

Client:
Richborough Estates Ltd/Mr & Mrs Adcock

Project:
**Land East of Stoke Road
Hinckley**

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Transport Assessment

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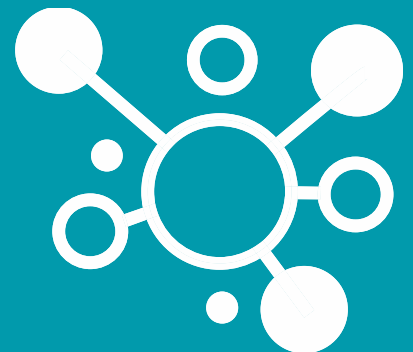


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1.0 Introduction

Background

- 1.1 Hub Transport Planning Ltd has been commissioned by Richborough Estates Ltd and Mr and Mrs Adcock, to provide transport advice for a proposed residential development on land to the north of Hinckley. The land in question is located to the north of the A47 and east of Stoke Road.
- 1.2 The outline planning application is for the erection of up to 475 dwellings, including public open space, land reserved for a primary school together with future expansion land (Use Class F1(a)), landscaping, drainage and associated infrastructure.
- 1.3 In the interests of robustness and to provide some flexibility at the reserve matters stage, this report considers a development for up to 500 dwellings and a 1-Form Entry Primary School. The site location is shown on **Figure 1.1**.

Structure of the Report

- 1.4 This report is intended to determine the relevant highway issues and indicate potential solutions, with reference to the impact of the proposed development site.
- 1.5 Following this introduction, the report is set out as follows:
 - Chapter 2 – Policy Review
 - Chapter 3 – Background Information and Highway Safety;
 - Chapter 4 – Sustainable Travel options;
 - Chapter 5 – Development Proposals;
 - Chapter 6 – Traffic Generation, Distribution and Assignment;
 - Chapter 7 – Traffic Impact and Assessment;
 - Chapter 8 – Off-site Highway Mitigation;
 - Chapter 9 – Summary and Conclusion.

Limitations of the Report

- 1.6 This report has been undertaken at the request of Richborough Estates Ltd/Mr and Mrs Adcock, thus should not be entrusted to any third party without written permission from Hub Transport Planning Ltd. However, should any information contained within this report be used by any unauthorised third party, it is done so entirely at their own risk and shall not be the responsibility of Hub Transport Planning Ltd.
- 1.7 This report has been compiled using data from several external sources (such as TRICS, traffic model data, traffic count data and public transport information); these sources are considered trustworthy and therefore the data provided is considered accurate and relevant at the time of preparing this report.

2.0 Policy Review

Introduction

2.1 This section summarises the relevant transport policy documents against which the development proposals are considered at a national, regional, and local level. The most relevant policy documents relating to this study are detailed below:

- National Planning Policy Framework (July 2021)
- Leicestershire Country Council Local Transport Plan 3 (2011-2026)
- Hinckley & Bosworth Local Plan 2006 to 2026: Core Strategy (December 2009)

National Policy

2.2 The latest National Planning Policy Framework (NPPF) was published in July 2021 and sets out the Government's planning policies and how these are expected to be applied.

2.3 In relation to transport, the NPPF states at paragraph 105 that:

'The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.'

2.4 When considering the effects the development may have on the local transport network, the NPPF states that:

'In assessing sites that may be allocated for development plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion) or on highway safety, can be cost effectively mitigated to an acceptable degree.

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

2.5 The NPPF further advises that:

'Within this context, applications for development should:

- a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.'*

2.6 In relation to parking policy the NPPF states that:

'If setting local parking standards for residential and non-residential development, policies should take into account:

- a) the accessibility of the development;*
- b) the type, mix and use of development;*
- c) the availability of and opportunities for public transport;*
- d) local car ownership levels; and*
- e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.'*

Leicestershire Local Transport Plan

2.7 Leicestershire County Council (LCC) have produced their Local Transport Plan (LTP) outlining the strategic transport goals for the county:

- 'A transport system that supports a prosperous economy and provides successfully for population growth.
- An efficient, resilient, and sustainable transport system that is well managed and maintained.
- A transport system that helps to reduce the carbon footprint of Leicestershire.
- An accessible and integrated transport system that helps promote equality of opportunity for all our residents.
- A transport system that improves the safety, health, and security of our residents.
- A transport system that helps to improve the quality of life for our residents and makes Leicestershire a more attractive place to live, work, and visit.'

2.8 In terms of new developments, the LTP3 sets out a range of objectives that aim to ensure that new developments are sustainable and help to facilitate the above goals:

- 'Encourage more people to walk, cycle and use public transport will help to reduce congestion and achieve a transport system that provides for the effective and efficient movement of people, materials, and goods.'
- Continuing to support bus services/alternative forms of public transport and seeking to ensure that new developments can access a range of facilities by means other than the private car, should help to promote equality of opportunity.
- Efforts to improve information about existing sustainable transport services and facilities should help to improve satisfaction with our transport system.'

Hinckley & Bosworth Borough Council's Policy

2.9 Hinckley & Bosworth Borough Council's Core Strategy for the Local Plan sets out the overarching strategy and policies to guide the future development of the borough up to 2026. It builds on policy at a national and regional level.

2.10 The Core Strategy identifies Hinckley as a Sub-Regional Centre. Policy 1 focuses on development in Hinckley:

'To support Hinckley's role as a sub-regional centre the council will:

- Allocate land for the development of a minimum of 1120 new residential dwellings. In particular, the council will seek to diversify the existing housing stock in the town centre to cater for a range of house types and sizes supported by Policy 15 and Policy 16.'

'To ensure development contributes to Hinckley's character and sense of place and that the town's infrastructure can accommodate the new development, the council will:

- Expect development to respect Hinckley's industrial heritage through sympathetic reuse of existing buildings unless it can be demonstrated that this is not achievable.
- Require new development to respect the character and appearance of the Hinckley Conservation Areas by incorporating locally distinctive features of the conservation area into the development.
- Require new development to enhance the poor public realm within the town centre.'

3.0 Background Information and Highway Safety

Site Location

- 3.1 The proposed development is located directly north of the A47 and is bounded to the west by Stoke Road and to the east and north by open fields. Existing access to the land is provided from Stoke Road via a field gate.

Local Highway Network

- 3.2 Stoke Road which runs along the western frontage of the site takes the form of a single carriageway road and is subject to the national speed limit. To the north, Stoke Road provides access towards Stoke Golding and Market Bosworth.
- 3.3 To the south of the site, Stoke Road forms a five-arm roundabout junction with the A47 and Sword Drive. All approach arms have two lane entries with the exception of A47 Eastern arm which has three lane entries. To the south of the roundabout Stoke Road provides access to residential areas and Hinckley Town Centre. Sword Drive gives access to a residential estate and Halfords and Wickes retail outlets.
- 3.4 The A47 is a wide single-carriageway road subject to a 40mph speed limit. To the west the A47 meets the A5 at a four-arm signalled roundabout to the southwest of Hinckley. The A47 then continues southwards towards Nuneaton via the signalled Longshoot junction. To the northeast, the A47 provides a route towards Barwell and Earl Shilton (effectively bypassing both settlements) and onwards to Leicester.
- 3.5 The Ashby Road junction with the A47 takes the form of a four-arm traffic signal junction. Each arm of this junction has two-lane entries.
- 3.6 A footway/cycleway runs alongside the A47 from the A5 past the site and continues northwards past Earl Shilton where it continues as an on-road advisory cycle lane.

Site Observations

- 3.7 The site has been visited on several occasions over the past three years. As a result, observations include pre and post Covid-19 traffic conditions. Generally speaking, the observations recently undertaken are relatively similar to those pre-covid.
- 3.8 The Stoke Road roundabout was generally observed to operate with minimal queues and delays during the morning peak hour on the highway network both now, and pre-covid. Some minor queueing was observed on the A47 western arm, particularly on the inside lane which is designated for traffic heading straight ahead and left.
- 3.9 At the Ashby Road/A47 traffic signals, queueing has been observed on the Ashby Road North arm during the AM peak. Queues were also observed on the A47 arms of the junction although queuing vehicles generally cleared in a single traffic signal cycle.
- 3.10 Further afield, congestion was observed at the Dodwells Roundabout, particularly on the A47 northern arm. Rolling queues on approach to the junction have been observed in the AM peak, both pre and post Covid. Some queuing and delay was also recently observed along the A5 at the A5/A47 Longshoot traffic signal junction.

Scoping Discussions

- 3.11 Initial discussions have been held with Leicestershire County Council (LCC) as local highway authority, and National Highways (NH) to agree the scope of the TA. Initial responses from both authorities requested that the development impact be assessed through the LCC's Pan Regional Transport Model (PRTM). As a result, additional scoping discussion are currently underway with LCC to agree the technical scope of the strategic traffic modelling requested. When available, this information will be submitted to supplement the assessment carried out in this report.
- 3.12 In the interim, this TA provides an initial assessment of the local highway network based on traffic count data collected in October 2021.

Traffic Data

- 3.13 In order to inform this assessment, peak hour classified turning counts were collected at the following junctions on Thursday 14th October 2021:
- A47/Stoke Road roundabout
 - A47/Ashby Road traffic signal junction
 - A47/Wykin Road roundabout
 - A47/Roston Drive/Triumph Access roundabout
 - A5/A47 Dodwells Roundabout
- 3.14 In addition, historic data was obtained from LCC at the Stoke Road/Tudor Road and Stoke Road/Wykin Road/Hollycroft junctions. This was dated Thursday 26th April 2018.
- 3.15 To supplement the turning count data, ATC's were also collected on Stoke Road (north and south of A47) and the A47 (east and west of Stoke Road) between 11th October 2021 and 17th October 2021.
- 3.16 All the relevant traffic counts are included as **Appendix A**.
- 3.17 In accordance with guidance from LCC, the traffic count data has been adjusted with a Covid Uplift Factor to give an appropriate base proxy.
- 3.18 The Covid Uplift Factors have been supplied by LCC. They are specific for Leicestershire and suggest the difference between current traffic levels and expected traffic levels taking account of the effects of the Covid-19 pandemic. The factors are provided for hourly periods for all weekdays and will be applied accordingly. The factors for the AM and PM peak periods are as follows:
- AM Peak - 94%
 - PM Peak - 91%
- 3.19 The factors suggest that on the day the base traffic counts were collected in October 2021, traffic flows were 6% and 9% lower compared to pre-covid traffic conditions. As a result the base traffic flows have been uplifted accordingly.
- 3.20 The base traffic data is included in **Figures 3.1 – 3.2**.

Personal Injury Accident Data

- 3.21 Personal Injury Accident (PIA) Data has been obtained from LCC for the latest 5-year, 10-month period available. This covers a period from 1st January 2016 to 17th October 2021. There have been a total number of 52 PIAs in the search area, 45 classified as slight and 7 as serious. There were no fatal accidents in the search area during this period.
- 3.22 The search area covers Stoke Road/Hollycroft corridor from near the centre of Hinckley to Stoke Golding in the north and along the A47 corridor between Dodwells Roundabout and the Ashby Road/A47 traffic signal junction.
- 3.23 A summary of the accident data is included below in **Table 1**, with full data provided in **Appendix B**.

Table 1 - Accident Data Summary

Location	Severity				Type	
	Slight	Serious	Fatal	Total	Pedestrian	Cyclist
Junctions						
A47/Stoke Road Roundabout	3	1	-	4	-	2
A47/Ashby Road	7	1	-	8	-	-
A47/Roston Drive	1	-	-	1	-	-
A47/Brindley Road	1	-	-	1	-	-
A47/Clover Field	2	1	-	3	-	-
A47/Cornfield	4	-	-	4	-	-
A47/Jacknell Road	1	-	-	1	-	-
A47/Outlands Drive	2	-	-	2	-	-
A47/Wykin Road	2	-	-	2	-	-
Council Road/Stockwell Head	2	-	-	2	-	-
Dodwells Roundabout	8	2	-	10	-	-
Lower/Upper Bond	3	-	-	3	-	-
Hollycroft/Stanley Road	1	-	-	1	-	-
Hollycroft/Westray Drive	1	-	-	1	-	-
Hollycroft/Shakespeare Drive	-	1	-	1	1	-
Stoke Road/Tudor Road	1	-	-	1	-	-
Stoke Road/Wykin Road	1	-	-	1	-	1
Links						
A47	-	1	-	1	-	-
Stoke Rd	3	-	-	3	2	-
Lower Bond Street	1	-	-	1	-	1
Hollycroft	1	-	-	1	-	-
Total						
All Accidents	45	7	0	52	3	4

- 3.24 In the past five years, there have been 4 accidents at the A47/Stoke Road roundabout, immediately to the south of the proposed site. Three of these were classified as slight and one as severe. Given the volume of traffic that passes through this junction the number and severity of accidents does not suggest there is a specific highway safety issue at this location. No accidents have been recorded along Stoke Road in the vicinity of the site frontage.
- 3.25 There have been eight accidents recorded at the crossroad between the A47 and Ashby Road. Seven of these accidents were classified as slight and one as severe. Analysis of these collisions shows the accidents involved various turning manoeuvres and does not suggest a particular pattern or common causation factor.

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- 3.26 Along the A47 corridor from Stoke Road to Dodwells Roundabout, no particular accident clusters have been recorded.
 - 3.27 The Dodwells Roundabout junction has recorded 10 accidents during the period under assessment, eight of which were classed as slight in severity and two severe. Analysis of these accidents does not suggest a particular patterns or causation factors. Furthermore, considering the volume of traffic that passes through this junction the number and severity of accidents does not suggest there is a specific highway safety issue at this location.
 - 3.28 To the south of the A47, the number of accidents recorded along Stoke Road and Hollycroft do not suggest there are any particular accident clusters along this corridor.
 - 3.29 Whilst all PIAs are regrettable, the quantity and severity of PIAs recorded in the vicinity of the site does not give any undue cause for concern.

4.0 Sustainable Travel Options

Introduction

- 4.1 This section provides an overview of the existing sustainable travel options which will be available to future residents of the site. The summary includes options for walking, cycling and using public transport.

National Guidelines

- 4.2 Walking and cycling provide important alternatives to the private car and should be encouraged to form part of longer journeys via public transport. Indeed, it is noteworthy that the Institute of Highways and Transportation (IHT) has prepared several guidance documents that provide advice with respect to the provision of sustainable travel in conjunction with new developments. The suggested acceptable walking distances to common facilities are presented in **Table 2** below.

Table 2 - Suggested Walking Distances (IHT Guidelines)

IHT Grading	Town Centre (m)	Commuting/Schools/Sightseeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

- 4.3 It is accepted that there is potential for short car trips to be substituted for cycle trips, and for longer trips to be substituted by a combination of cycle and public transport trips. Guidance suggests that 5km is a useful benchmark for a commutable distance by cycle.
- 4.4 The National Travel Survey 2020, highlights that the average cycle trip for 2019 was 6.1km (assuming a 10mph average cycle speed).
- 4.5 In addition to this, Manual for Streets (MfS) states that 'walkable neighbourhoods' are typically characterised by having a range of facilities within 10 minutes (up to about 800m) walking distance of residential areas which residents may access comfortably on foot.
- 4.6 MfS also states that the 800m walking distance is not an upper limit and references the former PPG13 guidance in respect of walking replacing short car trips, particularly those under 2km.
- 4.7 In addition to the above, it is pertinent to note that the National Travel Survey (published in August 2020), which provides a summary of results of travel survey data for 2019, reports that the average walk trip distance is 1.36km.
- 4.8 As such, it is reasonable to assume that the average person will walk between 800m and 2.0km to a defined destination (such as local facilities), but also being mindful of the 1.36km average walk distance.
- 4.9 The following sections consider the opportunities for sustainable travel that are available in the vicinity of the site.

Accessibility on Foot

- 4.10 A number of retail, leisure, and employment opportunities, lie directly to the south of the proposed development and south of the A47. The facilities are described in **Table 3** below and their location can be identified on **Figure 4.1**. In addition, the table refers to the other facilities typically used on a day-to-day or weekly basis by residents.

The distances listed in the table below are taken from the centre of the site and directed across the A47 via the proposed pedestrian crossings which are described in more detail later in this report.

Table 3 - Distance to Local Services

Amenity	Distance
Morrisons Supermarket and Petrol Station	430m
Fields Health and Fitness Club	450m
Bright Horizons Hinckley Day Nursery	550m
McDonald's	525m
Barleyfield/Maizefield Industrial Estate	550m
Milestone Hinckley Public House	600m
Halfords and Wickes	730m
Play Park	730m
Dorothy Goodman School (Primary Site)	760m
Green Towers Hinckley Club 4 Young People	820m
Redmoor Academy	910m
Richmond Primary School	940m
Tudor Road Fish and Chip Bar	970m
St Francis Community Centre	1.0km
Dovetree Primary School	1.45km
Battling Brook Community Primary School	1.5km
Hinckley and Bosworth Community Hospital	1.6km
Hollycroft Medical Centre and Chemist	2.0km
Hinckley Town Centre	2.3km

- 4.11 **Table 3** demonstrates that the site is well located to make use of a wide range of local facilities in the area. Within an 800m walk of the site residents will be able to access Morrisons Supermarket, public house and restaurants, primary schools and recreations areas.
- 4.12 The remaining facilities are all located within a 2km walking distance of the site and therefore are within the MfS and former PPG13 suggested upper limit. These facilities include; a senior school, medical practice and chemist.
- 4.13 A Public Right of Way (PRoW) runs north-south through the site and provides a connection to the A47 approximately 90m west of Clover Field. An existing pedestrian spitter island is located across the A47 at this point, however the development proposals include plans to improve this crossing facility to provide a signalised Toucan crossing. Further details are provided later in this report.
- 4.14 A segregated off-road footway/cycleway is located on the southern side of the A47 in the vicinity of the site. The footway/cycleway routes around the outside of the A47/Stoke Road roundabout junction with informal crossings located on all arms of the junction apart from Stoke Road.

- 4.15 To the north of the roundabout the footway/cycleway extends part way up Stoke Road. On the eastern side of the road the footway/cycleway extends approximately 40m north of the roundabout junction, whilst on the west side it extends approximately 100m north of the junction. As part of the development proposals, the footway/cycle infrastructure will be extended up to the proposed site access junction.
- 4.16 To the south of the A47/Stoke Road junction the segregated footway/cycleway heads south along Stoke Road before turning into a shared use facility. The footway continues in a southerly direction towards Hinckley Town Centre.
- 4.17 A PRoW also runs along Clover Field, through Richmond Park and provides a link to Tudor Road.

Accessibility by Cycle

- 4.18 An off-road segregated footway/cycleway is located to the south of the A47 carriageway, the track is clearly marked and dropped kerbs are provided at crossing points along the route. This route continues northeast to Earl Shilton and southwest to Harrowbrook Industrial Estate.
- 4.19 Recommended cycle routes are referred to on LCC's Hinckley Cycle Map (included as **Appendix C**); those in the vicinity of the site have been included on **Figure 4.2**. These routes provide links towards Hinckley Town Centre.
- 4.20 Based on the average cycle trip of 6.1km as per the 2020 national travel survey, residents would be able to access a number of employment opportunities including the Triumph Factory and Phoenix Business Park as well as those in the centre of Hinckley, Barwell and Earl Shilton.

Accessibility by Bus

- 4.21 The closest bus stops from the centre of the site are located approximately 610m to the southwest of the site on Stoke Road; these stops benefit from shelters and are served by the number 6 bus service.
- 4.22 Further stops are located on Tudor Road, approximately 960m to the south measured from the centre of the site, and are served by the number 1 and 2 bus services.
- 4.23 Bus stops are also located on Ashby Road, on the eastern boundary of the site, and are served by the number 48 and 158 bus services.
- 4.24 **Table 4** provides a summary of the destinations and frequencies of these services; the routes of these services in the vicinity of the site are shown on **Figure 4.3**.

Table 4 - Local Bus Services

Service No.	Bus Stop Location	Route	Frequency (approx.)		
			Mon - Fri	Sat	Sun
1	Tudor Road	Earl Shilton – Hinckley	1 morning and 3 Afternoon Services	1 morning and 3 Afternoon Services	N/A
2	Tudor Road	Barwell – Hinckley	3 morning and 4 Afternoon Services	2 morning and 3 Afternoon Services	N/A
6	Stoke Road	Burbage – Hinckley – Stoke Golding – Higham-on-the-Hill – Nuneaton	Hourly (07:16-19:57)	Hourly (09:04-17:06)	N/A

48L	Ashby Road	Coventry – Bishopgate – Longford – Exhall – Bedworth – Nuneaton – Hinckley – Barwell – Earl Shilton – Leicester	Every 20mins (06:11-20:50)	Every 20mins (06:11-19:12)	Hourly (08:29-16:22)
158	Ashby Road	Nuneaton – Hinckley – Barwell – Earl Shilton – Leicester	Every 20mins (06:25-22:50)	Every 20mins (06:25-22:50)	Hourly (08:40-18:40)

- 4.25 Overall, there is a relatively high level of bus service on offer in the vicinity of the site for residents travelling for work, education and/or leisure purposes. The stops serving these services are located within a reasonable walking distance of the site and suitable walking routes to these stops will be ensured as part of the development proposals.

Accessibility by Rail

- 4.26 Hinckley Rail Station is located approximately 3.4km south of the site and can be accessed by the 6-bus service (c.20-minute journey time) which stops directly adjacent to Hinckley Rail Station, by cycle (c.10-15-minute journey time), or by car (10-15-minute journey time).
- 4.27 The station benefits from 16 cycle parking spaces and 63 car parking spaces, with two accessible spaces.
- 4.28 The station provides services between Leicester (c.20-minute journey time) and Birmingham New Street (c.40-minute journey time), with services in either direction running approximately every half hour during peak times and hourly otherwise.
- 4.29 Overall, there is a realistic option for residents to travel by a combination of cycle/rail, bus/rail or car/rail within a reasonable journey time for work, education or leisure purposes.

Summary of Baseline Conditions

- 4.30 The above review demonstrates that the site is readily accessible by a variety of modes of transport that have the potential to reduce the reliance upon the private car. It is therefore considered that residents will have a real choice about how they travel and that the proposals therefore accord with the guiding principles of the NPPF.
- 4.31 Furthermore, a Travel Plan has been provided as part of the planning application to set out measures and initiatives to encourage sustainable travel to and from the site.

5.0 Development Proposals

Proposed Development

- 5.1 The outline planning application is for the erection of up to 475 dwellings, including public open space, land reserved for a primary school together with future expansion land (Use Class F1(a)), landscaping, drainage and associated infrastructure'
- 5.2 As stated previously in this report, in the interests of robustness this TA considers a development for up to 500 residential dwellings and a 1-Form Entry Primary School. The primary school will accommodate up to 210 pupils.
- 5.3 The illustrative masterplan for the development proposal is included as **Appendix D** to this report.

Access Strategy

- 5.4 Vehicular access to the site will be provided via a new three arm roundabout junction located off Stoke Road. The proposed roundabout layout is provided in **Drawing T19595.001 rev C**, with swept path analysis shown in **Drawing T19595.010**.
- 5.5 The roundabout junction has been designed in line with the guidance set out in CD 116 of the DMRB.
- 5.6 The site access arm of the roundabout has been set at 6.75m in width. This is in line with the Major Residential Access Road category set out in LCC's Highway Design Guide (HDG). It is noted that the HDC design guide states that major residential access roads can serve up to 1000 dwellings but '*normally no more than 400 from a single point of access*'. However, the guidance does state that LCC '*will consider developments in excess of the single-access limits on a site-by-site basis*'. Capacity assessments demonstrating that the proposed site access is suitable to cater for this level of development are provided later in this report.
- 5.7 In order to inform forward visibility requirements at the roundabout, an ATC was placed on Stoke Road in the vicinity of the proposed site access. The calculated 85th percentile southbound speeds on approach to the proposed access junction are 49.35mph. According to Table DG4 of LCC's HDG this equates to a visibility requirement of 160m.
- 5.8 On the northbound approach, forward visibility of 120m is provided which equates to 85th percentile speeds of 41mph to 44mph according to LCC HDG. Given that vehicles will be leaving the A47/Stoke Road roundabout at this point, actual speeds are likely to be significantly lower, therefore the visibility splay shown is considered appropriate.
- 5.9 As part of the site access proposals, the existing footway/cycleway on both sides of Stoke Road will be extended up to the site access and along the central spine road that links through the site. Crossing facilities in the form of dropped kerb crossings with tactile paving will be provided at the access roundabout.
- 5.10 In order to facilitate safe crossing of the A47, two Toucan crossings are proposed. The first of these is proposed approximately 90m west of Clover Field and aligns with the existing PRow which routes through the site. The crossing will be staggered which reduces the crossing distances and minimises delay to traffic on the A47. The applicant is willing to provide financial contributions, secured through an appropriate mechanism (e.g. Section 106), to improve the PRow link as it connects to the site in this location. The proposed crossing is shown in **Drawing T19595.002 rev C**.

- 5.11 The second Toucan crossing will be located between Cornfield and Nelson Drive. This will also be a staggered crossing and will connect to the existing footway/cycleway infrastructure on the southern side of the A47. The proposed crossing is shown on **Drawing T19595.006**.

Wider Proposals

- 5.12 Whilst not the subject of this planning application, it should be recognised that the proposed development has been designed with the potential for further development east of the site in mind. The land to the east is being promoted by Miller Homes and the overall land parcel, including that which is the subject of this application, might include up to 1,300 homes.
- 5.13 The proposed spine road which routes through the site has been designed so that it can be extended east in order to provide a connection with Ashby Road. Further consideration of this potential future development will be carried out using the PRTM and will be discussed with LCC in due course.

Stage 1 Road Safety Audits

- 5.14 In order to inform the proposed development proposals a Stage 1 Road Safety Audit (RSA) has been undertaken for the site access junction. The RSA, including the designers response is included in **Appendix E**.
- 5.15 A summary of the points raised, including the designers response is provided in **Table 5**. The RSA covers the site access and all off-site mitigation facilities. The summary table below refers to the proposed site access roundabout and the two Toucan Crossings proposed on the A47.

Table 5 – Site Access Stage 1 Road Safety Assessment Summary

Issue and Recommendation	Designers Response
Site Access Roundabout	
Issue 2.1 - Potential collisions due to standing water or service covers. Recommendation - When preparing the detailed design, ensure adequate surface water drainage is provided.	Recommendation accepted. The drainage requirements will be considered at the detailed design stage.
Issue 3.1 - Collisions associated with poor illumination. Recommendation - Ensure that street lighting is provided, street lighting columns should be placed at the back of footway to mitigate the risk of being struck by vehicles or causing an obstruction for pedestrians or cyclists.	Recommendation accepted. A full lighting assessment will be undertaken at the detailed design stage.
Toucan Crossing – Approx. 120m east of A47/Stoke Road Roundabout	
Issue 4.3 - Potential risk of pedestrians inadvertently stepping out onto the carriageway. Recommendation - Pedestrian guardrail should be used to direct non-motorised users to the crossing facility and mitigate the risk of them from inadvertently entering the carriageway.	Recommendation accepted. Pedestrian guard railing will be installed where appropriate. Full details will be provided at the detailed design stage.
Toucan Crossing – Approx. 100m east of Cornfield	
Issue 5.1 - Potential risk of pedestrians inadvertently stepping out onto the carriageway. Recommendation - Pedestrian guardrail should be used to direct non-motorised users to the crossing facility and mitigate the risk of them from inadvertently entering the carriageway.	Recommendation accepted. Pedestrian guard railing will be installed where appropriate. Full details will be provided at the detailed design stage.

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- 5.16 The Stage 1 RSA has raised four issues in relation to the proposed site access junctions and Toucan Crossing provision all of which can be appropriately mitigated at the detailed design stage.
- 5.17 A copy of the designer's response has been reviewed by the safety audit team who have confirmed the amendments are acceptable and fully address the issues raised. A letter from the safety audit team confirming this is provided as **Appendix E**.

6.0 Traffic Generation, Distribution and Assignment

TRICS Assessment

- 6.1 The TRICS (7.8.3) database has been interrogated in order to quantify the levels of vehicle trips that are likely to be associated with the proposed development.
- 6.2 The trip rates that have been extracted from the database are based upon the following search parameters:
- Land Use – Residential, Houses Privately Owned;
 - Regions – Great Britain (excluding Greater London and Ireland);
 - Unit Search Range – 200-1500;
 - Date Range – 01/01/13 to 29/02/20 (this excludes post Covid-19 surveys);
 - Selected Days – Weekdays;
 - Selected Locations – Edge of Town, Neighbourhood Centre.
- 6.3 The TRICS output reports are provided in **Appendix F** and a summary of the trip rates and subsequent vehicle trip generation for 500 dwellings is provided in **Table 6**.

Table 6 - TRICS Analysis – 500 Units

Peak Period	Trip Rate (per unit)		Trips (500 units)		Total
	In	Out	In	Out	
AM	0.138	0.418	69	209	278
PM	0.381	0.149	191	75	266

NB: AM peak is 08:00-09:00, PM peak is 17:00-18:00; trips have been rounded

- 6.4 **Table 6** demonstrates that the proposed residential element of the development is forecast to generate 278 two-way vehicle movements in the morning peak and 266 two-way vehicle movements in the evening peak; this equates to approximately four and a half vehicle movements per minute in each peak hour.
- 6.5 The proposed 1FE Primary School would consist of c.210 pupils and will serve the proposed development as well as the local area. It should be noted that some of the trips generated by the school will already be taken account of as part of the residential trip generation and this needs to be taken recognised to prevent double counting. Furthermore, it should also be noted that the school trips attracted from off-site are likely to already be on the network to some degree, albeit some will be diverted towards the development site (i.e. if they weren't attending the proposed school on-site they would be attending one in the local area).
- 6.6 LCC's 'Planning Obligations Policy' sets out likely pupil yield rates for primary age pupils. It suggests 100 homes of 2 or more bedrooms would generate 30 primary aged pupils. As a result, it is estimated that a residential site of 500 dwellings could generate up to 150 primary school places. These 150 pupil places would therefore unlikely result in off-site trips from the development, rather they would be internal trips only. To account for this the trip rates obtained from TRICS have been applied to 60 pupils (210 minus 150), this takes account that only 60 primary school places would be generated from off-site, and this number has been used to estimate the likely off-site trip generation related to the proposed school.

- 6.7 The trip rates and forecast off-site traffic generation for the proposed school development are set out in **Table 7**. The full TRICS outputs are included in **Appendix F**.

Table 7 – Summary of TRICS Primary School Trip Rates

Peak Period	Trip Rate (per pupil)		Trips (60 pupils)		Total
	In	Out	In	Out	
AM	0.294	0.228	18	14	32
PM	0.016	0.034	1	2	3

- 6.8 **Table 7** indicates the proposed school could generate up to 32 two-way off-site trips during the AM peak period. During the PM peak period the number of trips predicted is negligible.
- 6.9 The proposed school is likely to generate only a small number of off-site trips, many of which will already be on the network to some degree. Furthermore, the residential trips rates obtained from the TRICS database will already include some trips related to school drop-offs/pick-ups. As a result, the proposed school is unlikely to result in traffic impacts on the wider highway network. Nevertheless, sensitivity testing has been carried out at the Site Access and A47/Stoke Road roundabout to take account of the potential local impacts related to the potential school trip generation as set out in **Table 7**.

Traffic Distribution and Assignment

- 6.10 The distribution and assignment of development traffic is based on Journey to Work Census data for residents of the relevant MSOA area. The site lies in E02005384: Hinckley and Bosworth 008, however this is predominantly rural in nature. As a result, MSOA areas Hinckley and Bosworth 009 and 011 have also been included as this includes existing residential areas around the northern side of Hinckley and will provide a wider data set.
- 6.11 Traffic has then been assigned to the network using an online mapping tool based on travel times to various destinations. The resulting distribution is shown in **Appendix G**. The development traffic distribution and assignment is included in **Figures 6.1 to 6.6**.

Committed Development Traffic

- 6.12 A number of committed developments are located in the vicinity of the site. This includes the Bloor Homes development, located north of the Triumph motorcycle factory consisting of 850 residential dwellings and 1FE Primary School and community uses. The access proposal for that site will introduce a new roundabout junction on the A47.
- 6.13 In addition, The Barwell and Earl Shilton Sustainable Urban Extensions, located to the west of the development, are allocated sites with Hinckley and Bosworth Local Plan 2006 to 2026.
- 6.14 In order to account for these committed developments, the TA which was submitted to support the Bloor Homes development has been utilised to provide an indication of the likely changes in traffic flow that is likely to result from these developments. As part of that TA a Paramics model was developed for the A47 corridor between Dodwells Roundabout and the A47/Ashby Road junction. The model presented 2016 base model flows and 2026 future year flows with committed development and the Bloor Homes site added to the network. The committed development flows included the Barwell and Earl Shilton SUE's.

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- 6.15 Taking the 2016 Base traffic away from the 2026 Base + Committed + Development flows presented in the Bloor TA provides an indication of the likely change in flows that will be realised on the network as a result of the SUEs and the proposed Bloor Homes scheme that is currently under construction.
- 6.16 The committed development flows are presented in **Figures 6.7 to 6.12**.
- 6.17 It should be noted that the Paramics modelling included in the Bloor Homes TA included scenarios with and without the proposed dualling of the A5 between Longshoot and Dodwells Roundabout. The traffic flow assumptions used in this TA assume the A5 dualling is not implemented as it has been dropped from the National Highways programme.

7.0 Traffic Impact and Assessment

Introduction

- 7.1 This section sets out the results of the junction modelling undertaken to assess the capacity at key junctions on the local highway network. The following junctions have been assessed:
- Proposed site access junction off Stoke Road;
 - A47/Stoke Road roundabout;
 - A47/Ashby Road traffic signal junction;
 - A47/Wykin Road roundabout;
 - A47/Roston Drive/Triumph Access roundabout;
 - Stoke Road/Tudor Road; and
 - Stoke Road/Wykin Road/Hollycroft.
- 7.2 In addition, development traffic impacts have also been considered on the strategic highway network including, Dodwells Roundabout and the A47/A5 Longshoot signal junction.
- 7.3 Capacity assessments have been carried out for the 2022 base, 2027 future year (5-years after application), and 2032 future year scenario (10-years after application). The following traffic scenarios have been assessed:
- 2022 Base
 - 2027 Base including Committed Developments
 - 2027 Base including Committed Developments + Development
 - 2032 Base including Committed Developments
 - 2032 Base including Committed Development + Development
- 7.4 It should be recognised that it is very unlikely that the Barwell and Earl Shilton SUEs will be built out in full in 2027, or even 2031. Nevertheless, the inclusion of traffic associated with these sites within the committed development will provide a robust assessment.
- 7.5 The relevant traffic flow diagrams are shown in **Figure 7.1 to 7.18**.

Growth Factors

- 7.6 Background traffic growth has been applied to the base traffic data collected using the TemPro growth factors for the Hinckley and Bosworth 008 MSOA. The growth factors used to growth up the 2018 and 2021 base data are as follows:
- 2018 – 2021, AM peak – 1.0273, PM peak – 1.0252
 - 2021 – 2022, AM peak – 1.0072, PM peak – 1.0071
 - 2021 – 2027, AM peak – 1.0419, PM peak – 1.0409

- 2021 – 2032, AM peak – 1.0763, PM peak – 1.0750

Site Access – Stoke Road

- 7.7 The proposed site access roundabout junction has been modelled using the ARCADY module of Junction 10. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix H**.
- 7.8 **Table 8** indicates how the junction is predicted to operate in the 2027 and 2032 future year scenarios with committed and development traffic added to the network.

Table 8 – Site Access Assessment

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2027 Base + Committed + Development						
Site Access	0.26	0	5	0.07	0	3
Stoke Road South	0.42	1	4	0.44	1	5
Stoke Road North	0.60	2	8	0.31	1	5
2032 Base + Committed + Development						
Site Access	0.26	0	5	0.07	0	3
Stoke Road South	0.43	1	5	0.45	1	5
Stoke Road North	0.62	2	8	0.32	1	5

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.9 **Table 8** indicates that the proposed site access junction will operate comfortably within capacity with minimal queues and delays. This demonstrates that the junction would be suitable to accommodate up to 500 dwellings from the one point of access.

A47/Stoke Road Roundabout Junction

- 7.10 The A47/Stoke Road five-arm roundabout junction has been modelled using the ARCADY module of Junctions 10. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix I**.
- 7.11 The base year model has been validated based on on-site observations. Initial model outputs indicated that the capacity of the A47 eastern and western arms were being over estimated. Both of these arms currently have lane designation arrows meaning certain movements are restricted to one lane. For example, the A47 western arm has two approach lanes, the inside lane is designated for straight ahead and left turning traffic only, whilst the outside line is designated for right turning traffic only. As the straight ahead and left movements carries significantly more traffic compared to the right turn movements, this effectively reduces the capacity of the arm as the majority of traffic is confined to a single lane. A similar situation occurs on the eastern A47 arm, but to a slightly lesser extent.
- 7.12 In order to adjust the model to better reflect the existing situation a number of methods were investigated. Firstly, the lane simulation tool within ARCADY was used to simulation the uneven lane usage that occurs, however this resulted in the model underestimating the capacity on the A47 arms of the junction. This resulted in significant queues and delays over and above what have been observed.
- 7.13 As a result, testing was undertaken which assessed how the model would react when the A47 approaches were restricted to one lane for the predominant movement (i.e. A47 west - straight ahead and left and A47 east – straight ahead). Traffic associated with the other movements was then removed from the assessment. This provided an indication of how the junction would operate under these circumstances. Based on these results, intercept adjustments have been applied to the final base model on both the A47 eastern and western arms to better reflect the existing situation.

- 7.14 **Table 9** indicates how the junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network.

Table 9 – A47/Stoke Road Roundabout

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Stoke Road North	0.46	1	5	0.24	0	4
A47 East	0.75	3	9	0.84	5	13
Stoke Road South	0.44	1	5	0.39	1	5
Sword Drive	0.15	0	6	0.14	0	5
A47 West	0.71	3	11	0.85	5	20
2027 Base + Committed						
Stoke Road North	0.58	1	8	0.33	1	5
A47 East	0.92	11	27	1.04	50	93
Stoke Road South	0.56	1	8	0.48	1	7
Sword Drive	0.13	0	7	0.15	0	7
A47 West	0.88	7	26	1.05	42	118
2027 Base + Committed + Development						
Stoke Road North	0.77	3	14	0.38	1	5
A47 East	0.99	24	57	1.09	89	154
Stoke Road South	0.61	2	9	0.55	1	8
Sword Drive	0.14	0	8	0.16	0	7
A47 West	0.92	10	36	1.18	104	300
2032 Base + Committed						
Stoke Road North	0.61	2	8	0.33	1	5
A47 East	0.96	16	38	1.07	72	127
Stoke Road South	0.59	1	9	0.49	1	7
Sword Drive	0.14	0	7	0.15	0	7
A47 West	0.92	10	34	1.09	60	161
2032 Base + Committed + Development						
Stoke Road North	0.80	4	16	0.39	1	6
A47 East	1.02	39	83	1.12	114	199
Stoke Road South	0.63	2	10	0.56	1	8
Sword Drive	0.15	0	8	0.16	0	8
A47 West	0.96	15	49	1.22	125	382

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.15 **Table 9** indicates that under current conditions the junction is operating within capacity, however in the 2027 Base + committed scenario, the junction is predicted to operate over capacity in the PM peak with significant queues and delays predicted on the A47 arms of the junction. The AM peak during this scenario is also approaching capacity.
- 7.16 When development traffic is added to the network in the 2027 assessment year the level of queueing and delay is predicted to increase, particularly in the PM peak period on the A47 eastern and western arms.
- 7.17 In the 2032 future year scenario the level of queueing and delay is predicted to increase further. As a result, a mitigation scheme to help improve the operation of the junction, particularly on the A47 approach arms, is presented later in this report.

A47/Ashby Road Traffic Signal Junction

- 7.18 The A47/Ashby Road traffic signal junction has been modelled using LinSig V3. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix J**.

- 7.19 **Table 10** indicates how the junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network. The traffic signal specification for the existing junction layout has been obtained from LCC.

Table 10 – A47/Ashby Road Signals EXISTING – LinSig Summary Results

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	Sat (%)	Queue	Delay (s)	Sat (%)	Queue	Delay (s)
2022 Base						
A47 (West)	76.1	11	33	75.9	12	35
Ashby Rd (North)	94.9	18	60	82.2	12	33
A47 (East)	83.8	17	33	71.0	12	31
Ashby Rd (South)	88.4	15	54	70.2	11	31
Cycle Time (s)		90			90	
PRC (%)		-5.4			8.3	
Delay (PCU/Hr)		35.93			25.70	
2027 + Committed						
A47 (West)	135.1	182	547	115.8	97	305
Ashby Rd (North)	106.0	50	164	115.2	82	301
A47 (East)	112.2	79	258	116.8	81	334
Ashby Rd (South)	82.3	14	40	89.7	19	44
Cycle Time (s)		90			90	
PRC (%)		-50.7			-30.4	
Delay (PCU/Hr)		280.56			240.52	
2027 + Committed + Development						
A47 (West)	159.2	260	798	125.2	137	430
Ashby Rd (North)	101.2	29	95	119.5	96	360
A47 (East)	134.2	150	537	123.8	104	419
Ashby Rd (South)	103.2	33	142	91.9	21	48
Cycle Time (s)		90			90	
PRC (%)		-78.9			-39.1	
Delay (PCU/Hr)		436.58			317.80	
2032 Base + Committed						
A47 (West)	134.3	185	537	116.2	103	312
Ashby Rd (North)	133.1	140	528	118.3	95	342
A47 (East)	104.3	51	140	111.1	65	244
Ashby Rd (South)	95.4	21	71	119.1	85	354
Cycle Time (s)		90			90	
PRC (%)		-50.2			-32.4	
Delay (PCU/Hr)		349.76			304.72	
2032 Base + Committed + Development						
A47 (West)	124.5	159	418	118.4	115	342
Ashby Rd (North)	135.5	147	556	119.1	98	353
A47 (East)	90.5	23	38	117.4	91	345
Ashby Rd (South)	134.3	103	539	121.9	94	388
Cycle Time (s)		90			90	
PRC (%)		-50.6			-35.4	
Delay (PCU/Hr)		383.13			353.63	

Sat – Degree of Saturation %, Queue – Max mean queue (PCUs), Delay – seconds per vehicle

- 7.20 **Table 10** demonstrates that the existing traffic signal junction is operating slightly beyond capacity in the 2022 Base AM peak period, and approaching capacity in the PM peak period. This reflects on site observations and the approximate level of queuing observed. During the 2027 and 2032 future year scenarios, before the development traffic is added to the network, the signal junction is predicted to operate well beyond capacity with significant queues and delays predicted on all arms during the AM and PM peak periods.

- 7.21 The introduction of the development traffic on the network results in an increase in queues and delays on most arms of the junction during the AM and PM peak periods. As a result, a mitigation scheme to help improve the operation of the junction, is presented later in this report.

A47/Wykin Road Roundabout

- 7.22 The A47/Wykin Road four arm roundabout junction has been modelled using the ARCADY module of Junctions 10. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix K**.
- 7.23 **Table 11** indicates how the junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network.

Table 11 – A47/Wykin Road Roundabout

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Wykin Road East	0.25	0	5	0.10	0	4
A47 South	0.43	1	4	0.52	1	4
Wykin Road West	0.21	0	4	0.21	0	5
A47 North	0.50	1	4	0.42	1	3
2027 Base + Committed						
Wykin Road East	0.29	0	6	0.17	0	5
A47 South	0.54	1	4	0.66	2	6
Wykin Road West	0.25	0	5	0.27	0	6
A47 North	0.66	2	6	0.59	1	5
2027 Base + Committed + Development						
Wykin Road East	0.30	0	7	0.18	0	5
A47 South	0.56	1	5	0.69	2	6
Wykin Road West	0.26	0	5	0.30	0	6
A47 North	0.70	3	7	0.60	2	5
2032 Base + Committed						
Wykin Road East	0.30	0	6	0.18	0	5
A47 South	0.56	1	5	0.67	2	6
Wykin Road West	0.27	0	5	0.28	0	6
A47 North	0.67	2	7	0.60	2	5
2032 Base + Committed + Development						
Wykin Road East	0.32	1	7	0.19	0	5
A47 South	0.57	1	5	0.70	2	7
Wykin Road West	0.28	0	5	0.32	1	7
A47 North	0.72	3	8	0.62	2	5

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.24 **Table 11** demonstrates that the A47/Wykin Road roundabout junction operates within capacity under current traffic conditions and this is in line with on-site observations. In the future year scenarios, the junction continues to operate well within capacity when development traffic is added to the network. The predicted increase in queues and delay is minimal.

A47/Roston Drive/Triumph Factory Access

- 7.25 The A47/Roston Drive/Triumph Factory four arm roundabout junction has been modelled using the ARCADY module of Junctions 10. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix L**.

- 7.26 **Table 12** indicates how the junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network.

Table 12 – A47/Wykin Road Roundabout

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Roston Drive	0.36	1	5	0.26	0	4
A47 South	0.34	1	4	0.53	1	5
Triumph Access	0.03	0	4	0.23	0	5
A47 North	0.51	1	4	0.39	1	4
2027 Base + Committed						
Roston Drive	0.28	0	5	0.24	0	4
A47 South	0.37	1	4	0.62	2	6
Triumph Access	0.04	0	4	0.30	0	6
A47 North	0.64	2	6	0.46	1	4
2027 Base + Committed + Development						
Roston Drive	0.29	0	6	0.24	0	4
A47 South	0.40	1	4	0.65	2	6
Triumph Access	0.04	0	4	0.31	0	6
A47 North	0.67	2	6	0.46	1	4
2032 Base + Committed						
Roston Drive	0.29	0	6	0.25	0	4
A47 South	0.38	1	4	0.64	2	6
Triumph Access	0.04	0	4	0.32	1	6
A47 North	0.66	2	6	0.46	1	4
2032 Base + Committed + Development						
Roston Drive	0.30	0	6	0.25	0	4
A47 South	0.40	1	4	0.67	2	6
Triumph Access	0.04	0	4	0.33	1	6
A47 North	0.69	2	7	0.47	1	4

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.27 **Table 12** demonstrates that the A47/Roston Drive/Triumph Factory Access roundabout junction operates within capacity under current traffic conditions and this is in line with on-site observations. In the future year scenarios, the junction continues to operate well within capacity when development traffic is added to the network. The predicted increase in queues and delay is minimal.

Stoke Road/Tudor Road Priority T-junction

- 7.28 The Stoke Road/Tudor Road priority junction has been modelled using the PICADY module of Junctions 10. A large triangular island splits the left in/right out and right in/left out movements from Tudor Road. As a result, the junction effectively operates as two priority junctions and has been modelled as such. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix M**.
- 7.29 **Table 13** indicates how the northern junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network.

Table 13 – Stoke Road/Tudor Road Priority T-Junction (Northern Junction)

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Tudor Road	0.61	2	27	0.41	1	18
Stoke Road (RT)	0.00	0	0	0.00	0	0
2027 Base + Committed						
Tudor Road	0.68	2	35	0.46	1	21
Stoke Road (RT)	0.00	0	0	0.00	0	0
2027 Base + Committed + Development						
Tudor Road	0.72	2	43	0.48	1	23
Stoke Road (RT)	0.00	0	0	0.00	0	0
2032 Base + Committed						
Tudor Road	0.71	2	40	0.48	1	22
Stoke Road (RT)	0.00	0	0	0.00	0	0
2032 Base + Committed + Development						
Tudor Road	0.76	3	49	0.50	1	24
Stoke Road (RT)	0.00	0	0	0.00	0	0

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.30 **Table 13** indicates that the junction operates well within capacity under current traffic conditions. This matches on-site observations. In the future years, when development traffic is added to the network the junction is predicted to continue operating within capacity with only minor increases in queues and delay are predicted as a result.
- 7.31 **Table 14** indicates how the southern priority junction operates in the 2022 base, and 2027 and 2032 future year scenarios with and without development traffic on the network.

Table 14 – Stoke Road/Tudor Road Priority T-Junction (Southern Junction)

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Tudor Road	0.26	0	9	0.21	0	8
Stoke Road (RT)	0.27	1	6	0.28	1	6
2027 Base + Committed						
Tudor Road	0.28	0	10	0.23	0	9
Stoke Road (RT)	0.30	1	6	0.30	1	6
2027 Base + Committed + Development						
Tudor Road	0.29	0	10	0.23	0	9
Stoke Road (RT)	0.32	1	6	0.32	1	6
2032 Base + Committed6						
Tudor Road	0.29	0	10	0.23	0	9
Stoke Road (RT)	0.32	1	6	0.32	1	6
2032 Base + Committed + Development						
Tudor Road	0.30	0	10	0.24	0	9
Stoke Road (RT)	0.33	1	6	0.34	1	6

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.32 **Table 14** indicates that the junction operates well within capacity under current traffic conditions. This matches on-site observations. In the future years, when development traffic is added to the network the junction is predicted to continue operating within capacity with only minor increases in queues and delay are predicted as a result.

Stoke Road/Hollycroft/Wykin Road Mini Roundabout Junction

- 7.33 The Stoke Road/Hollycroft/Wykin Road mini roundabout junction has been modelled using the ARCADY module of Junctions 10. The full output files for the junction, showing geometry and capacity calculations, are shown in **Appendix N**.
- 7.34 **Table 15** indicates how the junction is predicted to operate in the 2022 base, 2027 and 2032 future year scenarios with and without development traffic added to the network.

Table 15 – Stoke Road/Hollycroft/Wykin Road Mini Roundabout

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
Stoke Road	0.63	2	12	0.56	1	9
Hollycroft	0.51	1	9	0.53	1	9
Wykin Road	0.55	1	12	0.45	1	10
2027 Base + Committed						
Stoke Road	0.74	3	18	0.65	2	12
Hollycroft	0.59	1	10	0.56	1	9
Wykin Road	0.71	2	20	0.48	1	11
2027 Base + Committed + Development						
Stoke Road	0.82	5	25	0.67	2	13
Hollycroft	0.61	2	11	0.63	2	11
Wykin Road	0.73	3	22	0.52	1	13
2032 Base + Committed						
Stoke Road	0.76	3	19	0.67	2	12
Hollycroft	0.60	2	11	0.58	1	10
Wykin Road	0.74	3	23	0.50	1	12
2032 Base + Committed + Development						
Stoke Road	0.85	5	30	0.69	2	14
Hollycroft	0.63	2	12	0.65	2	12
Wykin Road	0.76	3	25	0.54	1	13

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 7.35 **Table 15** indicates that the junction operates within capacity under current traffic conditions. In the future year scenarios the development is predicted to continue to operate within capacity with minimal queues and delays predicted.
- 7.36 When development traffic is added to the network, the junction is predicted to continue to operate within capacity. The largest increase in queue and delay are predicted on the Stoke Road arm of the junction in the 2032 future year scenario. During the AM peak queues are predicted to increase from 3 to 5 vehicles and delays by 11 seconds per vehicle. Overall, the development is not predicted to result in a material impact at this location.

Strategic Highway Network

- 7.37 The strategic modelling exercise using the PRTM will provide an assessment of the potential traffic impacts on the strategic highway network. This will focus on Dodwells Roundabout and the A47/A5 Longshoot traffic signal junction. However, to provide an indication of the likely impacts at this location **Table 16** sets out the likely increases in traffic that will pass through those junctions during the AM and PM peak periods.

Table 16 – Strategic Highway Network – Development Traffic

Approach Arm	AM Peak 08:00-09:00	PM Peak 17:00-18:00
Dodwells Roundabout		
A47 North	41	15
B4666	2	6
A5 Southeast	1	2
A5 Northwest	11	30
A47/A5 Longshoot		
A5 Southwest	33	12
A47	9	24
A5 Northwest	2	6

- 7.38 The proposed development is predicted to result in a relatively modest increase in trips on the strategic highway network. The largest increase on any one arm is predicted on the A47 arm of the Dodwells Roundabout junction. This equates to less than one additional vehicle every minute. As the Dodwells Roundabout is signalised, this is likely to result in less than one additional vehicle per cycle.
- 7.39 The largest impact at the Longshoot junction is predicted on the A5 southwest arm in the AM peak period. This results in an additional 33 vehicles which equates to approximately one additional vehicle every 2 minutes.

8.0 Offsite Highway Mitigation

A47/Stoke Road Roundabout Mitigation Scheme

- 8.1 The previous section indicated that the A47/Stoke Road Roundabout junction is predicted to operate beyond theoretical capacity in the future year scenarios. Once development traffic is added to the junction, queues and delays are predicted to increase, particularly on the A47 eastern and western arms.
- 8.2 To mitigate the impact of the proposed development, an improvement scheme has been proposed and is shown in **Drawing T19595.002 rev C** with swept path analysis included in **Drawing T19595.011**. The scheme involves widening the exit lanes on the A47 arms of the junction to allow the lane designations on the approach arm to be amended to allow two ahead lanes.
- 8.3 The base traffic flows at the junction indicate that the straight ahead flows on the A47 arms of the junction are the predominant traffic movements. For example, on the A47 eastern arm during the AM and PM peak periods the straight ahead movements make up over 80% of the traffic flow.
- 8.4 Due to the existing lane designation arrows, the straight ahead movements on the A47 arms are restricted to one lane which leads to uneven lane usage. By widening the exit arms to allow two vehicles to exit at once, the lane designations can be changed to allow two straight ahead lanes on the A47 approaches, providing an overall capacity benefit.
- 8.5 An ARCADY assessment has been carried out to indicate how the junction will operate once the improvements have been implemented. In order to model this arrangement, the intercept adjustments made to the base model to take account of the uneven lane usage have been removed. The summary results are provided in **Table 17** with full ARCADY outputs in **Appendix O**.

Table 17 – A47/Stoke Road Roundabout Proposed Mitigation Scheme

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2022 Base						
2027 Base + Committed + Development						
Stoke Road North	0.77	3	14	0.42	1	6
A47 East	0.87	7	16	0.97	20	41
Stoke Road South	0.62	2	10	0.59	1	10
Sword Drive	0.14	0	8	0.17	0	8
A47 West	0.62	2	6	0.78	4	10
2032 Base + Committed + Development						
Stoke Road North	0.81	4	16	0.44	1	7
A47 East	0.90	9	20	1.00	32	60
Stoke Road South	0.65	2	11	0.61	2	10
Sword Drive	0.16	0	9	0.18	0	9
A47 West	0.64	2	6	0.81	4	12

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per vehicle

- 8.6 **Table 17** shows that the proposed mitigation scheme will provide significant improvement to the operation of the junction. Both the AM and PM peak periods with the proposed improvement and development traffic provide a betterment over and above the existing layout with predicted future year scenarios before the development traffic is added to the network.

- 8.7 A Stage 1 Road Safety Audit has been carried for the proposed mitigation scheme. A summary of the issues raised and the designer's response is included in **Table 18**. The full RSA is included as **Appendix E**.

Table 18 – Site Access Stage 1 Road Safety Assessment Summary

Issue and Recommendation	Designers Response
Issue 2.1 - Potential collisions due to standing water or service covers. Recommendation - When preparing the detailed design, ensure adequate surface water drainage is provided.	Recommendation accepted. The drainage requirements will be considered at the detailed design stage.
Issue 4.1 - Potential risk of pedestrian/cycle collisions associated with poor provision. Recommendation - Review the layout, it may be more appropriate to provide a similar uncontrolled crossing facility across Stoke Road similar to the provision provided on the other approaches to the roundabout.	Recommendation accepted. An uncontrolled crossing will be provided on the Stoke Road arm of the junction. This has been indicated on drawing T19595.002 rev D .
Issue 4.2 - Potential risk of collisions associated with poor lane discipline. Recommendation - Ensure that new signs informing motorists of the lane designations on the A47 approaches are provided.	Recommendation accepted. Appropriate signage will be provided with further details provided at detailed design stage.

- 8.8 The Stage 1 RSA indicated three issues in relation to the proposed mitigation scheme all of which can be suitably mitigated at the detailed design stage.
- 8.9 A copy of the designer's response has been reviewed by the safety audit team who have confirmed the amendments are acceptable and fully address the issues raised. A letter from the safety audit team confirming this is provided as **Appendix E**.

A47/Ashby Road Mitigation Scheme

- 8.10 The previous section indicated that the A47/Ashby Road traffic signal junction operates at capacity under current traffic conditions. When background traffic growth and committed development is added to the network the queues and delays at the junction are predicted to increase. This is further exacerbated when development traffic is added to the junction.
- 8.11 To mitigate the impact of the proposed development, an improvement scheme has been proposed and is shown in **Drawing T19595.007** with swept path analysis included in **Drawing T19595.008 and 009**. The scheme involves providing an additional right turn lane on the A47 western arm of the junction as well as an additional left turn lane on the Ashby Road southern arm.
- 8.12 In addition to this, significant pedestrian improvements are proposed at the junction which involve provision of staggered pedestrian crossing on the A47 west arm and both of the Ashby Road arms. At present, only uncontrolled pedestrian facilities are available at the junction.
- 8.13 A capacity assessment of the proposed improvement scheme has been undertaken using LinSig. On site observations at the junction indicate that pedestrian movements across the junction are very infrequent. As a result, two iterations of the model have been presented, one which shows how the junction will operate without pedestrian phases being called and one showing how it would operate if they were called every other cycle. In reality, the junction is likely to operate somewhere between the two scenarios.

8.14 The summary results for the 2027 and 2032 future year scenarios with development traffic added to the network are presented in **Table 19** and 20 below. Full LinSig outputs are included in **Appendix P**.

Table 19 – A47/Ashby Road Proposed Mitigation Pedestrian Phase not Called – LinSig Summary Results

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	Sat (%)	Queue	Delay (s)	Sat (%)	Queue	Delay (s)
2027 + Committed + Development						
A47 West (L + A)	52.7	7	14	61.0	10	25
A47 West (A + R)	68.9	8	18	66.3	12	27
Ashby Road North (All)	79.2	9	30	84.8	11	31
A47 East (All)	79.2	14	19	85.7	18	35
Ashby Road South (L+A)	71.6	6	32	68.3	9	27
Ashby Rd South (R)	89.4	5	118	43.5	3	39
Cycle Time (s)	70			90		
PRC (%)	0.6			5.0		
Delay (PCU/Hr)	26.21			28.95		
2032 Base + Committed + Development						
A47 West (L + A)	54.7	7	15	62.6	80	26
A47 West (A + R)	76.0	8	19	67.9	13	28
Ashby Road North (All)	81.0	10	30	87.5	12	33
A47 East (All)	81.6	15	21	87.8	20	37
Ashby Road South (L+A)	73.7	7	33	69.9	10	27
Ashby Rd South (R)	92.0	6	130	46.5	3	41
Cycle Time (s)	70			90		
PRC (%)	-2.3			2.5		
Delay (PCU/Hr)	28.27			31.06		

Table 20 – A47/Ashby Road Proposed Mitigation Pedestrians Every Other Cycle – LinSig Summary Results

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	Sat (%)	Queue	Delay (s)	Sat (%)	Queue	Delay (s)
2027 + Committed + Development						
A47 West (L + A)	109.7	81	237	70.4	13	33
A47 West (A + R)	109.7	18	279	74.9	16	35
Ashby Road North (All)	83.7	16	41	81.2	14	32
A47 East (All)	91.0	26	42	96.5	30	66
Ashby Road South (L+A)	108.3	38	250	96.3	21	80
Ashby Rd South (R)	108.6	14	328	68.1	5	66
Cycle Time (s)	170			180		
PRC (%)	-21.9			-7.2		
Delay (PCU/Hr)	146.43			48.62		
2032 Base + Committed + Development						
A47 West (L + A)	115.7	112	328	73.1	13	34
A47 West (A + R)	116.5	19	398	88.8	16	36
Ashby Road North (All)	87.6	17	44	81.9	14	33
A47 East (All)	91.7	28	42	98.9	33	81
Ashby Road South (L+A)	117.2	57	385	98.5	24	96
Ashby Rd South (R)	111.8	16	370	72.5	5	71
Cycle Time (s)	170			180		
PRC (%)	-30.2			-9.9		
Delay (PCU/Hr)	203.01			56.82		

- 8.1 **Table 19** and **20** show that the proposed mitigation scheme will provide significant improvement to the operation of the junction. Even when the pedestrian phase is called every other cycle (based on a 85/90 second cycle), the overall junction is predicted to operate better when compared with the existing future year situation before development traffic is added to the network.
- 8.2 A Stage 1 RSA has been undertaken for the proposed improvement scheme. A summary of the issues raised and the designers response is provided in **Table 21**. The full RSA is included in **Appendix E**.

Table 21 – Site Access Stage 1 Road Safety Assessment Summary

Issue and Recommendation	Designers Response
Issue 2.1 - Potential collisions due to standing water or service covers. Recommendation - When preparing the detailed design, ensure adequate surface water drainage is provided.	Recommendation accepted. The drainage requirements will be considered at the detailed design stage.
Issue 6.1 - Potential risk of collisions associated with poor lane discipline. Recommendation - Ensure that new signs informing motorists of the lane designations on the A47 western arm and Ashby Road southern arm approaches are provided.	Recommendation accepted. Appropriate signage will be provided with further details provided at detailed design stage.
Issue 6.2 - Potential risk of collisions associated with poor lane. Recommendation - Review and amend the internal layout of the junction to ensure that the right turn storage area within the junction does not impede the path of vehicles travelling ahead through the junction.	Recommendation accepted. The white lining will be reviewed at detailed design stage and be amended if required.

- 8.3 The Stage 1 RSA indicated three issues in relation to the proposed mitigation scheme all of which can be suitably mitigated at the detailed design stage.
- 8.4 A copy of the designer's response has been reviewed by the safety audit team who have confirmed the amendments are acceptable and fully address the issues raised. A letter from the safety audit team confirming this is provided as **Appendix E**.

9.0 Summary and Conclusion

Summary

- 9.1 Hub Transport Planning Ltd has been commissioned by Richborough Estates Ltd and Mr and Mrs Adcock to provide transport advice for a proposed residential development on land to the north of Hinckley. The land in question is located to the north of the A47 and east of Stoke Road. The outline planning application is for the erection of up to 475 dwellings, including public open space, land reserved for a primary school together with future expansion land (Use Class F1(a)), landscaping, drainage and associated infrastructure.
- 9.2 Access to the site will be taken from Stoke Road via a new three arm roundabout junction. Pedestrian/cycle facilities which tie into the existing infrastructure have been proposed as part of the access design. Furthermore, two Toucan crossings are proposed across the A47 to provide safe links for pedestrian crossing the road to access local facilities in the area. The proposed site access arrangements are predicted to operate within capacity with minimal queues or delays.
- 9.3 A review of personal injury accident data has not identified any accident clusters or highway safety issues in the vicinity of the site. As a result, the proposed development is not predicted to result in an unacceptable impact on highway safety.
- 9.4 The site is well located to make use of existing facilities. Within 800m of the centre of the site a range of amenities can be accessed including primary schools, a supermarket, restaurants and recreation areas. Even more facilities are located within 1,200m of the site including a senior school.
- 9.5 Connections to the existing cycleway network are available, including the existing off-road route that runs along the southern side of the A47 and links to Earl Shilton to the northeast and Harrowbrook Industrial Estate.
- 9.6 Regular bus services can be accessed via Stoke Road that provide links to Nuneaton, via Stoke Golding. Further services are available via Ashby Road that provide access to Leicester and Hinckley. Furthermore, Hinckley Rail Station is located 3.4km south of the site.
- 9.7 The cumulative impact of the development on the local highway network has been assessed using standalone junction models. As a result of the assessments undertaken, the mitigation schemes have been proposed at the A47/Stoke Road roundabout and the A47/Ashby Road traffic signal junction. The modelling undertaken as part of this assessment has demonstrated that the proposed development will not have a material impact on the local highway network, or where impacts are predicted they can be appropriately mitigated.
- 9.8 Further traffic modelling will be undertaken using Leicestershire County Councils Pan Regional Transport Model and this will be presented in due course.

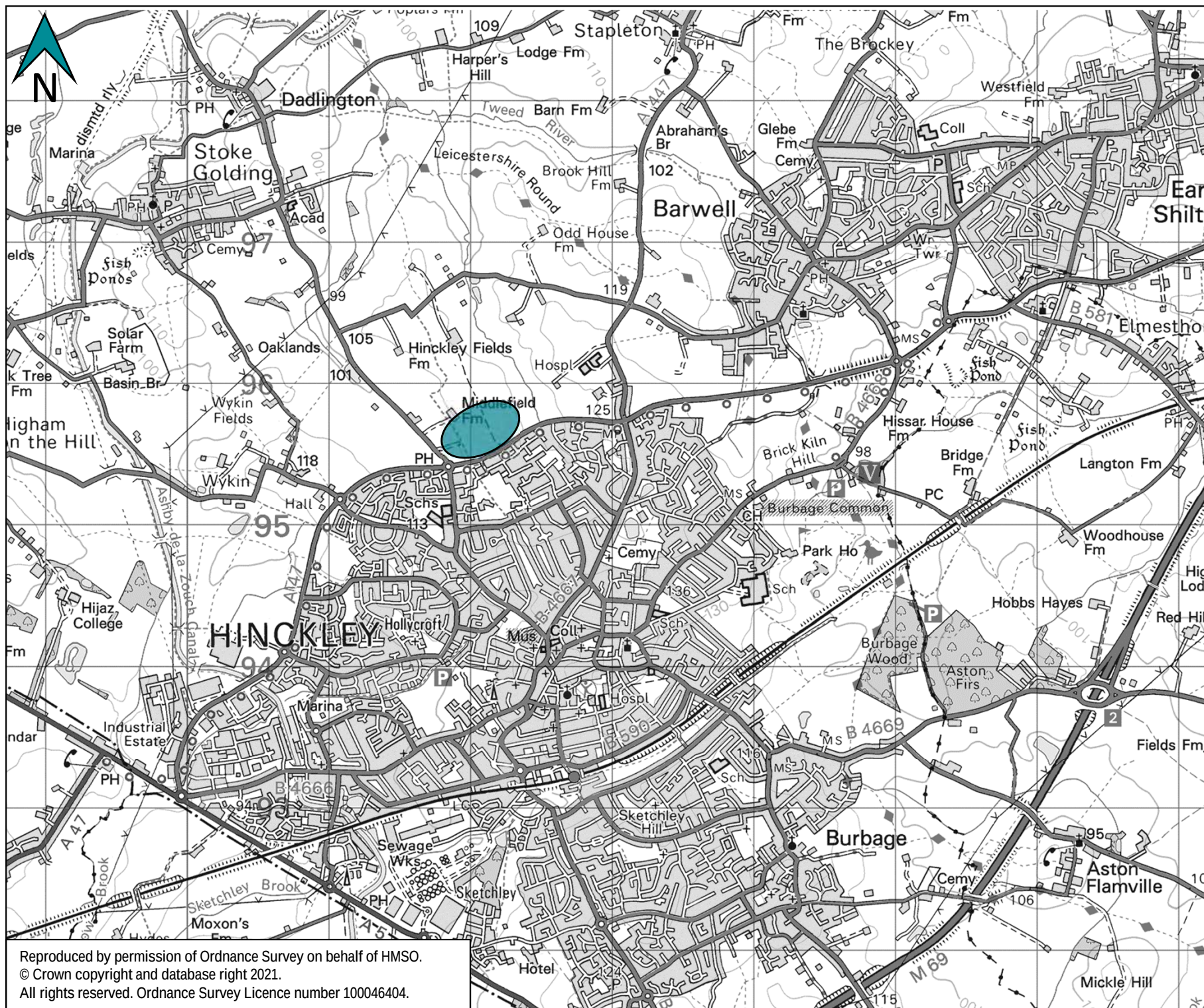
Conclusion

- 9.9 The development is extremely well located to make use of existing and planned infrastructure and services and is suitable in transport terms. The development will promote the use of sustainable modes of transport and the site provides safe and suitable access for all users.
- 9.10 Bearing the above in mind, the NPPF states that:

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

-
- 9.11 The assessment work undertaken and detailed in this report demonstrates that, in NPPF terms, the development will not have a material impact on the operation of the local highway network and will not have an unacceptable impact on highway safety.
- 9.12 It is concluded that the proposals accord with national and local transport related policies and, as such, it is considered that there are no reasons why the proposals should be resisted on traffic or transportation grounds.

Figures



Legend

● Site



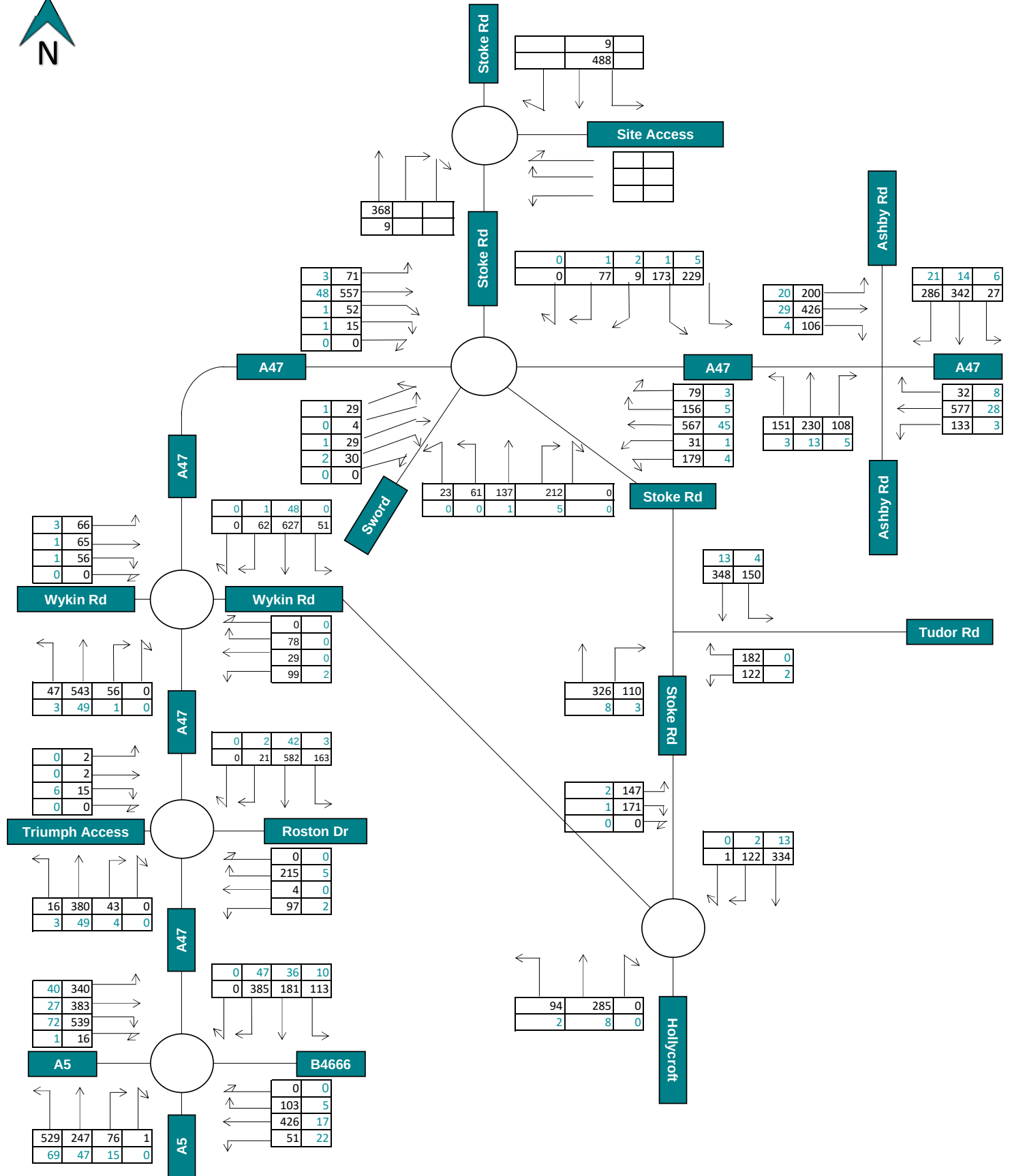
hub
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Not to Scale

North Hinckley

Figure 1.1 – Site Location Plan

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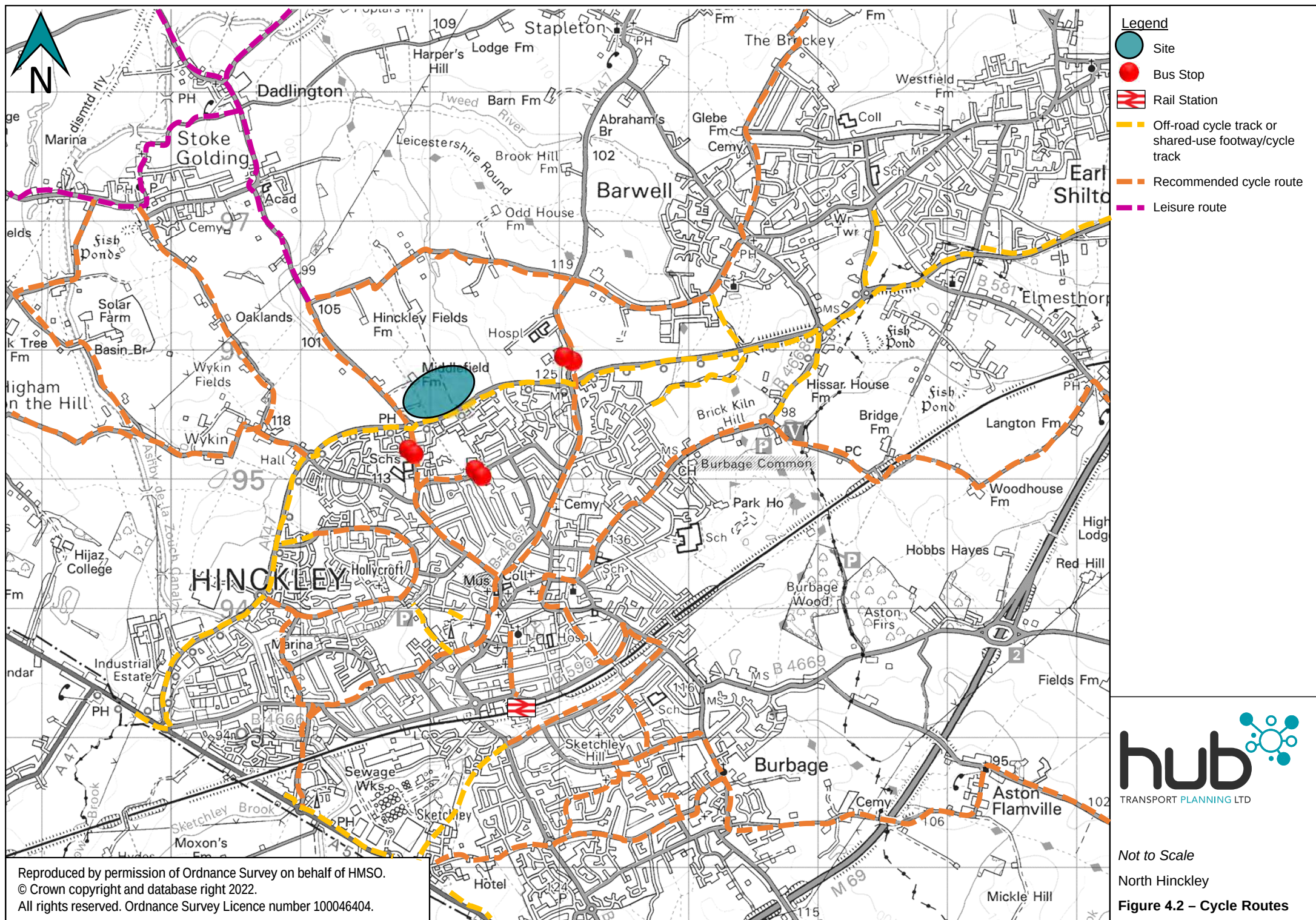
123	Total Vehicles
45	Number of HGVs

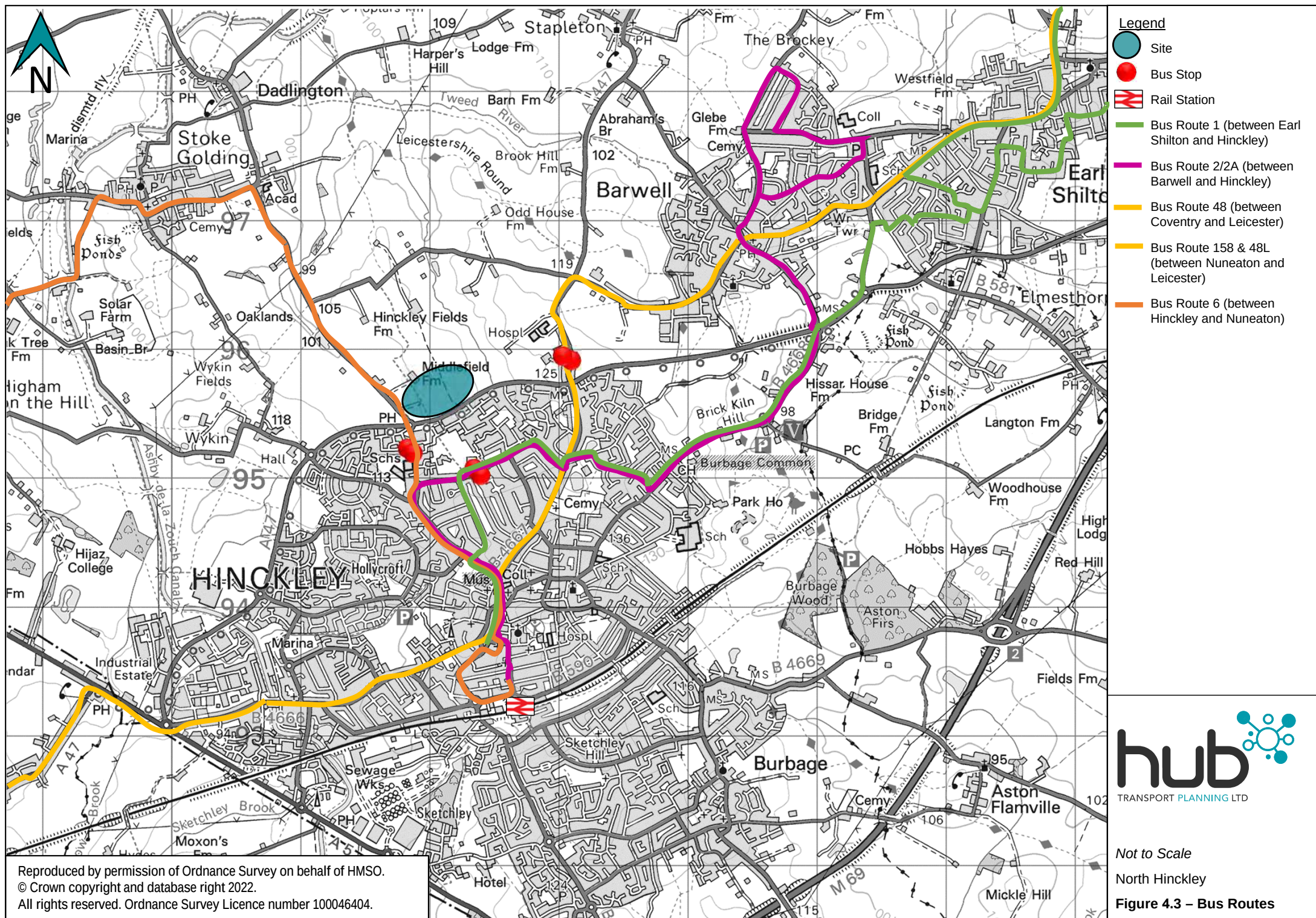


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T19595
North Hinckley
 Figure 3.1
 Surveyed Base Flows
 AM Peak Hour: 08:00 - 09:00

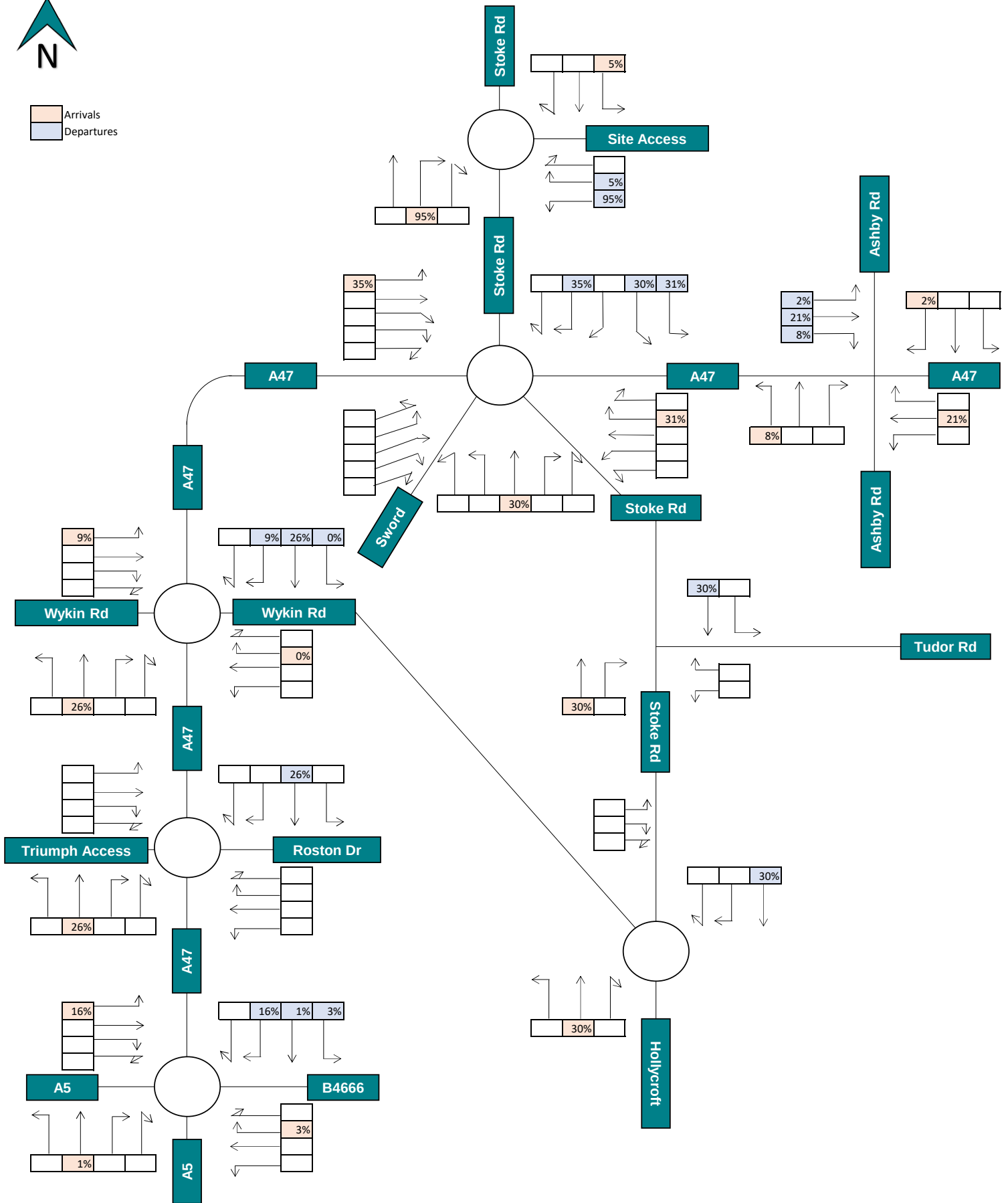








Arrivals
Departures



123% Percentage



T19595

North Hinckley

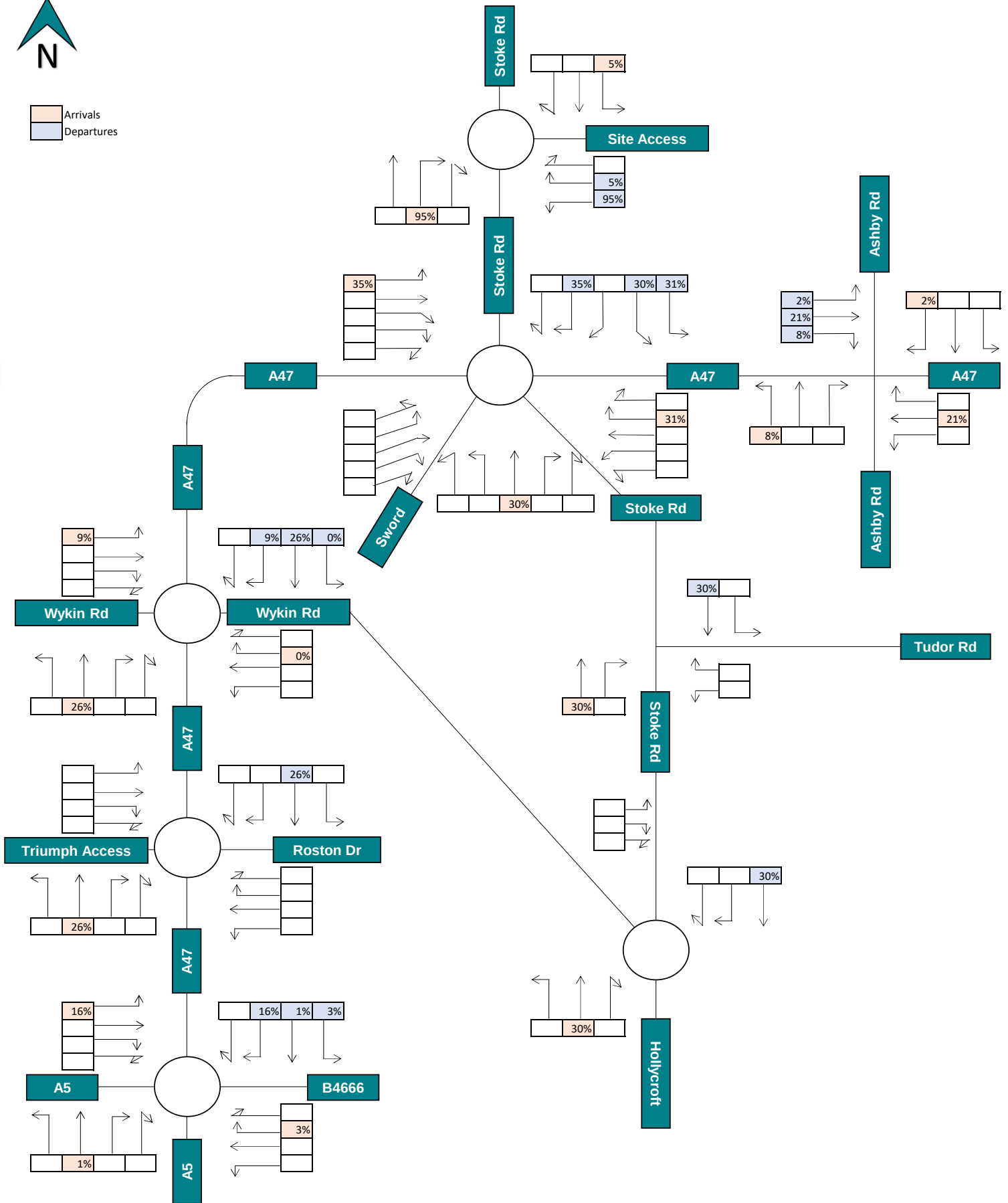
Figure 6.1

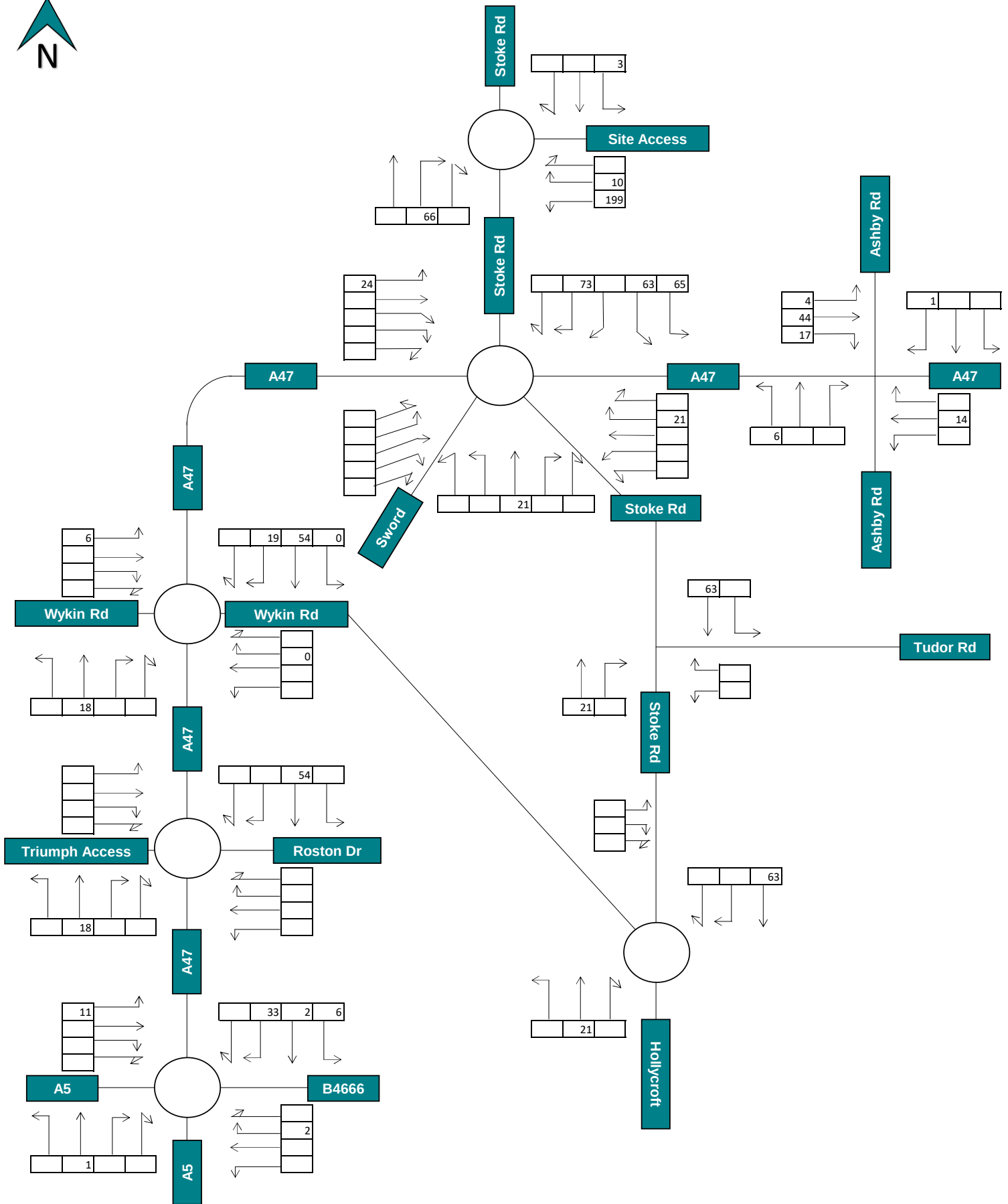
Development Distribution %

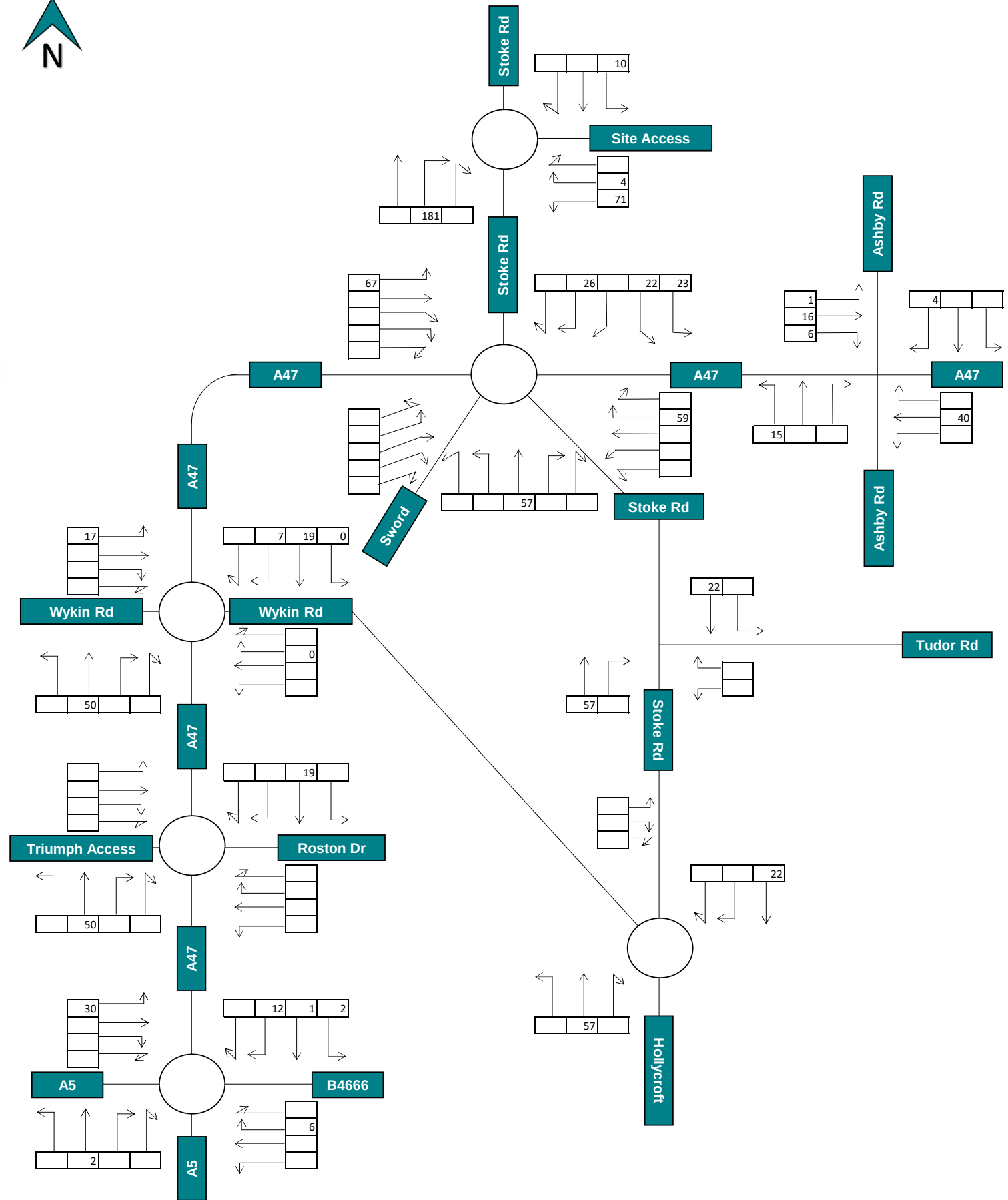
AM Peak Hour: 08:00 - 09:00

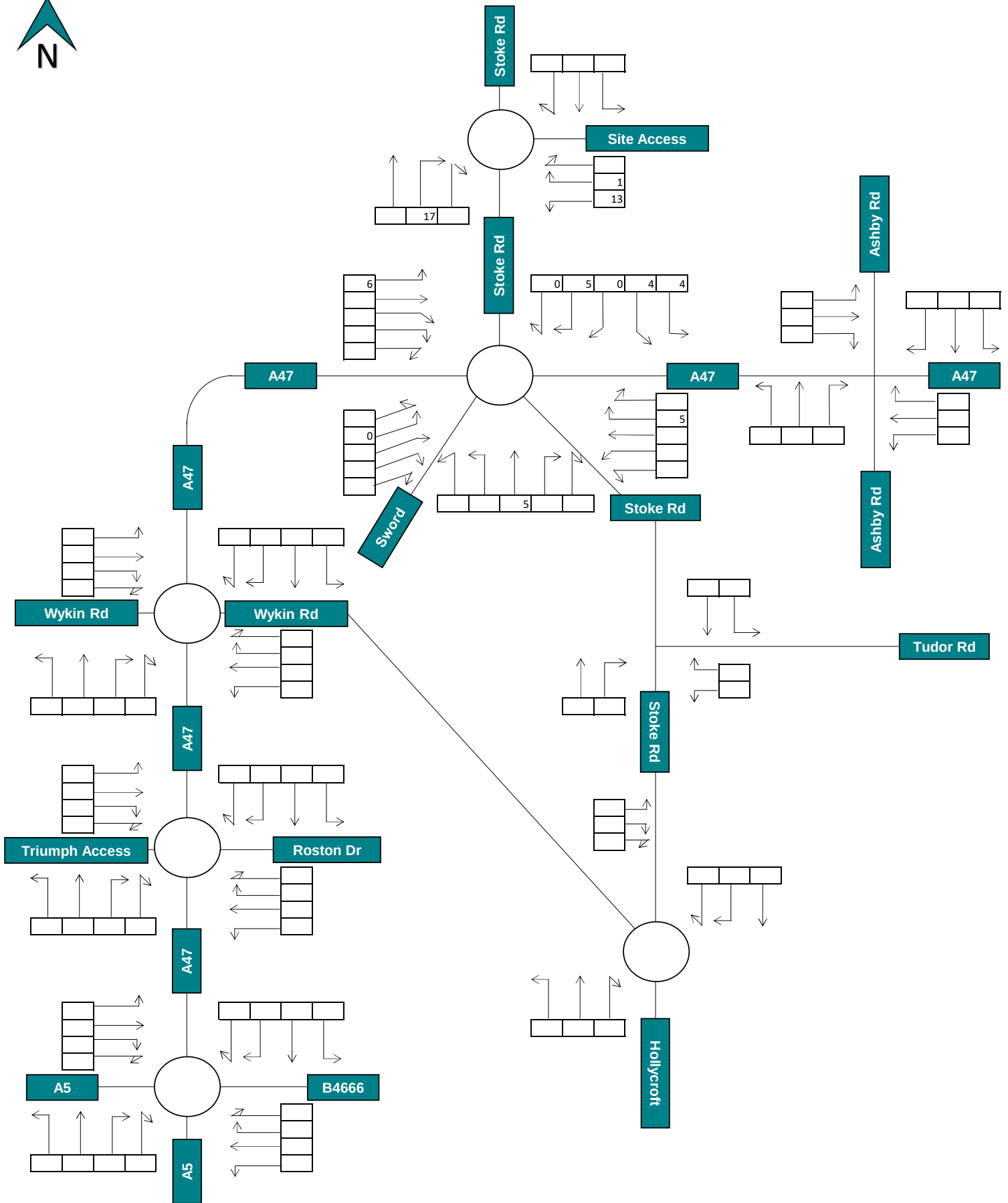


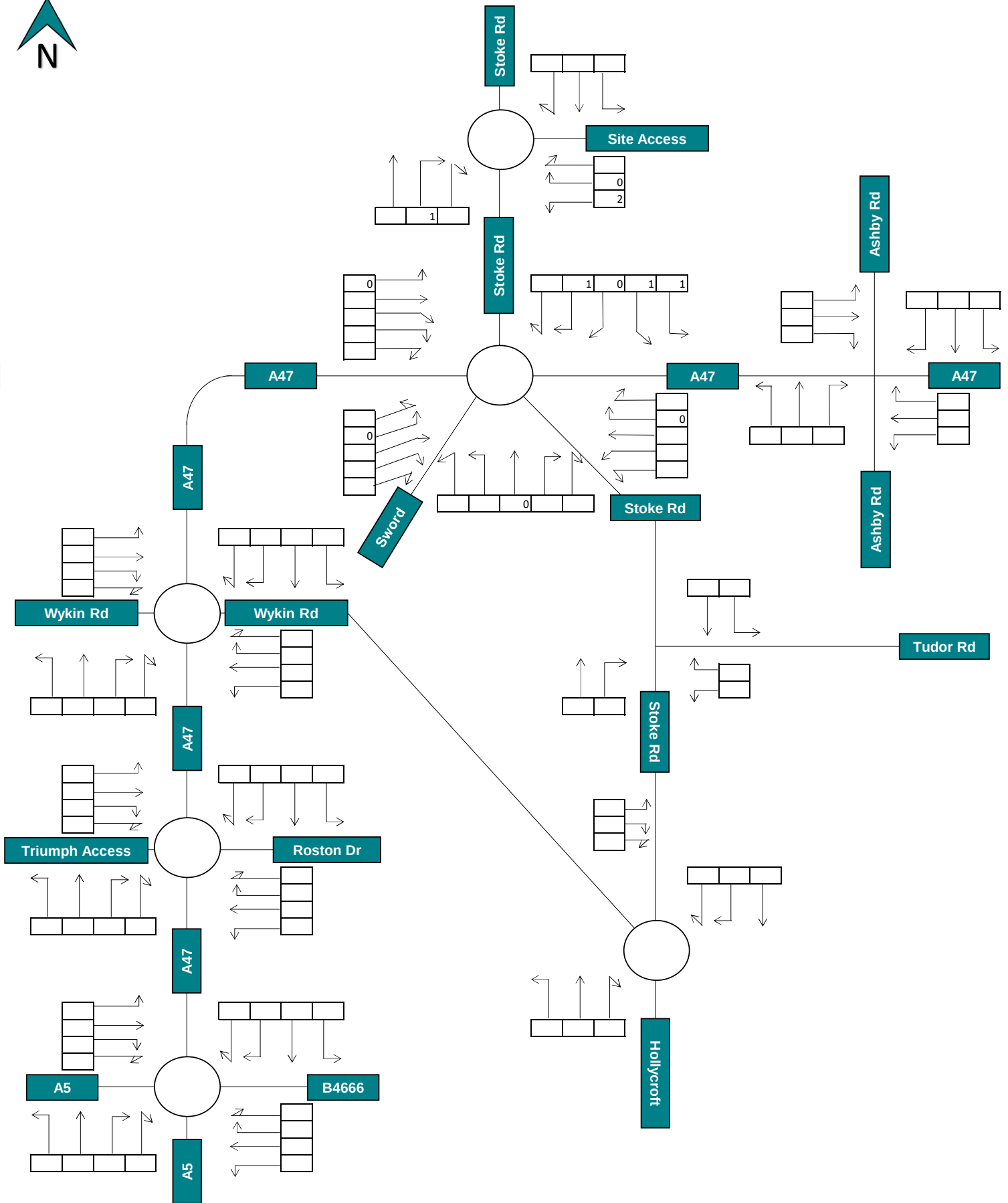
Arrivals
Departures

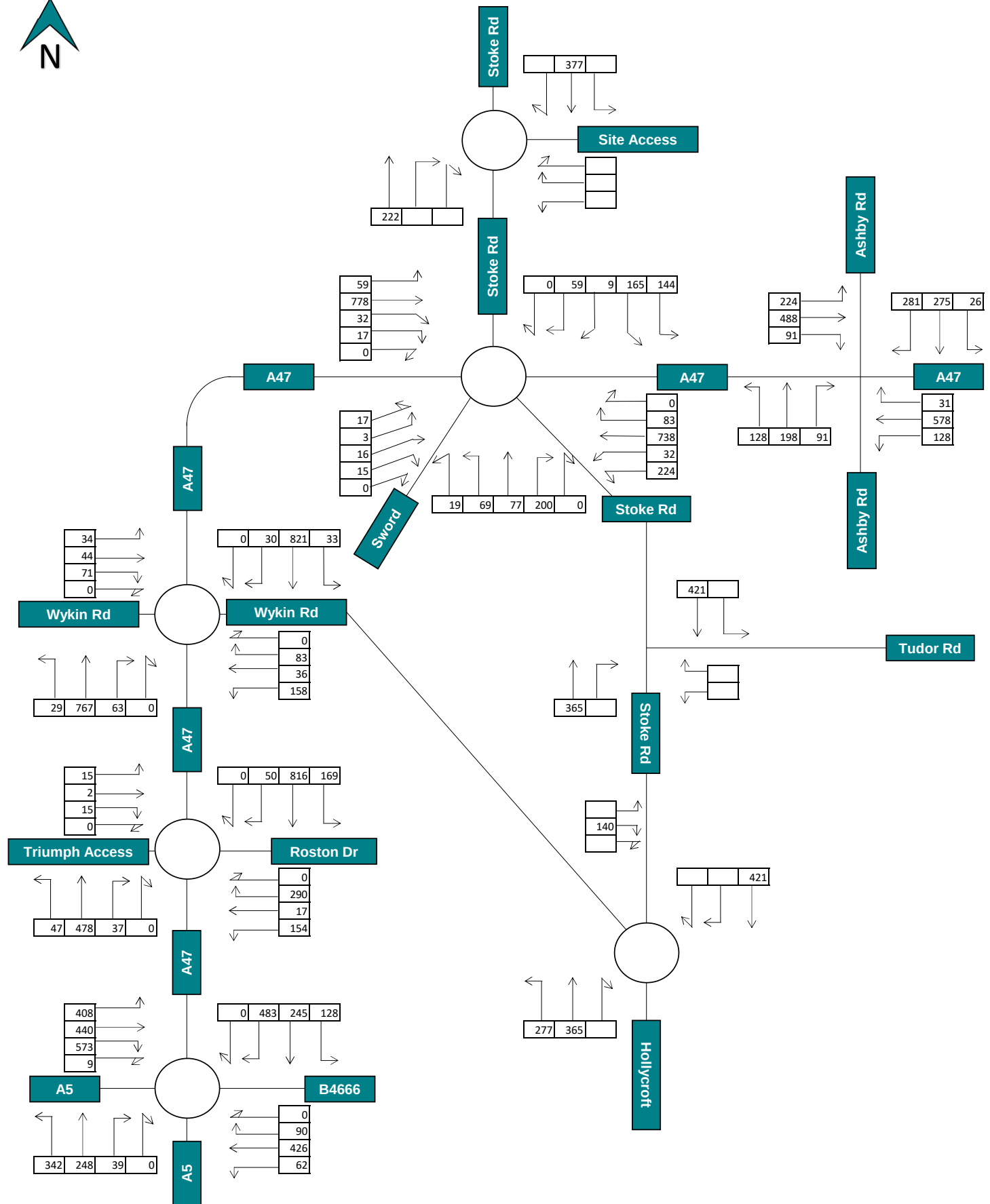




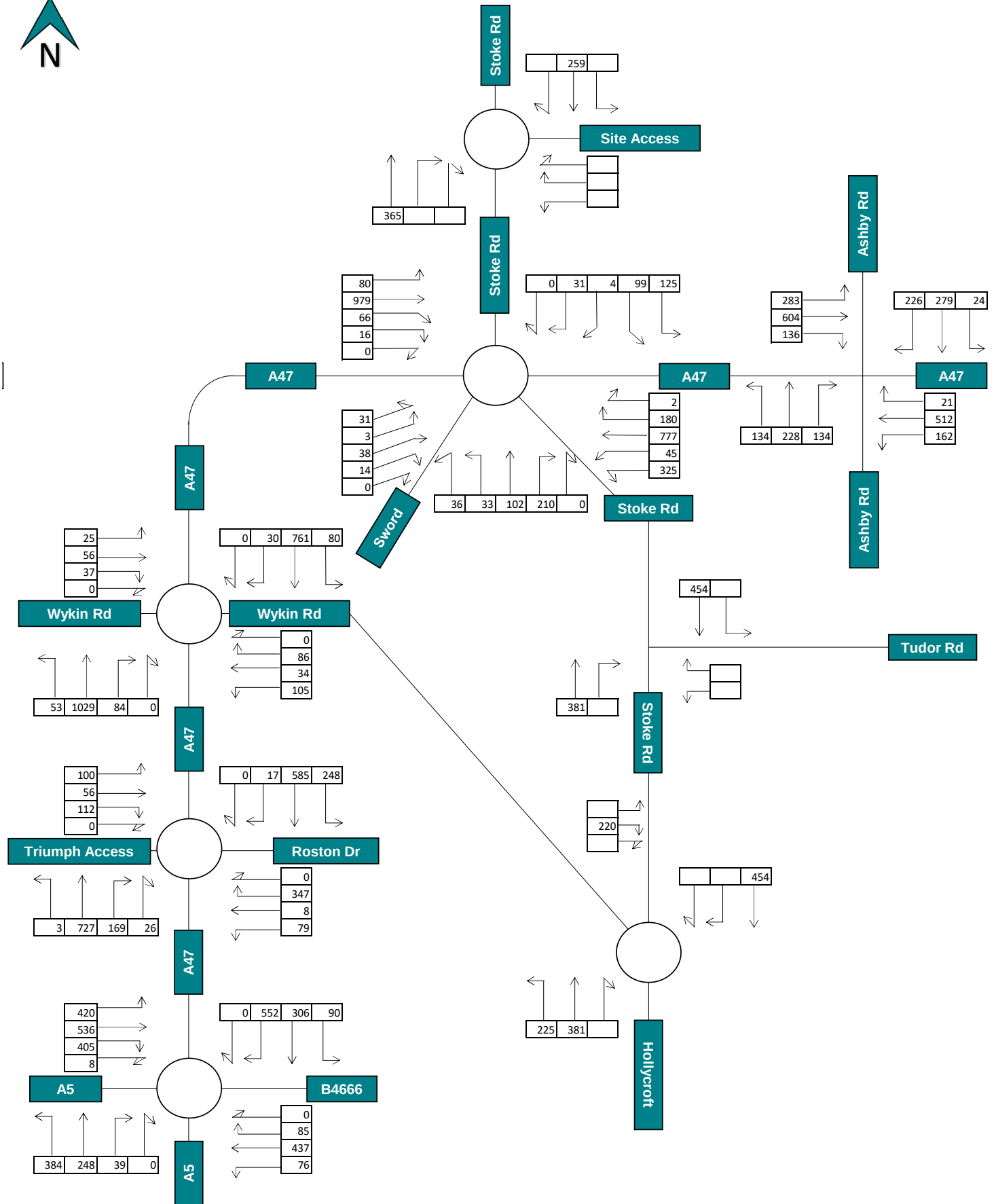




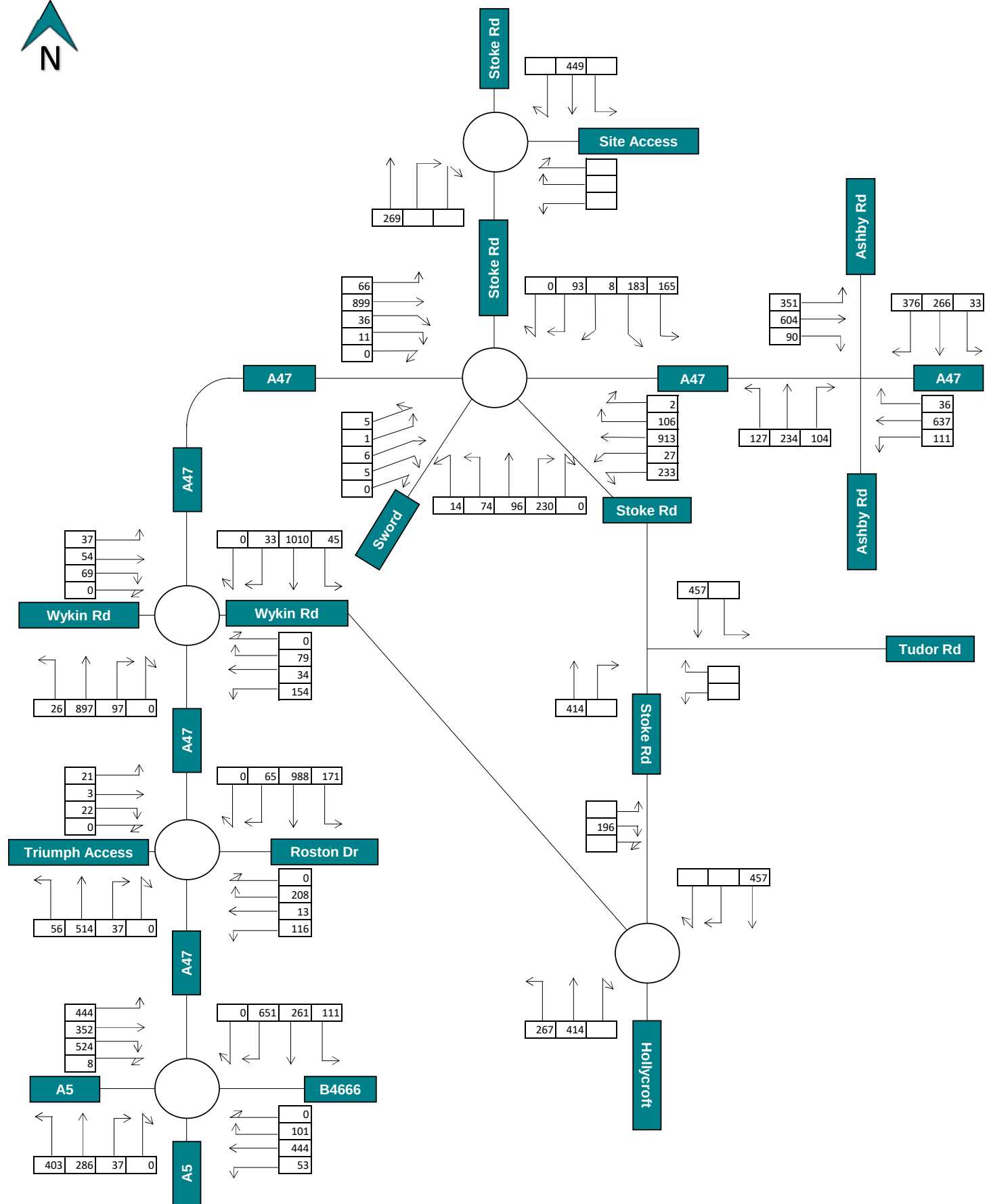




123	PCUs
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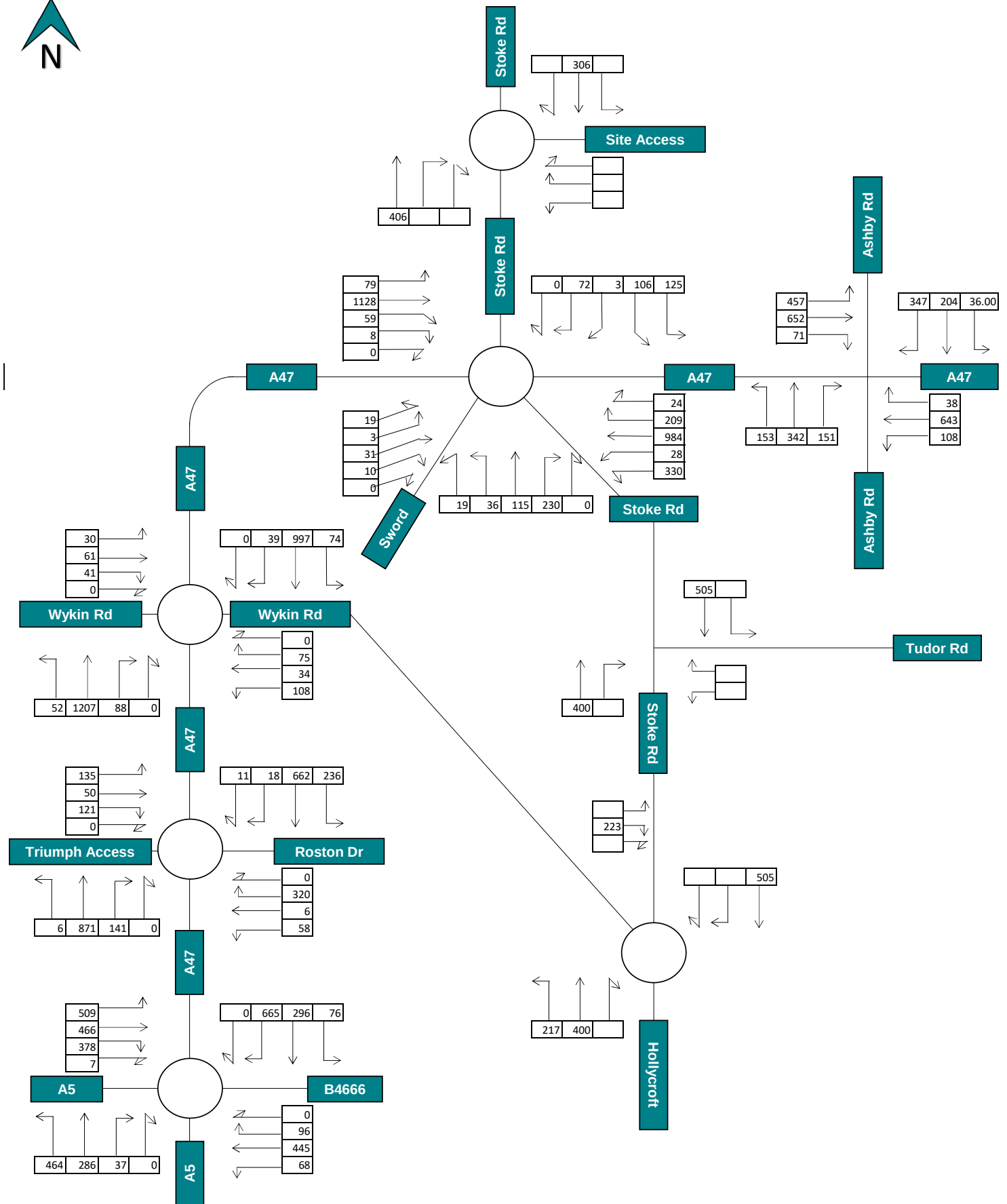


123	PCUs
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123	PCUs
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	T19595
	North Hinckley
	Figure 6.9
	Bloor TA - 2026 Base + Com + Bloor Dev
AM Peak Hour: 08:00 - 09:00	



123

PCUs



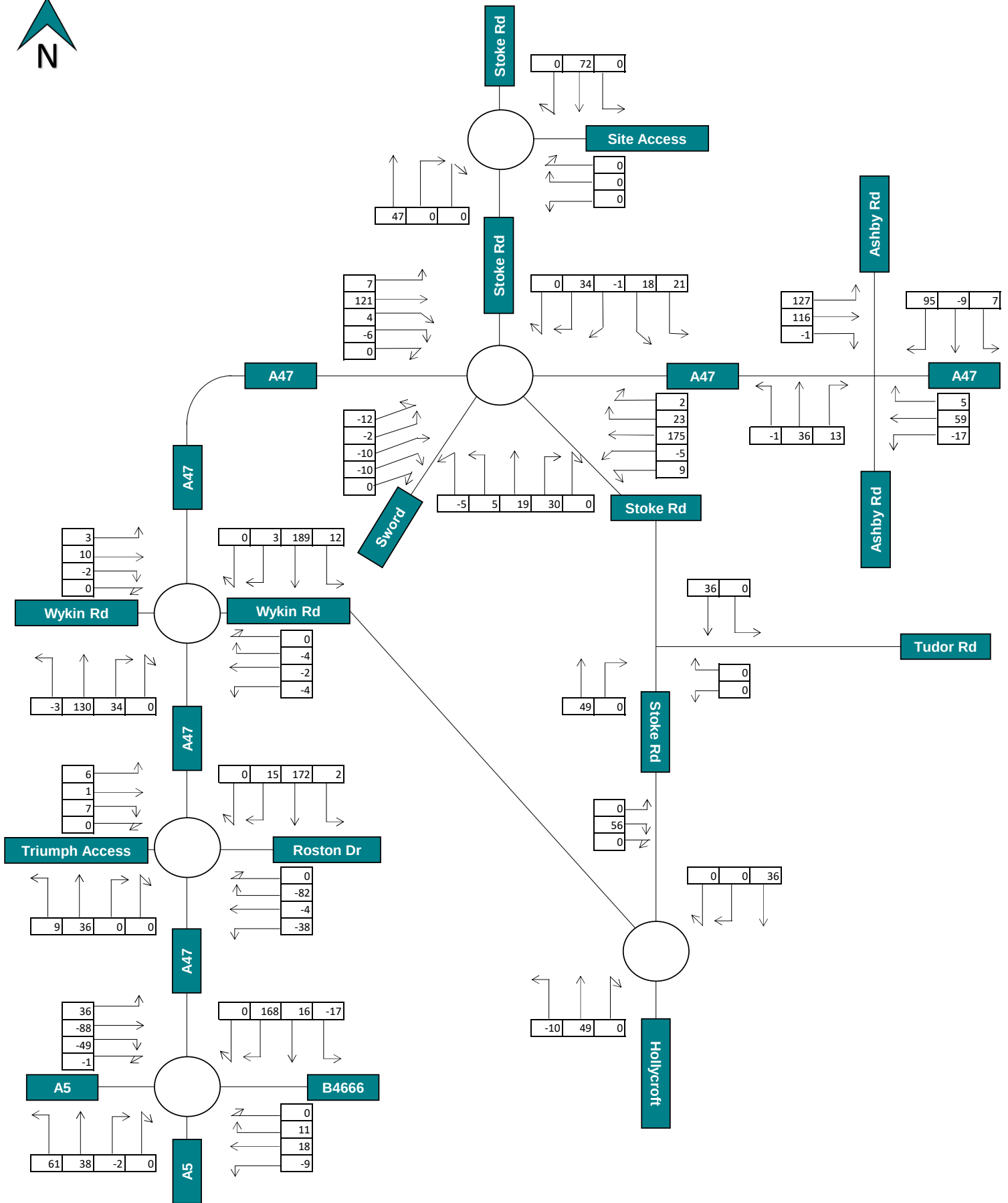
T19595

North Hinckley

Figure 6.10

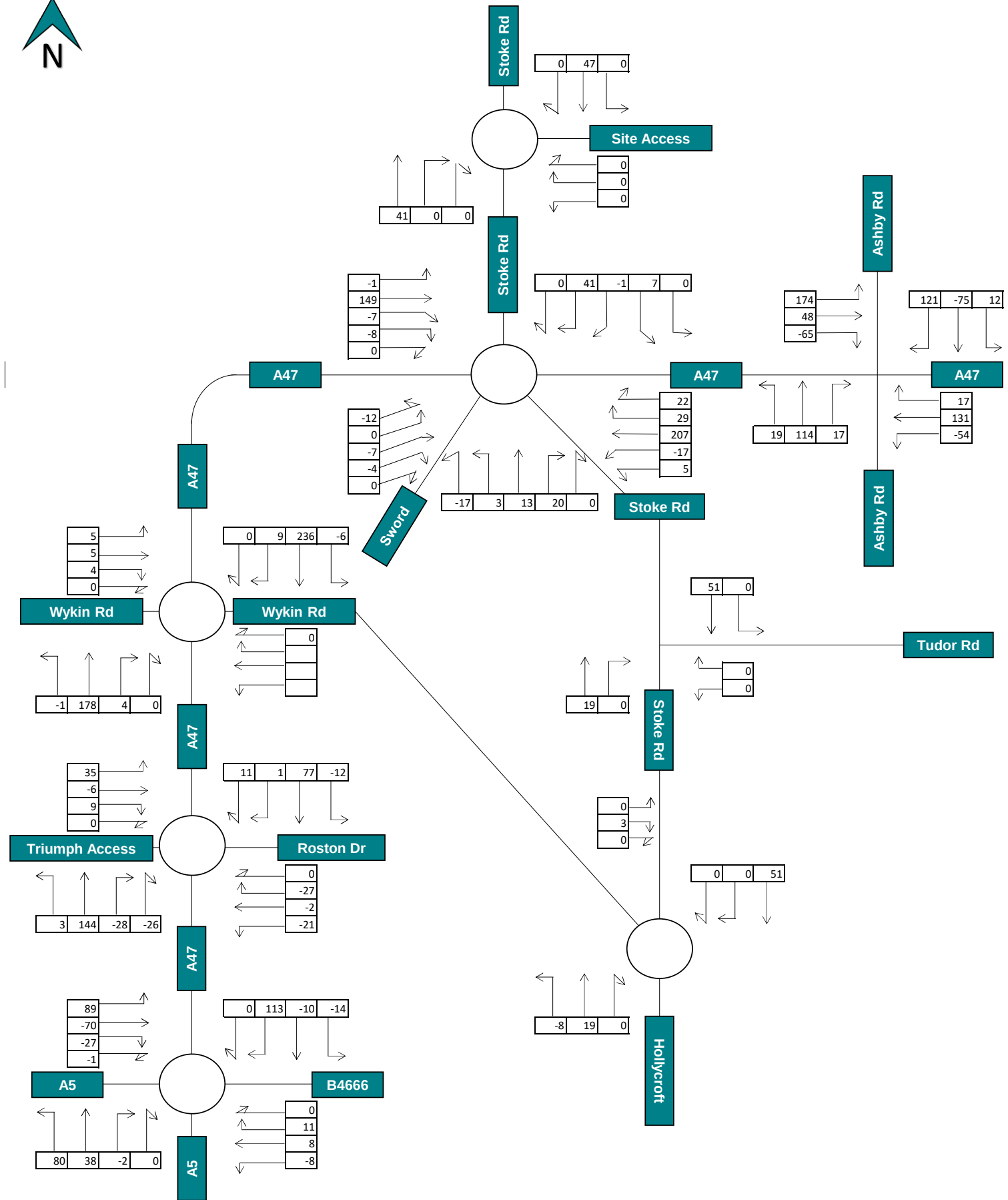
Bloor TA - 2026 Base + Com + Bloor Dev

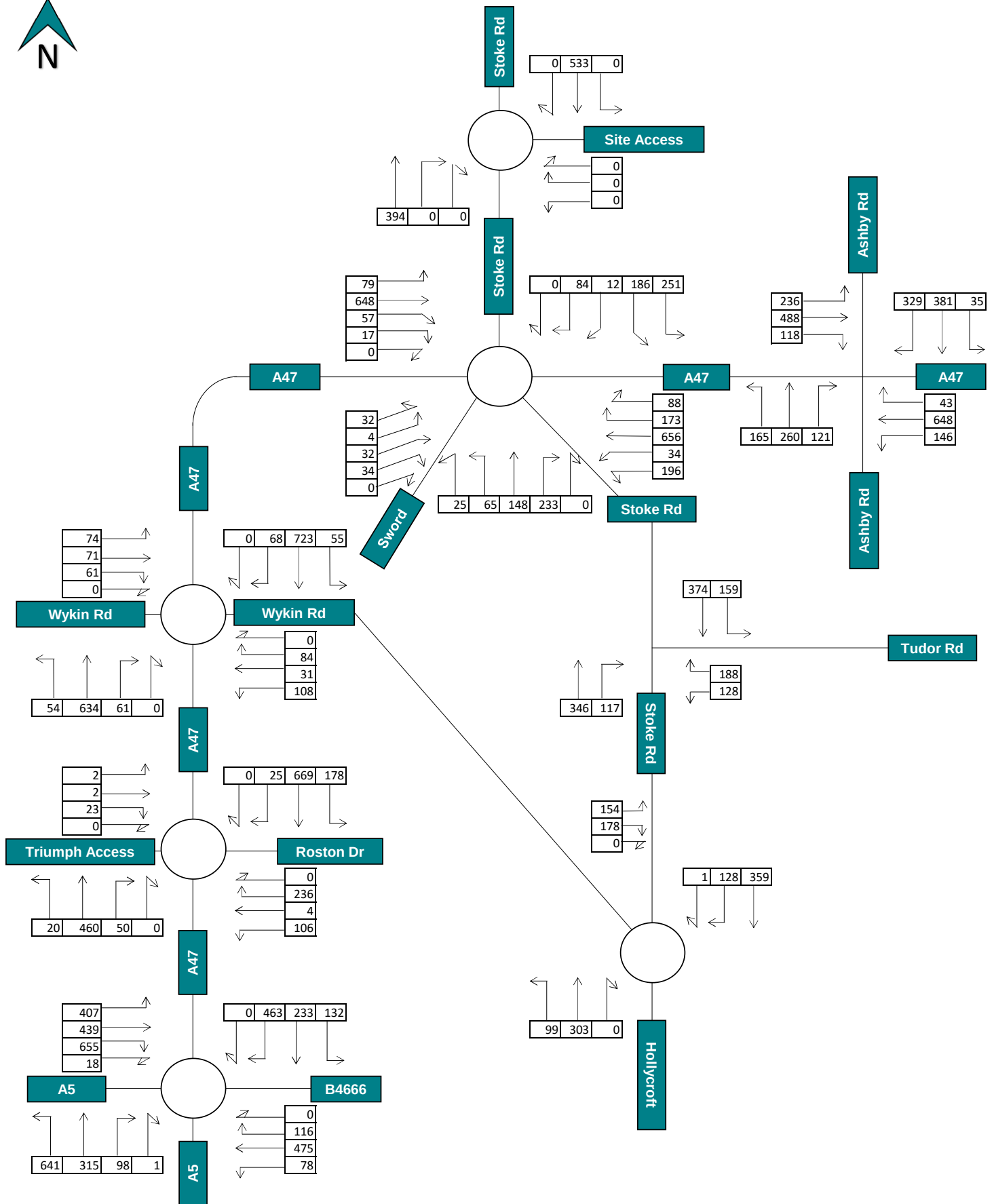
PM Peak Hour: 17:00 - 18:00

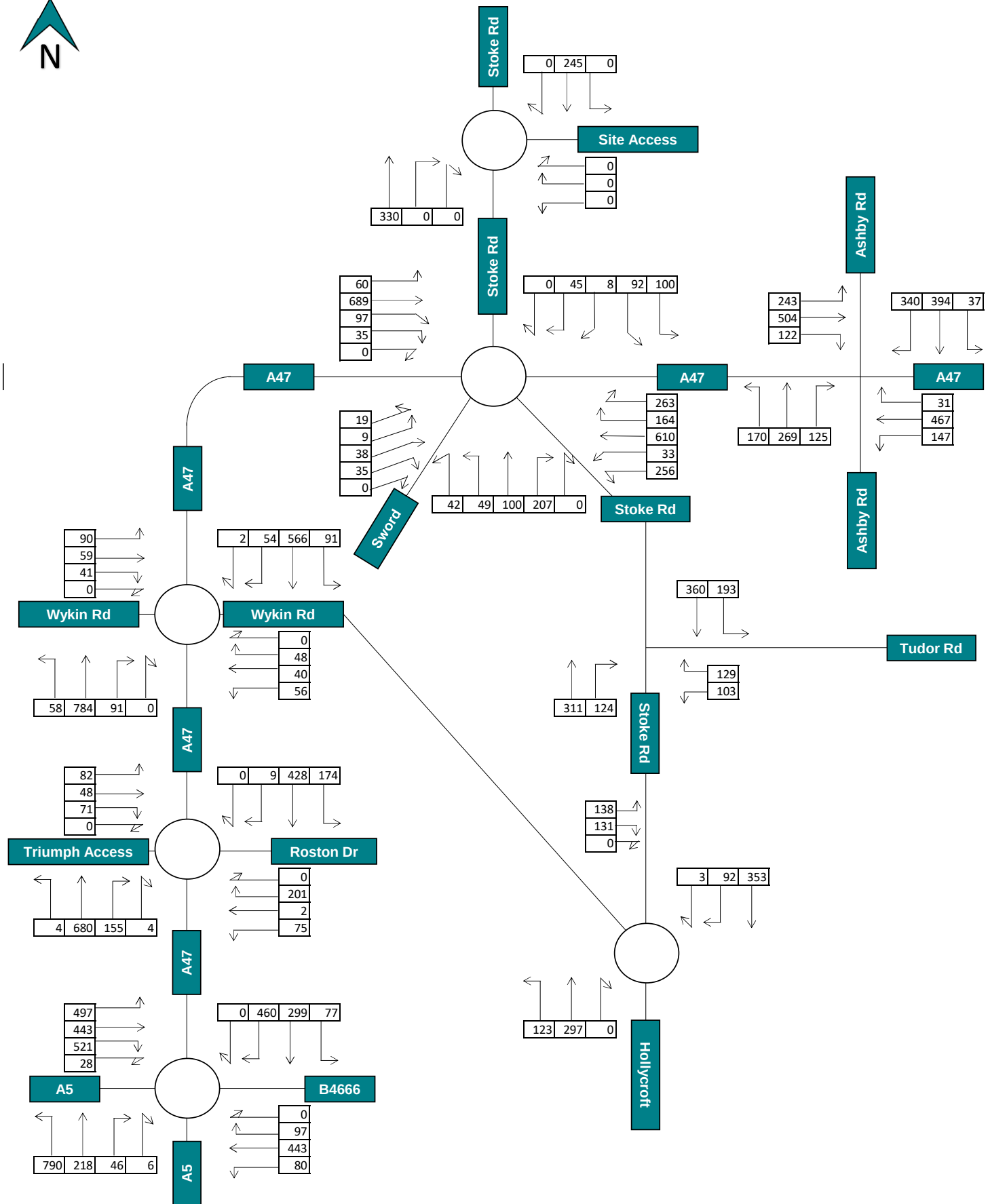


123	PCUs
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 TRANSPORT PLANNING LTD	T19595
	North Hinckley
	Figure 6.11
	Committed Development Flows AM Peak Hour: 08:00 - 09:00

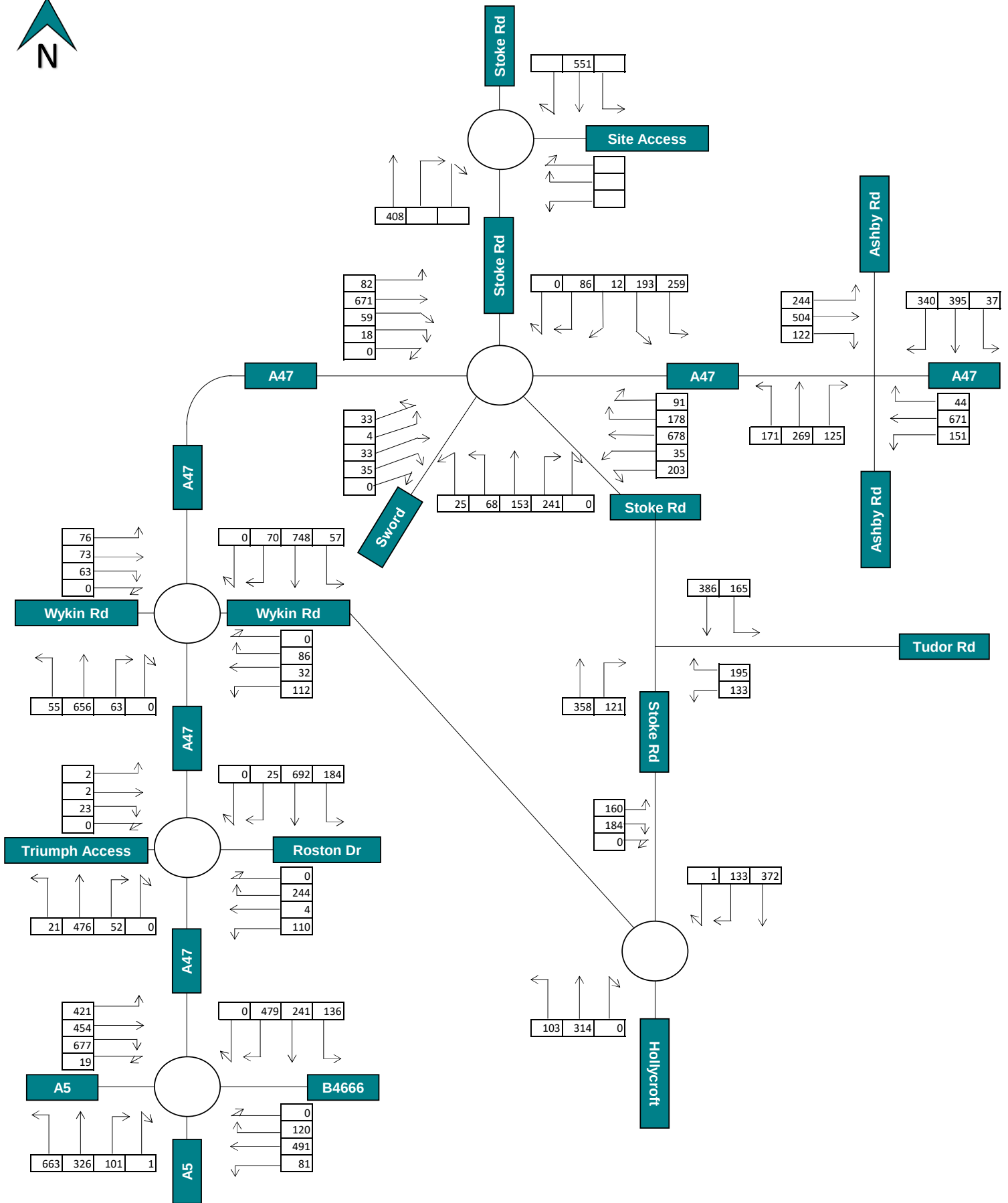


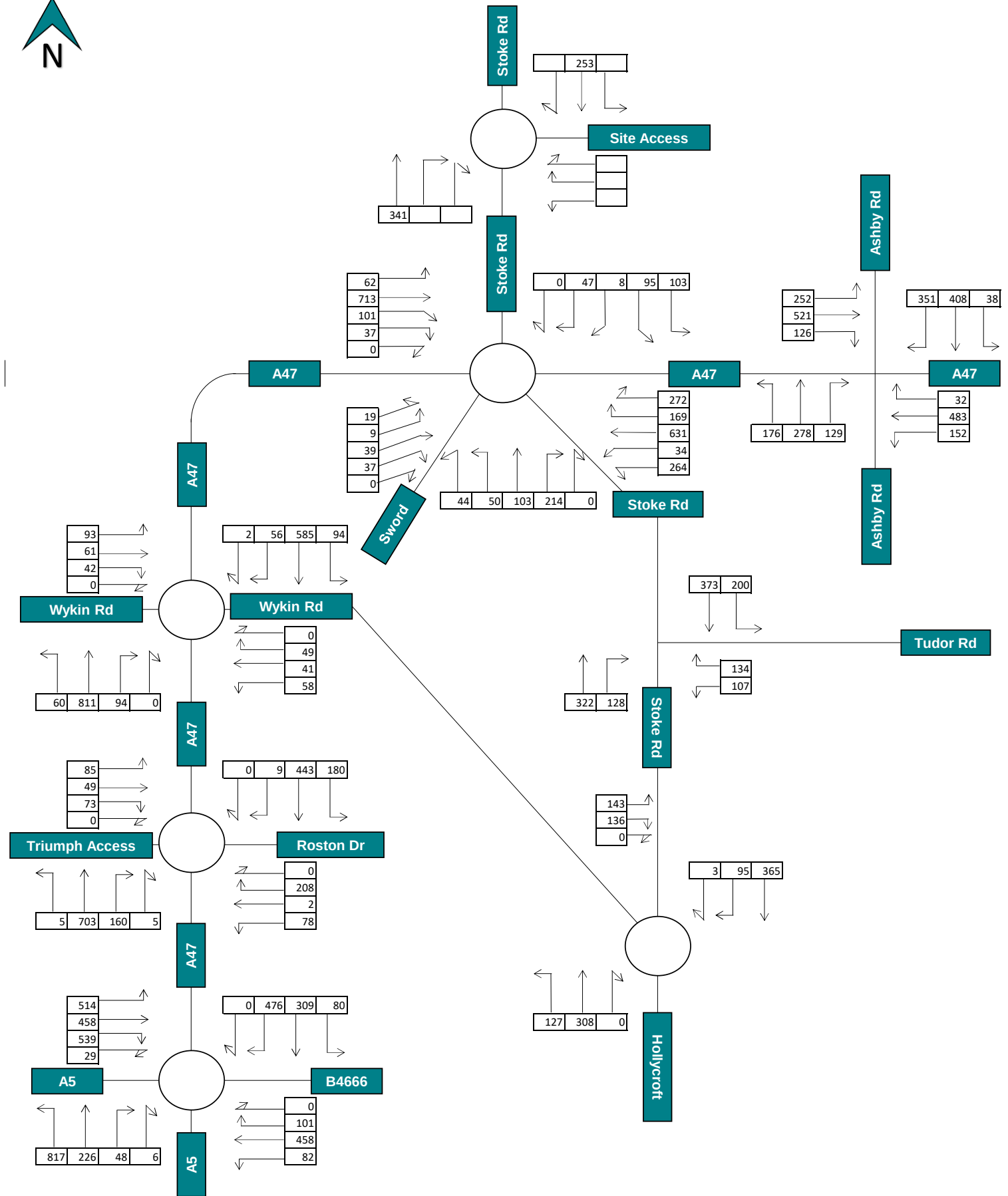


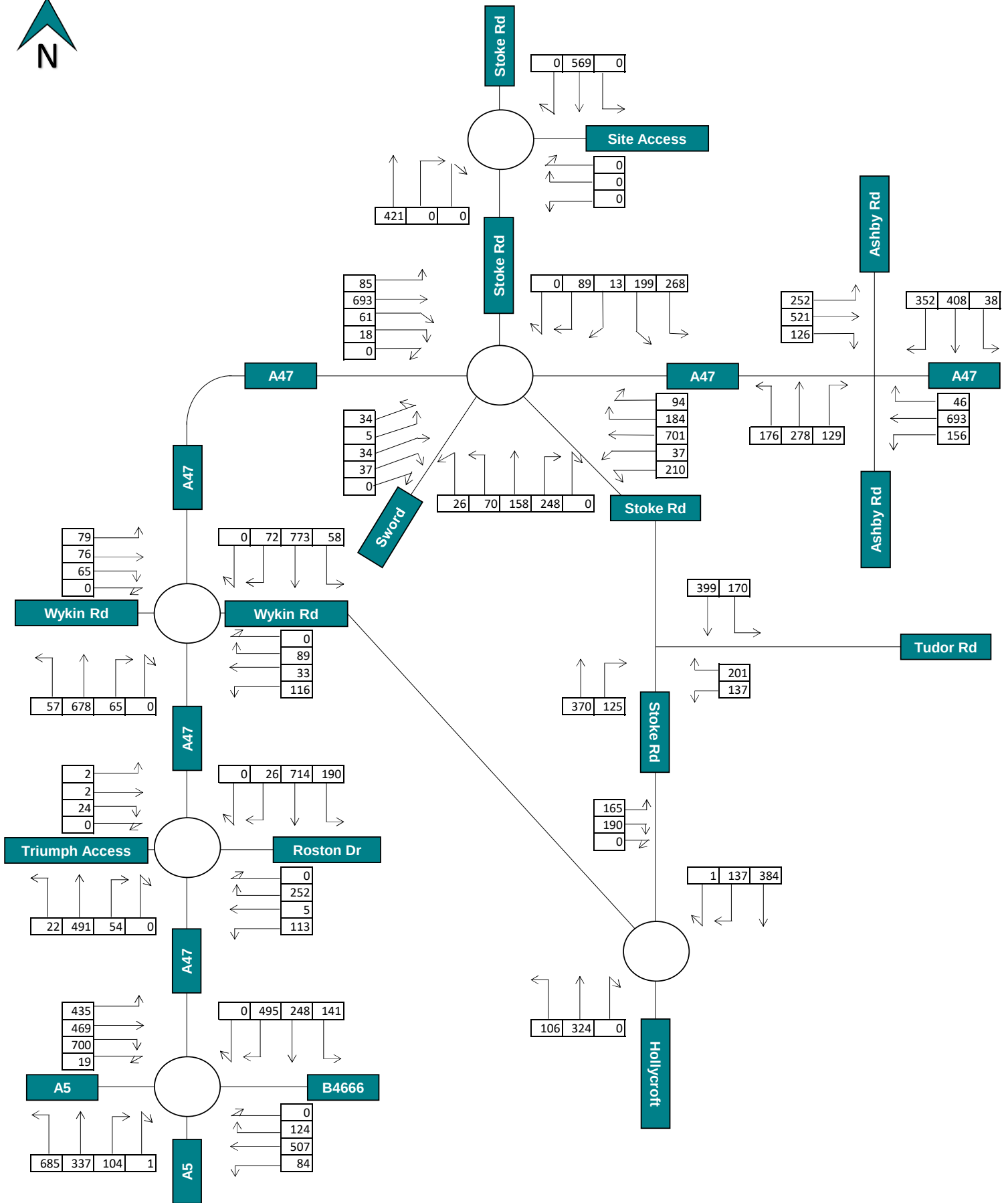


123	PCUs
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T19595
North Hinckley
 Figure 7.2
 2022 PCUs Base
 PM Peak Hour: 17:00 - 18:00

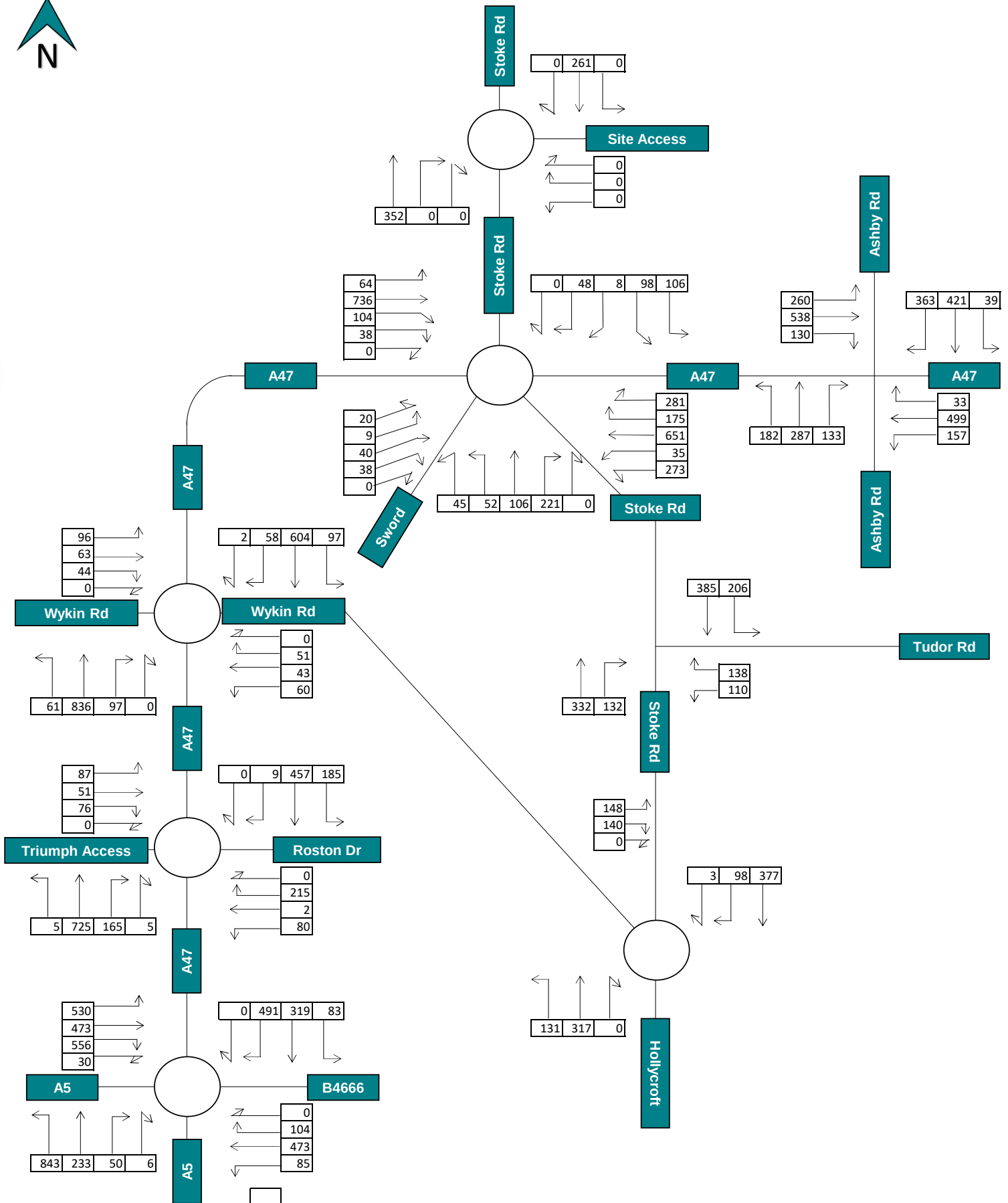


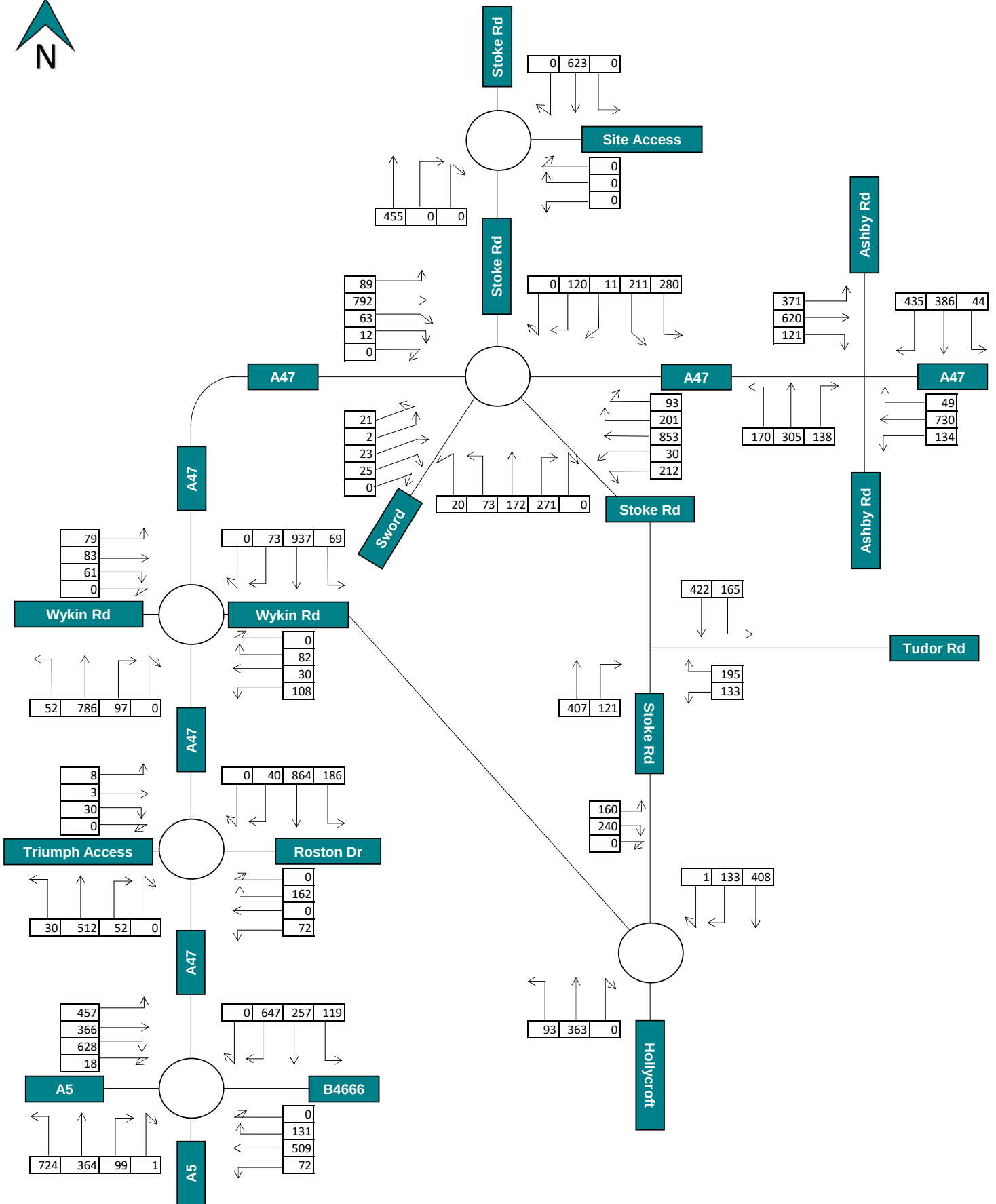




T19595
North Hinckley
Figure 7.5
2032 PCUs Base
AM Peak Hour: 08:00 - 09:00

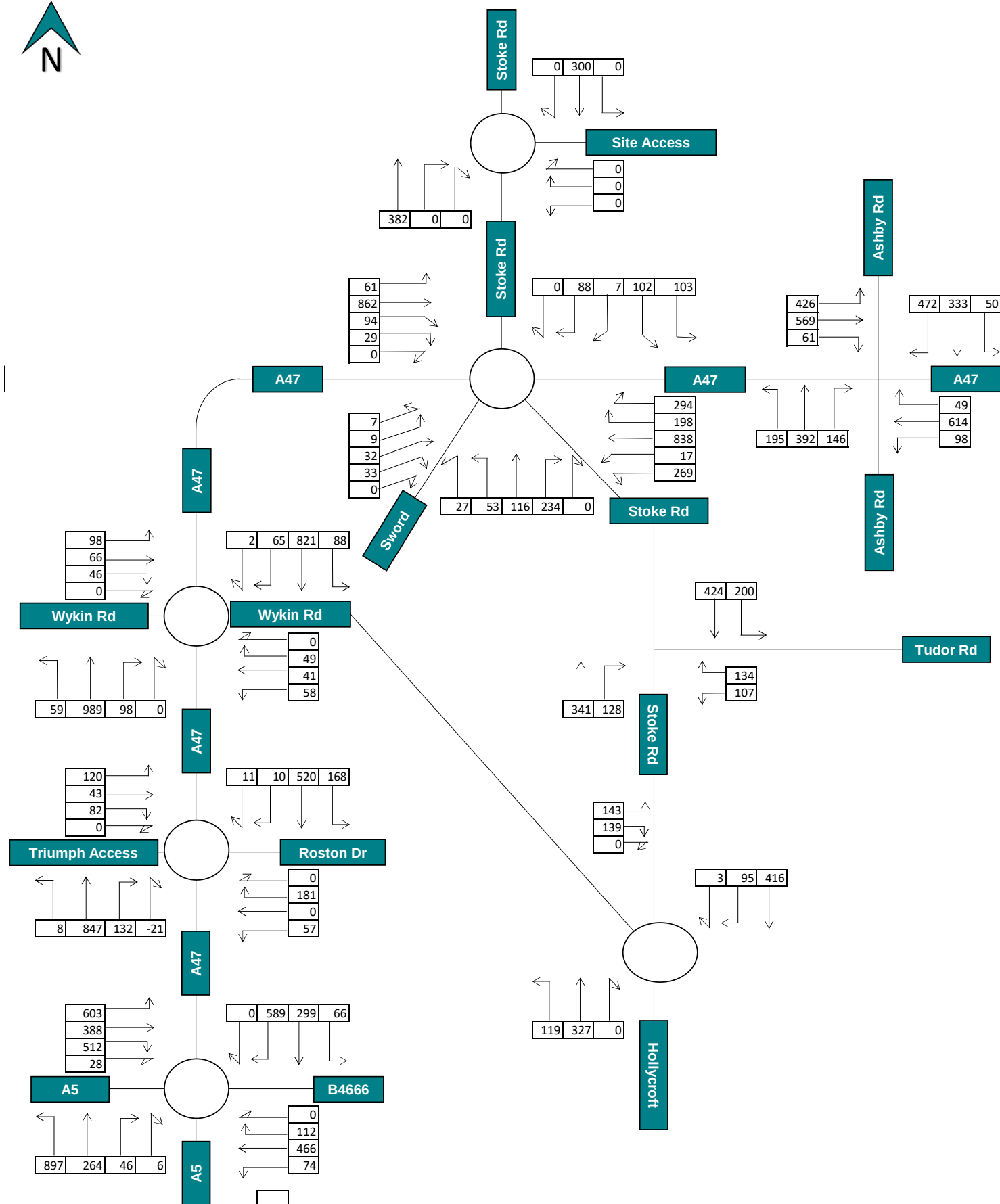
123	PCUs
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123

PCUs



123	PCUs
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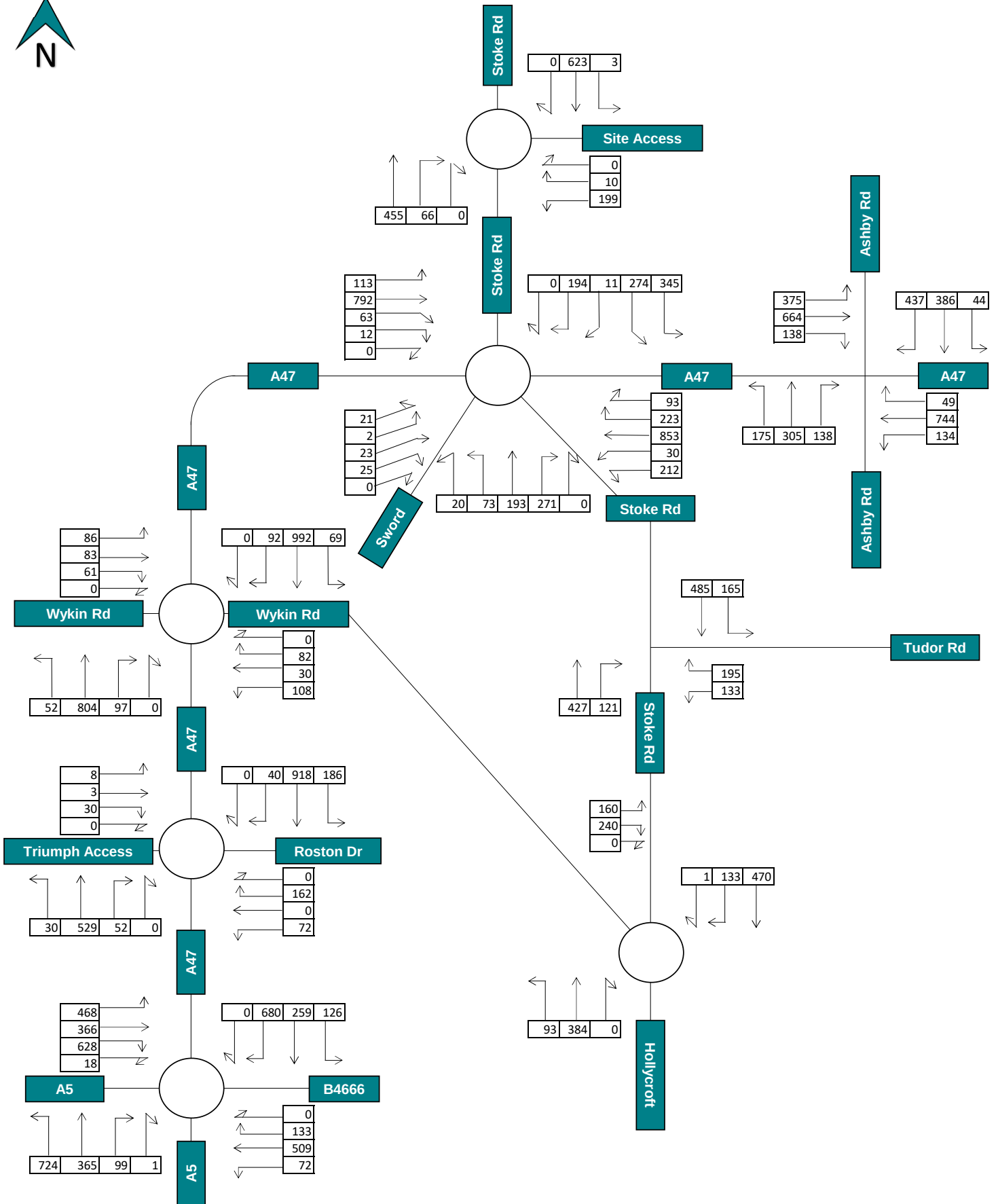
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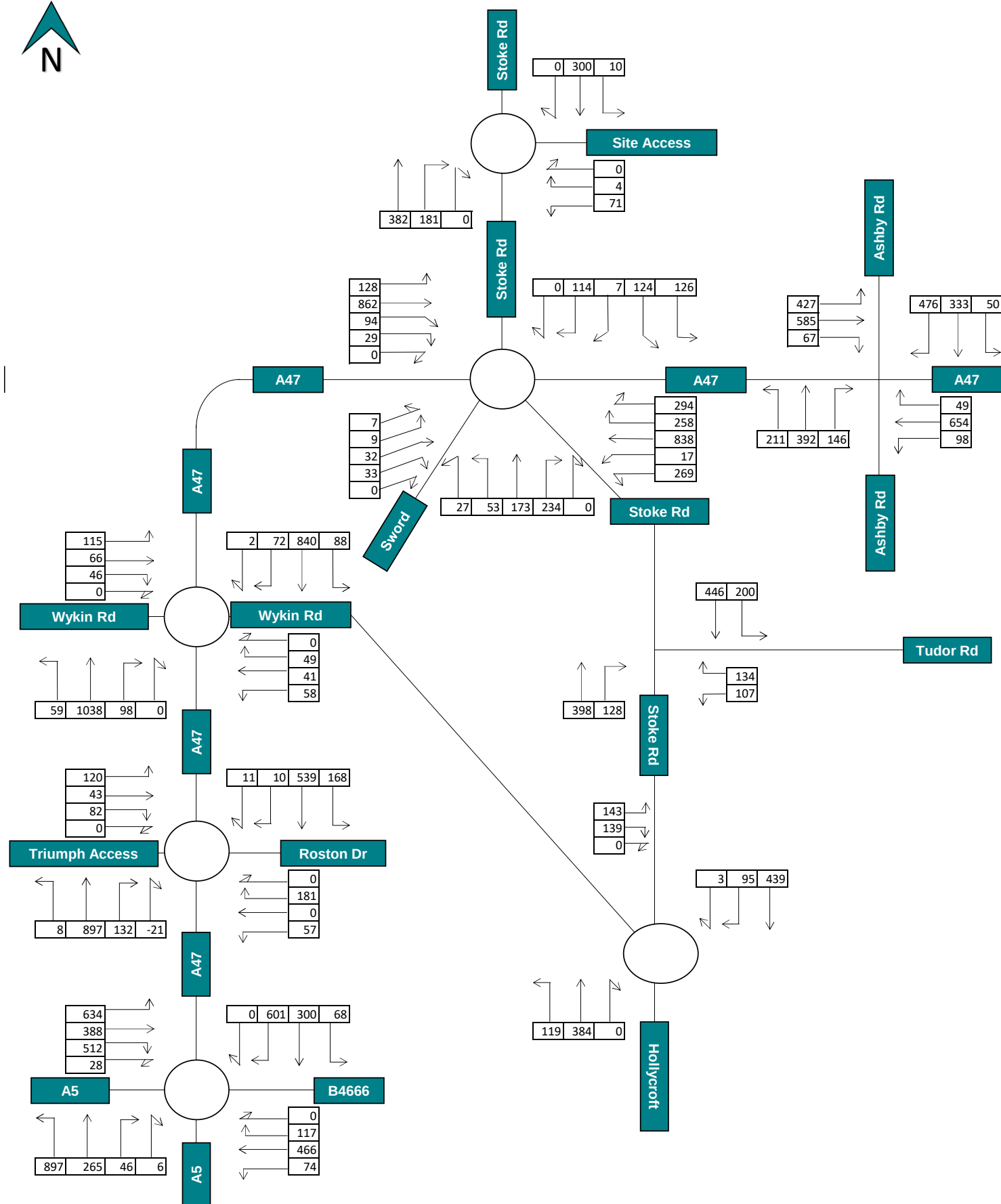
North Hinckley

Figure 7.8

2027 Base + Committed

PM Peak Hour: 17:00 - 18:00



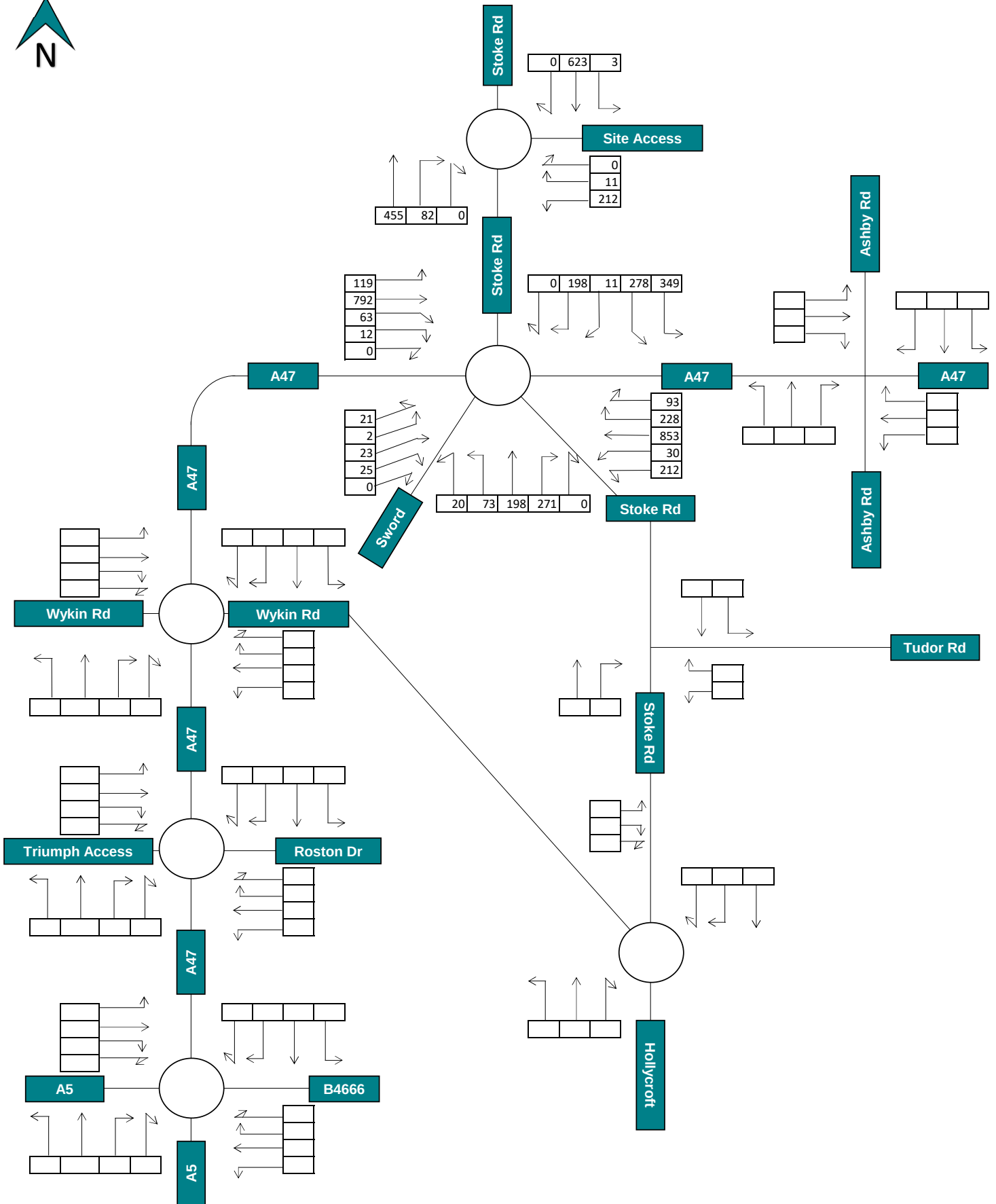


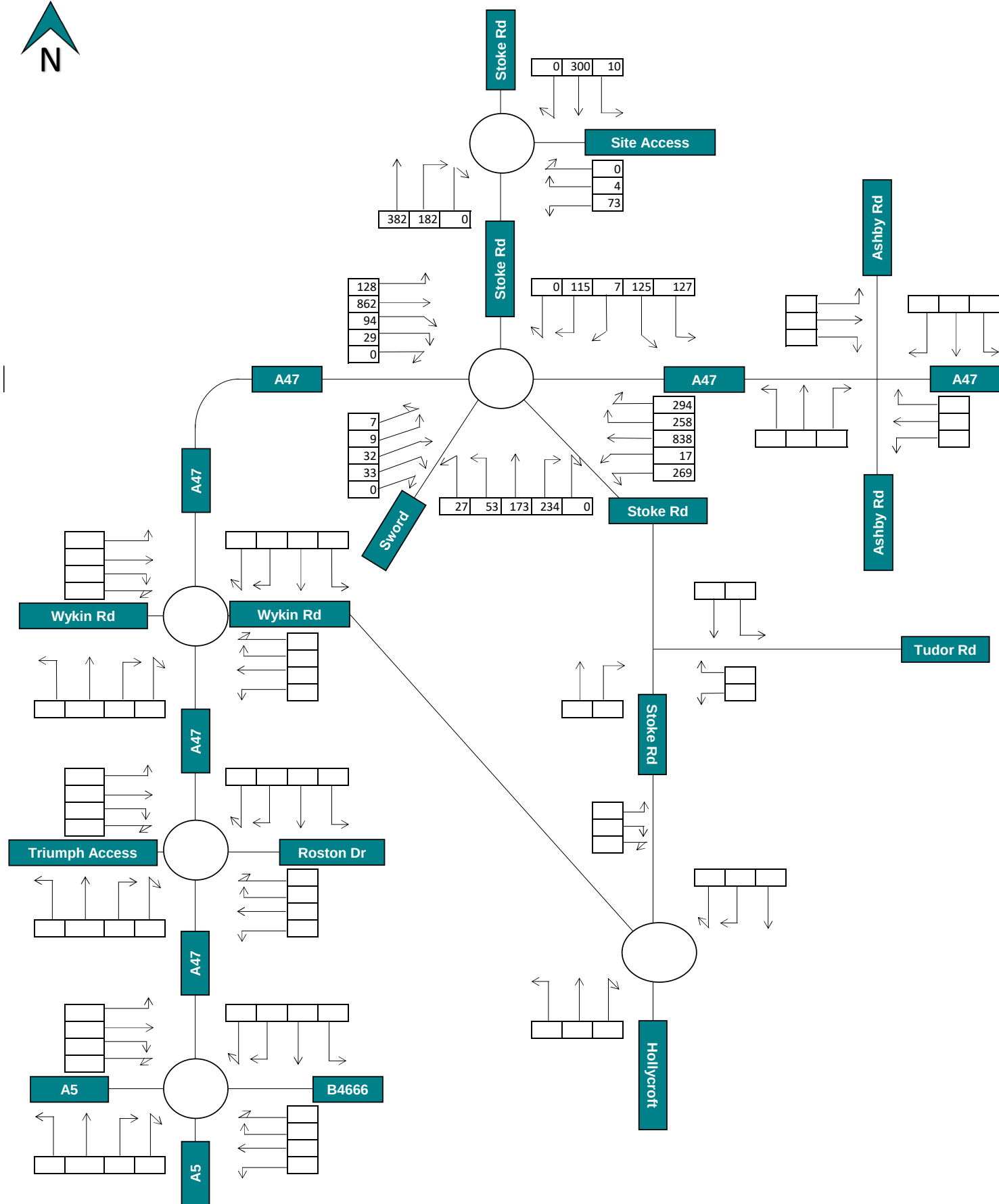
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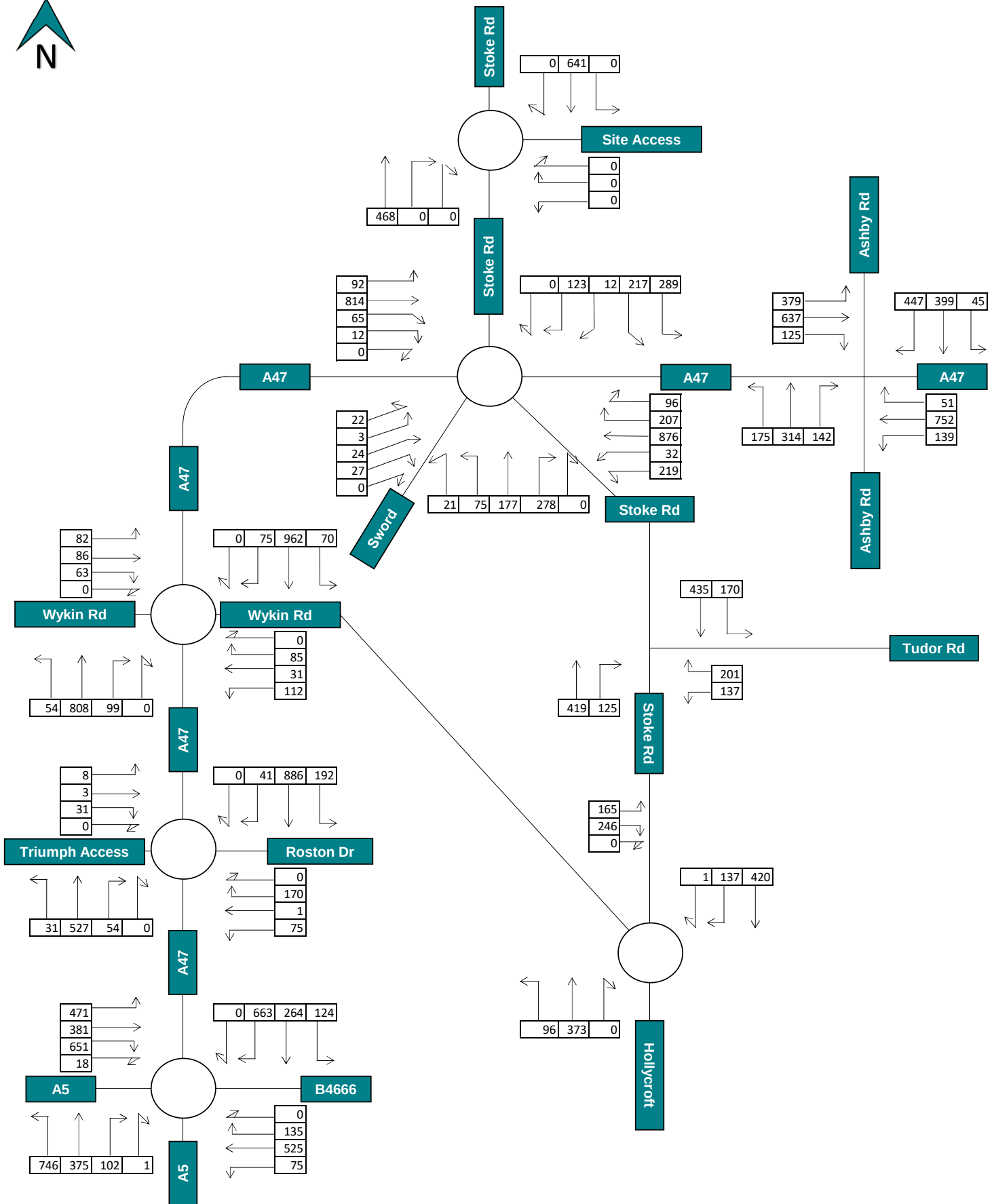
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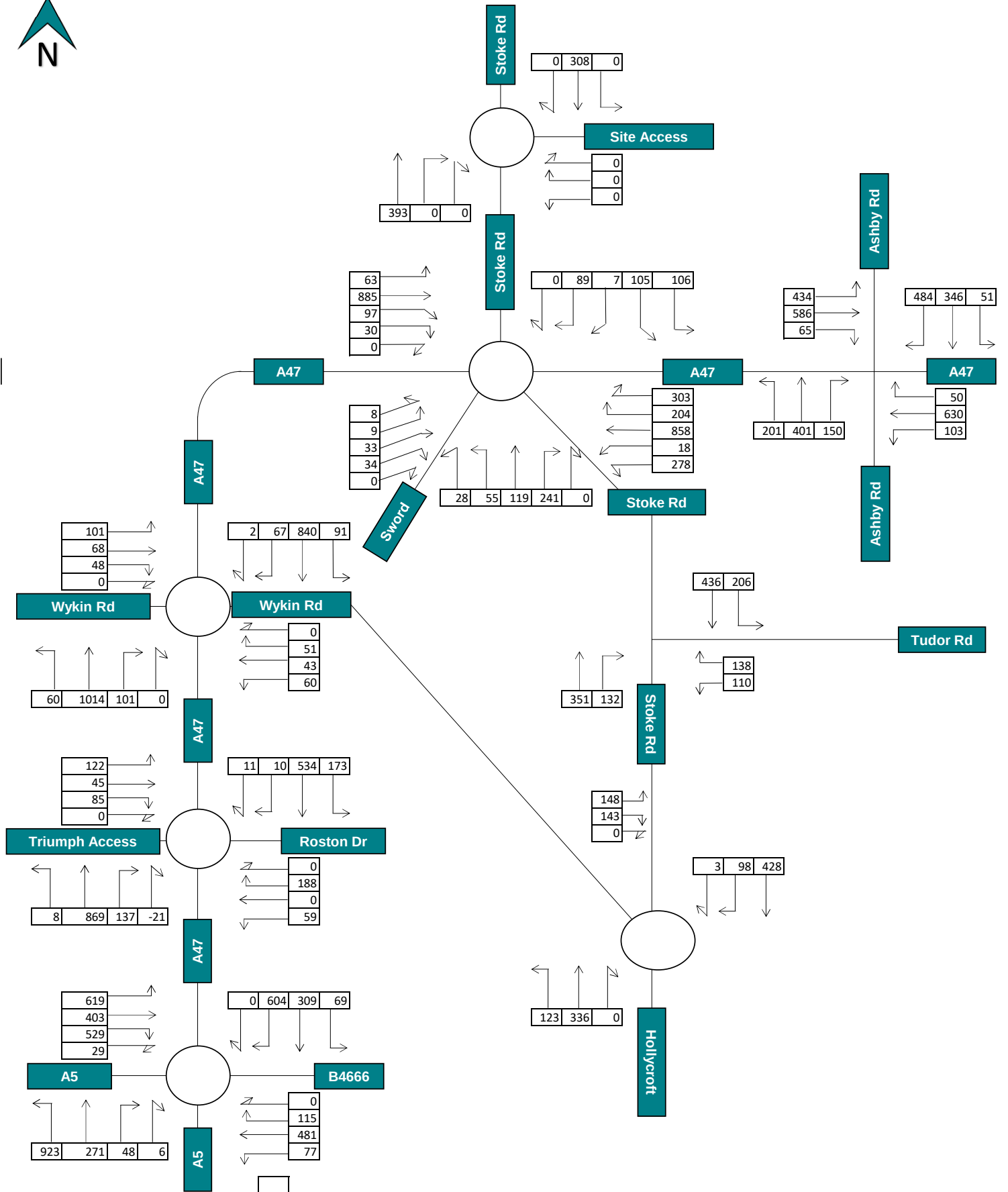


T19595
North Hinckley
Figure 7.10
2027 Base + Committed + Development
PM Peak Hour: 17:00 - 18:00



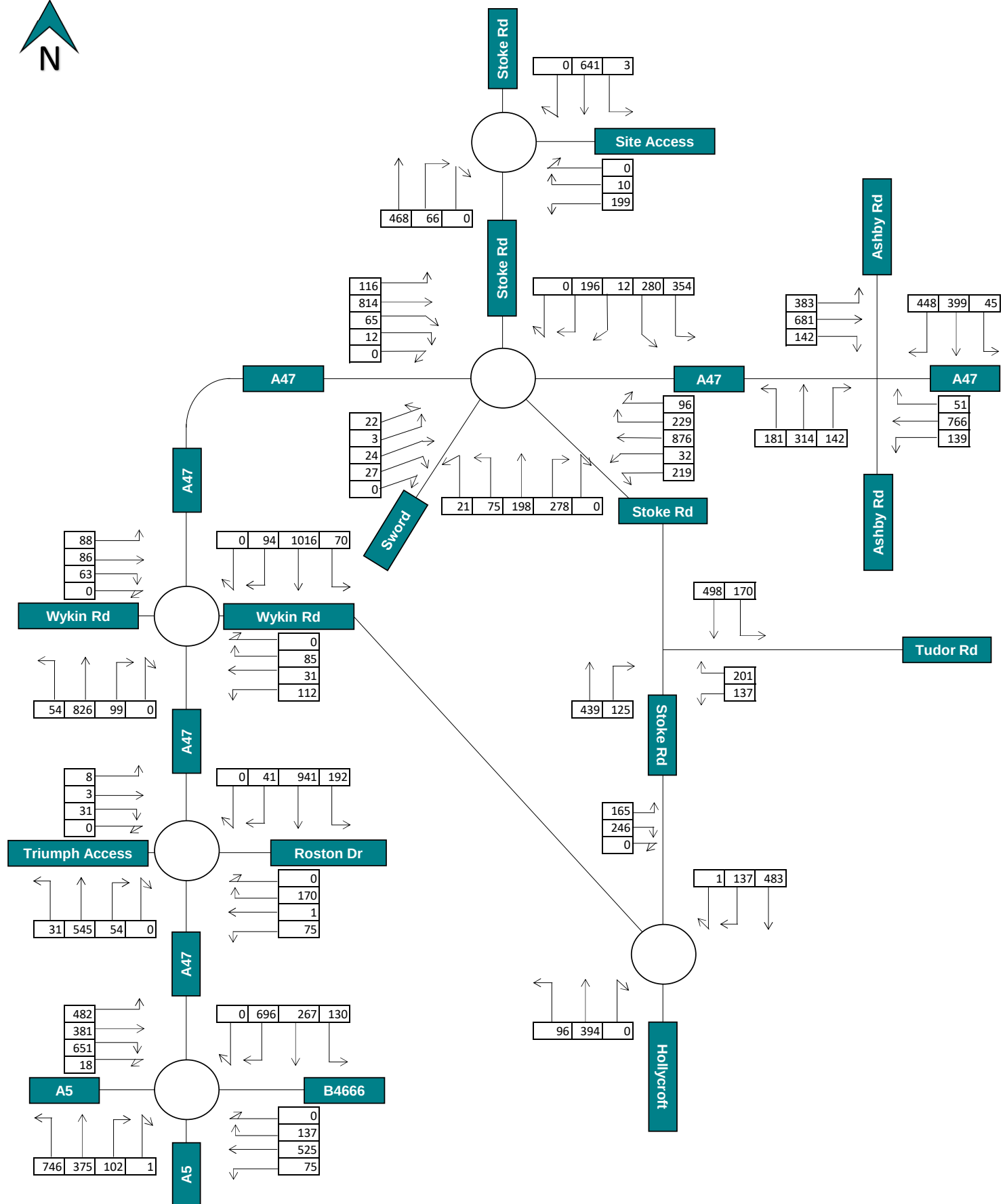




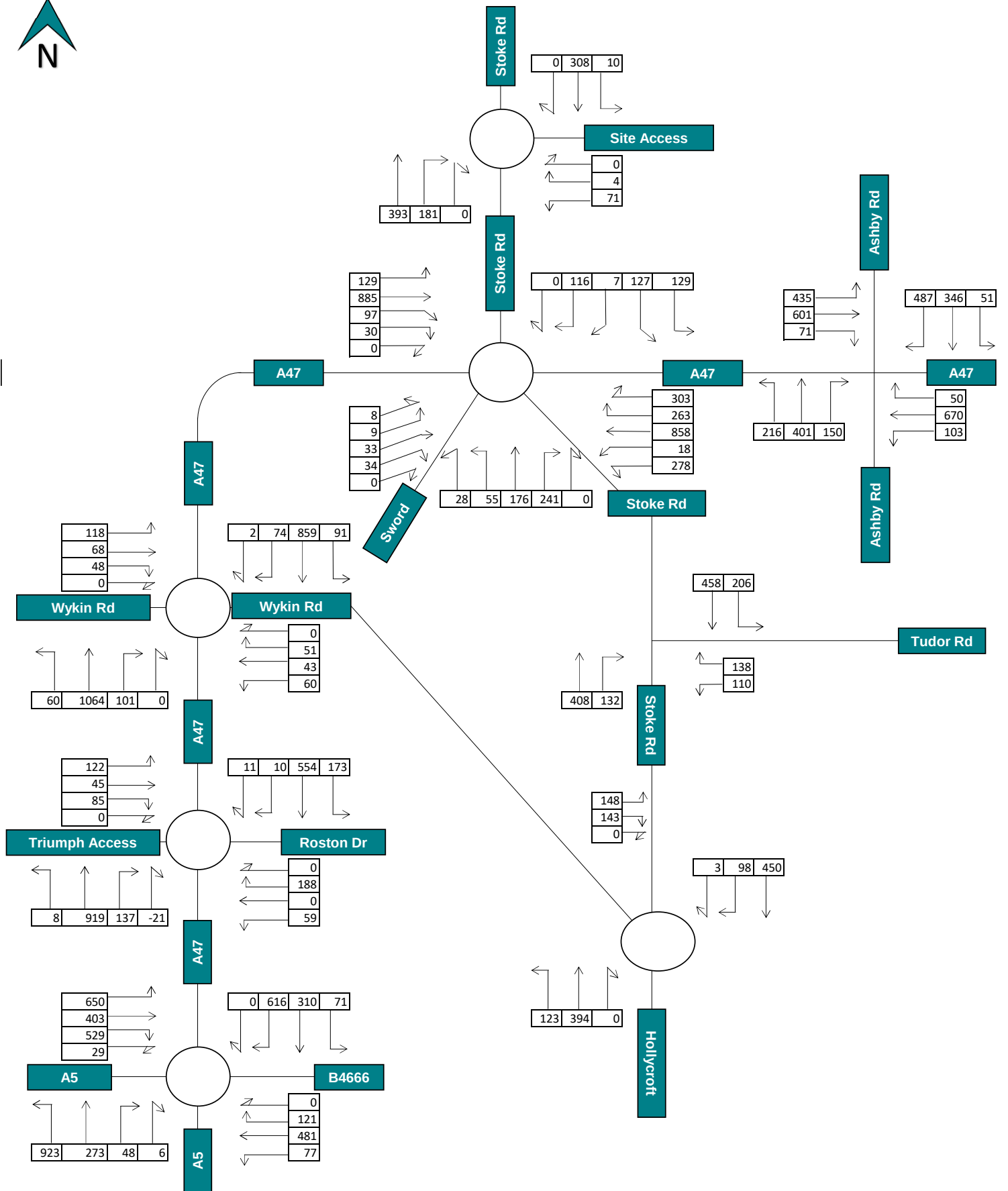


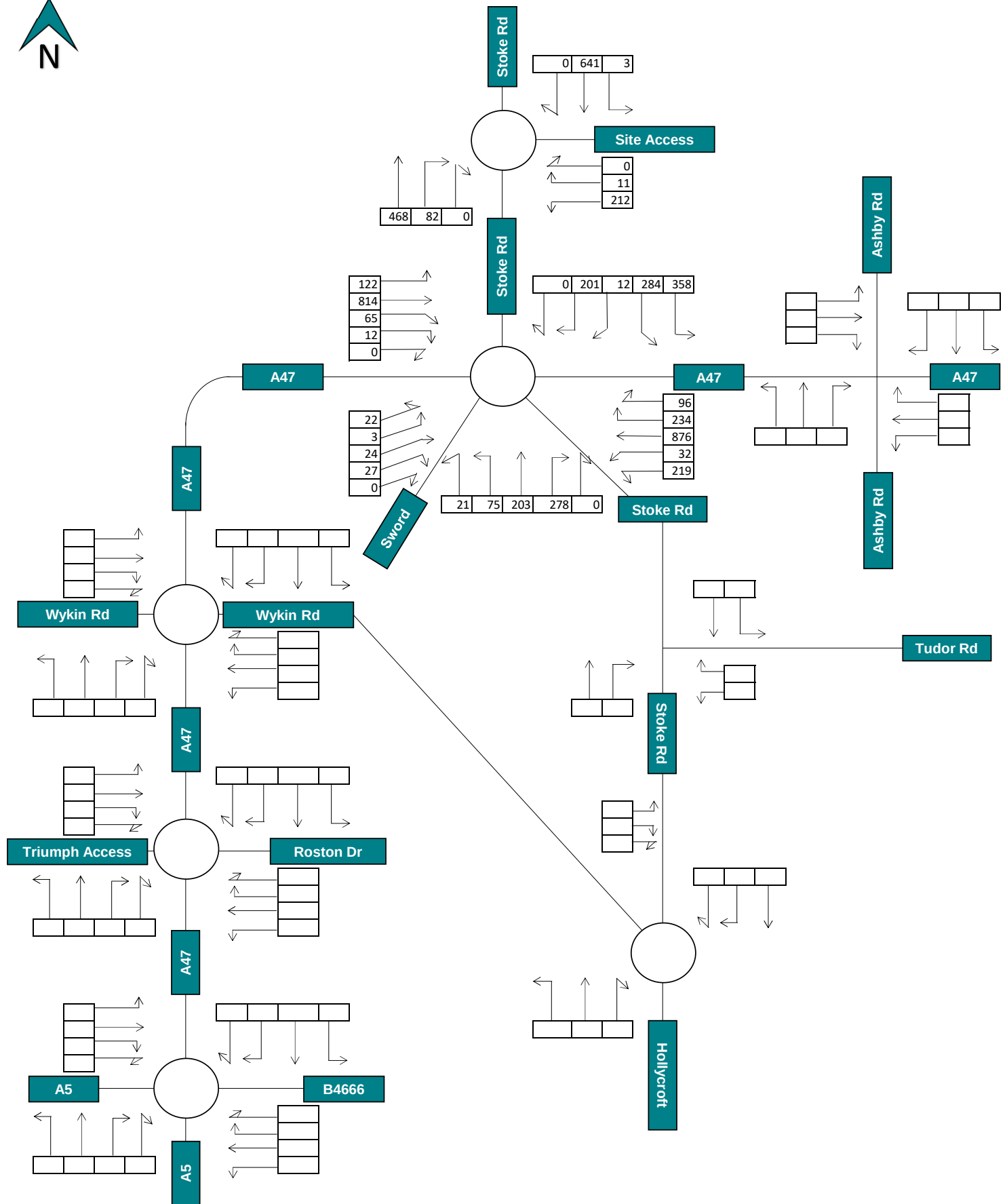
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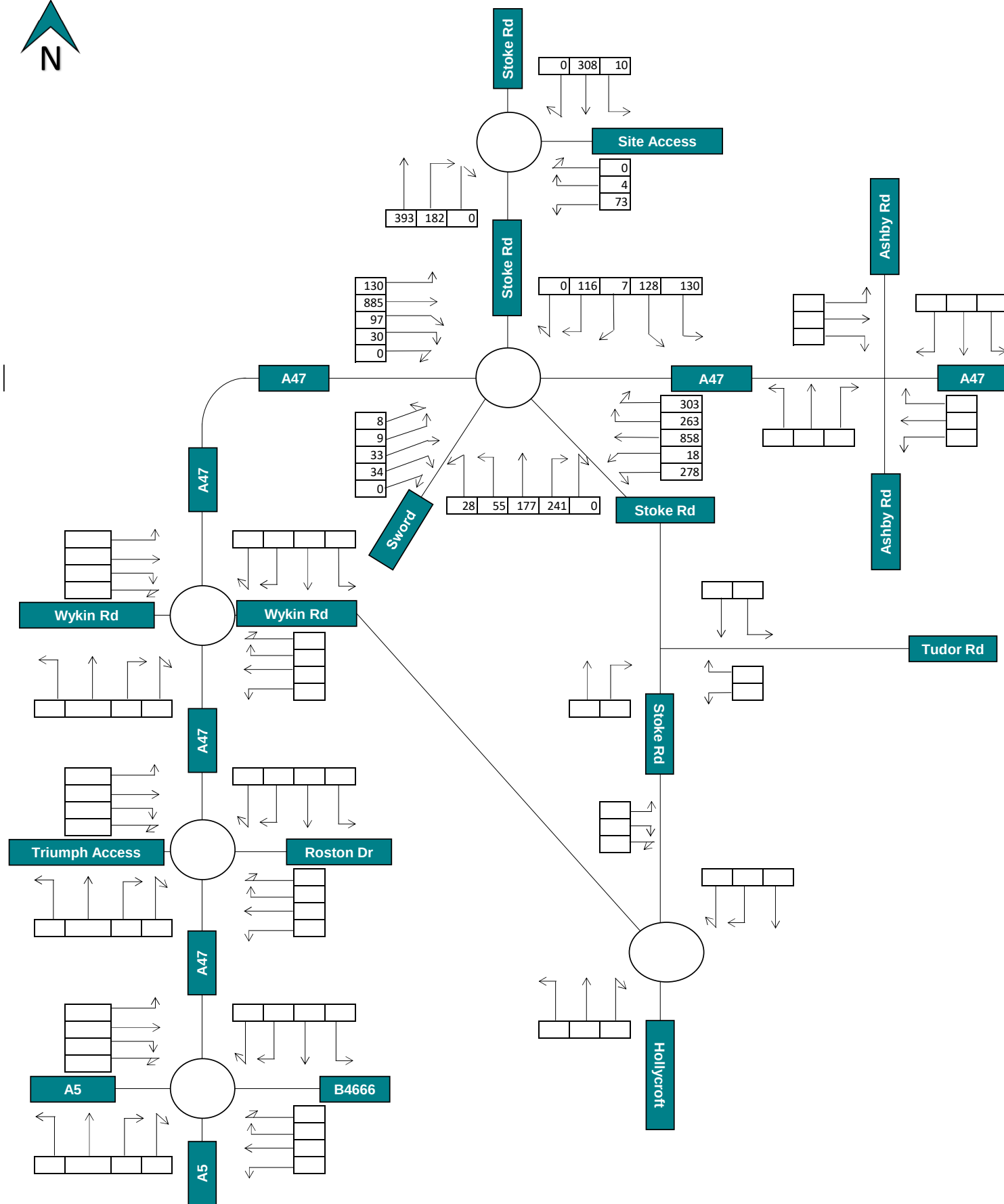
	T19595
	North Hinckley
	Figure 7.14
	2032 Base + Committed
PM Peak Hour: 17:00 - 18:00	



123	PCUs
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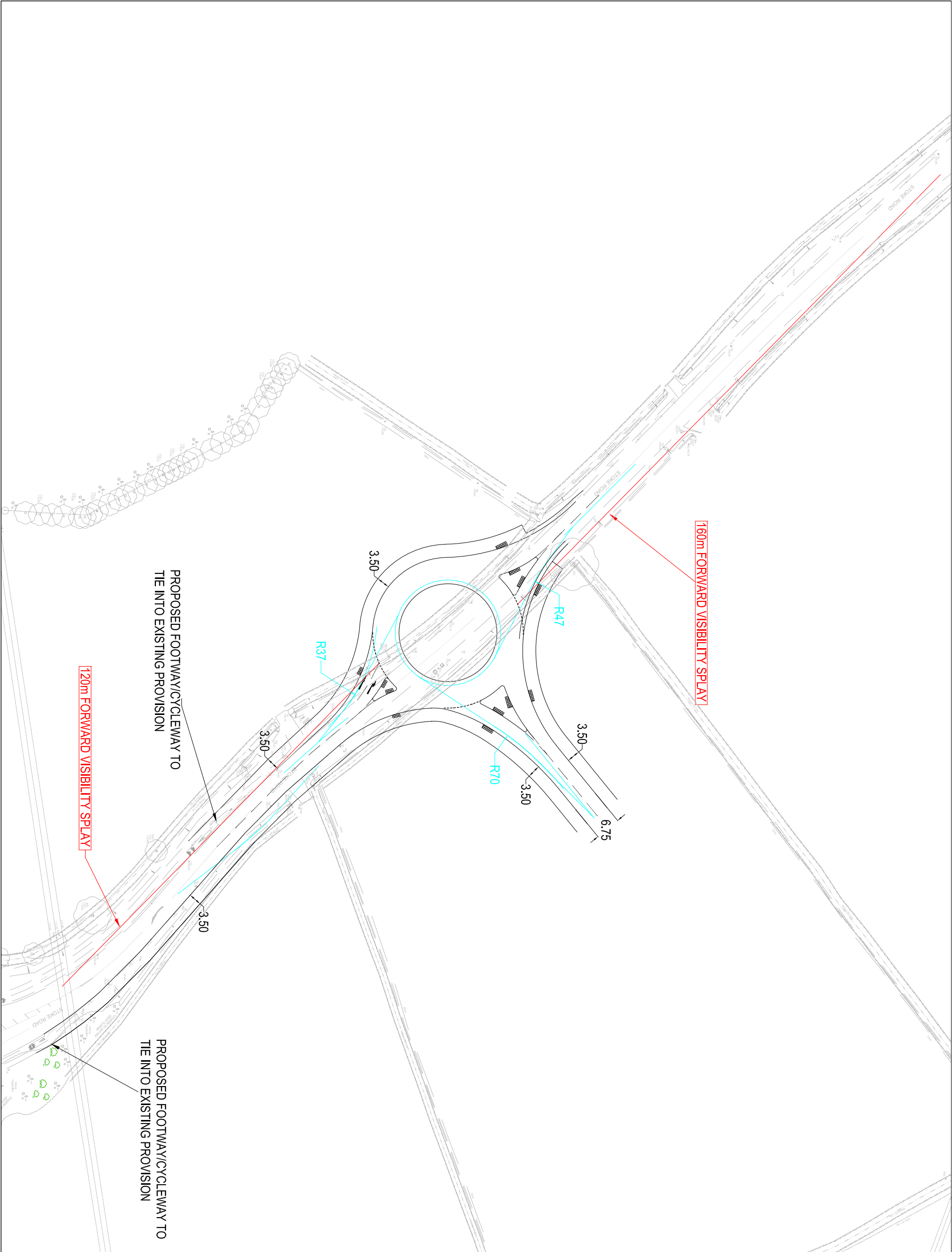


T19595
North Hinckley



Drawings

1. THIS DRAWING IS NOT TO BE SCALED FOR CONSTRUCTION PURPOSES.
2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.



REV	DESCRIPTION	DATE	BY	AUTH
C	PROPOSED SITE ACCESS AMENDED TO TIE IN TO TOPOGRAPHICAL SURVEY	28.01.20	JC	GM
B	JUNCTION LAYOUT AMENDED TO AVOID UNREGISTERED LAND	06.08.20	JC	GM
A	ROUNDABOUT LAYOUT AMENDED	31.07.20	JC	GM

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Hub Transport Planning Ltd

Raddcliffe House

66/68 Hagley Road

Edgbaston

Birmingham

West Midlands

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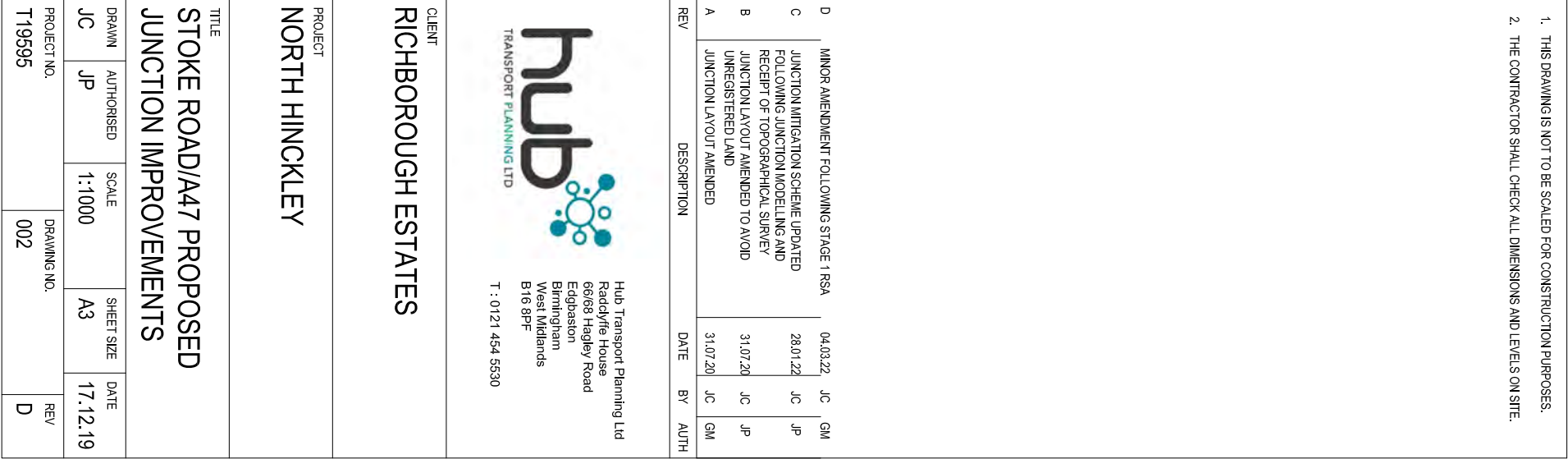
CLIENT
RICHBOROUGH ESTATES

PROJECT
NORTH HINCLEY

TITLE
PROPOSED SITE ACCESS LAYOUT
STOKE ROAD

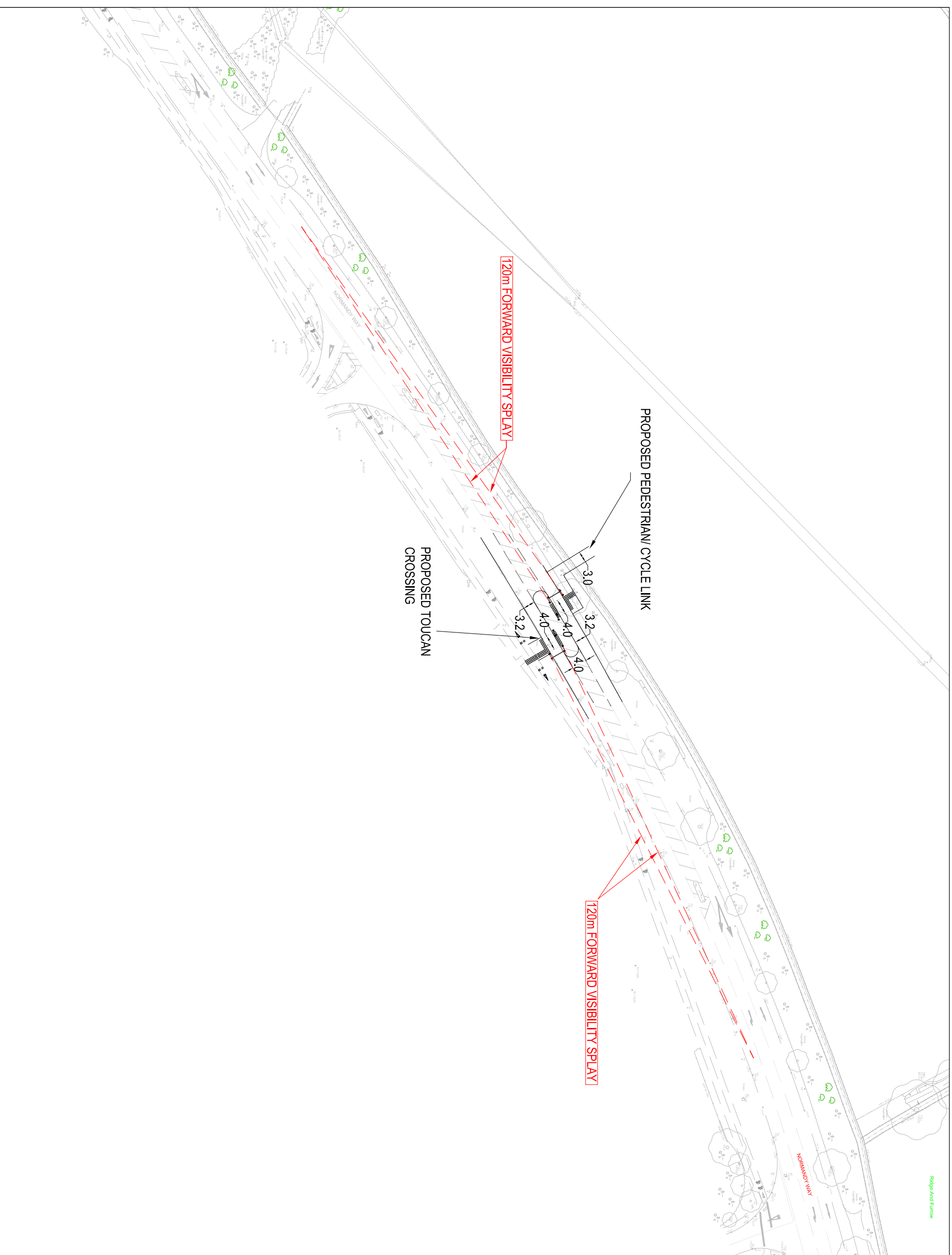
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JC	GM	1:1000	A3	17.12.19
PROJECT NO.	DRAWING NO.	REV		
T19595	001	C		

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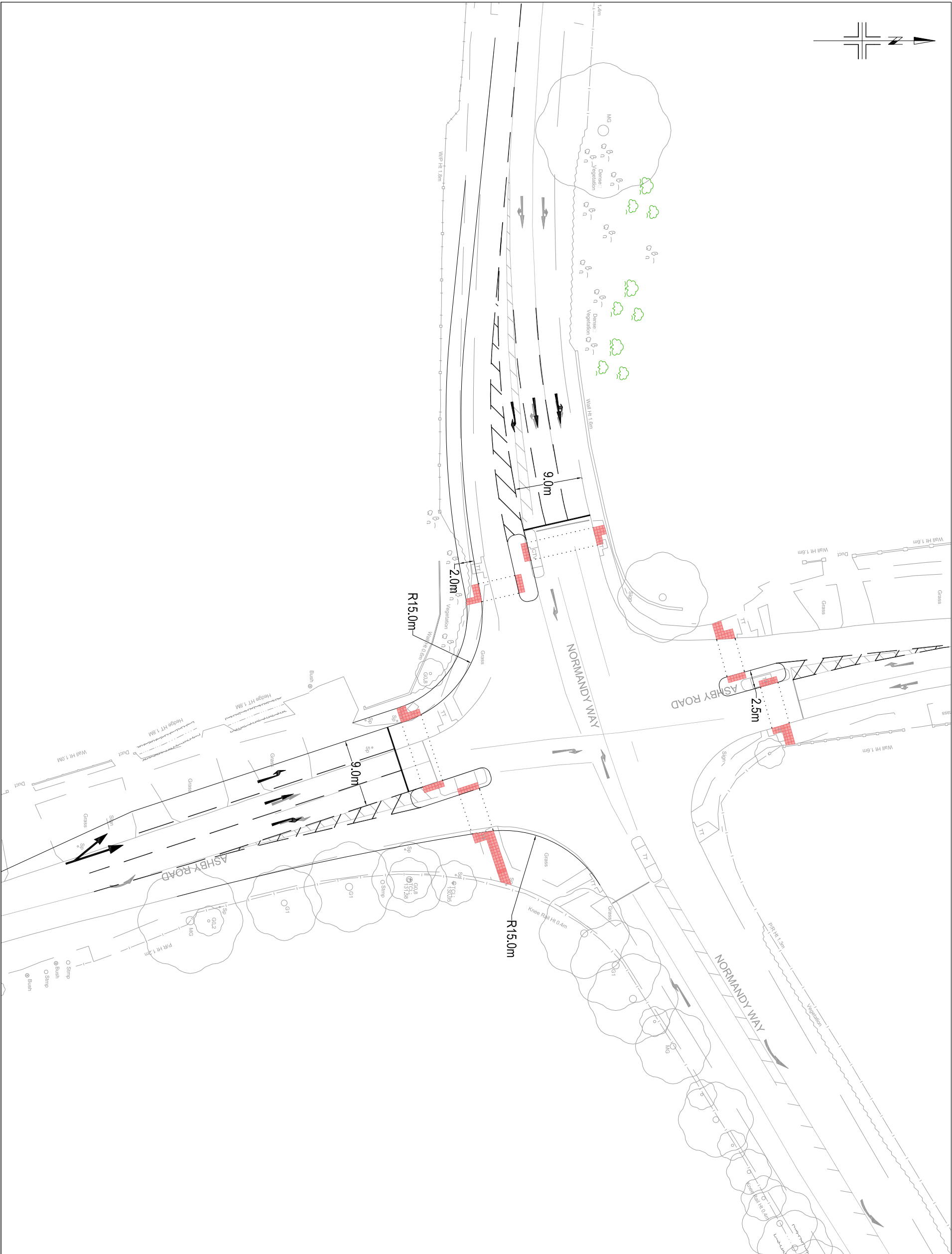
 Hub Transport Planning Ltd Raddlyffe House 66/68 Hagley Road Edgbaston Birmingham West Midlands B16 8PF T : 0121 454 5530			
CLIENT			
RICHBOROUGH ESTATES			
PROJECT			
NORTH HINCKLEY			
TITLE			
STOKE ROAD/A47 PROPOSED JUNCTION IMPROVEMENTS			
DRAWN	AUTHORISED	SCALE	SHEET SIZE
JC	JP	1:1000	A3
DATE			17.12.19
PROJECT NO.			REV
T19595			D
DRAWING NO.			002

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PROJECT				
NORTH HINCKLEY				
TITLE				
STOKE ROAD/A47 PROPOSED JUNCTION IMPROVEMENTS				
DRAWN	AUTHORISED	SCALE	SHEET SIZE	DATE
JC	GM	1:1000	A3	11.02.22
PROJECT NO.		DRAWING NO.		REV
T19595		006		-

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PROJECT

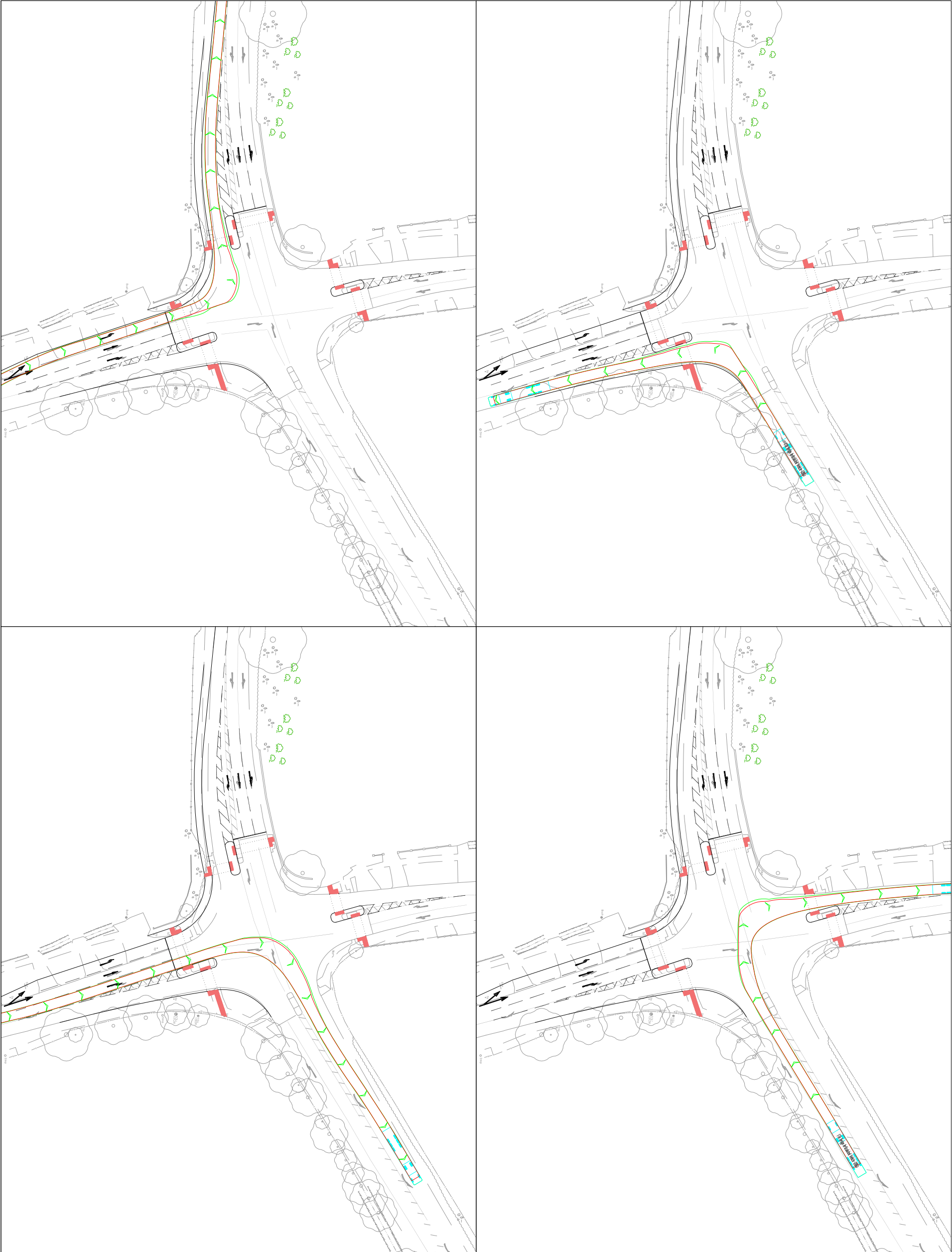
NORTH HINCLEY

TITLE

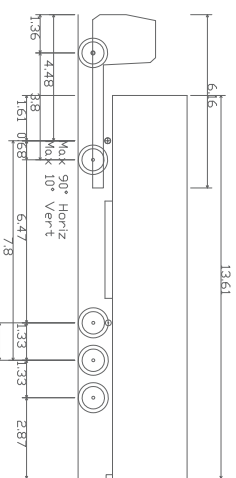
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PROJECT NO.	DRAWING NO.	REV
T19595	007	-



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FTA Design Articulated Vehicle (2016)
Overall Length 16.480m
Overall Width 2.550m
Overall Body Height 3.870m
Min Body Ground Clearance 0.515m
Max Track Width 2.470m
Lock to lock time 3.005
Kerb to Kerb Turning Radius 6.600m



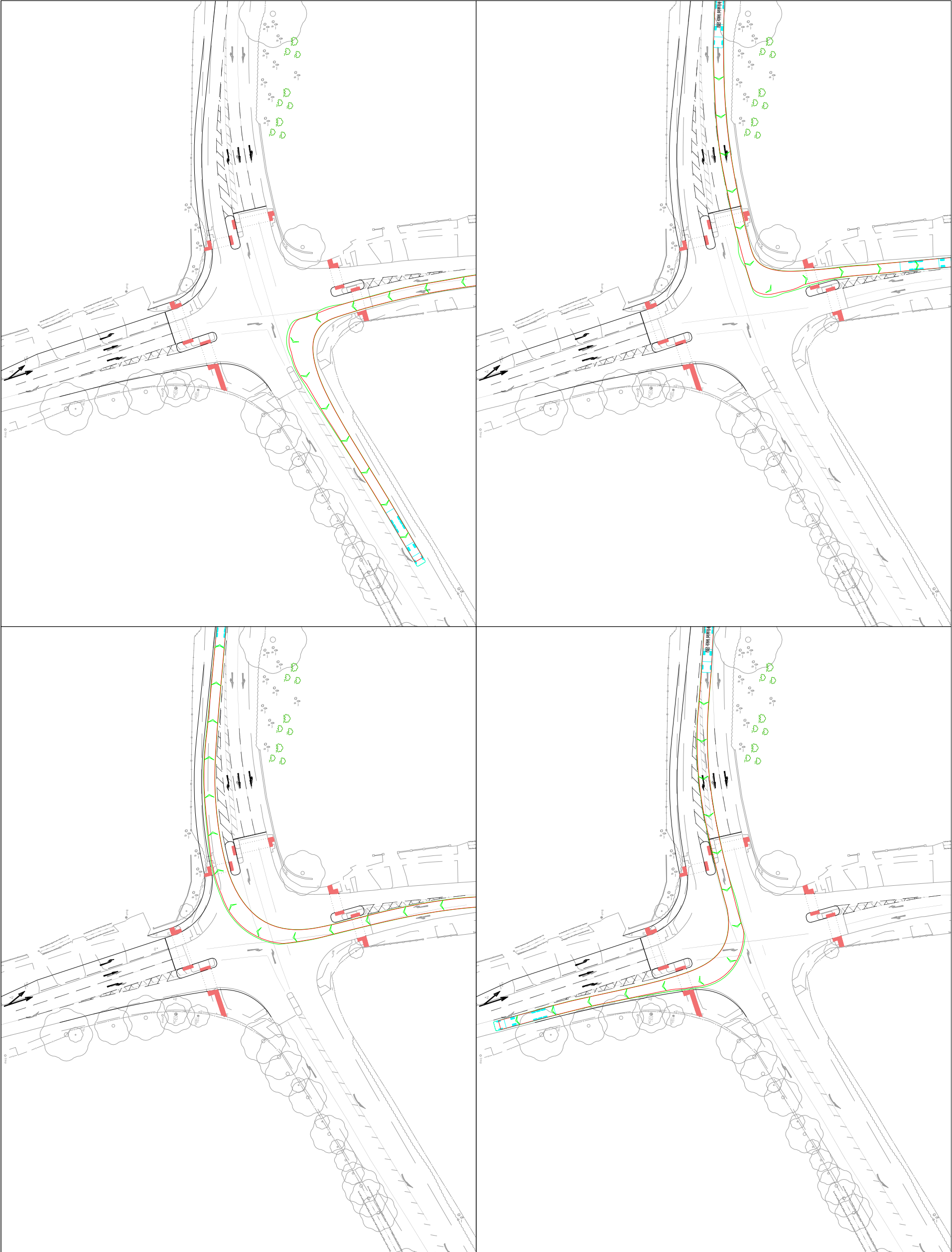
Hub Transport Planning Ltd
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Edgbaston
Birmingham
West Midlands
B16 8PF
T : 0121 454 5530

CLIENT
RICHBOROUGH ESTATES

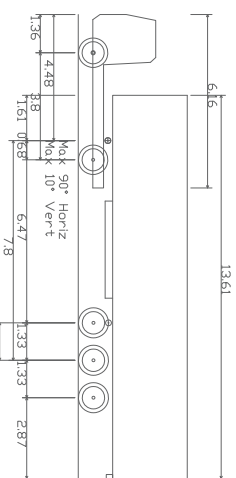
PROJECT
NORTH HINCKLEY

TITLE
ASHBY ROAD/A47 IMPROVEMENTS
SWEEP PATH ANALYSIS 01

DRAWN	AUTHORISED	SCALE	SHEET SIZE	DATE
ML	JC	1:1000	A3	15.02.22
PROJECT NO.	DRAWING NO.	REV		
T19595	008	-		



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FTA Design Articulated Vehicle (2016)
Overall Length 13.61m
Overall Width 2.550m
Overall Body Height 3.870m
Min Body Ground Clearance 0.515m
Max Track Width 2.470m
Lock to lock time 3.005s
Kerb to Kerb Turning Radius 6.600m

REV	DESCRIPTION	DATE	BY	AUTH



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Edgbaston
Birmingham
West Midlands
B16 8PF
T : 0121 454 5530

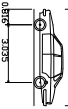
CLIENT
RICHBOROUGH ESTATES

PROJECT
NORTH HINCKLEY

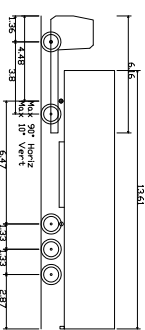
TITLE
ASHBY ROAD/A47 IMPROVEMENTS
SWEEP PATH ANALYSIS 02

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PROJECT NO.	DRAWING NO.	REV		
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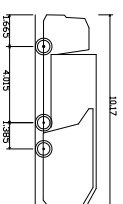
1. THIS DRAWING IS NOT TO BE SCALED FOR CONSTRUCTION PURPOSES.
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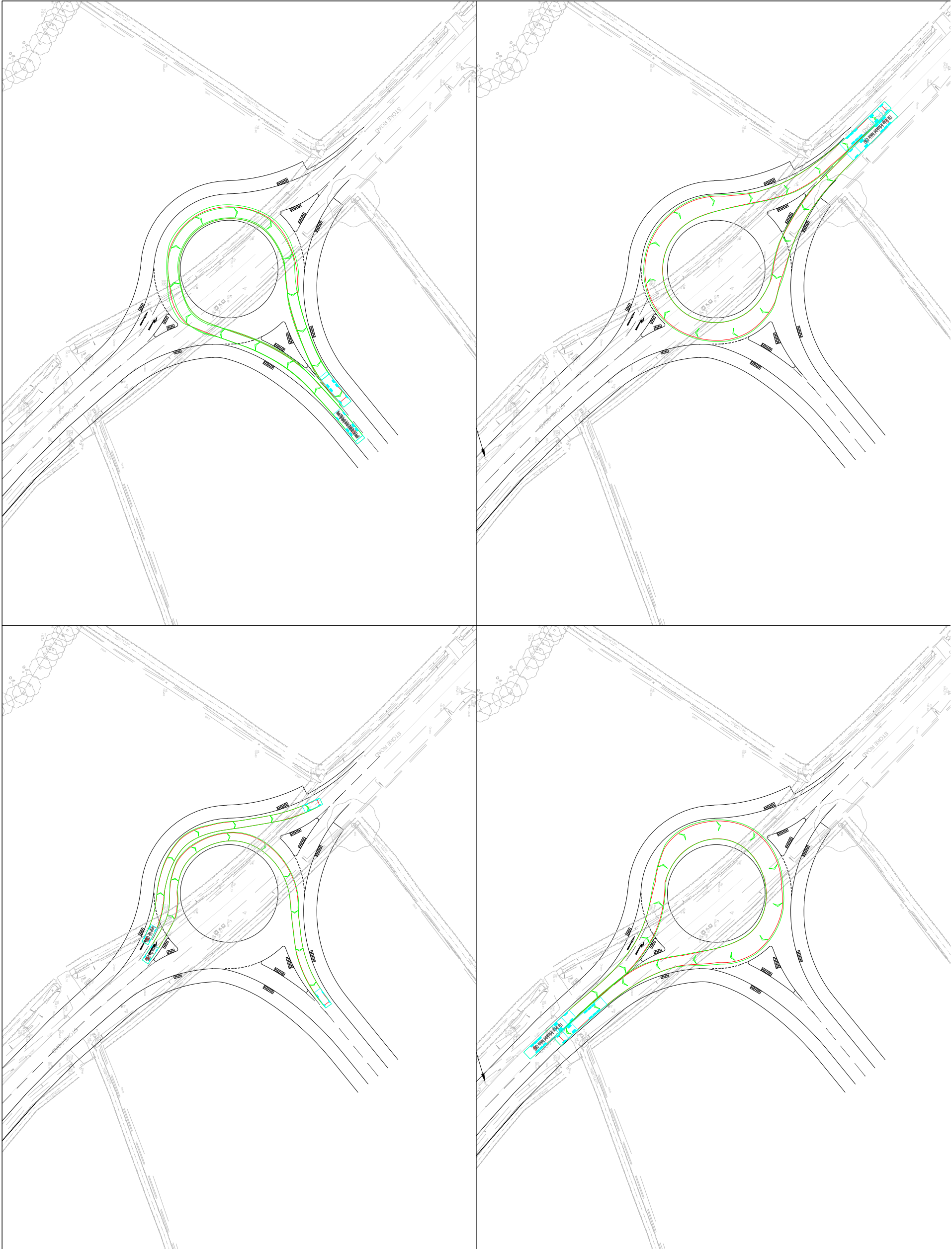
Large Car (2006)	5.072m
Overall Length	1.872m
Overall Width	1.525m
Min Body Height	1.831m
Min Body Ground Clearance	1.831m
Lock to lock time	4.005
Kerb to Kerb Turning Radius	5.900m



FTA Design Articulated Vehicle (2016)	16.480m
Overall Length	15.500m
Overall Width	2.530m
Min Body Height	2.470m
Min Body Ground Clearance	2.470m
Lock to lock time	3.005
Kerb to Kerb Turning Radius	6.600m

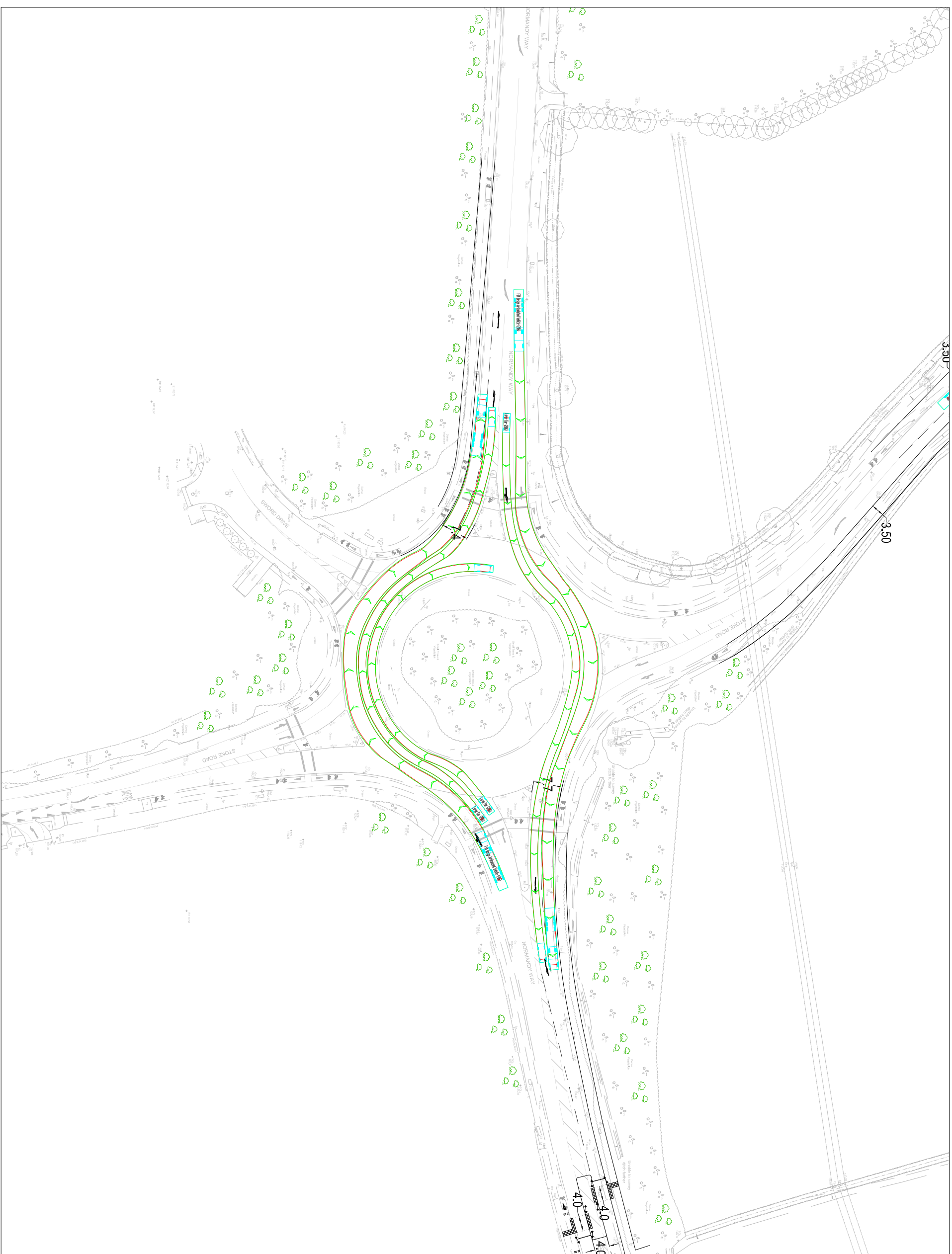
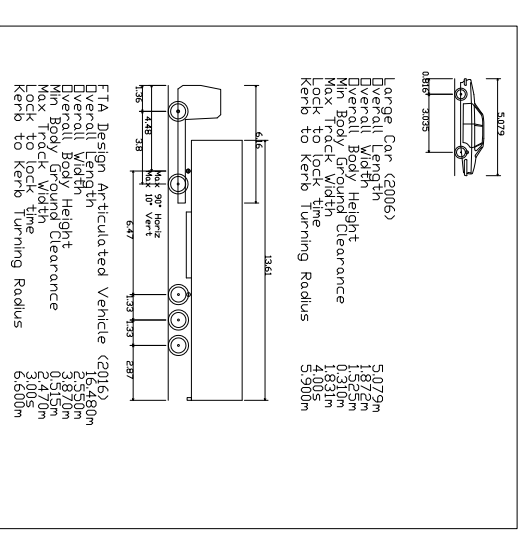


Phoenix 2 High Capacity Twin Pack 20 (with Elite 2 6x4 Chassis)	10.170m
Overall Length	9.330m
Overall Width	2.415m
Min Body Height	2.415m
Min Body Ground Clearance	2.415m
Lock to lock time	2.415m
Kerb to Kerb Turning Radius	10.300m



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CLIENT RICHBOROUGH ESTATES				
PROJECT NORTH HINCKLEY				
TITLE STOKE ROAD/A47 PROPOSED JUNCTION IMPROVEMENTS SWEPT PATH ANALYSIS				
DRAWN	AUTHORISED	SCALE	SHEET SIZE	DATE
JC	JP	1:1000	A3	17.12.19
PROJECT NO.	DRAWING NO.			REV
T19595	011			-

Appendix A

Traffic Count Data