3.3.2 Harras Road lies to the north-east of the site and forms part of the site's north-eastern frontage for approximately 150m. It is subject to a 30mph speed limit and the section that runs along the site

frontage has a carriageway width of approximately 5.0m. A footway is present along the southern side of the carriageway which extends to the existing residential area. There is street lighting on the southern side of Harras Road. Approximately 75m east from the site's north-eastern boundary, Harras Road forms a priority junction with Red Lonning with Red Lonning forming the major arm of the junction.

3.3.3 As part of the approved application on the opposite side of Harras Road (application numbers 4/16/2415/001 and 4/16/2416/001), a site access junction is proposed to the development located around 30m to the west of this site's north-western boundary. The section of Harras Road adjacent to the site is to be widened to 6m, a footway provided on the northern side of the road, and a new pedestrian refuge island installed around 70m to the west of Harras Road's junction with Red Lonning.

Red Lonning

3.3.4 The site boundary also forms a frontage with Red Lonning along a 200m section of road just south of the access road to the industrial site and opposite Whitehaven Golf Course. Red Lonning provides a link to the A595, located around 2.6km to the north of the site. Red Lonning is subject to the national speed limit (60mph) adjacent to the site frontage. Further to the south, where Red Lonning travels southwards through a residential area the speed limit changes to 30mph and then to 20mph just before the road enters the residential area. There is a footway along the western edge of Red Lonning along the frontage of the site which is separated from the road by a verge. There is street lighting on Red Lonning near the site.

Caldbeck Road

3.3.5 Part of Caldbeck Road runs through the site and provides access to an existing residential area located just to the south of the site. The northern section of Caldbeck Road does not serve any development and forms a cul-de-sac within the eastern/central extent of the site with a formal turning head provided. The road is around 6m wide and has footways on both sides of the road and is subject to a 30mph speed limit. Street lighting is provided.

3.3.6 Caldbeck Road forms a priority junction with Red Lonning approximately 240m to the south-east of the site's southern-most frontage with Red Lonning forming the major arm of the junction.

A595 Loop Road South

3.3.7 The proposed development site has a small frontage, approximately 12m long, with the A595 (Loop Road South) along the site's western boundary. The A595 forms part of the trunk road network and is therefore managed by HE rather than the LHA. Near the site, the A595 is around 7.5m wide has footways on both sides of the road and is subject to a 40mph speed limit. Street lighting is also provided.

3.3.8 The A595 is the primary vehicular route through Whitehaven and links Whitehaven to Sellafield and Barrow-in-Furness approximately 14km and 50km respectively to the south, and to Workington and Carlisle and the M6 approximately 8km and 55km to the north east.

3.4 Personal Injury Accident Review

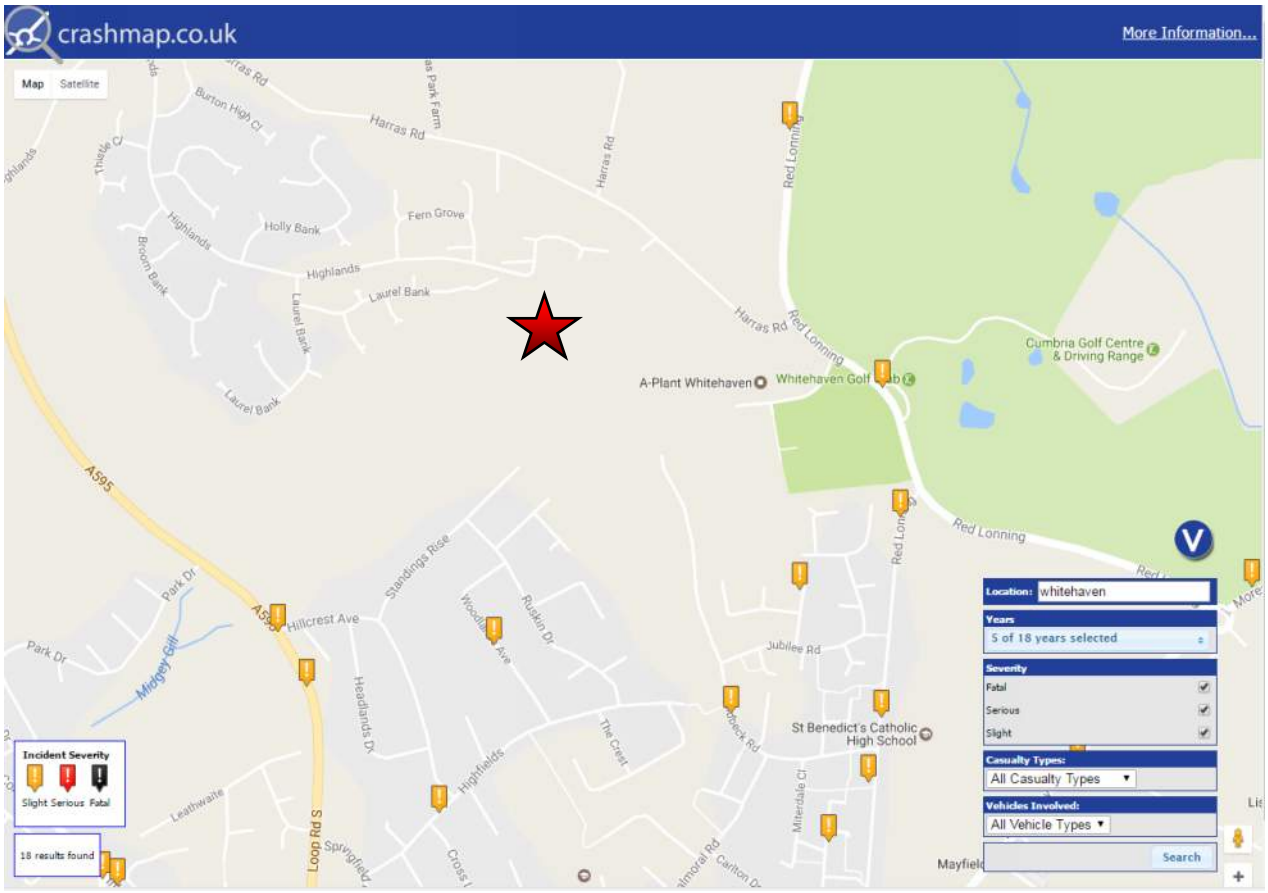
3.4.1 An interrogation of the crashmap website (www.crashmap.co.uk) has been undertaken to determine whether there are any accident issues/hotspots on the local highway network near the proposed site. Personal injury accident (PIA) data for the five-year period between 2011 and 2015 has been reviewed with **Figure 3.1** showing the location of recorded PIA's on the local highway network near the proposed site. The yellow flags indicate a 'slight' PIA.

3.4.2 **Figure 3.1** shows that during the five-year period reviewed, there have been no recorded PIA's along Harras Road, only two PIA's recorded on Red Lonning adjacent to the proposed development site, one on Caldbeck Road, and one on Loop Road South in the vicinity of the site. All these resulted in slight injury.

3.4.3 **Figure 3.1** shows that on the wider network, all PIA's that were recorded were classified as 'slight' injury and that there are no obvious clusters of PIA's that could suggest an existing highway safety problem.

3.4.4 Overall therefore, it is considered that the road network surrounding the site has a good safety record and based on this analysis, highway safety is therefore not considered to be a barrier to development of the site.

Figure 3.1 – Map of Personal Injury Accidents



4. Sustainable Transport

4.1 Introduction

4.1.1 This section considers pedestrian and cycle links and the provision of public transport within the surrounding area of the proposed development site.

4.2 Pedestrian Accessibility

4.2.1 It is generally accepted that walking is the most important mode of travel at a local level and offers the greatest potential to reduce short car trips, particularly those under 2km. The implication of this is that 2km is a distance that some people are prepared to walk to access an amenity/facility. 2km is also the Institution for Highways and Transportation (IHT) guidance preferred maximum suggested walking distance to schools and for commuting.

4.2.2 In respect of this, **Plan 3** has been prepared which shows 1km and 2km walking catchments from the centre of the site.

4.2.3 **Plan 3** shows that the 1km catchment contains the following:

- Whitehaven Golf Club
- Jericho Primary School
- St Benedicts RC High School
- An indoor children's play area.

4.2.4 **Plan 3** also shows that the majority of Whitehaven town centre falls within the 2km catchment of the site resulting in a wide range of amenities and facilities being within a reasonable walking distance of the site. These include:

- Various employment opportunities, including within Whitehaven town centre and those around the Cleator Moor Road / Main St junction.
- A Morrisons supermarket on the edge of Whitehaven town centre and a Spar convenience store on Richmond Hill Road to the south of the site. There are further retail stores including supermarkets such as Asda and Iceland located just outside the 2km walking catchment of the site.
- Five Primary Schools.
- A further secondary school.

- Mayfield School a Physical & Sensory Specialist School.
- A number of places of worship.
- Four GP surgeries.
- Two pharmacies.
- A Bank.
- A Post Office.
- Whitehaven Sports Centre.
- A library.
- A wide range of bars and restaurants, particularly in Whitehaven town centre.

4.2.5 In addition to the above, further employment opportunities and amenities are located at the Bridge Retail Park located to the south of the A5094. A Morrisons supermarket, a McDonalds restaurant, a Doctors Surgery plus other amenities are located here. These are located outside the 1km catchment but within the 2km catchment.

4.2.6 The pedestrian network near the site is good with footways and street lighting present along roads to local schools, employment and other amenities. The development proposals include the provision of a pedestrian link to the A595 Loop Road South and potential pedestrian links to the industrial estate road and Winchester Drive from the eastern boundary of the site, Highfields and High Grove from the western boundary of the site and potentially to Laurel Bank and Highlands from the north-western boundary of the site. The potential to provide these pedestrian connections will be studied in further detail as part of the future reserved matters applications for the site.

4.3 Accessibility by Cycle

4.3.1 It is generally accepted that cycling has the greatest potential to substitute for short car trips, particularly those less than 5km and to form part of a longer journey by public transport. A 5km catchment of the site has been prepared and is shown on **Plan 4.**

4.3.2 **Plan 4** shows that the whole of Whitehaven and surrounding villages such as Parton, Moresby parks and a large part of Cleator Moor fall within the 5km cycle catchment. This results in a wide range of amenities and facilities including retail, employment, educational and leisure facilities being located within acceptable cycling distance of the site.

4.3.3 **Plan 4** also shows that National Route 72 of the National Cycle Network (NCN), which starts in Kendal and makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth, runs south/north into Whitehaven town centre relatively close to the site. The route, which is largely traffic

free in this area is located around 1km to the west of the site's western boundary. National Route 71 of the NCN runs from National Route 72 to the west, in a northeast direction. The route runs approximately 2.3km to the south of the site. National Route 71 makes up the western third of the C2C route between Whitehaven or Workington and Blencow (Penrith).

4.4 Accessibility by Public Transport

Accessibility by Bus

4.4.1 A 400m walk distance is generally considered to be a reasonable walk distance between a development and bus stops. This distance is quoted in the 'IHT's - Guidelines for the Planning of Public Transport for Development'. However, this is only guidance to be achieved where possible with the document stating that it is more important to provide bus services which are easy and attractive to passengers rather than to '*slavishly adhere to arbitrary criteria for walking distances*'. (Paragraph 5.18, Page 73)

4.4.2 The location of local bus stops are shown on **Plan 2** which shows that the closest bus stops to the site are located on Caldbeck Road, approximately a 700m walk away from the centre of the site. Additional bus stops are located on Hillcrest Avenue in the housing estate that sits to the south of the site which are hail and ride type stops. Further bus stops are located on the A595 just south of Springfield Avenue. There are no bus stops on Harras Road which runs along the northern extent of the site.

4.4.3 All stops mentioned above are served by the 31 bus service, the frequency of which is summarised in **Table 4.1**.

Table 4.1: Summary of Bus Services

Service Number	Route	One way Frequency Per Hour				
		Monday to Saturday				Sunday
		AM Peak	Inter- peak	PM Peak	Evening	
Services on Caldbeck Road, Hillcrest Avenue and the A595						
31 Stagecoach	Maryport – Flimby – Siddick – Workington – Moorclose – Westfield – Moss Bay – High Harrington – Distington – Whitehaven – Corkickle – Hensingham – Cleator Moor – Frizington - Asby	2	2	2	0	0

4.4.4 **Table 4.1** shows that the 31 service provides 2 one way services per hour in the weekday AM, interpeak and PM peak periods, as well as on Saturdays. The service offers connections to a number of destinations including Maryport, Workington, Whitehaven, Corkickle and Asby.

4.4.5 In light of the above, the site is considered to be adequately served by bus.

Accessibility by Rail

4.4.6 The nearest rail station to the site is Corkickle Rail Station which is located approximately 1.6km (20-minute walk) from the site. Corkickle Rail Station provides frequent rail services to Barrow-in-Furness, Carlisle and Lancaster. Whitehaven can also be accessed from the station using northbound trains to Carlisle.

4.5 Accessibility Summary

4.5.1 The site is located within an acceptable walking distance of a number of important amenities and facilities. Whitehaven town centre, where a wide range of leisure, employment and retail facilities are located can be reached within a 2km walk of the site. It is anticipated that the majority of everyday journeys to local amenities could be made on foot, thus minimising the need for travel by car. Therefore, the site is considered to be sustainable for pedestrian journeys.

4.5.2 The site is well located to encourage trips by cycle. A range of important local employment, leisure, retail, education and health facilities can be reached within an acceptable 5km cycle of the site, including those within Whitehaven town centre and in Corkickle, Woodhouse, Minhouse and Cleator Moor. As such, the site is considered to be accessible by cycle.

4.5.3 The site is served by a regular bus service which provides connectivity to areas surrounding the site, including Whitehaven town centre. The service can be caught within a 700m walk of the centre of the site, and has a half hourly frequency on weekdays and Saturdays.

4.5.4 Corkickle Rail Station provides frequent rail services to Barrow in Furness, Carlisle and Lancaster and is located within a reasonable walk distance of the site.

4.5.5 It has been demonstrated that a wide range of local amenities and facilities can be accessed on foot, by cycle and by public transport. Accordingly, it is evident that the site is accessible by sustainable travel modes in compliance with national and local policy.

5. Development Proposals

5.1 Introduction

5.1.1 This section describes the proposed development including vehicular and pedestrian access provision.

5.2 Proposed Development

5.2.1 The proposals comprise the development of up to 370 residential dwellings on a site located east of Whitehaven town centre on land south of Harras Road. Vehicular access is to be provided from Caldbeck Avenue and Harras Road. An illustrative masterplan for the site showing the potential internal road network along with potential points of access has been developed and is attached in **Appendix B**.

5.2.2 The site's internal layout design will be based on Manual for Street's (MfS) principles. Direct access to individual dwellings will be provided from roads within the site which will contribute to a reduced speed environment since circulating drivers will need to be aware of driveway turning movements. Given the low speed environment within the site, cyclists will generally be able to cycle on carriageways.

5.2.3 Where cul-de-sacs are provided, these will be of an appropriate length to satisfy bin carry distance requirements set out in MfS and/or turning heads of appropriate geometry to accommodate service vehicle manoeuvring will be provided.

5.2.4 It is proposed that, on all but the minor roads within the proposed development, footways will be provided on both sides of the carriageway which will link to existing footways on the external highway network. On some minor roads, a 'shared surface' principle could apply.

5.3 Access Arrangements

5.3.1 There is currently only one formal vehicular access point into the site which is via Caldbeck Road which currently forms a cul-de-sac within the southern extent of the site. In addition, there are gated farm access points on Harras Road and the A595 (Loop Road South).

5.3.2 During the preparation of this report, discussions have been held with the LHA to obtain its views on accessing the site. Relevant email correspondence from these discussions are attached in **Appendix A.** During the discussions' the Highway Officer stated that at least two access points will need to be provided. As a result, vehicular access to the proposed development site is proposed via Caldbeck

Road by extending the current road into the site, and via a new access junction on Harras Road on the north-eastern boundary of the site.

5.3.3 The proposed Harras Road site access junction is shown in drawing A090070-P002 attached in **Appendix B**. The drawing shows a simple priority controlled site access junction with a 5.5m wide access road leading into the site. 2m wide footways will be provided on both sides of the access road which will connect to the existing footways on Harras Road.

5.3.4 To inform the design and location of the proposed Harras Road site access junction, an Automated Traffic Count (ATC) survey along Harras Road was commissioned and undertaken for a week in February 2017. The survey, which is attached in **Appendix C**, showed that 85th percentile vehicle speeds on Harras Road in the vicinity of the site were 40.7mph (eastbound) and 40.8 (westbound). These speeds are higher than the 30mph speed limit along this stretch of Harras Road.

5.3.5 However, the provision of this residential development along with the approved residential development on the opposite side of Harras Road will result in the extension of the 'urban' nature of Harras Road which in turn is likely to result in reduced vehicle speeds along the site boundary.

5.3.6 Nevertheless, visibility splays required at the junction have been determined based on the above observed 85th percentile vehicle speeds and based on MfS parameters. This shows that visibility splays of 63m are required at the junction. Drawing number A090070-P002 shows that visibility splays of this magnitude can easily be achieved.

5.3.7 In terms of pedestrian access, this will be provided at both vehicular site access junctions where pedestrian footways will be provided along both sides of the access road which will link into existing footways. In addition, the development proposals include for the provision of a pedestrian link to the A595 Loop Road South from the south-western boundary of the site and also potential pedestrian links to the industrial estate road and Winchester Drive from the eastern boundary of the site, Highfields and High Grove from the western boundary of the site, and potentially to Laurel Bank and Highlands from the north-western boundary of the site. The potential to provide these pedestrian connections will be studied in further detail as part of the future reserved matters applications for the site.

6. Existing and Future Traffic Flows

6.1 Background

6.1.1 As part of the scoping discussions with the LHA and HE, a Technical Note 1 (TN1), dated 17th January 2018 was prepared by WYG to provide the information on the potential trip generation and distribution of the proposed development. The aim of the note was also to enable the extent of junction capacity assessments to be agreed with the LHA and HE.

6.1.2 Following submission of TN1, the LHA and HE both provided comments which have been incorporated into the following. TN1 and the LHA and HE responses are attached in **Appendix A.**

6.1.3 Based on the comments received from the LHA and HE, the following junctions have been considered as part of this report.

- J1: Harras Road/Site Access Priority Junction
- J2: Harras Road/Red Lonning Priority Junction
- J3: Red Lonning/Caldbeck Road Priority Junction
- J4: Red Lonning/Moresby Road Roundabout
- J5: Moreby Road/Cleator Moor Road/Main Street Mini-Roundabout
- J6: Main Street/Thornton Road Priority Junction
- J7: A595/B5295 Ribton Moorside Signal Junction
- J8: A595/Highlands Priority Junction
- J9: A595/B5295 Egremont Road / Homewood Road Roundabout
- J10: A595/Rosehill Priority Junction
- J11: A595/Victoria Road (Sunny Hill Pub) Priority Junction
- J12: Moresby Road/Unnamed Road Priority Junction
- J13: B5295/Main Street Mini-Roundabout
- J14: A595/Inkerman Terrace Signal Junction
- J15: Solway View/Oakbank Road/Park View Priority Junction

6.2 Existing Traffic Flows

6.2.1 To determine existing traffic flows at the above junctions, traffic count surveys were undertaken on Wednesday 21st February 2018 by MHC Traffic. The survey data is attached in **Appendix C.**

6.2.2 From analysis of the surveyed flows, the weekday peak hours on the local highway network were found to be between 08:00-09:00 hours during the weekday morning peak and between 16:15-17:15 hours during the weekday evening peak.

6.2.3 The 2018 surveyed weekday AM and PM peak hour flows converted into passenger car units (pcu's) are illustrated in **Figures 1** and **2** respectively.

6.3 Background Traffic Growth

6.3.1 As agreed during scoping correspondence with the LHA and HE, the 2018 surveyed traffic flows have been factored to an assessment year 2023 (i.e. application year + 5 years) by using TEMPRO growth factors adjusted by NTM (National Traffic Model) for 'Copeland 003 Area', where the site is located.

6.3.2 The resultant growth factors are summarised in **Table 6.1** below.

Table 6.1: TEMPRO Growth Factors Adjusted by NTM

Period	AM Peak	PM Peak
2017-2023	1.0554	1.0516

6.3.3 The growth factors listed in **Table 6.1** have been applied to the 2018 surveyed traffic flows shown in **Figures 1** and **2** to derive 2023 growthed surveyed traffic flows. These are shown in **Figures 3** and **4** for the weekday AM and PM peaks respectively.

6.4 Committed Development Traffic

6.4.1 The consented residential development on land off Harras Road opposite to this site (application ref: 4/16/2416/0O1 and 4/16/2415/0O1), which is for 110 dwellings, has been considered as committed development.

6.4.2 The weekday AM and PM peak committed development traffic flows for this consented development have been obtained from the relevant TA and are reproduced in **Figures 5** and **6**.

6.5 Future Year Baseline Flows

6.5.1 The committed development traffic flows shown in **Figures 5** and **6** have been added to the 2023 growthed surveyed traffic flows shown in **Figures 3** and **4** to derive 2023 baseline traffic flows (i.e.

without the proposed development). These are shown in **Figures 7** and **8** for the weekday AM and PM peaks respectively.

6.6 Vehicular Trip Generation of the Proposed Development

6.6.1 During the scoping discussions' the LHA and HE confirmed that the trip rates set out in WYG TN1 are acceptable. The agreed trip rates are summarised in **Table 6.2** together with the resultant trip generation. **Table 6.2** and the following traffic impact assessment/junction capacity assessments have been undertaken assuming a development of 380 dwellings. This is 10 dwellings higher than that proposed in the application. The trip generation and junction assessments are therefore considered to be robust.

Table 6.2: Approved Trip Rates and Resultant Trip Generation of the Proposals

Proposed Land Use	Unit	AM Peak Hour			PM Peak Hour		
		Arr.	Dep.	2-Way	Arr.	Dep.	2-Way
Trip Rates							
C3 Houses Privately Owned	Dwelling	0.156	0.437	0.593	0.381	0.198	0.579
Trip Generations							
C3 Houses Privately Owned	380 (Dwelling)	59	166	225	145	75	220

6.6.2 **Table 6.2** shows that, a development of 380 dwellings (10 higher than the application) is estimated to generate around 225 additional two-way vehicular movements during the weekday AM peak hour and 220 two-way vehicular movements during the weekday PM peak hour.

6.7 Trip Distribution

6.7.1 A trip distribution was derived using 2011 Census 'journey to work' data and summarised in WYG's TN1 (dated 17th January 2018). HE confirmed that the trip distribution set out in TN1 was acceptable, however, a number of comments were received from the LHA.

6.7.2 The LHA's comments on the trip distribution are contained in **Appendix D** together with our response to these setting out how the LHA's comments have been taken into account in deriving the final development trip distribution.

6.7.3 The trip distribution incorporating the amendments resulting from the LHA's comments is attached in **Appendix D**, which also contains the full trip distribution analysis and a 'Distribution Plan'. The resultant trip distribution is also shown in **Figure 9**.

6.7.4 The number of trips estimated to be generated by the proposed development (shown in **Table 6.2**) have been assigned onto the local highway network using the distribution shown in **Figure 9**. The resulting development trips assigned to the local highway network during the weekday AM and PM peak periods are shown in **Figures 10** and **11** respectively.

6.8 Future Years Assessment Flows

6.8.1 To derive the future year assessment flows (i.e. 2023 with development) the development trip generation flows shown in **Figures 10** and **11** have been added to the 2023 baseline flows shown in **Figures 7** to **8.** The resultant 2023 assessment flows (i.e. with the proposed development) for the weekday AM and PM peak periods are shown in **Figures 12** and **13** respectively.

7. Traffic Impact Assessment

7.1 Background

7.1.1 This section of the report summarises the capacity assessments undertaken for the 14 off-site junctions listed in **Section 6.1** as agreed with the LHA and HE along with the site access proposed on Harras Road.

7.1.2 The priority junctions and roundabouts have been assessed using the JUNCTIONS 9 analysis software. The key operational output parameters of JUNCTIONS 9 are:

- The ratio of flow to capacity (RFC), in which RFC values of less than 1.0 indicate the junction is operating within its ultimate capacity;
- End queues in vehicles, which indicates the forecast length of traffic queues; and,
- Average delays in seconds per vehicle.

7.1.3 The signalised junctions have been assessed using the LinSig software. The key output operational parameters of LinSig are:

- Degree of saturation (DoS), where DoS values less than 100% indicate the junction is operating within its ultimate capacity;
- The maximum mean queue (MMQ) forecast on a link; and,
- Average delays in seconds per vehicle.

7.1.4 All the junction capacity models prepared for the above off-site junctions have been validated based on queue survey data to ensure that the models reflect the junction's current operational performance.

7.2 J1: Harras Road/Site Access Priority Junction

7.2.1 A site access junction is proposed off Harras Road. The proposed layout of the junction is shown in drawing number A090070-P002 attached in **Appendix B**. The capacity of the proposed junction has been assessed using the derived 2023 with development traffic flows shown in **Figures 12** and **13** with the results summarised in **Table 7.1.** Full JUNCTIONS 9 are contained in **Appendix E**.

Table 7.1: Capacity Assessment for 2023 Assessment Flows (J1)

Link Description	2023 With Development			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Site Access	0.210	0	0.100	0
Harras Rd (W)	0.030	0	0.090	0

7.2.2 **Table 7.1** confirms that the junction is estimated to operate well within capacity in both the weekday morning and evening peak hours in 2023 assessment year with no queuing.

7.3 J2: Harras Road/Red Lonning Priority Junction

7.3.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.3.2 **Table 7.2** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.3** summarises the results for 2023 without and with the proposed development. Full JUNCTIONS 9 outputs are contained in **Appendix F**.

Table 7.2: Capacity Assessment for 2018 Surveyed Flows (J2)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Harras Rd - Left Turn	0.010	0	0.040	0
Harras Rd - Right Turn	0.210	0	0.340	1
Red Lonning (N)	0.010	0	0.070	0

Table 7.3: Capacity Assessment for 2023 Assessment Flows (J2)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Harras Rd - Left Turn	0.020	0	0.030	0	**0**	0.050	0	0.050	0	**0**
Harras Rd - Right Turn	0.310	1	0.410	1	**0**	0.400	1	0.450	1	**0**
Red Lonning (N)	0.010	0	0.020	0	**0**	0.080	0	0.100	0	**0**
Average Jun. Delay (s/pcu)	1.6		2.4		-	2.5		2.9		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.7				-	+ 0.4				-

7.3.3 **Table 7.2** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.3.4 **Table 7.3** shows that the junction is estimated to still operate well within its capacity in both the weekday AM and PM peak hours in 2023 even with the addition of the proposed development traffic. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.4 J3: Red Lonning/Caldbeck Road Priority Junction

7.4.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.4.2 **Table 7.4** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.5** summarises the results for 2023 without and with the proposed development. Full JUNCTIONS 9 outputs are contained in **Appendix G**.

Table 7.4: Capacity Assessment for 2018 Surveyed Flows (J3)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Caldbeck Rd	0.250	0	0.180	0
Red Lonning (N)	0.240	0	0.190	0

Table 7.5: Capacity Assessment for 2023 Assessment Flows (J3)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Caldbeck Rd	0.260	0	0.440	1	**0**	0.190	0	0.260	0	**0**
Red Lonning (N)	0.260	0	0.260	0	**0**	0.200	0	0.210	0	**0**
Average Jun. Delay (s/pcu)	4.2		6.0		-	3.4		3.7		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 1.8				-	+ 0.3				-

7.4.3 **Table 7.4** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.4.4 **Table 7.5** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the proposed development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.5 J4: Red Lonning/Moresby Road Roundabout

7.5.1 This junction currently operates as a roundabout junction and has therefore been modelled using JUNCTIONS 9.

7.5.2 **Table 7.6** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.7** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix H**.

Table 7.6: Capacity Assessment for 2018 Surveyed Flows (J4)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Moresby Parks Rd (N)	0.240	0	0.180	0
Access to Field	0.000	0	0.000	0
Moresby Parks Rd (S)	0.250	0	0.440	1
Red Lonning	0.220	0	0.230	0

Table 7.7: Capacity Assessment for 2023 Assessment Flows (J4)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Moresby Parks Rd (N)	0.270	0	0.270	0	**0**	0.200	0	0.200	0	**0**
Access to Field	0.000	0	0.000	0	**0**	0.000	0	0.000	0	**0**
Moresby Parks Rd (S)	0.270	0	0.280	0	**0**	0.470	1	0.490	1	**0**
Red Lonning	0.270	0	0.290	0	**0**	0.250	0	0.270	0	**0**
Average Jun. Delay (s/pcu)	3.1		3.2		**-**	3.6		3.8		**-**
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.1				**-**	+ 0.2				**-**

7.5.3 **Table 7.6** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.5.4 **Table 7.7** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the proposed development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.6 J5: Moreby Road/Cleator Moor Road/Main Street Mini Roundabout

7.6.1 This junction currently operates as a mini roundabout junction and has therefore been modelled using JUNCTIONS 9.

7.6.2 **Table 7.8** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.9** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix I**.

Table 7.8: Capacity Assessment for 2018 Surveyed Flows (J5)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Moresby Parks Rd	0.690	2	0.820	4
Cleator Moor Rd	0.840	5	0.860	5
Main St	0.720	2	0.670	2

Table 7.9: Capacity Assessment for 2023 Assessment Flows (J5)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Moresby Parks Rd	0.780	3	0.900	7	**4**	0.880	6	0.940	9	**3**
Cleator Moor Rd	0.910	8	0.980	15	**7**	0.920	8	0.960	11	**3**
Main St	0.780	3	0.810	4	**1**	0.730	3	0.820	4	**1**
Average Jun. Delay (s/pcu)	27.9		46.6		-	28.6		39.3		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 18.7				-	+ 10.7				-

7.6.3 **Table 7.8** shows that the junction currently operates within capacity in both the weekday AM and PM peak hours.

7.6.4 **Table 7.9** shows that the junction is estimated to still operate within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. It is therefore considered that the impact of the development proposals at the junction is not significant let alone sever in NPPF terms.

7.7 J6: Main Street/Thornton Road Priority Junction

7.7.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.7.2 **Table 7.10** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.11** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix J**.

Table 7.10: Capacity Assessment for 2018 Surveyed Flows (J6)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Thornton Rd - Left Turn	0.230	0	0.210	0
Thornton Rd - Right Turn	0.340	1	0.220	0
B5295 Main St (N)	0.180	1	0.260	1

Table 7.11: Capacity Assessment for 2023 Assessment Flows (J6)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Thornton Rd - Left	0.250	0	0.260	0	**0**	0.230	0	0.240	0	**0**
Thornton Rd - Right	0.380	1	0.410	1	**0**	0.240	0	0.260	0	**0**
B5295 Main St (N)	0.200	1	0.220	1	**0**	0.280	1	0.310	1	**0**
Average Jun. Delay (s/pcu)	2.85		2.90		**-**	2.47		2.49		**-**
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.05				**-**	+ 0.02				**-**

7.7.3 **Table 7.10** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.7.4 **Table 7.11** shows that the junction is estimated to operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.8 J7: A595/B5295 Ribton Moorside Signal Junction

7.8.1 This junction currently operates as a signal controlled junction and has therefore been modelled using LinSig. Existing signal timing data has been obtained from HE to ensure the correct modelling parameters are used when assessing the operation of the junction. Because of the close association with junction 14, the A595/Inkerman Terrace signal junction, the two junctions have been modelled together.

7.8.2 **Table 7.12** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.13** summarises the results for 2023 without and with the development for the A595/B5295 Ribton Moorside Signal Junction only. Full LinSig outputs are contained in **Appendix K**.

Table 7.12: Capacity Assessment for 2018 Surveyed Flows (J7)

Approach	2018 Surveyed Year			
	AM Peak		PM Peak	
	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
Ribton Moorside Right Left	69.9%	11	74.7%	11
A595 Loop Rd (NB) Ahead	29.3%	5	32.6%	6
A595 Loop Rd (NB) Ahead Right	69.3%	10	64.4%	13
Hensingham Bypass (SB) Left	33.4%	0	49.3%	1
Hensingham Bypass (SB) Ahead	68.6%	16	58.6%	10

Table 7.13: Capacity Assessment for 2023 Assessment Flows (J7)

Approach	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)	MMQ (pcu)	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)	MMQ (pcu)
Ribton Moorside Right Left	76.2%	12	77.7%	13	**1**	79.8%	14	80.8%	14	**0**
A595 Loop Rd (NB) Ahead	30.3%	5	30.6%	5	**0**	32.9%	7	33.1%	7	**0**
A595 Loop Rd (NB) Ahead Right	76.0%	11	76.0%	11	**0**	68.1%	16	67.8%	16	**0**
Hensingham Bypass (SB) Left	35.4%	0	35.8%	0	**0**	51.8%	1	52.9%	1	**0**
Hensingham Bypass (SB) Ahead	71.2%	17	71.3%	17	**0**	59.1%	14	59.3%	14	**0**
Average Jun. Delay (s/pcu)	25.7		25.9		**-**	21.9		22.0		**-**
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.2				**-**	+ 0.1				**-**

7.8.3 **Table 7.12** shows that the junction currently operates within capacity in both the weekday AM and PM peak hours.

7.8.4 **Table 7.13** shows that the junction is still estimated to operate within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.9 J8: A595/Highlands Priority Junction

7.9.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.9.2 **Table 7.14** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.15** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix L**.

Table 7.14: Capacity Assessment for 2018 Surveyed Flows (J8)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Highlands - Left Turn	0.210	0	0.110	0
Highlands - Right Turn	0.330	1	0.200	0
A595 (S)	0.100	0	0.400	2

Table 7.15: Capacity Assessment for 2023 Assessment Flows (J8)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Highlands - Left Turn	0.230	0	0.230	0	**0**	0.120	0	0.120	0	**0**
Highlands - Right Turn	0.380	1	0.380	1	**0**	0.230	0	0.230	0	**0**
A595 (S)	0.110	0	0.110	0	**0**	0.450	2	0.460	2	**0**
Average Jun. Delay (s/pcu)	2.0		2.0		-	1.9		1.9		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.0				-	+ 0.0				-

7.9.3 **Table 7.14** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.9.4 **Table 7.15** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.10 J9: A595/B5295 Egremont Road / Homewood Road Roundabout

7.10.1 This junction currently operates as a roundabout junction and has therefore been modelled using JUNCTIONS 9.

7.10.2 **Table 7.16** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.17** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix M**.

Table 7.16: Capacity Assessment for 2018 Surveyed Flows (J9)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
B5295 Egremont Rd	0.250	0	0.220	0
Homewood Rd	0.520	1	0.780	3
A595 Egremont Rd	0.740	3	0.880	7
A595	0.660	2	0.640	2

Table 7.17: Capacity Assessment for 2023 Assessment Flows (J9)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Egremont Rd	0.300	0	0.390	1	**0**	0.240	0	0.290	0	**0**
Homewood Rd	0.580	1	0.620	2	**0**	0.860	5	0.880	6	**1**
A595 Egremont Rd	0.780	4	0.800	4	**1**	0.930	11	0.980	21	**10**
A595	0.700	2	0.710	3	**0**	0.680	2	0.700	2	**0**
Average Jun. Delay (s/pcu)	10.8		11.8		-	24.4		37.1		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 1.0				-	+ 12.7				-

7.10.3 **Table 7.16** shows that the junction currently operates within capacity in both the weekday AM and PM peak hours.

7.10.4 **Table 7.17** shows that the junction is estimated to still operate within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The increase in average delay at

the junction due to the development is only 1.0 seconds/PCU during the AM peak hour and 12.7 seconds/PCU during the PM peak hour. This level of increase in delay is not considered to be significant let alone severe in NPPF terms.

7.11 J10: A595/Rosehill Priority Junction

7.11.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.11.2 **Table 7.18** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.19** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix N**.

Table 7.18: Capacity Assessment for 2018 Surveyed Flows (J10)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Rosehill	0.680	2	0.860	4
A595 (S)	0.160	0	0.140	0

Table 7.19: Capacity Assessment for 2023 Assessment Flows (J10)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Rosehill - Left Turn	0.830	4	0.900	5	**1**	0.910	5	0.940	6	**1**
A595 (S)	0.190	0	0.190	0	**0**	0.160	0	0.160	0	**0**
Average Jun. Delay (s/pcu)	5.1		6.3		-	5.9		6.6		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 1.2				-	+ 0.7				-

7.11.3 **Table 7.18** shows that the junction currently operates within capacity in both the weekday AM and PM peak hours.

7.11.4 **Table 7.19** shows that the junction is estimated to still operate within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.12 J11: A595/Victoria Road (Sunny Hill Pub) Priority Junction

7.12.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.12.2 **Table 7.20** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.21** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix O**.

Table 7.20: Capacity Assessment for 2018 Surveyed Flows (J11)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Victoria Rd - Left Turn	0.080	0	0.280	0
Victoria Rd - Right Turn	0.090	0	0.200	0
A595 (S)	0.330	1	0.320	1

Table 7.21: Capacity Assessment for 2023 Assessment Flows (J11)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Victoria Rd - Left Turn	0.090	0	0.100	0	**0.0**	0.300	0	0.310	0	**0.0**
Victoria Rd - Right Turn	0.110	0	0.260	0	**0.2**	0.230	0	0.310	0	**0.1**
A595 (S)	0.370	2	0.370	2	**0.0**	0.360	1	0.370	2	**0.1**
Average Jun. Delay (s/pcu)	1.4		1.9		-	2.2		2.5		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.5				-	+ 0.3				-

7.12.3 **Table 7.20** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.12.4 **Table 7.21** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.13 J12: Moresby Road/Unnamed Road Priority Junction

7.13.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.13.2 **Table 7.22** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.23** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix P**.

Table 7.22: Capacity Assessment for 2018 Surveyed Flows (J12)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Unnamed Rd	0.340	1	0.530	1
Moresby Rd (S)	0.040	0	0.040	0

Table 7.23: Capacity Assessment for 2023 Assessment Flows (J12)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Unnamed Rd	0.390	1	0.400	1	**0.1**	0.600	1	0.620	2	**0.2**
Moresby Rd (S)	0.040	0	0.050	0	**0.0**	0.050	0	0.050	0	**0.0**
Average Jun. Delay (s/pcu)	2.10		2.12		-	3.9		4.1		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.02				-	+ 0.2				-

7.13.3 **Table 7.22** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.13.4 **Table 7.23** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.14 J13: B5295/Main Street Mini-Roundabout

7.14.1 This junction currently operates as a mini roundabout junction and has therefore been modelled using JUNCTIONS 9.

7.14.2 **Table 7.24** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.25** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix Q**.

Table 7.24: Capacity Assessment for 2018 Surveyed Flows (J13)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
B5295 Ribton Moor Side	0.600	2	0.560	1
B5295 Main St	0.720	3	0.580	1
B5295 Egremont Road	0.250	0	0.360	1

Table 7.25: Capacity Assessment for 2023 Assessment Flows (J13)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Ribton Moor Side	0.650	2	0.750	3	**1**	0.600	2	0.640	2	**0**
B5295 Main St	0.780	3	0.850	5	**2**	0.630	2	0.760	3	**1**
B5295 Egremont Road	0.270	0	0.280	0	**0**	0.390	1	0.420	1	**0**
Average Jun. Delay (s/pcu)	15.5		21.1		-	10.2		13.7		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 5.6				-	+ 3.5				-

7.14.3 **Table 7.24** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.14.4 **Table 7.25** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.15 J14: A595/Inkerman Terrace Signal Junction

7.15.1 This junction currently operates as a signal controlled junction and has therefore been modelled using LinSig. Existing signal timing data has been obtained from HE to ensure the correct modelling parameters are used when assessing the operation of the junction. Because of the close association with junction 7, the A595/B5295 Ribton Moorside Signal Junction, the two junctions have been modelled together.

7.15.2 **Table 7.26** summarises the capacity results obtained using the 2018 surveyed flows and **Table 7.27** summarises the results for 2023 without and with the development for the A595/Inkerman Terrace junction only. Full JUNCTIONS 9 outputs are contained in **Appendix K**.

Table 7.26: Capacity Assessment for 2018 Surveyed Flows (J14)

Approach	2018 Surveyed Year			
	AM Peak		PM Peak	
	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
Hensingham Bypass (NB) Left	49.8%	5	52.7%	6
Hensingham Bypass (NB) Ahead	59.0%	11	85.7%	15
Inkerman Terrace Right Left	69.5%	10	86.6%	18
A595 Loop Rd (SB) Ahead	61.6%	13	59.5%	12
A595 Loop Rd (SB) Right	46.3%	4	55.2%	4

Table 7.27: Capacity Assessment for 2023 Assessment Flows (J14)

Approach	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)	MMQ (pcu)	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)	MMQ (pcu)
Hensingham Bypass (NB) Left	52.7%	5	53.6%	6	**0.2**	55.3%	8	55.8%	8	**0.1**
Hensingham Bypass (NB) Ahead	68.2%	13	68.5%	13	**0.0**	87.3%	15	87.5%	16	**0.5**
Inkerman Terrace Right Left	64.5%	10	65.1%	10	**0.1**	86.0%	22	87.5%	23	**1.0**
A595 Loop Rd (SB) Ahead	69.9%	16	70.1%	16	**0.0**	63.1%	16	63.4%	16	**0.1**
A595 Loop Rd (SB) Right	58.8%	6	60.8%	6	**0.2**	76.7%	6	77.5%	7	**0.1**
Average Jun. Delay (s/pcu)	19.7		19.9		-	32.3		33.1		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.2				-	+ 0.8				-

7.15.3 **Table 7.26** shows that the junction currently operates within capacity in both the weekday AM and PM peak hours.

7.15.4 **Table 7.27** shows that the junction is estimated to still operate within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

7.16 J15: Solway View/Oakbank Road/Park View Priority Junction

7.16.1 This junction currently operates as a priority junction and has therefore been modelled using JUNCTIONS 9.

7.16.2 **Table 7.28** summarises the capacity results obtained using the 2018 surveyed flows while **Table 7.29** summarises the results for 2023 without and with the development. Full JUNCTIONS 9 outputs are contained in **Appendix R**.

Table 7.28: Capacity Assessment for 2018 Surveyed Flows (J15)

Link Description	2018 Surveyed Year			
	AM Peak		PM Peak	
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)
Park View - Left Turn	0.240	0	0.160	0
Park View - Right Turn	0.010	0	0.020	0
Solway View	0.140	0	0.310	1

Table 7.29: Capacity Assessment for 2023 Assessment Flows (J15)

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Difference	2023 Without Development		2023 With Development		Difference
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
Park View - Left Turn	0.290	0	0.310	1	**0.1**	0.190	0	0.200	0	**0.0**
Park View - Right Turn	0.010	0	0.090	0	**0.1**	0.020	0	0.070	0	**0.1**
Solway View	0.160	0	0.170	0	**0.0**	0.390	1	0.420	1	**0.1**
Average Jun. Delay (s/pcu)	4.2		4.8		-	4.5		4.8		-
Average Jun. Delay Increase Due to Dev. (s/pcu)	+ 0.6				-	+ 0.3				-

7.16.3 **Table 7.28** shows that the junction currently operates well within capacity in both the weekday AM and PM peak hours.

7.16.4 **Table 7.29** shows that the junction is estimated to still operate well within capacity in both the AM and PM peak hours in 2023 even with the addition of the development. The table shows that the impact of the proposals on the operation of the junction is negligible.

8. Summary and Conclusions

8.1 Summary

8.1.1 WYG has been commissioned by Homes England to provide transport and highways advice in relation to an outline planning application for a proposed development comprising of up to 370 dwellings on land at Harras Moor, Whitehaven, Cumbria.

8.1.2 The site, is located around 1.3km east of Whitehaven town centre on land south of Harras Road and is situated between existing residential development and an industrial development.

8.1.3 Relevant national and local planning policy has been reviewed with regard to transport considerations and it is considered that the proposals are compliant with the intentions of the various planning guidelines and policies.

8.1.4 An analysis of recent accident data on the local highway network shows that there are no highway safety issues on the local road network and based on this analysis, highway safety is therefore not considered to be a barrier to the development of the site.

8.1.5 The proposed development is well located in terms of access to sustainable travel modes.

8.1.6 The site is located within an acceptable walking distance of a number of important amenities and facilities. Whitehaven town centre, where a wide range of leisure, employment and retail facilities are located can be reached within a 2km walk of the site with many facilities located closer than this.

8.1.7 The site is well located to encourage trips by cycle. A range of important local employment, leisure, retail, education and health facilities can be reached within an acceptable 5km cycle of the site, including those within Whitehaven town centre.

8.1.8 The site is served by a regular bus service which provides connectivity to areas surrounding the site, including Whitehaven town centre. The service can be caught within a 700m walk of the centre of the site and has a half hourly frequency on weekdays and Saturdays.

8.1.9 Detailed discussions have taken place with the LHA on the proposed access arrangements. As a result of these discussions vehicular access to the proposed development is proposed via Caldbeck Road, by extending the current road further into the site, and via a new priority controlled access junction on Harras Road on the north-eastern boundary of the site. Visibility splays which meet the requirements of observed 85th percentile speeds along Harras Road can be achieved from the new junction.

8.1.10 In terms of pedestrian access, this will be provided at both vehicular site access junctions where pedestrian footways will be provided along both sides of the access road which will link into existing footways. Pedestrian connections will also be provided at other points around the development site including to the A595 Loop Road South from the south-western boundary of the site. The potential to provide additional pedestrian connections will be studied in further detail as part of the future reserved matters applications for the site.

8.1.11 Prior to the preparation of this report, the LHA and HE were consulted on the proposed trip generation, trip distribution and extent of junction analysis to be undertaken. The trip generation was agreed while the initial trip distribution proposed has been amended following comments made by the LHA.

8.1.12 Following consultation with the LHA and HE, it was agreed that 14 off-site junctions would need to be assessed to determine the development's impact on the highway network. Junction capacity assessments undertaken at these junctions together with the site access junction show that the junctions are expected to operate below their capacity during a future assessment year, 2023, even with the development. The assessments show that the impact of the development proposals on the local highway network is not significant and is not 'severe' in NPPF terms.

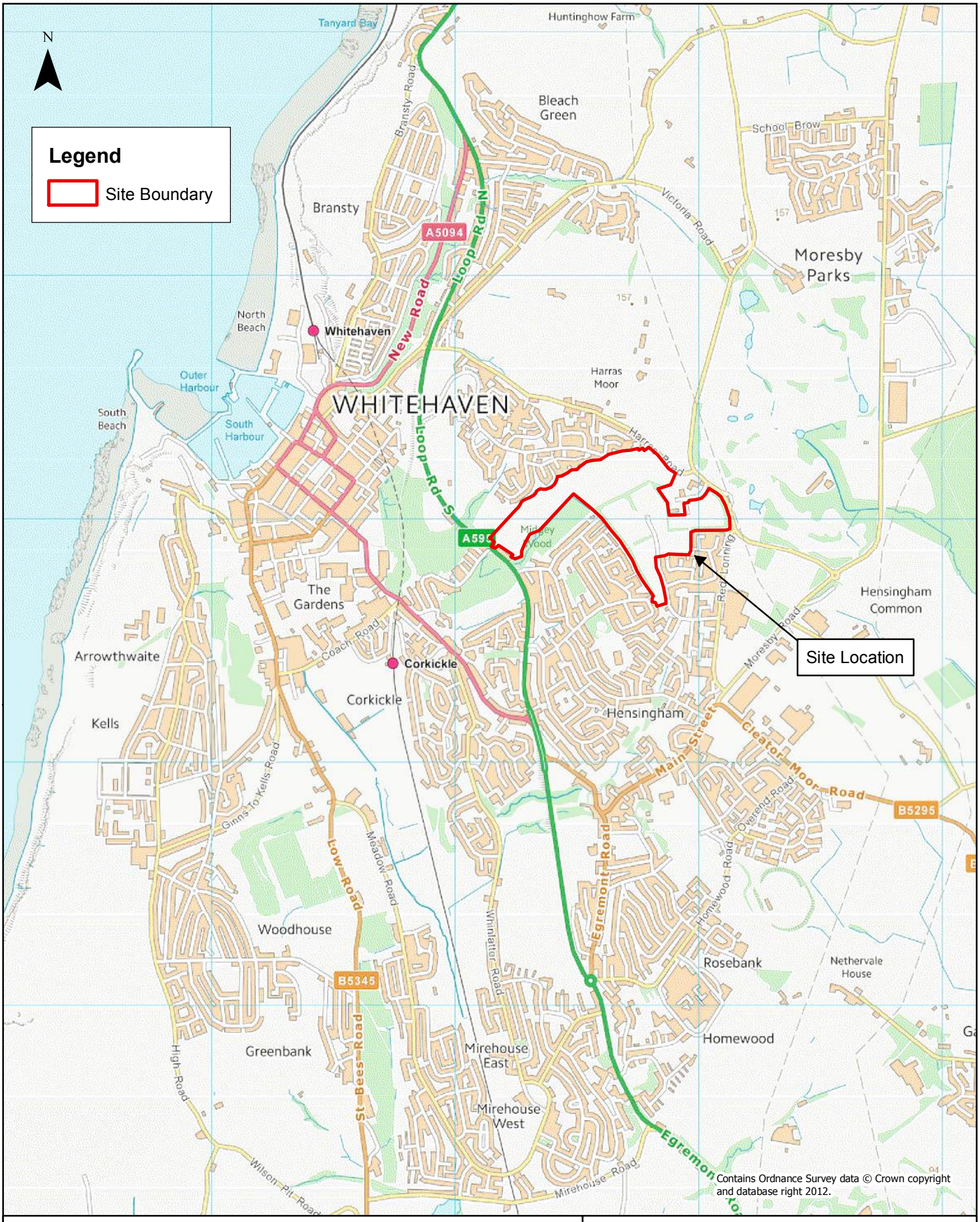
8.2 Conclusions

8.2.1 It has been shown that the proposed development site is in an accessible location to make use of sustainable forms of transport in compliance with the NPPF and local policy.

8.2.2 It has also been demonstrated that the proposed development will not have a significant impact on the safe and efficient operation of the surrounding highway network and that its impact will not be 'severe' in NPPF terms.

8.2.3 The report's findings are therefore commended to the local highway authority for approval since it has been demonstrated that no highway or transport reasons exist which should prevent approval of the planning application.

Plans



Harras Road, Harras Moor, Whitehaven

Plan 1: Site Location

Scale @ A4 1:20,000	Project No: A090070 - 410

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Harras Road, Harras Moor, Whitehaven

Plan 2: Local Highway Network

Scale @ A4 NTS	Project No: A090070 - 410

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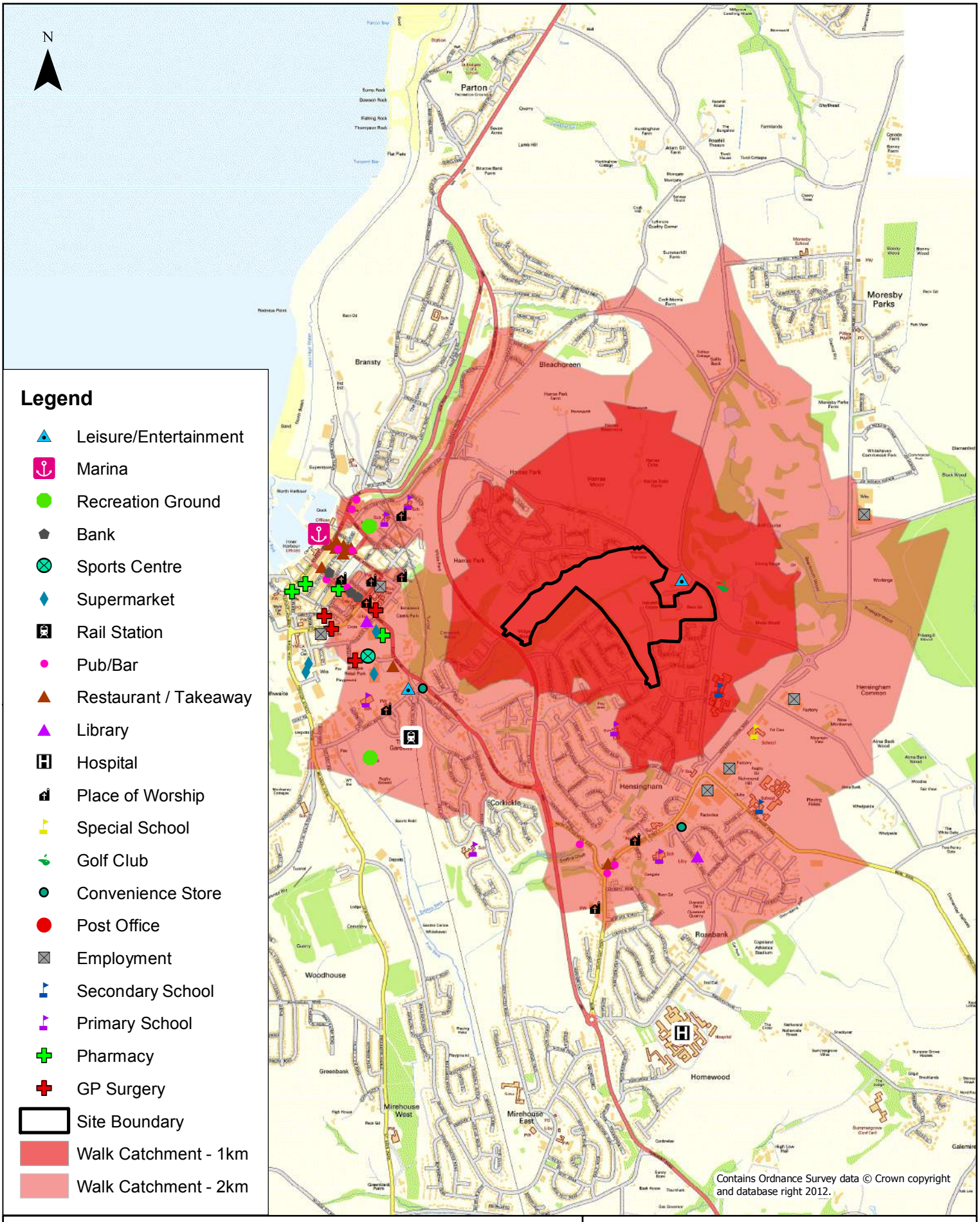

Harras Road, Harras Moor, Whitehaven

Plan 3: 1km and 2km Walk Catchment

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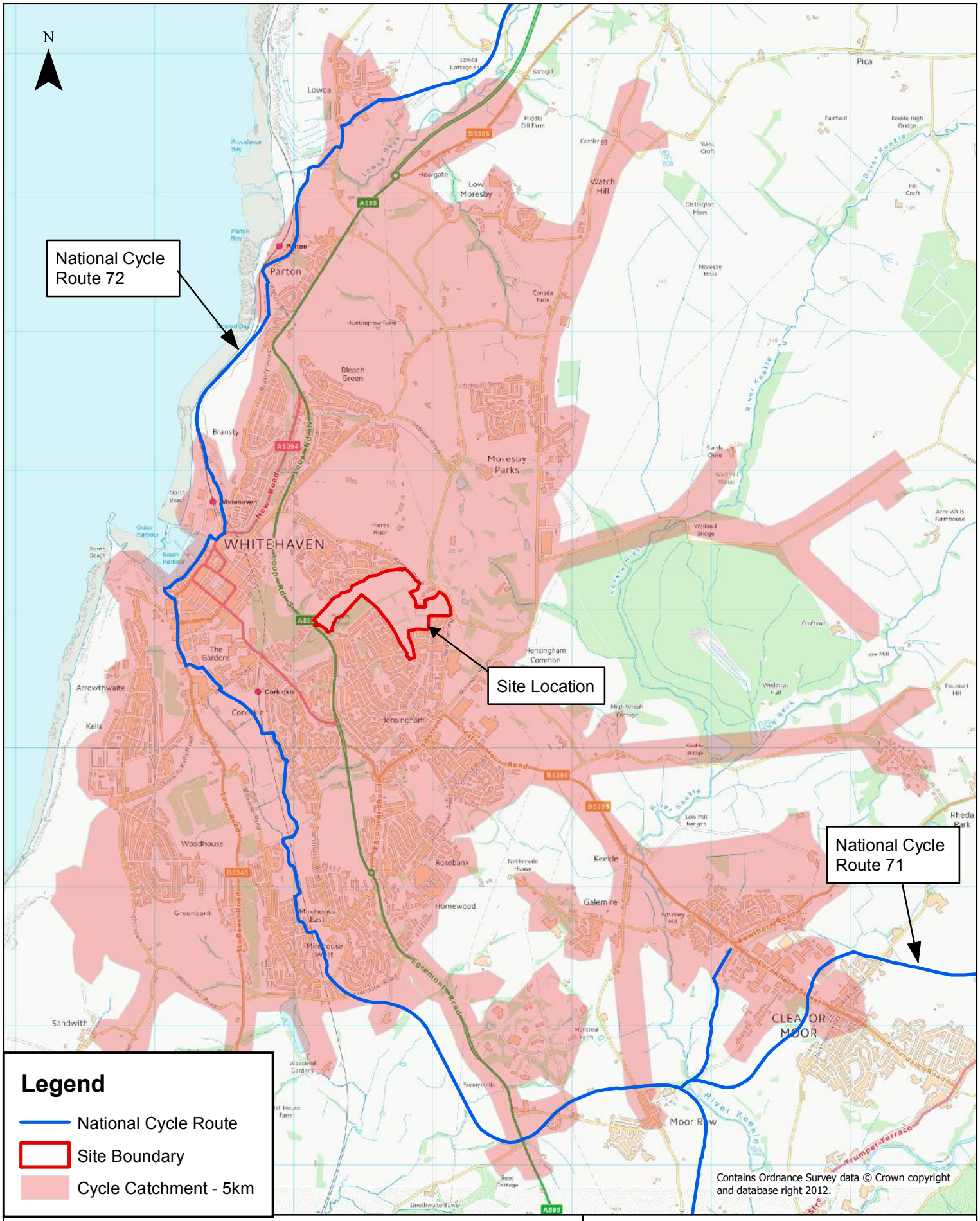

Harras Road, Harras Moor, Whitehaven

Plan 4: 5km Cycle Catchment

Scale @ A4 NTS	Project No: A090070 - 410

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Figures

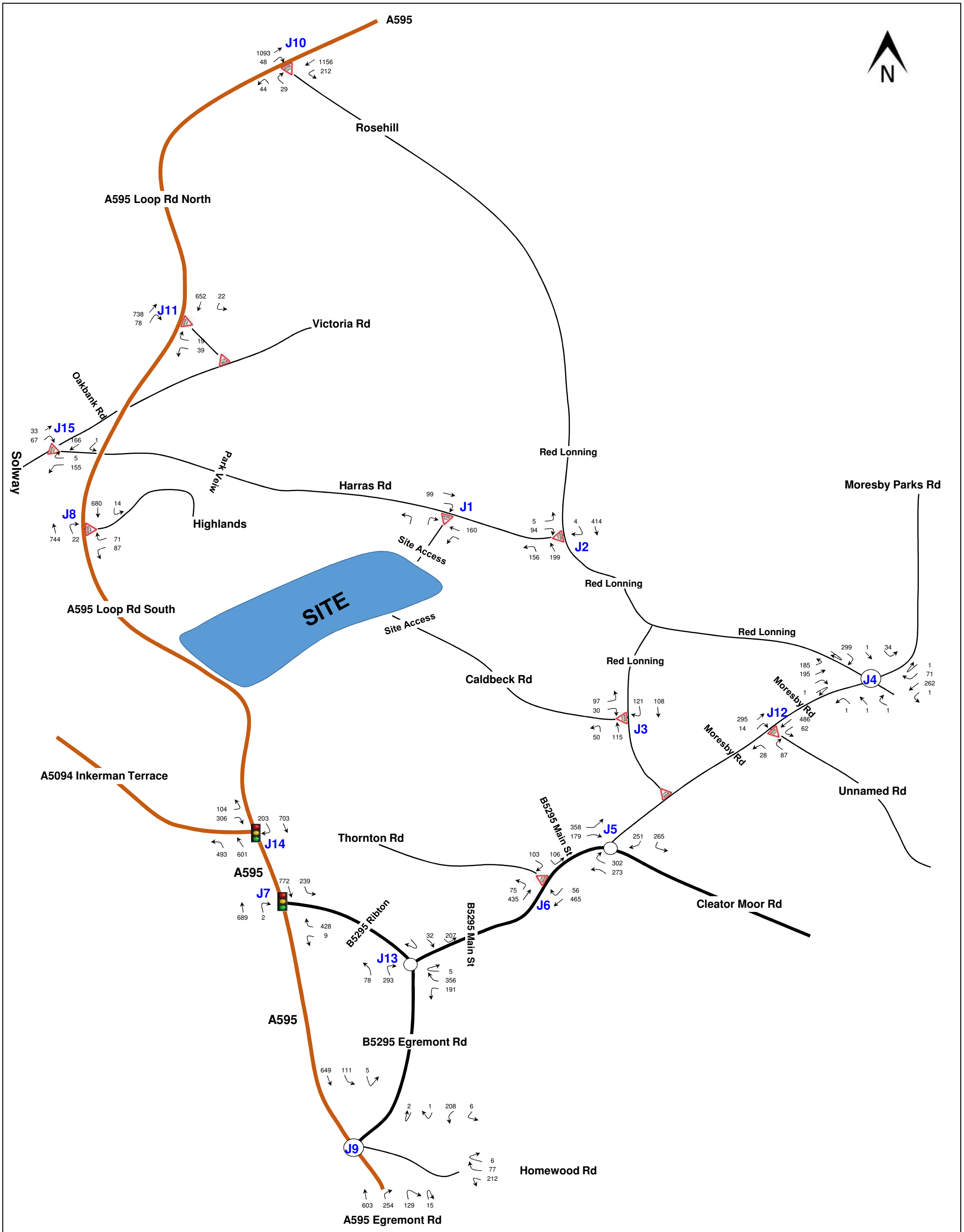

Fig 1: AM Peak Hour 2018 Surveyed Flows (08:00-09:00)

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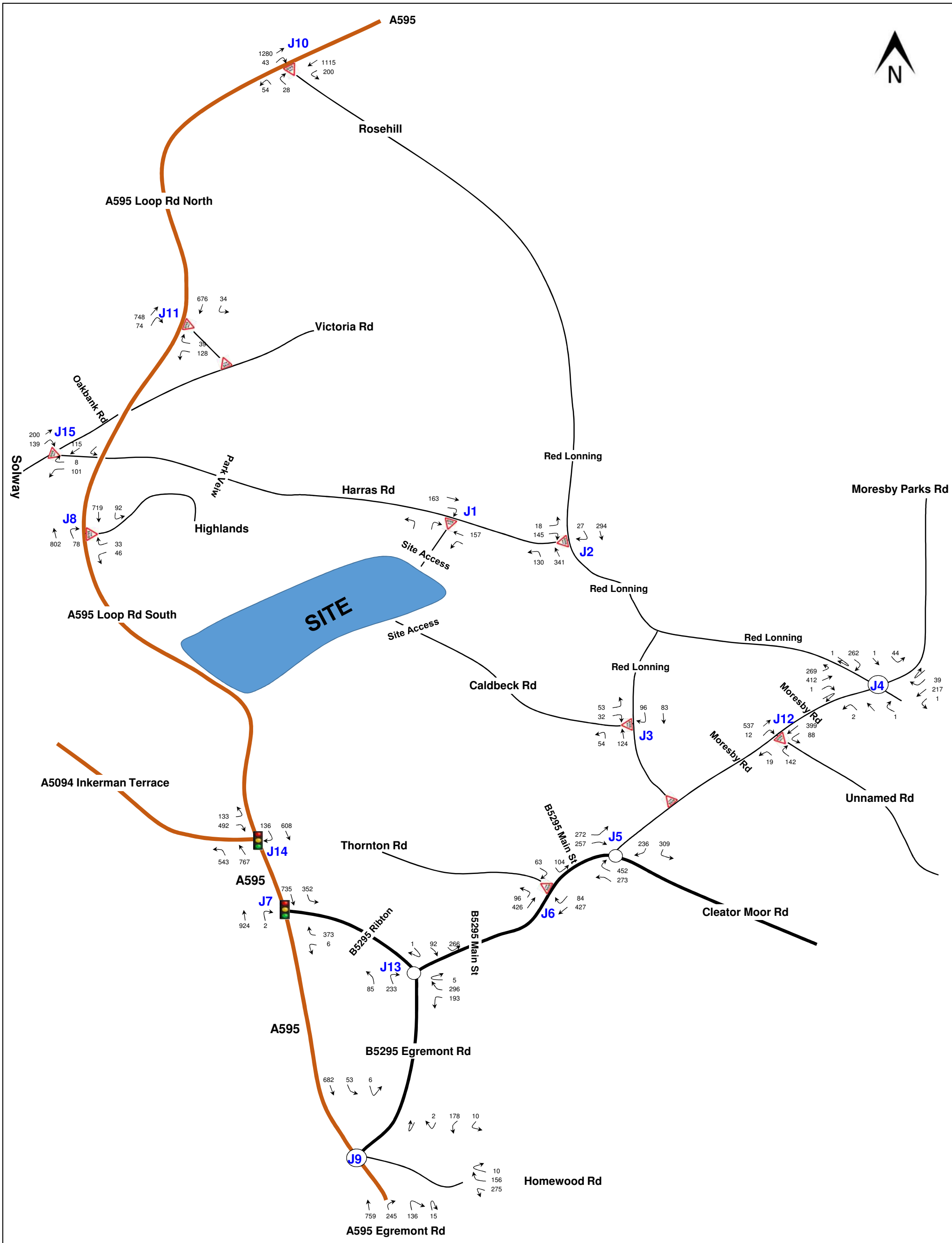

Fig 2: PM Peak Hour 2018 Surveyed Flows (16:15-17:15)

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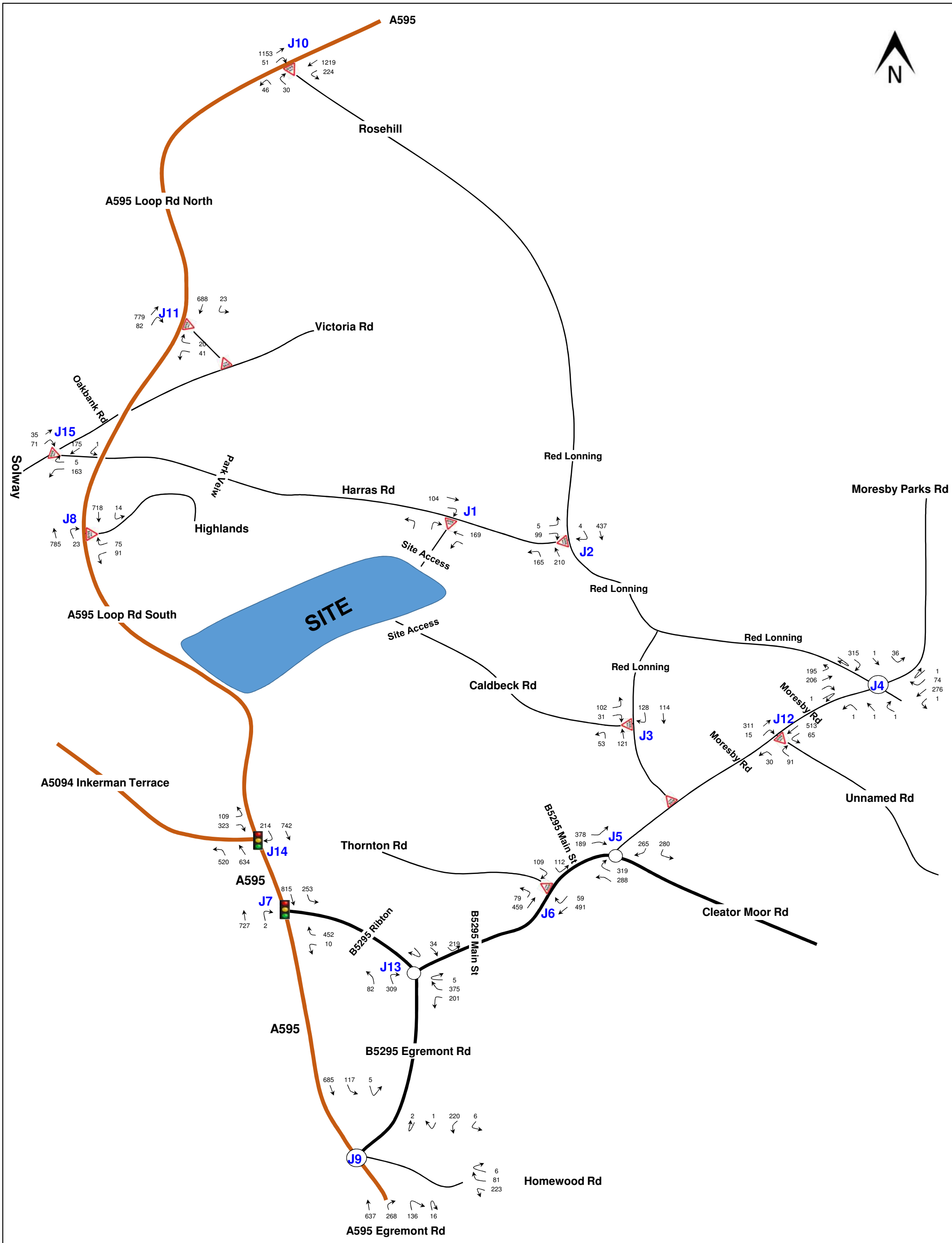

Fig 3: AM Peak Hour 2023 Growthed Surveyed Flow (08:00-09:00)

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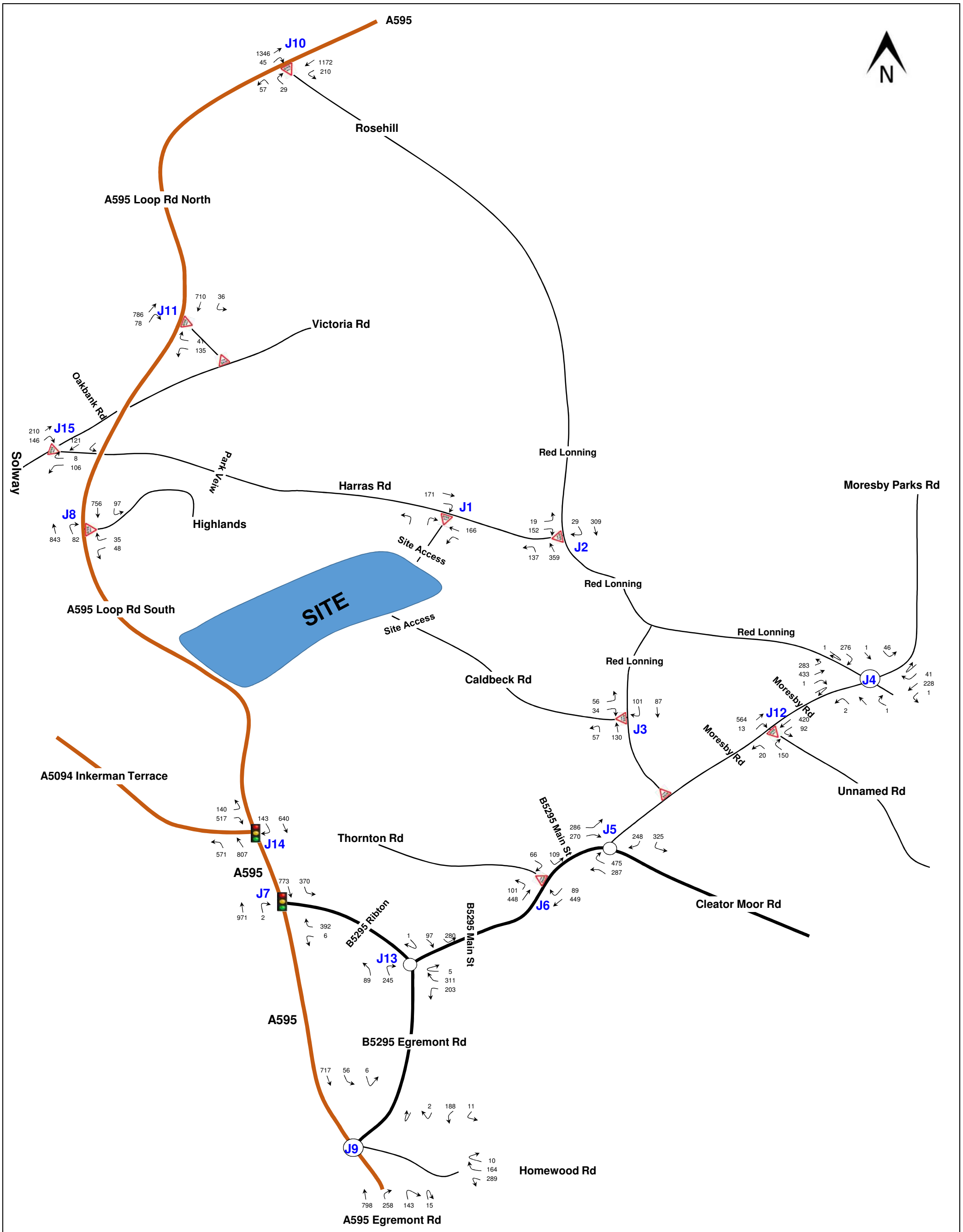

Fig 4: PM Peak Hour 2023 Growthed Surveyed Flows (16:15-17:15)

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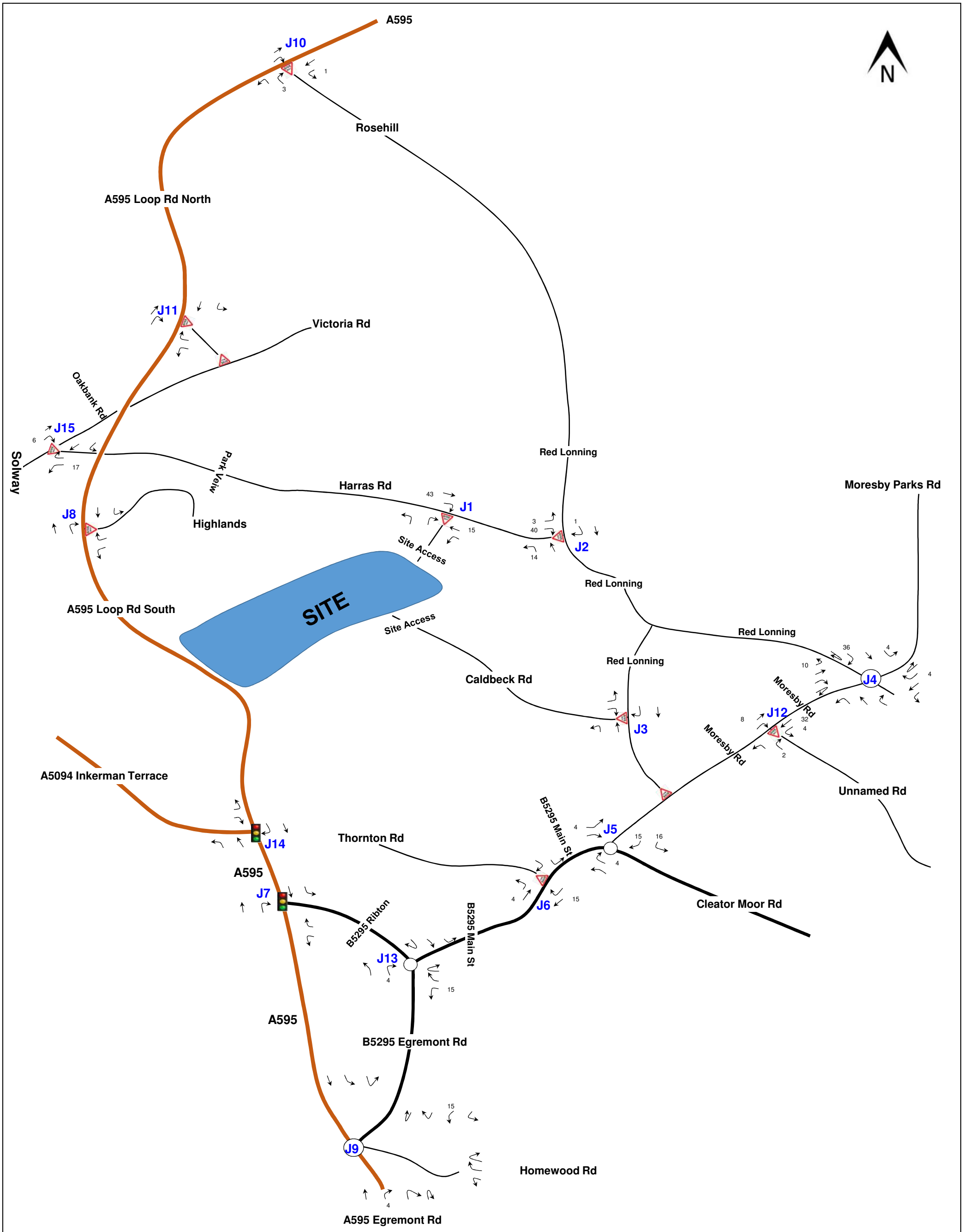

Fig 5: AM Peak Hour Committed Dev. Flows - Land at Harras Moor (4/16/2416/0O1&4/16/2415/0O1)

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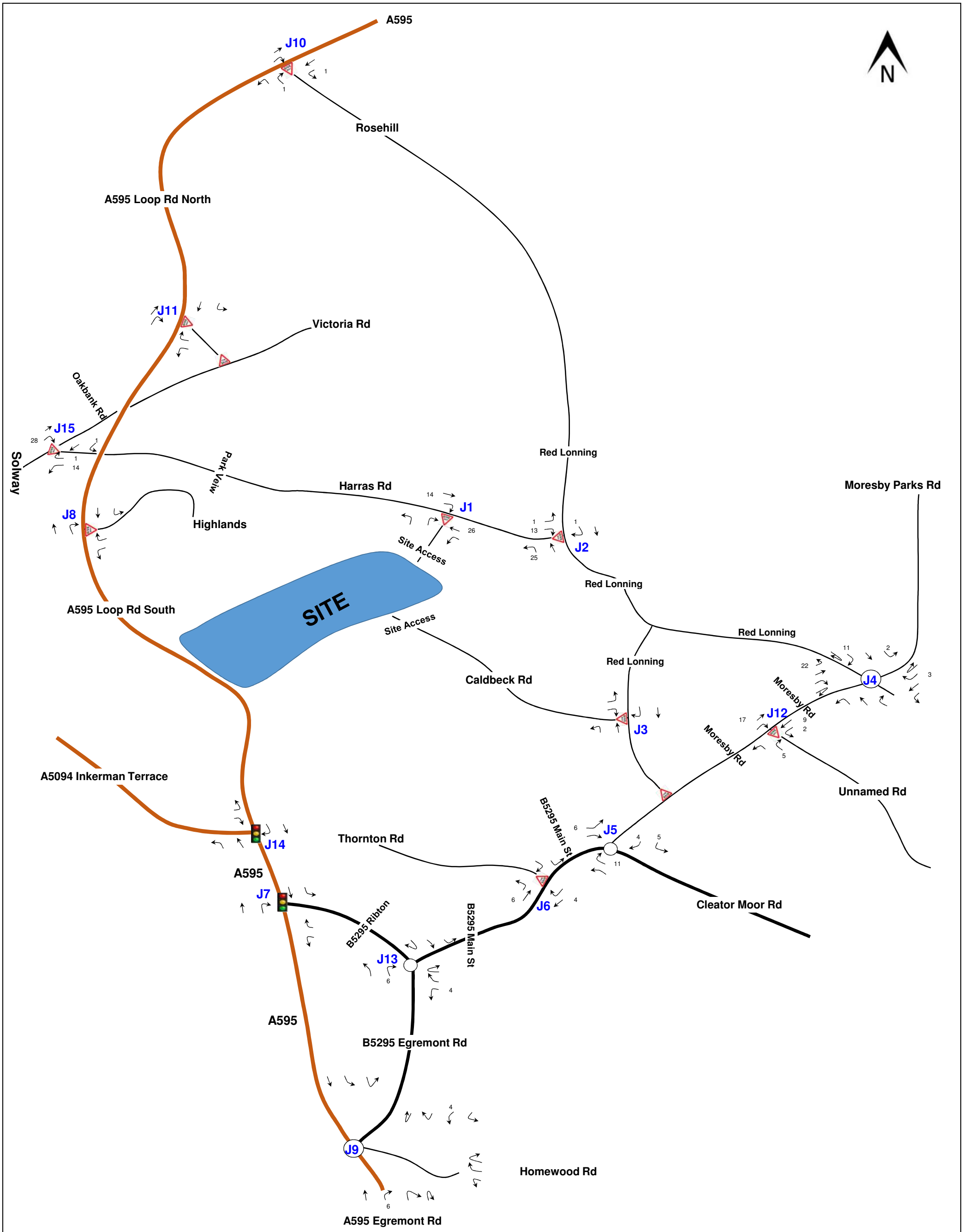

Fig 6: PM Peak Hour Committed Dev. Flows - Land at Harras Moor (4/16/2416/0O1&4/16/2415/0O1)

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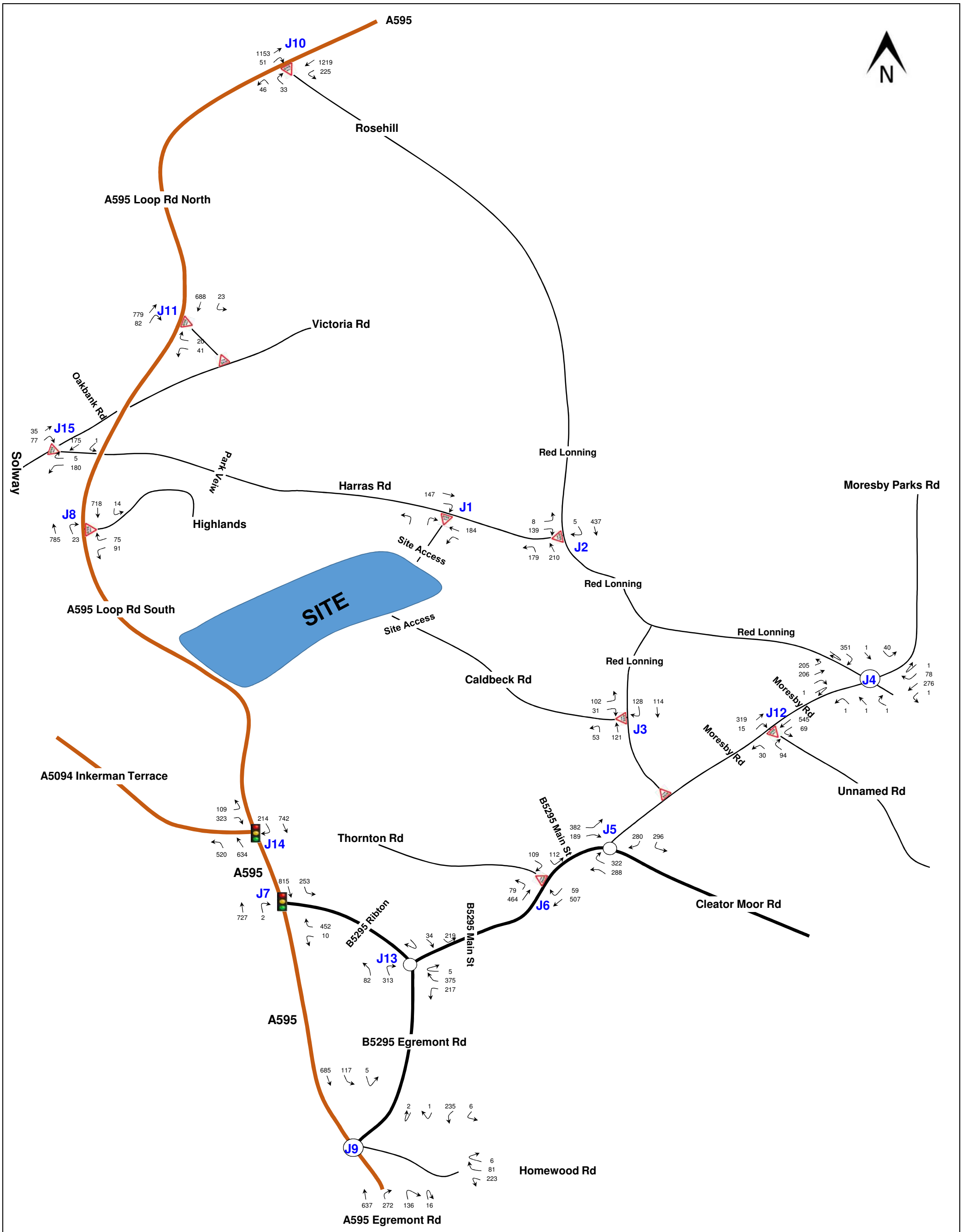

Fig 7: AM Peak Hour 2023 Baseline Flows (without Proposed Development)

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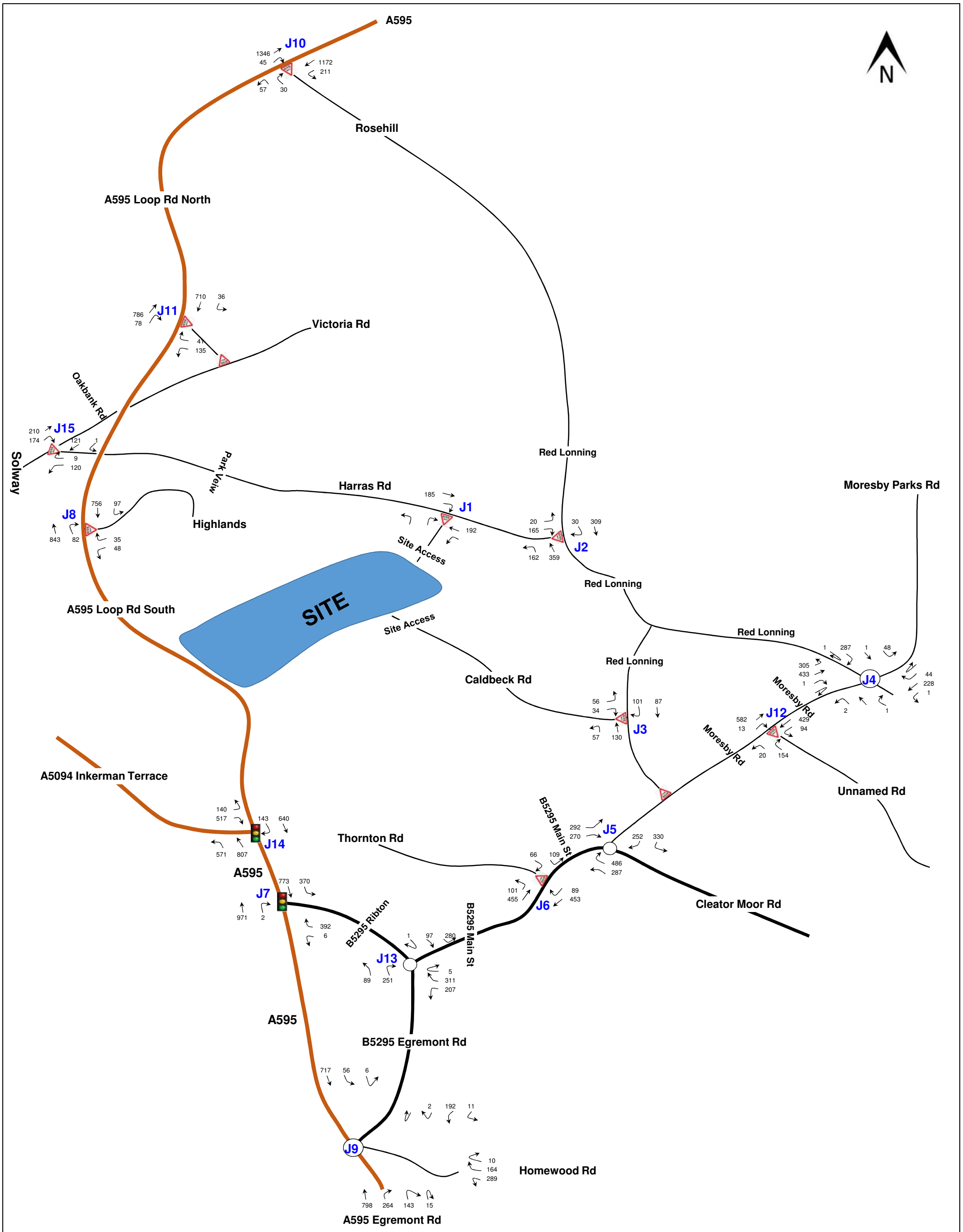

Fig 8: PM Peak Hour 2023 Baseline Flows (without Proposed Development)

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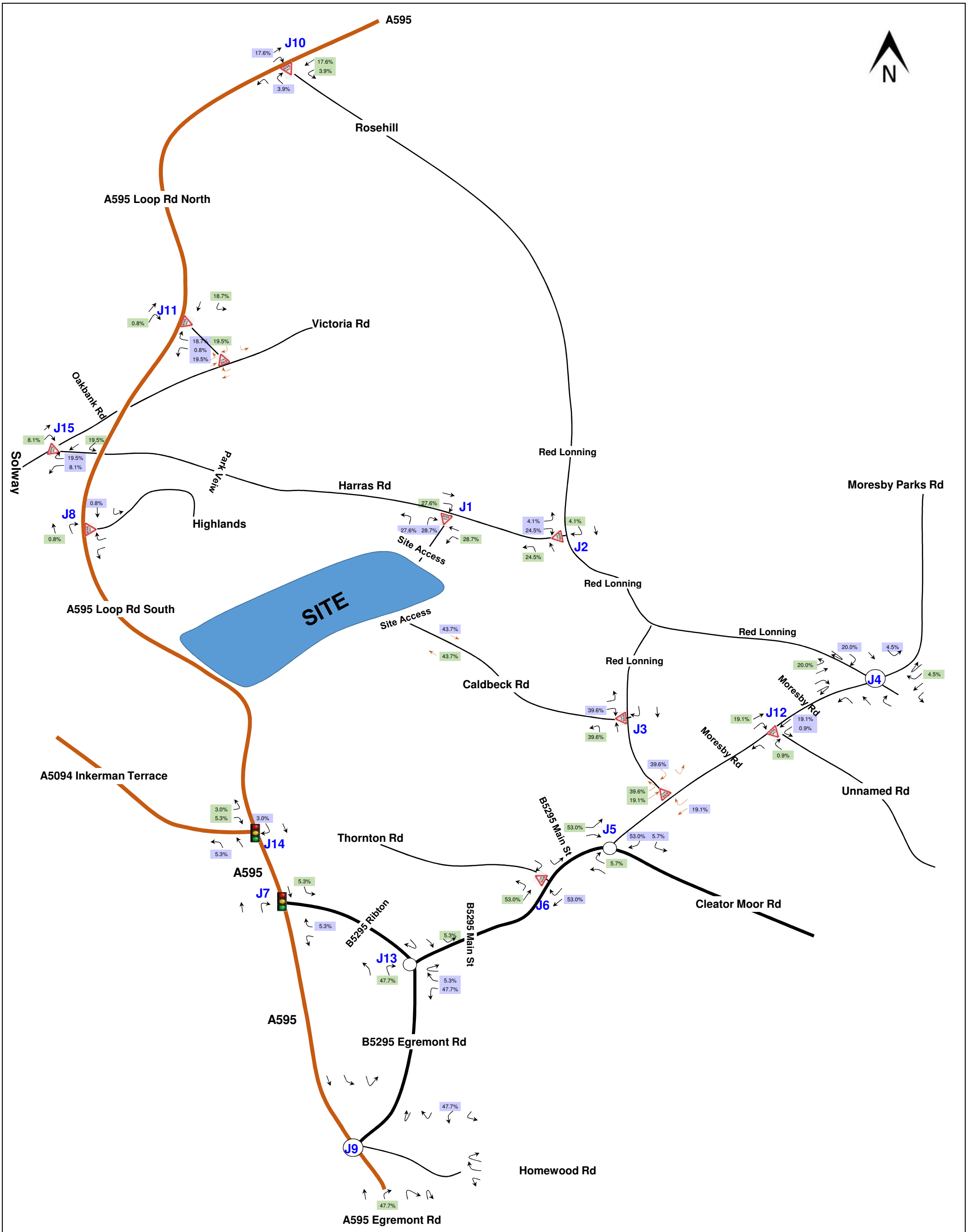

Fig 9: Trip Distribution based on 2011 Census- Proposed Residential Development

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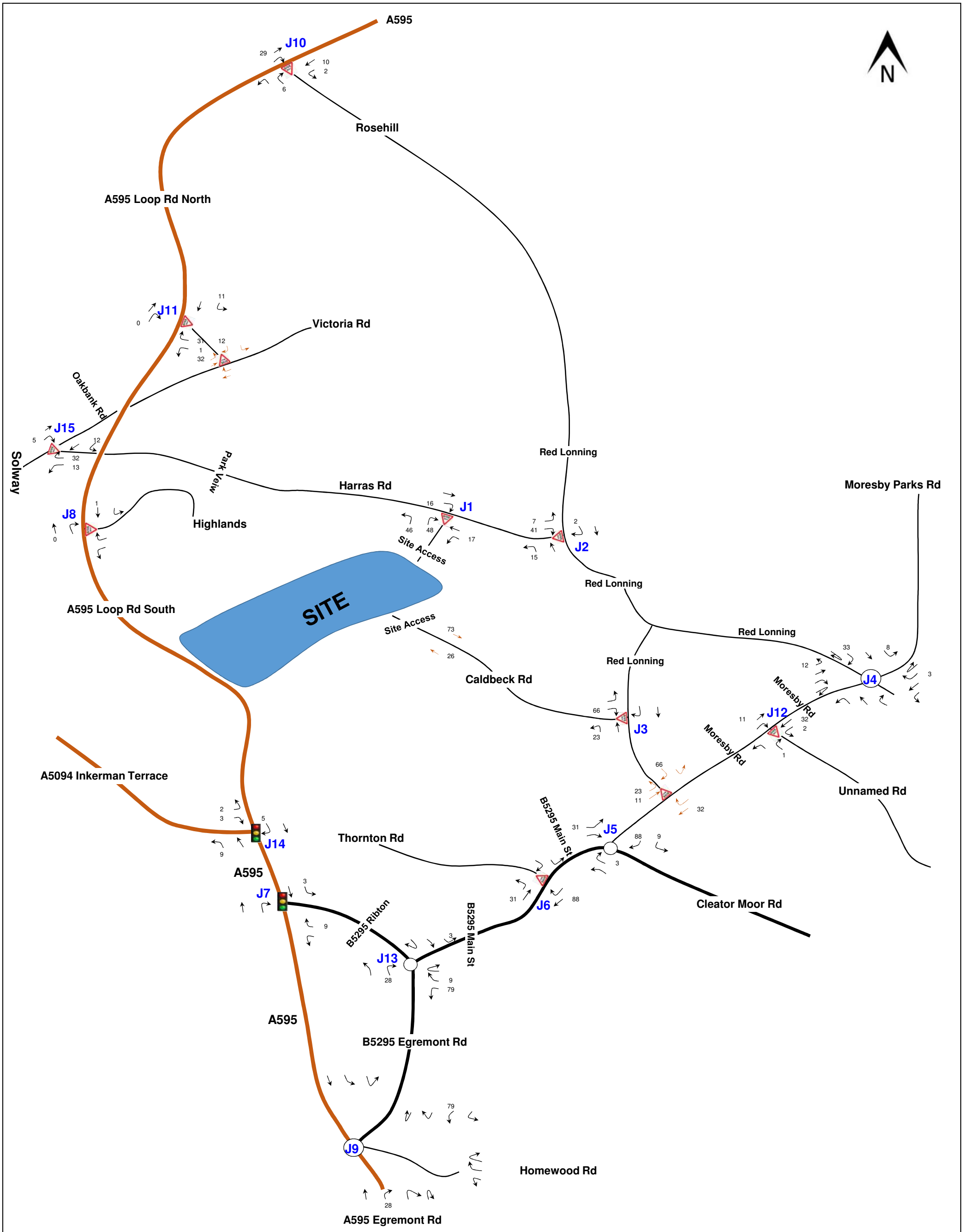

Fig 10: AM Peak Trip Generation - Proposed Residential Development

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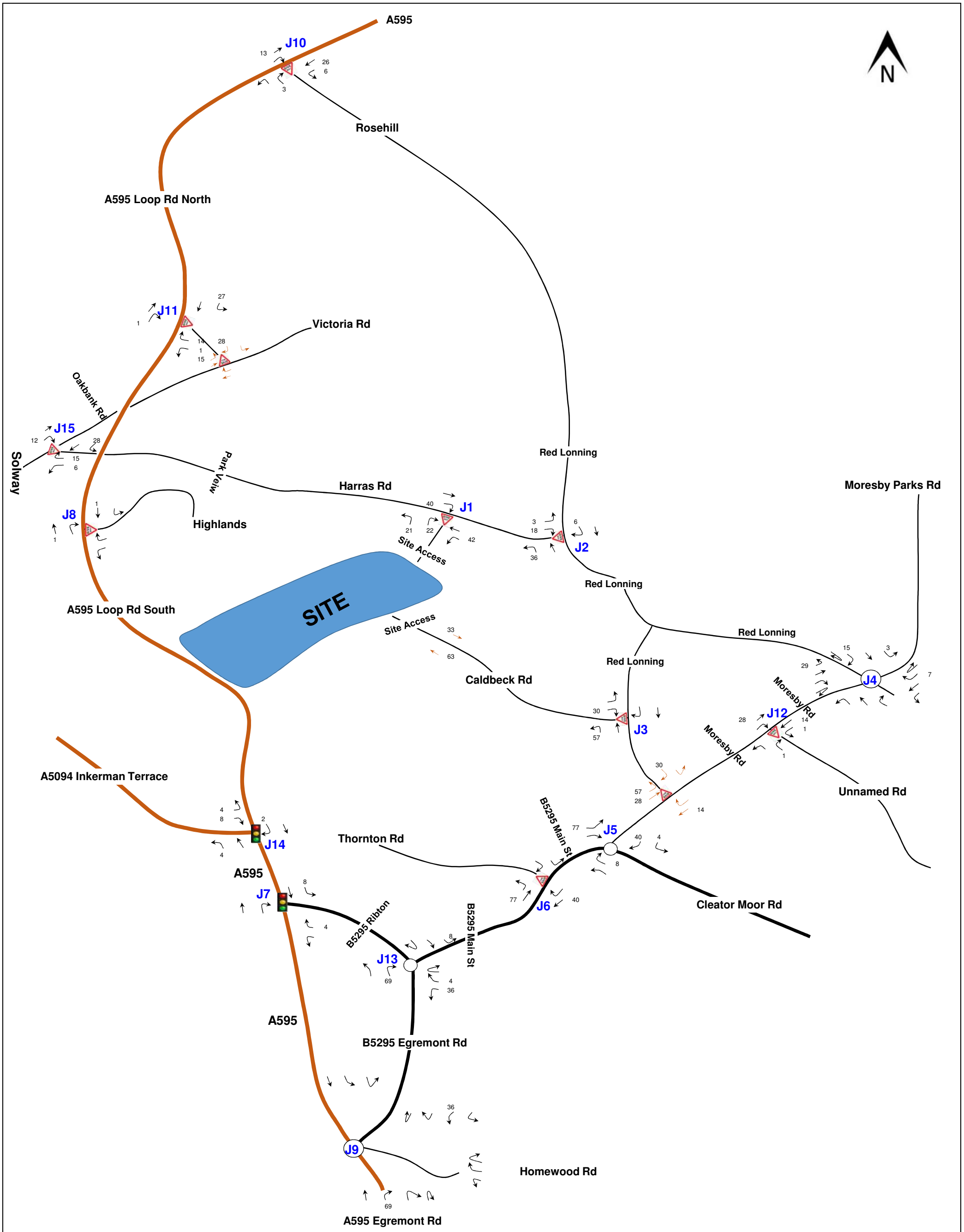

Fig 11: PM Peak Trip Generation - Proposed Residential Development

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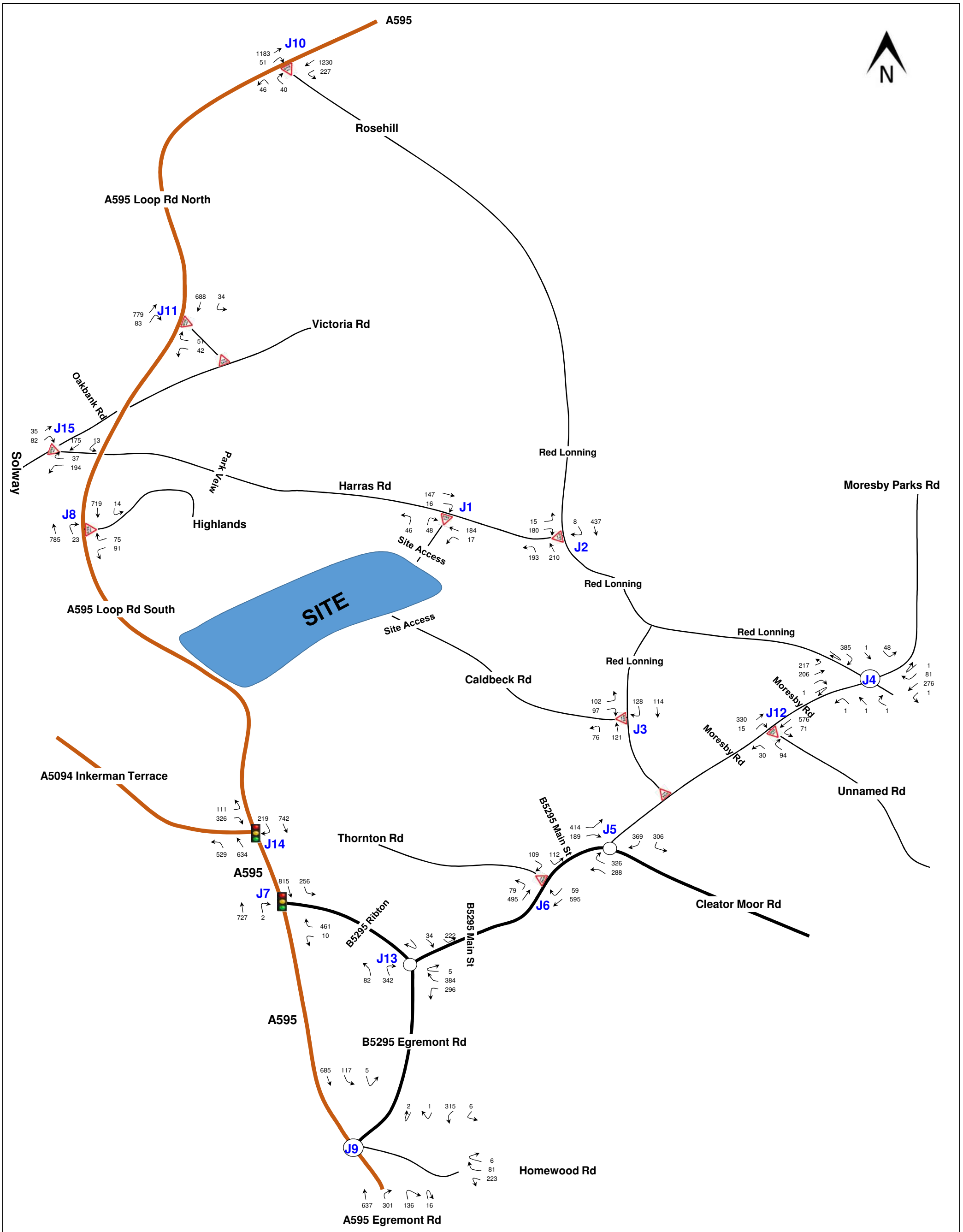

Fig 12: AM Peak Hour 2023 With Development Flows

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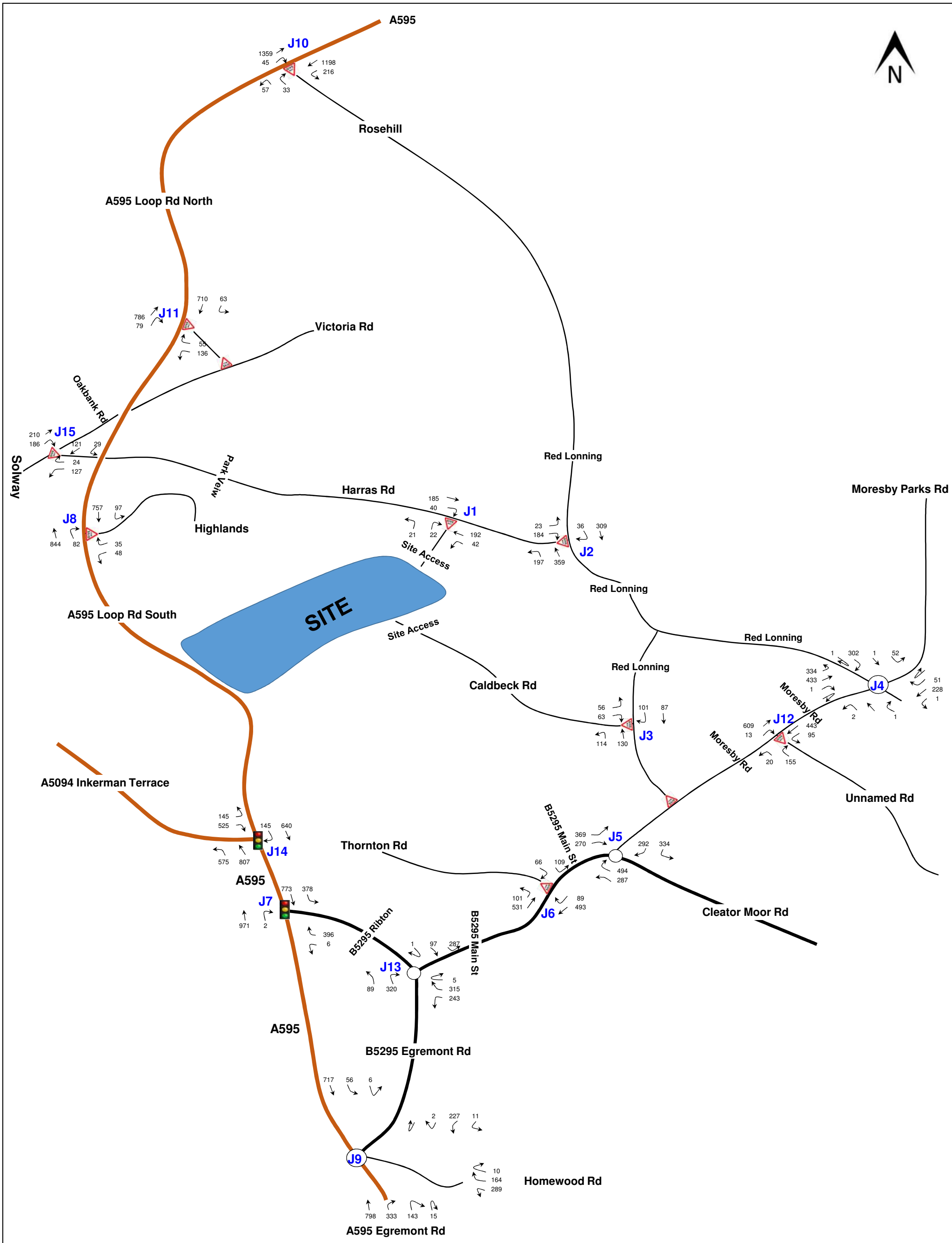

Fig 13: PM Peak Hour 2023 With Development Flows

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