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Gallagher Estates

Land at Gavray Drive, Bicester

October 2010

Transport Assessment

TRANSPORT
TRAFFIC
DEVELOPMENT
PLANNING
URBAN DESIGN
ECONOMICS
MARKET RESEARCH

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colinbuchanan.com

Land at Gavray Drive, Bicester

Transport Assessment

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20 Eastbourne Terrace,
London,
W2 6LG
Telephone: 020 7053 1300
Fax: 020 7053 1301
Email : London@cbuchanan.co.uk

Prepared by:

Approved by:

Alex Scarratt

Jenny Baker

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1 Introduction

1.1 Background

- 1.1.1 In 2002, Colin Buchanan (CB) were commissioned by Gallagher Estates to prepare a Transport Assessment (TA) in support of a proposed residential development, on land to the north of Gavray Drive, Bicester (planning reference 04/02797/OUT).
- 1.1.2 The site is located within the authoritative boundaries of Cherwell District Council (CDC) and Oxfordshire County Council (OCC), the latter of which has the responsibility as the local highway authority.
- 1.1.3 The development proposal consisted of 500 residential units and a primary school with capacity to accommodate approximately 210 pupils.
- 1.1.4 The development proposal was eventually approved by the Secretary of State following an appeal (reference 05/00019/NONDET), in July 2006. The TA that accompanied the original application was agreed with OCC and the only area that was at dispute at the appeal related to the comparative sustainability of residential rather than employment use. The Planning Inspector concluded that there was no reason that residential development in this location would be less sustainable than employment use.
- 1.1.5 The development has not as yet been implemented and the original approval is nearing expiry. Gallagher Estates are therefore seeking to renew the planning consent on the site. CDC have advised that the planning application will need to be supported by an updated TA in order to assess the impact of the development proposals against the current highway network.
- 1.1.6 Gallagher Estates have therefore commissioned CB to prepare this updated TA to support the development planning application.

1.2 Report Scope and Structure

- 1.2.1 This updated TA loosely follows the format of the original TA and assesses the impact of the development proposal using updated traffic surveys that have been undertaken on the wider highway network. As well as using up to date survey information, additional committed developments have been taken into account and the opening year has been revised to reflect the delayed start of development on the site.
- 1.2.2 The report is structured as follows:
- Section 2 details relevant planning policy against which the development will be assessed;
 - Section 3 describes the existing highway network around the site, including existing junction performance using data from traffic surveys that were undertaken in 2010;
 - Section 4 examines the current rail provision in the area;
 - Section 5 provides an updated position with regards to local bus services and how these can be linked to the development proposal;
 - Section 6 details the sites pedestrian and cycling accessibility;
 - Section 7 provides a baseline assessment of the local highway network by assessing traffic growth against an assumed opening year of 2016 and traffic associated with committed developments;
 - Section 8 quantifies the trip generation associated with the development proposals and the likely distribution based on 2001 Census data;

- Section 9 identifies the level of traffic impact associated with the development proposals against the baseline scenario. Where the development results in a detrimental impact to a particular junction an associated mitigation strategy is identified. Given the sites historical allocation as an employment site, Section 9 also considers the potential impact of traffic that would be associated with an employment use for comparative purposes;
- Section 10 considers the performance of the site access junctions; and
- Section 11 provides a summary and conclusion

2 Relevant Planning Policy Review

2.1 Introduction

2.1.1 This section identifies relevant national, regional and local transport planning policy documentation and guidance, against which the development proposal will be assessed.

2.1.2 Whilst it is not intended to provide a detailed review of each of these documents, the TA will ensure that the development proposal compliments specific policies where relevant.

Planning Policy Guidance 13: Transport 2001 (PPG 13)

2.1.3 The overall objective of PPG13 is to integrate planning and transport at the national, regional, strategic and local level, in order to:-

- Promote more sustainable transport choices;
- Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- Reduce the need to travel, especially by car.

2.1.4 Paragraph 6 details that Local Authorities, when considering planning applications, are advised to:

- actively manage the pattern of urban growth to make the fullest use of public transport, and focus major generators of travel demand in city, town and district centres and near to major public transport interchanges;
- locate day to day facilities which need to be near their clients in local centres so that they are accessible by walking and cycling;
- ensure that development comprising jobs, shopping, leisure and services offers a realistic choice of access by public transport, walking and cycling;
- use parking policies, alongside other planning and transport measures, to promote sustainable transport choices and reduce reliance on the car for work and other journeys;
- give priority to people over ease of traffic movement and plan to provide more road space to pedestrians, cyclists and public transport in town centres, local neighbourhoods and other areas with a mixture of land uses; and
- ensure that the needs of disabled people - as pedestrians, public transport users and motorists - are taken into account in the implementation of planning policies and traffic management schemes, and in the design of individual developments.

Regional Planning Policy: South East Plan

2.1.5 The South East Plan was the Regional Spatial Strategy for an area that included Oxfordshire. However, recent changes in Government policy have revoked the South East Plan as of July 2010.

Local Transport Plan

2.1.6 OCC's Local Transport Plan (LTP) sets out the range of investment programmes that have been formulated to improve the transport infrastructure within the county.

2.1.7 The current strategy is the second LTP that has been adopted by OCC and covers the period 2006-2011. LTP2 focuses on five priority areas:

- Tackling congestion
- Delivering accessibility
- Safer roads
- Better air quality
- Improvement to the street environment

2.1.8 In terms of the strategy for CDC, and specifically Bicester, LTP2 identifies tackling congestion is a priority, with the following the sections of the strategic highway network attracting particular attention:

- A34-M40 to Oxford
- A41-King's End, Bicester to M40

2.1.9 Congestion along both of these routes has been attributed to capacity concerns at J9 of the M40. It is understood that developer funding is to be secured from the Bicester Business Park development proposal, considered in subsequent sections, in order to deliver an improvement strategy at this junction.

2.1.10 OCC are currently developing LTP3, which is likely to be adopted in 2011 and will guide transport infrastructure investment until 2030. It is understood that consultation on the Draft LTP3 is likely to begin in October 2010. A potential list of schemes for Bicester has been outlined and whilst there are no details available as to whether these will be included within any adopted strategy, the following are considered relevant to the development site:

- BIC5 Gavray Drive to Mallards Way cycle/pedestrian link
- BIC12 Charbridge Lane A4421 Overbridge

Integrated Transport and Land Use Study for Bicester (BicITLUS)

2.1.11 The original BicITLUS study, adopted in 2000, was used to inform CDCs Local Plan, identifying the transport schemes that should be taken forward to support development within this period.

2.1.12 The study set out the following core aims and objectives:

1. To promote accessibility to everyday facilities for all members of the community, especially those without use of a car
2. To promote transport efficiency across the transport network
3. To improve safety and personal security for all users of the transport network
4. To promote integration of all modes of transport and land use planning
5. To protect and enhance the natural and built environment
6. To promote local economic vitality

2.1.13 Since the original TA was submitted (2004), many of the measures that were detailed within BicITLUS have been implemented, including:

- Howes Lane/Shakespeare Drive traffic signals
- Banbury Road to Lords Lane footpath upgrade
- Bicester North train station junction improvement
- Launton Road gateway
- Queens Avenue toucan crossing
- Lanbury Road cycle route (off road)
- Launton Road cycle route (off road)
- Churchill Road zebra crossing and refuge

- Bucknell Road footpath improvements
- Churchill Road lorry gate
- George Street cycle route
- Longfields to Churchill Road cycle route
- London Road pedestrian crossing
- Buckingham Road footway improvements

2.1.14 There are still however a number of remaining schemes that OCC are looking to develop in the future, including:

- Highway network improvements, including a South West perimeter road (to be implemented as part of the SW Bicester development by 2011) and upgrading of Howes Lane and Boundary Way.
- Traffic calming on the minor routes to discourage rat running.
- Pedestrian and cycle infrastructure improvements (radial and orbital routes, cycle lanes, signage, parking and crossing facilities)
- The provision of a new bus interchange at Bure Place in conjunction with the town centre development
- Bus network enhancements (frequency and links to Bicester North Station).
- Park and Ride site adjacent to the housing development at South West Bicester
- Rural taxi-bus scheme
- Improved interchange between Bicester North and Bicester Town railway stations
- Upgrading of rail line speeds and capacity
- Promotion of alternative travel modes through focused 'Better Ways to School' and 'Better Ways to Work' initiatives.

2.1.15 As part of CDC's transition to the LDF the original BicITLUS study is also going through a process of revision to form BicITLUS2, which will set out the package of transport measures that will need to be developed to support both future development and the existing needs of the town up to 2026.

2.1.16 A draft report detailing the analysis that will inform the strategy was released in early 2009 and it is understood that this has formed part of the evidence base for the LDF. However, this is highlighted as a discussion document, with a final strategy yet to be developed.

2.1.17 The Gavray Drive development proposal was adopted as a committed development within the analysis that supported the draft strategy, therefore any improvement strategies already allow for the impact of traffic associated with the proposal.

2.1.18 The study identified the transport infrastructure that would be needed to accommodate an additional 2000 dwellings and 20ha of employment land, across 4 potential development sites:

- Area 1 SW Bicester Phase 2
- Area 2 Howes Lane
- Area 3 Lords Lane
- Area 4 Wretchwick Farm

2.1.19 The first of these sites is considered 'fixed' and would accommodate 650 dwellings, with the remaining dwellings and employment land use being located within one of the other sites. Wretchwick Farm, located in the south east corner of Bicester, outside the Eastern perimeter road is the closest to the Gavray Drive development site.

- 2.1.20 The analysis identified potential highway improvement schemes that could be considered for implementation to mitigate network issues associated with future development. The schemes that are of relevance to the Gavray Drive development site include:
- Charbridge Lane railway bridge (following the introduction of East West rail)
 - Traffic calming in Launton (Launton would experience an increase in traffic due to increased congestion of the Eastern perimeter road and frequent closure of the level crossing)
 - Dualling of Wretchwick Way
- 2.1.21 The analysis found that the introduction of a combination of Wretchwick Way dualling and the Charbridge Lane over bridge results in the biggest decrease in total time spent on the network and shortest journey time on the Eastern perimeter road when compared to other schemes. The schemes also resulted in improved capacity at the Gavray Drive roundabout but additional capacity problems at the A4421/Launton roundabout. The level of increase of traffic on the route was dependant on the housing development options pursued, but development at Wretchwick Farm increased northbound link flows on Charbridge Lane.
- Local Development Documents***
- 2.1.22 CDC are currently preparing their Local Development Framework (LDF), which will form new planning policy guiding development in the district till 2026. The documents that form the LDF are not as yet adopted and until they are, policies within the Non-Statutory Cherwell Local Plan 2011 are identified as a material consideration in planning decisions.
- 2.1.23 Chapter 6 of the NSCLP2011 details the transport related planning policies against which development proposals are assessed. It is not intended to reproduce each of the specific policies within this section, but in summary they relate to:
- Locating developments in areas that reflect their anticipated demand
 - The requirement for a TA
 - The requirement for developments to mitigate its impact
 - The requirement to ensure the development does not generate any safety concerns
 - The requirement to support sustainable modes of travel
 - The requirement to provide an appropriate level of car and cycle parking.
- 2.1.24 The TA will ensure the development compliments specific policy where relevant.

3 Existing Traffic Conditions

3.1 Existing Highway Network

- 3.1.1 The original TA included an assessment of the existing highway network within the vicinity of the development site.
- 3.1.2 The same geographic scope has been adopted within this assessment as there has been no change to the scale or type of development being proposed for the site.
- 3.1.3 The development site is bounded to the south by Gavray Drive and to the east by the Bicester Eastern Distributor Route (see Figure 3.1). Gavray Drive is a wide single carriageway road without frontage development, providing access to residential development to the south via Mallards Way and Whimbrel Close. A number of bellmouth junctions have been constructed along the northern side of Gavray Drive to enable future development, even though the area is currently open grassland. Gavray Drive terminates just short of the rail line that serves Bicester Town Station to the south.
- 3.1.4 Wretchwick Way (A4421) forms part of the Eastern Distributor Route which skirts the eastern side of Bicester, connecting the A41 in the south to the A421 to the north. Where it passes the site it is a wide single carriageway. The junction between Gavray Drive and Wretchwick Way is located at the south-east corner of the site and takes the form of a normal three-armed roundabout.
- 3.1.5 To the south of Gavray Drive, Wretchwick Way provides access to Peregrine Way, which is effectively a large crescent acting as the main spine road to the Langford Village development. The northern connection between Peregrine Way and Wretchwick Road takes the form of a ghost island priority junction, whilst the southern junction is a normal three arm roundabout.
- 3.1.6 To the south of this roundabout the A4421 is dualled with two lanes on each carriageway, before joining the A41 at a large five-arm roundabout. As well as the A41, this roundabout also gives access to the town centre via London Road. The fifth arm accesses a Ministry of Defence site to the south.

3.2 Existing Junction Performance

- 3.2.1 OCC identified a number of junctions within the local highway network that required detailed junction capacity testing to assess the impact of the development proposals. These junctions are listed as follows:
- Gavray Drive / Mallards Way priority junction
 - Gavray Drive / Wretchwick Way roundabout
 - Peregrine Way / Wretchwick Way priority junction
 - Peregrine Way / Wretchwick Way / Neunkirchen Way roundabout
 - A41 / London Road / Seelscheid Way roundabout.
- 3.2.2 The performance of these junctions is reassessed as part of this updated TA. The traffic surveys that were commissioned to inform the original assessments were undertaken in 2004. As the traffic situation may have changed across the local highway network, updated turning count and queue surveys have been undertaken in 2010 and the junctions have been reassessed with this new information. The traffic surveys are attached to this report as Appendix A.

- 3.2.3 The 2010 turning counts revealed that the AM peak at each of the junctions was 07.45-08.45 and that the PM peak at all of the junctions apart from the London Road / London Road / Seelscheid Way roundabout was 17.00-18.00, with this junction having a slightly earlier PM peak of 16.45-17.45.
- 3.2.4 Figures 3.2 and 3.3 indicate the peak hour turning movements across this wider highway network.

Traffic Flow Comparison 2004 vs. 2010

- 3.2.5 In order to assess whether there have been changes in the volume of traffic using the various junctions between 2004 and 2010, the number of entry movements at each arm have been totalled for each junction, with this information summarised below as Table 3.1.

Table 3.1: Total entry flow comparison 2004 vs. 2010

Junction	AM Peak			PM Peak		
	2004	2010	% Change	2004	2010	% Change
Gavray Drive / Mallards Way priority junction	123	114	-7%	133	163	+23%
Gavray Drive / Wretchwick Way roundabout	1138	1193	+5%	1134	1266	+12%
Peregrine Way / Wretchwick Way priority junction	1276	1251	-2%	1434	1368	-5%
Peregrine Way / Wretchwick Way / Neunkirchen Way roundabout	1392	1428	+3%	1638	1565	-4%
London Road / London Road / Seelschied Way roundabout	3611	3507	-3%	3637	3618	-1%

- 3.2.6 Table 3.1 suggests that there is no clear pattern in terms of changing traffic volumes, with some junctions experiencing an increase and some experiencing a decrease between survey periods.
- 3.2.7 The capacity of each of the junctions has been tested using the 2010 flows and the results are summarised in the following paragraphs. The traffic models that were constructed as part of the original TA have been adopted as the junctions have not been modified in the interim. Full model outputs are included as Appendix B.

Gavray Drive / Mallards Way

- 3.2.8 This junction is currently a three-arm simple priority junction and is therefore modelled with the industry standard PICADY modelling software. (see Figure 3.4 for layout). The 2004 assessment identified that this junction operated well within capacity under observed traffic flows.

- 3.2.9 The 2010 traffic flows have been input into the traffic model and the results obtained in terms of ratios of flow to capacity (RFC) and queue lengths are presented in Table 3.2.

Table 3.2: Gavray Drive /Mallards Way Priority Junction – Existing Performance

	AM Peak			PM Peak		
	RFC	Modelled Queue	Observed Queue	RFC	Modelled Queue	Observed Queue
Mallards Way – left	0.006	0	0	0.013	0	0
Mallards Way – right	0.104	0	0	0.069	0	0
Gavray Drive - right	0.009	0	0	0.07	0	0

- 3.2.10 As was experienced within the 2004 assessment, it can be seen that this junction continues to operate well within capacity under 2010 traffic flows, with the RFC on all arms being less than 0.85 and with no queuing.
- 3.2.11 Comparing the modelled and observed queues it can be seen that the PICADY model reflects the observed situation

Gavray Drive / Wretchwick Way Roundabout

- 3.2.12 This junction is a normal three-arm roundabout and is therefore modelled with the industry standard ARCADY modelling software (see Figure 3.5 for layout). The 2004 assessment identified that this junction operated well within capacity under observed traffic flows.
- 3.2.13 The 2010 traffic flows have been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in Table 3.3.

Table 3.3: Gavray Drive / Wretchwick Way Roundabout – Existing Performance

	AM Peak			PM Peak		
	RFC	Modelled Queue	Observed Queue	RFC	Modelled Queue	Observed Queue
Wretchwick Way	0.259	0	0	0.401	1	0
Gavray Drive	0.061	0	0	0.193	0	0-2
Charbridge Road	0.348	1	0	0.267	0	0-1

- 3.2.14 As was experienced within the 2004 assessment, it can be seen that this junction continues to operate well within capacity under 2010 traffic flows with the RFC on all arms less than 0.85 and with observed queues reflecting similar results to the model outputs.

Peregrine Way / Wretchwick Way Priority Junction

3.2.15 This junction is a simple ghost island priority junction, (see Figure 3.6 for layout). The 2004 assessment identified that this junction operated well within capacity under observed traffic flows.

3.2.16 The 2010 traffic flows have therefore been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in Table 3.4.

Table 3.4: Peregrine Way / Wretchwick Way Priority Junction – Existing Performance

	AM Peak			PM Peak		
	RFC	Modelled Queue	Observed Queue	RFC	Modelled Queue	Observed Queue
Peregrine Way – left	0.235	0	1	0.239	0	1
Peregrine Way – right	0.220	0	1	0.112	0	1
Wretchwick Way – right	0.154	0	0	0.265	0	0

3.2.17 As was experienced within the 2004 assessment, it can be seen that this junction continues to operate well within capacity under 2010 traffic flows with the RFC on all arms less than 0.85.

3.2.18 Comparing the modelled and observed queues it can be seen that the PICADY model reasonably reflects the observed situation

Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout

3.2.19 This junction is a standard three-arm roundabout, (see Figure 3.7 for layout). The 2004 assessment identified that this junction operated well within capacity under observed traffic flows, with relatively little queuing.

3.2.20 The 2010 traffic flows have therefore been input into the traffic model and the results obtained in terms of RFC and queue lengths are presented in Table 3.5.

Table 3.5: Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – Existing Performance

	AM Peak			PM Peak		
	RFC	Modelled Queue	Observed Queue	RFC	Modelled Queue	Observed Queue
Neunkirchen Way	0.189	0	0-2	0.392	1	0-3
Peregrine Way	0.334	1	0-4	0.190	0	0-2
Wretchwick Way	0.339	1	0-4	0.253	0	0-8

3.2.21 As was experienced within the 2004 assessment, it can be seen that this junction continues to operate well within capacity with the RFC on all arms less than 0.85 and relatively little queuing.

3.2.22 In terms of the queuing results, in the PM peak, the observed queue of 8 vehicles on Wretchwick Road actually occurred during a single 5 minute period, with all of the remaining 5 minute periods within the peak hour having a queue length of zero. As such, it is believed the modelled queues reasonably reflect that which is observed.

A41 / London Road / Seelscheid Way roundabout

3.2.23 This is a large five-arm roundabout connecting the A41 with the A4421 (see Figure 3.8 for layout).

3.2.24 The 2004 assessment identified that, during the AM peak, the model outputs indicated significantly less queuing that was observed on the day of the survey, particularly on Neunkirchen Way. Site observations suggested that the heavy traffic flow from the A41 West and London Road to the A41 East did not give vehicles exiting Seelscheid Way sufficient opportunity to exit, resulting in the longer queues observed.

3.2.25 A site specific intercept correction of -5 was therefore applied to this arm in the AM peak, which resulted in the model more closely reflecting the observed queuing situation on Seelscheid Way.

3.2.26 During the 2004 PM peak the roundabout was shown to operate within capacity, with modelled queues reflecting what was observed. A site intercept correction was not therefore applied to the PM model.

3.2.27 The original models, without a site specific intercept correction, have been rerun with the current 2010 traffic flows and the results are indicated below in Table 3.6.

3.2.28 As previously identified, the PM peak for this junction was slightly earlier than the wider network, being between 16.45-17.45. This time period has also been modelled in addition to the wider network peak period of 17.00-18.00 therefore.

Table 3.6: A41 / London Road / Seelscheid Way Roundabout – Existing Performance

	AM Peak				PM Peak (16.45 – 17.45)				PM Peak (17.00 – 18.00)			
	RFC	Modelled Q	Obs. Q (near)	Obs. Q (off)	RFC	Modelled Q	Obs. Q (near)	Obs. Q (off)	RFC	Modelled Q	Obs. Q (near)	Obs. Q (off)
Seelscheid Way	0.794	4	0-17	0-15	0.408	1	0-4	0-2	0.416	1	0-4	0-2
A41 East	0.640	2	0-12	0-5	0.817	4	0-5	0-6	0.789	4	0-5	0-6
Gravenhill Road North	0.083	0	0-3		0.202	0	0		0.168	0	0.180	
B4100 London Road	0.510	1	0-6	0-2	0.593	1	0-10	0-5	0.574	1	0-10	0-5

3.2.29 Table 3.6 indicates that, once again, during the AM peak the modelled queue outputs are less than that which were observed as part of the traffic surveys. However, the difference in queues occurring along Seelscheid Way is significantly less than that which occurred during the 2004 surveys, with the other arms reflecting similar results.

3.2.30 During the AM peak the queue length along Seelscheid Way ranged between 0-17. However, for each 15 minute period within this peak hour, the average queue length was 7 vehicles, with the peak 15 minute period (07.45-08.00) having a queue length of 11.

3.2.31 Even with this additional information the observed queues along Seelscheid Way still exceed that which was modelled and so the 2010 flows have been input into the adjusted model with the same site specific intercept of -5 for this arm, detailed below in Table 3.7 also suggests that AM peak modelled queues for the A41 East did not reflect that which was observed, with the modelled queue of 2 compared with an observed range of 0-12 for the nearside lane. However, the observed 5 minute period when the queue was 12 vehicles was in fact an anomaly (08.25-08.30), with each 15 minute period within this peak hour having an average queue length of 2 and the peak 15 minute period (08.15-08.30) having a queue of 5. As such no adjustment is required at this arm.

3.2.32 In terms of the PM peak, as occurred under the 2004 assessment, the modelled results are more reflective of the observed scenario. The analysis confirms that the performance of the junction as a whole is worse during the junction specific peak period of 16.45-17.45. Subsequent analysis of the PM peak, in terms of baseline assessments and the addition of development traffic, will be applied to this junction specific peak period to reflect a robust assessment.

3.2.33 Table 3.7 therefore indicates the capacity test results of the junction for the AM peak using the adjusted model.

Table 3.7: A41 / London Road / Seelshied Way Roundabout – Existing AM Peak Performance Adjusted model

	AM Peak			
	RFC	Modelled Queue	Observed Q (near)	Observed Q (off)
Seelshield Way	1.022	29	0-17	0-15
A41 East	0.635	2	0-12	0-5
Gravenhill Road North	0.081	0	0-3	
A41 West	0.584	1	0-6	0-5
B4100 London Road	0.510	1	0-6	0-2

3.2.34 Table 3.7 confirms that adopting the adjusted model for the AM peak generates a queue on this arm that more readily reflects the observed scenario.

3.2.35 As a result of this adjustment the arm exceeds capacity, with an RFC of 1.022.

4 Rail

4.1 Introduction

- 4.1.1 The original TA detailed the existing rail services that operate within Bicester and proposed improvements to these services. This information is updated within this document.

4.2 Existing Situation.

- 4.2.1 There are two railway stations in Bicester (see Figure 4.1)

- Bicester North is located on the main line between London Marylebone and Birmingham and served by Chiltern Railways. This station has approximately 10,300 residents within 1km and has seen a growth in services and passenger numbers in recent years with a core timetable of 3 trains per hour in each direction, with a 1hr journey time to central London.
- Bicester Town, which forms part of the Great Western franchise, is located in the south east corner of the town, offering approximately 10 daily services to Oxford with a journey time of 26 minutes, in what was rebranded in 2009 as the Bicester link. The original TA identified that the station and service frequency was poor, however since the rebranding, frequency and station facilities including car parking have improved significantly. The station is located on a line that is subject of East West Rail's proposals for new services between Oxford and Bedford.

4.3 Rail Developments

East West Rail

- 4.3.2 The East West Rail Link is a scheme proposal which has been developed to establish a strategic railway connection East Anglia with Central, Southern and Western England.
- 4.3.3 The project is being promoted by the East West Rail Consortium - a group of local authorities and businesses with an interest in improving access to and from East Anglia and the Milton Keynes South Midlands growth area.
- 4.3.4 The East West proposals are referenced within relevant transport policy documentation and have support from the relevant local highway authorities.
- 4.3.5 Chiltern Railways are developing proposals for the Oxford to Bicester part of the Western Section of East West Rail, known as Project Evergreen 3.

Project Evergreen3 – Chiltern Railways

- 4.3.6 The original TA detailed that Phase 1 of Project Evergreen had been completed, resulting in improved line speeds and capacity. Since the submission of the original application Phase 2 has also been completed, involving improvements to Marylebone.
- 4.3.7 Chiltern Railways is now developing Phase 3 of Project Evergreen and in early 2010 submitted an application for a Transport and Works Act Order to construct a new railway (including the reconstruction of an existing railway) that will link Oxford and London via Bicester, together with the construction or reconstruction of stations at Bicester Town, Islip, Water Eaton and Oxford. The proposals are supported by OCC.

4.3.8 This project therefore facilitates the operation of direct railway services between London Marylebone, Bicester Town and Oxford, with initial intention to provide two trains per hour in each direction.

4.3.9 Land at the western end of Gavray Drive would be required to construct a rail chord linking Chilterns London-Birmingham line with the east-west line to Oxford.

4.4 New Interchange Station

4.4.1 The original TA highlighted that the original BicITLUS study detailed the possibility of establishing a new interchange at the intersection of the two railway lines, which could replace the existing two stations.

4.4.2 CB identified a number of reservations regarding the idea, which supported the opinion of Chiltern railways. The revised BicITLUS2 makes no reference to the interchange and as such it is assumed that the potential for such a facility has now been discounted.

5 Public Bus

5.1 Introduction

- 5.1.1 The original TA detailed the existing public bus services within reasonable proximity of the site and formulated a strategy to make the site more accessible to these services. This information is updated within this TA.

5.2 Existing Bus Services

- 5.2.1 There are three bus routes that pass through or near to the Langford area of Bicester, summarised below:
- Stagecoach Route S5, hourly service, Oxford - Bicester
 - Heyfordian Route 22, hourly service, Bicester Circular
 - Heyfordian Route 23, hourly service, Bicester Circular
- 5.2.2 Each of these services have formal stops along Peregrine Way, however Traveline Southeast identifies that the section of Gavray Drive that forms part of the Heyfordian Routes 22 and 23 is hail and ride and could therefore be accessed by future residents of the development site.
- 5.2.3 BicITLUS2 identifies that the Gavray Drive development '*should provide the impetus for the current 22/23 service to be improved from the current hourly service to half hourly.*' Should any of the identified development sites considered within the analysis come forward, then BICITLUS2 identifies no new service that would be likely to access the Gavray Drive development site.
- 5.2.4 In addition to these locally accessible services, there are also a number of services that can be accessed from the town centre, with key services summarised as follows:
- Arriva route 16, infrequent service Bicester – Aylesbury
 - Arriva Route 18, infrequent service Bicester - Buckingham
 - Stagecoach Route X5, every 30 minute service, Oxford – Bicester – Milton Keynes - Bedford – Cambridge
- 5.2.5 Identified bus routes are indicated in Figure 5.1.

5.3 Taxibus Service

- 5.3.1 As well as existing public bus services, the original TA also identified the existence of Chiltern Railways' Taxibus service, which provides a route to Bicester North Station from various points around Bicester, for use by Chiltern Rail customers.
- 5.3.2 The Taxibus network is currently made up of three urban services, one of which encompasses Langford Village, stopping at Peregrine Way and Mallards Way and including Gavray Drive on its route., indicated as Figure 5.2. Although there are no designated stops along Gavray Drive, the service actually operates as a hail and ride and so can be accessed from Gavray Drive.
- 5.3.3 The service operates against a regular timetable to access the station during peak hours, but outside these hours operates as a more traditional taxi service giving individuals

access to the station from their own home. Each vehicle can accommodate up to seven people.

5.3.4 The original TA identified that Chiltern Railways has reported that the scheme has been quite successful, attributable to several factors including:

- Well-designed routes that serve key Chiltern commuter catchment areas;
- Provision of branded customised vehicles and a uniformed driver;
- A dedicated interchange and priority measures for Taxibus vehicles at Bicester North station; and
- Fares well below the parking prices at Bicester North station.

5.3.5 Existing Taxibus fares are understood to be as follows:

- | | |
|-----------------------|-------|
| ▪ Single | £2.20 |
| ▪ Day Return | £3.50 |
| ▪ 7 Day Season ticket | £12 |
| ▪ Annual | £480 |

5.4 Public Bus Strategy

Bus Routeing Options

5.4.2 As part of the formulation of the original TA, CB liaised with Stagecoach to examine the possibility of extending existing services into Gavray Drive.

5.4.3 Stagecoach however suggested that the rerouting of existing services was problematic, due in part to a proposed review of service provision.

5.4.4 The potential diversion of other services that operate within the vicinity was considered, however as these services were heavily reliant on subsidies from OCC the position was adopted that diversion of such was not feasible.

Taxibus Alternative

5.4.5 As the rerouting of an existing bus service was deemed unsuitable, the original TA identified the potential of providing a Taxibus service for the development.

5.4.6 The existing Taxibus route as it stands is currently suitable for diversion through the site without adverse effects to existing Chiltern customers given it already runs along Gavray Drive. Using this route as a base a simple alternative routeing scenario has been considered. This suggested routeing is shown in Figure 5.3.

5.4.7 In both the peak periods the Taxibus service is timed to connect with train departures for London in the morning, and train arrivals from London in the evening. The main objective for the Taxibus service is to provide a connection with Chiltern rail services thereby eliminating the need for commuters to park at the station. Therefore any adjustment to the route must maintain the same running time in order to ensure that connections to train services can be made in a similar manner.

5.4.8 The option presented has been examined in terms of the extra length added to the route and the impact this may have on running times. The proposed route alteration adds only around 200 metres to the current route. Assuming average speed remains the same as the current operation, this adds less than a minute extra to the overall journey time.

5.4.9 As part of the formulation of the original TA, the proposed route was discussed with Chiltern Railways, and they agreed in principle with the diversion of the Taxibus into the development. This however may require additional funding, including the provision of an

extra vehicle should it be required to meet the train departures and arrivals at Bicester North station.

- 5.4.10 Chiltern Railways advised that the approximate cost of operating a Taxibus service is around £60,000 per vehicle. Taking the current route length, this works out at an annual cost of around £6,500 per vehicle kilometre. Therefore the cost of adding an additional 200 metres to the current journey may cost around £1,300 per annum.
- 5.4.11 As the development is built and demand increases it is likely that an additional vehicle may be required. Taking the estimated cost of £60,000 per annum and comparing it to estimated levels of demand provides a useful gauge of how much financial support would be required from the developer.
- 5.4.12 Census 'Journey to Work' statistics for 2001 show that in Bicester wards, approximately 6% of all people aged 16 to 74 and in employment are public transport users. This proportion provides a guide as to what the base level of demand might be. The proposed development consists of 500 dwellings. Assuming around 2.4 people per household this equates to a population of 1200. At 6% mode share, this results in 72 residents using public transport and assuming each user is a regular commuter who opts for a £12 weekly ticket, then the service could generate an annual revenue of approximately £41,500 based on a 48 week period.
- 5.4.13 The development could therefore generate revenue to cover over 70% of the annual cost of an additional Taxibus vehicle if only 6% of the population use the service.
- 5.4.14 Through the use of a targeted marketing campaign and other measures to enhance and promote the Taxibus service it is likely that a 10% mode share could be achieved. This would translate to approximately £69,000 revenue per annum from the proposed development of 500 residential units which clearly covers the annual running costs of an additional Taxibus

6 Pedestrian and Cycle Infrastructure

6.1 Introduction

- 6.1.1 The original TA detailed the existing pedestrian and cycle infrastructure that is located within vicinity of the development site. It is believed that this infrastructure has not changed significantly since the original assessment, which has therefore been reproduced within subsequent paragraphs.

6.2 Pedestrian Infrastructure

- 6.2.1 Gavray Drive is a 7.3m wide single carriageway road with 2 metre wide footways on both sides.
- 6.2.2 Gavray Drive ends at the rail line to the west that serves Bicester Town Station and there is no link across the railway provided at this point. However, there is a footpath link that connects to Gavray Drive to the east of the railway line. This runs southwards to an un-controlled level crossing and on to connect to Launton Road. This footway is generally 2m wide and its provided with street lighting along it length. The level crossing is already well used by pedestrians walking from the Banbury Fields and Langford Village developments. The northern section of this footpath is less well used, but usage would increase as a result of these development proposals.
- 6.2.3 Immediately to the north of where this footpath connects to Launton Road there is a Toucan crossing provided to give access for pedestrian and cyclists using the shared footway/cycleway on the western side of Launton Road. The footway on the western side of Launton Road is generally 3m wide, but as it approaches the town centre, it narrows in places to less than 2m and cyclist dismount markings are provided to improve safety.
- 6.2.4 This route will form an important link from the site to the centre of Bicester, which is approximately 1.5km from the centre of the development.
- 6.2.5 To the east of the site, Wretchwick Way is a busy road and forms part of the Eastern Distributor Road around Bicester. It is well lit and a 3 metre wide footway/cycleway runs along the length of the western side only. This is constructed from bituminous material and is generally of good quality.
- 6.2.6 There are also several footpath links from Gavray Drive running to the south through Langford Village and the open space then runs along the watercourse. These are generally for use by pedestrians and cyclists, although most have a thermoplastic marking running along the centre to segregate the two user groups. These routes provide good access to the local centre and primary school in Langford Village and certain of them can be used to walk to Bicester Town Station to the south.

Walk Distances to Trip Attractors

- 6.2.7 To fully assess the potential for future residents to walk to different sites within the area, a series of isochrones have been produced relating to the centre of the development area. These are shown in Figure 6.1. The isochrones have been chosen to reflect approximately 10 minute (800m) and 20 minute (1600m) walk times.
- 6.2.8 Table 6.1 shows the distance from the centre of the development site to the main local trip attractors. Walk distances of up to one kilometre are generally considered reasonable

by most members of the public, with the likelihood of trips by foot reducing as the distance increases.

Table 6.1: Walk Distance to Trip Attractors

Destination	Distance	Attractor
Local shops	800m	Employment, Retail
Launton Road Industrial Estate	1250m	Employment
Langford Primary School	800m	Education, Employment
Town Centre	1300m	Employment, Retail, Leisure
Bicester Town Rail Station	1450m	Public Transport
Bicester North Rail Station	1550m	Public Transport
Cooper Secondary School	2150m	Education, Employment
Kings End Hospital	2200m	Healthcare, Employment

6.3 Cycling Infrastructure

- 6.3.1 BicITLUS2 identifies that the eastern perimeter road currently has a high quality pedestrian / cycle route, with good penetration into existing residential areas, but that the volume of traffic using this route results in severance.
- 6.3.2 Gavray Drive currently forms part of the Sustrans National Cycle Network Route 51 Oxford to Milton Keynes, accommodating a segregated route extending towards the town centre to the west and Wretchwick Way to the east. Within Bicester itself, the route connects with both rail stations, the town centre, Bicester village and Tesco superstore.
- 6.3.3 The north section of Wretchwick Way also forms part of the Sustrans Cycle network which then extends to the east towards Launton.
- 6.3.4 At present no facilities exist along the length of Peregrine Way but there are a network of segregated footway/cycleway through the Langford Village developments.
- 6.3.5 Cycle distances of up to 5 miles are generally considered as reasonable by most members of the cycling community and such journeys would take up to 27½ minutes. On this basis, the whole of Bicester, Ambrosden, Middleton Stoney, Upper Arncott and Marsh Gibbon are all accessible within a 30 minute cycle ride.

6.4 Conclusion

- 6.4.1 The development site is easily accessible to employment, retail, education and leisure facilities by bicycle and the permeability of the local footway network and the existing and proposed cycle route hierarchy results in a development site that is considered sustainable and which can encourage alternative methods of transport to car based trips

7 Baseline Traffic Flows and Junction Performance

7.1 Introduction

7.1.1 Section 3 detailed junction capacity tests based on observed traffic flows. It is now necessary to consider the performance of these junctions against a baseline assessment, encompassing the background traffic growth that will occur up to an identified opening year of development and also traffic associated with committed development proposals that have not as yet been implemented.

7.1.2 The following sections set out the baseline scenario therefore.

7.2 Traffic Growth

7.2.1 The anticipated opening year of the development is 2016. In the original TA a design year 10 years after opening of the development was assessed. However, in the interim less onerous TA Guidelines have been published and we have therefore only examined the developments opening year.

7.2.2 National Traffic Model (NTM) growth factors, adjusted using TEMPRO local growth factors, have therefore been applied to the observed 2010 traffic flows to inform the 2016 baseline situation. These growth factors are indicated below as Table 7.1 and the resultant traffic flows on the local highway network are attached as Figures 7.1 and 7.2 for the AM and PM peak periods respectively.

Table 7.1: NTM, TEMPRO adjusted growth factors

	AM Peak	PM Peak
2010-2016 Growth Factor	1.0472	1.0484

7.3 Committed Development

7.3.1 When assessing the traffic impact of development proposals, it is standard practice to derive the baseline scenario by adding estimates of traffic flows from committed developments that have planning approval but have not yet been implemented to observed traffic flows.

7.3.2 It should be noted however, that TEMPRO growth factors, which have been applied to observed traffic as described above, typically take into account development proposals that are identified within local development plans. As such, establishing traffic flows associated with committed developments will result in an element of double counting. As such, any subsequent traffic impact analysis will reflect a robust assessment.

7.3.3 There were no committed developments that required consideration as part of the original TA. However, CDC's letter dated 19th April 2010 and further discussion with Richard Deadman at OCC have confirmed that a number of committed development sites should now be considered within the updated TA, listed as follows:

- South West Bicester (planning reference 06/00967/OUT)
- Bicester Business Park (07/01106/OUT)

- Bicester Town Centre (07/00422/F)
- Discount food store at land adjacent former publishing house (10/00385/F)
- Skimmingdish Lane Business Park (05/01563/OUT)

7.3.4 The TAs that were produced in support of each of these development sites have been reviewed and the development flows have been extracted. Where the adjacent local highway network does not link into that which has been considered as part of the Gavray Drive impact assessment, then assumptions have been made regarding the assignment of development traffic, which are detailed within the following paragraphs.

South West Bicester

7.3.5 This significant development site, granted outline planning permission in June 2008, is located on land at Whitelands Farm, bounded by the A41 Oxford Road, the B4030 Middleton Stoney Road and The A4095, approximately 3km from the Gavray Drive site.

7.3.6 The development proposals encompass the following land use mix:

- 1585 residential units
- 1000sqm local centre
- 20000sqm B1/B2 Employment Use
- 100 bedroom hotel
- 3.5ha Health Village
- 2323sqm Sports Centre
- 630 pupil primary school
- 650 pupil secondary school

7.3.7 The supporting TA, produced by WSP, identifies that the construction of the development will take place over a number of years, with completion anticipated for 2014.

7.3.8 The highway network that was considered as part of the impact assessment did not include any of the junctions that are to be considered as part of the Gavray Drive impact assessment. The assessment did however detail the change in turning movements that would occur at the A41 Oxford Road/A41 East (Esso) roundabout junction. The A41 east is an arm of the London Road/Seelscheid Way/A41 Aylesbury Road junction, which was included within the Gavray Drive local highway network impact assessment. The impact of the change in turning movements as a result of the South West Bicester development upon this network can therefore be assessed.

7.3.9 The introduction of development traffic results in an additional 117 westbound and 107 eastbound movements along the A41 East in the AM peak and 113 westbound and 100 eastbound movement in the PM peak. The supporting TA also identifies that there will be a reasonable level of highway works associated with the development, including the introduction of a perimeter road around the site, which results in the diversion of baseline traffic. At the Esso roundabout this diversion actually results in a decrease in baseline movements amounting to 40 westbound and 36 eastbound movements along the A41 East in the AM peak and 36 westbound and 44 eastbound movement in the PM peak.

7.3.10 The net impact of additional development traffic and this diversion is an additional 77 westbound and 72 eastbound movements along the A41 East in the AM peak and 77 westbound and 56 eastbound movement in the PM peak.

7.3.11 These movements have been distributed onto the local highway network that has been assessed as part of the Gavray Drive impact assessment based on the following assumptions:

- 0% of traffic travelling east on the A41 turns left into London Road as drivers exiting South West Bicester would have simply continued north up Oxford Road to access areas of the town that are served by London Road.
- The remainder of traffic travelling east on the A41, and therefore north along the perimeter road, is distributed based on the observed turning proportions at each of the junctions.
- 0% of traffic travelling west on the A41 towards South West Bicester comes from London Road as traffic from areas of Bicester served by London Road would travel south on Oxford Road.
- The remainder of traffic travelling west on the A41 has an origin that has been proportioned based on the observed turning movements at each of the junctions.

7.3.12 Figures 7.3 and 7.4 therefore indicate the AM and PM peak committed development flows for South West Bicester within the local highway network that has been assessed as part of the Gavray Drive assessment.

7.4 Bicester Business Park

7.4.1 A resolution to grant outline planning permission, subject to a Section 106 agreement, was made in January 2008 for a 60,000sqm business park, located to the south east of Bicester, bordered to the north by the A41 Boundary Way and to the west by the A41 Oxford Road.

7.4.2 The development proposal formed part of a larger parcel of land, associated with the South West Bicester development proposal detailed above.

7.4.3 The TA supporting the development proposal, produced by i-Transport, has been reviewed and the development traffic has been extracted.

7.4.4 Whilst the TA did include the impact of committed development flows associated with Gavray Drive and town centre, the traffic impact analysis only considered the impact of the development at the A41 Oxford Road/A41 Boundary Way Esso roundabout and did not consider any junction within the wider highway network. This is despite the TA identifying that there would be a considerable volume of development traffic distributed on the A41 Boundary Way and therefore onto the A41 east arm of the London Road/Seelscheid Way/A41 Aylesbury Road junction, which was assessed as part of the Gavray Drive impact assessment.

7.4.5 The TA identified that the development would generate a total of 201 westbound movements and 23 eastbound movements on the A41 Boundary Way during the AM peak and 21 westbound and 152 eastbound movements during the PM peak, considerably more than any other of the committed development sites considered within this section.

7.4.6 Given their proximity, these movements have been distributed onto the local highway network that has been assessed as part of the Gavray Drive impact assessment based on the same assumptions that were adopted for the South West Bicester site.

7.4.7 Figures 7.5 and 7.6 therefore indicate the AM and PM peak committed development flows for Bicester Business Park within the local highway network that has been assessed as part of the Gavray Drive assessment.

Bicester Town Centre Expansion

- 7.4.8 The proposed redevelopment of Bicester town centre, focussed on an area of land between Manorsfield Road and Sheep Street, was granted planning permission in September 2009.
- 7.4.9 The main elements of the development proposals encompass the following land use mix:
- Net increase in non-food retail of 6434sqm
 - Food retail 7414sqm
 - 2198sqm cinema
 - 19 residential units
 - civic office
- 7.4.10 In terms of traffic impact, based on the development proposal being dominated by retail and leisure land uses, the supporting TA only assessed PM peak and Saturday peak periods and did not assess the traditional weekday AM peak.
- 7.4.11 The highway network that was considered as part of the impact assessment did not include any of the junctions that are to be considered as part of the Gavray Drive impact assessment. The assessment did however detail the change in turning movements that would occur at the London Road/Market Square/Launton Road junction. London Road is an arm at the London Road/Seelscheid Way/A41 Aylesbury Road junction, which was included within the Gavray Drive local highway network impact assessment, and so the impact of the change in turning movements as a result of the Bicester Town Centre redevelopment upon this network can be assessed.
- 7.4.12 The introduction of development traffic results in an additional 23 westbound and 29 eastbound movements along London Road in the weekday PM peak.
- 7.4.13 These movements have been distributed onto the local highway network that has been assessed as part of the Gavray Drive impact assessment, based on the following assumptions:
- 80% of westbound development traffic on the London Road arm of at the London Road/Market Square/Launton Road junction comes from the London Road/Seelscheid Way/A41 Aylesbury Road junction.
 - 80% of eastbound development traffic on London Road comes from the London Road/Market Square/Launton Road junction and reaches the London Road/Seelscheid Way/A41 Aylesbury Road junction.
 - 0% of development traffic travelling east on London Road turns right onto the A41 London Road as drivers would have used Oxford Road to access areas of the town that are served by the A41.
 - The remainder of development traffic travelling east on London Road, and therefore north along the perimeter road, is distributed based on the observed turning proportions at each of the junctions.
 - 0% of development traffic travelling west on London Road towards the town centre comes from the A41 as traffic from areas of Bicester served by the A41 would have accessed the town centre via Oxford Road.
 - The remainder of development traffic travelling west London Road has an origin that has been proportioned based on the observed turning movements at each of the junctions.
- 7.4.14 Figure 7.7 therefore indicates the PM peak committed development flows for the town centre expansion within the local highway network that has been assessed as part of the Gavray Drive assessment.

Discounted Food Store

- 7.4.15 This development site, located on Launton Road, was recently granted planning permission and encompasses a 1672sqm discount foodstore, to be operated by Lidl.
- 7.4.16 Given the proposed landuse, the TA that was submitted to support the application only considered the weekday PM peak hour within its assessment, for a 2015 design year.
- 7.4.17 The highway network that was considered as part of the impact assessment did not include any of the junctions that are to be considered as part of the Gavray Drive impact assessment. The TA did however detail the change in turning movements at the Launton Road/A4421 Skimmingdish Lane/A4421 Charbridge Lane junction. Charbridge Lane continues south to form part of the Eastern perimeter road and therefore part of the highway network that has been assessed as part of the Gavray Drive assessment.
- 7.4.18 The TA calculated that the development would generate 11 new trips that had an origin and destination via the A4421 Charbridge Lane. These movements have been distributed onto the local highway network that has been assessed as part of the Gavray Drive impact assessment, based on the following assumptions:
- 80% of development traffic that uses Charbridge Lane has an origin/destination south along the eastern perimeter road, with 20% having an origin/destination towards Laughton via Bicester Road.
 - 0% of development traffic has an origin/destination via London Road at the London Road/Seelscheid Way/A41 Aylesbury Road junction, with development traffic having used Launton Road to access areas served by London Road.
 - The remainder of development traffic using the eastern perimeter road has an origin/destination that has been proportioned based on the observed turning movements at each of the junctions.
- 7.4.19 Figure 7.8 therefore indicates the PM peak committed development flows for the discount store within the local highway network that has been assessed as part of the Gavray Drive assessment.

Skimmingdish Lane Business Park

- 7.4.20 This development proposal, which was approved at appeal in early 2007, is located immediately north of A4421 Skimmingdish Lane and encompasses 5857sqm GFA of commercial development.
- 7.4.21 Unfortunately, the publically available TA that is currently available on the CDC planning portal website is incomplete. However, the sections that are available confirm that only the impact of the development at the junction of Skimmingdish Lane with Launton Road has been assessed. As such, no consideration was given as to the impact of development traffic upon the local highway network that has been considered as part of the Gavray Drive development proposal.
- 7.4.22 The TA identifies that in the AM/PM peak periods, 50/10 vehicles enter the site from Skimmingdish Lane East and 11/38 vehicles exit the site onto Skimmingdish Lane east, with these movements accessing Charbridge Lane, which links into the local highway network that has been assessed as part of the Gavray Drive impact assessment.
- 7.4.23 These movements have been distributed based on the same assumptions that are related to the discount store above.

- 7.4.24 Figure 7.9 and 7.10 therefore indicates the AM and PM peak committed development flows for proposals within the local highway network that has been assessed as part of the Gavray Drive assessment.

Total Committed Development

- 7.4.25 Figures 7.11 and 7.12 give the total committed development traffic flows.

7.5 Proposed Development: North West Bicester Ecotown

- 7.5.1 As well as the committed development sites identified above, we are also aware of proposals that are being formulated to introduce an Ecotown on a site to the north west of Bicester.
- 7.5.2 The development proposal encompasses 5000 residential units and 5000 jobs and is based on a principle of high levels of self containment, low levels of commuting and high levels of public transport use. Initial estimates suggest that 3000 of these units could be constructed by 2026.
- 7.5.3 Whilst the detailed proposals are being formulated, there are a number of feasibility documents that have been produced, one of which relates to transport, produced by Halcrow with the most recent version dated June 2009.
- 7.5.4 The document details SATURN analysis that has been undertaken to assess the impact of the development upon the wider highway network. Given the location of the site however, on the western edge of the town, focus is given to those strategic routes to the west, north and south of Bicester where development traffic will be naturally distributed.
- 7.5.5 There is a limited analysis undertaken on the impact of development traffic on the Eastern Perimeter Road. As such, it is reasonable to assume that the impact of the development on the local highway network that has been assessed as part of the Gavray Drive analysis is likely to be negligible.
- 7.5.6 Indeed, the results of SATURN modelling that has been undertaken to assess the change in actual flows that occur along strategic links within the town for the AM peak between a 2026 reference case and a scenario with the Ecotown in plan details confirms the small change in traffic flows that would occur along Charbridge Lane and A41 East, reproduced below as Table 7.2.

Table 7.2: Ecotown Traffic Impact – Actual AM Peak traffic flows

Link	Direction	2026 Reference Case	Ecotown	Change
A41 East	Eastbound	850	875	+25
	Westbound	1239	1245	+6
Charbridge Lane	Northbound	267	298	+31
	Southbound	974	974	0

Source: Halcrow Transport Issues Technical Note June 2009 Table 4.1

- 7.5.7 From Table 7.2 it is clear that the analysis indicates that the Ecotown proposal will have little impact on the Eastern perimeter road. As such and given the opening year of 2026, some 10 years after the Gavray Drive development proposal is likely to be operational, no further assessment has been made as to the impact of the Ecotown.

7.6 Baseline Traffic Impact Assessment

7.6.1 Having established the 2016 baseline traffic flows (See Figures 7.13 and 7.14) it is possible to model the performance of each of the junctions assessed in Section 3.2 under these flows, against which the impact of the development can be assessed.

7.6.2 Full model outputs are included as Appendix C and summarised in the following tables.

Gavray Drive / Mallards Way

7.6.3 Table 7.3 below indicates the results of the junction capacity test under the baseline scenario.

Table 7.3: Gavray Drive /Mallards Way Priority Junction – Baseline Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Mallards Way – left	0.006	0	0.013	0
Mallards Way – right	0.114	0	0.074	0
Gavray Drive - right	0.009	0	0.007	0

7.6.4 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms and no queuing.

Gavray Drive / Wretchwick Way Roundabout

7.6.5 Table 7.4 below indicates the results of the junction capacity test under the baseline scenario.

Table 7.4: Gavray Drive / Wretchwick Way Roundabout – Baseline Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Wretchwick Way	0.325	1	0.470	1
Gavray Drive	0.075	0	0.226	0
Charbridge Road	0.425	1	0.313	1

7.6.6 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms.

Peregrine Way / Wretchwick Way Priority Junction

7.6.7 Table 7.5 below indicates the results of the junction capacity test under the baseline scenario.

Table 7.5: Peregrine Way / Wretchwick Way Priority Junction – Baseline Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.272	0	0.271	0
Peregrine Way – right	0.284	0	0.137	0
Wretchwick Way – right	0.167	0	0.309	0

7.6.8 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms.

Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout

7.6.9 Table 7.6 below indicates the results of the junction capacity test under the baseline scenario.

Table 7.6: Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – Baseline Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Neunkirchen Way	0.219	0	0.461	1
Peregrine Way	0.401	1	0.223	0
Wretchwick Way	0.481	1	0.297	0

7.6.10 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms.

A41 / London Road / Seelscheid Way Roundabout

7.6.11 Table 7.7 below indicates the results of the junction capacity test under the baseline scenario. The AM peak has been tested against the adjusted model and the peak hour committed development flows (17.00-18.00) have been summated to the junction specific PM peak (16.45-17.45) to reflect a robust assessment.

Table 7.7: A41/ London Road / Seelscheid Way Roundabout – Baseline Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Seelscheid Way	1.300	154	0.512	1
A41 East	0.776	3	0.931	11
Gravenhill Road North	0.115	0	0.294	0
A41 West	0.679	2	0.945	13
B4100 London Road	0.575	1	0.747	3

7.6.12 Table 7.7 confirms that background traffic growth to the opening year and the addition of committed development traffic worsens the performance of the junction during the AM peak, with Seelscheid Way further exceeding capacity, resulting in an increased queue length.

7.6.13 As well as this however, the A41 East and A41 West arms exceed capacity during the PM peak.

8 Trip Generation and Distribution

- 8.1.1 The original TA that was submitted as part of the approved development detailed a trip generation assessment associated with the development proposals.
- 8.1.2 As the scale of the development has not changed as the trip rates for each land use are essentially approved, this updated TA will adopt the results of the original trip generation assessment.

Residential

- 8.1.3 The original trip generation assessment adopted approved residential trip rates that were associated with the nearby Bicester Fields development. Table 8.1 reproduces these trip rates and the subsequent number of trips, based on an assumption of 30% of the 500 units being affordable.

Table 8.1: Residential Trip Rates and Trips

		In		Out		Total	
		Private	Affordable	Private	Affordable	Private	Affordable
Trip Rate	08.00-09.00	0.17	0.09	0.63	0.26	0.8	0.35
	17.00-18.00	0.59	0.26	0.16	0.2	0.75	0.46
Trips	08.00-09.00	60	14	221	39	281	50
	17.00-18.00	207	39	70	30	277	69

Primary School

- 8.1.4 The original trip rate assessment adopted representative trip rates from the TRICS database for the proposed single form of entry primary school.
- 8.1.5 The primary school would have a capacity of 210 pupils, however the proposed residential aspect of the development would be expected to generate 125 primary aged pupils (25 per 100 dwellings). These pupils were found not to generate car trips on the wider road network and trip generation was therefore based on the remaining 85 pupils. The TRICS trips rates and anticipated traffic generation associated with the land use has therefore been reproduced below as Table 8.2.

Table 8.2: Primary School Trip Rates and Trips

		IN		OUT		Total	
		Trip Rate	Car Trips	Trip Rate	Car Trips	Trip Rate	Car Trips
08.00-09.00		0.23	20	0.18	15	0.41	35
17.00-18.00		0.03	3	0.03	3	0.06	6

Comparative Trip Generation – Employment Land Use

- 8.1.6 The original TA identified that the site was actually allocated as a high quality employment land use within the current local development plan. The original TA therefore prepared a comparative Trip Generation assessment to ascertain the potential traffic

impact of an employment land use, based on an assumed plot ratio of 40% of a site area of 136,700sqm and a building height of 2-storeys, resulting in a GFA of 109,440sqm.

- 8.1.7 The trip generation assessment identified trip rates for both B1a office and B1c light industrial land uses from the TRICS database, with the full site selection and TRICS outputs reproduced as Appendix D.
- 8.1.8 Table 8.3 and Table 8.4 reproduce the resultant trip rates and trips for these land uses.

Table 8.3: Employment Land Use Trip Rates

	B1a Office			B1c Light Industry		
	IN	OUT	Total	IN	OUT	TOTAL
0800-0900	1.67	0.16	1.83	1.00	0.18	1.2
1700-1800	0.16	1.26	1.43	0.2	0.88	1.07

Table 8.4: Employment Land Use Trips

	B1a Office			B1c Light Industry		
	IN	OUT	Total	IN	OUT	TOTAL
0800-0900	1828	175	2003	1094	197	1313
1700-1800	175	1379	1554	219	963	1171

- 8.1.9 It can be seen that both of these land uses have the potential to generate substantially more traffic than the residential proposals being put forward for the site.

8.2 Trip Distribution

Residential

- 8.2.2 The trip distribution for the residential land uses included within the original TA was based on 2001 Census data for Bicester. The original data is reproduced as Appendix E and the aggregate distribution assumptions are reproduced as follows:

- 13% A4421 North
- 6% A41 South
- 7% London Road
- 74% A41 towards M40

- 8.2.3 Figures 8.1 and 8.2 indicate the anticipated residential traffic flows assigned to the road network during the AM and PM peak periods, based on these assumptions.

Primary School

- 8.2.4 The trip distribution for the primary school land uses included within the original TA was believed to be much more local in nature and was based on the following assumptions:
- 20% to the north
 - 30% from Layford Village

- 30% from Bicester Fields
- 20% from the town centre

8.2.5 Figures 8.3 and 8.4 indicate the anticipated primary school traffic flows assigned to the road network during the AM and PM peak periods, based on these assumptions.

Alternative Employment Use

8.2.6 The original TA also identified the distribution of development traffic based on a situation of the site being used for employment, based on 2001 Census Data. The original data is reproduced as Appendix F and the aggregate distribution assumptions are reproduced as follows:

- 24% A4421 North
- 11% A41 South
- 24% London Road
- 41% A41 towards M40

8.2.7 Figures 8.5-8.8 indicate the anticipated office and light industrial related traffic flows assigned to the road network, based on these assumptions.

9 Development Traffic Impact

9.1 Introduction

- 9.1.1 Having established the performance of each of the junctions within the immediate highway network under the assumed baseline situation, it is necessary to test the impact of the additional traffic that would be generated by the development proposal.
- 9.1.2 Figures 9.1 and 9.2 therefore detail the AM and PM peak traffic flows that would occur by summing baseline and development traffic.
- 9.1.3 Each of the junctions have been retested for this 'with development' scenario, with model outputs included as Appendix G. In addition tests have also been undertaken examining the implications of employment development on this site, with model outputs included as Appendix H.

Gavray Drive / Mallards Way

- 9.1.4 Table 9.1 below indicates the results of the junction capacity test at this junction under the with development scenario.

Table 9.1: Gavray Drive /Mallards Way Priority Junction – With Development Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Mallards Way – left	0.006	0	0.013	0
Mallards Way – right	0.125	0	0.076	0
Gavray Drive - right	0.009	0	0.007	0

- 9.1.5 It can be seen that this junction continues to operate well within capacity under the with development scenario, with an RFC less than 0.85 on all arms and no queuing.

Gavray Drive / Wretchwick Way Roundabout

- 9.1.6 Table 9.2 below indicates the results of the junction capacity test at this junction under the with development scenario.

Table 9.2: Gavray Drive / Wretchwick Way Roundabout – With Development Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Wretchwick Way	0.365	1	0.561	1
Gavray Drive	0.341	1	0.263	0
Charbridge Road	0.474	1	0.356	1

9.1.7 It can be seen that this junction continues to operate well within capacity under the with development scenario, with an RFC less than 0.85 on all arms.

Peregrine Way / Wretchwick Way Priority Junction

9.1.8 Table 9.3 below indicates the results of the junction capacity test at this junction under the with development scenario.

Table 9.3: Peregrine Way / Wretchwick Way Priority Junction – With Development Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.290	0	0.301	0
Peregrine Way – right	0.331	0	0.169	0
Wretchwick Way – right	0.175	0	0.339	1

9.1.9 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms.

Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout

9.1.10 Table 9.4 below indicates the results of the junction capacity test at this junction under the with development scenario.

Table 9.4: Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – With Development Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Neunkirchen Way	0.248	0	0.552	1
Peregrine Way	0.419	1	0.258	0
Wretchwick Way	0.622	2	0.340	1

- 9.1.11 It can be seen that this junction continues to operate well within capacity under the with development scenario, with an RFC less than 0.85 on all arms.

A41/ London Road / Seelscheid Way roundabout

- 9.1.12 Table 9.5 below indicates the results of the junction capacity test at this junction under the with development scenario. The AM peak has been tested against the adjusted model and the development flows have been summated to the junction specific PM peak (16.45-17.45) to reflect a robust assessment.

Table 9.5: A41/London Road/Seelscheid Way Roundabout – With Development Performance

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Seelscheid Way	1.560	307	0.571	1
A41 East	0.793	4	0.964	17
Gravenhill Road North	0.123	0	0.337	1
A41 West	0.721	2	1.076	72
B4100 London Road	0.598	2	0.813	4

- 9.1.13 As anticipated, Table 9.5 confirms that the addition of development traffic worsens the performance of the junction with Seelscheid Way suffering from significant queuing in the AM peak and the A41 East and A41 West further exceeding capacity during the PM peak.
- 9.1.14 A highway improvement strategy will therefore need to be formulated to mitigate the impact of the development proposal at this junction.

9.2 Traffic Impact with Previously Designated Employment Development

9.2.1 The Local Plan allocation for this site was originally for a high quality employment use. Section 8 identified that an employment use at this site would have the potential to generate a significant number of vehicular trips, well above that which would be generated by the current development proposals. Should the site have ever been used for employment purposes, the analysis has assessed the impact of employment traffic at each of the relevant junctions, considering the impact of a B1a Office scheme first and a B1c light industrial use second. Figures 9.3-9.6 indicate the traffic flows at each of the junctions associated with these land uses.

Gavray Drive / Mallards Way – B1a Office

9.2.2 Table 9.6 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1a Office development.

Table 9.6: Gavray Drive /Mallards Way Priority Junction – Baseline Performance + B1a Office

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Mallards Way – left	0.006	0	0.013	0
Mallards Way – right	0.114	0	0.074	0
Gavray Drive - right	0.009	0	0.007	0

9.2.3 It can be seen that the introduction of a B1a office development scheme would have no impact at this junction.

Gavray Drive / Wretchwick Way Roundabout – B1a Office

9.2.4 Table 9.7 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1 Office development.

Table 9.7: Gavray Drive / Wretchwick Way Roundabout – Baseline Performance + B1a Office

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Wretchwick Way	1.265	269	0.503	1
Gavray Drive	0.231	0	1.518	319
Charbridge Road	0.632	2	0.540	1

- 9.2.5 It can be seen that the additional traffic associated with a B1a office development proposal results in this junction exceeding capacity with significant queues occurring on Wretchwick Way during the AM peak and Gavray Drive during the PM peak.

Peregrine Way / Wretchwick Way Priority Junction- B1a Office

- 9.2.6 Table 9.8 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1a Office development.

Table 9.8: Peregrine Way / Wretchwick Way Priority Junction – Baseline Performance + B1a Office

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	***	82	0.311	0
Peregrine Way – right	***	79	0.355	1
Wretchwick Way – right	0.385	1	0.329	0

- 9.2.7 It can be seen that the additional traffic associated with a B1a office development proposal results in this junction exceeding capacity during the AM peak with the volume of through traffic along the Eastern perimeter road preventing vehicles from exiting Peregrine Way.

Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – B1a Office

- 9.2.8 Table 9.9 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1a Office development.

Table 9.9: Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – Baseline Performance + B1a Office

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Neunkirchen Way	0.852	6	0.532	1
Peregrine Way	2.111	130	0.250	0
Wretchwick Way	0.528	1	0.957	16

- 9.2.9 It can be seen that the additional traffic associated with a B1a office development proposal results in this junction exceeding capacity, with Peregrine Way suffering from severe queuing during the AM peak and Wretchwick Way exceeding capacity during the PM peak.

A41/ London Road / Seelscheid Way roundabout – B1a Office

- 9.2.10 Table 9.10 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1a Office development.

Table 9.10: A41 / London Road / Seelscheid Way Roundabout – Baseline Performance + B1a Office

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Seelscheid Way	1.215	143	1.203	140
A41 East	0.944	13	1.139	115
Gravenhill Road North	0.181	0	0.615	1
A41 West	1.281	256	0.981	21
B4100 London Road	1.354	194	0.814	4

- 9.2.11 It can be seen that the additional traffic associated with a B1a office development proposal results in this junction exceeding capacity on the majority of arms during all peak periods.

- 9.2.12 The introduction of a B1a office scheme would therefore need to be supported by a significant mitigation strategy at this junction.

Gavray Drive / Mallards Way – B1 Light Industrial

9.2.13 Table 9.11 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1c Light Industrial development.

Table 9.11: Gavray Drive /Mallards Way Priority Junction – Baseline Performance + B1c Light Industrial

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Mallards Way – left	0.006	0	0.013	0
Mallards Way – right	0.114	0	0.073	0
Gavray Drive - right	0.009	0	0.007	0

9.2.14 It can be seen that the introduction of an employment development scheme would have no impact at this junction.

Gavray Drive / Wretchwick Way Roundabout– B1c Light Industrial

9.2.15 Table 9.12 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1 Light Industrial development.

Table 9.12: Gavray Drive / Wretchwick Way Roundabout – Baseline Performance + B1c Light Industrial

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Wretchwick Way	0.860	6	0.524	1
Gavray Drive	0.269	0	1.077	51
Charbridge Road	0.563	1	0.543	1

9.2.16 It can be seen that during the AM peak Wretchwick Way just exceeds capacity and that during the PM peak Gavray Drive exceeds capacity with the onset of B1c Light Industrial development traffic.

Peregrine Way / Wretchwick Way Priority Junction– B1c Light Industrial

9.2.17 Table 9.13 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1c Light Industrial development.

Table 9.13: Peregrine Way / Wretchwick Way Priority Junction – Baseline Performance + B1c Light Industrial

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Peregrine Way – left	0.975	6	0.309	0
Peregrine Way – right	0.911	5	0.262	0
Wretchwick Way – right	0.241	0	0.334	0

9.2.18 It can be seen that the volume of through traffic along Wretchwick Way during the AM peak results in Peregrine Way exceeding capacity, although the PM peak continues to operate well within capacity under this scenario, with an RFC less than 0.85 on all arms.

Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – B1c Light Industrial

9.2.19 Table 9.14 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1c Light Industrial development.

Table 9.14: Peregrine Way / Wretchwick Way / Neunkirchen Way Roundabout – Baseline Performance + B1c Light Industrial

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Neunkirchen Way	0.598	2	0.537	1
Peregrine Way	0.779	3	0.252	0
Wretchwick Way	0.580	1	0.746	3

9.2.20 It can be seen that this junction continues to operate well within capacity under the baseline scenario, with an RFC less than 0.85 on all arms.

A41/ London Road / Seelscheid Way roundabout – B1c Light Industrial

9.2.21 Table 9.15 below indicates the results of the junction capacity test at this junction under the baseline scenario with additional traffic flows associated with a B1c Light Industrial development.

Table 9.15: A41 / London Road / Seelscheid Way Roundabout – Baseline Performance + B1c Light Industrial

	AM Peak		PM Peak	
	RFC	Modelled Queue	RFC	Modelled Queue
Seelscheid Way	1.414	232	1.011	28
A41 East	0.873	6	1.134	108
Gravenhill Road North	0.145	0	0.598	1
A41 West	1.028	44	1.007	31
B4100 London Road	1.085	49	0.931	5

- 9.2.22 It can be seen that the additional traffic associated with a B1c light industrial development proposal results in this junction exceeding capacity on the majority of arms during all peak periods, requiring a significant mitigation strategy.

9.3 Mitigation Strategy

- 9.3.1 The only junction to require improvement in the case of development with the proposed residential use is the A41 / London Road / Seelscheid Way roundabout junction.
- 9.3.2 The main problem at this junction occurs during the morning peak hour on Seelscheid Way. Site observations suggest this is caused by the volume of traffic travelling from the A41 West and London Road towards the A41 East offering very few gaps for traffic to join the roundabout from Seelscheid Way.
- 9.3.3 The TA that supported the original application identified the potential mitigation strategy of introducing a part-time traffic signal on the roundabout and the Seelscheid Way arm of the junction to provide guaranteed opportunities to exit, which would only need to be operational during the AM peak period.
- 9.3.4 A part-time signal arrangement at this junction was therefore formulated using TRANSYT and this has been reproduced using the updated traffic flow information.
- 9.3.5 The junction layout is shown in Figure 9.7 whilst the TRANSYT link diagram is included in Figure 9.8. The full TRANSYT results at this junction can be seen in Appendix I and are summarised below in Table 9.16.

Table 9.16: 2016 AM Peak junction Performance (RFC and Degree of Saturation) with 500 Units and a Primary School

Link	2016 Baseline + Committed Development + Development
London Road	51
Seelscheid Way	88
A41 East	79
MoD Access	9
A41 West	63
Neunkirchen Way (Northbound)	74
Circulatory Carriageway	69

- 9.3.6 The output from TRANSYT has a different format to that of roundabout models. The junction performance is given as degree of saturation, which is the flow along a link as a percentage of its capacity. Degrees of saturation of 90% or below indicate that the junction is operating acceptably, whilst result between 90% and 100% show that the particular link exceeds its practical capacity, but is within its theoretical capacity.
- 9.3.7 Table 9.16 indicates that, based on a cycle time of 60 seconds, the junction operates within capacity with the proposed mitigation strategy in place with maximum degree of saturation on Seelscheid Way being 88% and a queue of 24 vehicles, which is a significant improvement compared to the scenario with no mitigation strategy in place. In addition, the mean maximum queue on the circulatory carriageway would increase to 8 vehicles. Any blocking of London Road that might occur as a result of this would only occur for a short time during a cycle and as the arm of this junction is under capacity we would not expect this reduction in exit opportunities to cause a significant problem.
- 9.3.8 In the PM peak, the onset of development traffic resulted in A41 East and A41 West exceeding capacity. In order to mitigate for these impacts, minor geometric changes to entry width and flare length have been made as indicated in Figure 9.7.
- 9.3.9 An ARCADY model of this amended junction has been created and the performance of the junction with these changes to the geometry implemented can be seen in Table 9.17, with full model outputs included as Appendix J. The 2004 assessment also indicated London Road exceeded capacity and so the mitigation strategy promoted a modification to the entry width at this arm as well. The modified junction has therefore retained this improvement to allow for tolerance in terms of traffic movements.

Table 9.17: PM Peak A41/London Road/Seelscheid Way Roundabout – With Development Performance – Mitigation Strategy

	PM Peak	
	RFC	Modelled Queue
Seelscheid Way	0.576	1
A41 East	0.926	11
Gravenhill Road North	0.343	1
A41 West	0.939	12
B4100 London Road	0.687	2

9.3.10 From Table 9.17 it can be seen that proposed mitigation strategy results in significant improvements to the junction. Whilst the strategy does not result in all arms benefiting from having an RFC within 0.85, it mitigates both the impact of the development and returns the junction to anticipated baseline levels of performance during the PM peak before the onset of development traffic, which the 2004 assessment also achieved.

9.3.11 To reflect the change in opposed maximum flow values that would occur to the relevant give way entry arms as a result of the changes in geometry, the AM peak TRANSYT Model has also been rerun, with results indicated below as Table 9.18 and full model outputs included as Appendix K.

Table 9.18: 2016 AM Peak junction Performance (RFC and Degree of Saturation) with 500 Units and a Primary School and geometric changes

Link	2016 Baseline + Committed Development + Development
London Road	41
Seelscheid Way	88
A41 East	77
MoD Access	9
A41 West	55
Neunkirchen Way (Northbound)	74
Circulatory Carriageway	69

9.3.12 From Table 9.18 it is clear that the geometric changes do not result in significant changes in the performance of the junction during the AM peak above the improvements that have been generated after the introduction of the signalised arrangement.

9.4 Other Improvements

- 9.4.1 The TA that supported the original application identified other improvements to the local highway network that can be delivered in association with the development proposals and these are set out below.

Cycling

- 9.4.2 One beneficial effect of the introduction of traffic signals at the Seelshied Way arm of the A41 roundabout is that these would enable pedestrians / cyclists to cross from the footway on the east side of Neunkirchen Way to that on the north side of the A41 West. Although it is only proposed to operate the signals during the AM peak period, the crossing facility could be set up to operate on demand (i.e. push button operated) during other periods.
- 9.4.3 This addresses a specific concern that was raised by residents during the public consultation that supported the original application, where residents reported that current movement between the A41 West and Seelscheid Way cycle routes were hazardous.

Gavray Drive

- 9.4.4 Another area of concern raised by residents was the speed of vehicles currently travelling along Gavray Drive which is a good quality, 7.3m wide single carriageway road that follows a straight and level alignment. At present it is very lightly trafficked, which offers the opportunity for drivers using the route to travel at high speed.
- 9.4.5 As part of the development proposals there is the potential to introduce measures to reduce vehicle speeds along Gavray Drive. In particular, in order to ensure pedestrian linkages between the site and the existing residential development are good, it would be beneficial to introduce crossing facilities at the main pedestrian desire lines (i.e. where existing footpaths join Gavray Drive on its southern side). These could take the form of uncontrolled crossings with a central island and, potentially, the road surface raised to the same level as the footway. Alternatively, if demand was anticipated to be sufficient, signal controlled Pelican crossings could be installed where necessary.
- 9.4.6 No detailed scheme has yet been developed for this, but crossing facilities could also be accompanied by other measures to discourage high vehicle speeds, such as carriageway narrowing, chicanes, changes of surface texture, etc.

10 Site Access Junctions

10.1 Site Access

10.1.1 It is proposed that access is provided to the site at five points. The eastern end of the site will accommodate approximately 325 residential units served by three simple priority junctions whilst the western end has about 175 units and the primary school accessed via two simple priority junctions (see Figure 10.1 for the location of these).

10.1.2 In order to demonstrate that there would be no capacity problems at the site access junctions, PICADY has been used to assess the performance of a single priority junction assuming that all of the traffic from 325 dwellings would use a single access. This gives an absolute worst case capacity assessment for the site access.

10.1.3 Using the traffic flow shown in Figure 10.2 along with the industry standard software package PICADY, the capacity results indicated Table 10.1 were achieved for the notional site access layout, with full model outputs included as Appendix L.

Table 10.1: Site Access Junction Performance

	AM		PM	
	RFC	Qs	RFC	Qs
Site Access	0.289	0	0.078	0
Gavray Drive-Right	0.087	0	0.309	1

10.1.4 Even under the extreme assumption that all traffic would use one access, it can be seen that a simple priority junction would perform with no capacity problems. It is thus clear that if traffic is distributed between two priority controlled access junctions, no capacity problem will occur.

10.2 Car Parking

10.2.1 Relevant maximum parking standards are detailed within NSCLP2011. These standards designate two separate parking areas:

- Type 1 – Central urban areas
- Type 2 – All other locations

10.2.2 Table 10.2 below details the relevant parking standards that the development will therefore need to comply with. In terms of the primary school, the standards only reference a higher education facility, which is inappropriate. As such, it is assumed an appropriate level of parking will be agreed with the local planning authority.

Table 10.2: Car Parking Standards

Type	Residential Standard
Type 1	1 space per dwelling up to 2 beds, 2 + beds on merit
Type 2	1 bed – 1 space, 2/3 bed – 2 spaces, 4 bed+ 2+ spaces on merit

- 10.2.3 The residential parking requirement therefore depends on the accommodation mix of the 500 residential units, which will form part of a future reserved matters application.

11 Summary and Conclusion

- 11.1.1 In 2002, Colin Buchanan were commissioned by Gallagher Estates to prepare a Transport Assessment in support of a proposed residential development on land to the north of Gavray Drive, Bicester (planning reference 04/02797/OUT).
- 11.1.2 The development proposal was eventually approved by the Secretary of State following an appeal (reference 05/00019/NONDET), in July 2006, with the Transport Assessment having been agreed with Oxfordshire County Council as part of the appeal process.
- 11.1.3 The development has not as yet been implemented and the original approval is nearing expiry. Gallagher Estates are therefore seeking to renew the planning consent on the site. CDC have advised that the planning application will need to be supported by an updated TA in order to assess the impact of the development proposals against the current highway network.
- 11.1.4 This report therefore updates the original TA and assesses the impact of the development proposal, which has not changed since the original application, using updated traffic surveys that have been undertaken on the wider highway network.
- 11.1.5 The junction capacity analysis shows that the performance of the junctions in 2010 is similar to that in 2004, with all of the junctions operating within capacity apart from the A41/ London Road / Seelscheid Way roundabout, with the volume of circulatory traffic from London Road and the A41 West preventing vehicles from Seelscheid Way entering the junction.
- 11.1.6 The updated TA has identified an assumed opening year of 2016 and growthed observed traffic using National Traffic Model flows adjusted to reflect local TEMPRO factors. Committed development flows were then added to these 2016 traffic flows and the junctions were retested to assess their performance against this baseline scenario.
- 11.1.7 The committed development proposals included:
- South West Bicester (planning reference 06/00967/OUT)
 - Bicester Business Park (07/01106/OUT)
 - Bicester Town Centre (07/00422/F)
 - Discount food store at land adjacent former publishing house (10/00385/F)
 - Skimmingdish Lane Business Park (05/01563/OUT)
- 11.1.8 This updated TA adopts the trip generation and distribution assessments included within the original TA and added these flows to the baseline scenario. Each of the junctions were reassessed and it was demonstrated that existing capacity concerns were magnified.
- 11.1.9 A mitigation strategy at the A41/ London Road / Seelscheid Way roundabout has therefore been formulated, based on introducing part time signals to relieve capacity concerns during the AM peak and a modified geometry to relieve capacity concerns during the PM peak. The models indicate that the mitigation strategy significantly improve the performance of the junction, returning it to anticipated baseline performance levels.
- 11.1.10 The TA also indicates that if an employment scheme had been pursued for the site, it would result in capacity concerns at other junction within the network, resulting in a wider mitigation strategy being required.
- 11.1.11 In terms of sustainable access to the site, the updated TA has reproduced the strategy adopted within the original assessment, based on introducing a dedicated Taxibus to

serve the site. The level of demand generated by the development is likely to sustain an additional service.

- 11.1.12 In conclusion therefore, given the previous approval for the site, the key aspect of this TA is to ensure that the traffic that is generated can be accommodated within the local highway network based on the current scenario. The analysis has demonstrated that where the traffic impact is significant the mitigation measures identified are similar to those promoted in the previous TA (i.e. minor attentions to junction geometry and the introduction of part time signals). CB therefore conclude that there are no transport reasons to prevent planning consent being granted for the proposed development.

Figures

Figure 3.1 Site Location Plan

Figure 3.2 AM Peak Observed 2010 Traffic Flows (PCUs)

Figure 3.3 PM Peak Observed 2010 Traffic Flows (PCUs)

Figure 3.4 Gavray Drive / Mallard Way Priority Junction

Figure 3.5 Gavray Drive / Wretchwick Way Roundabout

Figure 3.6 Peregrine Way / Wretchwick Way Priority Junction

**Figure 3.7 Peregrine Way / Wretchwick Way / Neunkirchen Way
Roundabout**

Figure 3.8 A41 / London Road / Seelscheid Way Roundabout

Figure 4.1 Existing Rail Infrastructure

Figure 5.1 Existing Bus Routes

Figure 5.2 Existing Taxibus Service

Figure 5.3 Proposed Taxibus Service

Figure 6.1 Pedestrian Isochrones

Figure 7.1 AM Peak 2016 Traffic Flows

Figure 7.2 PM Peak 2016 Traffic Flows

**Figure 7.3 AM Peak South West Bicester Committed Development
Flows**

**Figure 7.4 PM Peak South West Bicester Committed Development
Flows**

**Figure 7.5 AM Peak Bicester Business Park Committed Development
Flows**

Figure 7.6 PM Peak Bicester Business Park Committed Development Flows

Figure 7.7 PM Peak Town Centre Committed Development Flows

Figure 7.8 PM Peak Discounted Food Store Committed Development Flows

Figure 7.9 AM Peak Skimmingdish Lane Business Park Committed Development Flows

Figure 7.10 PM Peak Skimmingdish Lane Business Park Committed Development Flows

Figure 7.11 AM Peak Total Committed Development Flows

Figure 7.12 PM Peak Total Committed Development Flows

Figure 7.13 AM Peak Baseline Traffic Flows

Figure 7.14 PM Peak Baseline Traffic Flows

Figure 8.1 AM Peak Residential Trip Distribution

Figure 8.2 PM Peak Residential Trip Distribution

Figure 8.3 AM Peak Primary School

Figure 8.4 PM Peak Primary School

Figure 8.5 AM Peak B1a Office Employment Distribution

Figure 8.6 PM Peak B1a Office Employment Distribution

Figure 8.7 AM Peak B1c Light Industrial Employment Distribution

Figure 8.8 PM Peak B1c Light Industrial Employment Distribution

Figure 9.1 AM Peak Baseline + Development Traffic Flows

Figure 9.2 PM Peak Baseline + Development Traffic Flows

Figure 9.3 AM Peak Baseline + B1a Office Employment Traffic Flows

Figure 9.4 PM Peak Baseline + B1a Office Employment Traffic Flows

**Figure 9.5 AM Peak Baseline + B1c Light Industrial Employment
Traffic Flows**

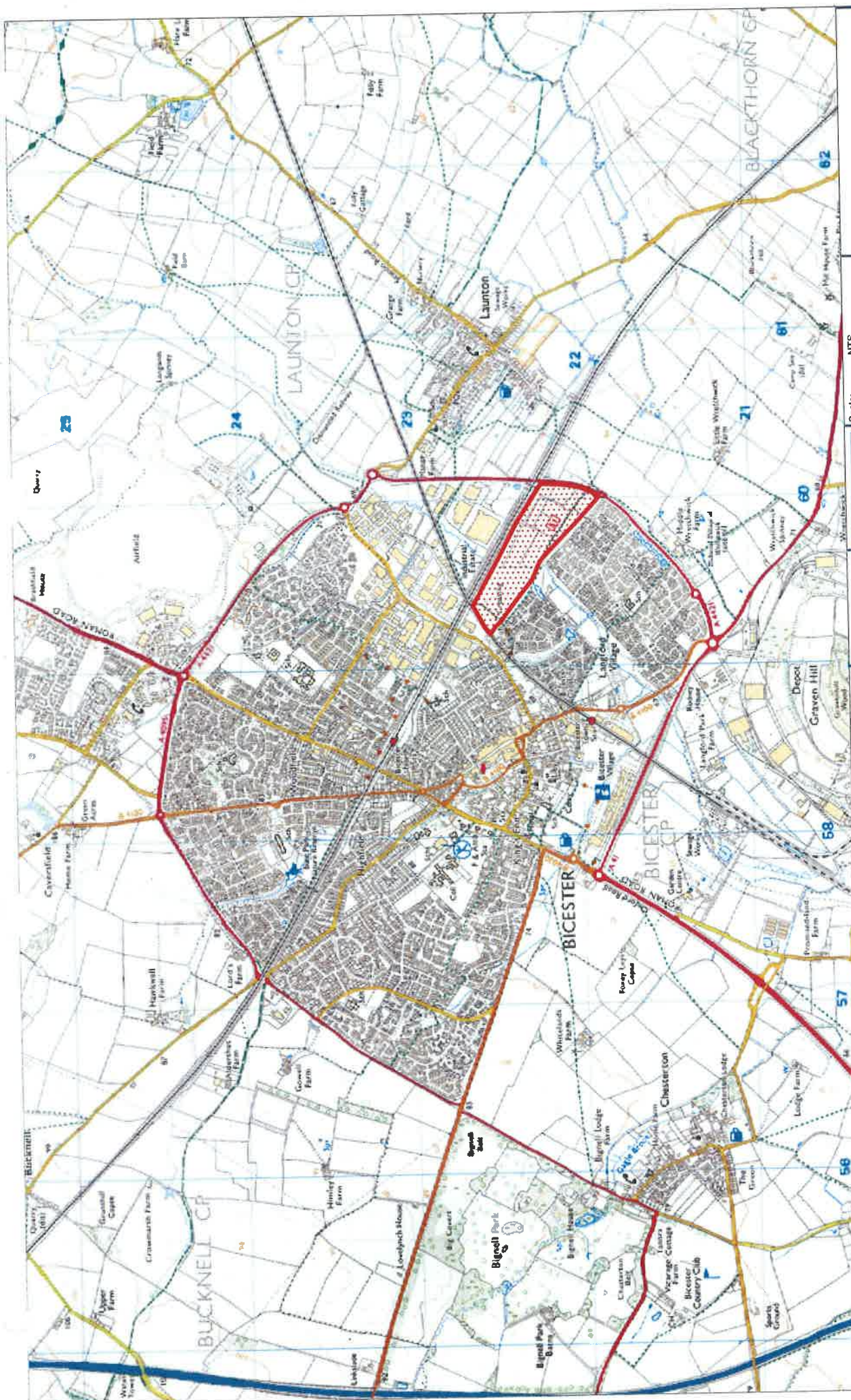
**Figure 9.6 PM Peak Baseline + B1c Light Industrial Employment
Traffic Flows**


**Figure 9.7 A41 / London Road / Seelscheid Way Proposed Part Time
Signal Mitigation Strategy Junction Layout**

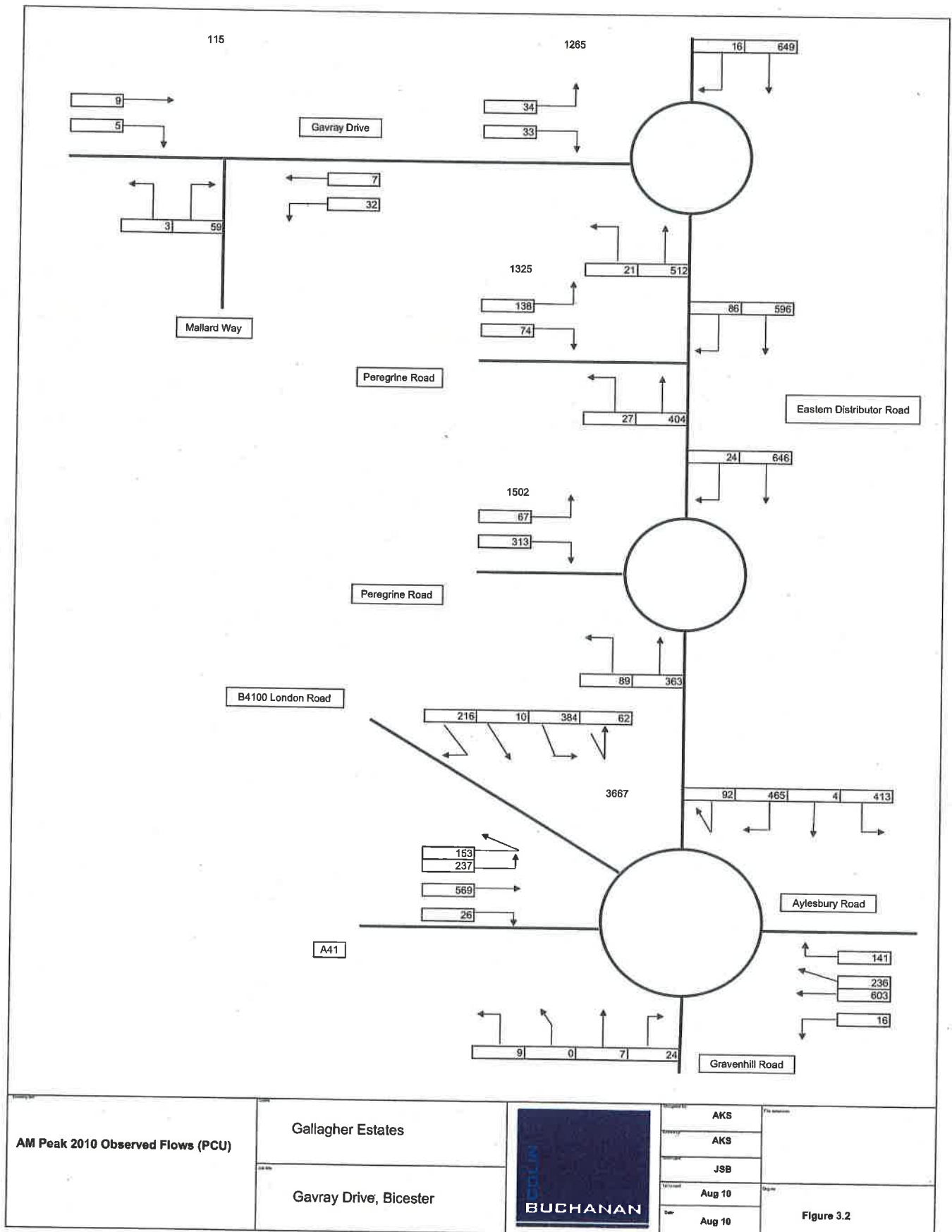
**Figure 9.8 A41 / London Road / Seelscheid Way TRANSYT Link
Diagram**

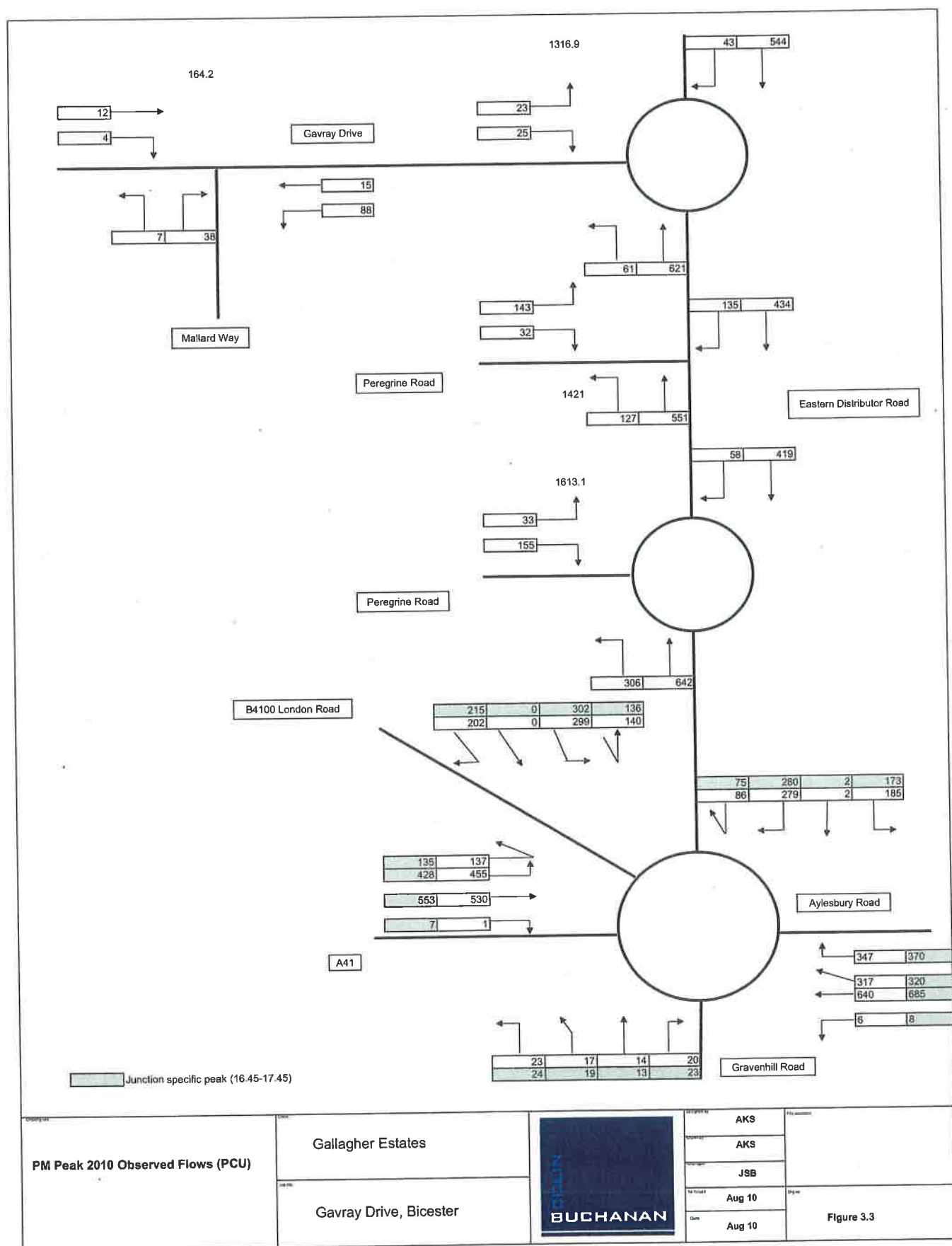
Figure 10.1 Site Access Locations

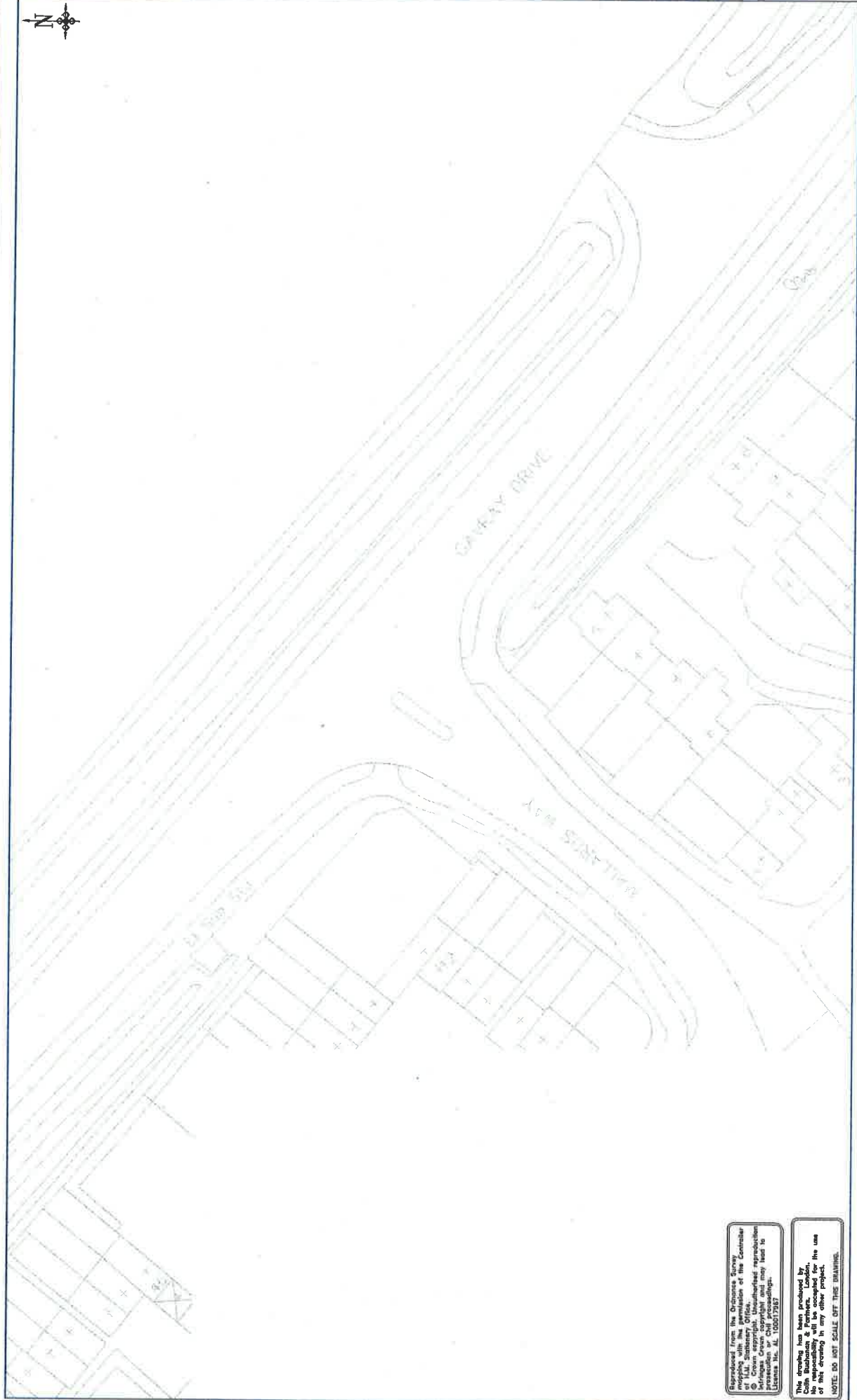
Figure 10.2 Site Access Turning Movements



Drawing Title	Site Location Plan	Client	Gallagher Estates	 BUCHANAN	Scale: NTS	Designed by: AKS	Drg No: Figure 3.1
						Drawn by: AKS	
		Job Title	Gavray Drive, Bicester	Chkd/Appd: JSB	1st Issued: Aug 10		
				Job No: 18578-01-1			
				10 Eastbourne Terrace Paddington London W2 8LG		T 020 7053 1300 F 020 7053 1301 www.buchanan.co.uk	







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Drawing Title

GAVRAY DRIVE/ MALLARDS WAY
PRIORITY JUNCTION - EXISTING LAYOUT

Client

GALLAGHER ESTATES

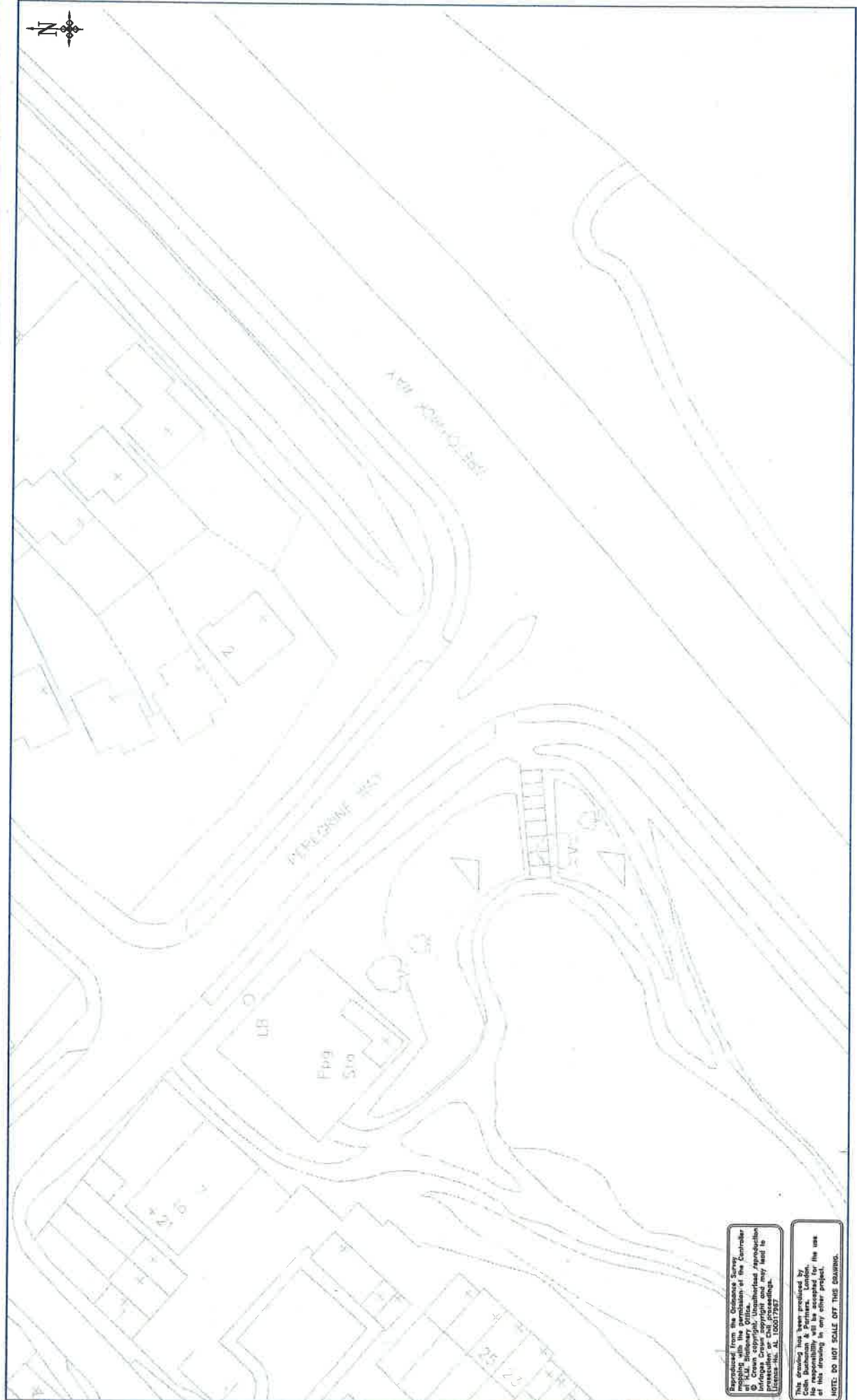
Job Title

GAVRAY DRIVE, BICESTER



Scale:	1:500@A3	Dwg No:
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Drawn by:	A.D	
Ckd/Appd:		
1st Issued:	Oct '04	
Job No:	64211	

Figure 3.4



Drawing Title

PEREGRINE WAY/ WRETCHWICK WAY
PRIORITY JUNCTION - EXISTING LAYOUT

Client

GALLAGHER ESTATES

Job Title

GAVRAY DRIVE, BICESTER

Scale: 1:500@A3

Designed by: D.S

Drawn by: A.D

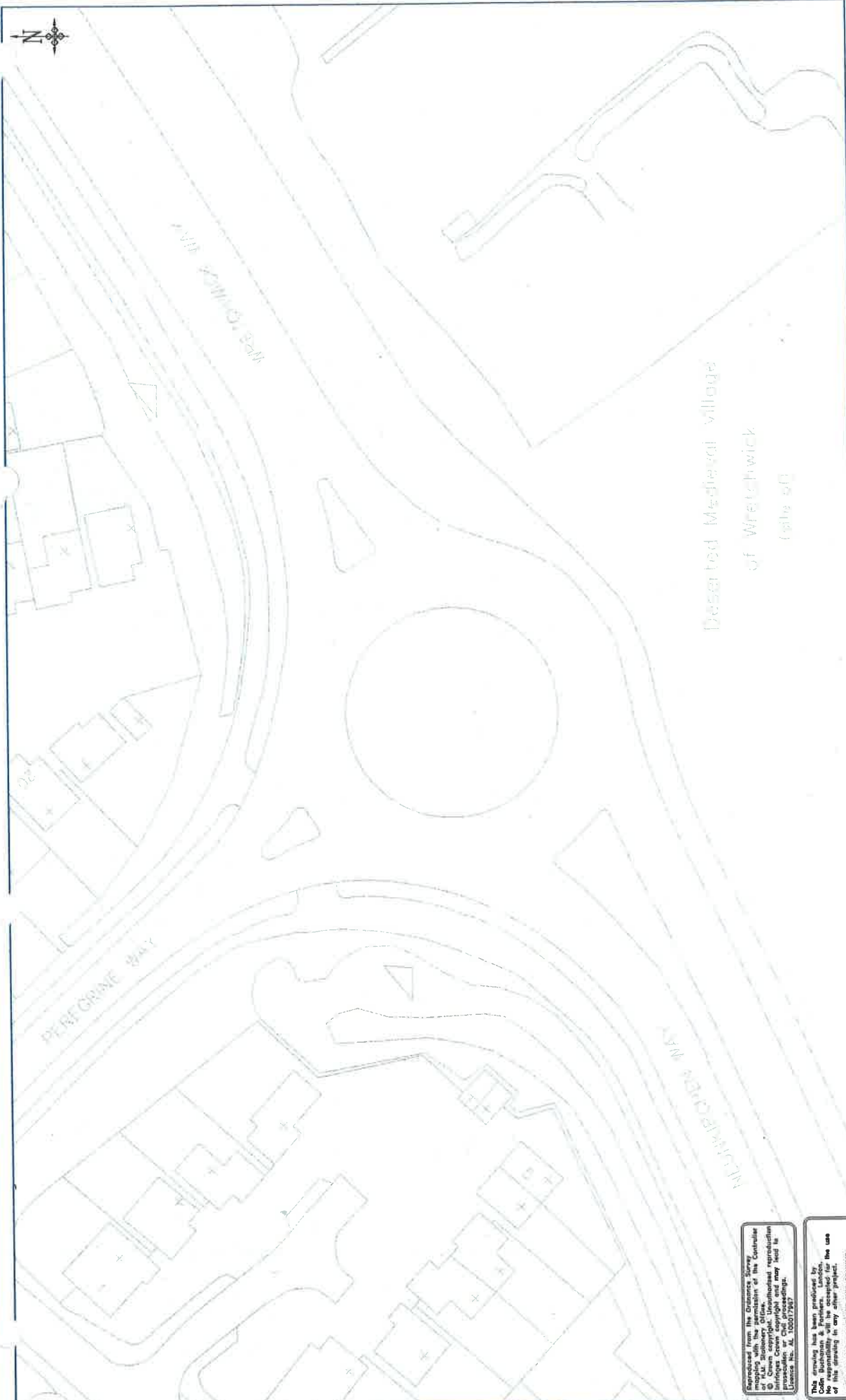
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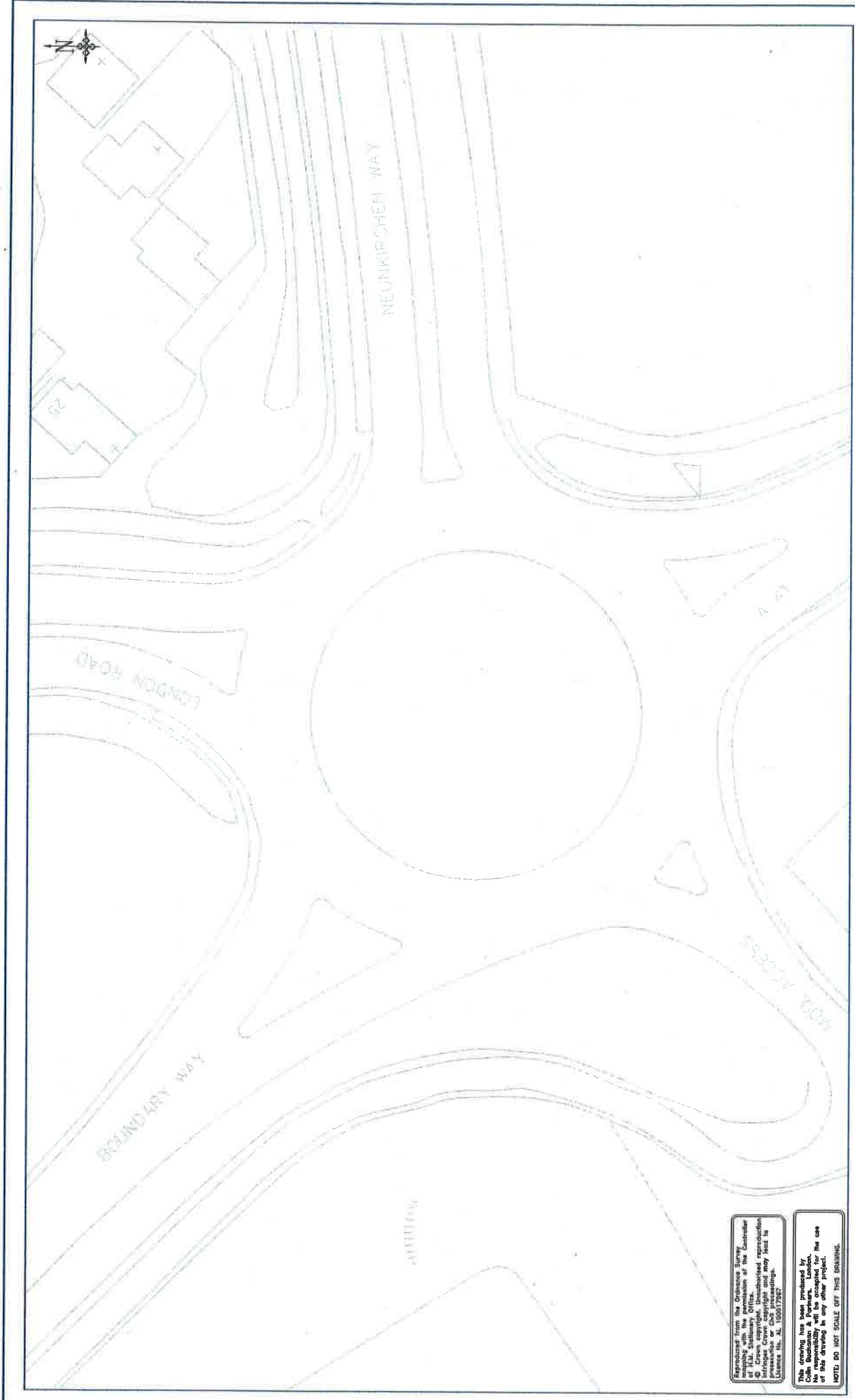
Drg No:

Figure 3.6



Drawing Title	PEREGRINE WAY/ WRETCHWICK WAY/ NEUNKIRCHEN WAY ROUNDABOUT - EXISTING LAYOUT		Client	GALLAGHER ESTATES		Scale:	1:500@A3	Drg No:	Figure 3.7				
	Job Title			GAURAY DRIVE, BICESTER			Designed by:		D.S.	Drawn by:	A.D.	Ckd/Appd:	

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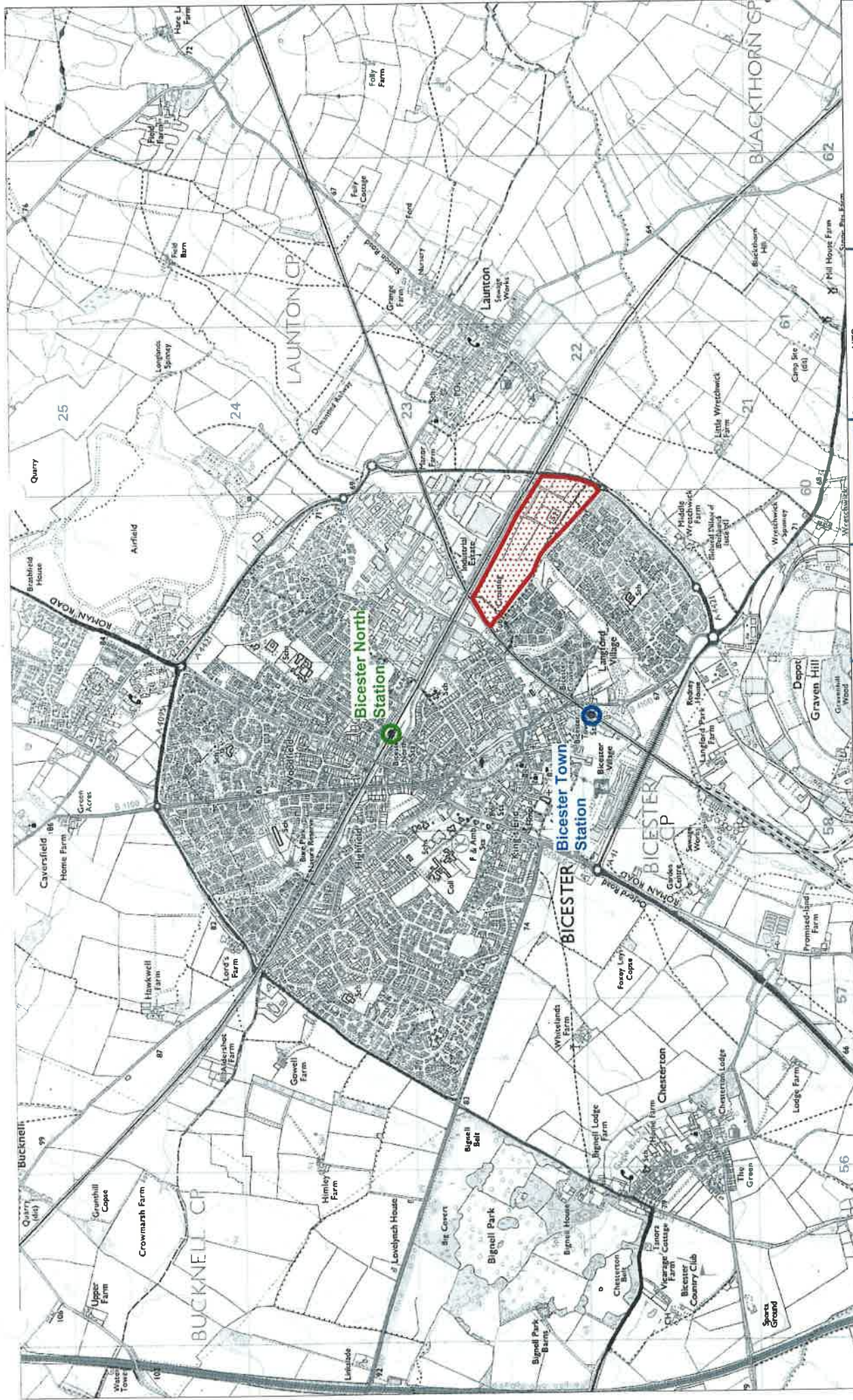
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							Designed by:	D.S	
							Drawn by:	A.D	
							Ckd/Appt:		
							1st Issued:	Oct '04	
							Job No:	64211	

Figure 3.8

Figure 3.8

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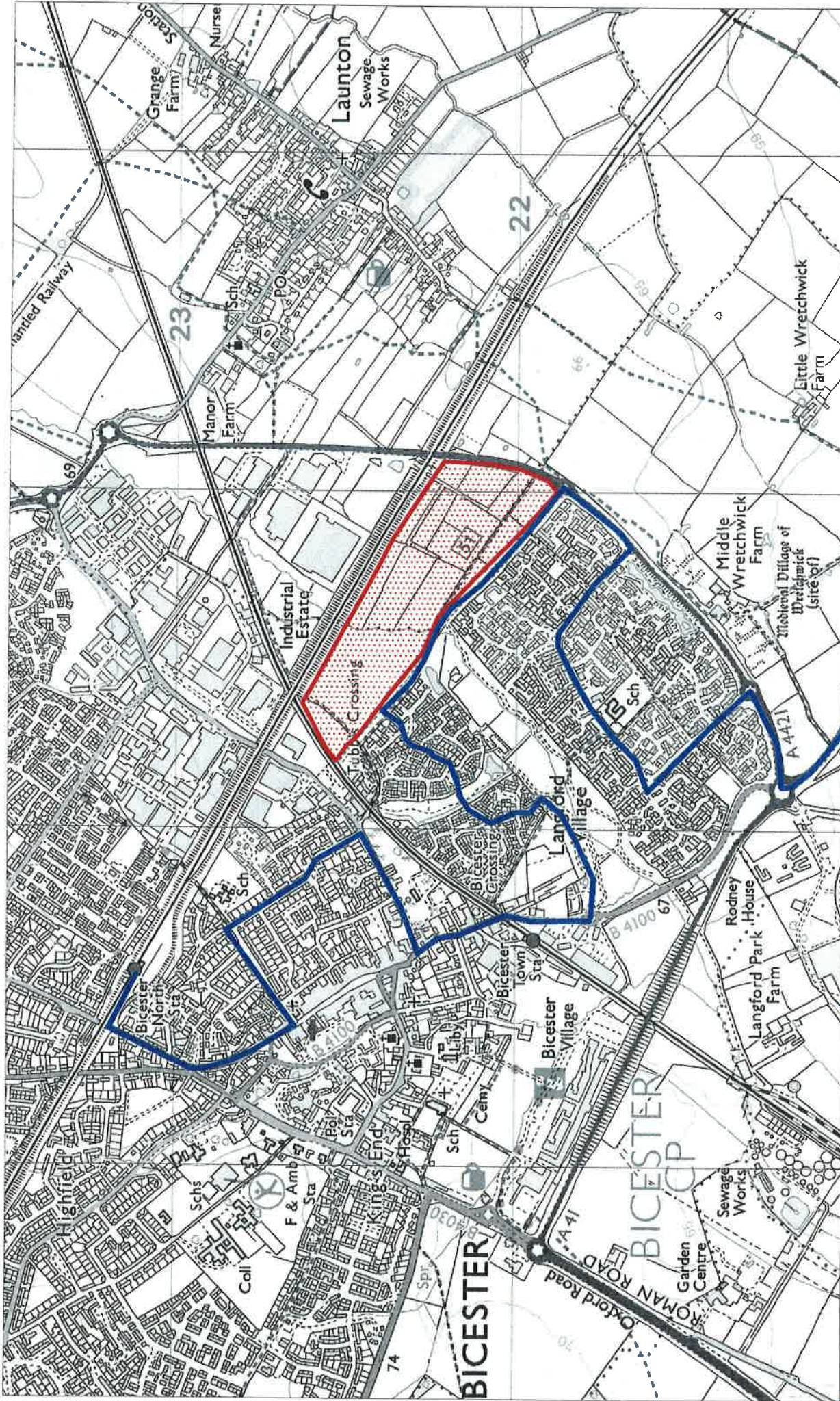
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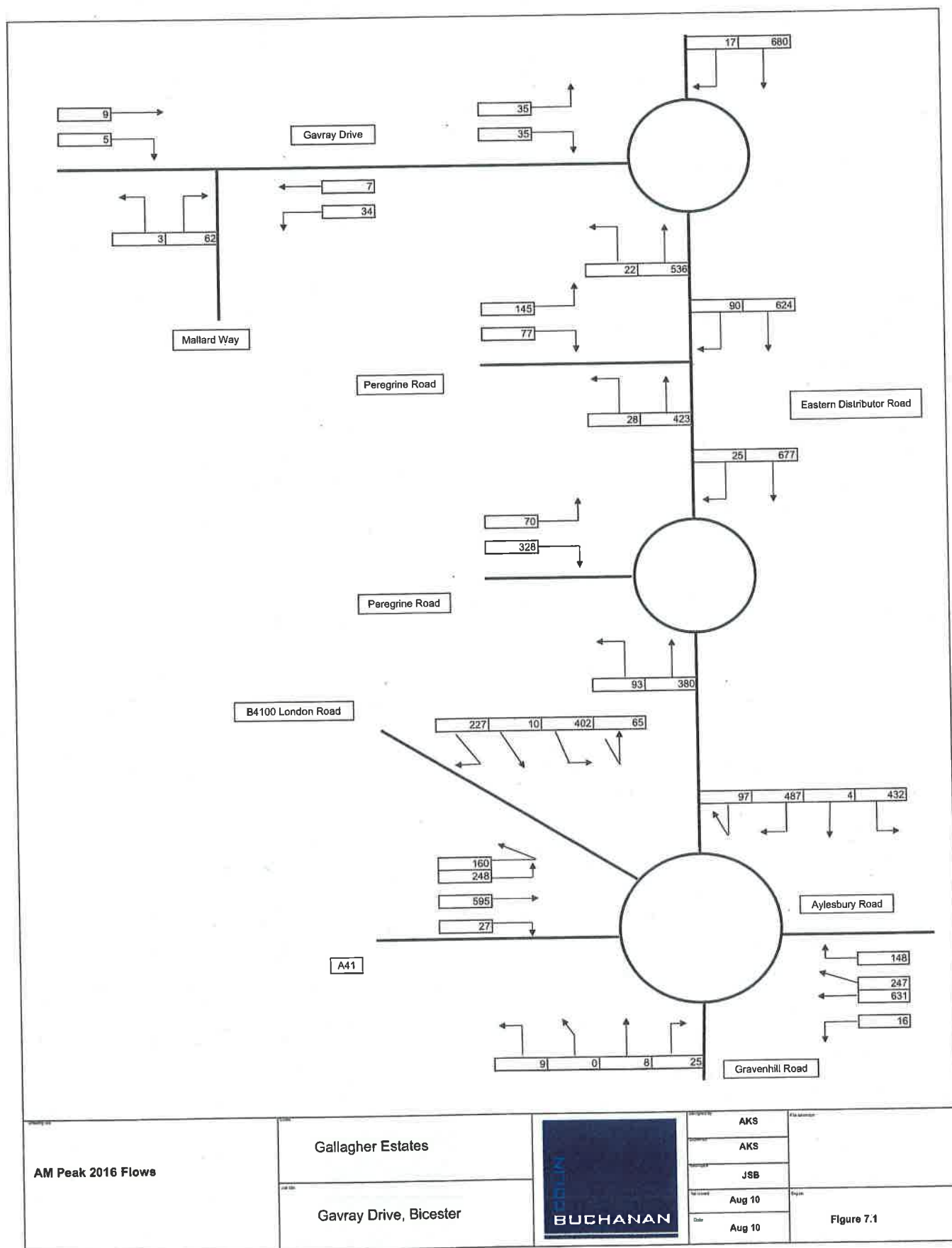
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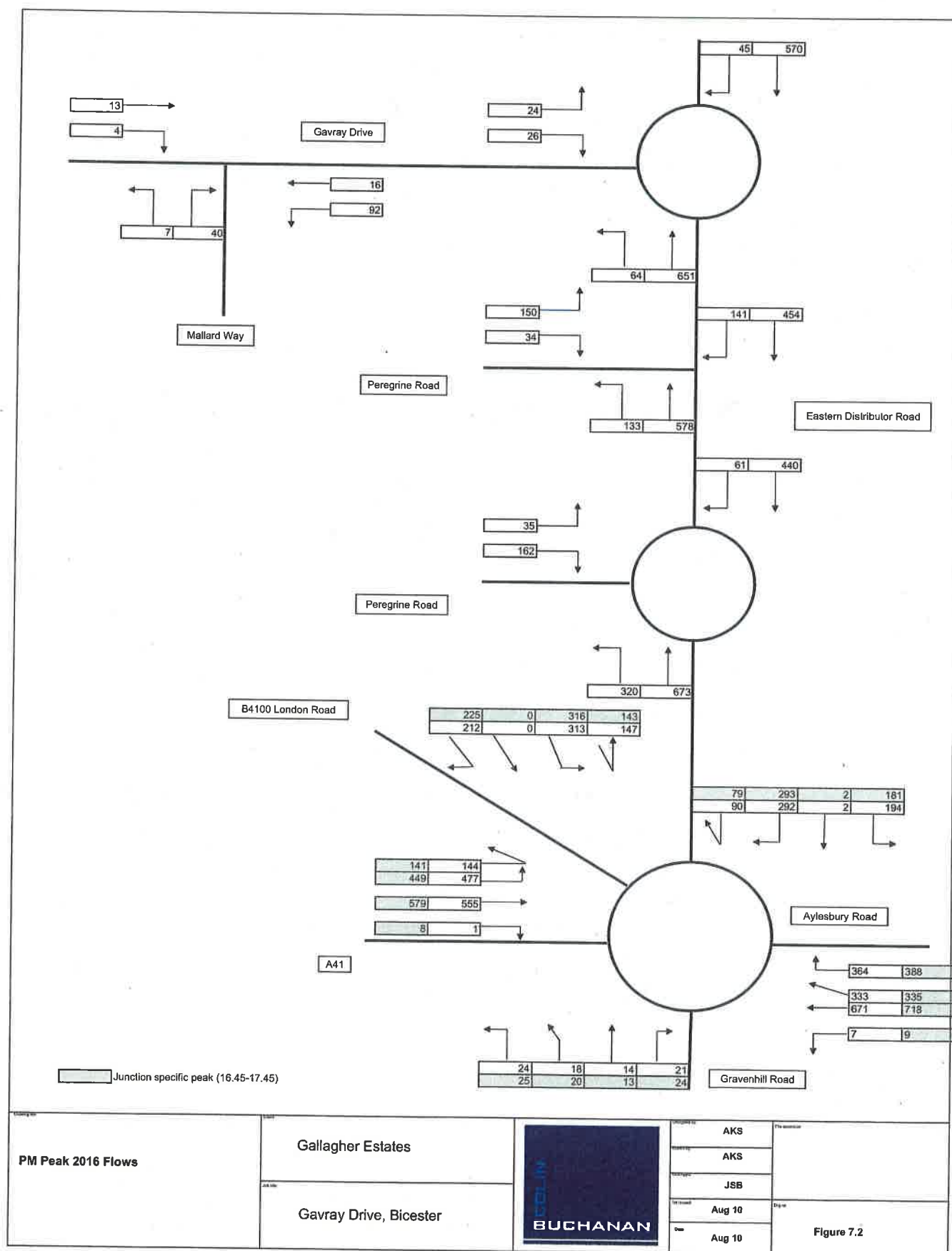


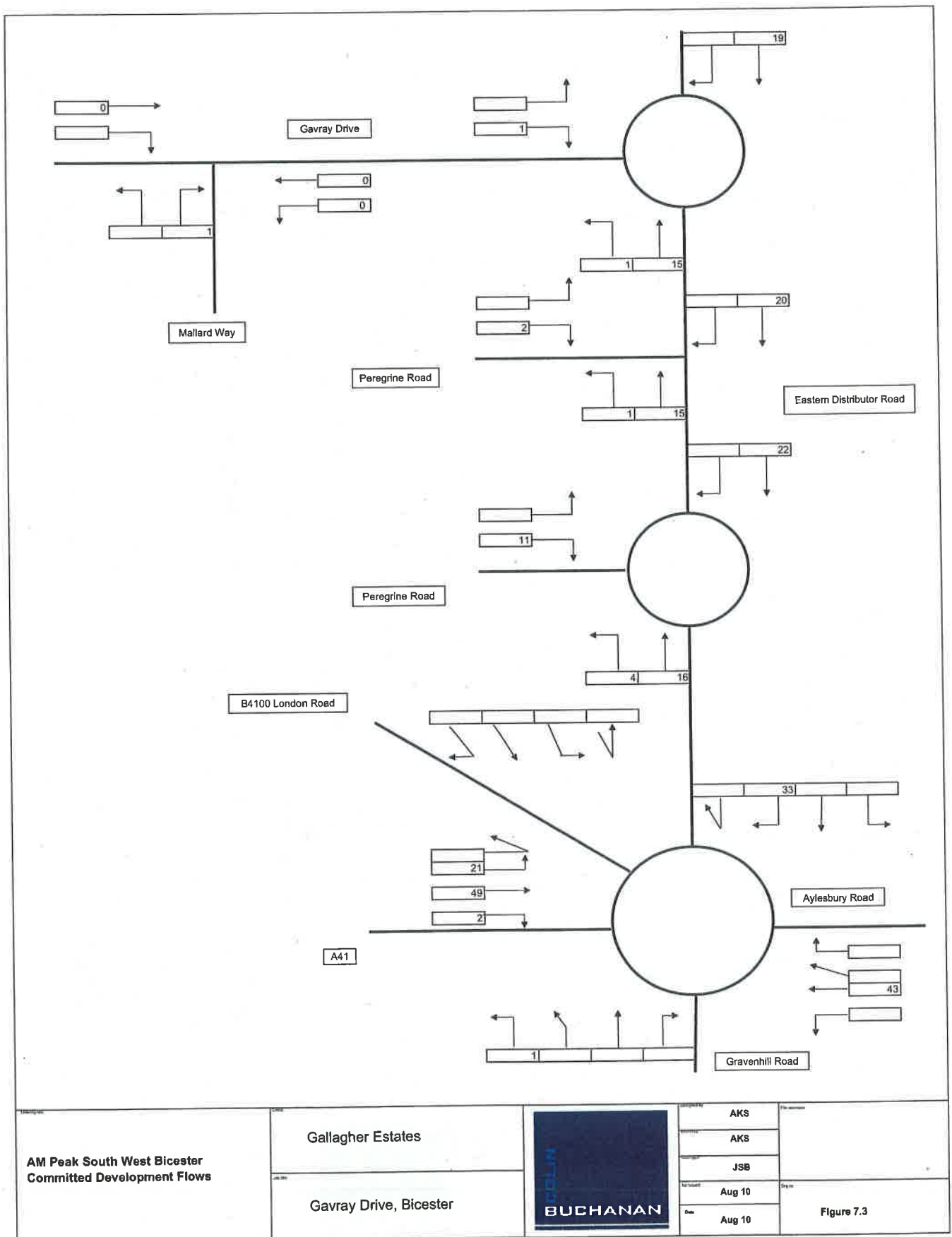
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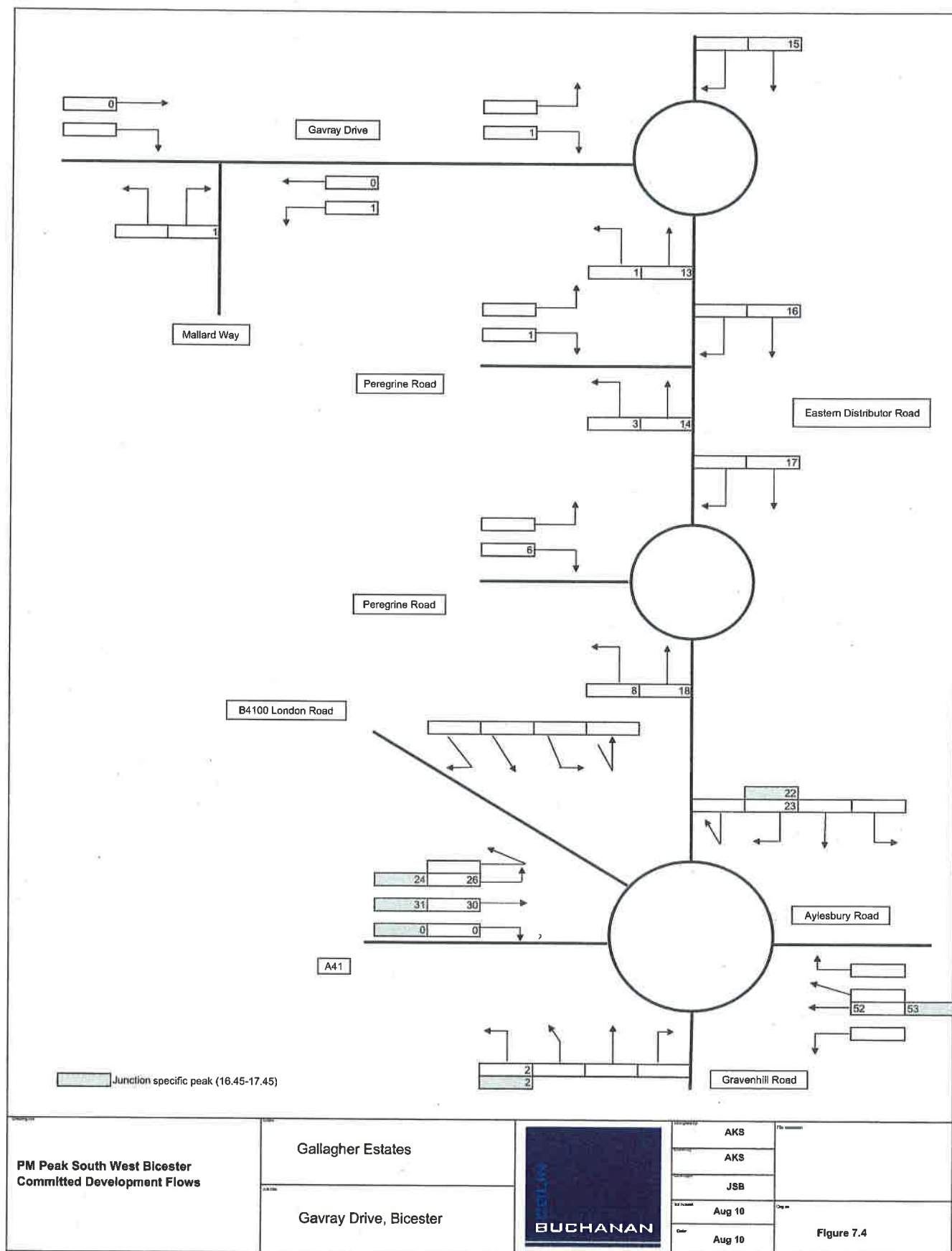


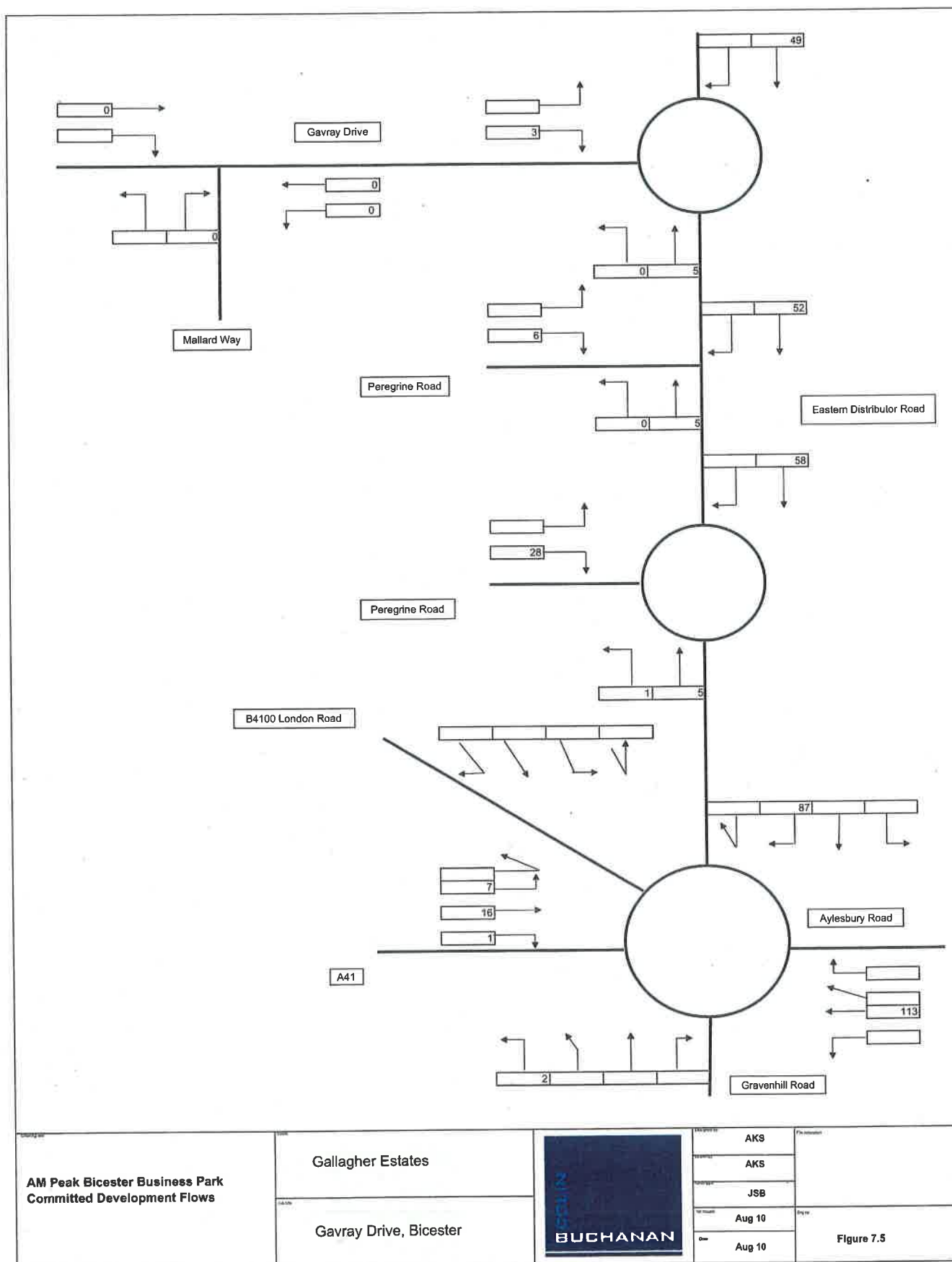
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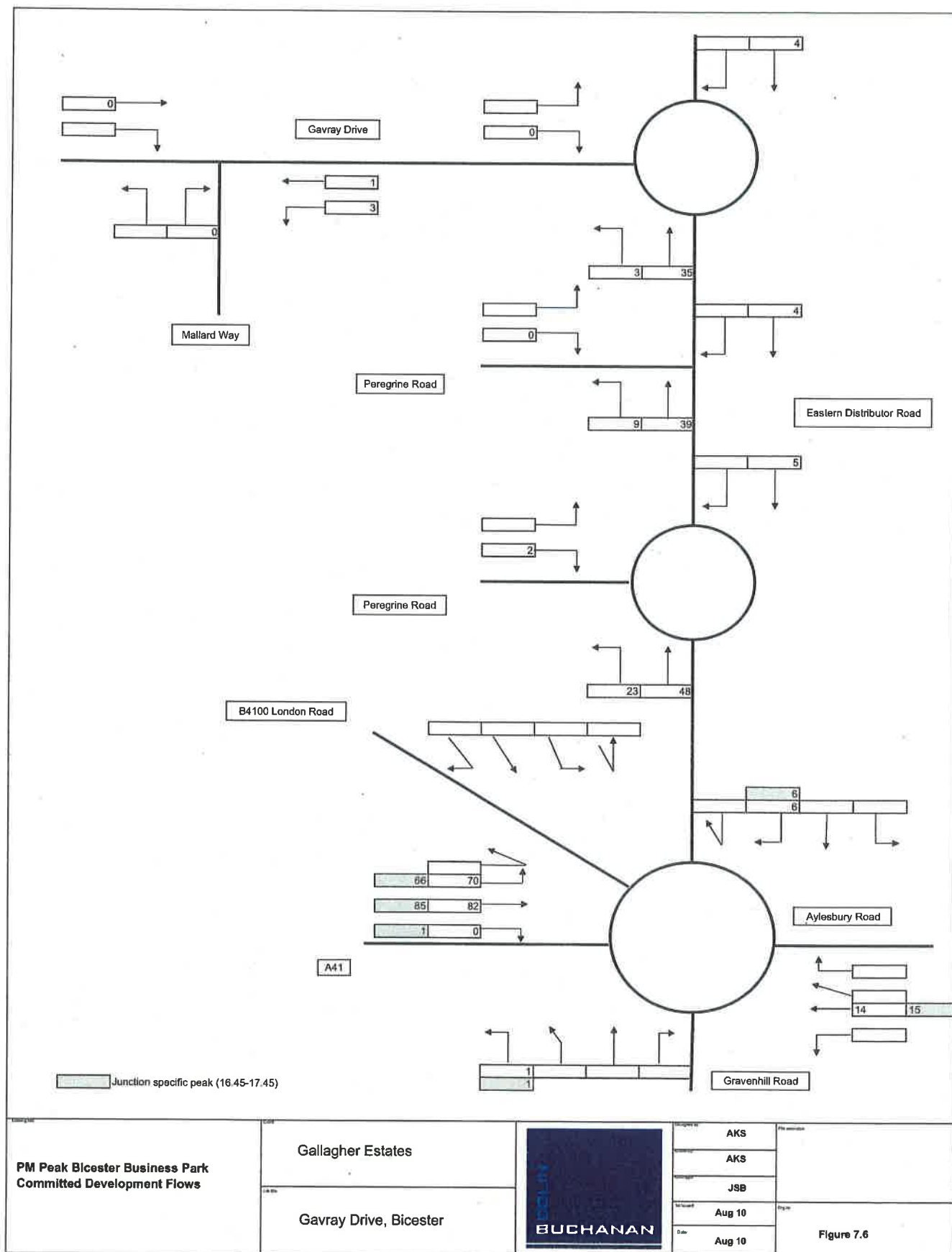


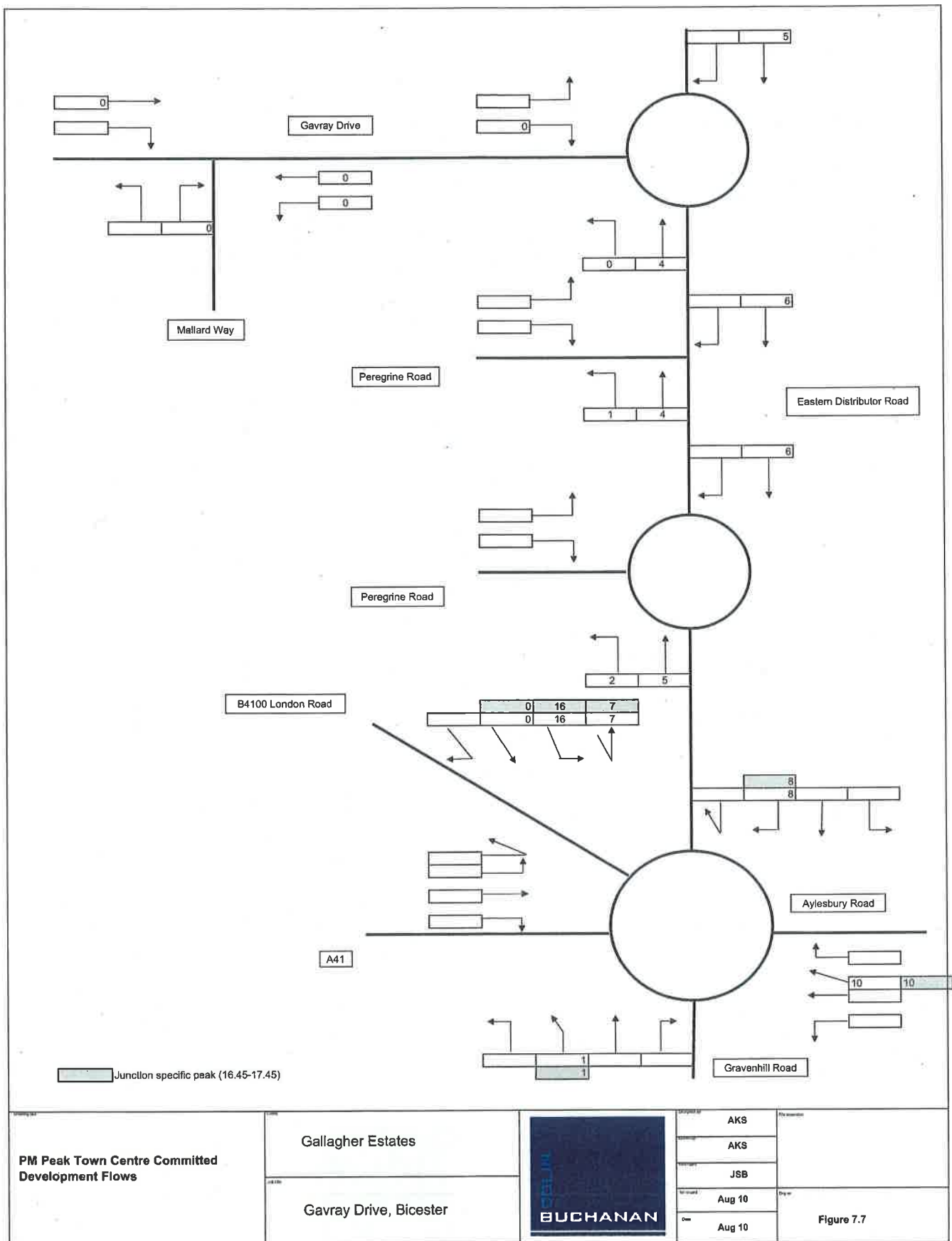


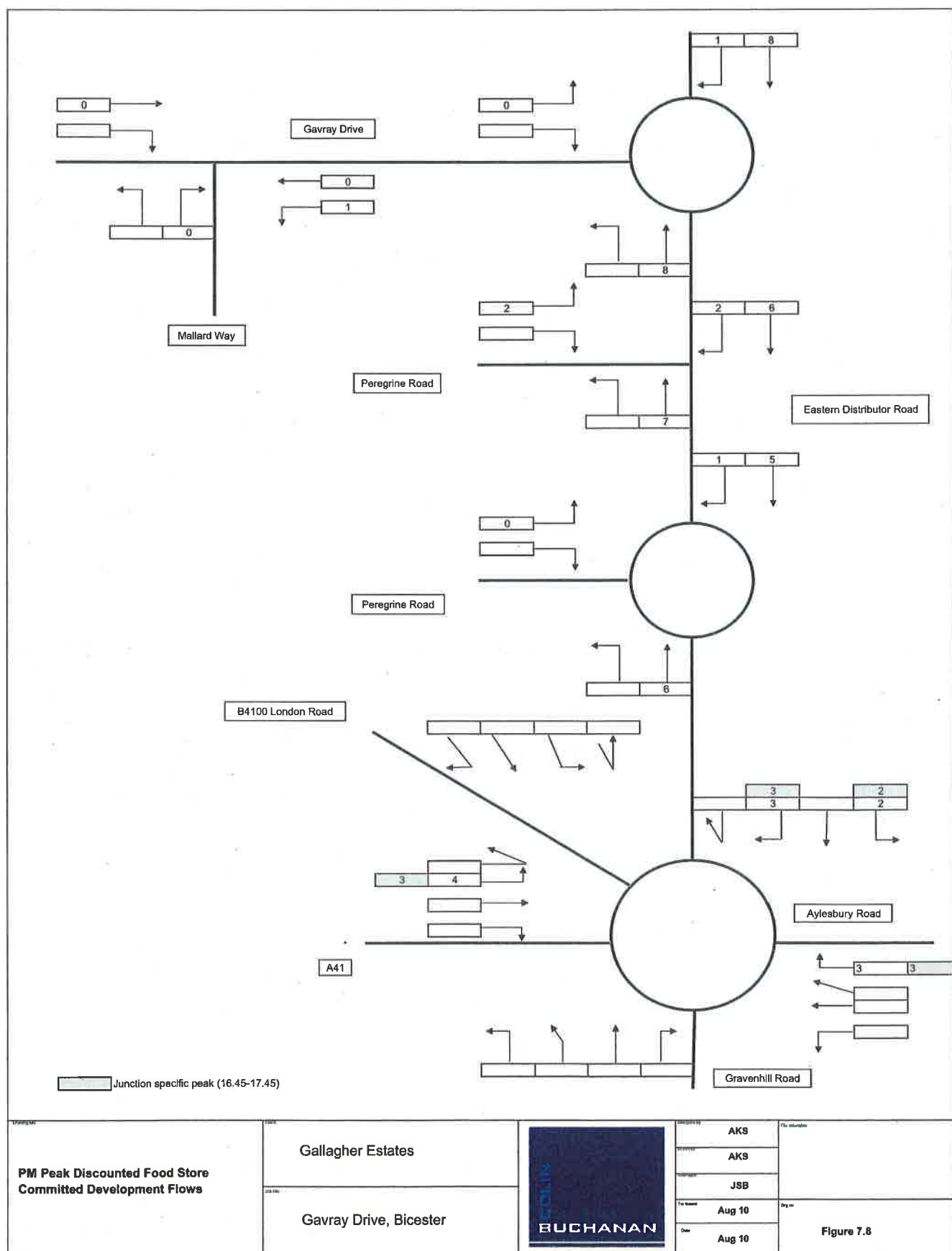


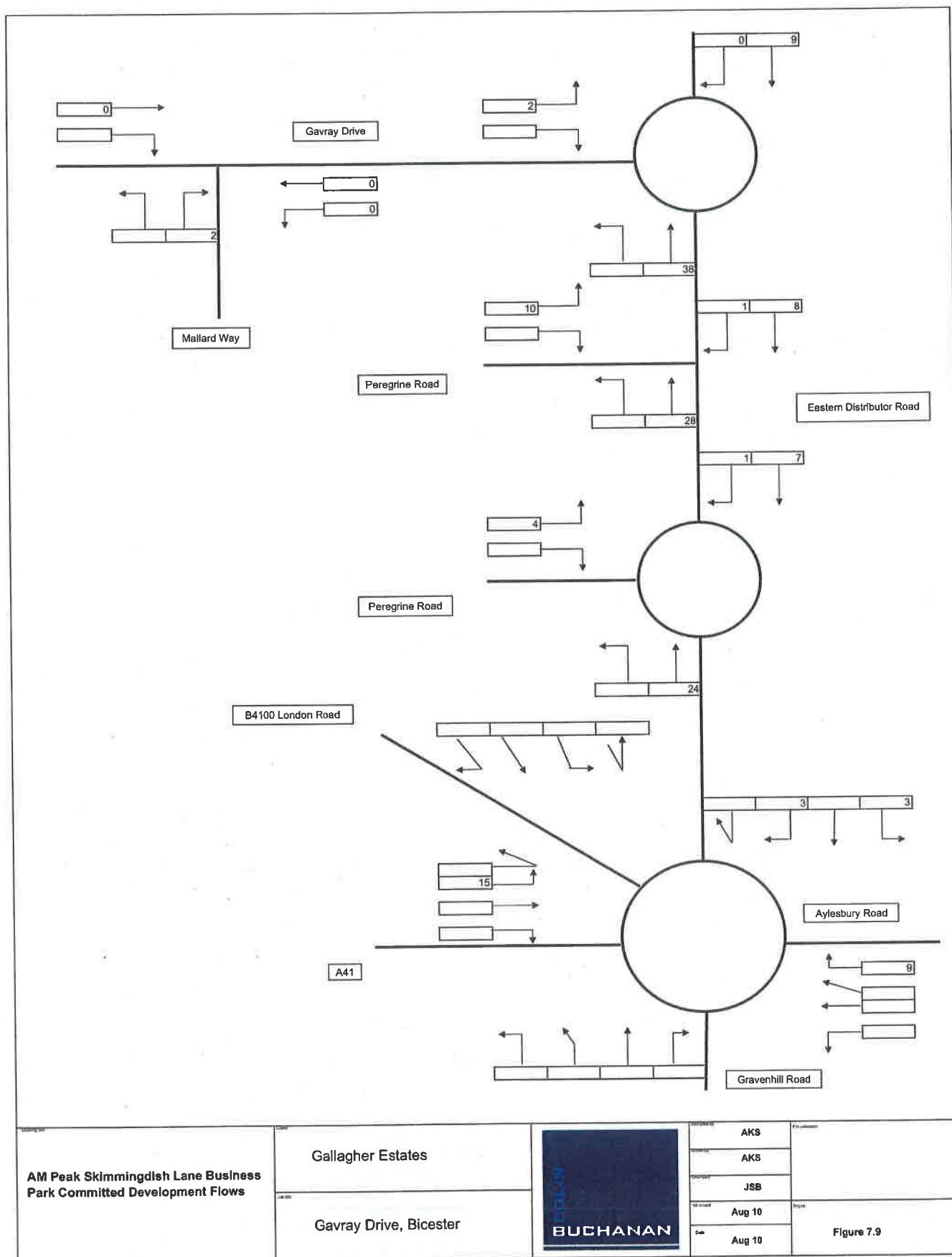




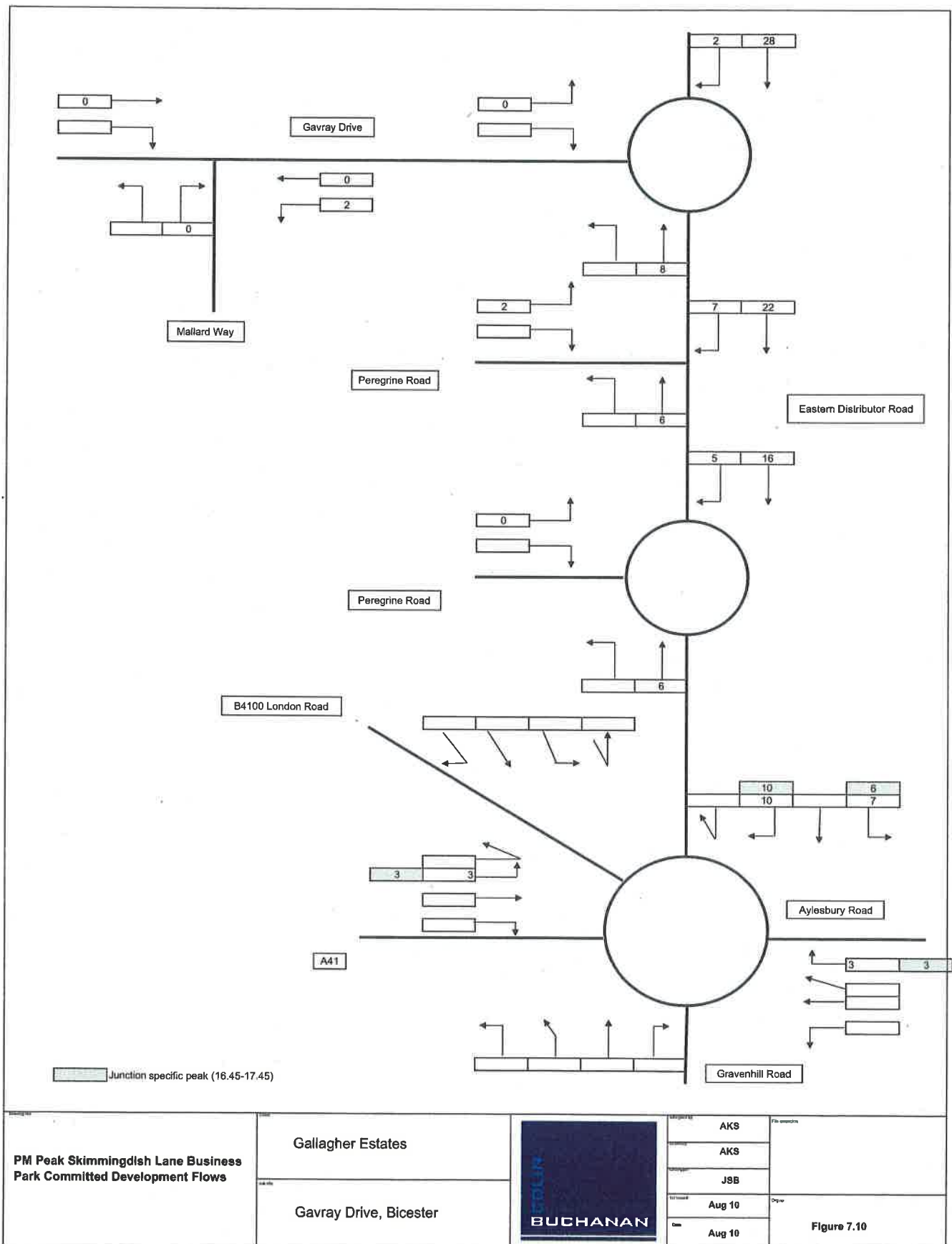




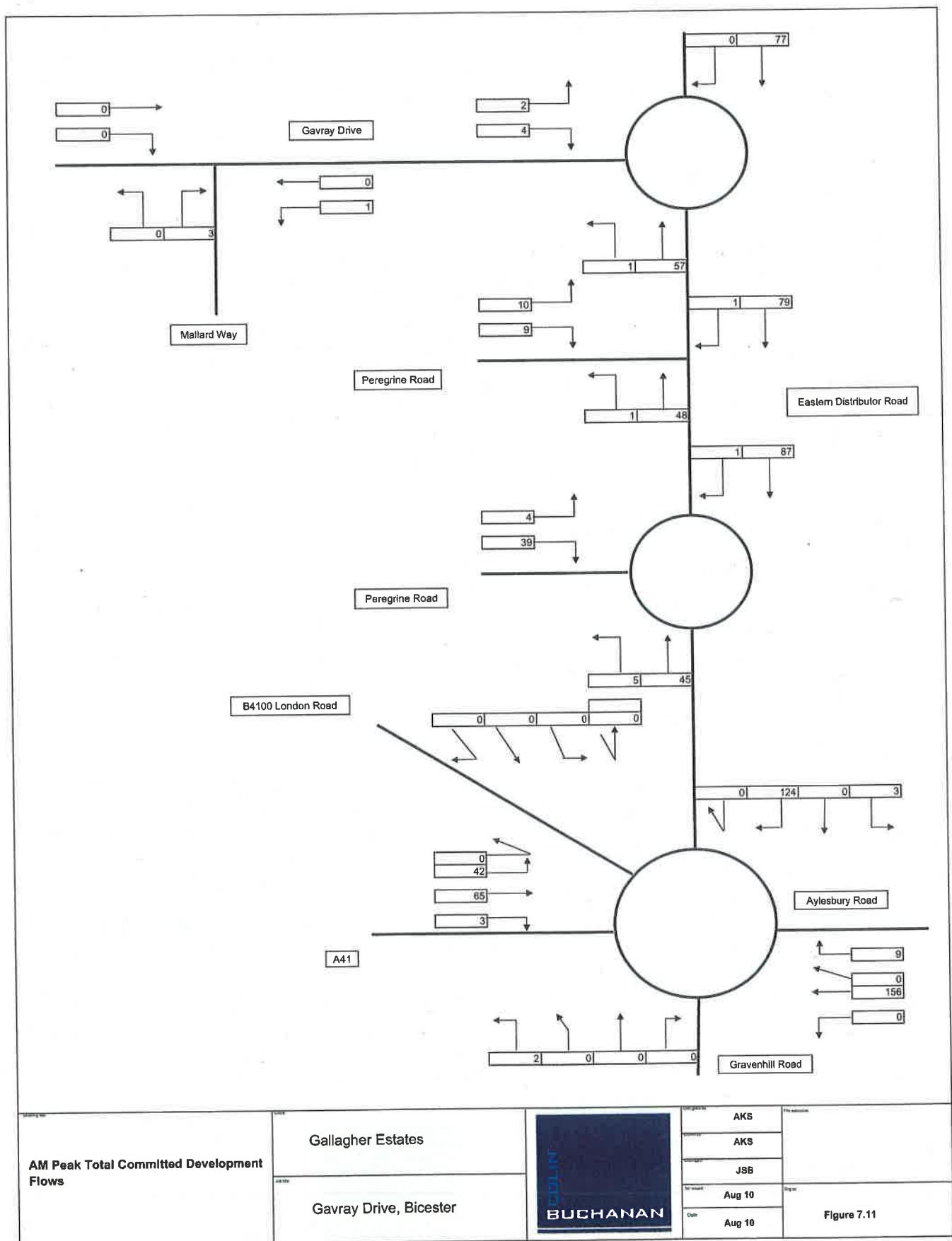




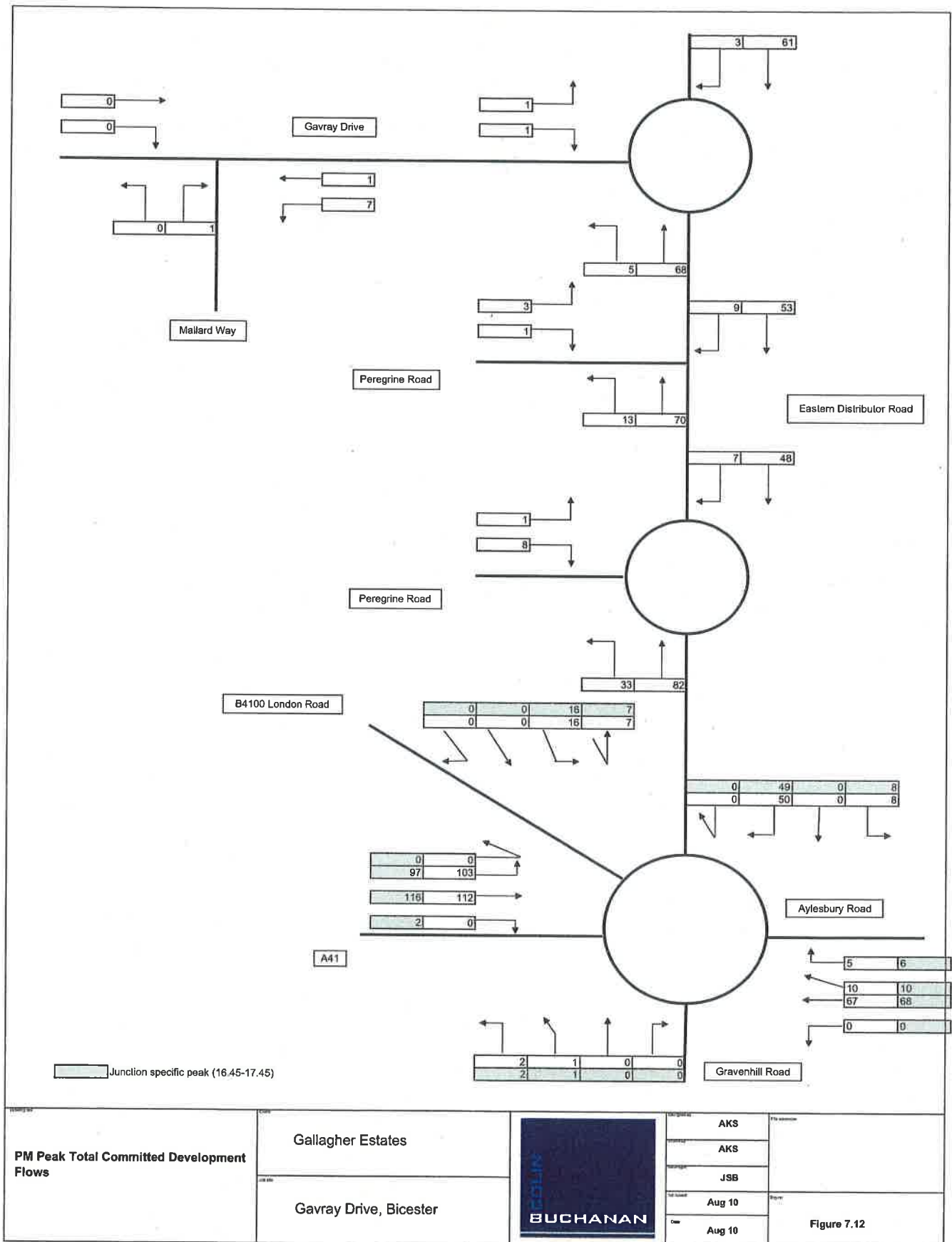
AM Peak Skimmingdish Lane Business Park Committed Development Flows	Client	Gallagher Estates		AKS	Figure 7.9
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	JSB				
	Aug 10				
	Aug 10				
	Sub site	Gavray Drive, Bicester			



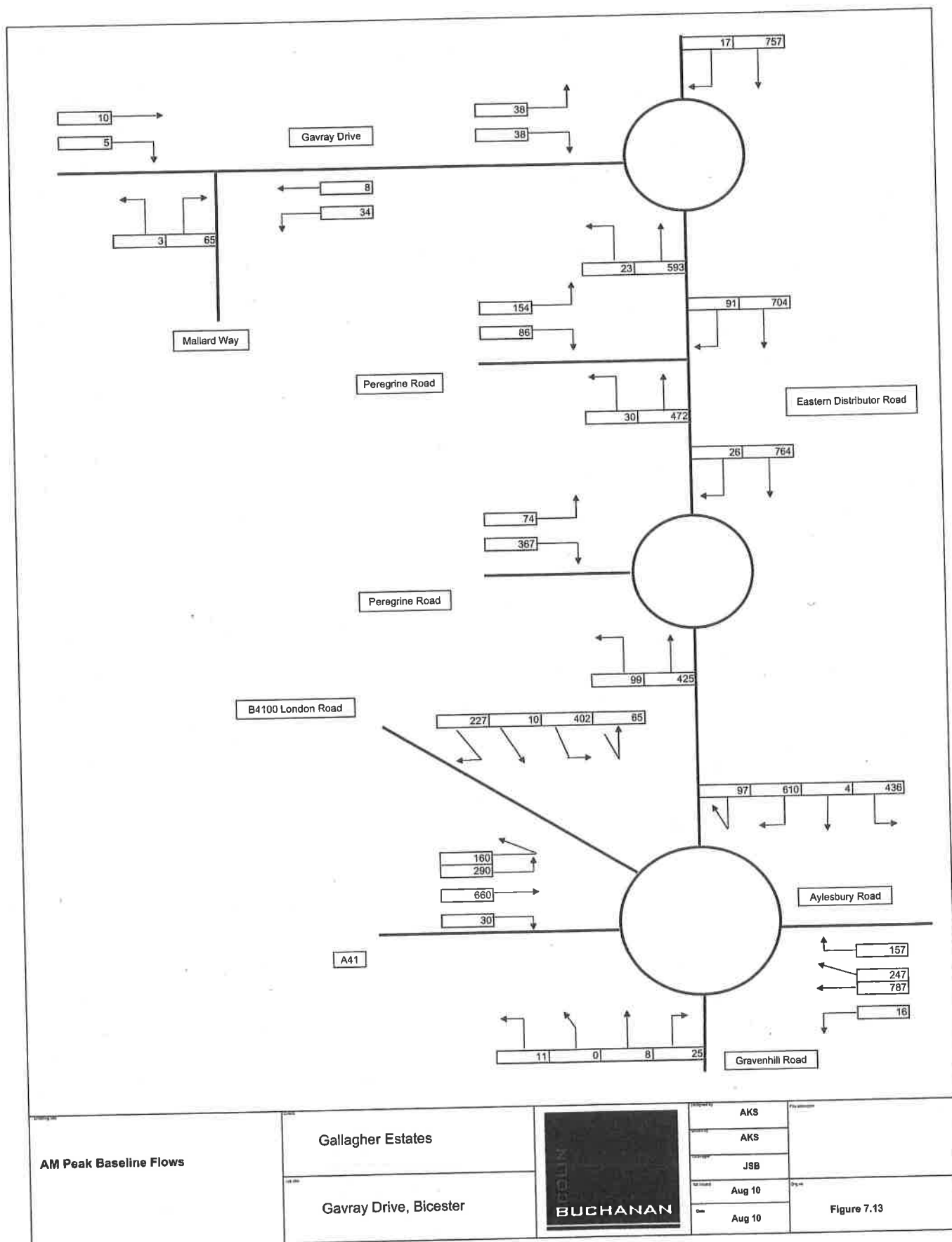
PM Peak Skimmingdish Lane Business Park Committed Development Flows	Gallagher Estates		AKS	Figure 7.10
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			JSB	
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			Aug 10	

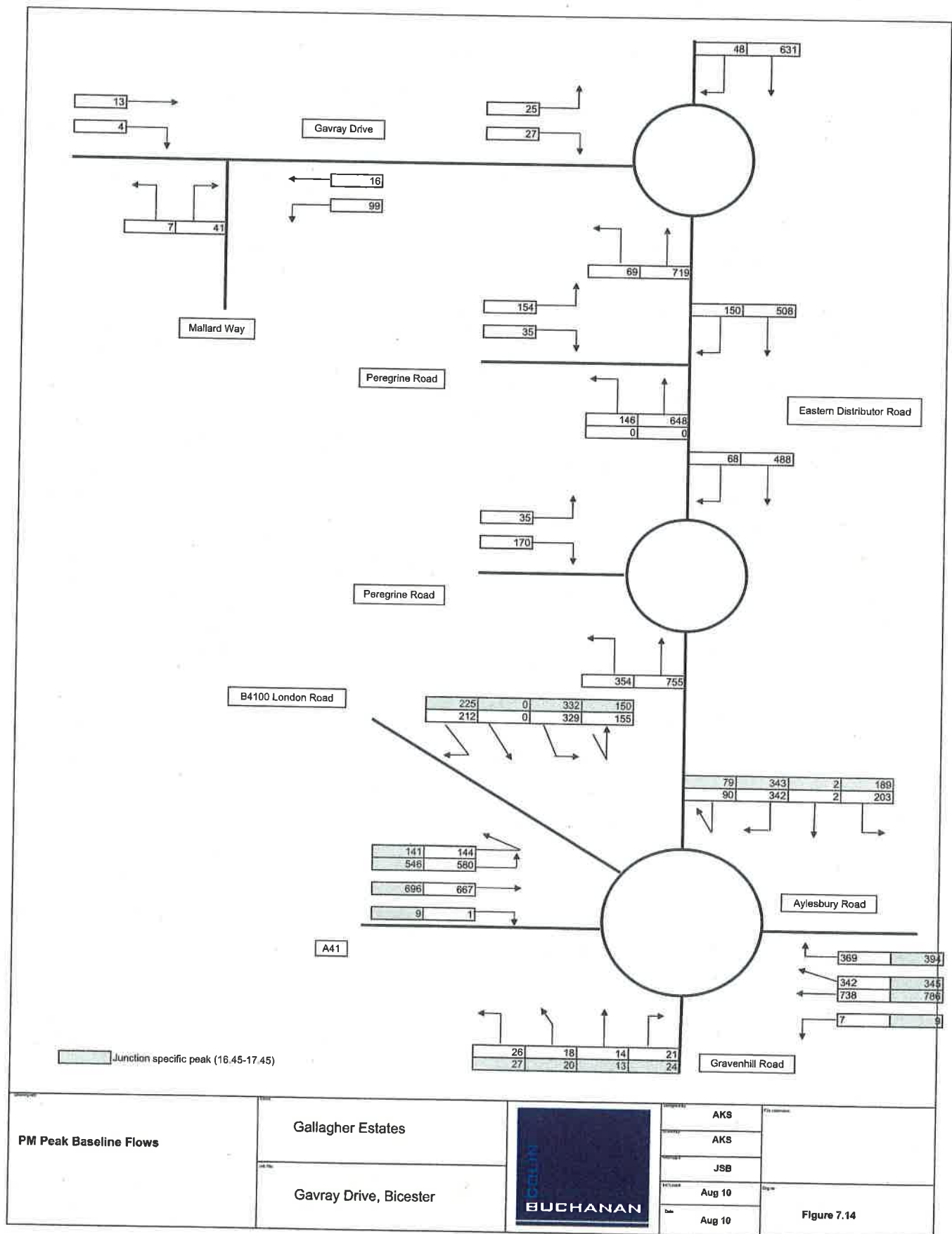


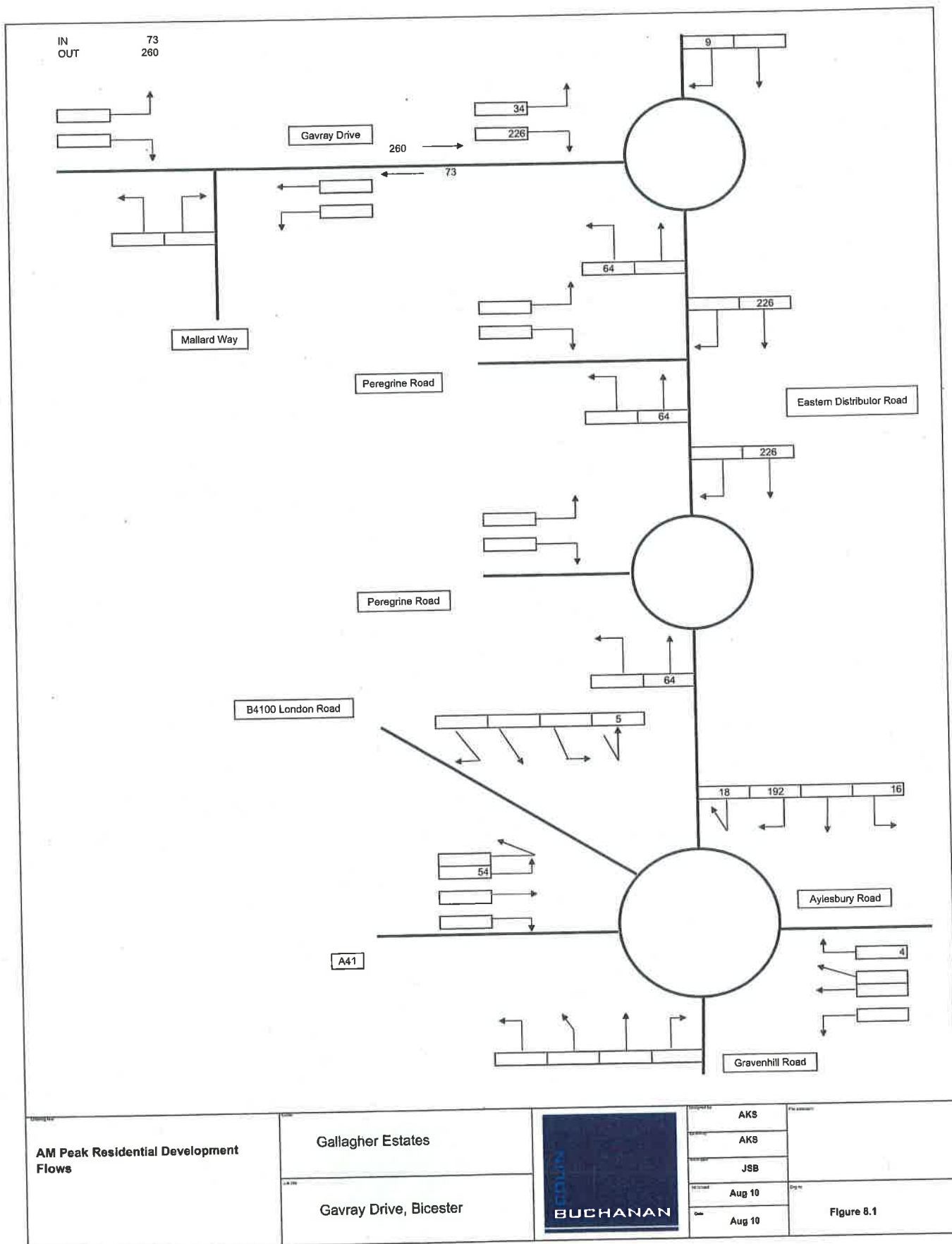
AM Peak Total Committed Development Flows	Gallagher Estates		AKS	Figure 7.11
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			Aug 10	
			Aug 10	

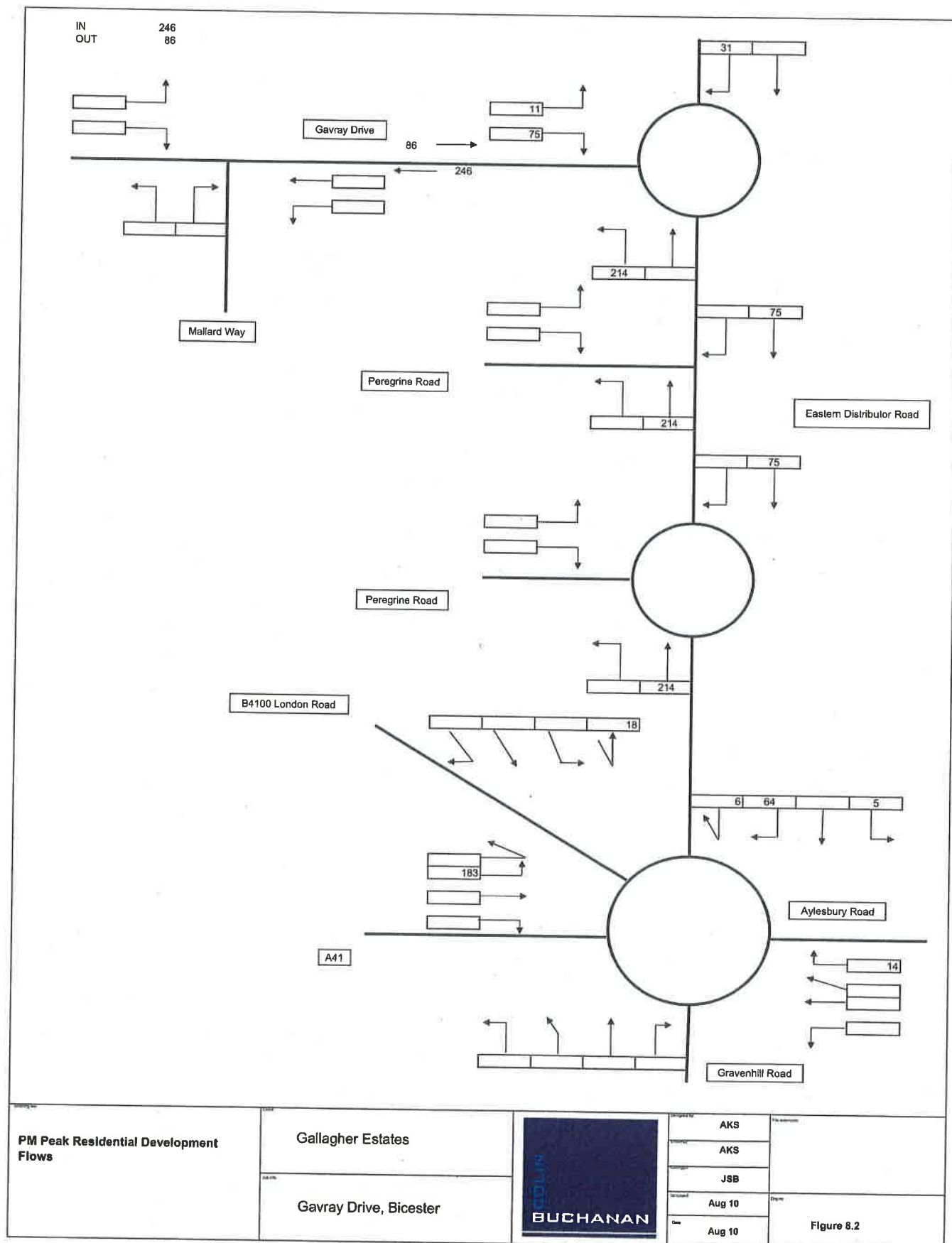


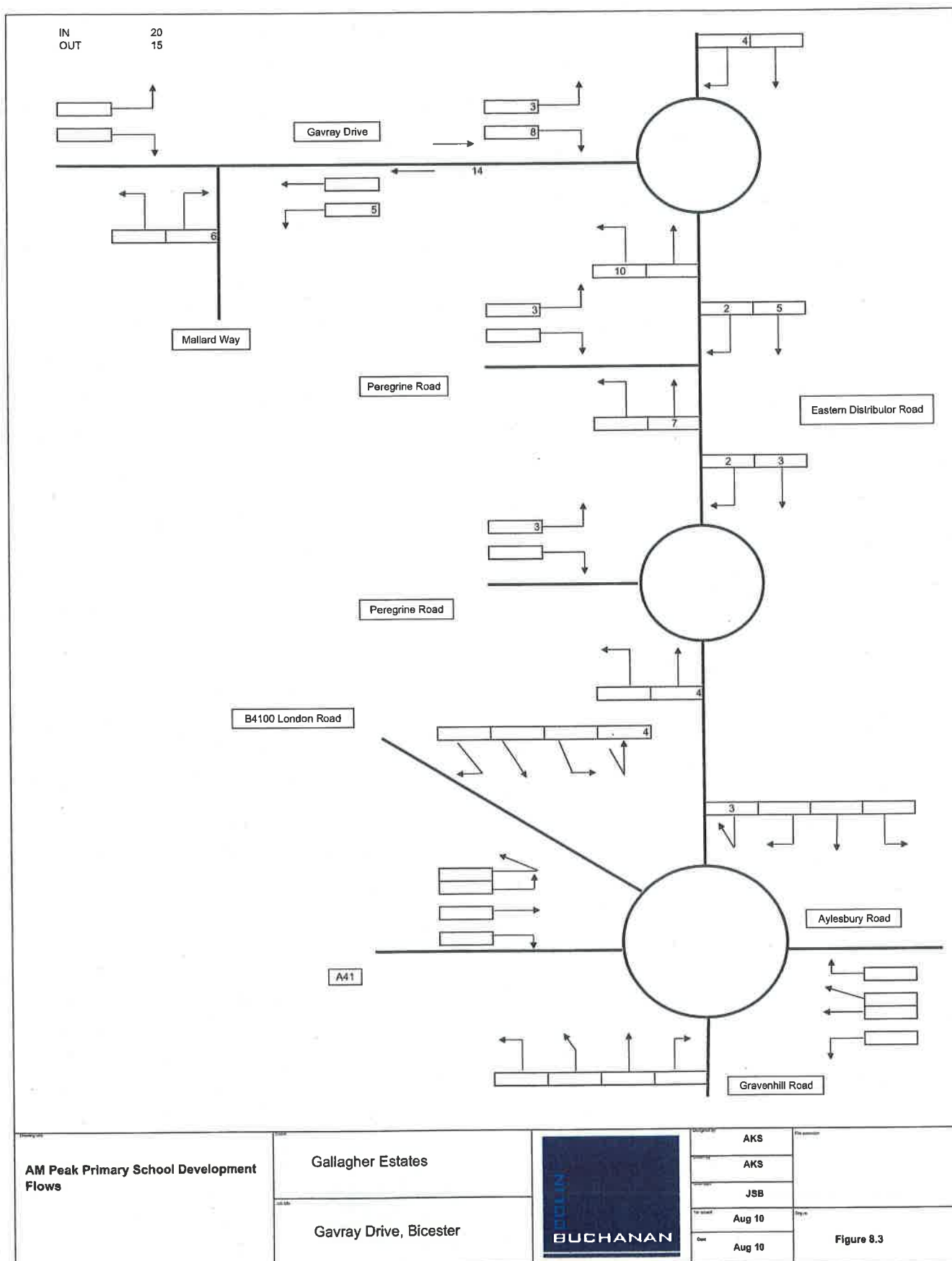
PM Peak Total Committed Development Flows	Gallagher Estates		AKS	<div> <div>AKS</div> <div>JSB</div> <div>Aug 10</div> <div>Aug 10</div> </div>	Figure 7.12
	Gavray Drive, Bicester				

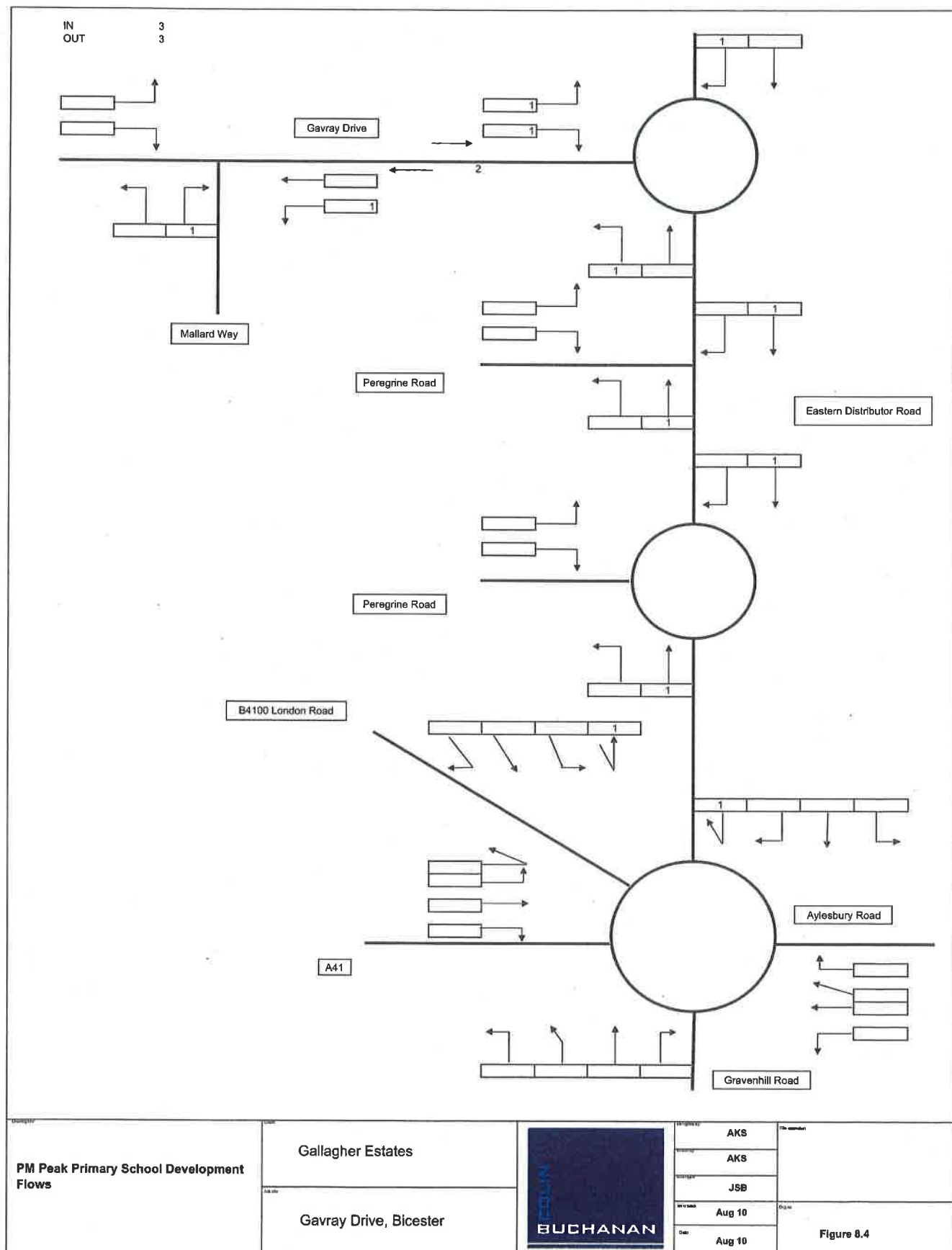


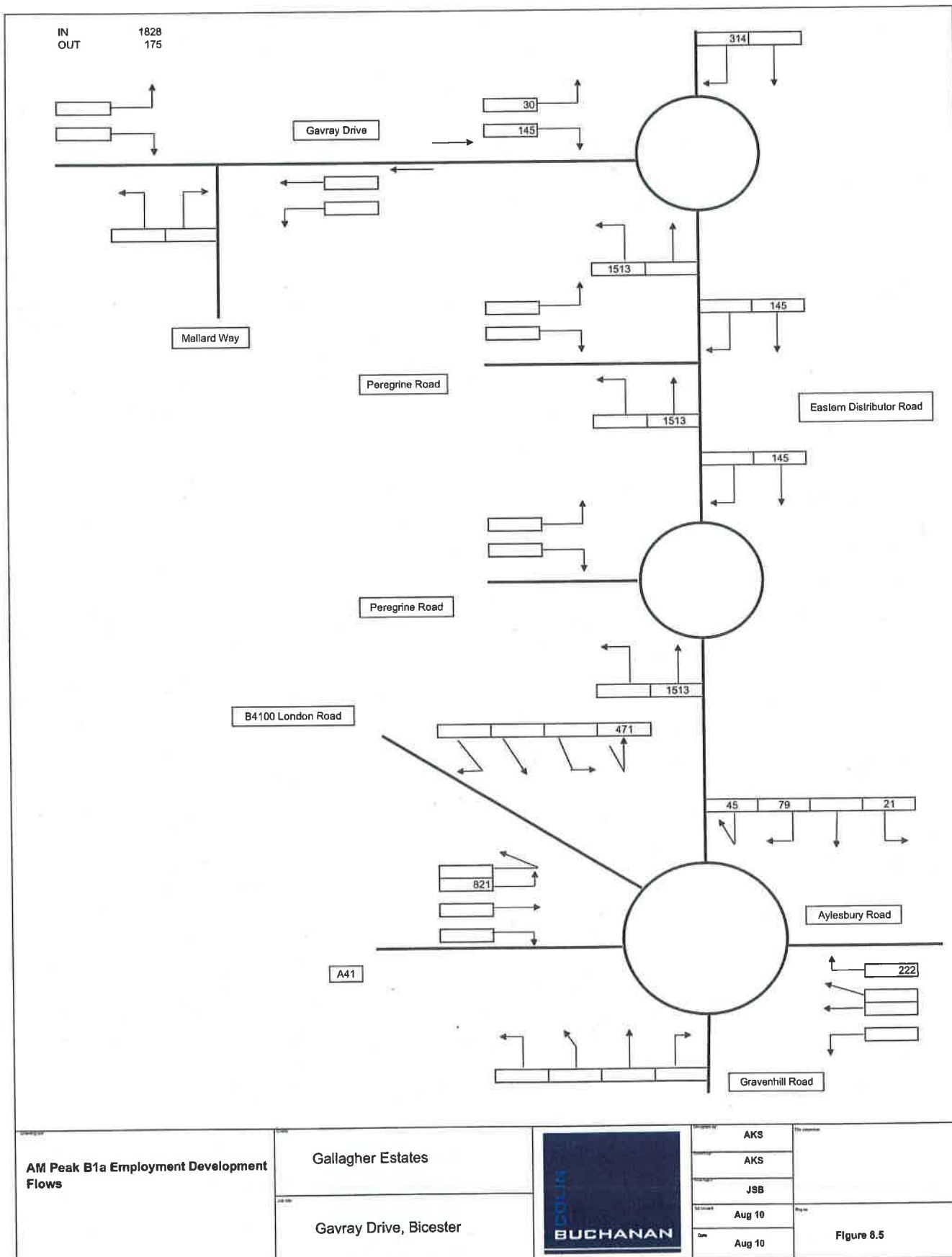


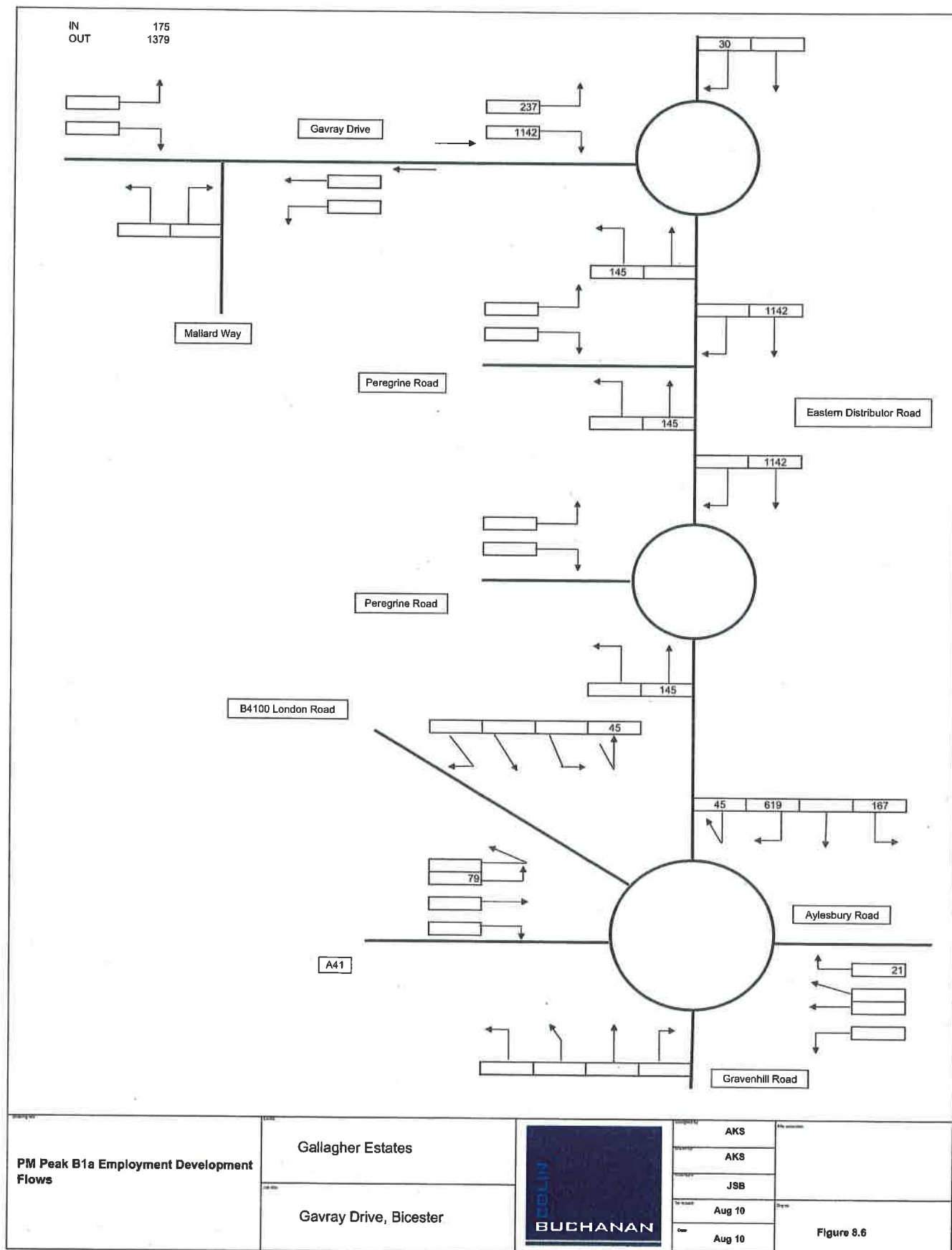


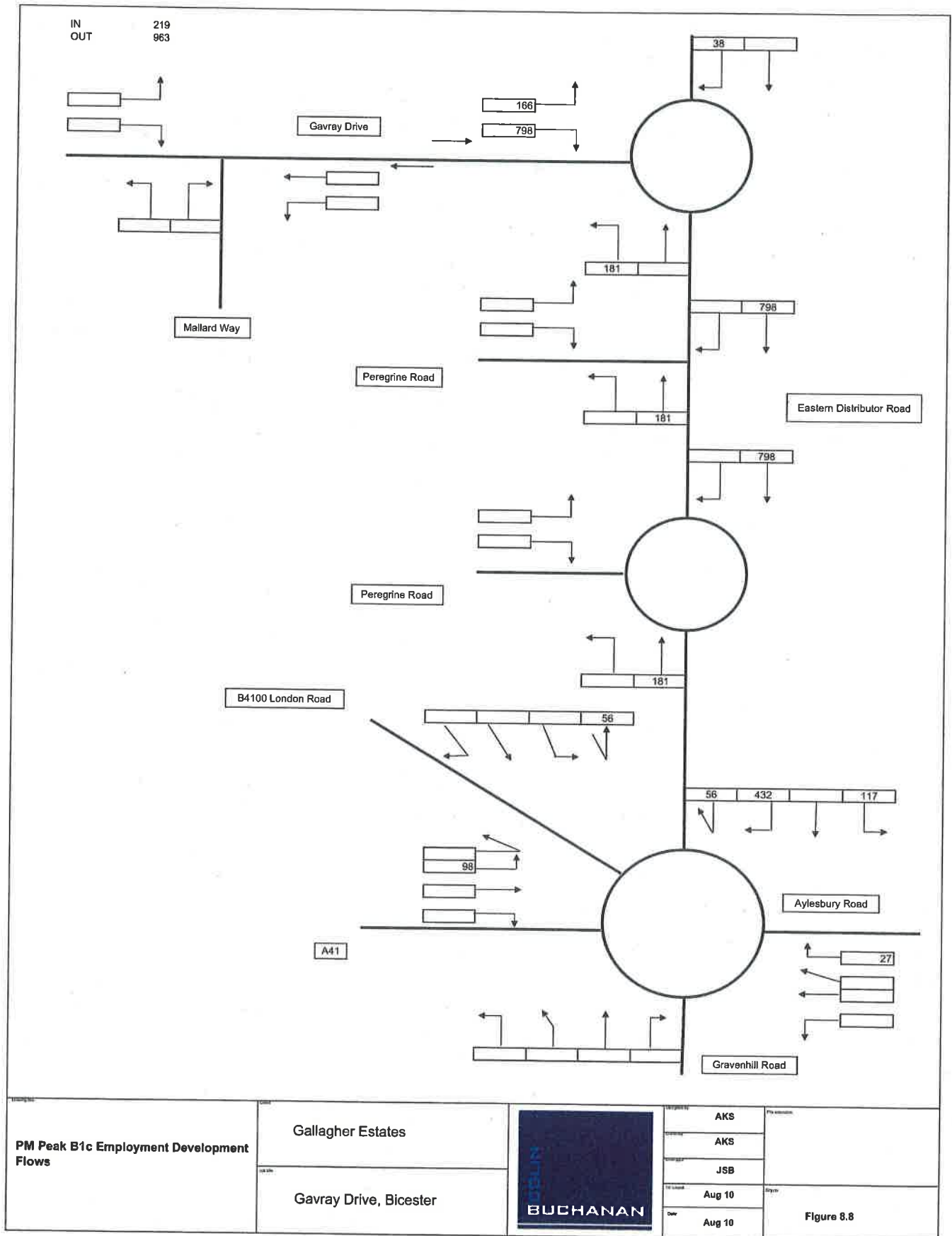


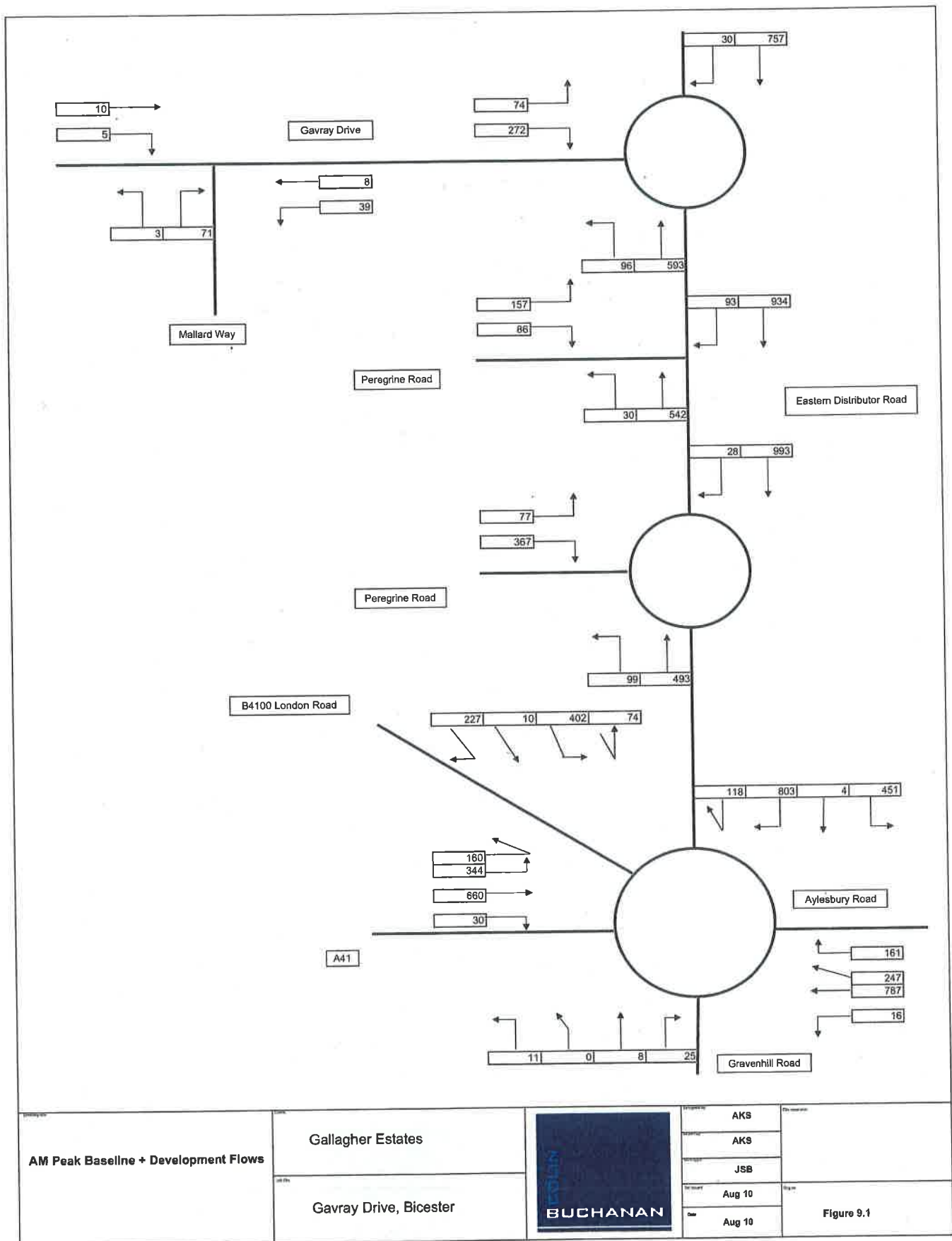


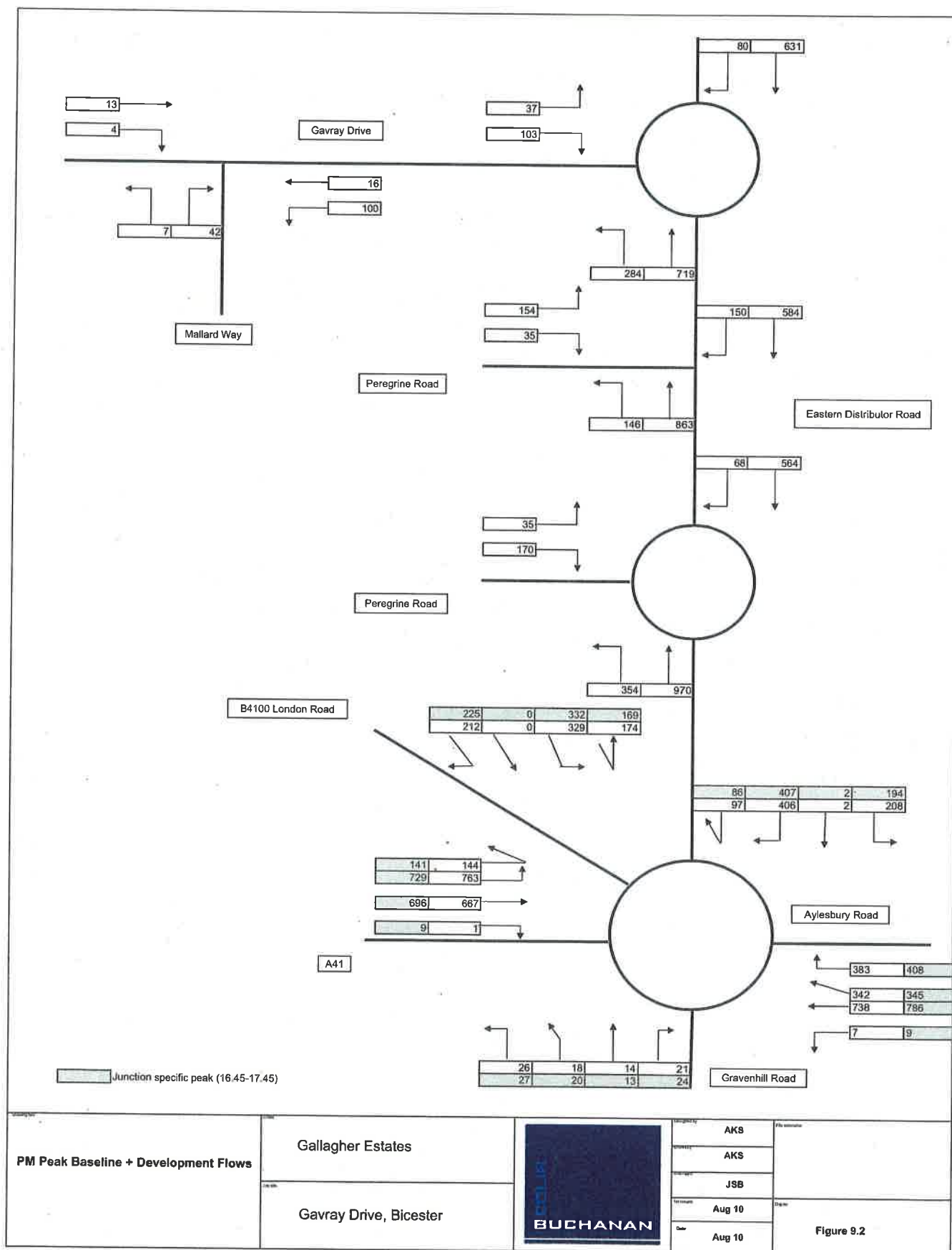


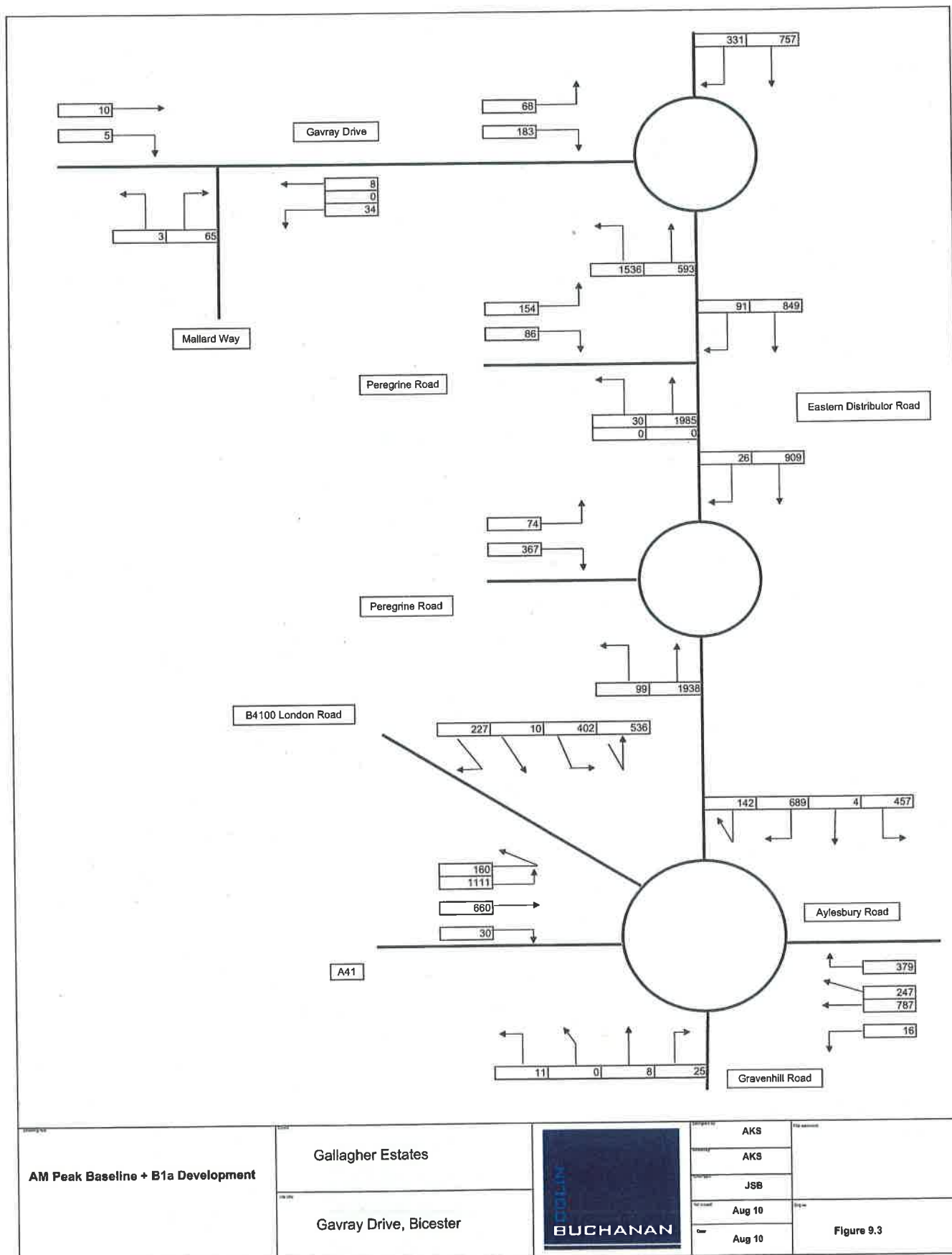


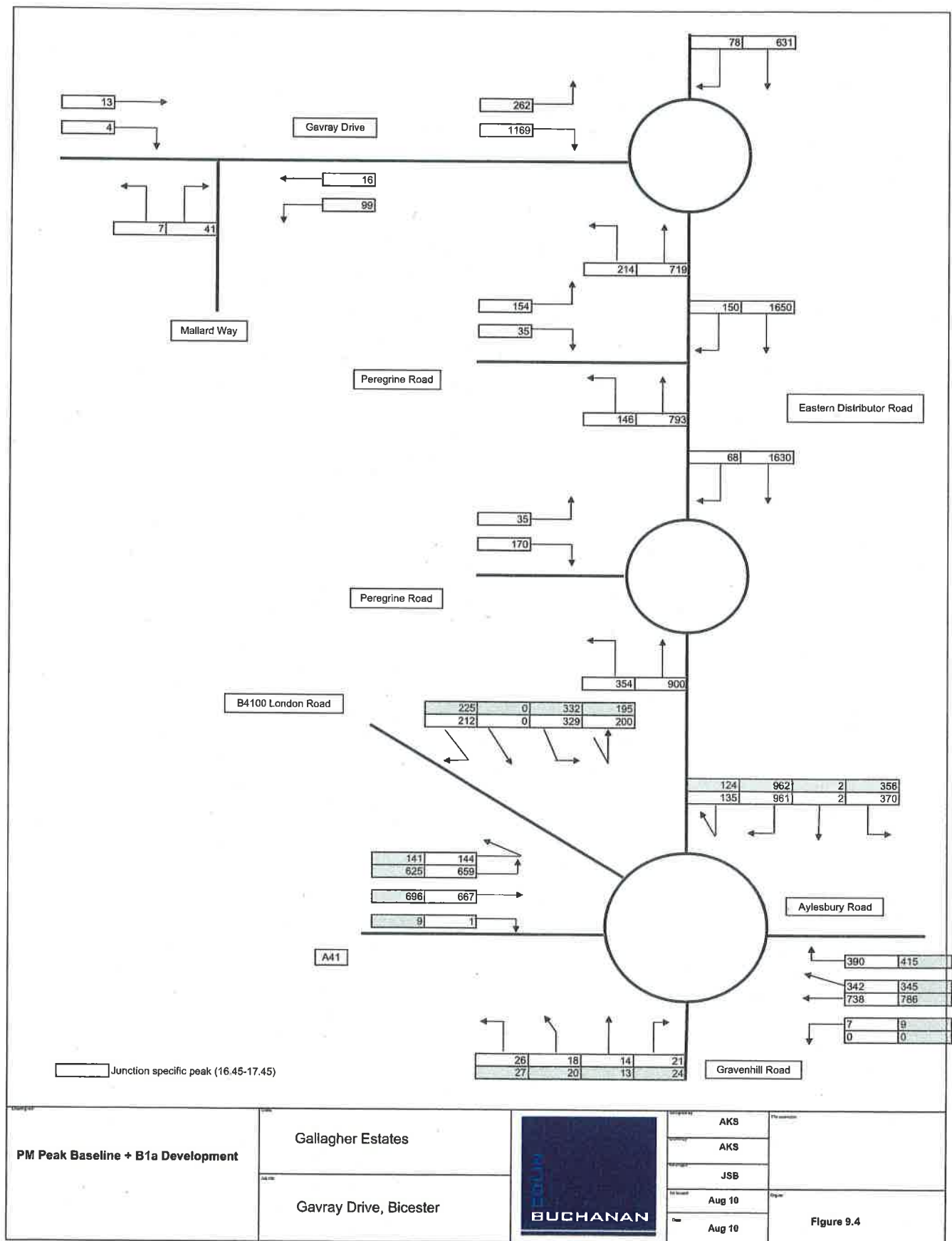


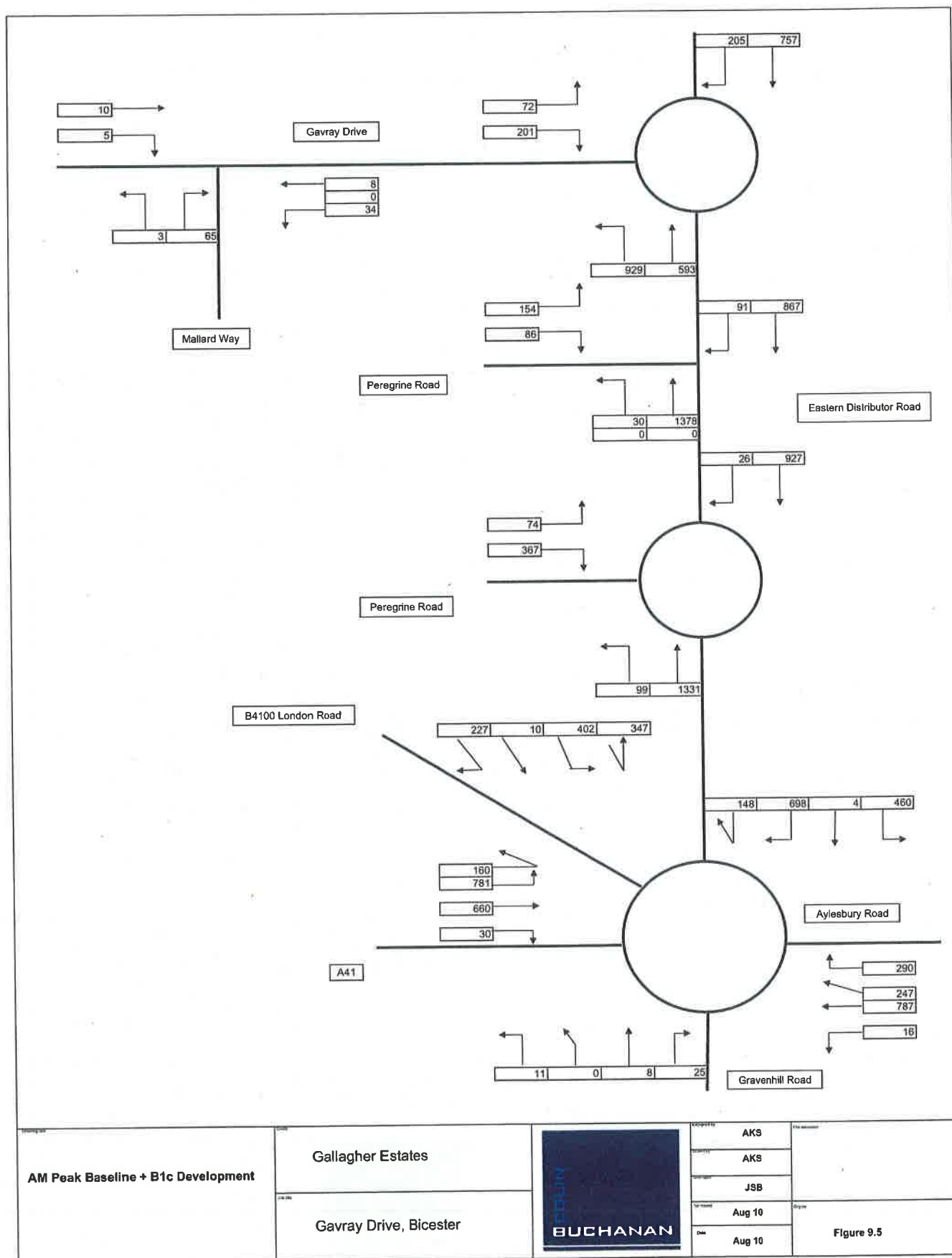


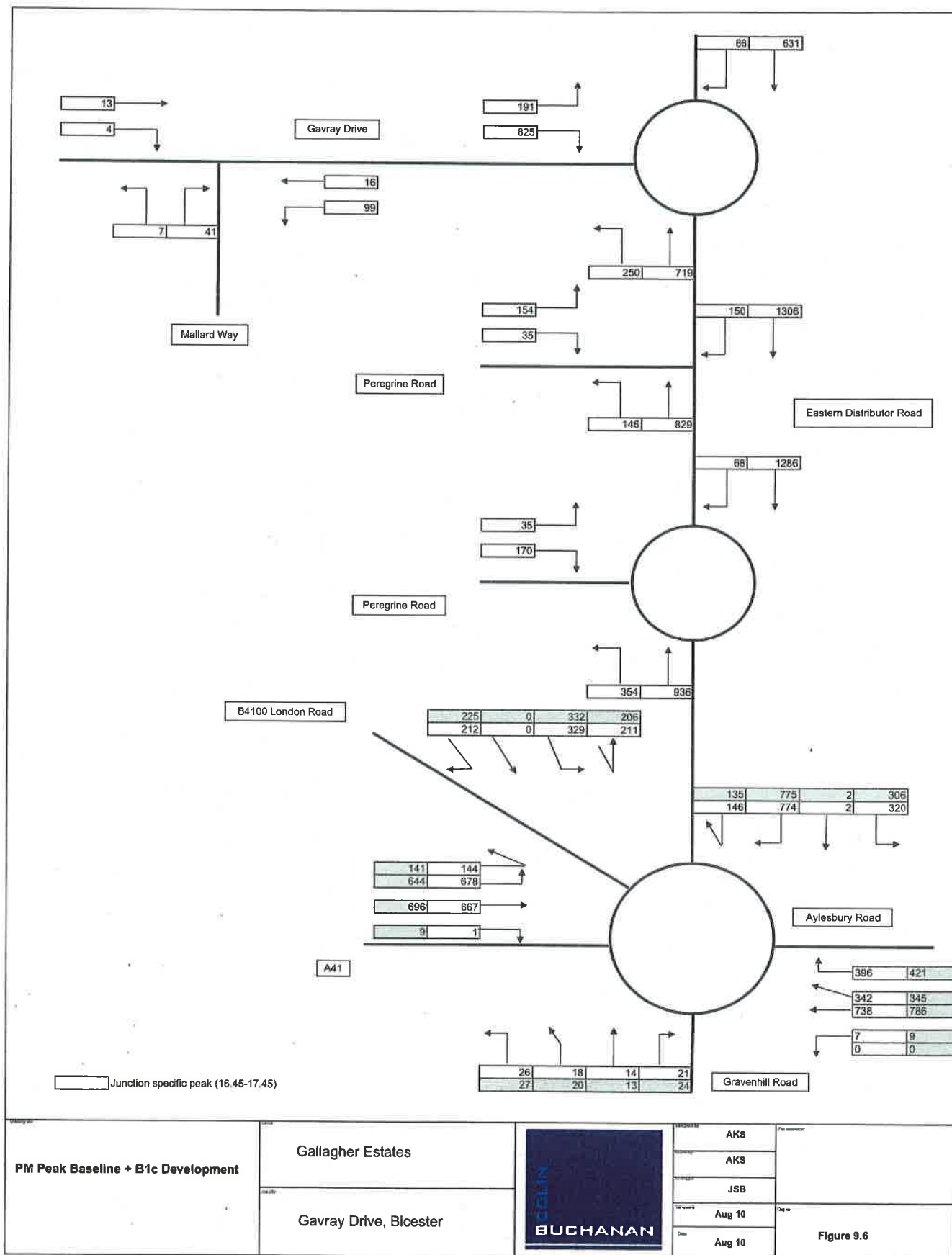


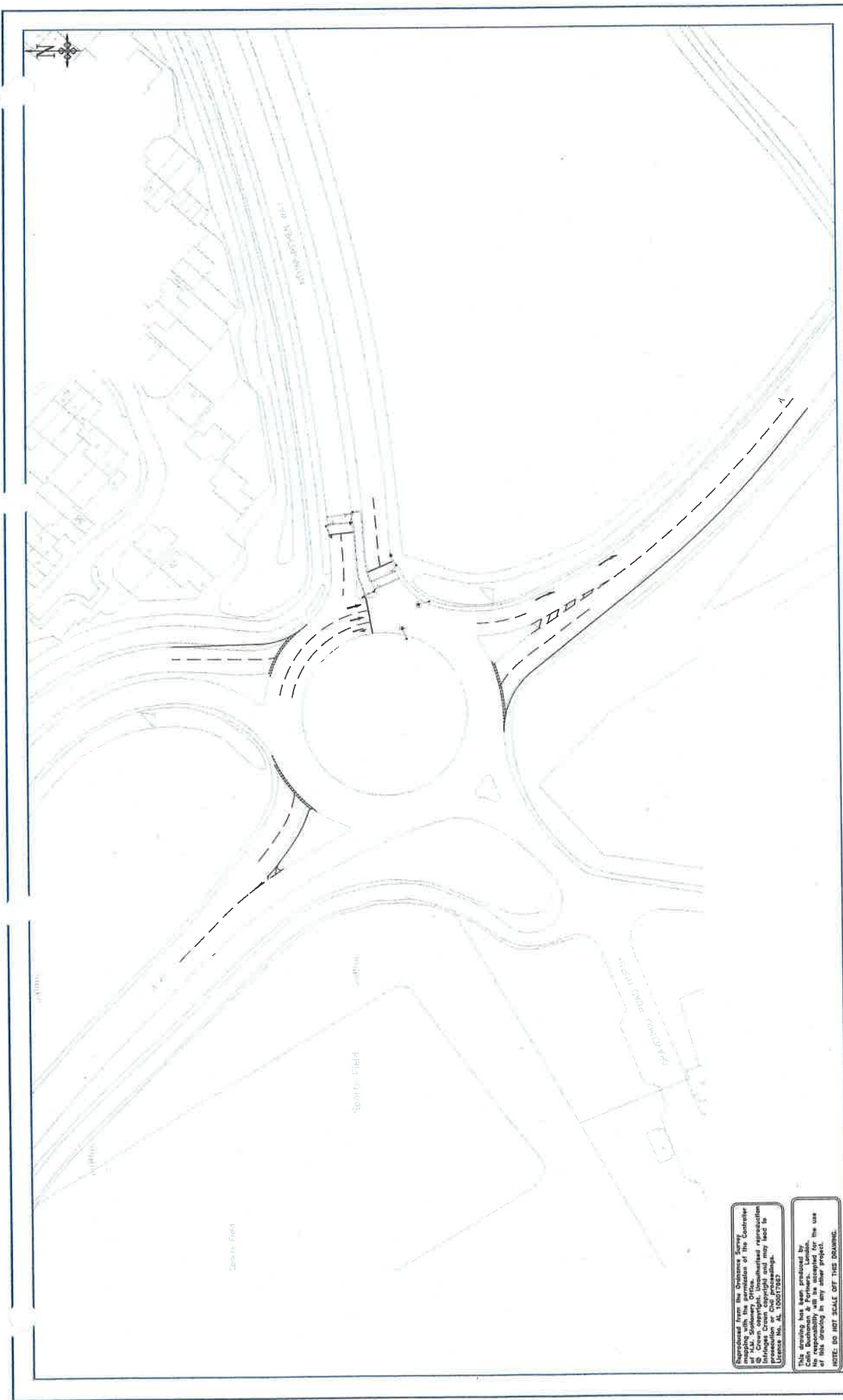










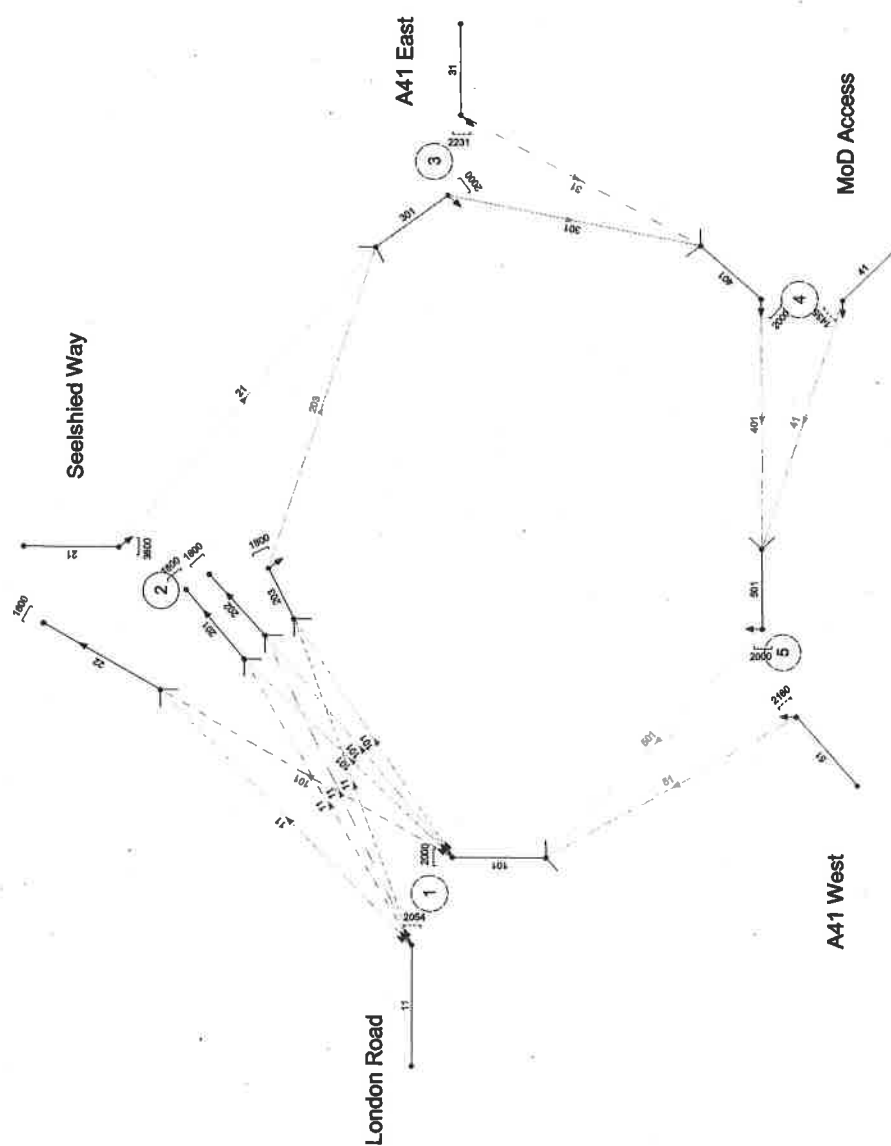


BOUNDARY WAY/ LONDON ROAD/ NEUNKIRCHEN WAY - PROPOSED IMPROVEMENT LAYOUT		GALLAGHER ESTATES		Figure 9.7	
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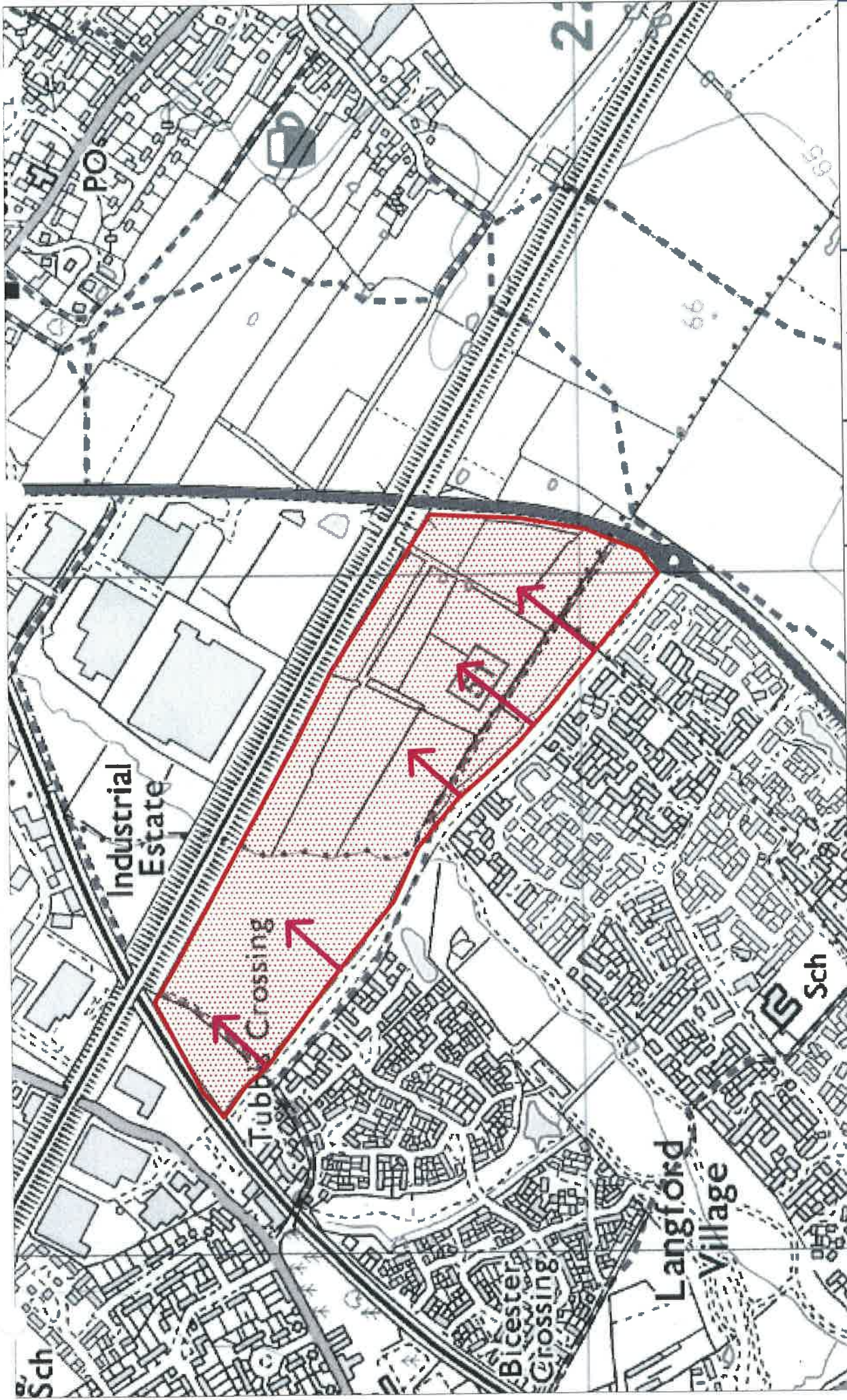



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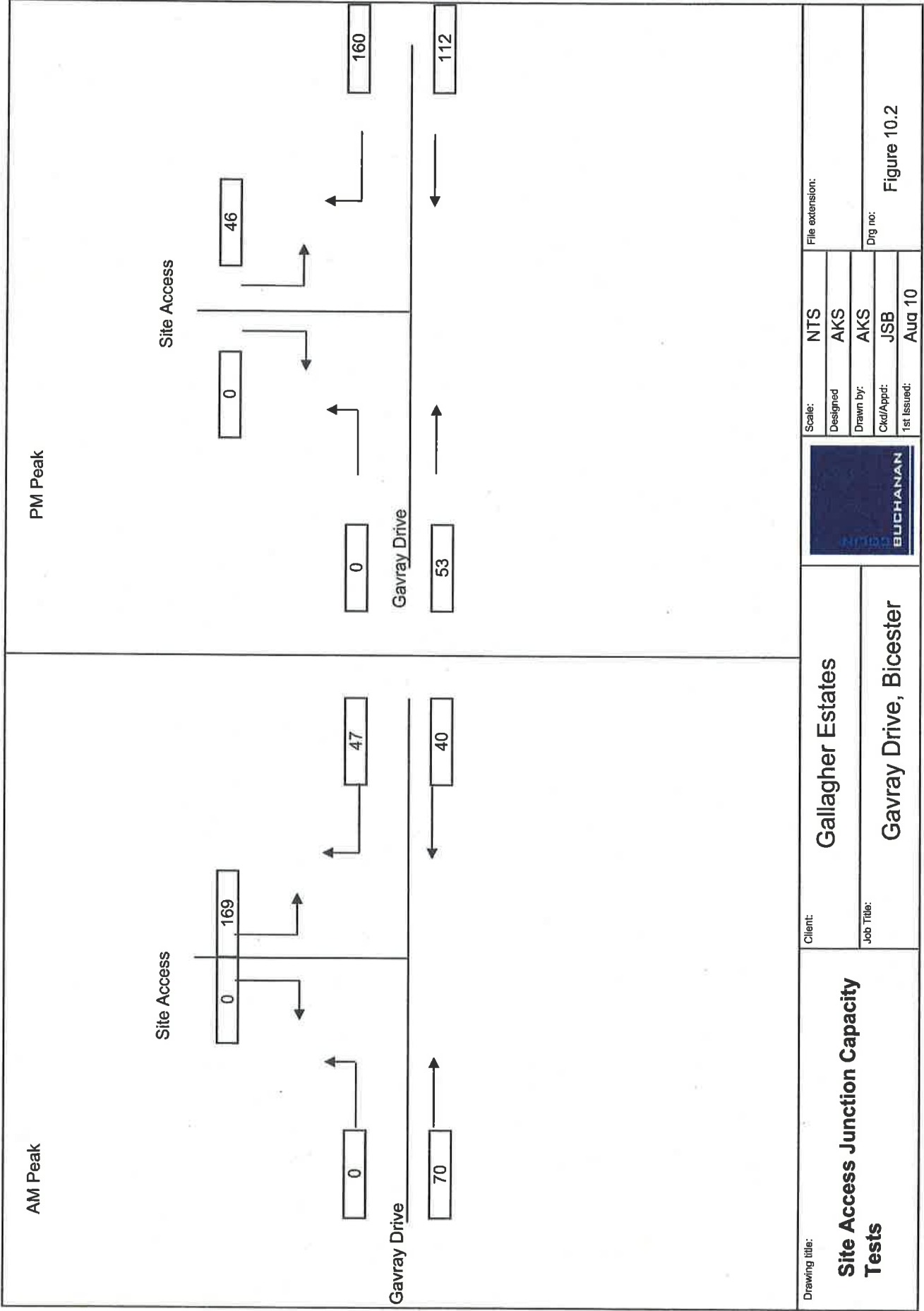
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Company	Colin Buchanan			Author	A Scarratt	FileName	old model.tnd		



Drawing Title	Site Access Points	Client	Gallagher Estates	10 Eastbourne Terrace Paddington London W2 6LG			
					Scale: NTS	Designed by: AKS	
		Job Title	Gavray Drive, Bicester	T 020 7053 1300 F 020 7053 1301 www.dbuchanan.co.uk	Drawn by: AKS	Chkd/Appd: JSB	Drg No: Figure 10.1
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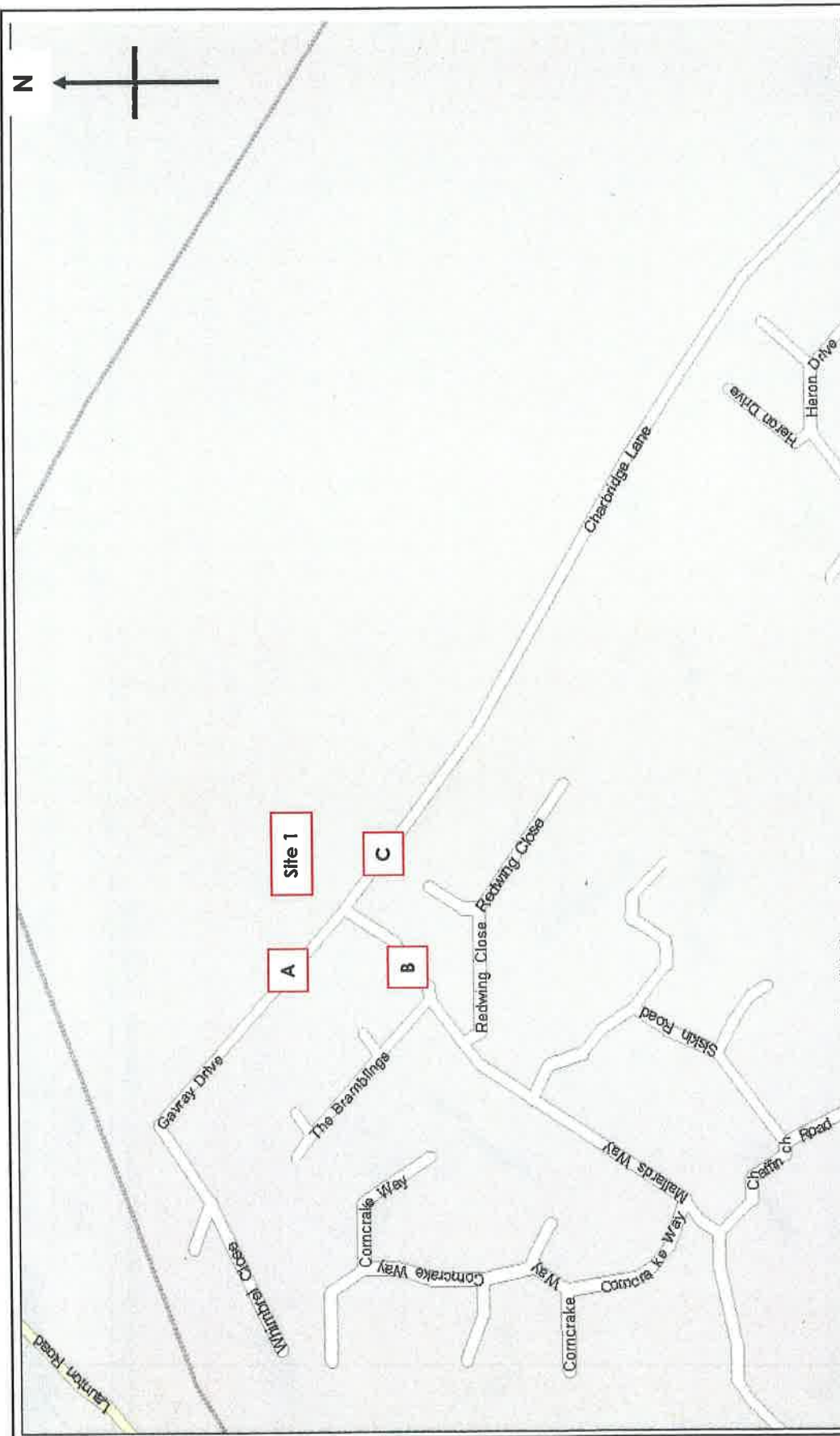


Appendices




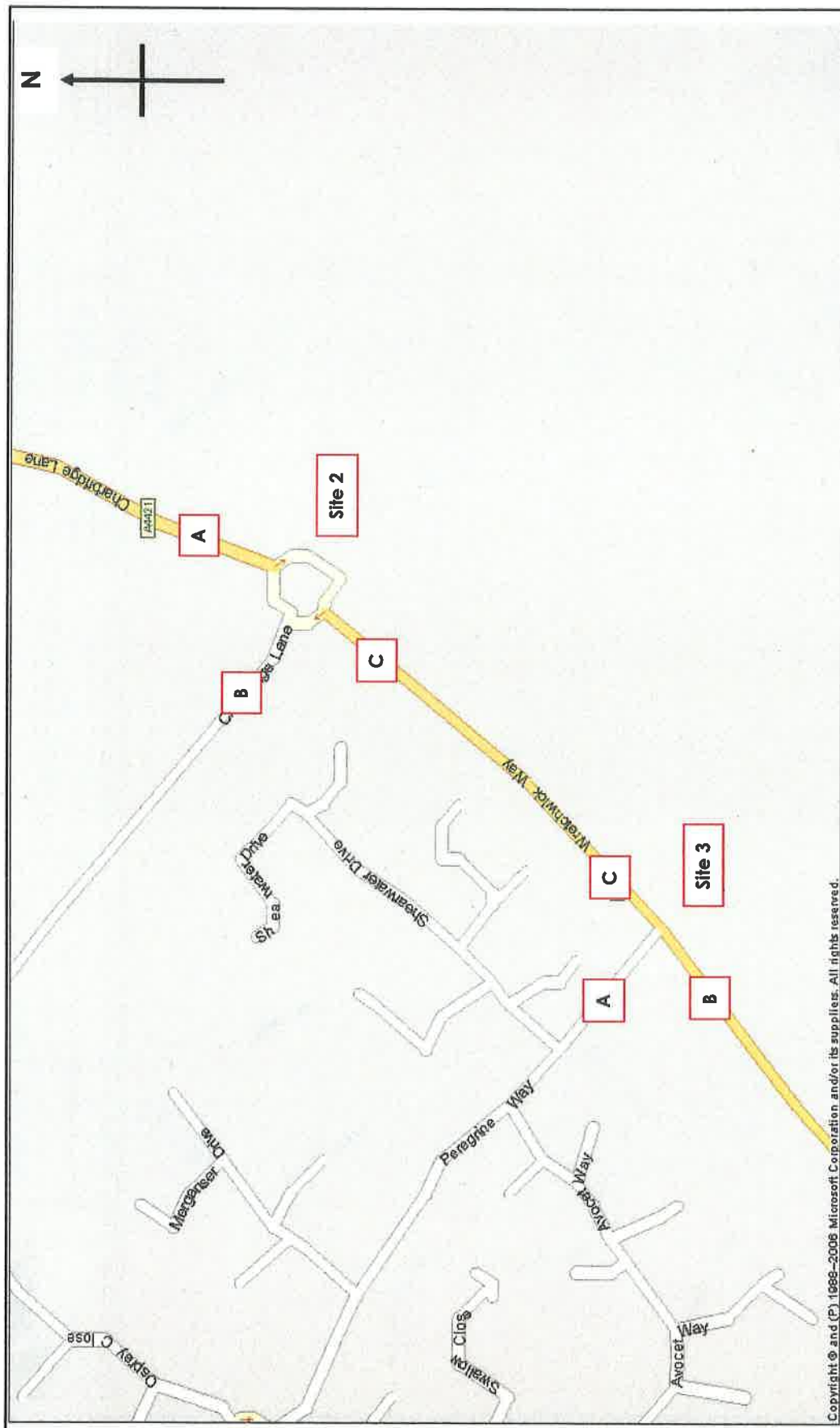
Appendix A


2010 Observed Traffic Flow and Queue Length Surveys

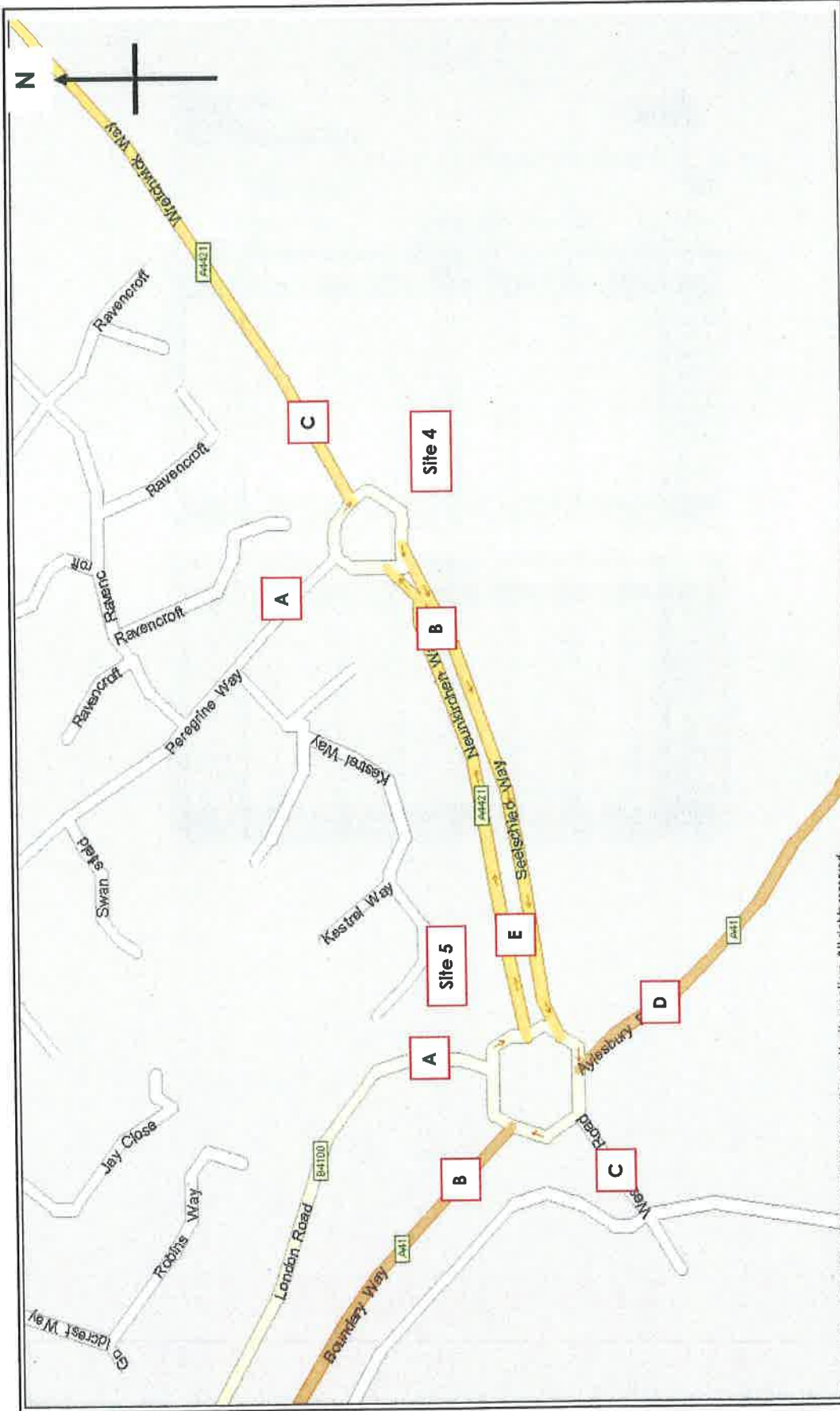



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	Site / Location: Site 1, Garray Drive / Mallards Way		Project No: 827	Drawing No: 827-01	Drawn By: NT
	Survey Date: Tuesday 29th June 2010		Project Name: Bicester		
	Survey Times: 07:00 to 10:00, 16:00 to 19:00		Drawing Title: Site Layout and Observed Movements		



	Site / Location:	Sites 2 & 3	Project No:	827	Drawing No:	827-02	Drawn By:	NT
	Survey Date:	Tuesday 29th June 2010	Project Name: Bicester					
	Survey Times:	07:00 to 10:00, 16:00 to 19:00	Drawing Title: Site Layout and Observed Movements					



	Site / Location: Sites 4 & 5		Project No: 827	Drawing No: 827-03	Drawn By: NT
	Survey Date: Tuesday 29th June 2010		Project Name: Bicester		
	Survey Times: 07:00 to 10:00, 16:00 to 19:00		Drawing Title: Site Layout and Observed Movements		



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1

DATE: 29/06/10

LOCATION: Garray Drive / Mallards Way

DAY: Tuesday

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	2	2	0	0	0	0	1	4.2
07:15	1	0	0	0	0	0	0	1
07:30	1	0	0	0	0	0	0	1
07:45	2	1	0	0	0	0	0	3
08:00	1	0	0	0	0	0	0	1
08:15	1	0	0	0	0	0	0	1
08:30	4	0	0	0	0	0	0	4
08:45	2	1	0	0	0	0	0	3
09:00	1	0	0	0	0	0	0	1
09:15	3	0	0	0	0	0	0	3
09:30	2	0	0	0	0	0	0	2
09:45	2	0	0	0	0	0	0	2
P/TOT	22	4	0	0	0	0	1	26.2

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0
16:45	0	1	0	0	0	0	0	1
17:00	3	1	0	0	0	0	0	4
17:15	2	0	0	0	0	0	0	2
17:30	2	1	0	0	0	0	0	3
17:45	3	0	0	0	0	0	0	3
18:00	4	0	0	0	0	0	0	4
18:15	3	0	0	0	0	0	2	3.4
18:30	0	0	0	0	0	0	0	0
18:45	4	0	0	0	0	0	0	4
P/TOT	22	3	0	0	0	0	2	25.4



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE:

1

DATE: 29/06/10

LOCATION:

Garray Drive / Mallards Way

DAY: Tuesday

TIME	A TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	0	0	0	0	0	0	0	0
07:15	1	0	0	0	0	0	0	1
07:30	2	0	0	0	0	0	0	2
07:45	1	0	0	0	0	0	0	1
08:00	1	0	0	0	0	0	0	1
08:15	2	0	0	0	0	0	0	2
08:30	1	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	1	0	0	0	0	0	0	1
09:30	1	0	0	0	0	0	0	1
09:45	0	0	0	0	0	0	0	0
P/TOT	10	0	0	0	0	0	0	10

TIME	A TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	0	1	0	0	0	0	0	1
16:30	1	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1
17:30	2	0	0	0	0	0	0	2
17:45	1	0	0	0	0	0	0	1
18:00	2	0	0	0	0	0	0	2
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	2	0	0	0	0	0	0	2
P/TOT	9	1	0	0	0	0	0	10



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10
LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	B TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
08:00	2	0	0	0	0	0	0	2
08:15	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	1
08:45	1	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0
09:15	1	0	0	0	0	0	0	1
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
P/TOT	5	0	0	0	0	0	0	5

TIME	B TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	2	0	0	0	0	0	0	2
16:15	1	0	0	0	0	0	0	1
16:30	1	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0
17:00	1	0	0	0	0	0	0	1
17:15	1	0	0	0	0	0	0	1
17:30	4	0	0	0	0	0	0	4
17:45	1	0	0	0	0	0	0	1
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	1	0	0	0	0	0	0	1
18:45	0	0	0	0	0	0	0	0
P/TOT	12	0	0	0	0	0	0	12



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10
 LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	B TO C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	10	0	0	0	0	0	0	10
07:15	17	1	0	0	0	0	0	18
07:30	9	0	0	0	0	0	0	9
07:45	12	2	1	0	0	0	0	15.5
08:00	11	0	0	0	0	1	0	11.4
08:15	15	0	0	0	1	0	1	17.2
08:30	15	0	0	0	0	0	0	15
08:45	16	1	0	0	0	0	0	17
09:00	6	0	0	0	0	0	0	6
09:15	6	0	0	0	1	0	0	8
09:30	7	2	0	0	0	0	0	9
09:45	5	1	0	0	0	0	0	6
P/TOT	129	7	1	0	2	1	1	142.1

TIME	B TO C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	4	0	0	0	0	0	0	4
16:15	7	1	0	0	1	0	0	10
16:30	7	1	0	0	0	0	0	8
16:45	10	2	0	0	0	0	0	12
17:00	9	1	0	0	0	0	0	10
17:15	5	2	0	0	1	0	0	9
17:30	5	0	0	0	0	0	0	5
17:45	14	0	0	0	0	0	0	14
18:00	10	1	0	0	0	0	1	11.2
18:15	7	0	0	0	0	0	0	7
18:30	12	1	0	0	0	0	0	13
18:45	12	0	0	0	0	0	0	12
P/TOT	102	9	0	0	2	0	1	115.2



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 1 DATE: 29/06/10
LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	C TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	3	0	0	0	0	0	0	3
07:15	2	0	0	0	0	0	0	2
07:30	3	2	0	0	0	0	0	5
07:45	9	3	0	0	1	0	0	14
08:00	3	2	0	0	0	0	0	5
08:15	3	3	0	0	0	0	0	6
08:30	7	0	0	0	0	0	0	7
08:45	8	1	0	0	1	0	0	11
09:00	7	1	0	0	0	0	0	8
09:15	2	2	0	0	0	0	0	4
09:30	3	1	0	0	0	0	0	4
09:45	0	0	0	0	1	0	0	2
P/TOT	50	15	0	0	3	0	0	71

TIME	C TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	7	0	0	0	0	0	0	7
16:15	12	2	0	0	0	0	0	14
16:30	9	0	0	0	0	0	0	9
16:45	17	2	0	0	1	1	0	21.4
17:00	20	2	0	0	0	0	1	22.2
17:15	25	2	0	0	0	0	0	27
17:30	14	2	0	0	0	0	0	16
17:45	17	4	0	0	1	0	0	23
18:00	18	0	0	0	0	0	0	18
18:15	11	2	0	0	0	0	0	13
18:30	15	0	0	0	0	0	2	15.4
18:45	5	0	0	0	0	0	1	5.2
P/TOT	170	16	0	0	2	1	4	191.2



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10

LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	C TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	1	1	0	0	0	0	0	2
07:15	1	0	0	0	0	0	0	1
07:30	2	0	0	0	0	0	0	2
07:45	0	2	0	0	0	0	0	2
08:00	1	0	0	0	0	0	0	1
08:15	2	0	0	0	0	0	0	2
08:30	2	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0
09:00	3	0	0	0	0	0	0	3
09:15	1	0	0	0	0	0	0	1
09:30	2	1	0	0	0	0	0	3
09:45	2	0	0	0	0	0	0	2
P/TOT	17	4	0	0	0	0	0	21

TIME	C TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	1	1	0	0	0	0	0	2
16:15	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	0	1
16:45	0	1	0	0	0	0	0	1
17:00	3	2	0	0	0	0	0	5
17:15	4	1	0	0	0	0	0	5
17:30	4	0	0	0	0	0	0	4
17:45	5	0	0	0	0	0	0	5
18:00	4	0	0	0	0	0	0	4
18:15	1	0	0	0	0	0	0	1
18:30	3	1	0	0	0	0	0	4
18:45	5	0	0	0	0	0	0	5
P/TOT	31	6	0	0	0	0	0	37



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10
LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	1	1	0	0	0	0	0	2
07:15	1	0	0	0	0	0	0	1
07:30	2	0	0	0	0	0	0	2
07:45	0	2	0	0	0	0	0	2
08:00	3	0	0	0	0	0	0	3
08:15	2	0	0	0	0	0	0	2
08:30	3	0	0	0	0	0	0	3
08:45	1	0	0	0	0	0	0	1
09:00	3	0	0	0	0	0	0	3
09:15	2	0	0	0	0	0	0	2
09:30	2	1	0	0	0	0	0	3
09:45	2	0	0	0	0	0	0	2
P/TOT	22	4	0	0	0	0	0	26

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	3	1	0	0	0	0	0	4
16:15	1	0	0	0	0	0	0	1
16:30	2	0	0	0	0	0	0	2
16:45	0	1	0	0	0	0	0	1
17:00	4	2	0	0	0	0	0	6
17:15	5	1	0	0	0	0	0	6
17:30	8	0	0	0	0	0	0	8
17:45	6	0	0	0	0	0	0	6
18:00	4	0	0	0	0	0	0	4
18:15	1	0	0	0	0	0	0	1
18:30	4	1	0	0	0	0	0	5
18:45	5	0	0	0	0	0	0	5
P/TOT	43	6	0	0	0	0	0	49



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10

LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	2	2	0	0	0	0	1	4.2
07:15	2	0	0	0	0	0	0	2
07:30	3	0	0	0	0	0	0	3
07:45	3	1	0	0	0	0	0	4
08:00	2	0	0	0	0	0	0	2
08:15	3	0	0	0	0	0	0	3
08:30	5	0	0	0	0	0	0	5
08:45	2	1	0	0	0	0	0	3
09:00	1	0	0	0	0	0	0	1
09:15	4	0	0	0	0	0	0	4
09:30	3	0	0	0	0	0	0	3
09:45	2	0	0	0	0	0	0	2
P/TOT	32	4	0	0	0	0	1	36.2

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	1	1	0	0	0	0	0	2
16:30	1	0	0	0	0	0	0	1
16:45	0	1	0	0	0	0	0	1
17:00	3	1	0	0	0	0	0	4
17:15	3	0	0	0	0	0	0	3
17:30	4	1	0	0	0	0	0	5
17:45	4	0	0	0	0	0	0	4
18:00	6	0	0	0	0	0	0	6
18:15	3	0	0	0	0	0	2	3.4
18:30	0	0	0	0	0	0	0	0
18:45	6	0	0	0	0	0	0	6
P/TOT	31	4	0	0	0	0	2	35.4



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10
LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	3	0	0	0	0	0	0	3
07:15	3	0	0	0	0	0	0	3
07:30	5	2	0	0	0	0	0	7
07:45	10	3	0	0	1	0	0	15
08:00	4	2	0	0	0	0	0	6
08:15	5	3	0	0	0	0	0	8
08:30	8	0	0	0	0	0	0	8
08:45	8	1	0	0	1	0	0	11
09:00	7	1	0	0	0	0	0	8
09:15	3	2	0	0	0	0	0	5
09:30	4	1	0	0	0	0	0	5
09:45	0	0	0	0	1	0	0	2
P/TOT	60	15	0	0	3	0	0	81

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	7	0	0	0	0	0	0	7
16:15	12	3	0	0	0	0	0	15
16:30	10	0	0	0	0	0	0	10
16:45	17	2	0	0	1	1	0	21.4
17:00	20	2	0	0	0	0	1	22.2
17:15	26	2	0	0	0	0	0	28
17:30	16	2	0	0	0	0	0	18
17:45	18	4	0	0	1	0	0	24
18:00	20	0	0	0	0	0	0	20
18:15	11	2	0	0	0	0	0	13
18:30	15	0	0	0	0	0	2	15.4
18:45	7	0	0	0	0	0	1	7.2
P/TOT	179	17	0	0	2	1	4	201.2



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10

LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	10	0	0	0	0	0	0	10
07:15	17	1	0	0	0	0	0	18
07:30	9	0	0	0	0	0	0	9
07:45	12	2	1	0	0	0	0	15.5
08:00	13	0	0	0	0	1	0	13.4
08:15	15	0	0	0	1	0	1	17.2
08:30	16	0	0	0	0	0	0	16
08:45	17	1	0	0	0	0	0	18
09:00	6	0	0	0	0	0	0	6
09:15	7	0	0	0	1	0	0	9
09:30	7	2	0	0	0	0	0	9
09:45	5	1	0	0	0	0	0	6
P/TOT	134	7	1	0	2	1	1	147.1

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	6	0	0	0	0	0	0	6
16:15	8	1	0	0	1	0	0	11
16:30	8	1	0	0	0	0	0	9
16:45	10	2	0	0	0	0	0	12
17:00	10	1	0	0	0	0	0	11
17:15	6	2	0	0	1	0	0	10
17:30	9	0	0	0	0	0	0	9
17:45	15	0	0	0	0	0	0	15
18:00	10	1	0	0	0	0	1	11.2
18:15	7	0	0	0	0	0	0	7
18:30	13	1	0	0	0	0	0	14
18:45	12	0	0	0	0	0	0	12
P/TOT	114	9	0	0	2	0	1	127.2



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10
LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	12	2	0	0	0	0	1	14.2
07:15	18	1	0	0	0	0	0	19
07:30	10	0	0	0	0	0	0	10
07:45	14	3	1	0	0	0	0	18.5
08:00	12	0	0	0	0	1	0	12.4
08:15	16	0	0	0	1	0	1	18.2
08:30	19	0	0	0	0	0	0	19
08:45	18	2	0	0	0	0	0	20
09:00	7	0	0	0	0	0	0	7
09:15	9	0	0	0	1	0	0	11
09:30	9	2	0	0	0	0	0	11
09:45	7	1	0	0	0	0	0	8
P/TOT	151	11	1	0	2	1	2	168.3

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	4	0	0	0	0	0	0	4
16:15	8	1	0	0	1	0	0	11
16:30	7	1	0	0	0	0	0	8
16:45	10	3	0	0	0	0	0	13
17:00	12	2	0	0	0	0	0	14
17:15	7	2	0	0	1	0	0	11
17:30	7	1	0	0	0	0	0	8
17:45	17	0	0	0	0	0	0	17
18:00	14	1	0	0	0	0	1	15.2
18:15	10	0	0	0	0	0	2	10.4
18:30	12	1	0	0	0	0	0	13
18:45	16	0	0	0	0	0	0	16
P/TOT	124	12	0	0	2	0	3	140.6



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 1 DATE: 29/06/10

LOCATION: Garray Drive / Mallards Way DAY: Tuesday

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	4	1	0	0	0	0	0	5
07:15	3	0	0	0	0	0	0	3
07:30	5	2	0	0	0	0	0	7
07:45	9	5	0	0	1	0	0	16
08:00	4	2	0	0	0	0	0	6
08:15	5	3	0	0	0	0	0	8
08:30	9	0	0	0	0	0	0	9
08:45	8	1	0	0	1	0	0	11
09:00	10	1	0	0	0	0	0	11
09:15	3	2	0	0	0	0	0	5
09:30	5	2	0	0	0	0	0	7
09:45	2	0	0	0	1	0	0	4
P/TOT	67	19	0	0	3	0	0	92

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	8	1	0	0	0	0	0	9
16:15	12	2	0	0	0	0	0	14
16:30	10	0	0	0	0	0	0	10
16:45	17	3	0	0	1	1	0	22.4
17:00	23	4	0	0	0	0	1	27.2
17:15	29	3	0	0	0	0	0	32
17:30	18	2	0	0	0	0	0	20
17:45	22	4	0	0	1	0	0	28
18:00	22	0	0	0	0	0	0	22
18:15	12	2	0	0	0	0	0	14
18:30	18	1	0	0	0	0	2	19.4
18:45	10	0	0	0	0	0	1	10.2
P/TOT	201	22	0	0	2	1	4	228.2



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 1
LOCATION: Garray Drive / Mallards Way

DATE: 29/06/10
DAY: Tuesday

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	16	3	0	0	0	0	1	19.2
07:15	22	1	0	0	0	0	0	23
07:30	17	2	0	0	0	0	0	19
07:45	24	8	1	0	1	0	0	35.5
08:00	19	2	0	0	0	1	0	21.4
08:15	23	3	0	0	1	0	1	28.2
08:30	30	0	0	0	0	0	0	30
08:45	27	3	0	0	1	0	0	32
09:00	17	1	0	0	0	0	0	18
09:15	14	2	0	0	1	0	0	18
09:30	15	4	0	0	0	0	0	19
09:45	9	1	0	0	1	0	0	12
P/TOT	233	30	1	0	5	1	2	275.3

PEAK HOUR CALCULATION	
07:00 to 08:00	97
07:15 to 08:15	99
07:30 to 08:30	104
07:45 to 08:45	115
08:00 to 09:00	112
08:15 to 09:15	108
08:30 to 09:30	98
08:45 to 09:45	87
09:00 to 10:00	67
PEAK VALUE	115

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	14	1	0	0	0	0	0	15
16:15	21	4	0	0	1	0	0	27
16:30	19	1	0	0	0	0	0	20
16:45	27	6	0	0	1	1	0	35.4
17:00	36	6	0	0	0	0	1	42.2
17:15	38	5	0	0	1	0	0	45
17:30	31	3	0	0	0	0	0	34
17:45	41	4	0	0	1	0	0	47
18:00	38	1	0	0	0	0	1	39.2
18:15	22	2	0	0	0	0	2	24.4
18:30	31	2	0	0	0	0	2	33.4
18:45	28	0	0	0	0	0	1	28.2
P/TOT	346	35	0	0	4	1	7	390.8

PEAK HOUR CALCULATION	
16:00 to 17:00	97
16:15 to 17:15	125
16:30 to 17:30	143
16:45 to 17:45	157
17:00 to 18:00	168
17:15 to 18:15	165
17:30 to 18:30	145
17:45 to 18:45	144
18:00 to 19:00	125
PEAK VALUE	168



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	92	26	1	12	0	0	0	147.1
07:15	106	19	4	4	2	0	0	144.2
07:30	97	25	4	12	0	2	0	156.4
07:45	124	17	4	4	0	1	0	156.6
08:00	106	12	3	2	0	3	0	128.3
08:15	145	8	7	6	0	1	0	177.7
08:30	154	10	6	6	0	0	0	186.8
08:45	110	11	7	8	0	0	0	149.9
09:00	87	12	7	6	1	3	0	126.5
09:15	77	14	4	7	1	0	0	115.1
09:30	64	13	6	7	1	0	0	104.1
09:45	72	15	9	5	1	0	0	114
P/TOT	1234	182	62	79	6	10	0	1706.7

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	67	13	4	7	1	1	0	104.5
16:15	68	19	5	4	0	0	0	103.7
16:30	96	14	1	6	0	0	0	125.3
16:45	91	12	4	4	1	1	1	120.8
17:00	114	20	0	6	1	0	0	149.8
17:15	112	15	3	5	0	0	0	143
17:30	107	6	0	4	0	2	0	123
17:45	102	10	3	3	2	2	0	128.2
18:00	95	9	0	3	0	1	0	111.3
18:15	77	2	2	3	0	0	0	88.9
18:30	91	4	0	3	0	0	0	101.9
18:45	55	7	1	2	0	1	0	68.5
P/TOT	1075	131	23	50	5	8	1	1368.9



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	A to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	4	0	0	0	0	0	0	4
07:15	2	0	0	0	0	0	0	2
07:30	1	1	0	0	0	0	0	2
07:45	1	3	0	0	0	0	0	4
08:00	0	2	0	0	0	0	0	2
08:15	2	2	0	0	0	0	0	4
08:30	5	1	0	0	0	0	0	6
08:45	3	0	0	0	0	0	0	3
09:00	6	0	0	0	0	0	0	6
09:15	1	1	0	0	0	0	0	2
09:30	2	1	0	0	0	0	0	3
09:45	1	0	0	0	0	0	0	1
P/TOT	28	11	0	0	0	0	0	39

TIME	A to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	6	0	0	0	0	0	0	6
16:15	6	1	0	0	0	0	0	7
16:30	4	0	0	0	0	1	0	4.4
16:45	10	1	0	0	0	0	0	11
17:00	13	0	0	0	0	0	0	13
17:15	10	1	0	0	0	0	0	11
17:30	13	0	0	0	0	0	0	13
17:45	6	0	0	0	0	0	0	6
18:00	9	1	0	0	0	0	0	10
18:15	6	1	0	0	0	0	0	7
18:30	8	0	0	0	0	0	0	8
18:45	3	0	0	0	0	0	0	3
P/TOT	94	5	0	0	0	1	0	99.4



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	A to A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	0	0	1
08:30	0	0	1	0	0	0	0	1.5
08:45	1	0	0	0	0	0	0	1
09:00	1	0	0	0	0	0	0	1
09:15	2	0	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
P/TOT	5	0	1	0	0	0	0	6.5

TIME	A to A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	1	2	0	0	0	0	0	3
17:30	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	1
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	1	0	0	1	0	0	0	3.3
P/TOT	3	2	0	1	0	0	0	7.3



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2

DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way

DAY: Tuesday

TIME	CAR	LGV	OGV1	B to A		PSV	MCL	PCL	TOT
				OGV2					
07:00	4	0	0	0	0	0	0	0	4
07:15	12	0	0	0	0	0	0	0	12
07:30	4	0	0	0	0	0	0	0	4
07:45	5	2	1	0	0	0	0	0	8.5
08:00	7	0	0	0	0	0	0	0	7
08:15	11	0	0	0	0	0	0	0	11
08:30	7	0	0	0	0	0	0	0	7
08:45	7	1	0	0	0	0	0	0	8
09:00	6	0	0	0	0	0	0	0	6
09:15	3	0	0	0	0	0	0	0	3
09:30	3	0	0	0	0	0	0	0	3
09:45	5	1	0	0	0	0	0	0	6
P/TOT	74	4	1	0	0	0	0	0	79.5

TIME	CAR	LGV	OGV1	B to A		PSV	MCL	PCL	TOT
				OGV2					
16:00	2	0	0	0	0	0	0	0	2
16:15	6	1	0	0	0	0	0	0	7
16:30	2	0	0	0	0	0	0	0	2
16:45	7	0	0	0	0	0	0	0	7
17:00	4	2	0	0	0	0	0	0	6
17:15	3	2	0	0	0	0	0	0	5
17:30	5	0	0	0	0	0	0	0	5
17:45	7	0	0	0	0	0	0	0	7
18:00	7	1	0	0	0	0	0	0	8
18:15	5	0	0	0	0	0	0	0	5
18:30	7	1	0	0	0	0	0	0	8
18:45	5	0	0	0	0	0	0	0	5
P/TOT	60	7	0	0	0	0	0	0	67



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
 LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	B to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	8	1	0	0	0	0	1	9.2
07:15	7	2	0	0	0	0	0	9
07:30	5	0	0	0	0	0	0	5
07:45	6	0	0	0	0	0	0	6
08:00	6	0	0	0	0	1	0	6.4
08:15	5	0	0	0	1	0	0	7
08:30	13	1	0	0	0	0	0	14
08:45	10	1	0	0	0	0	0	11
09:00	4	0	0	0	0	0	0	4
09:15	4	0	0	0	0	0	0	4
09:30	3	1	0	0	0	0	0	4
09:45	4	1	0	0	0	0	0	5
P/TOT	75	7	0	0	1	1	1	84.6

TIME	B to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	3	0	0	0	0	0	0	3
16:15	2	0	0	0	1	0	0	4
16:30	7	1	0	0	0	0	0	8
16:45	5	2	0	0	0	0	0	7
17:00	9	1	0	0	0	0	0	10
17:15	4	0	0	0	1	0	0	6
17:30	2	0	0	0	0	0	0	2
17:45	6	1	0	0	0	0	0	7
18:00	8	0	0	0	0	0	0	8
18:15	6	0	0	0	0	0	0	6
18:30	5	0	0	0	0	0	0	5
18:45	9	0	0	0	0	0	0	9
P/TOT	66	5	0	0	2	0	0	75



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	B to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

TIME	B to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	1	0	0	0	0	0	0	1
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
P/TOT	1	0	0	0	0	0	0	1



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	CAR	LGV	OGV1	C to B OGV2	PSV	MCL	PCL	TOT
07:00	1	1	0	0	0	0	0	2
07:15	1	0	0	0	0	0	0	1
07:30	6	1	0	0	0	0	0	7
07:45	6	2	0	0	1	0	0	10
08:00	3	0	0	0	0	0	0	3
08:15	2	0	0	0	0	0	0	2
08:30	6	0	0	0	0	0	0	6
08:45	4	1	0	0	1	0	0	7
09:00	5	1	0	0	0	0	0	6
09:15	1	0	0	0	0	0	0	1
09:30	4	1	0	0	0	0	0	5
09:45	0	0	0	0	1	0	0	2
P/TOT	39	7	0	0	3	0	0	52

TIME	CAR	LGV	OGV1	C to B OGV2	PSV	MCL	PCL	TOT
16:00	2	2	0	0	0	0	0	4
16:15	6	0	0	0	0	0	0	6
16:30	5	0	0	0	0	0	0	5
16:45	7	2	0	0	1	0	0	11
17:00	10	3	0	0	0	0	0	13
17:15	19	2	0	0	0	0	0	21
17:30	5	2	0	0	0	0	0	7
17:45	16	2	0	0	1	0	0	20
18:00	13	0	0	0	0	0	1	13.2
18:15	5	0	0	0	0	0	0	5
18:30	11	1	0	0	0	0	0	12
18:45	10	0	0	0	0	0	0	10
P/TOT	109	14	0	0	2	0	1	127.2



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2

DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way

DAY: Tuesday

TIME	CAR	LGV	OGV1	C to A OGV2	PSV	MCL	PCL	TOT
07:00	34	11	3	3	0	0	0	56.4
07:15	49	8	0	5	2	0	1	72.7
07:30	82	10	3	8	1	0	0	116.9
07:45	85	14	4	2	0	1	0	110
08:00	80	12	4	6	1	0	0	113.8
08:15	116	12	5	12	0	2	1	164.1
08:30	94	10	4	6	0	1	0	124.2
08:45	95	7	4	7	1	1	0	126.5
09:00	64	5	6	5	1	0	0	91.5
09:15	52	7	5	10	0	1	0	89.9
09:30	42	6	7	4	0	2	0	68.5
09:45	46	8	4	8	1	0	0	80.4
P/TOT	839	110	49	76	7	8	2	1214.9

TIME	CAR	LGV	OGV1	C to A OGV2	PSV	MCL	PCL	TOT
16:00	95	16	3	3	0	2	0	123.2
16:15	89	15	6	8	1	0	0	133.4
16:30	108	23	3	3	0	0	0	142.4
16:45	115	23	3	4	1	0	0	153.7
17:00	144	18	1	4	0	1	0	173.1
17:15	129	10	1	5	0	2	1	153
17:30	133	12	1	3	0	2	0	154.2
17:45	116	4	4	6	0	2	0	140.6
18:00	101	5	2	4	0	2	0	119
18:15	112	8	4	7	0	2	0	142.9
18:30	111	9	4	3	2	0	0	136.9
18:45	58	6	0	1	0	3	0	67.5
P/TOT	1311	149	32	51	4	16	1	1639.9



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 2 DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	CAR	LGV	OGV1	C to C OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	1	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
P/TOT	2	0	0	0	0	0	0	2

TIME	CAR	LGV	OGV1	C to C OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	2	0	0	0	0	0	0	2
17:30	0	0	0	0	0	0	0	0
17:45	1	1	0	0	0	0	0	2
18:00	0	0	0	0	0	0	0	0
18:15	0	1	0	0	0	0	0	1
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
P/TOT	3	2	0	0	0	0	0	5



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	38	11	3	3	0	0	0	60.4
07:15	61	8	0	5	2	0	1	84.7
07:30	86	10	3	8	1	0	0	120.9
07:45	90	16	5	2	0	1	0	118.5
08:00	87	12	4	6	1	0	0	120.8
08:15	128	12	5	12	0	2	1	176.1
08:30	101	10	5	6	0	1	0	132.7
08:45	103	8	4	7	1	1	0	135.5
09:00	71	5	6	5	1	0	0	98.5
09:15	57	7	5	10	0	1	0	94.9
09:30	45	6	7	4	0	2	0	71.5
09:45	51	9	4	8	1	0	0	86.4
P/TOT	918	114	51	76	7	8	2	1300.9

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	97	16	3	3	0	2	0	125.2
16:15	95	16	6	8	1	0	0	140.4
16:30	110	23	3	3	0	0	0	144.4
16:45	122	23	3	4	1	0	0	160.7
17:00	148	20	1	4	0	1	0	179.1
17:15	133	14	1	5	0	2	1	161
17:30	138	12	1	3	0	2	0	159.2
17:45	124	4	4	6	0	2	0	148.6
18:00	108	6	2	4	0	2	0	127
18:15	117	8	4	7	0	2	0	147.9
18:30	118	10	4	3	2	0	0	144.9
18:45	64	6	0	2	0	3	0	75.8
P/TOT	1374	158	32	52	4	16	1	1714.2



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	96	26	1	12	0	0	0	151.1
07:15	108	19	4	4	2	0	0	146.2
07:30	98	26	4	12	0	2	0	158.4
07:45	125	20	4	4	0	1	0	160.6
08:00	106	14	3	2	0	3	0	130.3
08:15	148	10	7	6	0	1	0	182.7
08:30	159	11	7	6	0	0	0	194.3
08:45	114	11	7	8	0	0	0	153.9
09:00	94	12	7	6	1	3	0	133.5
09:15	80	15	4	7	1	0	0	119.1
09:30	66	14	6	7	1	0	0	107.1
09:45	73	15	9	5	1	0	0	115
P/TOT	1267	193	63	79	6	10	0	1752.2

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	73	13	4	7	1	1	0	110.5
16:15	74	20	5	4	0	0	0	110.7
16:30	100	14	1	6	0	1	0	129.7
16:45	101	13	4	4	1	1	1	131.8
17:00	127	20	0	6	1	0	0	162.8
17:15	123	18	3	5	0	0	0	157
17:30	120	6	0	4	0	2	0	136
17:45	109	10	3	3	2	2	0	135.2
18:00	104	10	0	3	0	1	0	121.3
18:15	83	3	2	3	0	0	0	95.9
18:30	99	4	0	3	0	0	0	109.9
18:45	59	7	1	3	0	1	0	74.8
P/TOT	1172	138	23	51	5	9	1	1475.6



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2 DATE: 29/06/10
 LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	5	1	0	0	0	0	0	6
07:15	3	0	0	0	0	0	0	3
07:30	7	2	0	0	0	0	0	9
07:45	7	5	0	0	1	0	0	14
08:00	3	2	0	0	0	0	0	5
08:15	4	2	0	0	0	0	0	6
08:30	11	1	0	0	0	0	0	12
08:45	7	1	0	0	1	0	0	10
09:00	11	1	0	0	0	0	0	12
09:15	2	1	0	0	0	0	0	3
09:30	6	2	0	0	0	0	0	8
09:45	1	0	0	0	1	0	0	3
P/TOT	67	18	0	0	3	0	0	91

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	8	2	0	0	0	0	0	10
16:15	12	1	0	0	0	0	0	13
16:30	9	0	0	0	0	1	0	9.4
16:45	17	3	0	0	1	0	0	22
17:00	23	3	0	0	0	0	0	26
17:15	29	3	0	0	0	0	0	32
17:30	18	2	0	0	0	0	0	20
17:45	22	2	0	0	1	0	0	26
18:00	22	1	0	0	0	0	1	23.2
18:15	12	1	0	0	0	0	0	13
18:30	19	1	0	0	0	0	0	20
18:45	13	0	0	0	0	0	0	13
P/TOT	204	19	0	0	2	1	1	227.6



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 2 DATE: 29/06/10
LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	12	1	0	0	0	0	1	13.2
07:15	19	2	0	0	0	0	0	21
07:30	9	0	0	0	0	0	0	9
07:45	11	2	1	0	0	0	0	14.5
08:00	13	0	0	0	0	1	0	13.4
08:15	16	0	0	0	1	0	0	18
08:30	20	1	0	0	0	0	0	21
08:45	17	2	0	0	0	0	0	19
09:00	10	0	0	0	0	0	0	10
09:15	7	0	0	0	0	0	0	7
09:30	6	1	0	0	0	0	0	7
09:45	9	2	0	0	0	0	0	11
P/TOT	149	11	1	0	1	1	1	164.1

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	5	0	0	0	0	0	0	5
16:15	8	1	0	0	1	0	0	11
16:30	9	1	0	0	0	0	0	10
16:45	12	2	0	0	0	0	0	14
17:00	13	3	0	0	0	0	0	16
17:15	7	2	0	0	1	0	0	11
17:30	7	0	0	0	0	0	0	7
17:45	13	1	0	0	0	0	0	14
18:00	15	1	0	0	0	0	0	16
18:15	12	0	0	0	0	0	0	12
18:30	12	1	0	0	0	0	0	13
18:45	14	0	0	0	0	0	0	14
P/TOT	127	12	0	0	2	0	0	143



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2

DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way

DAY: Tuesday

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	100	27	1	12	0	0	1	156.3
07:15	113	21	4	4	2	0	0	153.2
07:30	102	25	4	12	0	2	0	161.4
07:45	131	17	4	4	0	1	0	163.6
08:00	112	12	3	2	0	4	0	134.7
08:15	150	8	7	6	1	1	0	184.7
08:30	168	11	6	6	0	0	0	201.8
08:45	120	12	7	8	0	0	0	160.9
09:00	91	12	7	6	1	3	0	130.5
09:15	81	14	4	7	1	0	0	119.1
09:30	67	14	6	7	1	0	0	108.1
09:45	76	16	9	5	1	0	0	119
P/TOT	1311	189	62	79	7	11	1	1793.3

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	70	13	4	7	1	1	0	107.5
16:15	70	19	5	4	1	0	0	107.7
16:30	103	15	1	6	0	0	0	133.3
16:45	96	14	4	4	1	1	1	127.8
17:00	123	21	0	6	1	0	0	159.8
17:15	118	15	3	5	1	0	0	151
17:30	109	6	0	4	0	2	0	125
17:45	109	12	3	3	2	2	0	137.2
18:00	103	9	0	3	0	1	0	119.3
18:15	83	3	2	3	0	0	0	95.9
18:30	96	4	0	3	0	0	0	106.9
18:45	64	7	1	2	0	1	0	77.5
P/TOT	1144	138	23	50	7	8	1	1448.9



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 2 DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way DAY: Tuesday

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	35	12	3	3	0	0	0	58.4
07:15	50	8	0	5	2	0	1	73.7
07:30	88	11	3	8	1	0	0	123.9
07:45	92	16	4	2	1	1	0	121
08:00	83	12	4	6	1	0	0	116.8
08:15	118	12	5	12	0	2	1	166.1
08:30	101	10	4	6	0	1	0	131.2
08:45	99	8	4	7	2	1	0	133.5
09:00	69	6	6	5	1	0	0	97.5
09:15	53	7	5	10	0	1	0	90.9
09:30	46	7	7	4	0	2	0	73.5
09:45	46	8	4	8	2	0	0	82.4
P/TOT	880	117	49	76	10	8	2	1268.9

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	97	18	3	3	0	2	0	127.2
16:15	95	15	6	8	1	0	0	139.4
16:30	113	23	3	3	0	0	0	147.4
16:45	122	25	3	4	2	0	0	164.7
17:00	154	21	1	4	0	1	0	186.1
17:15	150	12	1	5	0	2	1	176
17:30	138	14	1	3	0	2	0	161.2
17:45	133	7	4	6	1	2	0	162.6
18:00	114	5	2	4	0	2	1	132.2
18:15	117	9	4	7	0	2	0	148.9
18:30	122	10	4	3	2	0	0	148.9
18:45	68	6	0	1	0	3	0	77.5
P/TOT	1423	165	32	51	6	16	2	1772.1



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 2

DATE: 29/06/10

LOCATION: Charbridge Lane / Wretchwick Way

DAY: Tuesday

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	143	39	4	15	0	0	1	222.7
07:15	177	29	4	9	4	0	1	240.9
07:30	195	37	7	20	1	2	0	291.3
07:45	228	38	9	6	1	2	0	296.1
08:00	202	26	7	8	1	4	0	260.5
08:15	282	22	12	18	1	3	1	366.8
08:30	280	22	11	12	0	1	0	346.5
08:45	230	21	11	15	2	1	0	306.4
09:00	173	18	13	11	2	3	0	241
09:15	140	22	9	17	1	1	0	217
09:30	118	22	13	11	1	2	0	187.6
09:45	128	25	13	13	3	0	0	208.4
P/TOT	2296	321	113	155	17	19	3	3185.2

PEAK HOUR CALCULATION	
07:00 to 08:00	1051
07:15 to 08:15	1089
07:30 to 08:30	1215
07:45 to 08:45	1270
08:00 to 09:00	1280
08:15 to 09:15	1261
08:30 to 09:30	1111
08:45 to 09:45	952
09:00 to 10:00	854
PEAK VALUE	1280

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	175	31	7	10	1	3	0	242.7
16:15	177	36	11	12	2	0	0	261.1
16:30	222	38	4	9	0	1	0	287.1
16:45	235	40	7	8	3	1	1	310.5
17:00	294	44	1	10	1	1	0	364.9
17:15	280	32	4	10	1	2	1	344
17:30	265	20	1	7	0	4	0	304.2
17:45	255	18	7	9	3	4	0	311.8
18:00	233	16	2	7	0	3	1	269.5
18:15	212	12	6	10	0	2	0	256.8
18:30	233	15	4	6	2	0	0	271.8
18:45	141	13	1	4	0	4	0	166.3
P/TOT	2722	315	55	102	13	25	3	3390.7

PEAK HOUR CALCULATION	
16:00 to 17:00	1101
16:15 to 17:15	1224
16:30 to 17:30	1307
16:45 to 17:45	1324
17:00 to 18:00	1325
17:15 to 18:15	1230
17:30 to 18:30	1142
17:45 to 18:45	1110
18:00 to 19:00	964
PEAK VALUE	1325



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
 LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	A TO C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	12	5	1	0	0	0	0	18.5
07:15	17	4	0	0	2	0	0	25
07:30	37	4	0	0	1	0	0	43
07:45	27	7	0	0	1	0	0	36
08:00	28	1	0	0	1	0	0	31
08:15	29	1	0	0	0	0	0	30
08:30	39	2	0	0	0	0	0	41
08:45	33	1	0	0	2	0	0	38
09:00	19	3	0	0	0	0	0	22
09:15	11	1	0	0	0	0	0	12
09:30	13	3	0	0	0	1	0	16.4
09:45	9	2	0	0	2	0	0	15
P/TOT	274	34	1	0	9	1	0	327.9

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	10	3	0	0	0	0	0	13
16:15	17	1	0	0	0	0	0	18
16:30	14	3	0	0	0	0	0	17
16:45	18	3	0	0	2	0	0	25
17:00	37	3	1	0	0	0	0	41.5
17:15	28	0	0	0	0	0	0	28
17:30	26	2	1	0	0	1	0	29.9
17:45	40	2	0	0	1	0	0	44
18:00	25	2	0	0	0	0	0	27
18:15	23	0	0	0	0	0	0	23
18:30	24	1	0	0	0	0	0	25
18:45	18	1	0	0	0	0	0	19
P/TOT	280	21	2	0	3	1	0	310.4



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	A TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	23	1	0	1	0	0	0	26.3
07:15	19	1	0	0	0	2	0	20.8
07:30	31	0	0	0	0	0	0	31
07:45	17	1	0	0	0	0	0	18
08:00	15	2	0	0	0	1	0	17.4
08:15	17	1	1	0	0	0	0	19.5
08:30	18	1	0	0	0	0	0	19
08:45	17	0	0	0	0	0	0	17
09:00	14	1	0	0	0	0	0	15
09:15	13	0	0	0	0	0	0	13
09:30	11	1	0	0	0	1	0	12.4
09:45	11	1	0	0	0	1	0	12.4
P/TOT	206	10	1	1	0	5	0	221.8

TIME	A TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	3	1	0	0	0	0	0	4
16:15	2	1	0	0	0	0	0	3
16:30	5	0	0	0	0	0	0	5
16:45	4	1	0	0	0	0	0	5
17:00	5	2	0	0	0	0	0	7
17:15	7	0	0	0	0	0	0	7
17:30	11	0	0	0	0	0	0	11
17:45	6	1	0	0	0	0	0	7
18:00	9	2	0	0	0	0	1	11.2
18:15	9	0	0	0	0	0	0	9
18:30	8	2	0	0	0	0	0	10
18:45	19	0	0	0	0	0	0	19
P/TOT	88	10	0	0	0	0	1	98.2



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	B TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	3	1	0	0	0	0	0	4
07:15	4	0	0	0	0	0	0	4
07:30	4	0	0	0	0	0	0	4
07:45	4	1	0	0	1	0	0	7
08:00	5	1	0	0	1	0	0	8
08:15	3	0	0	0	0	0	0	3
08:30	6	3	0	0	0	0	0	9
08:45	8	0	0	0	0	0	0	8
09:00	11	1	0	0	0	0	0	12
09:15	8	1	0	0	0	0	0	9
09:30	7	1	0	0	0	0	0	8
09:45	9	1	0	0	0	0	0	10
P/TOT	72	10	0	0	2	0	0	86

TIME	B TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	12	1	0	0	0	0	0	13
16:15	15	1	0	0	0	0	0	16
16:30	22	2	0	0	0	0	0	24
16:45	23	1	0	0	0	0	0	24
17:00	29	1	1	0	0	0	0	31.5
17:15	28	3	0	0	0	0	0	31
17:30	29	2	0	0	0	0	0	31
17:45	28	5	0	0	0	1	0	33.4
18:00	34	1	0	0	0	0	0	35
18:15	28	0	0	0	0	0	0	28
18:30	38	0	0	0	0	0	1	38.2
18:45	19	0	0	0	0	1	0	19.4
P/TOT	305	17	1	0	0	2	1	324.5



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
 LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	B TO C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	22	5	2	3	0	1	0	37.3
07:15	33	4	0	5	0	0	1	48.7
07:30	49	6	3	8	0	0	0	77.9
07:45	74	9	4	2	0	1	0	94
08:00	53	10	4	8	0	0	0	87.4
08:15	91	11	5	9	0	2	1	131.2
08:30	62	7	4	7	0	1	0	91.5
08:45	65	7	4	7	0	1	0	94.5
09:00	52	3	6	5	0	0	0	75.5
09:15	39	6	5	9	0	1	0	73.6
09:30	34	4	7	4	0	1	0	58.1
09:45	38	6	4	8	0	0	0	68.4
P/TOT	612	78	48	75	0	8	2	938.1

TIME	B TO C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	86	13	3	3	0	2	1	111.4
16:15	77	11	6	8	1	0	0	117.4
16:30	101	23	3	4	0	0	0	137.7
16:45	102	19	3	3	0	0	0	132.4
17:00	118	19	0	4	0	1	0	146.6
17:15	120	13	0	6	0	2	1	147.8
17:30	110	14	0	3	0	2	0	131.7
17:45	96	5	5	7	0	1	0	125
18:00	94	6	1	3	0	2	1	109.4
18:15	93	7	5	7	0	2	0	124.4
18:30	89	7	4	3	2	0	0	112.9
18:45	55	8	2	1	0	3	0	69.5
P/TOT	1141	145	32	52	3	15	3	1466.2



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10

LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	C TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	97	21	2	11	0	0	1	146.5
07:15	107	17	4	4	1	0	0	141.2
07:30	94	21	4	12	0	2	0	149.4
07:45	114	17	3	5	0	1	0	147.4
08:00	96	12	3	2	0	4	0	118.7
08:15	134	9	5	6	0	1	0	164.7
08:30	135	9	5	6	0	0	0	165.3
08:45	93	14	7	8	0	0	0	135.9
09:00	71	9	7	6	0	2	0	105.1
09:15	60	14	3	7	1	0	0	96.6
09:30	57	13	6	7	1	0	0	97.1
09:45	58	12	9	5	1	0	0	97
P/TOT	1116	168	58	79	4	10	1	1564.9

TIME	C TO B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	54	10	4	7	0	1	0	86.5
16:15	56	16	5	4	0	0	0	88.7
16:30	76	14	1	6	0	0	0	105.3
16:45	67	11	4	4	0	1	1	93.8
17:00	90	17	0	6	1	0	0	122.8
17:15	89	13	2	5	0	0	0	116.5
17:30	78	4	0	4	0	2	0	92
17:45	78	10	3	3	1	2	0	102.2
18:00	76	6	0	3	0	1	0	89.3
18:15	59	1	2	3	0	0	0	69.9
18:30	73	5	0	3	0	0	0	84.9
18:45	44	5	1	2	0	1	0	55.5
P/TOT	840	112	22	50	2	8	1	1107.4



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	C TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	6	2	0	0	0	0	0	8
07:15	6	3	0	0	1	0	0	11
07:30	11	0	0	0	0	0	0	11
07:45	12	2	0	0	0	0	0	14
08:00	15	1	0	0	0	0	0	16
08:15	15	0	1	0	1	0	0	18.5
08:30	36	1	0	0	0	0	0	37
08:45	25	2	0	0	0	0	0	27
09:00	21	2	0	0	0	1	0	23.4
09:15	15	1	1	0	1	0	0	19.5
09:30	14	0	0	0	0	0	0	14
09:45	20	3	1	0	0	0	0	24.5
P/TOT	196	17	3	0	3	1	0	223.9

TIME	C TO A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	13	2	0	0	1	0	0	17
16:15	13	2	0	0	1	0	0	17
16:30	30	2	0	0	0	0	0	32
16:45	27	2	0	0	1	0	0	31
17:00	28	4	0	0	0	0	0	32
17:15	31	0	1	0	1	0	0	34.5
17:30	33	2	0	0	0	0	0	35
17:45	29	2	0	0	1	0	0	33
18:00	29	4	0	0	0	0	0	33
18:15	25	2	0	0	0	0	0	27
18:30	21	0	0	0	0	0	0	21
18:45	21	3	0	0	0	0	0	24
P/TOT	300	25	1	0	5	0	0	336.5



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JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	9	3	0	0	0	0	0	12
07:15	10	3	0	0	1	0	0	15
07:30	15	0	0	0	0	0	0	15
07:45	16	3	0	0	1	0	0	21
08:00	20	2	0	0	1	0	0	24
08:15	18	0	1	0	1	0	0	21.5
08:30	42	4	0	0	0	0	0	46
08:45	33	2	0	0	0	0	0	35
09:00	32	3	0	0	0	1	0	35.4
09:15	23	2	1	0	1	0	0	28.5
09:30	21	1	0	0	0	0	0	22
09:45	29	4	1	0	0	0	0	34.5
P/TOT	268	27	3	0	5	1	0	309.9

TIME	TO ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	25	3	0	0	1	0	0	30
16:15	28	3	0	0	1	0	0	33
16:30	52	4	0	0	0	0	0	56
16:45	50	3	0	0	1	0	0	55
17:00	57	5	1	0	0	0	0	63.5
17:15	59	3	1	0	1	0	0	65.5
17:30	62	4	0	0	0	0	0	66
17:45	57	7	0	0	1	1	0	66.4
18:00	63	5	0	0	0	0	0	68
18:15	53	2	0	0	0	0	0	55
18:30	59	0	0	0	0	0	1	59.2
18:45	40	3	0	0	0	1	0	43.4
P/TOT	605	42	2	0	5	2	1	661



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	35	6	1	1	0	0	0	44.8
07:15	36	5	0	0	2	2	0	45.8
07:30	68	4	0	0	1	0	0	74
07:45	44	8	0	0	1	0	0	54
08:00	43	3	0	0	1	1	0	48.4
08:15	46	2	1	0	0	0	0	49.5
08:30	57	3	0	0	0	0	0	60
08:45	50	1	0	0	2	0	0	55
09:00	33	4	0	0	0	0	0	37
09:15	24	1	0	0	0	0	0	25
09:30	24	4	0	0	0	2	0	28.8
09:45	20	3	0	0	2	1	0	27.4
P/TOT	480	44	2	1	9	6	0	549.7

TIME	FROM ARM A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	13	4	0	0	0	0	0	17
16:15	19	2	0	0	0	0	0	21
16:30	19	3	0	0	0	0	0	22
16:45	22	4	0	0	2	0	0	30
17:00	42	5	1	0	0	0	0	48.5
17:15	35	0	0	0	0	0	0	35
17:30	37	2	1	0	0	1	0	40.9
17:45	46	3	0	0	1	0	0	51
18:00	34	4	0	0	0	0	1	38.2
18:15	32	0	0	0	0	0	0	32
18:30	32	3	0	0	0	0	0	35
18:45	37	1	0	0	0	0	0	38
P/TOT	368	31	2	0	3	1	1	408.6



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	120	22	2	12	0	0	1	172.8
07:15	126	18	4	4	1	2	0	162
07:30	125	21	4	12	0	2	0	180.4
07:45	131	18	3	5	0	1	0	165.4
08:00	111	14	3	2	0	5	0	136.1
08:15	151	10	6	6	0	1	0	184.2
08:30	153	10	5	6	0	0	0	184.3
08:45	110	14	7	8	0	0	0	152.9
09:00	85	10	7	6	0	2	0	120.1
09:15	73	14	3	7	1	0	0	109.6
09:30	68	14	6	7	1	1	0	109.5
09:45	69	13	9	5	1	1	0	109.4
P/TOT	1322	178	59	80	4	15	1	1786.7

TIME	TO ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	57	11	4	7	0	1	0	90.5
16:15	58	17	5	4	0	0	0	91.7
16:30	81	14	1	6	0	0	0	110.3
16:45	71	12	4	4	0	1	1	98.8
17:00	95	19	0	6	1	0	0	129.8
17:15	96	13	2	5	0	0	0	123.5
17:30	89	4	0	4	0	2	0	103
17:45	84	11	3	3	1	2	0	109.2
18:00	85	8	0	3	0	1	1	100.5
18:15	68	1	2	3	0	0	0	78.9
18:30	81	7	0	3	0	0	0	94.9
18:45	63	5	1	2	0	1	0	74.5
P/TOT	928	122	22	50	2	8	2	1205.6



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
 LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	25	6	2	3	0	1	0	41.3
07:15	37	4	0	5	0	0	1	52.7
07:30	53	6	3	8	0	0	0	81.9
07:45	78	10	4	2	1	1	0	101
08:00	58	11	4	8	1	0	0	95.4
08:15	94	11	5	9	0	2	1	134.2
08:30	68	10	4	7	0	1	0	100.5
08:45	73	7	4	7	0	1	0	102.5
09:00	63	4	6	5	0	0	0	87.5
09:15	47	7	5	9	0	1	0	82.6
09:30	41	5	7	4	0	1	0	66.1
09:45	47	7	4	8	0	0	0	78.4
P/TOT	684	88	48	75	2	8	2	1024.1

TIME	FROM ARM B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	98	14	3	3	0	2	1	124.4
16:15	92	12	6	8	1	0	0	133.4
16:30	123	25	3	4	0	0	0	161.7
16:45	125	20	3	3	0	0	0	156.4
17:00	147	20	1	4	0	1	0	178.1
17:15	148	16	0	6	0	2	1	178.8
17:30	139	16	0	3	0	2	0	162.7
17:45	124	10	5	7	0	2	0	158.4
18:00	128	7	1	3	0	2	1	144.4
18:15	121	7	5	7	0	2	0	152.4
18:30	127	7	4	3	2	0	1	151.1
18:45	74	8	2	1	0	4	0	88.9
P/TOT	1446	162	33	52	3	17	4	1790.7



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 29/06/10
 LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	34	10	3	3	0	1	0	55.8
07:15	50	8	0	5	2	0	1	73.7
07:30	86	10	3	8	1	0	0	120.9
07:45	101	16	4	2	1	1	0	130
08:00	81	11	4	8	1	0	0	118.4
08:15	120	12	5	9	0	2	1	161.2
08:30	101	9	4	7	0	1	0	132.5
08:45	98	8	4	7	2	1	0	132.5
09:00	71	6	6	5	0	0	0	97.5
09:15	50	7	5	9	0	1	0	85.6
09:30	47	7	7	4	0	2	0	74.5
09:45	47	8	4	8	2	0	0	83.4
P/TOT	886	112	49	75	9	9	2	1266

TIME	TO ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	96	16	3	3	0	2	1	124.4
16:15	94	12	6	8	1	0	0	135.4
16:30	115	26	3	4	0	0	0	154.7
16:45	120	22	3	3	2	0	0	157.4
17:00	155	22	1	4	0	1	0	188.1
17:15	148	13	0	6	0	2	1	175.8
17:30	136	16	1	3	0	3	0	161.6
17:45	136	7	5	7	1	1	0	169
18:00	119	8	1	3	0	2	1	136.4
18:15	116	7	5	7	0	2	0	147.4
18:30	113	8	4	3	2	0	0	137.9
18:45	73	9	2	1	0	3	0	88.5
P/TOT	1421	166	34	52	6	16	3	1776.6



**827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT**

SITE: 3 DATE: 29/06/10
LOCATION: Wretchwick Way / Peregrine Way DAY: Tuesday

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	103	23	2	11	0	0	1	154.5
07:15	113	20	4	4	2	0	0	152.2
07:30	105	21	4	12	0	2	0	160.4
07:45	126	19	3	5	0	1	0	161.4
08:00	111	13	3	2	0	4	0	134.7
08:15	149	9	6	6	1	1	0	183.2
08:30	171	10	5	6	0	0	0	202.3
08:45	118	16	7	8	0	0	0	162.9
09:00	92	11	7	6	0	3	0	128.5
09:15	75	15	4	7	2	0	0	116.1
09:30	71	13	6	7	1	0	0	111.1
09:45	78	15	10	5	1	0	0	121.5
P/TOT	1312	185	61	79	7	11	1	1788.8

TIME	FROM ARM C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	67	12	4	7	1	1	0	103.5
16:15	69	18	5	4	1	0	0	105.7
16:30	106	16	1	6	0	0	0	137.3
16:45	94	13	4	4	1	1	1	124.8
17:00	118	21	0	6	1	0	0	154.8
17:15	120	13	3	5	1	0	0	151
17:30	111	6	0	4	0	2	0	127
17:45	107	12	3	3	2	2	0	135.2
18:00	105	10	0	3	0	1	0	122.3
18:15	84	3	2	3	0	0	0	96.9
18:30	94	5	0	3	0	0	0	105.9
18:45	65	8	1	2	0	1	0	79.5
P/TOT	1140	137	23	50	7	8	1	1443.9



SITE: 3

DATE: 29/06/10

LOCATION: Wretchwick Way / Peregrine Way

DAY: Tuesday

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	163	35	5	15	0	1	1	240.6
07:15	186	29	4	9	4	2	1	250.7
07:30	226	31	7	20	1	2	0	316.3
07:45	248	37	7	7	2	2	0	316.4
08:00	212	27	7	10	2	5	0	278.5
08:15	289	22	12	15	1	3	1	366.9
08:30	296	23	9	13	0	1	0	362.8
08:45	241	24	11	15	2	1	0	320.4
09:00	188	19	13	11	0	3	0	253
09:15	146	23	9	16	2	1	0	223.7
09:30	136	22	13	11	1	3	0	206
09:45	145	25	14	13	3	1	0	227.3
P/TOT	2476	317	111	155	18	25	3	3362.6

PEAK HOUR CALCULATION	
07:00 to 08:00	1124
07:15 to 08:15	1162
07:30 to 08:30	1278
07:45 to 08:45	1325
08:00 to 09:00	1329
08:15 to 09:15	1303
08:30 to 09:30	1160
08:45 to 09:45	1003
09:00 to 10:00	910
PEAK VALUE	1329

TIME	JUNCTION TOTAL							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	178	30	7	10	1	3	1	244.9
16:15	180	32	11	12	2	0	0	260.1
16:30	248	44	4	10	0	0	0	321
16:45	241	37	7	7	3	1	1	311.2
17:00	307	46	2	10	1	1	0	381.4
17:15	303	29	3	11	1	2	1	364.8
17:30	287	24	1	7	0	5	0	330.6
17:45	277	25	8	10	3	4	0	344.6
18:00	267	21	1	6	0	3	2	304.9
18:15	237	10	7	10	0	2	0	281.3
18:30	253	15	4	6	2	0	1	292
18:45	176	17	3	3	0	5	0	206.4
P/TOT	2954	330	58	102	13	26	6	3643.2

PEAK HOUR CALCULATION	
16:00 to 17:00	1137
16:15 to 17:15	1274
16:30 to 17:30	1378
16:45 to 17:45	1388
17:00 to 18:00	1421
17:15 to 18:15	1345
17:30 to 18:30	1261
17:45 to 18:45	1223
18:00 to 19:00	1085
PEAK VALUE	1421



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 4

DATE: 29/06/10

LOCATION: Neunkirchen Way / Peregrine Way DAY: Tuesday

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	4	0	0	0	0	1	0	4.4
07:15	8	0	0	0	0	0	0	8
07:30	12	0	0	0	0	0	0	12
07:45	14	2	0	0	0	0	0	16
08:00	13	0	0	0	0	0	0	13
08:15	23	0	0	0	0	0	0	23
08:30	14	0	0	0	0	2	0	14.8
08:45	14	1	0	0	0	0	0	15
09:00	7	1	0	0	0	0	0	8
09:15	11	0	0	0	0	0	0	11
09:30	9	1	0	0	0	0	0	10
09:45	7	2	0	0	0	0	0	9
P/TOT	136	7	0	0	0	3	0	144.2

TIME	A to C							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	6	1	0	0	0	0	0	7
16:15	8	1	0	0	0	0	0	9
16:30	13	2	0	0	0	0	0	15
16:45	4	0	0	0	0	0	0	4
17:00	8	2	0	0	0	0	0	10
17:15	9	1	0	0	0	0	0	10
17:30	6	1	0	0	0	0	0	7
17:45	5	1	0	0	0	0	0	6
18:00	10	0	0	0	0	0	0	10
18:15	14	0	0	0	0	0	0	14
18:30	11	3	0	0	0	0	0	14
18:45	4	0	0	0	0	0	0	4
P/TOT	98	12	0	0	0	0	0	110



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 4 DATE: 29/06/10

LOCATION: Neunkirchen Way / Peregrine Way DAY: Tuesday

TIME	A to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	61	7	0	0	0	0	0	68
07:15	72	5	0	0	1	0	0	79
07:30	78	8	0	0	0	0	0	86
07:45	72	5	1	0	1	2	0	81.3
08:00	71	5	0	0	1	0	0	78
08:15	82	3	0	0	1	1	0	87.4
08:30	64	2	0	0	0	1	0	66.4
08:45	65	3	1	0	0	1	0	69.9
09:00	67	3	0	0	0	0	0	70
09:15	49	4	0	0	1	1	0	55.4
09:30	33	3	1	0	0	1	0	37.9
09:45	31	2	1	0	0	0	0	34.5
P/TOT	745	50	4	0	5	7	0	813.8

TIME	A to B							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	25	2	0	0	2	0	0	31
16:15	25	2	0	0	1	0	0	29
16:30	26	1	0	0	0	0	0	27
16:45	23	2	0	0	0	0	0	25
17:00	32	2	0	0	1	2	0	36.8
17:15	29	4	0	0	1	0	0	35
17:30	53	2	0	0	0	0	0	55
17:45	25	3	0	0	0	0	0	28
18:00	39	0	0	0	1	0	0	41
18:15	44	1	0	0	0	0	0	45
18:30	39	3	0	0	0	0	0	42
18:45	30	2	0	0	0	0	0	32
P/TOT	390	24	0	0	6	2	0	426.8



827 / BICESTER
JUNE 2010
CLASSIFIED TURNING COUNT

SITE: 4 DATE: 29/06/10
LOCATION: Neunkirchen Way / Peregrine Way DAY: Tuesday

TIME	A to A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
08:00	1	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	1	0	0	0	0	1.5
09:45	0	0	0	0	0	0	0	0
P/TOT	2	0	1	0	0	0	0	3.5

TIME	A to A							TOT
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0