



Plot SGR1
Transport Assessment
Section 2 of 4

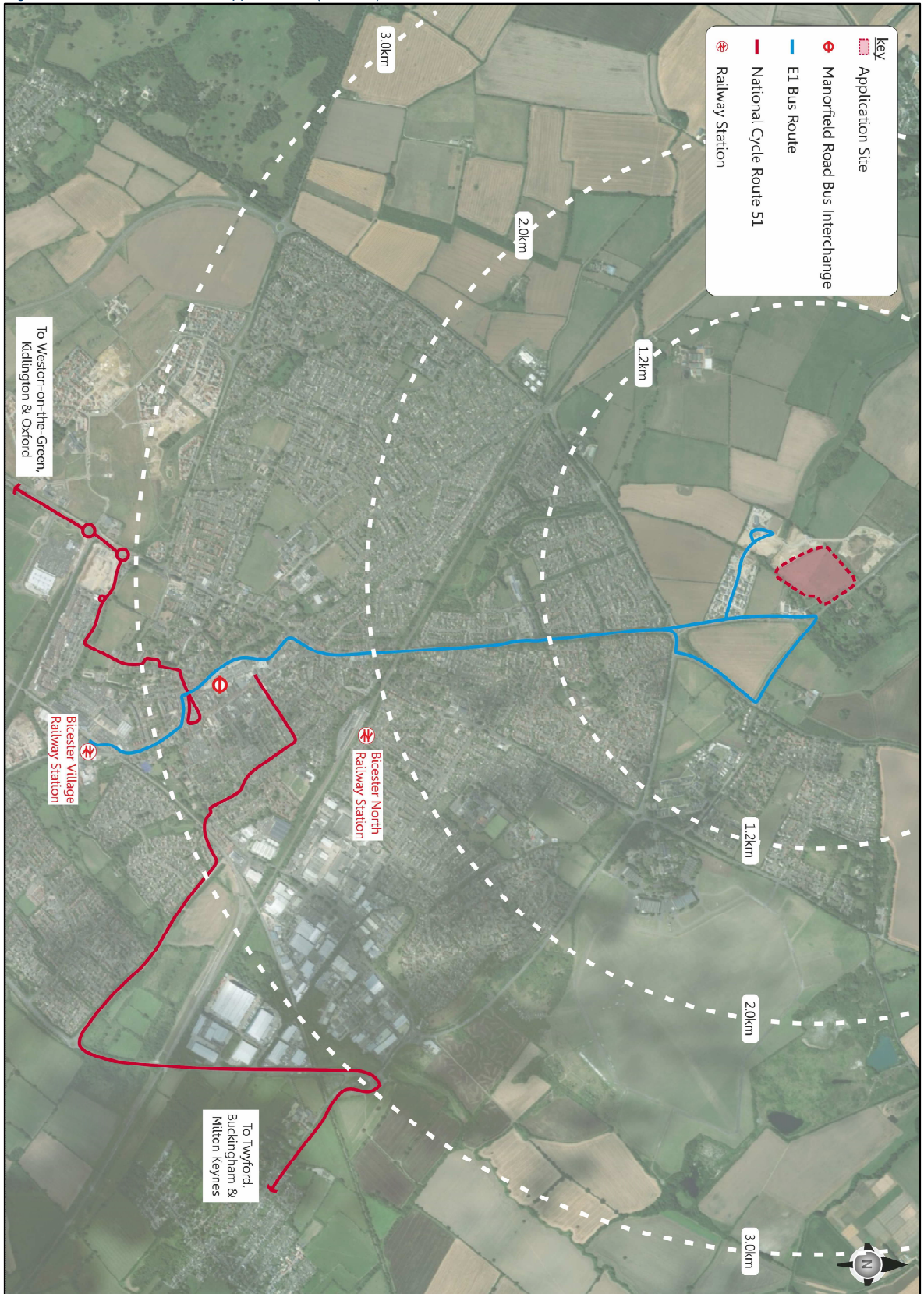
On behalf of **SGR (Bicester 1) Ltd**

Project Ref: 41436/5501 | Rev: V1.2 | Date: March 2018

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Figure 3.2: Sustainable Access Opportunities (Bicester)



Walking / Cycling

- 3.4.2 In terms of access on foot and by cycle to the application site through *Elmsbrook*, this will be achievable along Charlotte Avenue. At the time of writing, the southern section is accessible while the northern section along the frontage of the application site is under construction. Where Charlotte Avenue has been built, a footway with a minimum width of 2.0m is provided on either side of the carriageway with uncontrolled pedestrian crossing points provided with dropped kerbs and tactile paving located at regular intervals.
- 3.4.3 It is proposed, as part of the North West Bicester Masterplan, that Charlotte Avenue is designated a 'direct' walking and cycling route and as such, will act as fast commuter route through *Elmsbrook* when complete.
- 3.4.4 A new education facility (Gagle Brook Primary School) is proposed at *Elmsbrook* as part of the adjacent development scheme. It is located along Charlotte Avenue within a 5-minute walking distance of the application site and will be open by the time the proposed development at Plot SGR1 is built.
- 3.4.5 External to the Eco Town scheme, a shared footway / cycleway is provided alongside the northbound carriageway of B4100 Banbury Road which provides direct access on foot and by cycle into *Elmsbrook* in the south-eastern corner of the scheme and to the existing footway alongside the southern section of Charlotte Avenue.
- 3.4.6 A signalised crossing is provided on B4100 Banbury Road to the south of *Elmsbrook* to enable pedestrians and cyclists to cross the carriageway and head eastwards onto another shared footway / cycleway alongside the A4095 which is separated from the carriageway by a grass verge. The shared footway / cycleway continues south into Bicester town centre where further pedestrian and cyclist connections are provided towards the existing residential areas to the south.
- 3.4.7 Engagement with the wider client project team has confirmed that parishioners of St Laurence Church, located off B4100 Banbury Road immediately south of an existing priority T-junction access arrangement to Home Farm, currently make informal use of the access road to Home Farm as an informal parking area and then cross the B4100 Banbury Road on foot to access St Laurence Church. Some concern has been raised by the existing community given the lack of formal footway and / or pedestrian crossing facility at this location.
- 3.4.8 From a strategic access perspective, National Cycle Network Route 51 passes through Bicester town centre and runs towards Bletchley, Milton Keynes and Bedford to the north-east and Weston-on-the-Green, Kidlington and Oxford to the south-west. A number of local routes within Bicester connect to Route 51 including those on B4100 Banbury Road and the A4095.

Bus Services

- 3.4.9 In terms of access by public transport to the application site, a number of bus stops are already provided along Charlotte Avenue as part of the *Elmsbrook* development. These bus stops are provided with seating and a shelter to protect waiting passengers from inclement weather as well as Real Time Information which indicates the status of the bus service. They are also provided with cycle parking which demonstrates the inclusive sustainable access strategy of the Eco Town scheme.
- 3.4.10 The nearest active bus stop to the application site is located approximately 300m to the south on Charlotte Avenue; however, observations as part of the PBA site visit indicate that, while not active at the time of writing, a bus stop is located less than 200m from the site access.

- 3.4.11 The design and function of Charlotte Avenue incorporates bus priority by way of a bus-gate immediately north of the access to the application site. At this point the carriageway narrows to 4.0m limiting 2-way flow to buses only. This is illustrated in the General Arrangement drawings setting out the proposals for Charlotte Avenue as included in **Appendix D**.
- 3.4.12 The E1 bus service calls at the bus stops along Charlotte Avenue and provides a service from *Elmsbrook* to Bicester Village Station via Caversfield and Bicester town centre which takes approximately 15 minutes. It is operated by Grayline Coaches and forms part of Bus Route 2 proposed as part of the North West Bicester Masterplan.
- 3.4.13 The bus interchange within Bicester town centre itself where the E1 bus service calls is provided along Manorsfield Road. A total of 8 bus stands are provided where 10 bus services call. The bus services available from the Manorsfield Road bus interchange are shown in **Table 3.1**.

Table 3.1: Bus Services Available from Manorsfield Road

Operator	Service No.	Route	Daytime Frequency (mins)		
			Mon-Fri	Sat	Sun
OurBus Bartons	8	Middle Barton – Steeple Aston – Lower Heyford – King's End – Bicester	2 per day (Fri only)	N/A	N/A
Stagecoach	X5	Cambridge – Bedford – Milton Keynes – Buckingham – Bicester – Oxford	30	30	30
	S5	Arcott – Bicester – Oxford Parkway – John Radcliffe Hospital – Oxford	15	15	30
	26	Kingsmere Centre – Bicester	30	30	N/A
Thames Travel	25A	Oxford – Summertown – Bletchingdon – Upper Heyford – Bicester	60	60	N/A
Grayline Coaches	21	Chesterton – Bicester – King's End – Highfield	30	30	N/A
	E1	Elmsbrook – Bicester	30	30	N/A
Langston & Tasker	18	Buckingham – Padbury – Steeple Claydon – Twyford – Bicester	120	N/A	N/A

- 3.4.14 As can be seen from **Table 3.1**, bus services are provided from Bicester town centre to the majority of the surrounding areas. Included is the X5, which is an inter-city express service provided by Stagecoach, that provides connections from Bicester to the major towns and cities on the Cambridge to Oxford corridor.

Rail Services

3.4.15 Bicester is served by two mainline railway stations: Bicester North (2.15km from the application site) and Bicester Village (3.35km from the application site), both of which are managed by Chiltern Railways.

Bicester North

3.4.16 Bicester North is located on the Chiltern mainline between London Marylebone and Birmingham Snow Hill. The facilities at this station include storage provided for up to 65 cycles as well as parking bays which include EV charging points.

3.4.17 Although Bicester North is not accessible by a direct bus service from the application site, it is located within a 10-minute cycle and is therefore accessible by a sustainable mode of travel. The route from the application site to Bicester North is flat and includes a shared footway / cycleway provided along B4100 Banbury Road towards the town centre. A section of the route adjacent to the railway bridge is also segregated from vehicular traffic to enhance the pleasantness of the journey.

3.4.18 **Table 3.2** outlines the rail journey times to selected destinations from Bicester North Station.

Table 3.2: Rail Journey Times from Bicester North Station

Destination	Average Journey Time
London Marylebone	56 minutes
Beaconsfield	35 minutes
High Wycombe	28 minutes
Kings Sutton	10 minutes
Banbury	18 minutes
Leamington Spa	32 minutes
Warwick	36 minutes
Birmingham Moor Street	64 minutes
Birmingham Snow Hill	72 minutes

Bicester Village

3.4.19 Bicester Village is located to the south of Bicester adjacent to the Bicester Village outdoor shopping mall and is located on the Chiltern mainline between Oxford and London Marylebone. It is accessible from the application site with the E1 bus service as well as within a 15-minute cycle and is therefore accessible by a sustainable mode of travel.

3.4.20 The cycle route from the application site to Bicester Village is flat and includes a shared footway / cycleway provided along B4100 Banbury Road towards the town centre. A section of the route adjacent to the railway bridge is also segregated from vehicular traffic to enhance the pleasantness of the journey.

3.4.21 **Table 3.3** outlines the rail journey times to selected destinations from Bicester Village Station.

Table 3.3: Rail Journey Times from Bicester Village Station

Destination	Average Journey Time
Oxford	20 minutes
Oxford Parkway	9 minutes
Islip	6 minutes
Haddenham & Thame Parkway	12 minutes
High Wycombe	24 minutes
London Marylebone	48 minutes

3.4.22 As can be seen from **Table 3.3**, the regular services throughout the day ensure a good range of destinations are readily accessible from Bicester North and Bicester Village rail stations. The employment, recreational and shopping opportunities within Oxford are available within a 30-minute rail journey from Bicester. There is a service approximately every 15 minutes to Banbury, Birmingham and London from Bicester North station.

3.5 Highway Network

Charlotte Avenue

3.5.1 Charlotte Avenue is a proposed 6.0m-wide internal access road through the Exemplar development scheme. This is illustrated in the General Arrangement drawings setting out the proposals for Charlotte Avenue as included in **Appendix D**.

3.5.2 From PBA observations, it is evident that while the southern section of Charlotte Avenue is accessible for vehicular traffic, the northern section along the frontage of the application site is currently under construction.

3.5.3 Where Charlotte Avenue is complete, access onto B4100 Banbury Road is provided to the south-east by means of a priority T-junction. It is subject to a speed limit of 20mph with a gateway feature provided at the access to encourage drivers to observe this speed limit. It also incorporates conventional traffic calming features to ensure that the route does not dominate the area with vehicular traffic and become an obstruction to movement by other travel modes. It includes local narrowing of the carriageway in places to a minimum width of 3.5m along with raised table junctions to slow vehicular traffic down.

3.5.4 As part of the North West Bicester Masterplan, it is proposed that when built, a 4.0m-wide bus only link will be provided along the northern section to prioritise bus movement and limit through flow traffic. In addition to this, its T-junction with B4100 Banbury Road will be upgraded to a signalised junction.

B4100 Banbury Road

- 3.5.5 B4100 Banbury Road runs adjacent to the application site to the east in the local context between the A43 to the north and its junction with the A4095 to the south where it continues towards its convergence with Buckingham Road and Field Street via a roundabout junction in the centre of Bicester.
- 3.5.6 The northern section of B4100 Banbury Road to the north of the roundabout junction with the A4095 is predominately rural in nature and is subject to a speed limit of 40mph until just to the south of its junction with Bainton Road where the national speed limit applies. There is an existing access to Home Farm off B4100 Banbury Road by way of a priority T-junction located to the north of St Laurence Church.
- 3.5.7 The southern section is more urban in nature with the presence of footways and traffic calming features. This section of B4100 Banbury Road is subject to a speed limit of 40mph then 30mph towards the town centre.

A4095 Howes Lane / A4095 Lords Lane

- 3.5.8 A4095 is a single lane carriageway that runs to the north-west and north of Bicester as a town centre by-pass route between B4030 Middleton Stoney Road and its convergence with the A4421 and Buckingham Road via a roundabout junction.
- 3.5.9 The section of the A4095 to the south of the railway line known as Howes Lane is rural in nature and is subject to a speed limit between 40mph and 50mph with predominantly no street lighting and no footways or adjacent path. The section to the north of the railway line is subject to a speed limit of 50mph with street lighting provided.

Baseline Traffic Flows and Speeds

- 3.5.10 Automatic Traffic Count surveys were undertaken by a 3rd-party traffic survey company on behalf of PBA along B4100 Banbury Road and the A4095 for a 7-day period between 22 February 2018 and 28 February 2018 to determine baseline traffic flows and vehicle speeds across the local highway network. The 3rd-party ATC survey data including plans illustrating the survey locations is included in **Appendix E**.
- 3.5.11 **Table 3.4** outlines the baseline traffic flows that were recorded by the Automatic Traffic Count surveys for the AM and PM peak hour as well as for the 18-hour and 24-hour periods while **Table 3.5** includes the 85th percentile vehicle speeds along these highway links.

Table 3.4: 2018 Baseline Traffic Flows on Local Highway Network

Link Reference	Link Description	2016 Baseline Traffic Flows			
		AM Peak	PM Peak	18-hour	24-hour
1	B4100 to the north of Charlotte Avenue	1238	1263	13214	13728
2	B4100 to the south of Charlotte Avenue	1276	1336	13630	14093
3	A4095 to the west of B4100	1367	1356	14068	14316

Table 3.5: Recorded 85th Percentile Speeds for Local Highway Network

Link Reference	Link Description	85 th Percentile Speeds	
		Northbound	Southbound
1	B4100 to the north of Charlotte Avenue	45.9 mph	45.4 mph
2	B4100 to the south of Charlotte Avenue	41.3 mph	39.6 mph
3	A4095 to the west of B4100	41.9 mph	42.6 mph

3.6 Personal Injury Collision Data

3.6.1 Personal Injury Collision (PIC) data for the local highway network was obtained from Oxfordshire County Council. The data spans the 60-month period between 1 January 2013 and 31 December 2017. The full PIC data output is included as **Appendix F**.

3.6.2 The collisions are classified into three injury categories: Slight, Serious and Fatal. The definition of each of these categories is provided below:

- Slight Injury: Injuries of a minor nature, such as sprains, bruises, or cuts not judged to be severe, or slight shock requiring only roadside attention (medical treatment is not a pre-requisite for an injury to be defined as slight).
- Serious Injury: Injuries for which a person is detained in hospital, as an in-patient, or any of the following injuries, whether or not a person is detained in hospital; fractures, concussion, internal injuries, severe cuts and lacerations, severe general shock requiring medical treatment and injuries which result in death 30 days after the collision. The serious category, therefore, covers a very broad range of injuries.
- Fatal Injury: Injuries which cause death either immediately or any time up to 30 days after the collision.

3.6.3 The data obtained indicates a total of 7 collisions occurred during this period within the study area. Of these 7 collisions, 4 were 'slight' in nature and 3 were 'serious' in nature.

3.6.4 A summary of the annual collision data for the local highway network is shown in **Table 3.6**. This is broken down to show the total collisions and in addition, the vulnerable road users (pedestrians and cyclists) involved in the collisions. Further additional information with regards to the collisions which involved vulnerable road users is included in **Table 3.7**. The years for the PIC data are:

- Year 1: 01/01/2013 – 31/12/2013;
- Year 2: 01/01/2014 – 31/12/2014;
- Year 3: 01/01/2015 – 31/12/2015;
- Year 4: 01/01/2016 – 31/12/2016; and
- Year 6: 01/01/2017 – 31/12/2017.

Table 3.6: PIC Summary

Collisions	Injury Severity	Year					Total
		2013	2014	2015	2016	2017	
Total	Fatal	0	0	0	0	0	0
	Serious	2	0	0	1	0	3
	Slight	1	0	0	2	1	4
Pedestrian	Fatal	0	0	0	0	0	0
	Serious	0	0	0	1	0	1
	Slight	0	0	0	0	0	0
Cyclist	Fatal	0	0	0	0	0	0
	Serious	0	0	0	0	0	0
	Slight	0	0	0	0	1	1

Table 3.7: Nature of Personal Injury Collisions with Vulnerable Road Users

Date	Nature of Personal Injury Collision	Severity
26/11/2016	Pedestrian crossing at signalised crossing struck by car. Light was green for car.	Serious
07/07/2017	No description provided by OCC. A cycle and a car collided.	Slight

3.6.7 A review of this PIC data and information on the collision factors indicates that all 7 collisions that occurred in the study area for the 60-month period were as a result of driver or pedestrian error and do not point to any specific local highway safety issues.

3.7 Summary

3.7.1 The chapter has been prepared through reference to a range of data sources and describes the existing conditions local to Plot SGR1 in the context of the delivery of the wider North West Bicester Masterplan including the adjoining *Elmsbrook* development.

3.7.2 This review has confirmed that the application site will be accessible on foot and by cycle as well as by local bus services enabling connections to a range of local facilities and amenities and that, through review of available traffic and PIC data, there are no known underlying existing highway issues that would preclude delivery of the development proposals.

4 Development Proposal and Access Strategy

4.1 Overview

4.1.1 This chapter of the TA provides a description of the development proposal and outlines the access strategy for the site for both vehicles and sustainable modes of transport. It also considers the strategy for construction traffic access during the construction phase of the development.

4.2 Development Proposal

4.2.1 The proposal is to provide up to 75 residential units with a single point of vehicular access along Charlotte Avenue which is to be built out as part of the Exemplar development, as well as a footpath / cycle route through the site adjacent to the residential units. The development will also include open space with an orchard and allotments with an informal parking area provided for these users and Parishioners of St Laurence Church; this will be accessible via an existing priority T-junction serving Home Farm.

4.2.2 The indicative masterplan for the development is included in **Appendix B**.

Cycle Parking

4.2.3 It is proposed that cycle parking will be provided for each residential unit as part of the development in accordance with the standards as set out in the adopted Cherwell Local Plan 2011-2031 document which states 1 space for each 1-bedroom unit and 2 spaces for each unit with 2 or more bedrooms. Visitor cycle parking provision will also be provided in accordance with these local standards, with 1 cycle stand provided for every 2 units.

Vehicular Parking

4.2.4 Oxfordshire's Residential Road Design Guide (2003; amended in 2015, Appendix 6) states that one allocated car parking space per dwelling will be acceptable at the North West Bicester Eco Town. This may be on plot or off plot. Off plot provision may be grouped in a parking court provided the courts are small, close by, secure and conveniently accessed. Additional unallocated off plot car parking may also be provided up to a maximum of one space per dwelling.

2.1.1 Provision for car parking on site will be made in accordance with the standards and policy set out by Cherwell District Council and Oxfordshire County Council. Resident car parking will be provided on plot in garages or on driveways. The following principles will govern parking provision:

- Parking to be provided as close to each property as possible, and is safe and easy to use;
- Parking is generally expected to be provided in a combination of on plot, off plot and on street spaces;
- Adopting a flexible approach to parking design and provision, focusing on optimum design and layout to meet the needs of residents, pedestrians and cyclists; and
- Reducing the visibility of the car in the street scene through careful design, robust boundary treatments, and unobtrusive garaging and use of car ports.

4.2.5 It is also proposed that space is to be provided in the northern corner of the application site, adjacent to the allotment area, for an informal parking area for use by Parishioners and users of the allotments. This proposal has been discussed with local stakeholders and improves the existing parking arrangements for this important local community facility.

4.3 Access Strategy

- 4.3.1 The access strategy for the proposed development builds upon the aspirations of the North West Bicester Masterplan and Supplementary Planning Document. A vehicular access is provided along Charlotte Avenue while the development also encourages travel by sustainable modes of transport both within the Eco Town and external towards Bicester town centre.

Walk / Cycle Access

- 4.3.2 It is proposed pedestrian and cycle access into the site will be taken from the adjacent development. A footway will be provided on both sides of the primary access road to enable access on foot from Charlotte Avenue while pedestrian links to the adjacent developments are proposed along the north-western and south-western frontages of the site.
- 4.3.3 In addition to these connections, a recreational footpath / cycleway proposed through the site adjacent to the residential units will enable access on foot and by cycle from residential areas to the north and south-west. The detailed design of these routes would be established at the reserved matters stage.
- 4.3.4 The proposals will also allow for the future provision of a pedestrian link through Plot SGR1 towards St Laurence Church located across B4100 Banbury Road. The applicant will facilitate and safeguard the area for a future potential pedestrian crossing facility across B4100 Banbury Road responding to existing limitations of provision of access to this important community facility, subject to ongoing discussions with Oxfordshire County Council and S106 negotiations.
- 4.3.5 This strategy will provide strong pedestrian and cycle links from the development to the wider Eco Town and surrounding areas and supports the wider walking and cycling access strategy of the North West Bicester Masterplan.

Public Transport Access

- 4.3.6 The location of the residential units proposed as part of the development will be well within a 400m walking distance of the E1 bus route which runs along Charlotte Avenue through the adjacent Exemplar development scheme and into Bicester town centre.
- 4.3.7 The applicant is willing to provide an appropriately scaled financial contribution toward the delivery of the proposed local bus service improvements consistent with other local development sites, subject to ongoing discussions with Oxfordshire County Council and S106 negotiations.
- 4.3.8 This strategy will provide strong public transport links from the development to the wider Eco Town and surrounding areas and therefore supports the wider public transport access strategy of the North West Bicester Masterplan.

Vehicle Access

- 4.3.9 It is proposed vehicular access to the development site will be provided along Charlotte Avenue using an existing T-junction arrangement built out as part of the Exemplar development scheme (10/01780/hybrid). The General Arrangement [Sheet 2] Drawing 7239 Issue F (Hyder Consulting, June 2015) prepared to support the 10/01780/hybrid planning application is included in **Appendix D**.

- 4.3.10 The design of the new internal access road will include provision of a 5.5m carriageway and minimum 1.8m footway on either side of the carriageway, in accordance with local design standards. The internal street network will be designed in accordance with local guidance although remain subject to detailed design at the reserved matters stage (with further details set out within the accompanying Design and Access Statement).
- 4.3.11 The development will also include open space with an orchard and allotments with an informal parking area provided for these users and Parishioners of St Laurence Church; this will be accessible via an existing priority T-junction serving Home Farm.

Travel Planning

- 4.3.12 A Travel Plan has been prepared by PBA under separate cover to support the outline planning application for development at Plot SGR1 alongside this TA. The applicant is committed towards the delivery of this Travel Plan which will be secured by way of a planning condition.
- 4.3.13 The Travel Plan demonstrates how the design of the development will encourage sustainable travel choices by future residents and responds to the travel planning requirements of the North West Bicester Supplementary Planning Document.

Construction Traffic

- 4.3.14 The development is expected to come forward over a single-phased construction programme of between 18 and 30 months with construction works currently anticipated to commence on-site in Quarter 4 of 2018 and, assuming a worst-case programme, likely to be complete in Quarter 2 of 2021.
- 4.3.15 As part of the construction phase of the development, a Construction Traffic Management Plan (CTMP) will be a condition of the outline planning consent and will be prepared before commencement of construction works. It will be agreed with both the local planning authority and local highway authority and will describe the measures to prevent, reduce, and where possible, off-set the environmental effects from construction traffic activity.
- 4.3.16 It is proposed that the CTMP would where possible, route construction traffic along the strategic highway network to limit any associated impact on the residential and town centre areas of Bicester therefore to reduce the impact of construction traffic on the town centre.
- 4.3.17 It is proposed to provide a temporary construction access along B4100 Banbury Road to the north of the site using an existing field gate with all construction traffic using this access to the site.
- 4.3.18 The CTMP will form part of the Construction Environment Management Plan (CEMP) for the proposed development and will be implemented by all contractors associated with the construction of the proposed development. The CEMP will include measures to manage construction traffic on-site as part of a CTMP.
- 4.3.19 The CEMP will outline the following transport specific details:
- site logistics;
 - working hours;
 - maintaining access;
 - general site layout (including accesses and routes);
 - construction traffic; and
 - designated access routes.

5 Development Travel Demand

5.1 Introduction

5.1.1 This chapter of the TA provides an overview of the trip generation methodology that has been used to forecast the predicated travel demand for the proposed development by all modes of transport. The methodology is consistent with that set out in the Access & Travel Strategy (Hyder Consulting, June 2014) document prepared to support the North West Bicester Masterplan.

5.2 Development Travel Demand

Person Trip Rates

5.2.1 The Access & Travel Strategy (Hyder Consulting, June 2014) document sets out trip rates agreed with Oxfordshire County Council to inform transport assessment work for development across the North West Bicester site.

5.2.2 The trip rates set out are *person* trip rates derived from the TRICS database which equate to the total number of trips generated by each land use for all modes of travel. The trip rates derived are for both the AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00) as well as a 12 hour (07:00-19:00) assessment period. The 85th percentile trip rates are to be used for the residential development to ensure a robust assessment for traffic modelling purposes. The residential person trip rates are shown in **Table 5.1**.

Table 5.1: 85th %ile Residential Person Trip Rates per 1 Dwelling

Residential Person Trips	Trip Rates (per 1 Dwelling)		
	IN	OUT	Two-Way
AM Peak – Houses Privately Owned	0.384	1.058	1.442
AM Peak – Affordable Houses	0.307	0.846	1.154
PM Peak – Houses Privately Owned	0.778	0.517	1.295
PM Peak – Affordable Houses	0.622	0.414	1.036
12-hour Period – Houses Privately Owned	4.843	5.939	10.782
12-hour Period – Affordable Houses	3.874	4.751	8.626

Person Trip Generation

5.2.3 The development proposal for Plot SGR1 is for 75 residential units will comprise 52 marketable units (70%) and 23 affordable units (30%). The total number of person trips for the proposed development using the trip rates in **Table 5.1** is shown in **Table 5.2**.

Table 5.2: Residential Person Trip Generation (75 Units)

75 Units	AM Peak			PM Peak			12-hour Period		
	IN	OUT	Two-Way	IN	OUT	Two-Way	IN	OUT	Two-Way
Houses Privately Owned (52)	20	55	75	40	27	67	252	309	561
Affordable Houses (23)	7	19	27	14	10	24	89	109	198
Total	27	74	102	54	37	91	341	418	759

5.3 Development Trips Journey Purpose

5.3.1 The Access & Travel Strategy (Hyder Consulting, June 2014) document provides journey purpose data of residents in different time periods from the 2008/12 National Travel Survey and quantifies the proportion between journey purpose categories by hour period over the day. The journey purpose categories are identified as follows:

- commuting;
- business;
- education;
- shopping;
- other services; and
- visiting friends and relatives.

5.3.2 The above journey purposes have been further grouped into 3 core categories to be able to consider how these may vary in terms of trip origins / destinations and modal split. This is confirmed and quantified for the AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00) assessment periods in **Table 5.3**.

Table 5.3: Journey Purpose of Residents (2008/12 National Travel Survey Table NTS0502)

Journey Purpose	Included Categories	AM (08:00-09:00)	PM (17:00-18:00)
Work / Employment	'Commuting' & 'Business'	27%	37%
Education	'Education'	48%	4%
Other	'Shopping', 'Other Services' & 'Visiting Friends / Relatives'	24%	60%
TOTAL		100%	100%

5.3.3 The residential person trips by journey purpose are shown in **Table 5.4**.

Table 5.4: Residential Trips by Journey Purpose

Journey Purpose	AM Peak			PM Peak		
	IN	OUT	Two-Way	IN	OUT	Two-Way
Work / Employment	7	20	28	20	14	34
Education	13	36	49	2	1	3
Other	7	18	25	32	22	54
Total	27	74	102	54	37	91

5.4 Development Trips Modal Split

Work / Employment Trips

- 5.4.1 As outlined in **Table 5.4**, it is estimated that 28 two-way trips in the AM peak and 34 two-way trips in the PM peak will be made for work / employment. To estimate the appropriate modal split for employment trips, journey to work data from the 2011 Census has been considered for the ward of Cherwell 012 (excluding those who work from home). The results of this Census data are summarised in **Table 5.5** and included in **Appendix G**.

Table 5.5: 2011 Census Journey to Work Data (Method of Travel to Work from Cherwell 012) for Employment Trip Purpose

Method of Travel	Baseline Mode Share
Underground, Metro, Light Rail or Tram	0.1%
Train	4.4%
Bus, Minibus or Coach	4.3%
Taxi	0.1%
Motorcycle, Scooter or Moped	0.6%
Driving a Car or Van	71.6%
Passenger in a Car or Van	6.2%
Bicycle	3.4%
On Foot	9.2%
Other	0.2%
TOTAL	100%

- 5.4.2 The 2011 Census data shown in **Table 5.5** demonstrates that 71.6% of people drive to work.
- 5.4.3 When the mode share in **Table 5.5** is applied to person trips for work / employment shown in **Table 5.4**, the trips by all modes can be calculated as shown in **Table 5.6**.

Table 5.6: Baseline Trips for Employment Trip Purpose by All Modes

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Underground, Metro, Light Rail & Tram	0	0	0	0	0	0
Train	0	1	1	1	1	2
Bus, Minibus or Coach	0	1	1	1	1	2
Taxi	0	0	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0	0	0
Driving a Car or Van	5	14	19	14	10	24
Passenger in a Car or Van	0	1	1	1	1	2
Walking and Cycling	1	3	4	3	2	5
Other	0	0	0	0	0	0
Total	6	20	26	20	15	35

Education Trips

- 5.4.4 As outlined in **Table 5.4**, it is estimated that 49 two-way trips in the AM peak and 3 two-way trips in the PM peak will be made for education. To estimate the appropriate modal split for trips made for education purposes, a combination of 2011 Census data and the National Travel Survey has been used.
- 5.4.5 The 2011 Census data has been used to estimate the number of primary and secondary school children at the development. For the Cherwell 012 ward, 54% of school aged children attend primary school while 46% of school aged children attend secondary school. These proportions are shown in **Table 5.7**.

Table 5.7: Percentage of School Aged Children in Each Type of School

School Type	Percentage of Children in Cherwell 012 of this Age
Primary School	54%
Secondary School	46%

- 5.4.6 These proportions have been used to estimate the number of trips made for each education purpose: 26 two-way trips for primary schools and 23 two-way trips for secondary schools in the AM peak; and 2 two-way trips in for primary schools and 1 two-way trip for secondary schools in the PM peak.
- 5.4.7 The National Travel Survey was then used to give the mode split for the two education purposes. It has been assumed that all primary school aged children will attend Gagle Brook Primary School in Elmsbrook (approximately 0.2 miles from the centre of the application site), while all secondary school children will attend the secondary school within the Eco Town proposed as part of the North West Bicester Masterplan (approximately 1.1 miles from the centre of the application site).
- 5.4.8 This assumption has been based on review of the school catchment areas and indicates that primary school children will travel less than a mile, while secondary school children will travel between one and two miles. The mode shares for these parameters are available in the National Travel Survey (NTS0614) and are summarised in **Table 5.8**.
- 5.4.9 Oxfordshire's Home to School Transport Policy states that children under eight years of age travelling more than two miles will be eligible for free transport; likewise, any child aged eight or over travelling more than three miles to school is also eligible for free transport. Oxfordshire also provide free transport to children whose route to school has been assessed as unsafe to walk, even if accompanied by a responsible adult. These parameters are applicable where the child is attending the nearest available school, which is the two schools mentioned above for the application site. It is expected that the walking routes from the development to both schools will be safe, and shorter than the threshold to provide free transport from the County.

Table 5.8: National Travel Survey Education Mode Share for Education Trip Purpose

Mode	Primary School Mode Share Less than 1 mile	Secondary School Mode Share 1-2 miles
Walk or Cycle	80%	62%
Car or Van	20%	26%
Bus	0%	11%
Other	0%	1%
Total	100%	100%

- 5.4.10 Applying the mode splits in **Table 5.8** to the person trips in **Table 5.4** provides education trips by mode share as shown in **Table 5.9**.

Table 5.9: Baseline Trips for Education Purposes by All Modes

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Walking or Cycling	10	26	36	2	1	3
Car / Van	3	8	11	0	0	0
Bus	1	2	3	0	0	0
Other	0	0	0	0	0	0
Total	14	36	50	2	1	3

Other Trip Purpose

5.4.11 **Table 5.4** indicates that 25 two-way trips in the AM peak and 54 two-way trips in the PM peak are made for other journey purposes. It has been assumed that journeys made for other purposes will have the same mode share as that of employment; therefore, the mode share from 2011 Census journey to work data for the Cherwell 012 ward. Applying the data shown in **Table 5.10** to the trips for other purposes in **Table 5.4**, the trips by all modes for other purposes is shown in **Table 5.11**.

Table 5.10: 2011 Census Journey to Work Data (Method of Travel to Work from Cherwell 012) and Target Mode Share for Other Trips

Method of Travel	Baseline Mode Share
Underground, Metro, Light Rail or Tram	0.1%
Train	4.4%
Bus, Minibus or Coach	4.3%
Taxi	0.1%
Motorcycle, Scooter or Moped	0.6%
Driving a Car or Van	71.6%
Passenger in a Car or Van	6.2%
Bicycle	3.4%
On Foot	9.2%
Other	0.2%
TOTAL	100%

Table 5.11: Baseline Trips for Other Purposes by All Modes

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Underground, Metro, Light Rail & Tram	0	0	0	0	0	0
Train	0	1	1	1	1	2
Bus, Minibus or Coach	0	1	1	1	1	2
Taxi	0	0	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0	0	0
Driving a Car or Van	5	13	18	23	16	39
Passenger in a Car or Van	0	1	1	2	1	3
Walking and Cycling	1	2	3	4	3	7
Other	0	0	0	0	0	0
Total	6	18	24	31	22	53

5.5 Total Development Multi-Modal Trip Generation

5.5.1 By combining the information in **Tables 5.6, 5.9 & 5.11**, an estimate for the total multi-modal trip generation of the development proposals for Plot SGR1 is shown in **Table 5.12**.

Table 5.12: Total Baseline Multi-Modal Trip Generation

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Underground, Metro, Light Rail & Tram	0	0	0	0	0	0
Train	0	2	2	2	2	4
Bus, Minibus or Coach	1	4	5	2	2	4
Taxi	0	0	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0	0	0
Driving a Car or Van	13	35	48	37	26	63
Passenger in a Car or Van	0	2	2	3	2	5
Walking and Cycling	12	31	43	9	6	15
Other	0	0	0	0	0	0
Total	26	74	100	53	38	91

5.5.2 The baseline total trip generation outlined in **Table 5.12** has been used to calculate the overall baseline mode share for the application site. This has been outlined in **Table 5.13**.

Table 5.13: Total Baseline and Target Mode Share for All Trips

Method of Travel	Baseline Mode Share (AM Peak)	Baseline Mode Share (PM Peak)
Underground, Metro, Light Rail or Tram	0%	0%
Train	2%	4%
Bus, Minibus or Coach	5%	4%
Taxi	0%	0%
Motorcycle, Scooter or Moped	0%	0%
Driving a Car or Van	48%	69%
Passenger in a Car or Van	2%	5%
Walking or Cycling	43%	16%
Other	0%	0%
TOTAL	100%	100%

- 5.5.3 The development peak period multi-modal travel demand has been determined based upon the methodology set out in the Access & Travel Strategy (Hyder Consulting, June 2014) document prepared to support the North West Bicester Masterplan.
- 5.5.4 The resulting predicted demands are summarised in **Table 5.12** and **Table 5.12**.
- 5.5.5 It is recognised that the predicted modal splits, particularly in the PM peak period, do not meet with the broader Travel Plan targets set out within the North West Bicester SPD including:
- 50% of all trips originating from the development will be made by non-car modes of transport following occupation;
 - 40% of trips originating from the development will be made by active modes (walking and cycling) by one year following occupation; and
 - 10% of trips originating from the development will be made by bus by one year following occupation.

5.5.6 It is important to recognise however that these targets apply to all trips across the whole day and are not just limited to the peak hours and also to recognise that the resulting modal splits presented above present a worst-case prediction in terms of reliance on journeys by private car on the basis that:

- The modal share of employment and other journey purpose trips has been based upon 2011 Census data based on the existing characteristics of the Cherwell 012 ward, and it is anticipated that the planned delivery of the Eco Town development including the application site will result in reduced car dependency due to the mix of uses proposed and the prioritisation of movement by sustainable modes, coupled with continuing changes to working arrangements and broader travel behaviours; and
- The modal share of education journey trips has been based on characteristics represented by the National Travel Survey, and it is anticipated that the planned delivery of the Eco Town development including the application site will result in reduced car dependency due to high quality pedestrian and cycle routes to these facilities.

5.5.7 Notwithstanding the above, the resulting vehicle trip generation has now been carried through to distribute and assign peak hour trips across the local road network and in the following chapter to assess the percentage impact of development traffic on the local highway network.

5.6 Development Vehicle Traffic Distribution & Assignment

5.6.1 During scoping discussions with Oxfordshire County Council, it was agreed that the study area should focus on development traffic impacts on Charlotte Avenue and B4100 Banbury Road extending from the junction with Charlotte Avenue to the north and to a point south of the junction with the A4095.

5.6.2 The distribution of peak hour development traffic has been considered by each core journey purpose identified above and then assigned across this local study area.

Employment Trips

5.6.3 In order to predict the distribution of employment trips, 2011 Census journey to work data has been reviewed to determine where people living in the area will travel to for work, based on the existing characteristics of the Cherwell 012 ward.

5.6.4 The calculations from this analysis is provided at **Appendix G** with the extensive list of journey to work destinations collated into four broad geographic destinations as summarised in **Table 5.14**.

Table 5.14: Distribution of Employment Traffic

Direction	Percentage of Total Vehicles
North	15.6%
East	5.8%
South	75.7%
West	2.8%

5.6.5 **Table 5.6** outlines the total number of vehicles entering and leaving the site at peak times for work / employment purposes. This has then been used to calculate the number of vehicles in each direction from the SG1 Bicester site for employment purposes as shown in **Table 5.15**.

Table 5.15: Baseline Vehicle Distribution of Employment Traffic

Direction	Two-Way Vehicle Movements (AM Peak)	Two-Way Vehicle Movements (PM Peak)
North	3	4
East	1	1
South	14	18
West	1	1
Total	19	24

5.6.6 From Plot SGR1, vehicle traffic irrespective of journey purpose has been assigned onto the local highway network one of the following directions (using outbound trips as an example):

- North: All vehicles will turn left out of Plot SGR1 south onto Charlotte Avenue, then left onto B4100 Banbury Road;
- East: All vehicles will turn left out of Plot SGR1 south onto Charlotte Avenue, then right onto B4100 Banbury Road then left onto the eastern arm of the A4095 at its junction with B4100 Banbury Road;
- South: All vehicles will turn left out of Plot SGR1 south onto Charlotte Avenue, then right onto B4100 Banbury Road then straight ahead at the B4100 Banbury Road / A4095 roundabout junction; and
- West: All vehicles will turn left out of Plot SGR1 south onto Charlotte Avenue, then right onto B4100 Banbury Road then right onto the western arm of the A4095 at its junction with B4100 Banbury Road.

5.6.7 The trip generation for the employment journey purpose has been assigned as above and is illustrated in **Figures 5.1 & 5.2**.

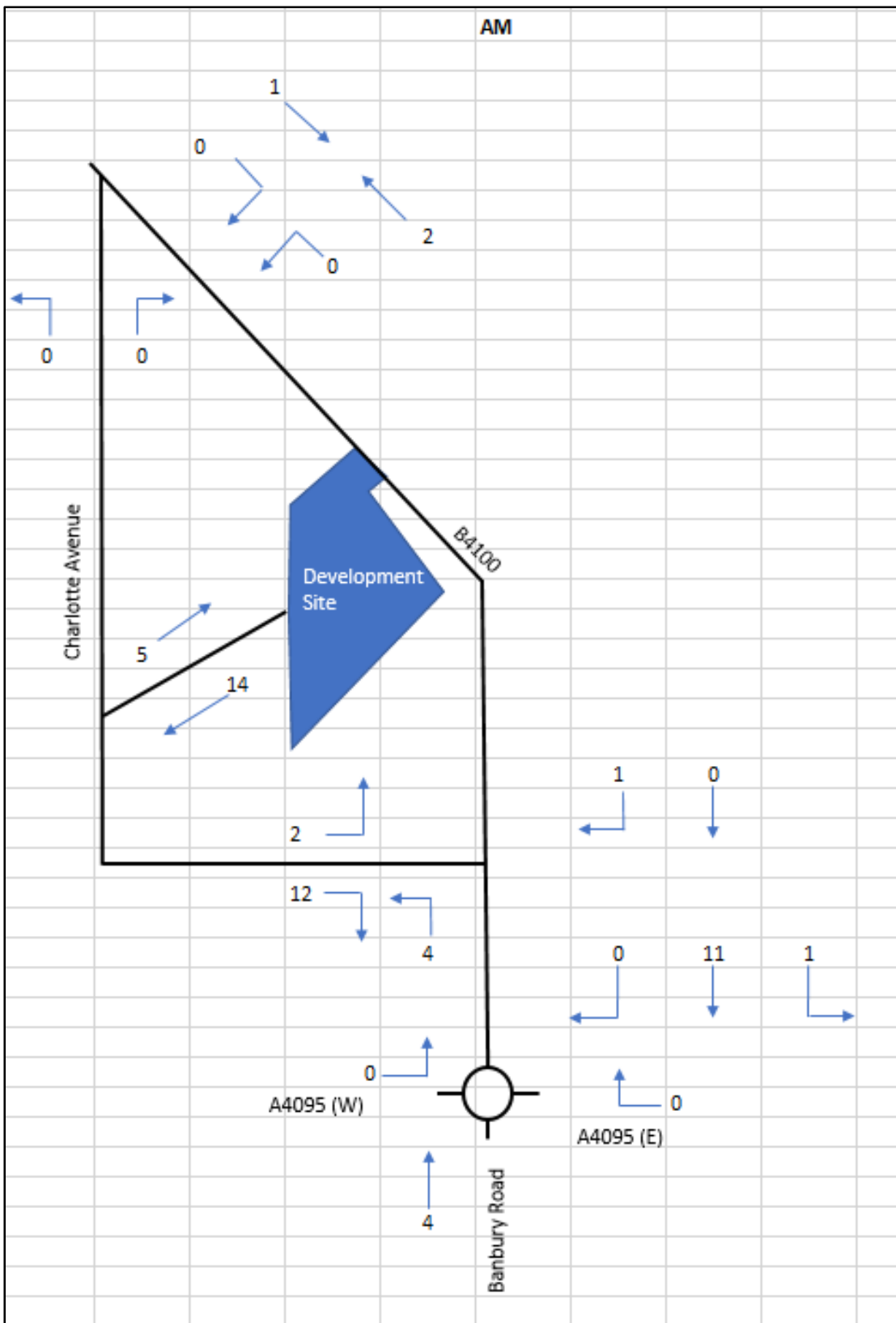


Figure 5.1: Development Employment Trips (AM Peak)

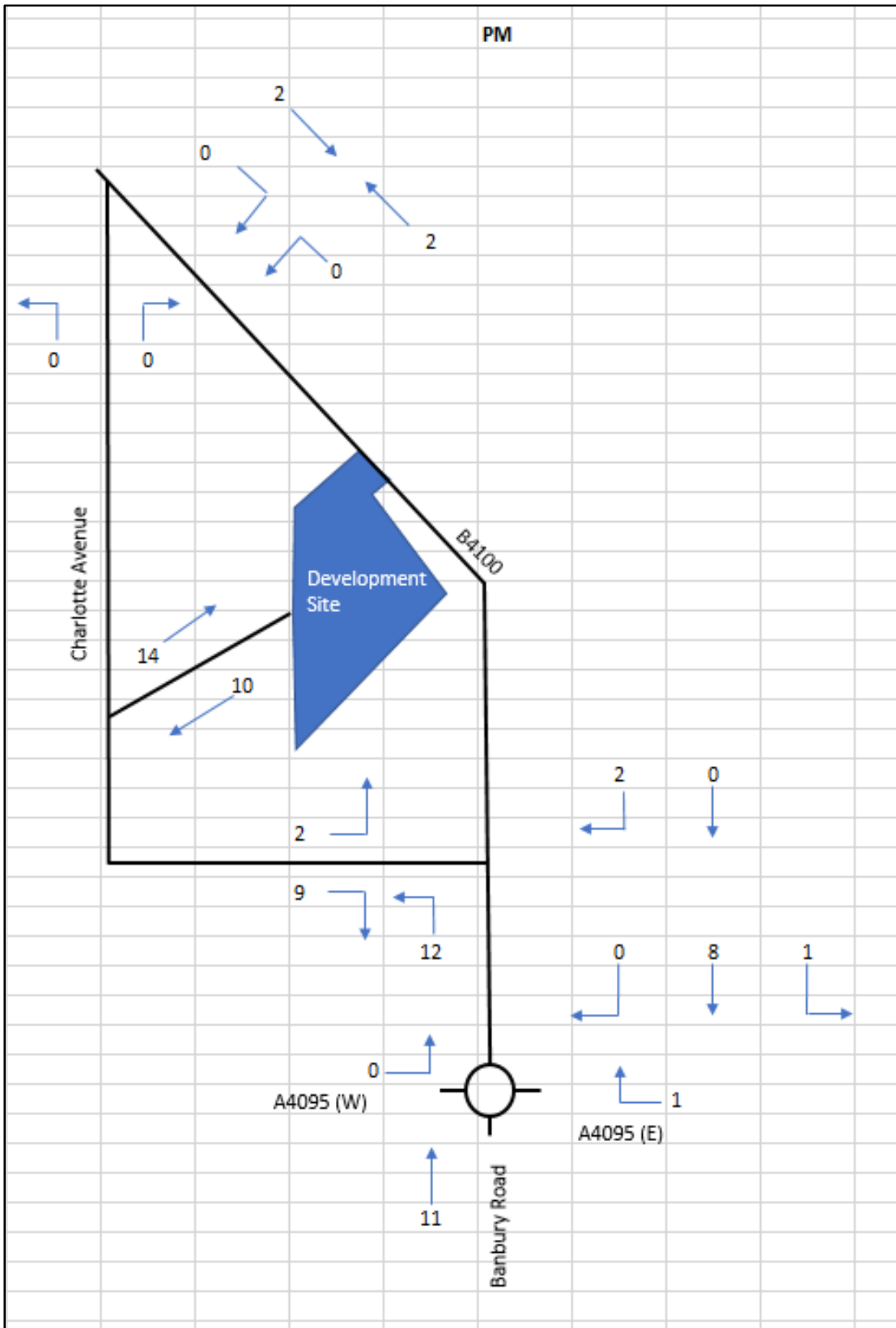


Figure 5.2: Development Employment Trips (PM Peak)

Education Trips

- 5.6.8 It has been assumed that all primary school aged children will attend Gagle Brook Primary School in Elmsbrook while all secondary school children will attend the secondary school within the Eco Town proposed as part of the North West Bicester Masterplan.
- 5.6.9 As outlined in **Table 5.7**, 46% of education trips will be for the secondary school and as such, **Table 5.16** outlines the number of vehicles in each direction from Plot SGR1 for education purposes.

Table 5.16: Baseline Vehicle Distribution of Education Traffic

Direction	Two-Way Vehicle Movements (AM Peak)	Two-Way Vehicle Movements (PM Peak)
North	0	0
East	0	0
South	0	0
West	5	0
Internal	6	0
Total	11	0

- 5.6.10 The trip generation for the education journey purpose has been assigned based on para 5.6.6 and is illustrated in **Figures 5.3 & 5.4**.
- 5.6.11 There are no vehicle trips generated by education journey purposes in the PM peak. The primary school vehicular trips generated in the AM peak do not exit Charlotte Avenue, given the location of Gagle Brook Primary school.

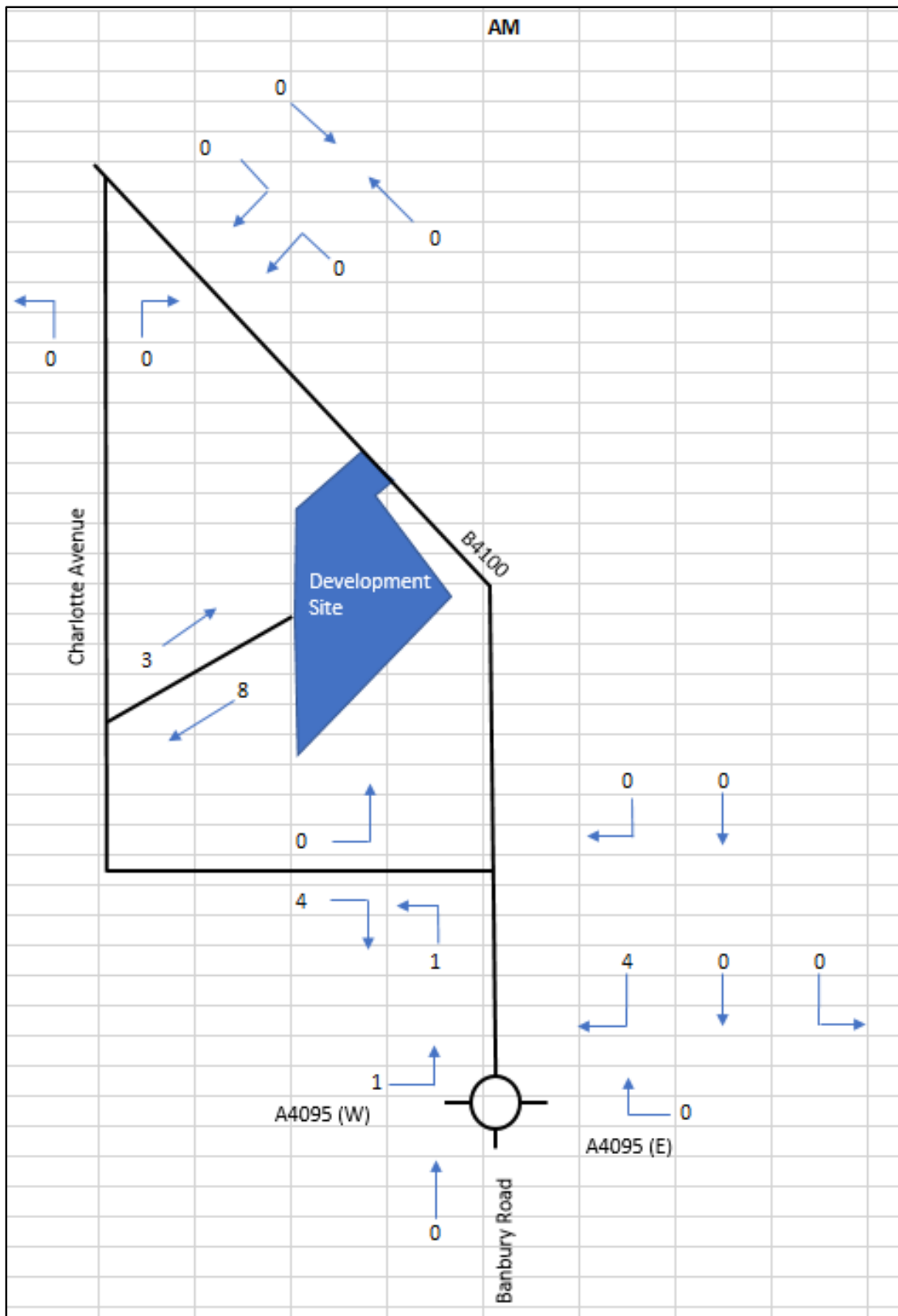


Figure 5.3: Development Education Trips (AM Peak)

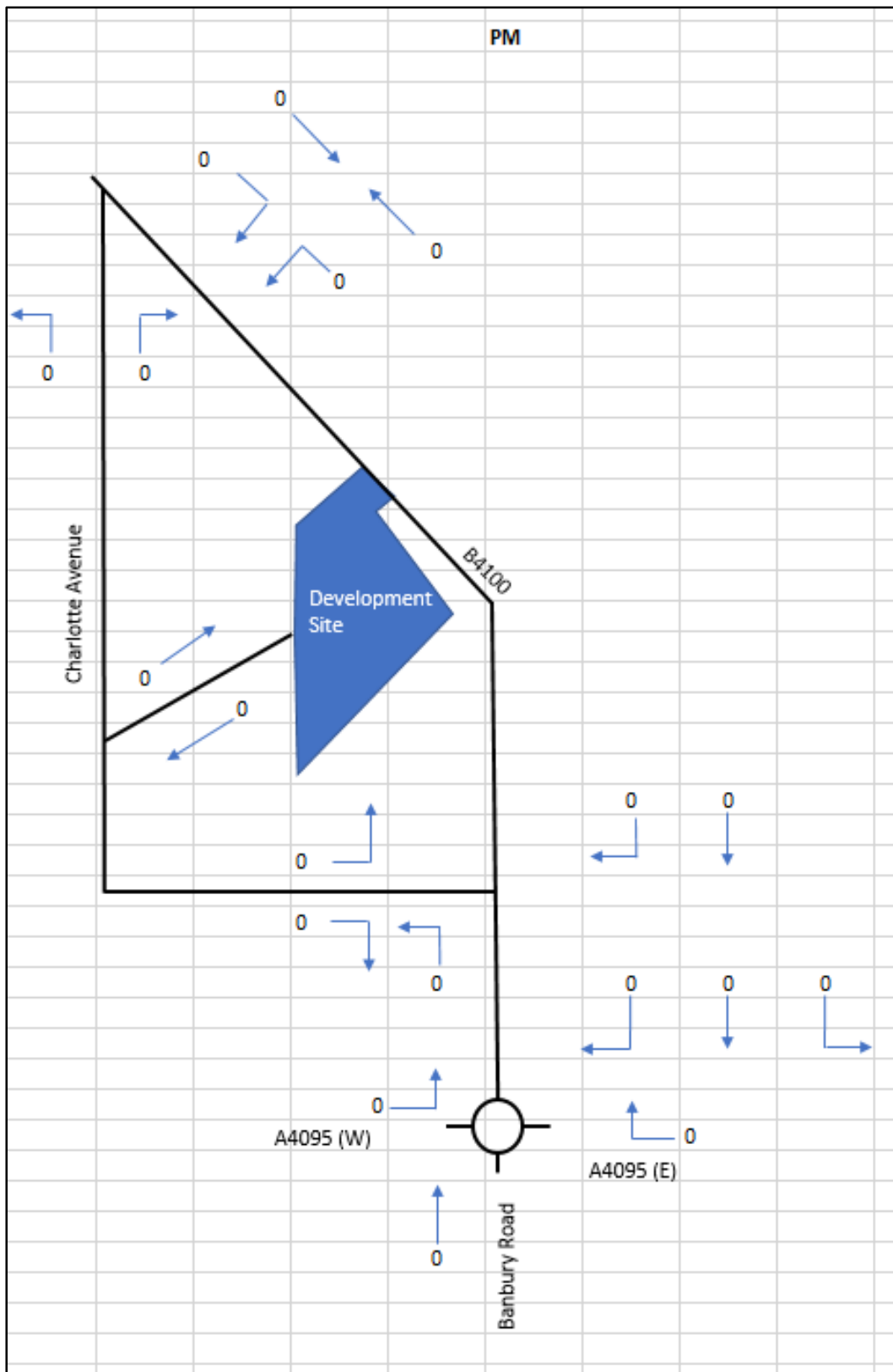


Figure 5.4: Development Education Trips (PM Peak)

Other Trips

- 5.6.12 The distribution of other trips has followed the same methodology adopted for employment trips. The percentage distribution of vehicle trips for other trip purposes is outlined in **Table 5.10** while the vehicle distribution is shown in **Table 5.17**.

Table 5.17: Baseline Vehicle Distribution of Other Traffic

Direction	Two-Way Vehicle Movements (AM Peak)	Two-Way Vehicle Movements (PM Peak)
North	3	6
East	1	2
South	14	30
West	1	1
Total	18	39

- 5.6.13 The trip generation for the other journey purpose has been assigned based on para 5.6.6 and is illustrated in **Figures 5.5 & 5.6**.

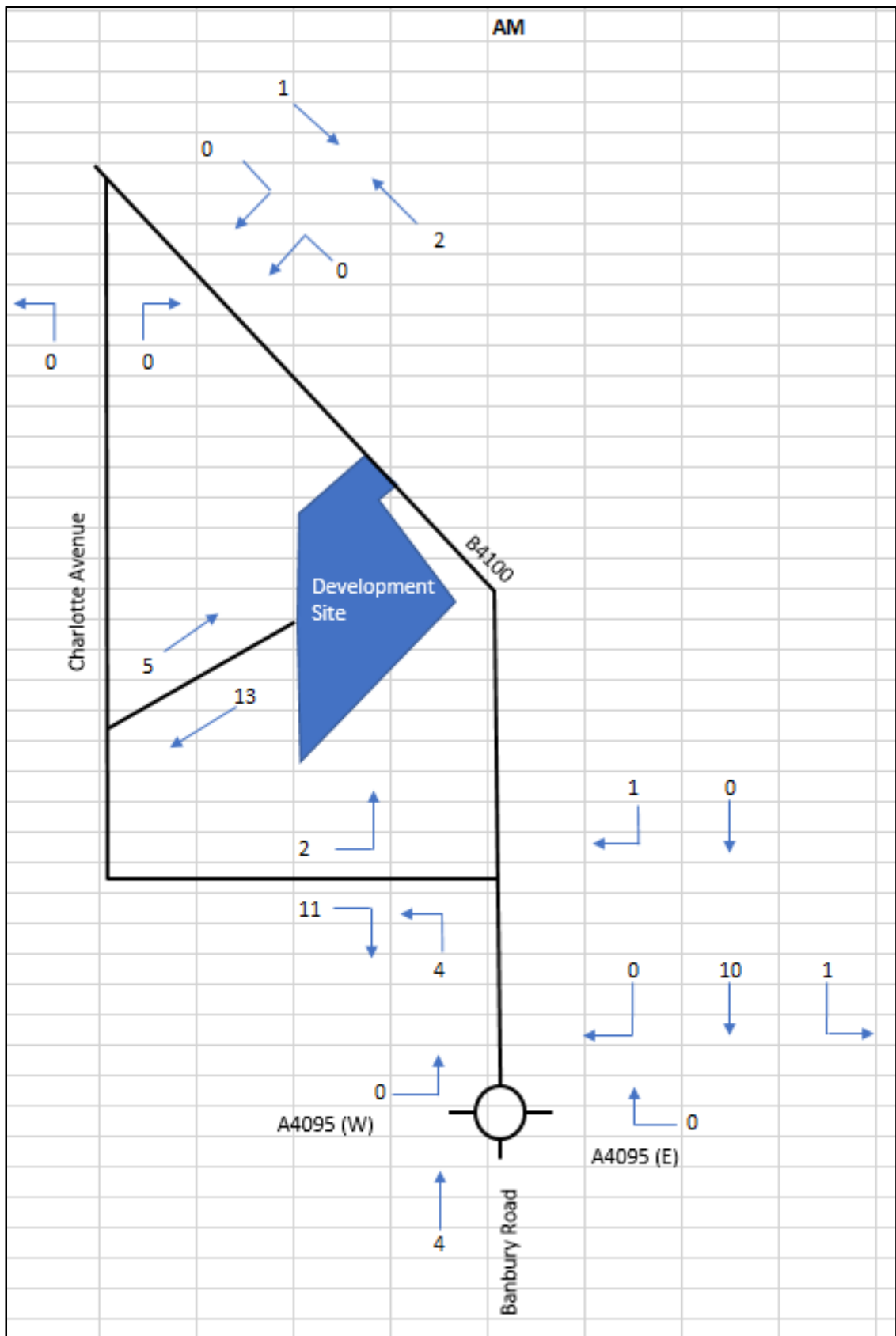


Figure 5.5: Development Other Trips (AM Peak)

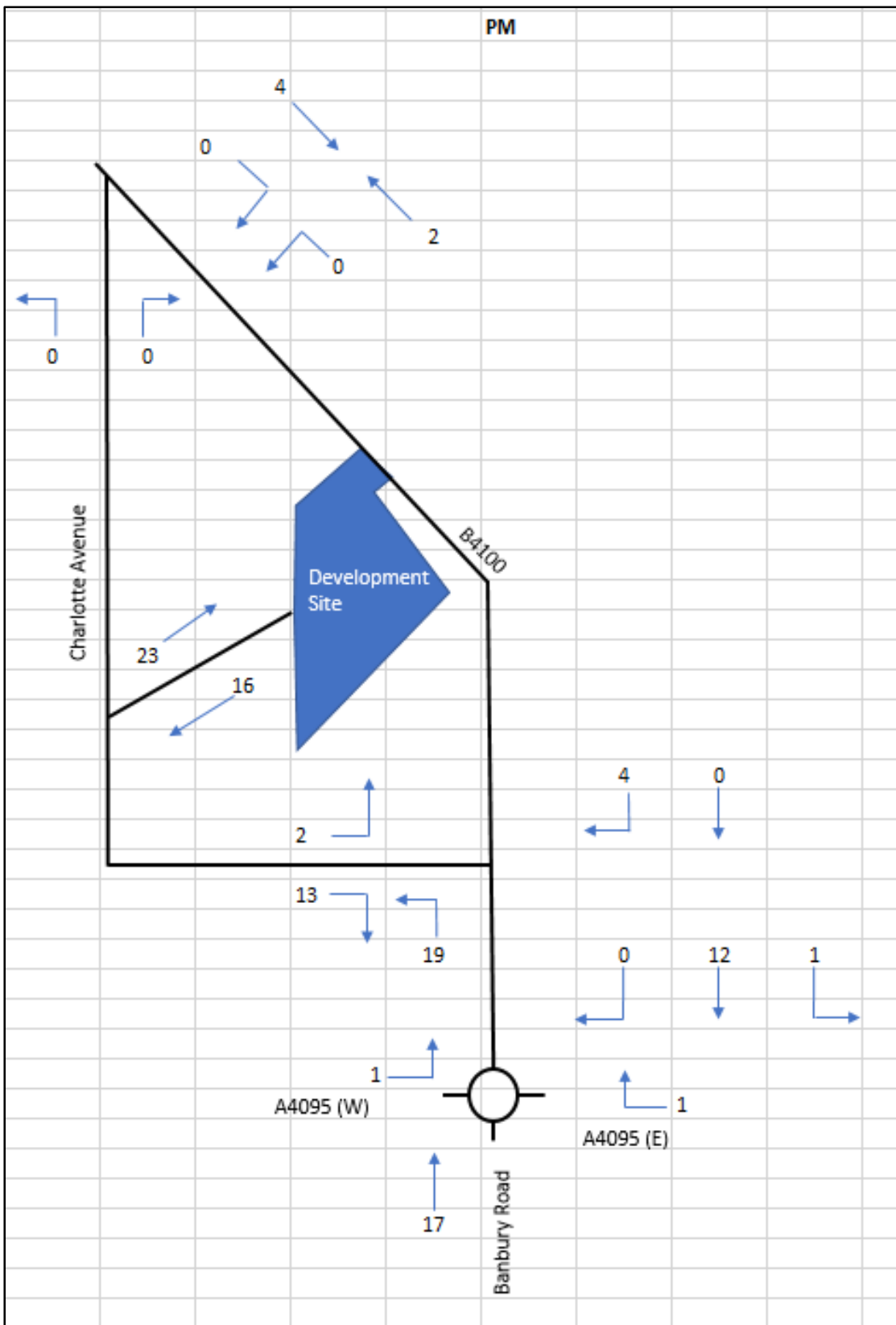


Figure 5.6: Development Other Trips (PM Peak)

Total Distribution of Trips

5.6.14 The total distribution for all three journey purposes is outlined in **Table 5.18** with the resulting assign traffic flows illustrated in **Figures 5.7 & 5.8**.

Table 5.18: Baseline Vehicle Distribution of All Traffic

Direction	Vehicle Movements (AM Peak)			Vehicle Movements (PM Peak)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
North	2	4	6	6	4	10
East	0	2	2	2	2	3
South	8	21	28	28	20	48
West	1	4	7	1	0	2
Internal	2	4	6	0	0	0
Total	13	35	49	37	26	63

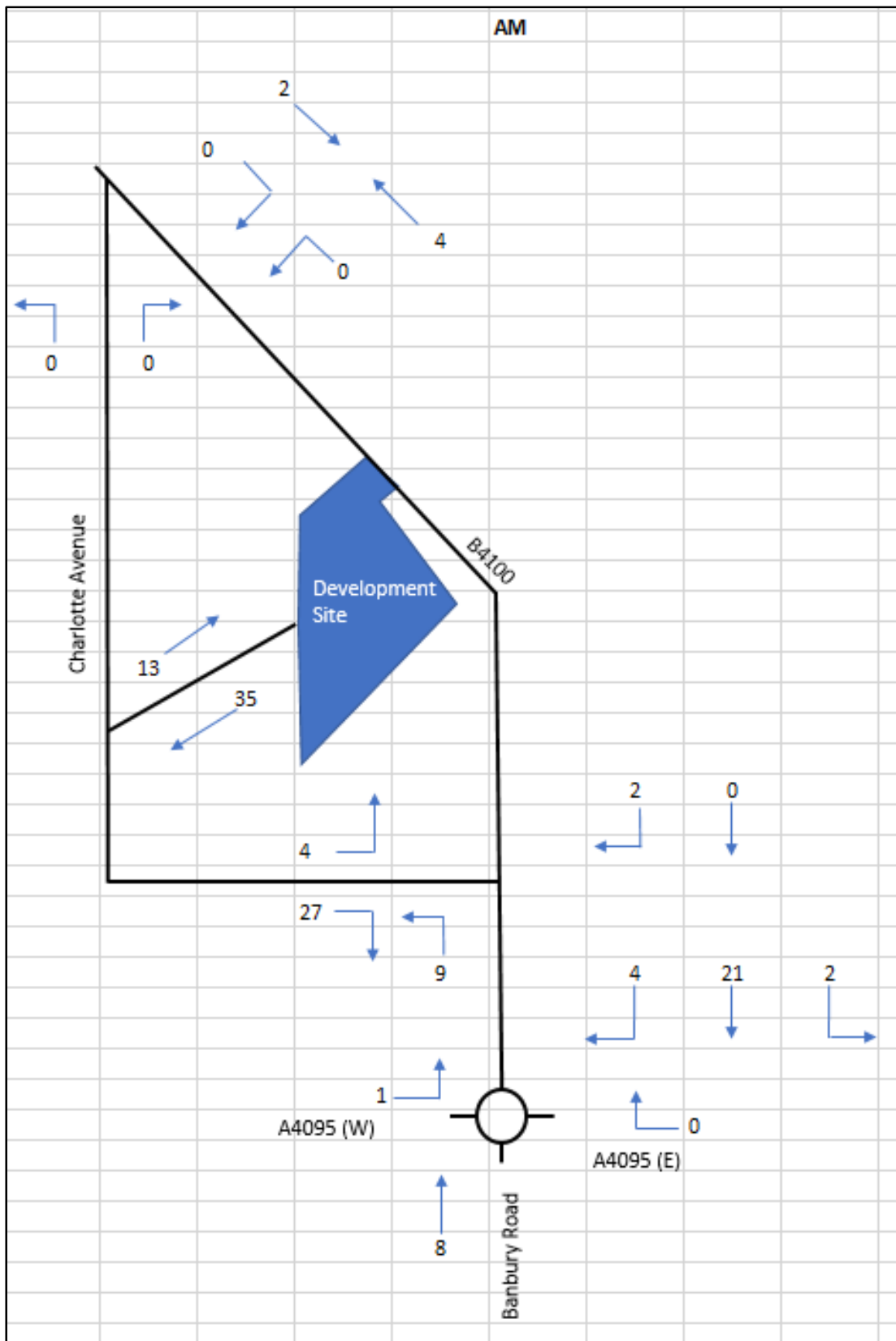


Figure 5.7: Development Total Trips (AM Peak)

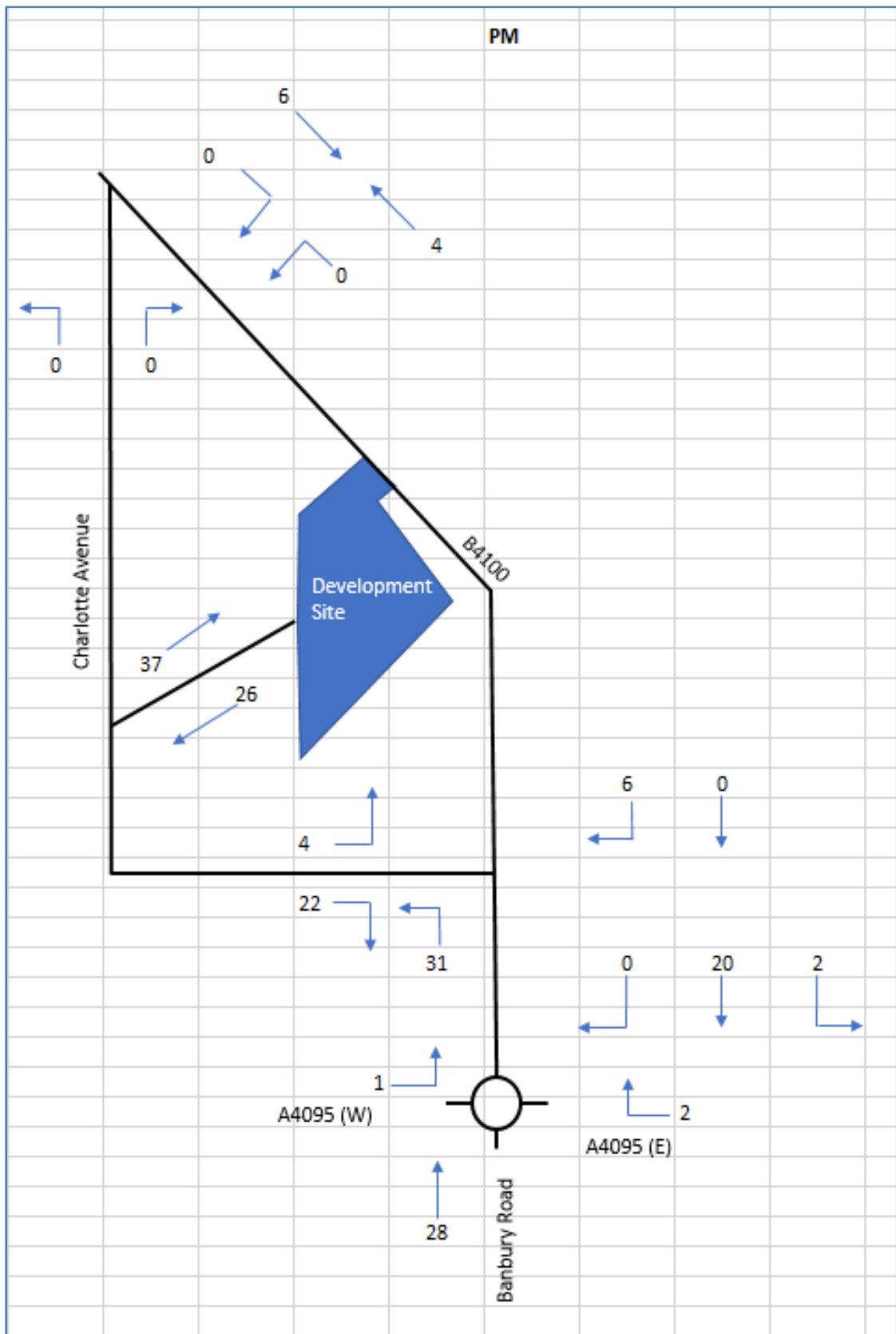


Figure 5.8: Development Total Trips (PM Peak)

6 Traffic Impact Assessment

6.1 Introduction

- 6.1.1 This chapter of the TA considers the impact of development vehicular traffic on the local highway network.
- 6.1.2 It has been agreed with Oxfordshire County Council that the Bicester Traffic Model is the appropriate tool to forecast future traffic flows, accordingly data has been secured from County to inform this assessment.
- 6.1.3 As agreed with Oxfordshire County Council during the pre-application scoping meeting, the forecast years (limited to those that exist within the Oxfordshire County Council Bicester Transport Model) identified to assess the traffic and transport impacts of the proposed development are:
- 2026 Do Nothing (i.e. consented development and planned infrastructure); and
 - 2026 Do Something (i.e. 2026 Do Nothing + Plot SGR1 development traffic)
- 6.1.4 The 2026 Do Nothing scenario provides the baseline against which the assessment of development traffic will be undertaken. The traffic flows associated with this forecast year are as set out within the 'Bicester Transport Model – Future Year Forecasting Report' (Issue 2, April 2017 – prepared by White Young Green on behalf of Oxfordshire County Council). The flows take into account:
- future year background traffic growth; and
 - future planned residential, employment and school development proposals and planned infrastructure proposals as expected to be delivered at a 2026 future year (as detailed at Appendix A of the 'Bicester Transport Model – Future Year Forecasting Report').
- 6.1.5 The 2026 Do Something scenario adds the predicted development traffic flows set out in **Section 5** of this report and specifically as illustrated in **Figures 5.7 & 5.8** to the 2026 Do Nothing scenario.

6.2 2026 'Do Nothing' Forecast Flows

- 6.2.1 The AM and PM peak hour 2026 'Do Nothing' flows are shown in **Figures 6.1 & 6.2** respectively: these are the total vehicle demand flows provided by Oxfordshire County Council.

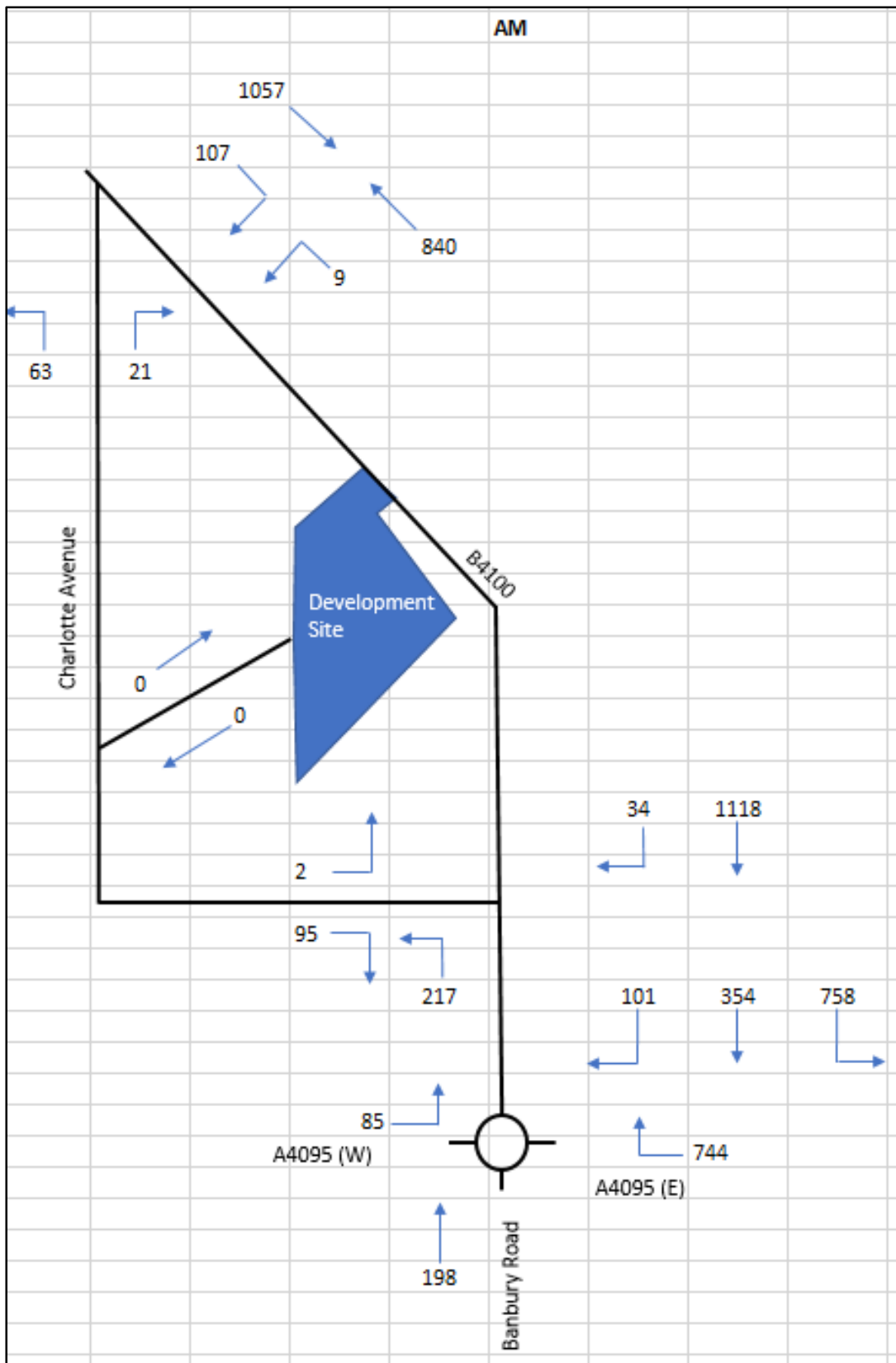


Figure 6.1: 2026 Do Nothing Forecast Flows [Total Vehicle, Demand flows] (AM Peak)

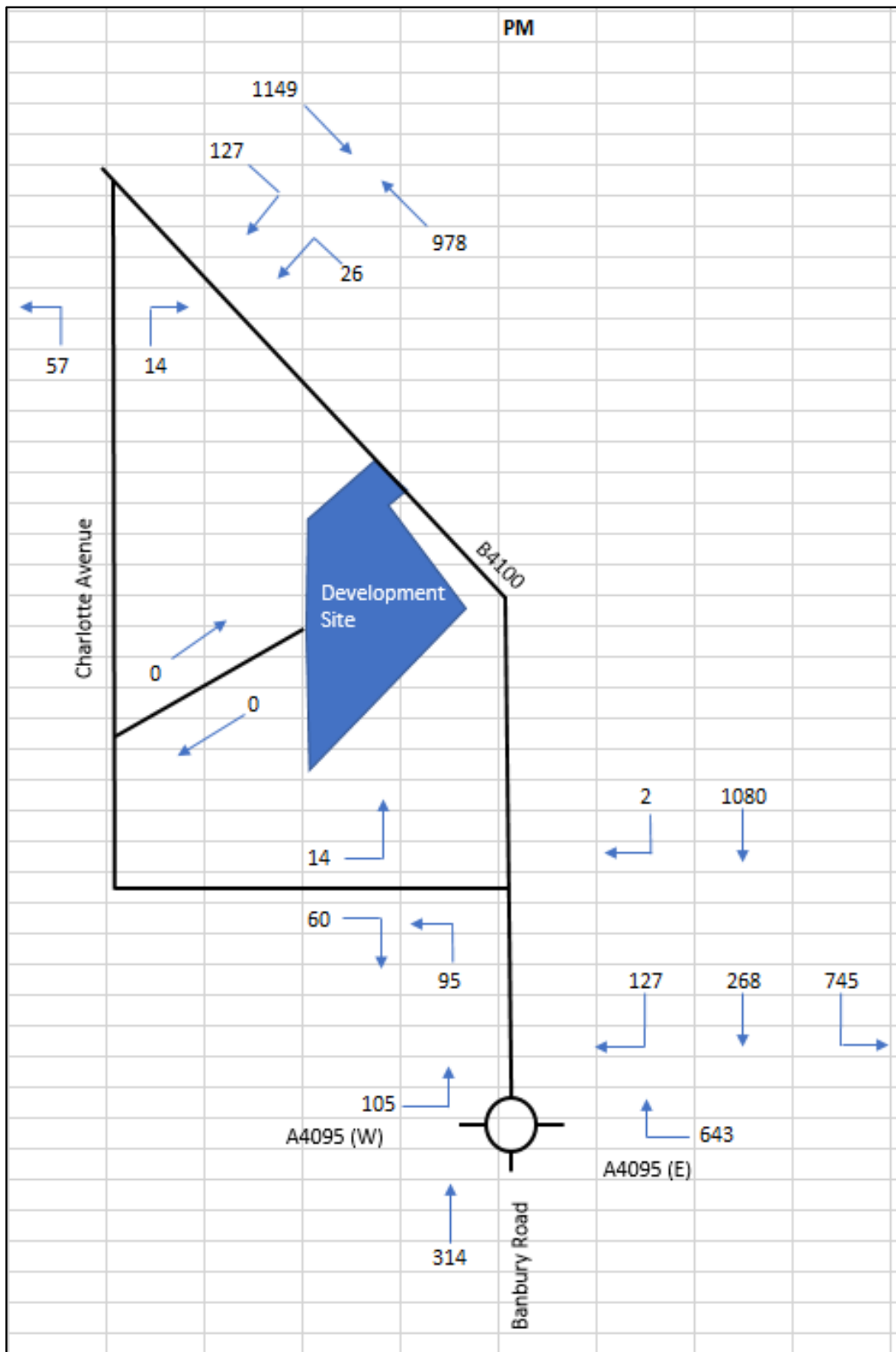


Figure 6.2: 2026 Do Nothing Forecast Flows [Total Vehicle, Demand flows] (PM Peak)

6.3 Development Flows

6.3.1 The trips that are expected to be generated by the proposed development are as set out in **Section 5** of this report and specifically as illustrated in **Figures 5.7 & 5.8**.

6.4 2026 'Do Something' Forecast

6.4.1 The total model diagram for the 2026 'Do Nothing' Bicester Transport Model forecast flows plus the development is shown in **Figures 6.3 & 6.4**.

6.4.2 The percentage impact of the development on the 2026 baseline flows in the model is shown in **Figures 6.5 & 6.6**.

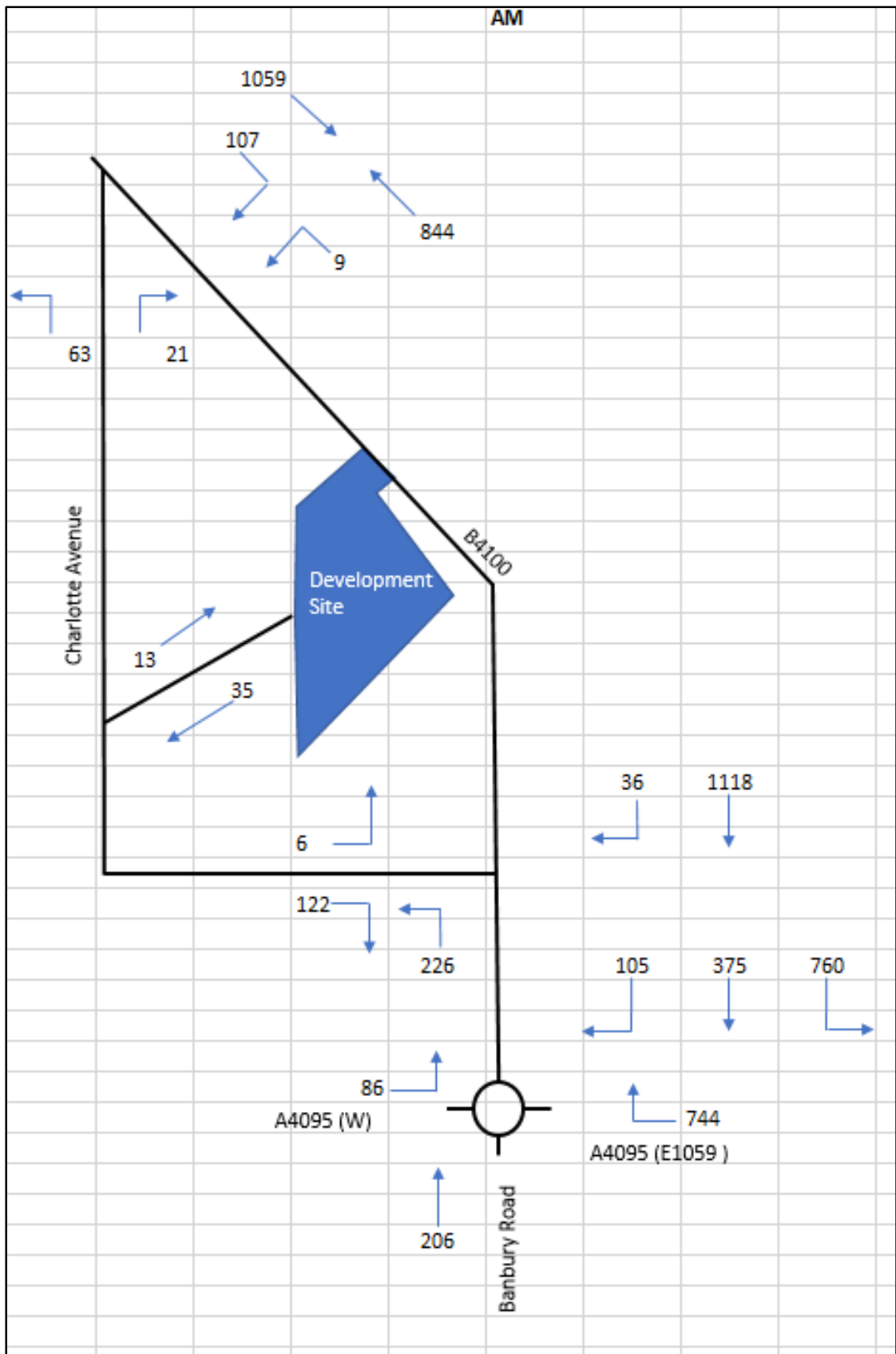


Figure 6.3: 2026 Do Something Flows (AM Peak)

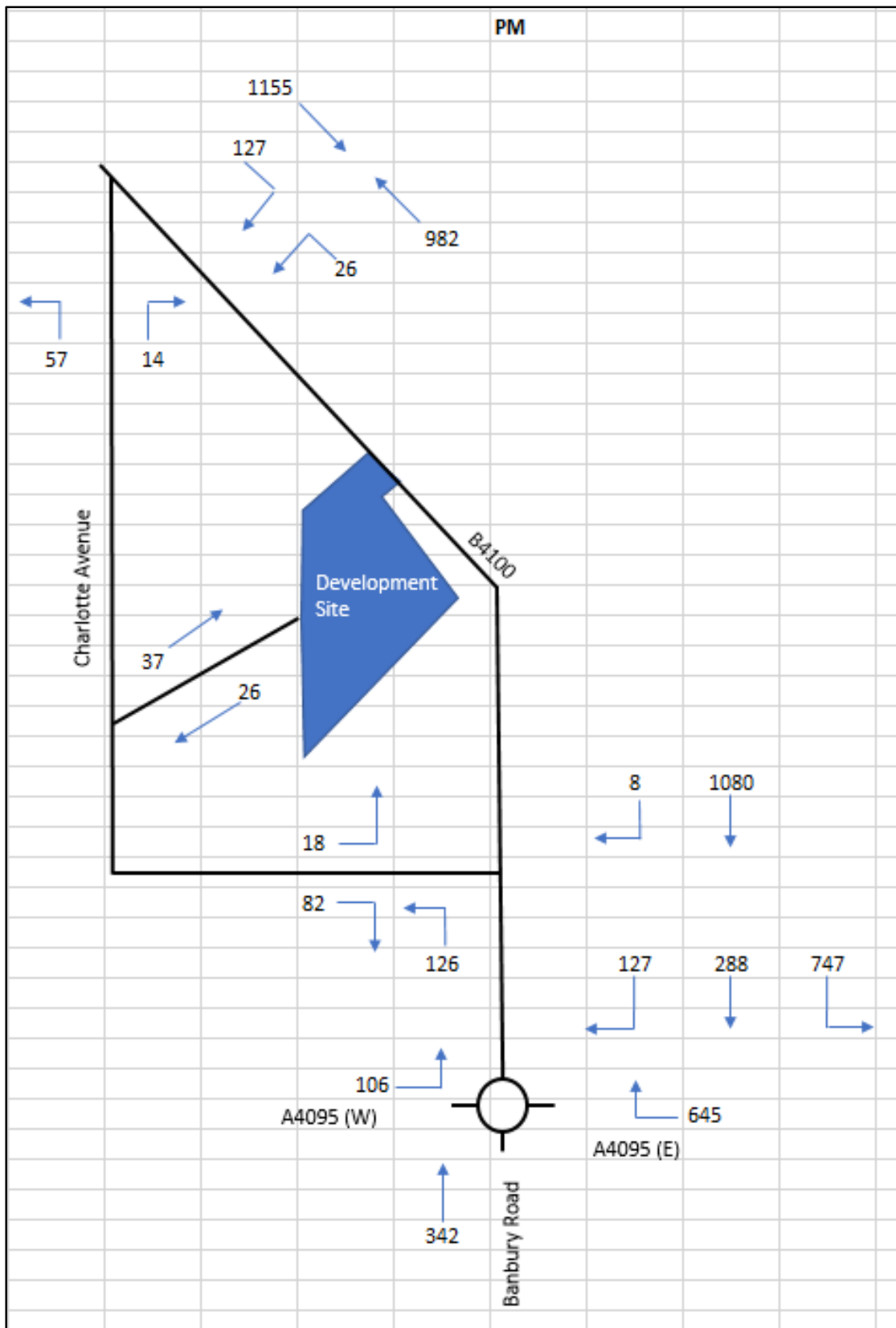


Figure 6.4: 2026 Do Something Flows (PM Peak)

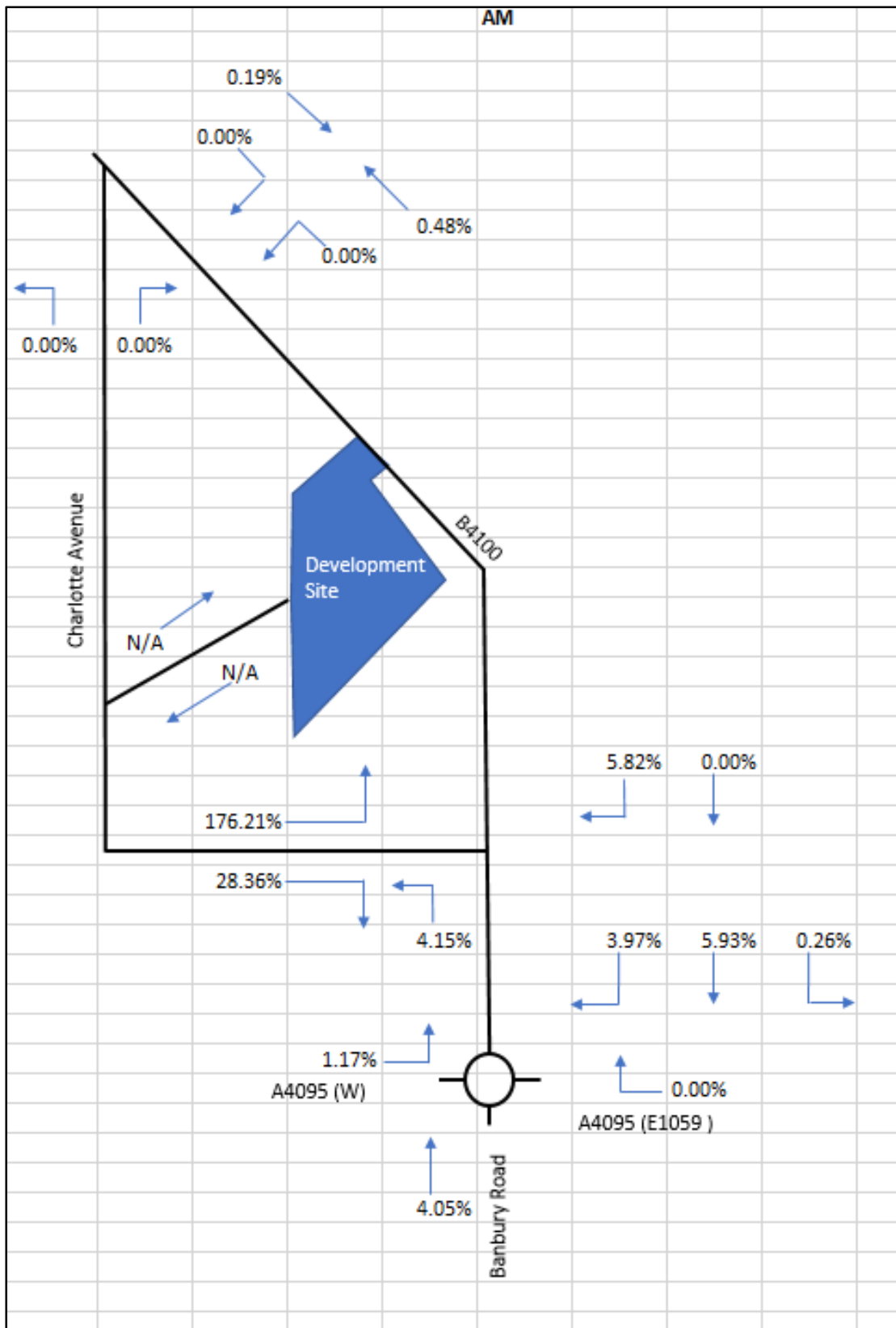


Figure 6.5: Percentage Impact of Development (AM Peak)

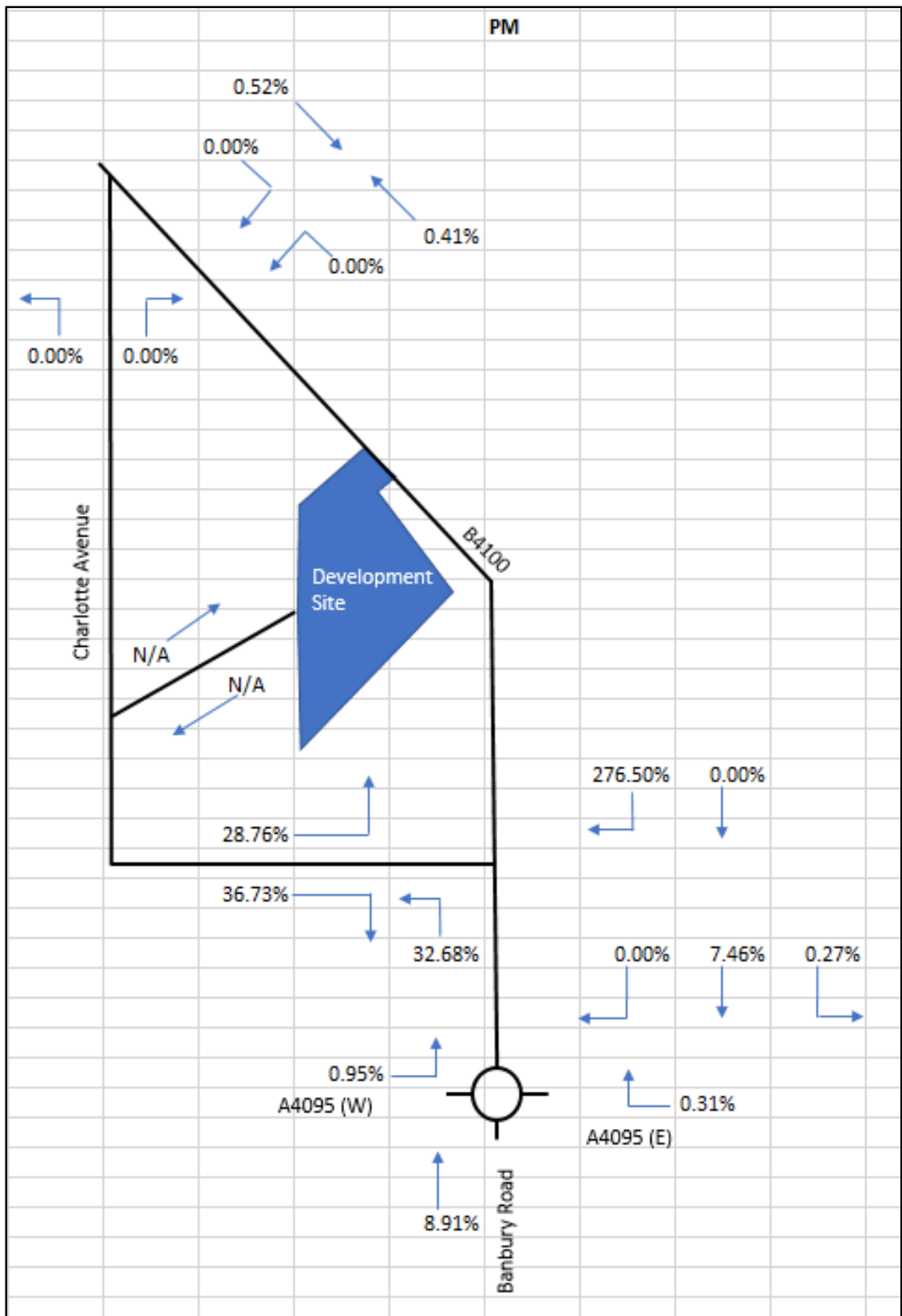


Figure 6.6: Percentage Impact of Development (PM Peak)

6.5 Summary

- 6.5.1 This chapter of the TA demonstrates that vehicular traffic from the proposed development at Plot SGR1, in the context of the wider Eco Town scheme, will not have a significant impact on the local highway network.
- 6.5.2 The impact along Charlotte Avenue in the 2026 'Do Something' scenario as a result of the proposed development is due to the fact that this is a new highway link built out as part of the North West Bicester Masterplan with a low baseline traffic flow. The impact of development traffic along Charlotte Avenue would in reality reduce further in the future as more of the Eco Town scheme is built out over time beyond 2026.

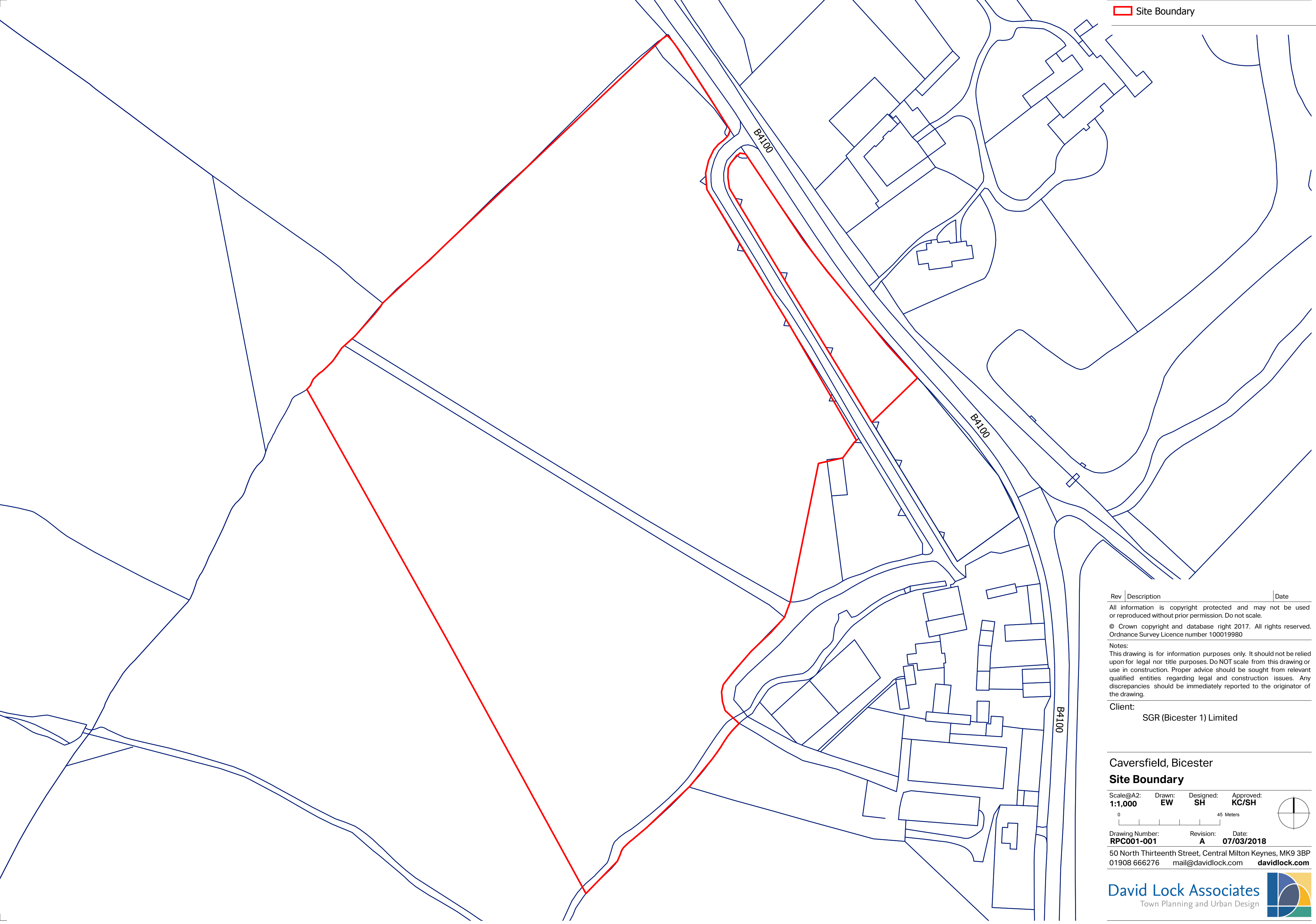
7 Summary and Conclusions

- 7.1.1 This Transport Assessment (TA) has been prepared by Peter Brett Associates LLP (PBA) on behalf of SGR (Bicester 1) Ltd to support an outline planning application for the development of up to 75 residential units on Plot SGR1.
- 7.1.2 In terms of demonstrating that the development proposal conforms with national and local transport policy, the proposed access strategy for the development gives priority to pedestrian and cycle movements with access to a frequent E1 bus services. In terms of sustainable travel choices, the proposed access strategy will provide strong pedestrian and cycle links from the development to the wider Eco Town and surrounding areas and supports the wider walking and cycling access strategy of the North West Bicester Masterplan.
- 7.1.3 Vehicular access to the development site will be provided along Charlotte Avenue using an existing T-junction arrangement built out as part of the Exemplar development scheme (10/01780/hybrid). The General Arrangement [Sheet 2] Drawing 7239 Issue F (Hyder Consulting, June 2015) prepared to support the 10/01780/hybrid planning application is included in **Appendix D** of this report.
- 7.1.4 The design of the new internal access road will include provision of a 5.5m carriageway and minimum 1.8m footway on either side of the carriageway, in accordance with local design standards. The internal street network will be designed in accordance with local guidance although remain subject to detailed design at the reserved matters stage (with further details set out within the accompanying Design and Access Statement).
- 7.1.5 The development will also include open space with an orchard and allotments with an informal parking area provided for these users and Parishioners of St Laurence Church; this will be accessible via an existing priority T-junction serving Home Farm.
- 7.1.6 In addition to a commitment to site travel planning (see Travel Plan report prepared under separate cover), the applicant is willing to provide an appropriately scaled financial contribution toward delivery of a pedestrian crossing facility across the B4100 Banbury Road responding to existing limitations of provision of access to this important community facility. The applicant is also willing to provide an appropriately scaled financial contribution toward the delivery of the proposed local bus service improvements consistent with other local development sites. These commitments remain subject to ongoing discussions with Oxfordshire County Council and S106 negotiations.
- 7.1.7 A comprehensive trip generation assessment that has been undertaken to forecast the predicated travel demand for the proposed development by all modes of transport. The methodology used is consistent with that set out in the Access & Travel Strategy (Hyder Consulting, June 2014) document prepared to support the North West Bicester Masterplan.
- 7.1.8 As agreed during scoping discussions with Oxfordshire County Council, the Bicester Traffic Model has been confirmed as the appropriate tool to forecast future traffic flows and accordingly data has been secured from County to inform the assessment presented in this TA, confirming the limited peak hour development traffic impacts of the proposals.
- 7.1.9 The objective of this TA was to demonstrate that the development proposal follows the same principles and methodology that has been established for the North West Bicester Masterplan and accords with and supports the movement and access strategy of the Supplementary Planning Document.
- 7.1.10 This TA has demonstrated that:
- The development proposal conforms with national and local transport policy;

- The site access strategy will encourage sustainable travel choices; and
- The predicted traffic generation of the development, in the context of the wider Eco Town scheme, will not have a significant impact on the local highway network.

Appendix A Red Line Boundary Plan

Site Boundary



Rev | Description | Date

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Client:
SGR (Bicester 1) Limited

Caversfield, Bicester
Site Boundary

Scale@A2: 1:1,000 Drawn: EW Designed: SH Approved: KC/SH

0 45 Meters



Drawing Number: RPC001-001 Revision: A Date: 07/03/2018

50 North Thirteenth Street, Central Milton Keynes, MK9 3BP
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David Lock Associates
Town Planning and Urban Design



Appendix B Indicative Masterplan