Fleckney, Great Glen and the Kibworths

Harborough District Council and Leicestershire County Council

Cumulative Development Traffic Impact Study

1 | Final Rev A

24 January 2017

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Project No:	B2274700
Document Title:	Cumulative Development Traffic Impact Study
Document No.:	1
Revision:	Final Rev A
Date:	24 January 2017
Client Name:	Harborough District Council and Leicestershire County Council
Client No:	*
Project Manager:	Louis Lau
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File Name:	I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\CRAV Full Final Report\LCC additional comments 24 Jan 17\240117_Cumulative Development Impact Study A6 Revised Jan 2017_Final Rev A.docx

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Document history and status

Revision	Date	Description	By	Review	Approved
Draft	21/12/2016	Draft issued for client's comments	HS/DH/LL	DP	LL
Final	18/01/2017	Revised after receiving client's comments	HS/DH/LL/HC	JG	LL
Rev A	24/01/2017	Addressed minor comments from client.	HS/DH/LL/HC	JG	LL

Contents

1. Introduction

1.1 Purpose of Study

1.1.1 The purpose of this report is to assess the cumulative traffic impact of committed/proposed development within the A6 study area detailed in this report and to identify potential mitigation measures to resolve junction capacity problems.

1.2 Preamble

1.2.1 Jacobs was commissioned by Harborough District Council (HDC) and Leicestershire County Council (LCC) to assess the cumulative traffic impact as a result of a total of ten committed/proposed developments identified by HDC within the Kibworth Beauchamp, Kibworth Harcourt, Fleckney, Great Glen and Saddington areas.

1.2.2 This work has been undertaken in accordance with the scope of works agreed with HDC and LCC. It has been based on the available Transport Assessments submitted as part of site specific planning applications. For proposed developments at pre-application stage, worst case residential trip rates have been obtained from appropriate Transport Assessment (TA) to establish the level of associated vehicular trips. The vehicular trips are then assigned to the network using the 2011 National Census 'Location of usual residence and place of work by method of travel to work' dataset.

1.2.3 The list of junctions that the review/estimate trip generation and distribution work have been undertaken are as follows:

- Spinney Road / Welford Road junction;
- Fleckney Road/Wistow Road/Fleckney Road junction;
- High Street / Kilby Road / Leicester Road junction;
- Main Street / High Street junction (Feckney);
- Saddington Road / Manor Road junction;
- Kibworth Road / Shearsby Road / Weir Road junction;
- Bruntingthorpe Road / Welford Road / Saddington Road junction;
- Fleckney Road/Kibworth Road/Warwick Road junction;
- Wistow Road/Warwick Road Roundabout;
- A6/Wistow Road Roundabout;
- Carlton Road/Langton Road junction;
- Church Road / A6 junction;
- A6 Harborough Road / New Road junction;
- Fleckney Road/Kibworth Road junction;
- Station Street / New Road / High Street / Paget Street Roundabout;
- Station Road/Leicester Road junction;
- London Road/Leicester Road junction;
- London Road/Church Road junction;
- Stretton Road/Oaks Road/Church Road junction;
- Main Street / A6 junction; and
- Harborough Road/West Langton Road junction.

1.2.4 The list of cumulative development, provided by HDC, assessed within this study is shown in Table 1.1.

Table 1.1: List of Cumulative Development

Reference	Planning Reference	Status	Development Name	Development Details
K1	16/00166/OUT	Pending Consideration[1]	Land North Of Fleckney Road Kibworth Beauchamp	Erection of up to 200 residential dwellings
K2	16/00286/OUT	Pending Consideration	Land To South And West Of Priory Business Park Wistow Road Kibworth Harcourt	Up to 11,368m2 of commercial/industrial floor space, up to 882m2 of office floor space and up to 294m2 of retail floor space
K3	15/01153/OUT	Approved[2]	Land South East Of Warwick Road Kibworth Beauchamp	Erection of up to 110 dwellings (including affordable housing)
K4	15/01398/OUT	Refused	Land East Of Wentworth Close Kibworth Beauchamp	Erection of up to 100 dwellings
G1	-	Pre-application[3]	Land South Of London Road Great Glen	Additional 150 dwellings in Great Glen for future growth
G2	-	Pre-application	Residential Development at Stretton Road , Great Glen	Additional 150 dwellings in Great Glen for future growth
G3	-	Pre-application[4]	Residential Development at Oaks Road , Great Glen	Additional 150 dwellings in Great Glen for future growth
G4	16/01382/OUT	Pending Consideration[5]	Land South Of London Road Great Glen	Erection of up to 19 dwellings
F1	16/01355/FUL	Pending Consideration	Land At Fleckney Road Saddington	Erection of 290 residential dwellings
F2	16/00592/OUT	Pending Consideration	Land At Kilby Road Fleckney	Erection of up to 150 residential dwellings

1.2.5 Table 1.1 lists the status of applications at the time the study commenced (September 2016). A map showing the location of each development can be found in Appendix A.

1.3 Report Structure

1.3.1 After this introductory chapter, the report is structured as follows:

- Chapter 2 summaries the review of information available for trip generation and distribution of the cumulative development. It also summaries the trip generation and distribution methodology used for developments which are at the pre-application stage;
- Chapter 3 details the methodology for assessing the impact on the highway network from the baseline traffic as well as the traffic generation associated with the cumulative development and outlines the finding;
- Chapter 4 presents the baseline capacity assessment results;
- Chapter 5 presents the concept highways improvements to accommodate the impact of the cumulative development flows and the revised capacity assessment results; and

[1] Planning status at the time of commission, the application has since been approved on 23/11/2016
[2] Refused at the time the study commenced and correct as of January 2017
[3] Planning status at the time of commission, an application has been made since (16/02081/OUT (up to 100 Dwellings))
[4] Planning status at the time of commission, an application has been made since (16/01501/OUT (up to 170 Dwellings))
[5] Planning status at the time of commission, non-determination appeal pending has been made since

- Chapter 6 summaries and concludes the report.

2. Review/Estimate Trip Generation and Distribution of Cumulative Development

2.1 Traffic Flow Data and Growth Factors

2.1.1 As agreed with HDC/LCC, 2021 has been used as the assessment year for this study. The relevant assessment year 2021 flows outlined within available TAs have been used as to form the basis of the 2021 baseline morning and evening peak traffic flow diagrams. For junctions where no traffic flow data for 2021 is available from TAs, the traffic flows for 2021 have been estimated using previously surveyed traffic counts and adjusting these flows for background traffic growth. The most recent manual turning counts undertaken by LCC have been obtained from the LCC's traffic database. Relevant National Traffic Model (NTM) growth factors adjusted by local TEMPRO growth factors have be obtained and applied to the surveyed peak hour traffic flows to estimate the 2021 traffic flows.

2.1.2 The data source for each of the junctions within the traffic flow diagrams are outlined in Table 2.1.

Table 2.1: Traffic flow Data Source

Junction Name	Data Source	Year
Spinney Road / Welford Road	TA	2021
Fleckney Road/Wistow Road/Fleckney Road	TA	2021
High Street / Kilby Road / Leicester Road	TA	2021
Main Street / High Street	TA	2021
Saddington Road / Manor Road	TA	2021
Kibworth Road / Shearsby Road / Weir Road	TA	2021
Bruntingthorpe Road / Welford Road / Saddington Road	TA	2021
Fleckney Road/Kibworth Road/Warwick Road	TA	2021
Wistow Road/Warwick Road Roundabout	TA	2021
A6/Wistow Road Roundabout	TA	2021
Carlton Road/Langton Road	LCC MCC survey	2016
Church Road / A6	TA	2021
A6 Harborough Road / New Road	TA	2021
Fleckney Road/Kibworth Road	TA	2021
Station Street / New Road / High Street / Paget Street Roundabout	TA	2020
Station Rd/Leicester Rd	LCC MCC survey	2015
London Rd/Leicester Red	LCC MCC survey	2015
London Rd/Church Rd	LCC MCC survey	2016
Main Street / A6	TA	2021
Harborough Rd/West Langton Road	LCC MCC survey	2014

2.1.3 The growth factors have been obtained from the TEMPRO database and Harborough 003 has been used as the local area. Table 2.2 summarises the TEMPRO growth factors used within the study.

Table 2.2: TEMPRO growth factors

Base Year – Future Year	Road Type	AM Peak	PM Peak
2014 - 2021	Principal	1.100	1.106
2015 - 2021	Principal	1.086	1.090
2016 - 2021	Principal	1.070	1.074
2016 - 2021	Minor	1.070	1.073
2020 - 2021	Principal	1.018	1.018

2.1.4 The resultant morning and evening peak baseline 2021 traffic flows are summarised within Appendix B and were issued to HDC/LCC for comments on 18th October 2016.

2.2 Derivation of Cumulative Development Traffic Flows

2.2.1 Table 2.3 outlines the approach used to forecast traffic flows for each development included within this assessment.

Table 2.3: Method of traffic flows derivation for each committed/proposed development

Planning Reference	Development Name	Approach
16/00166/OUT	Land North Of Fleckney Road Kibworth Beauchamp	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.
16/00286/OUT	Land To South And West Of Priory Business Park Wistow Road Kibworth Harcourt	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.
15/01153/OUT	Land South East Of Warwick Road Kibworth Beauchamp	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.
15/01398/OUT	Land East Of Wentworth Close Kibworth Beauchamp	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.
-	Land South Of London Road Great Glen	Worst case residential trip rates were obtained from TA (15/01153/OUT) in Kibworths were used. Vehicular trips were assigned to the network using the 2011 National Census 'Location of usual residence and place of work by method of travel to work' dataset (reference WU03EW). Great Glen is located within Harborough 003 MSOA and therefore trips to and from this MSOA were used to estimate trip distribution.
-	Residential Development at Stretton Road , Great Glen	Worst case residential trip rates obtained from TA (15/01153/OUT) in Kibworths were used. Vehicular trips were assigned to the network using the 2011 National Census 'Location of usual residence and place of work by method of travel to work' dataset (reference WU03EW). Great Glen is located within Harborough 003 MSOA and therefore trips to and from this MSOA were used to estimate trip distribution.
-	Residential Development at Oaks Road , Great Glen	Worst case residential trip rates were obtained from TA (15/01153/OUT) in Kibworths were used. Vehicular trips were assigned to the network using the 2011 National Census 'Location of usual residence and place of work by method of travel to work' dataset (reference WU03EW). Great Glen is located within Harborough 003 MSOA and therefore trips to and from this MSOA were used to estimate trip distribution.
16/01382/OUT	Land South Of London Road Great Glen	Worst case residential trip rates were obtained from TA (15/01153/OUT) in Kibworths were used. Vehicular trips were assigned to the network using the 2011 National Census 'Location of usual residence and place of work by method of travel to work' dataset (reference WU03EW). Great Glen is located within Harborough 003 MSOA and therefore trips to and from this MSOA were used to estimate trip distribution.

Planning Reference	Development Name	Approach
16/01355/FUL	Land At Fleckney Road Saddington	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.
16/00592/OUT	Land At Kilby Road Fleckney	Development flows were obtained from TA submitted. Where flows do not extend as far as junctions identified in other TAs, trips were distributed using distributions from other TAs.

2.2.2 Table 2.4 outlines the number of trips considered for each development for morning and evening peak hours.

Table 2.4: Trip generation considered for each committed/proposed development

Planning Reference	Development Name	AM		PM	
		Origin	Destination	Origin	Destination
16/00166/OUT	Land North Of Fleckney Road Kibworth Beauchamp	98	49	59	93
16/00286/OUT	Land To South And West Of Priory Business Park Wistow Road Kibworth Harcourt	60	225	193	62
15/01153/OUT	Land South East Of Warwick Road Kibworth Beauchamp	107	39	43	73
15/01398/OUT	Land East Of Wentworth Close Kibworth Beauchamp	41	17	25	42
-	Land South Of London Road Great Glen	146	53	58	100
-	Residential Development at Stretton Road , Great Glen	146	53	58	100
-	Residential Development at Oaks Road , Great Glen	146	53	58	100
16/01382/OUT	19 dwellings at G1	19	7	8	12
16/01355/FUL	Land At Fleckney Road Saddington	103	42	57	94
16/00592/OUT	Land At Kilby Road Fleckney	78	27	37	72

2.2.3 Morning and evening peak traffic flow diagrams for each of the developments can be found in Appendix C. These development traffic flows have been combined to derive the cumulative development traffic flow for morning and evening peaks which are summarised in Appendix D. The morning and evening peak cumulative development traffic flows have been combined with the baseline 2021 traffic flows to form the Baseline 2021+ Cumulative Development traffic flow scenario which are included within Appendix E.

3. Highway Impact Methodology

3.1 Methodology

3.1.1 In order to assess the cumulative impact on the highway network in terms of total estimated traffic flows and the capacity levels of the carriageways, per link and per direction, a list of links has been identified and agreed with HDC and LCC for assessment.

3.1.2 Only morning and evening peak hour flows have been considered and not Annual Average Daily Totals, as it is considered that the peak hour loading is the overwhelming issue on the highway network, rather than the amount of total daily traffic. This study has therefore used the carriageway capacity calculations within Design Manual for Roads and Bridges TA 79/99.

3.1.3 The capacity of a carriageway is dependent on many factors, including Road Type, Road Quality, Number of Lanes and Carriageway Width. The defined study area consists of strategic highways and urban roads covered by the following road type categories:

- Road type UAP1 is defined in TA 79/99 as 'high standard single/dual carriageway road carrying predominantly through traffic with limited access';
- Road type UAP2 is defined in TA 79/99 as 'good standard single/dual carriageway road with frontage access and more than two side roads per km';
- Road type UAP3 is defined in TA 79/99 as 'variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings'; and
- Road type UAP4 is defined in TA 79/99 as 'busy high street carrying predominantly local traffic with frontage activity including loading and unloading'.

3.1.4 The capacities of different road types, as calculated in TA 79/99 are contained within Table 3.1.

Table 3.1: Carriageway capacities per direction, TA 79/99

		Two-way Single Carriageway- Busiest direction flow (Assumes a 60/40 directional split)									Dual Carriageway			
		Total number of Lanes									Number of Lanes in each direction			
		2				2-3	3	3-4	4	4+	2		3	4
Carriageway width		6.1m	6.75m	7.3m	9.0m	10.0m	12.3m	13.5m	14.6m	18.0m	6.75m	7.3m	11.0m	14.6m
Road type	UM	Not applicable										4000	5600	7200
	UAP1	1020	1320	1590	1860	2010	2550	2800	3050	3300	3350	3600	5200	-
	UAP2	1020	1260	1470	1550	1650	1700	1900	2100	2700	2950	3200	4800	-
	UAP3	900	1100	1300	1530	1620	-	-	-	-	2300	2600	3300	-
	UAP4	750	900	1140	1320	1410	-	-	-	-	-	-	-	-

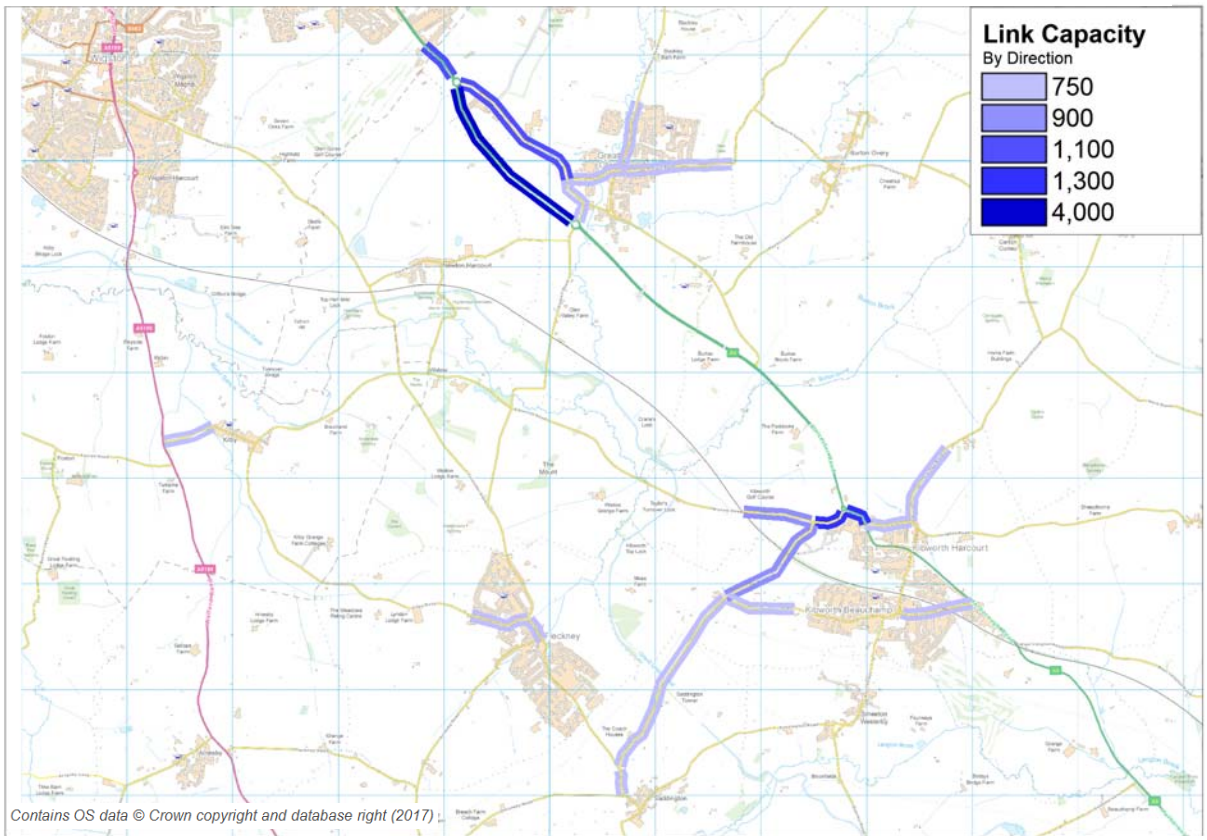
3.1.5 The categorisation of the identified roads within the study area has been agreed with HDC and LCC and each of the roads have therefore been assigned capacity levels according to the criteria in TA 79/99, which is summarised in Table 3.2.

Table 3.2: Highway capacities by road type

Road	Total no of lanes	Road type	Capacity per direction
Oaks Road	2	UAP4	750
Stretton Road	2	UAP4	750
Church Road	2	UAP4	750
London Road	2	UAP 3	1100
A6 north of London Road	2	UAP 3	1100
Station Road (Great Glen)	2	UAP4	750
A6 Leicester Road	2	UM	4000
Carlton Road	2	UAP4	750
Albert Street	2	UAP4	750
Wistow Road (east of Warwick Road)	2	UAP3	1300
Wistow Road (west of Warwick Road)	2	UAP3	900
Warwick Road	2	UAP4	900
Fleckney Road	2	UAP4	750
New Road (The Kibworths)	2	UAP4	750
Kibworth Road	2	UAP4	750
Kibworth Road/Weir Road	2	UAP4	750
High Street (Fleckney)	2	UAP4	750
Spinney Road	2	UAP4	750
Kilby Road	2	UAP4	750
A6 Harborough Road	2	UAP4	750
Oaks Road	2	UAP4	750

3.1.6 Figure 3.1 maps the links in Table 3.2, detailing the start and end point of the links analysed and shows the highway capacity by direction.

Figure 3.1: Link Capacity by Direction



3.2 Baseline 2021 Link Assessment

3.2.1 It is necessary to assess the links identified under the Baseline 2021 traffic so that a comparison can be made between the Baseline 2021 and Baseline 2021 + Cumulative Development traffic flows.

3.2.2 Table 3.3 summarised the maximum Baseline 2021 traffic flows for each of the links assessed, compared to the theoretical capacity per direction, as predicted in TA79/99. The cells that are highlighted in red indicate roads, or sections of road, that are operating over 85% of available capacity. They will require remedial measures to accommodate additional traffic.

3.2.3 Table 3.3 demonstrated that under Baseline 2021 traffic scenario, the section of A6 north of London Road (Great Glen) is forecast to operate with less than 10% capacity remaining in the morning peak period.

3.2.4 The section of A6 south of the A6 Leicester Road/Wistow Road Roundabout, under the Baseline 2021 traffic scenario, is forecast to operate over its theoretical capacity (100%) during both morning and evening peak periods in both directions.

3.2.5 For other links assessed under the Baseline 2021 scenario, the capacity assessment predicts that they will be operating within practical capacity (85%).

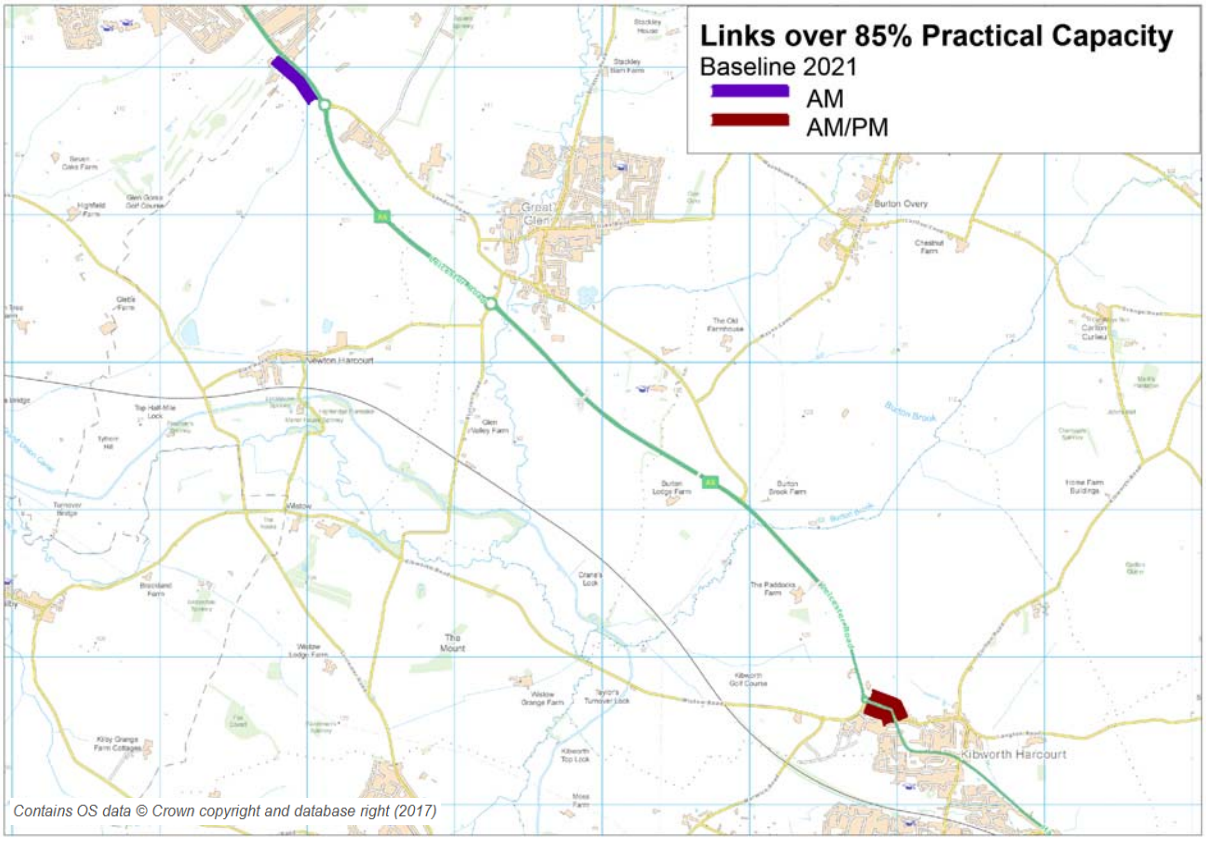
Table 3.3: Highway capacities by road type

Road	Total no of lanes	Road type	Capacity per direction	Predicted 2021 baseline flows			
				AM/direction		PM/direction	
Oaks Road	2	UAP4	750	59	wbd	131	wbd
				54	ebd	102	ebd

Road	Total no of lanes	Road type	Capacity per direction	Predicted 2021 baseline flows			
				AM/direction		PM/direction	
Stretton Road	2	UAP4	750	276	sbd	205	sbd
				241	nbd	188	nbd
Church Road	2	UAP4	750	174	wbd	225	wbd
				377	ebd	381	ebd
London Road	2	UAP 3	1100	400	sbd	358	sbd
				439	nbd	261	nbd
A6 north of London Road	2-3	UAP 2	1650	1510	nbd	1120	nbd
				1211	sbd	1143	sbd
Station Road (Great Glen)	2	UAP4	750	382	wbd	384	wbd
				542	ebd	403	ebd
A6 Leicester Road	2	UM	4000	1344	nbd	1059	nbd
				977	sbd	882	sbd
Carlton Road	2	UAP4	750	136	nbd	118	nbd
				86	sbd	125	sbd
Albert Street	2	UAP4	750	194	ebd	191	ebd
				104	wbd	150	wbd
Wistow Road (east of Warwick Road)	2	UAP3	1300	553	ebd	377	ebd
				337	wbd	429	wbd
Wistow Road (west of Warwick Road)	2	UAP3	900	270	ebd	221	ebd
				230	wbd	269	wbd
Warwick Road	2	UAP4	900	354	nbd	227	nbd
				178	sbd	231	sbd
Fleckney Road	2	UAP4	750	291	wbd	200	wbd
				132	ebd	195	ebd
New Road (The Kibworths)	2	UAP4	750	302	wbd	267	wbd
				246	ebd	220	ebd
Kibworth Road	2	UAP4	750	188	wbd	300	wbd
				309	ebd	170	ebd
Kibworth Road/Weir Road	2	UAP4	750	283	nbd	243	nbd
				234	sbd	219	sbd
High Street (Fleckney)	2	UAP4	750	330	nbd	406	nbd
				290	sbd	330	sbd
Spinney Road	2	UAP4	750	380	wbd	239	wbd
				308	ebd	297	ebd
Kilby Road	2	UAP4	750	134	wbd	148	wbd
				116	ebd	119	ebd
A6 Harborough Road (south of A6 Leicester Road/Wistow Road Roundabout)	2	UAP3	1300	1329	nbd	1315	nbd
				1489	sbd	1189	sbd

3.2.6 Figure 3.2 maps the links over 85% practical capacity for the Baseline 2021 scenario, as shown in Table 3.3.

Figure 3.2: Baseline 2021 Links over 85% Practical Capacity



3.3 Baseline 2021 + Cumulative Development Link Assessment

3.3.1 The Baseline 2021 + Cumulative Development directional traffic flows have also been assessed. Table 3.4 summarised the Baseline 2021 traffic flows and the Baseline 2021 + Cumulative Development traffic flows compared to the theoretical capacity as predicted in TA79/99.

3.3.2 The cells that are highlighted in red indicate roads, or sections of road, that are operating at over 85% of available capacity (Practical Capacity). They will require remedial measures to accommodate additional traffic.

3.3.3 Table 3.4 demonstrated that under Baseline 2021 + Cumulative Development traffic flow scenario, the section of A6 north of London Road (Great Glen) is forecast to operate approximately 10% over its theoretical capacity in the morning peak period.

3.3.4 The section of A6 south of the A6 Leicester Road/Wistow Road Roundabout, under the Baseline 2021+ Cumulative Development traffic flow scenario, is forecast to operate over its theoretical capacity during both morning and evening peak periods in both directions.

3.3.5 For other links assessed under the Baseline 2021 + Cumulative Development scenario, the capacity assessment predicts that they will be operating within practical capacity.

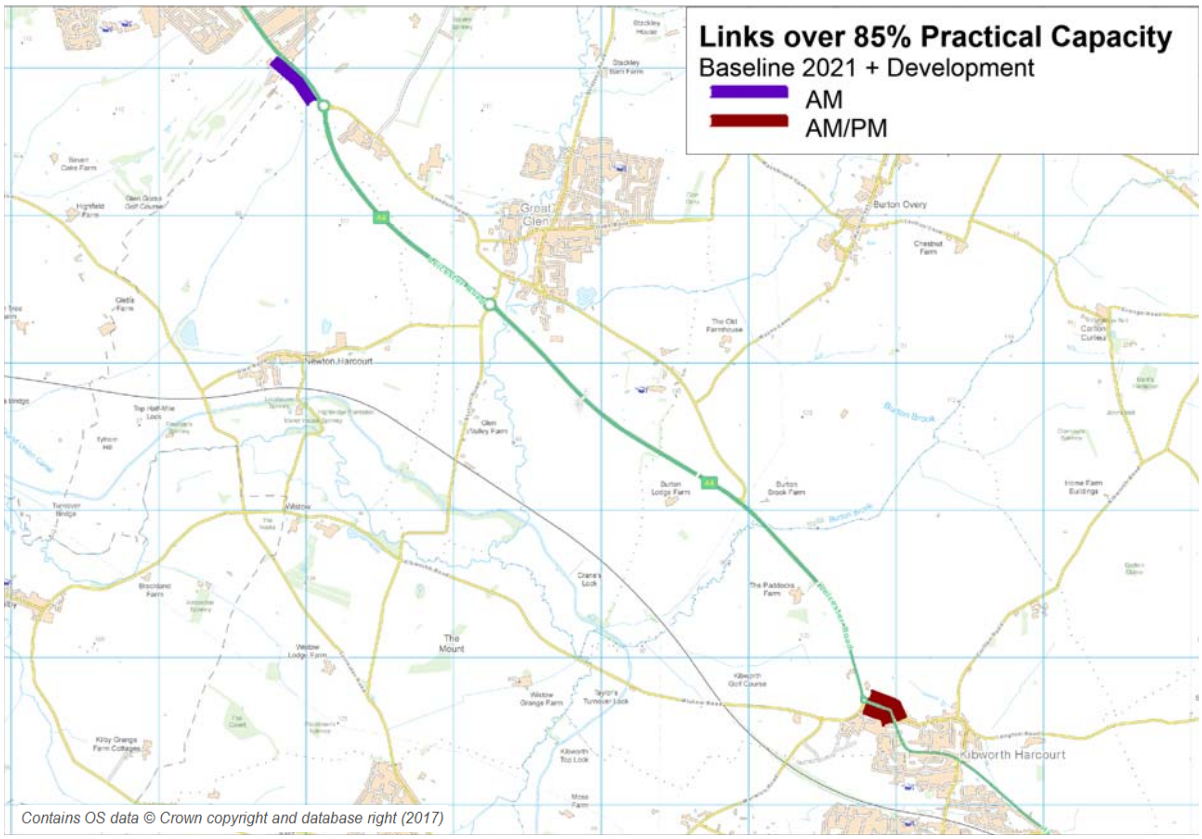
Table 3.4: Highway capacities by road type – baseline 2021 & baseline + cumulative developments 2021

Road	Total no of lanes	Road type	Capacity per direction	Predicted 2021 baseline flows				Predicted 2021 baseline + Cumulative development flows			
				AM/direction		PM/direction		AM/direction		PM/direction	
Oaks Road	2	UAP4	750	59	wbd	131	wbd	171	wbd	171	wbd
				54	ebd	102	ebd	104	ebd	175	ebd
Stretton Road	2	UAP4	750	276	sbd	205	sbd	358	sbd	302	sbd
				241	nbd	188	nbd	313	nbd	256	nbd
Church Road	2	UAP4	750	174	wbd	225	wbd	344	wbd	338	wbd
				377	ebd	381	ebd	473	ebd	474	ebd
London Road	2	UAP3	1100	400	sbd	358	sbd	460	sbd	462	sbd
				439	nbd	261	nbd	631	nbd	323	nbd
A6 north of London Road	2-3	UAP2	1650	1510	nbd	1120	nbd	1840	nbd	1276	nbd
				1211	sbd	1143	sbd	1380	sbd	1348	sbd
Station Road (Great Glen)	2	UAP4	750	382	wbd	384	wbd	469	wbd	449	wbd
				542	ebd	403	ebd	582	ebd	488	ebd
A6 Leicester Road	2	UM	4000	1344	nbd	1059	nbd	1502	nbd	1247	nbd
				977	sbd	882	sbd	1151	sbd	1046	sbd
Carlton Road	2	UAP4	750	136	nbd	118	nbd	152	nbd	136	nbd
				86	sbd	125	sbd	109	sbd	142	sbd
Albert Street	2	UAP4	750	194	ebd	191	ebd	218	ebd	214	ebd
				104	wbd	150	wbd	127	wbd	168	wbd
Wistow Road (east of Warwick Road)	2	UAP3	1300	553	ebd	377	ebd	684	ebd	539	ebd
				337	wbd	429	wbd	513	wbd	540	wbd
Wistow Road (west of Warwick Road)	2	UAP3	900	270	ebd	221	ebd	318	ebd	328	ebd
				230	wbd	269	wbd	362	wbd	314	wbd
Warwick Road	2	UAP4	900	354	nbd	227	nbd	528	nbd	362	nbd
				178	sbd	231	sbd	312	sbd	378	sbd
Fleckney Road	2	UAP4	750	291	wbd	200	wbd	425	wbd	295	wbd
				132	ebd	195	ebd	224	ebd	318	ebd
New Road (The Kibworths)	2	UAP4	750	302	wbd	267	wbd	350	wbd	316	wbd
				246	ebd	220	ebd	293	ebd	267	ebd
Kibworth Road	2	UAP4	750	188	wbd	300	wbd	231	wbd	334	wbd
				309	ebd	170	ebd	351	ebd	208	ebd
Kibworth Road/Weir Road	2	UAP4	750	283	nbd	243	nbd	312	nbd	279	nbd
				234	sbd	219	sbd	278	sbd	244	sbd
High Street (Fleckney)	2	UAP4	750	330	nbd	406	nbd	410	nbd	447	nbd
				290	sbd	330	sbd	321	sbd	402	sbd
Spinney Road	2	UAP4	750	380	wbd	239	wbd	410	wbd	286	wbd
				308	ebd	297	ebd	356	ebd	329	ebd
Kilby Road	2	UAP4	750	134	wbd	148	wbd	176	wbd	168	wbd

Road	Total no of lanes	Road type	Capacity per direction	Predicted 2021 baseline flows				Predicted 2021 baseline + Cumulative development flows			
				AM/direction		PM/direction		AM/direction		PM/direction	
				116	ebd	119	ebd	130	ebd	157	ebd
A6 Harborough Road (south of A6 Leicester Road/Wistow Road Roundabout)	2	UAP3	1300	1329	nbd	1315	nbd	1448	nbd	1416	nbd
				1489	sbd	1189	sbd	1577	sbd	1317	sbd

3.3.6 Figure 3.3, below, maps the links over 85% practical capacity for the Baseline 2021 + Cumulative Development scenario, as shown in Table 3.4.

Figure 3.3: Baseline 2021 + Cumulative Development Links over 85% Practical Capacity

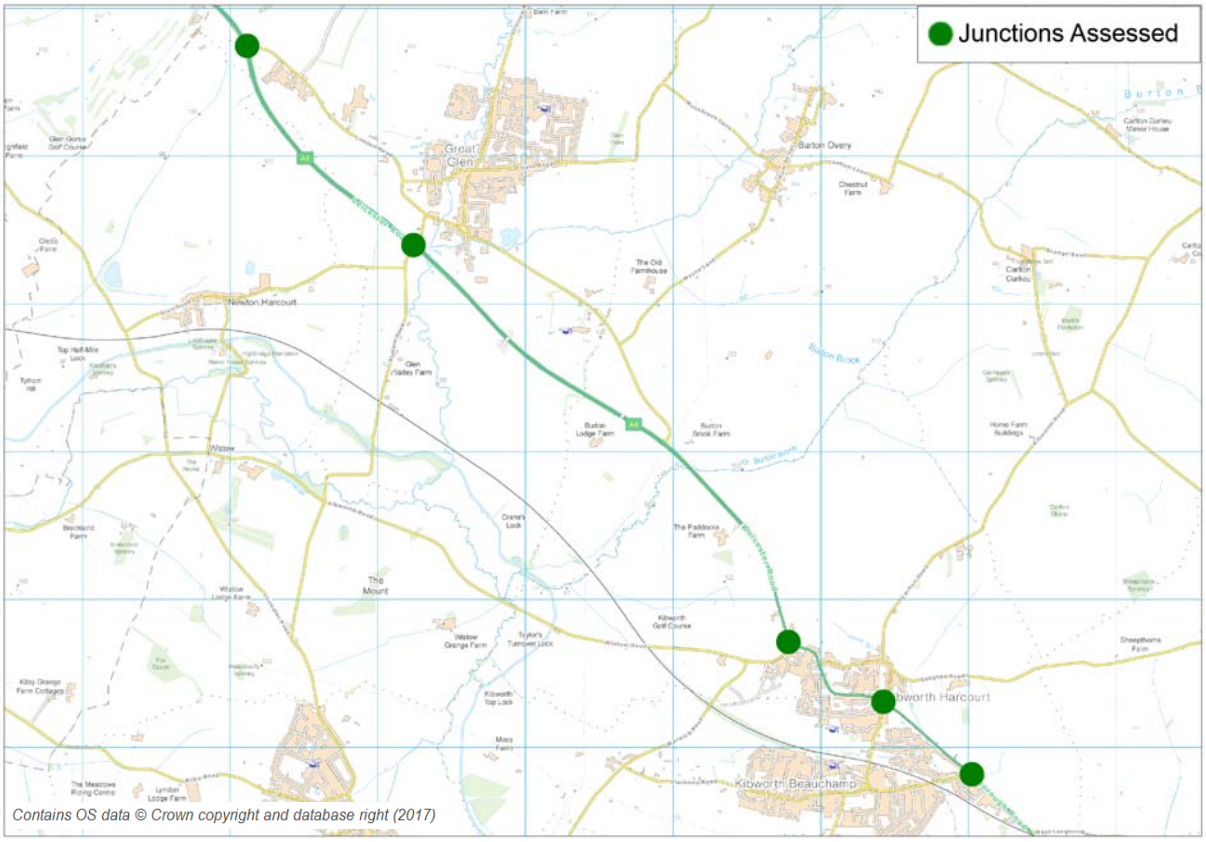


3.3.7 Table 3.4 demonstrates that the A6 corridor within the study area is operating significantly above its theoretical capacity level. Therefore it will be necessary to undertake local junction capacity assessments to understand their operational performance. The following junctions have been identified and agreed with HDC and LCC for junction assessments:

- Glen Road / London Road / A6 Leicester Road Roundabout;
- A6 Leicester Road / Station Road Roundabout;
- A6 Leicester Road / Wistow Road Roundabout;
- Church Road / A6 Harborough Road/ Marsh Drive junction; and
- A6 Harborough Road / New Road junction.

3.3.8 The locations of these junctions are displayed on Figure 3.4.

Figure 3.4: Junctions Assessed



3.3.9 Table 3.5 shows the development flows distributed to each road and the percentage increase in flow has in comparison to the 2021 baseline case.

Table 3.5: Difference between 2021 baseline flows and 2021 baseline + cumulative development flows

Road	2021 development flows				Difference between 2021 baseline + Cumulative development flows and 2021 baseline (%)			
	AM/direction		PM/direction		AM/direction		PM/direction	
Oaks Road	112	wbd	40	wbd	190%	wbd	31%	wbd
	50	ebd	73	ebd	92%	ebd	71%	ebd
Stretton Road	82	sbd	97	sbd	30%	sbd	47%	sbd
	72	nbd	68	nbd	30%	nbd	36%	nbd
Church Road	170	wbd	113	wbd	97%	wbd	50%	wbd
	96	ebd	92	ebd	26%	ebd	24%	ebd
London Road	61	sbd	104	sbd	15%	sbd	29%	sbd
	192	nbd	62	nbd	44%	nbd	24%	nbd
A6 north of London Road	330	nbd	156	nbd	22%	nbd	14%	nbd
	169	sbd	206	sbd	14%	sbd	18%	sbd
Station Road (Great Glen)	87	wbd	65	wbd	23%	wbd	17%	wbd

Road	2021 development flows				Difference between 2021 baseline + Cumulative development flows and 2021 baseline (%)			
	AM/direction		PM/direction		AM/direction		PM/direction	
	40	ebd	84	ebd	7%	ebd	21%	ebd
A6 Leicester Road	158	nbd	188	nbd	12%	nbd	18%	nbd
	174	sbd	164	sbd	18%	sbd	19%	sbd
Carlton Road	16	nbd	18	nbd	12%	nbd	15%	nbd
	23	sbd	17	sbd	26%	sbd	14%	sbd
Albert Street	24	ebd	23	ebd	12%	ebd	12%	ebd
	23	wbd	17	wbd	22%	wbd	12%	wbd
Wistow Road (east of Warwick Road)	131	ebd	162	ebd	24%	ebd	43%	ebd
	176	wbd	111	wbd	52%	wbd	26%	wbd
Wistow Road (west of Warwick Road)	48	ebd	107	ebd	18%	ebd	48%	ebd
	132	wbd	45	wbd	58%	wbd	17%	wbd
Warwick Road	174	nbd	135	nbd	49%	nbd	60%	nbd
	134	sbd	147	sbd	75%	sbd	64%	sbd
Fleckney Road	134	wbd	95	wbd	46%	wbd	47%	wbd
	92	ebd	123	ebd	70%	ebd	63%	ebd
New Road (The Kibworths)	48	wbd	49	wbd	16%	wbd	18%	wbd
	47	ebd	47	ebd	19%	ebd	21%	ebd
Kibworth Road	43	wbd	34	wbd	23%	wbd	11%	wbd
	42	ebd	38	ebd	14%	ebd	22%	ebd
Kibworth Road/Weir Road	29	nbd	36	nbd	10%	nbd	15%	nbd
	44	sbd	25	sbd	19%	sbd	11%	sbd
High Street (Fleckney)	80	nbd	41	nbd	24%	nbd	10%	nbd
	31	sbd	72	sbd	11%	sbd	22%	sbd
Spinney Road	30	wbd	47	wbd	8%	wbd	20%	wbd
	48	ebd	32	ebd	16%	ebd	11%	ebd
Kilby Road	42	wbd	20	wbd	31%	wbd	14%	wbd
	14	ebd	38	ebd	12%	ebd	32%	ebd
A6 Harborough Road (south of A6 Leicester Road/Wistow Road Roundabout)	119	nbd	101	nbd	9%	nbd	8%	nbd
	88	sbd	128	sbd	6%	sbd	11%	sbd

4. Junction Capacity Assessments

4.1 Introduction

4.1.1 Junction capacity assessments have been undertaken to the following junctions:

- Glen Road / London Road / A6 Leicester Road Roundabout;
- A6 Leicester Road / Station Road Roundabout;
- A6 Leicester Road / Wistow Road Roundabout;
- Church Road / A6 Harborough Road/ Marsh Drive junction; and
- A6 Harborough Road / New Road junction.

4.1.2 The following flow scenarios have been assessed for the each of the junction for the weekday AM and PM peak hour:

- Baseline 2021; and
- Baseline 2021 + cumulative development.

4.1.3 Table 4.1 outlines the traffic flows for each junction assessed in the baseline 2021 and baseline 2021 + cumulative development case and highlight the difference between the two scenarios.

Table 4.1: Junction Traffic Flows - baseline 2021, baseline + cumulative developments 2021 & difference

Junction (Arm)	Baseline 2021		Baseline 2021 + cumulative development		Difference (vehicles)		Difference (%)	
	AM	PM	AM	PM	AM	PM	AM	PM
Glen Road / London Road / A6 Leicester Road Roundabout								
Glen Road (N)	1211	1143	1380	1349	169	206	14%	18%
London Road (E)	439	261	631	323	192	62	44%	24%
Leicester Road (S)	1124	871	1261	965	137	94	12%	11%
Total	*2774*	*2275*	3273	2637	499	362	18%	16%
A6 Leicester Road / Station Road Roundabout								
Leicester Road (N)	868	837	976	938	108	101	12%	12%
Station Road (E)	382	384	469	449	87	65	23%	17%
Leicester Road (S)	1344	1059	1502	1247	158	188	12%	18%
Station Road (W)	532	405	533	409	1	4	0%	1%
Total	*2258*	*1848*	2504	2105	246	257	11%	14%
A6 Leicester Road / Wistow Road Roundabout								
Leicester Road (N)	1086	1001	1260	1163	174	162	16%	16%
Leicester Road (E)	1329	1315	1448	1416	119	101	9%	8%
Wistow Road (S)	700	430	828	590	128	160	18%	37%
Total	*3115*	*2746*	3536	3169	421	423	14%	15%
Church Road / A6 Harborough Road / Marsh Drive Junction								
Harborough Road (N)	1396	1059	1479	1177	83	118	6%	11%
Marsh Drive (E)	67	71	67	71	0	0	0%	0%
Harborough Road (S)	1019	1223	1112	1282	93	59	9%	5%

Junction (Arm)	Baseline 2021		Baseline 2021 + cumulative development		Difference (vehicles)		Difference (%)	
Church Road (W)	290	203	309	212	19	9	7%	5%
Total	*1376*	*1497*	1488	1565	112	68	8%	5%
A6 Harborough Road / New Road Junction								
Harborough Road (N)	1216	848	1290	953	74	105	6%	12%
Harborough Road (S)	1031	1325	1152	1464	121	139	12%	11%
New Road (W)	226	143	290	185	64	42	28%	29%
Total	*2473*	*2316*	2732	2602	259	286	10%	12%

4.1.4 The assessment of the junctions has been undertaken using PICADY 9 (the Priority Intersection Module) or ARCADY 9 (the Roundabout Module) within Junction 9 modelling software. Geometric inputs for each junction have been measured from OS mapping available.

4.1.5 The Junctions software refers to LOS values contained in the Highway Capacity Manual. In this instance, model outputs show the unsignalised LOS values for each peak hour, based on the average delay per arriving vehicle. The LOS system uses the following alphabetised categories:

- A = Free flow;
- B = Reasonably free flow;
- C = Stable flow;
- D = Approaching unstable flow;
- E = Unstable flow; and
- F = Forced or breakdown flow

4.1.6 For priority junctions a Ratio of Flow to Capacity (RFC) value below 0.85 indicates that a junction operates ‘within’ its practical capacity. Typically junctions can satisfactorily operate with RFC values between 0.85 and 1.00. A RFC value greater than 1.00 indicates that a junction operates ‘above’ its theoretical capacity.

4.1.7 The RFCs are reported using a traffic light colouring system, the traffic light colouring system works as follows:

- Green - RFC less than 0.85, junction is likely to operate without delays; 0.85 is an industry recognised level of congestion at which a junction is starting to approach its capacity.
- Amber - RFC between 0.85 and 1, junction is approaching capacity and may be subject to minor delay; and
- Red -RFC greater than 1, junction is over capacity and delays will occur.

4.1.8 The junction capacity assessment software only models junctions on an individual basis and therefore does not take into account the interaction between adjacent junctions as a result of queuing or ‘platooning’ traffic.

4.1.9 It should also be noted that as traffic flow outputs have been taken from a fixed assignment spreadsheet model, junction capacity results should be deemed ‘the worst case’. In reality it might be expected that vehicles will attempt to avoid the worst incidences of congestion by changing route, mode of travel or time of travel.

4.1.10 Results of the junction capacity modelling are presented in tables for each assessed junction in turns, and represent conditions modelled at the busiest quarter-hour period of the peak hours.

4.1.11 The detailed output of all junction capacity assessments are presented in Appendix F and are discussed in this chapter.

4.2 Glen Road / London Road / Leicester Road Roundabout

4.2.1 Table 4.2 outlines the results of the Baseline 2021 scenario junction capacity assessments. In order to understand if the existing junction layout will be able to accommodate traffic from the cumulative development, Table 4.2 also outlines the results of the Baseline 2021 + Cumulative Development scenario. The table also indicates the change to the operation of the junction following the addition of traffic from the cumulative development.

Table 4.2: Glen Road / London Road / Leicester Road Roundabout junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development								Difference (Baseline 2021+Cumulative Development - Baseline 2021)							
	AM				PM				AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
London Road	1	4.38	0.37	A	0	3.42	0.21	A	1	6.49	0.56	A	0	3.87	0.28	A	1	2.11	0.19	-	0	0.45	0.07	-
Leicester Road	1	2.56	0.47	A	1	1.89	0.34	A	1	3.22	0.55	A	1	2.06	0.38	A	0	0.66	0.08	-	0	0.17	0.04	-
Glen Road	1	2.5	0.48	A	1	2.24	0.44	A	1	2.87	0.55	A	1	2.51	0.50	A	0	0.37	0.07	-	0	0.27	0.06	-

4.2.2 It can be seen from Table 4.2 that the existing junction will operate within capacity under the Baseline 2021 scenario during the AM and PM peak periods, with RFCs below 0.85 on all arms and minimal queuing taking place. It can also be seen from the table that the existing junction will continue to operate within capacity under the Baseline 2021 + Cumulative Development scenario during the AM and PM peak periods, with RFCs below 0.85 on all arms and minimal queuing taking place.

4.3 A6 Leicester Road / Station Road Roundabout

4.3.1 Table 4.3 outlines the results of the Baseline 2021 scenario junction capacity assessments. In order to understand if the existing junction layout will be able to accommodate traffic from the cumulative development, Table 4.3 also outlines the results of the Baseline 2021 + Cumulative Development scenario. The table also indicates the change to the operation of the junction following the addition of traffic from the cumulative development.

Table 4.3 : Leicester Road / Station Road Roundabout junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development								Difference (Baseline 2021+Cumulative Development - Baseline 2021)							
	AM				PM				AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Leicester Road Northbound	1	3.27	0.57	A	1	2.03	0.40	A	2	3.95	0.64	A	1	2.29	0.47	A	1	0.68	0.07	-	0	0.26	0.07	-
Station Road Eastbound	2	11.78	0.66	B	1	4.94	0.38	A	3	17.2	0.74	C	1	5.7	0.42	A	1	5.42	0.08	C (B)	0	0.76	0.04	-
Leicester Road Southbound	1	2.56	0.40	A	1	1.89	0.33	A	1	2.86	0.46	A	1	2.08	0.37	A	0	0.3	0.06	-	0	0.19	0.04	-
Station Road Westbound	1	6.11	0.42	A	1	4.88	0.36	A	1	8.23	0.54	A	1	5.61	0.42	A	0	2.12	0.12	-	0	0.73	0.06	-

4.3.2 It can be seen from Table 4.3 that the existing junction will operate within capacity under the Baseline 2021 scenario during the AM and PM peak periods, with RFCs below 0.85 on all arms and minimal queuing taking place. It can also be seen from the table that the existing junction will continue to operate within capacity under the Baseline 2021 + Cumulative Development scenario during the AM and PM peak periods, with RFCs below 0.85 on all arms and minimal queuing taking place.

4.4 A6 Leicester Road / Wistow Road Roundabout

4.4.1 Table 4.4 outlines the results of the Baseline 2021 scenario junction capacity assessments. In order to understand if the existing junction layout will be able to accommodate traffic from the cumulative development, Table 4.4 also outlines the results of the Baseline 2021 + Cumulative Development scenario. The table also indicates the change to the operation of the junction following the addition of traffic from the cumulative development.

Table 4.4 : Leicester Road / Wistow Road Roundabout junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development								Difference (Baseline 2021+Cumulative Development - Baseline 2021)							
	AM				PM				AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Leicester Road Northbound	9	23.7	0.91	C	8	20	0.89	C	46	97.06	1.04	F	27	62.99	1.00	F	37	73.36	0.13	F (C)	19	42.99	0.11	F (C)
Wistow Road	4	20.4	0.82	C	1	5.79	0.43	A	14	58.28	0.97	F	2	8.91	0.62	A	10	37.88	0.15	F (C)	1	3.12	0.19	-
Leicester Road Southbound	5	15.24	0.84	C	2	7.96	0.71	A	18	49.32	0.97	E	5	14.94	0.84	B	13	34.08	0.13	E (C)	3	6.98	0.13	B (A)

4.4.2 It can be seen from Table 4.4 that the A6 Leicester Road Northbound Arm is approaching capacity in the AM and PM peak periods under the Baseline 2021 scenario (with RFC of 0.91 and 0.89 respectively). The Wistow Road Arm and A6 Leicester Road Southbound Arm both operate with RFCs below 0.85 during both AM and PM peak periods under the Baseline 2021 scenario.

4.4.3 For the Baseline 2021 + Cumulative Development scenario, it can be seen from Table 4.4 that the A6 Leicester Road Northbound Arm is operating at over capacity with a RFC of 1.04 in the AM peak. The Wistow Road Arm and Leicester Road Southbound Arm are approaching their capacities with both RFCs at 0.97 during the AM Peak.

4.4.4 For the PM peak under the Baseline 2021 + Cumulative Development, the results indicate both the A6 Leicester Road Northbound and Southbound Arms are approaching at capacity with RFCs of 1.00 and 0.84 respectively. The results also indicate the Wistow Road Arm will operate within capacity with a RFC of below 0.85.

4.5 Church Road / A6 Leicester Road/ Marsh Drive

4.5.1 Table 4.5 outlines the results of the Baseline 2021 scenario junction capacity assessments for the Church Road/A6 Harborough Road/Marsh Drive junction. In order to understand if the existing junction layout will be able to accommodate traffic from the cumulative development, Table 4.5 also outlines the results of the Baseline 2021 + Cumulative Development scenario. The table also indicates the change to the operation of the junction following the addition of traffic from the cumulative development.

Table 4.5: Church Road / A6 Harborough Road/ Marsh Drive junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development								Difference (Baseline 2021+Cumulative Development - Baseline 2021)							
	AM				PM				AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Church Rd to Leicester Rd Eastbound	144	1898.88	N/A	F	95	1686.07	N/A	F	227	3244.24	N/A	F	100	1421.78	N/A	F	84	1345.36	0	-	5	-264.29	0	-
Church Rd to Leicester Rd Westbound/Marsh Drive	24	1981.2	N/A	F	18	1088.35	N/A	F	35	3339.14	N/A	F	19	1486.25	N/A	F	11	1357.94	0	-	1	397.9	0	-
Leicester Rd Westbound to Church Rd / Leicester Rd Eastbound /Marsh Drive	2	4.42	0.31	A	3	4.7	0.45	A	3	4.93	0.42	A	4	5.87	0.57	A	2	0.51	0.11	-	2	1.17	0.12	-
Marsh Drive to Leicester Rd Westbound / Church Rd / Leicester Rd Eastbound	38	1762.29	N/A	F	1	53.94	0.55	F	42	1652.34	N/A	F	6	251.63	1.07	F	4	-109.95	0	-	5	197.69	0.52	-
Leicester Rd Eastbound to Church Rd	1	18.58	0.51	C	2	29.52	0.69	D	1	23.89	0.58	C	3	45.77	0.79	E	0	5.31	0.07	-	1	16.25	0.1	E (D)

4.5.2 Under the Baseline 2021 scenario, it can be seen from Table 4.5 that during the AM peak the minor arms of the junction (Church Road and Marsh Drive) are operating significantly over capacity with RFC error values. This implies that there are insufficient gaps in the traffic on the A6 Leicester Road to allow traffic from Church Road and Marsh Drive turning right or left to access A6 Leicester Road in both directions. During the PM peak, the result also indicates the Church Road Arm is operating significantly over capacity with RFC error values. This implies that there are insufficient gaps in the traffic on the A6 Leicester Road to allow traffic from Church Road turning right or left to access A6 Leicester Road in both directions.

4.5.3 It can be seen from the table that under the Baseline 2021 + Cumulative Development scenario, the cumulative flows would have further impact on the junction with increases in queuing and delay for both Church Road and Marsh Drive Arms.

4.6 New Road/A6 Harborough Road

4.6.1 Table 4.6 outlines the results of the Baseline 2021 scenario junction capacity assessments. In order to understand if the existing junction layout will be able to accommodate traffic from the cumulative development, Table 4.6 also outlines the results of the Baseline 2021 + Cumulative Development scenario. The table also indicates the change to the operation of the junction following the addition of traffic from the cumulative development.

Table 4.6 : New Road/A6 Harborough Road junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development								Difference (Baseline 2021+Cumulative Development - Baseline 2021)							
	AM				PM				AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
New Road to Harborough Road Southbound	34	3024.68	3.18	F	18	1501.97	1.98	F	70	45155.67	58.4	F	41	1794.15	N/A	F	36	42130.99	55.22	-	24	292.18	1E+10	-
New Road to Harborough Road Northbound	53	3003.52	3.01	F	23	1470.22	1.93	F	135	43904.46	58.84	F	70	1772.31	N/A	F	81	40900.94	55.83	-	47	302.09	1E+10	-
Harborough Road Southbound to New Road	0	9.37	0.05	A	0	14.75	0.27	B	0	10.57	0.06	B	1	18.95	0.34	C	0	1.2	0.01	B (A)	0	4.2	0.07	C (B)

4.6.2 Under the Baseline 2021 scenario, it can be seen from Table 4.6 that during the AM and PM peak the minor arm of the junction (New Road) is operating significantly over capacity with a maximum RFC of 3.18 in the morning peak.

4.6.3 It can be seen from the table that under the Baseline 2021 + Cumulative Development scenario, the cumulative flows would have further impact on the junction with increases in queuing and delay for New Road Arm. During the PM peak the minor arm of the junction New Road, is operating significantly over capacity with RFC

error values. This implies that there are insufficient gaps in the traffic on the A6 Leicester Road to allow traffic from New Road turning right or left to access A6 Harborough Road in both directions.

4.7 Summary

4.7.1 Based on the junction capacity assessments outlined within this chapter, consideration should be given to introduce concept highway improvement designs to mitigate the highway impact from the cumulative development for the following junctions:

- Leicester Road / Wistow Road Roundabout;
- Church Road / A6 Leicester Road/ Marsh Drive; and
- Harborough Road / New Road junction.

5. Concept Highway Improvements

5.1 Introduction

5.1.1 Based on the junction capacity assessments presented in the previous chapter, this chapter presents the concept highway improvements to fully mitigate the impact of development traffic. At this level of design, all improvements proposed are delivered within the public highway.

5.1.2 Concepts presented within this chapter are intended to illustrate the scale of possible capacity requirements, and are not intended to be definitive or exhaustive.

5.1.3 The Degree of Saturation (DoS) is an output from LinSig which provides a measure of the utilised capacity of a signalised junction approach lane. It is directly comparable to the RFC outputs obtained from PICADY/ARCADY assessments.

5.1.4 The colour-coding system used to categorise DoS in the model results tables is as follows:

- Lanes with a DOS of less than 90% are coloured green
- Lanes with a DOS between 90% and 99% are coloured amber; and
- Lanes with a DOS of 100% or more are coloured red

5.1.5 A 90% or less DoS value is generally considered to result in the satisfactory operation of any arm of a signalised junction. Values between 90% and 100% suggest that the arm is approaching its theoretical capacity, while values in excess of 100% indicate that the arm of the signalised junction is over-capacity, and hence the junction is operating over its theoretical capacity.

5.1.6 LinSig also provides a Practical Reserve Capacity (PRC) percentage figure, which is an overall assessment of the amount of spare capacity available at a signalised junction. In many cases, a DoS value of between 90% and 100% results in a negative PRC figure, meaning that there is no spare capacity available.

5.1.7 The modelling outputs of all junction capacity assessments are presented in Appendix G and are discussed in this chapter.

5.2 A6 Leicester Road / Wistow Road Roundabout

5.2.1 Figure 5.1 presents the possible improvement scheme to mitigate the impact from the Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario for the A6 Leicester Road/Wistow Road Roundabout for HDC/LCC's consideration.

5.2.2 The proposed improvements are as follows:

- Longer flare for Wistow Road;
- Alter hatching along the A6 Leicester Road northbound approach to increase the approach line width; and
- Longer flare for the A6 Leicester Road southbound approach.

5.2.3 The results of the Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario junction capacity assessments are summarised in Table 5.1.

Table 5.1: Revised A6 Leicester Road / Wistow Road Roundabout junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development							
	AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Leicester Rd Nbd	3	6.91	0.74	A	3	6.41	0.72	A	4.9	11.5	0.84	B	4	9.39	0.8	A
Wistow Rd	2	8.58	0.65	A	1	4.07	0.35	A	3.7	15.01	0.79	C	1	5.56	0.5	A
Leicester Rd Sbd	2	7.29	0.71	A	2	4.93	0.6	A	4.6	12.3	0.83	B	3	7.07	0.72	A

5.2.4 It can be seen from the Table 5.1 that the proposed improvement scheme would operate within capacity (RFC less than 0.85) for both Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario.

5.3 Church Road/A6 Harborough Road/Marsh Drive

5.3.1 Figure 5.2 presents the possible improvement scheme to mitigate the majority of the traffic impact generated from the Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario for the Church Road / A6 Harborough Road/ Marsh Drive junction for HDC/LCC's consideration.

5.3.2 The proposed improvements are to signalise the following arms of the existing priority junction:

- A6 Harborough Road north;
- A6 Harborough Road south; and
- Church Road.

5.3.3 At this stage, it is not proposed to provide any controlled crossing facilities, as a pedestrian all-red stage would almost certainly push the junction over capacity. In conjunction with the above, in order to minimise conflicting turning movements, it is proposed to ban the right turn movements to and from Marsh Drive. Local appetite for this would need to be assessed as part a subsequent more detailed feasibility testing.

Table 5.2: Revised Church Road / A6 Harborough Road / Marsh Drive junction capacity assessment results.

ARM	Baseline 2021						Baseline 2021 + Cumulative Development					
	AM (cycle time 110 s)			PM (cycle time 86s)			AM (cycle time 110s)			PM (cycle time 76s)		
	Queue (Veh)	Delay (s)	DoS %	Queue (Veh)	Delay (s)	DoS %	Queue (Veh)	Delay (s)	DoS %	Queue (Veh)	Delay (s)	DoS %
A6 North	34.2	21.6	91.6%	20.0	42.5	96.7%	50.7	36.9	97.1%	45.5	100.6	103.3%
Marsh Drive (left out only)	0.1	5.1	16.3%	0.1	4.0	14.2%	0.1	5.3	17.0%	0.1	4.2	14.6%
A6 South	29.2	22.2	85.3%	38.2	40.8	96.6%	32.5	23.4	88.1%	62.5	114.5	104.0%
Church Rd	13.4	90.0	91.5%	5.1	43.9	59.1%	16.2	110.2	95.8%	4.5	36.1	54.3%
PRC	-1.8			-7.5			-7.8			-15.6		

5.3.4 It can be seen from Table 5.2 that for the AM peak under the Baseline 2021 scenario the A6 South Arm and Marsh Drive will operate under capacity with DoS of less than 90%. The A6 North Arm and the Church Road will approach their theoretical capacity with DoS of 91.6% and 91.5% respectively.

5.3.5 For the PM peak under the Baseline 2021 scenario, the Marsh Drive and Church Road Arms will operate under capacity with DoS of less than 90%. The A6 North and South Arms will approach their theoretical capacity with DoS of 96.7% and 96.6% respectively.

5.3.6 For the AM peak under the Baseline 2021 + Cumulative Development scenario, the Marsh Drive and Church Road Arms will continue to operate under capacity with DoS of less than 90%. The A6 North and South Arms will approach their theoretical capacity with DoS of 97.1% and 95.8% respectively.

5.3.7 In the PM peak under the Baseline 2021 + Cumulative Development scenario, the Marsh Drive and Church Road Arms will continue to operate under capacity with DoS of less than 90%. The A6 North and South Arms will operate over-capacity with DoS of 103.3% and 104.0% respectively.

5.3.8 With the introduction of traffic signal control, the results in Table 5.2 above show that delays will be spread more evenly across all arms. Compared to the existing give-way scenario, this clearly benefits the Church Road approach, with delays substantially reduced. On the other hand, delay will be introduced to the A6 arms which at present, operates unimpeded.

5.3.9 The possible improvement scheme identified provides a significant improvement on the Baseline 2021 and Baseline 2021 + Cumulative Development scenario at the existing priority junction where the minor arms of the junction (Church Road and Marsh Drive) are operating significantly over capacity with RFC error values. The existing priority junction modelling results from Table 4.5 imply that there are insufficient gaps in the traffic on the A6 Leicester Road to allow traffic from minor arms of the junction turning right or left to access A6 Leicester Road in both directions.

5.4 New Road/ A6 Harborough Road

5.4.1 Figure 5.3 presents the possible improvement scheme to mitigate the impact from the Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario for the A6 Harborough Road/New Road junction. It is proposed to convert the existing priority junction to a 3-arm roundabout consisting of A6 Harborough Road North Arm (northern arm), A6 Harborough Road South Arm (southern arm) and New Road Arm (western arm).

5.4.2 The results of the Baseline 2021 scenario and the Baseline 2021 + Cumulative Development scenario junction capacity assessments are summarised in Table 5.3.

Table 5.3 : Revised New Road/Harborough Road junction capacity assessment results

ARM	Baseline 2021								Baseline 2021 + Cumulative Development							
	AM				PM				AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Harborough Rd Nbd	1	4.31	0.56	A	3	7.02	0.74	A	2	5.07	0.62	A	4	9.98	0.82	A
New Rd	0	4.52	0.23	A	0	4.98	0.17	A	0	5.38	0.32	A	0	5.83	0.24	A
Harborough Rd Sbd	5	13.38	0.83	B	1	5.14	0.56	A	8	22.14	0.90	C	2	6.35	0.64	A

5.4.3 The revised junction capacity assessment results based on the proposed roundabout indicate that it will operate within capacity under the Baseline 2021 scenario during the AM and PM peak periods, with RFCs below 0.85 on all arms and minimal queuing taking place.

5.4.4 For the Baseline 2021 + Cumulative Development scenario, the revised junction capacity assessment outputs indicate that the southbound Harborough Road Arm will approach capacity with a RFC of 0.90 during the AM peak period. For the PM peak period, under the Baseline 2021 + Cumulative Development scenario, the revised junction will operate within capacity with RFCs below 0.85 on all arms.

5.5 Summary

5.5.1 Two of the three concept junction improvements designs could fully mitigate the impact in both the AM and PM peak periods under the Baseline 2021 and Baseline 2021 + Cumulative Development scenarios tested.

5.5.2 The proposed signalised A6 Leicester Road/Church Road junction is shown to have DoS values approaching theoretical capacity under the AM and PM peak Baseline 2021 scenario and the AM peak period for Baseline 2021 + Cumulative Development scenario. The DoS values indicate the junction is operating over its theoretical capacity during the PM peak Baseline 2021 + Cumulative Development scenario.

5.5.3 This is reflective of the through-route accommodating traffic flows from across the district and the county along the A6 corridor. Consequently, the demand from the A6 Leicester Road/Church Road junction under the Baseline 2021 and Baseline 2021 + Cumulative Development is unlikely to be fully mitigated by implementing localised junction improvements. In light of the potential emerging highway mitigation/ interventions and the scale of the development, local junction interventions and bespoke highway improvement proportionate to the scale of the total development quantum proposed should be pursued.

6. Summary and Conclusions

6.1 Summary

6.1.1 This report has been prepared to assess the cumulative development traffic impact at links and junctions identified within the of Kibworth Beauchamp, Kibworth Harcourt, Fleckney and Great Glen areas.

6.1.2 The extent of the study area has been set by reviewing available Transport Assessments to form the basis of the Baseline 2021 morning and evening peak traffic flow diagrams. For junctions where no 2021 traffic flow data is available from Transport Assessments, the most recent manual turning counts undertaken by LCC have been obtained and relevant National Traffic Model growth factors adjusted by local TEMPRO growth factors have be applied to the peak hour traffic flows to estimate the Baseline 2021 traffic flows.

6.1.3 The highway link capacity assessment of the links identified demonstrates that the A6 corridor within the study area is operating significantly above its theoretical capacity level. Local junctions modelling have been undertaken for the junctions identified along the A6.

6.1.4 Concept highway improvements have been identified for the A6 Leicester Road/Wistow Road Roundabout to accommodate the impact of the cumulative development identified within this study. Similarly concept highway improvements have been identified for the A6 Harborough Road / New Road junction to accommodate the impact of the cumulative development identified within this study. In addition, concept highway improvements have been identified for the Church Road / A6 / Marsh Drive junction which would allow traffic from Church Road and Marsh Drive to access the A6 Leicester Road more freely compared to the existing junction layout. It should be noted the improvement identified for the Church Road / A6 / Marsh Drive junction does not fully accommodate the impact from the cumulative development identified within this study under the Baseline 2021 + Cumulative Development scenario during the PM peak.

6.2 Conclusions

6.2.1 Concept highway improvements are necessary to accommodate traffic flows from the Baseline 2021 traffic flow scenario and Baseline 2021 + Cumulative Development scenario for the A6 Leicester Road/Wistow Road Roundabout and the New Road/Harborough Road junction.

6.2.2 The proposed signalisation of the Church Road / A6 Leicester Road junction would allow traffic from Church Road and Marsh Drive to access the A6 more freely compared to the existing priority junction operation. By providing gaps to allow traffic from Church Road to access the A6 would mean introducing delay for the through traffic along the A6. Therefore the proposed signalisation of the Church Road/A6 Leicester Road is acknowledged to be only part of the solution. In light of the emerging potential highway mitigation/ interventions and the scale of the development, local junction interventions and bespoke highway improvement proportionate to the scale of the total development quantum proposed should be pursued.

Glossary of Terms

Term	Definition
ARCADY	ARCADY is a module within Junctions 9 for modelling roundabouts
DoS	Degree of Saturation (DoS) is an output from LinSig which provides a measure of the utilised capacity of a signalised junction approach lane
HDC	Harborough District Council
LCC	Leicestershire County Council
LinSig	LinSig is a modelling tool for the assessment and design of traffic signal junctions
LOS	Level of service is a term used in ARCADY and PICADY to report junction performance
MCC	Manual Classified Count break down traffic flows by vehicle type and are enumerated manually.
MSOA	Middle Layer Super Output Area is a geographic area created for the 2001 census containing a minimum of 5,000 persons
NTM	The National Transport Model contains national road traffic forecasts
OS	Ordnance Survey
PICADY	PICADY is a module within Junctions 9 for modelling priority-controlled junctions
PRC	Practical Reserve Capacity is a term used in LinSig to assess a signalised junctions spare capacity
RFC	Ratio of Flow to Capacity is a term used in ARCADY and PICADY to assess junction performance
TA	Transport Assessment
TEMPRO	TEMPRO is the acronym for the Department for Transport's Trip End Model Presentation Program. It is based on development information provided by local authorities and is used to analyse data about trip ends (destinations), journey mileage, car ownership and the population and workforce.

Figures

N

SCALE 1:1000

Key:

HIGHWAY BOUNDARY

135.5m

128.8m

ROCHESTER ROAD

ROCHESTER CLOSE

The Paddocks Farm

El Sub Sta

Low Ash

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	13/12/2016	DRAWING RELEASE	KP			

JACOBS

Client: Leicestershire County Council

Project: Proposed Junction Improvements
Leicester Road/Wistow Road Roundabout

Drawing title: A6 Cumulative Impact Study

Drawing status: Preliminary Design

Scale	1:1000 @ A3	DO NOT SCALE
Jacobs No.	B2274700	
Client no.		

Drawing number: Figure 5.1

Rev: 0

N

SCALE 1:500

Key:

------- HIGHWAY BOUNDARY

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	13/12/2016	DRAWING RELEASE	KP			

JACOBS

Client: Leicestershire County Council

Project: Proposed Junction Improvements Church Road/A6/Marsh Drive

Drawing title: A6 Cumulative Impact Study

Drawing status: Preliminary Design

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Jacobs No.	B2274700
Client no.	

Drawing number: Figure 5.2 — Rev: 0

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SCALE 1:500

Key:

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Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
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JACOBS

Client: Leicestershire County Council

Project: Proposed Junction Improvements
Harborough Road/New Road Junction

Drawing title: A6 Cumulative Impact Study

Drawing status: Preliminary Design

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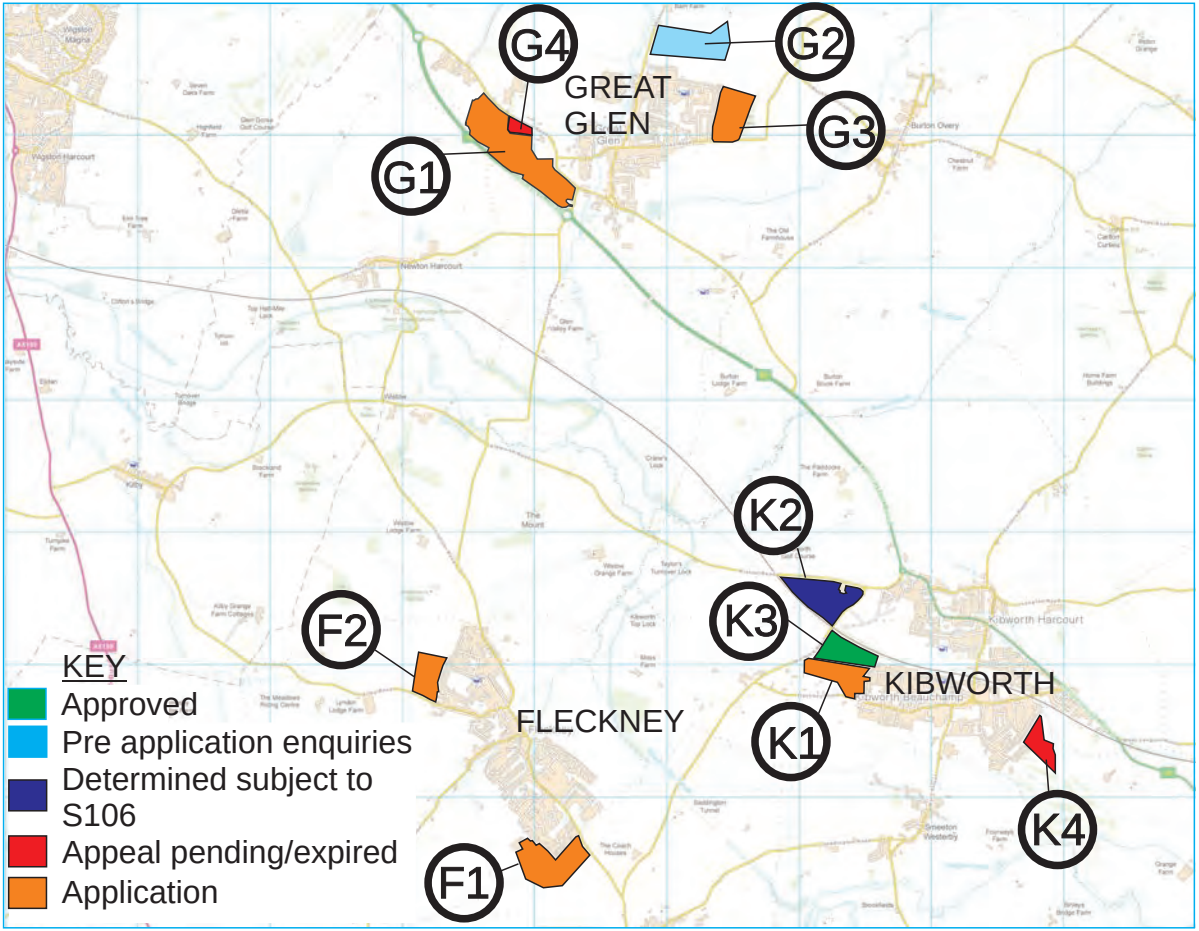
Client no.		

Drawing number: Figure 5.3

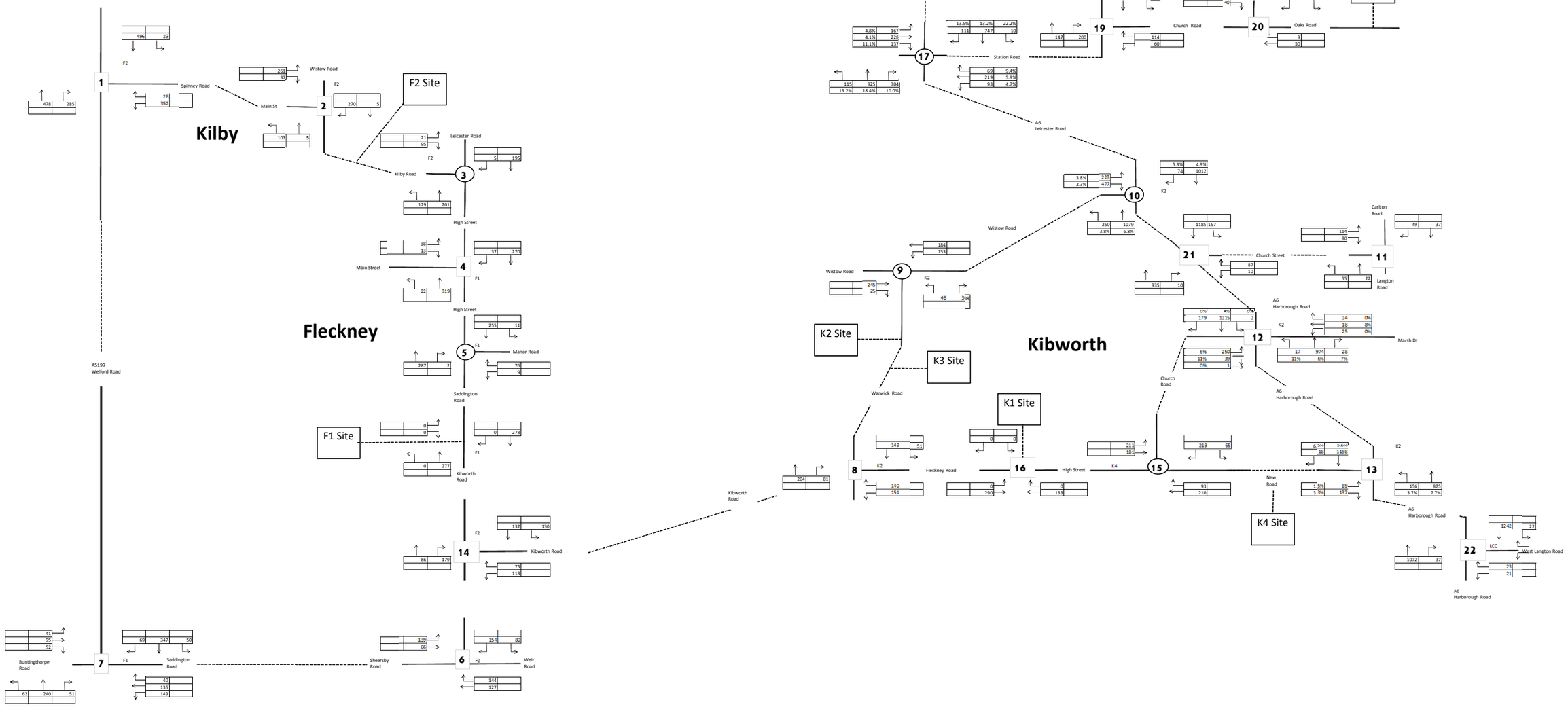
Rev: 0

Appendix A.


G4
G2
GREAT
GLEN
G3
G1
K2
K3
F2
KIBWORTH
FLECKNEY
K1
K4
F1
KEY
Approved
Pre application enquiries
Determined subject to S106
Appeal pending/expired
Application

Appendix B.

Baseline 2021 AM



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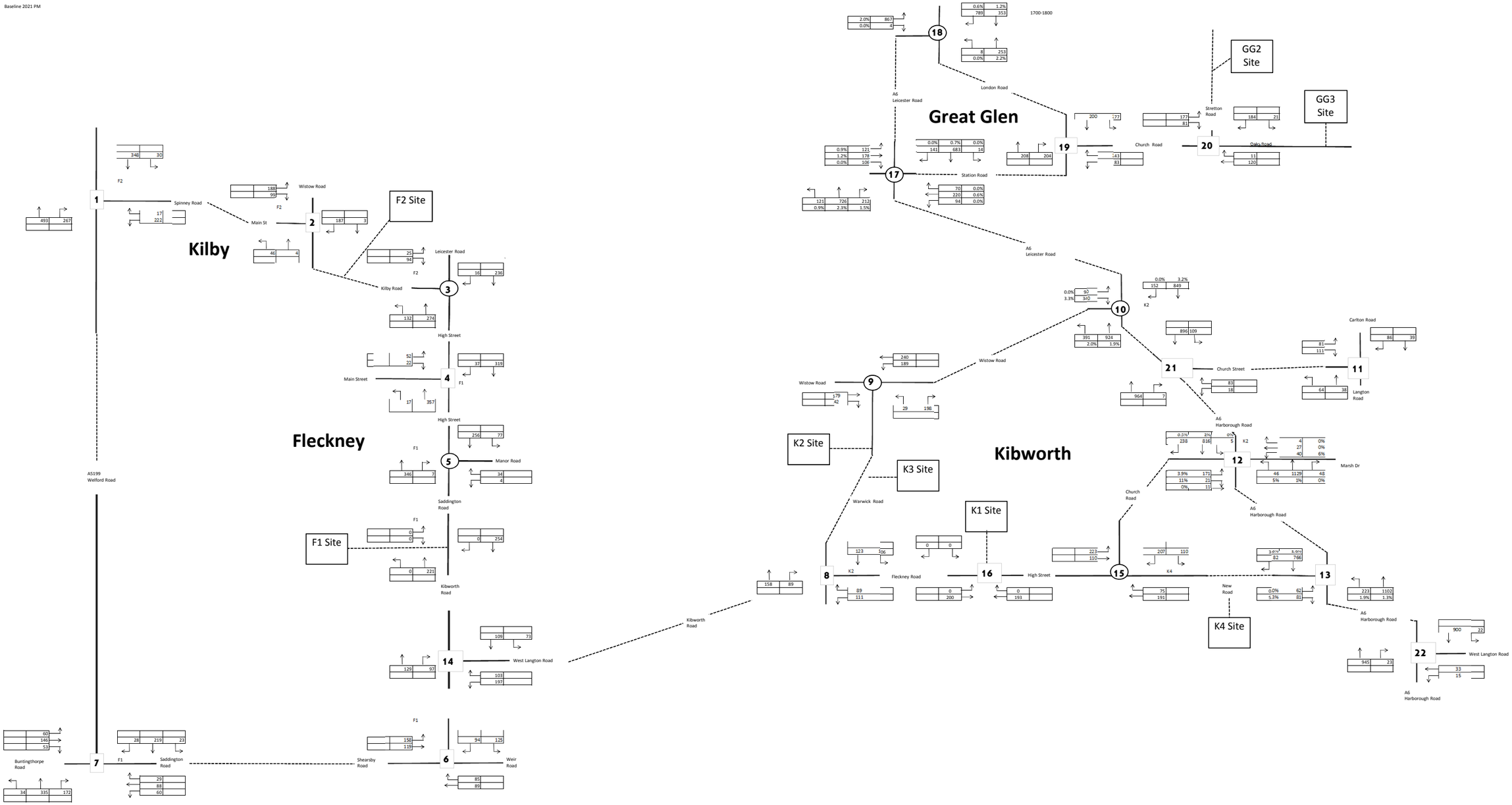
Baseline 2021 PM



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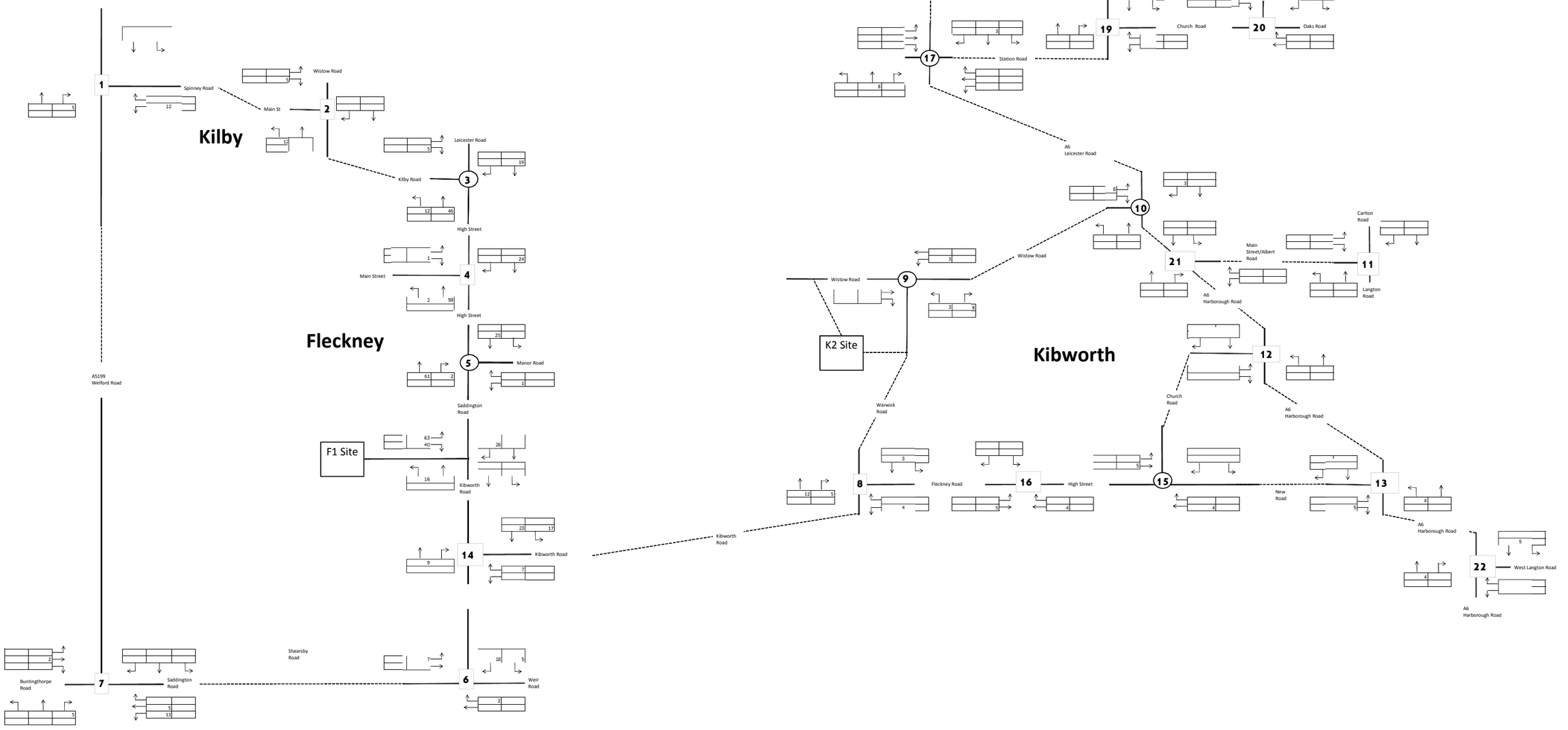
Appendix C.

F1 DEV AM
16/01355/FUL
250 units, Land off Fleckney Road



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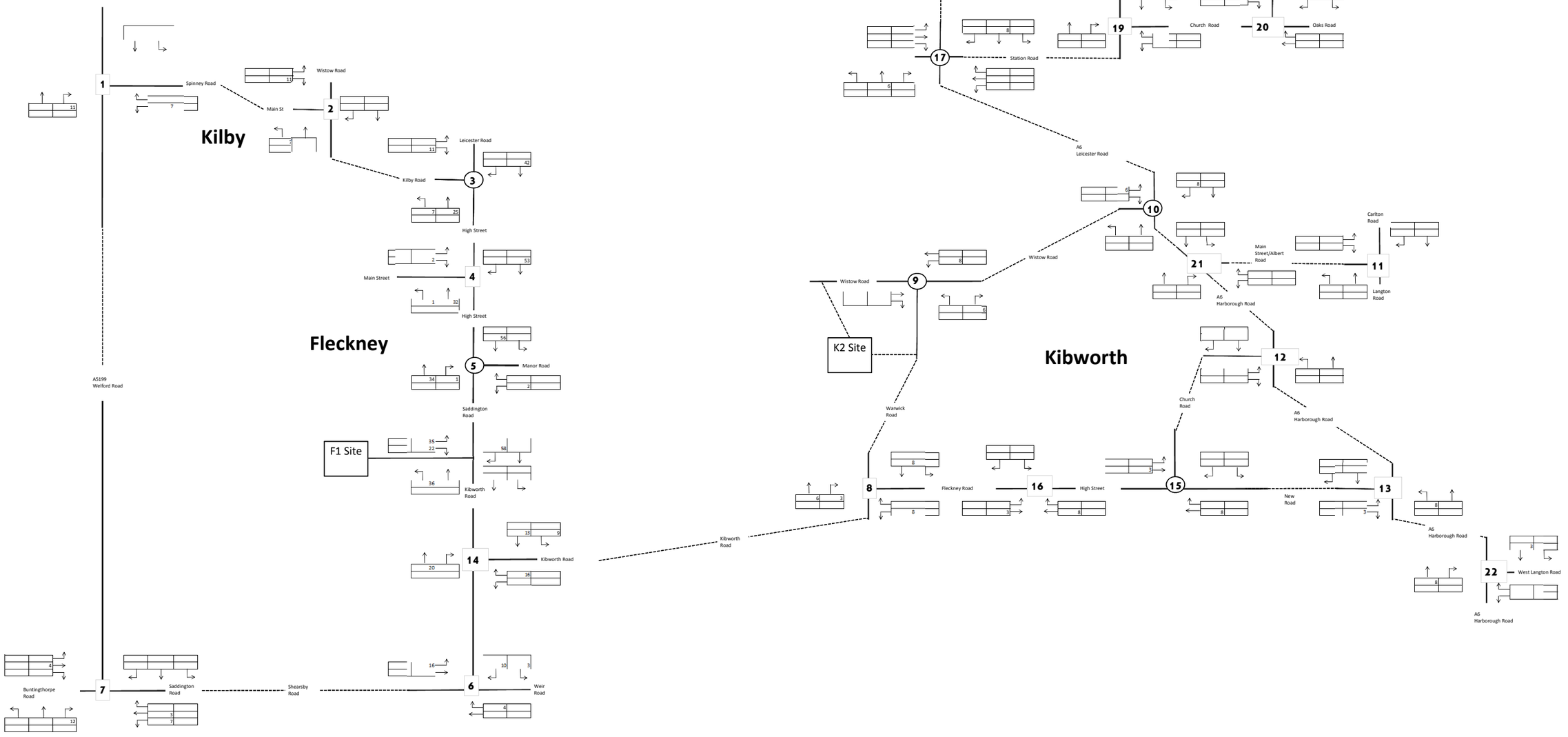
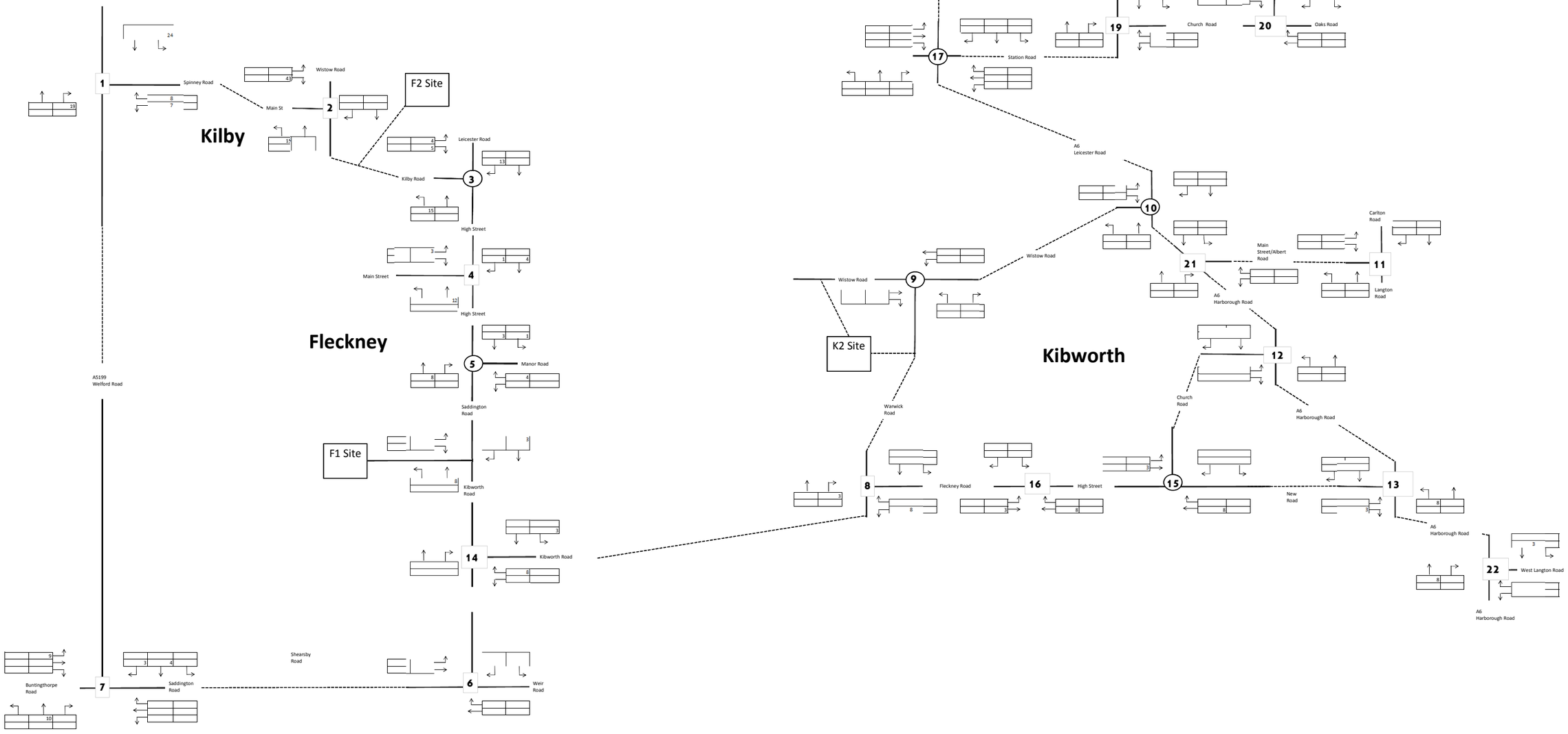
F1 DEV PM
16/01355/FUL
250 units, Land off Fleckney Road



F2 AM DEV
16/00592/FUL
150 units, Kilby Road.



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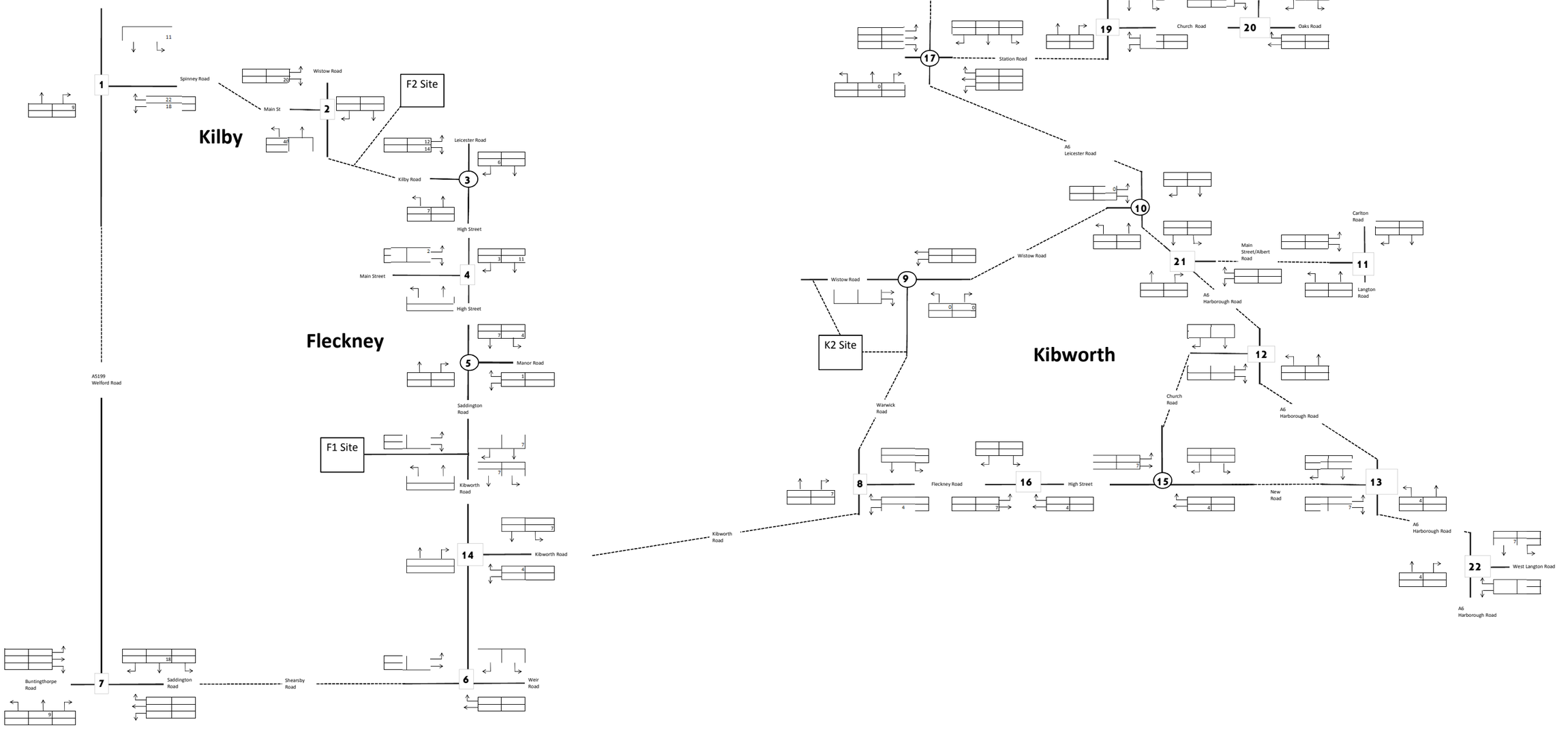
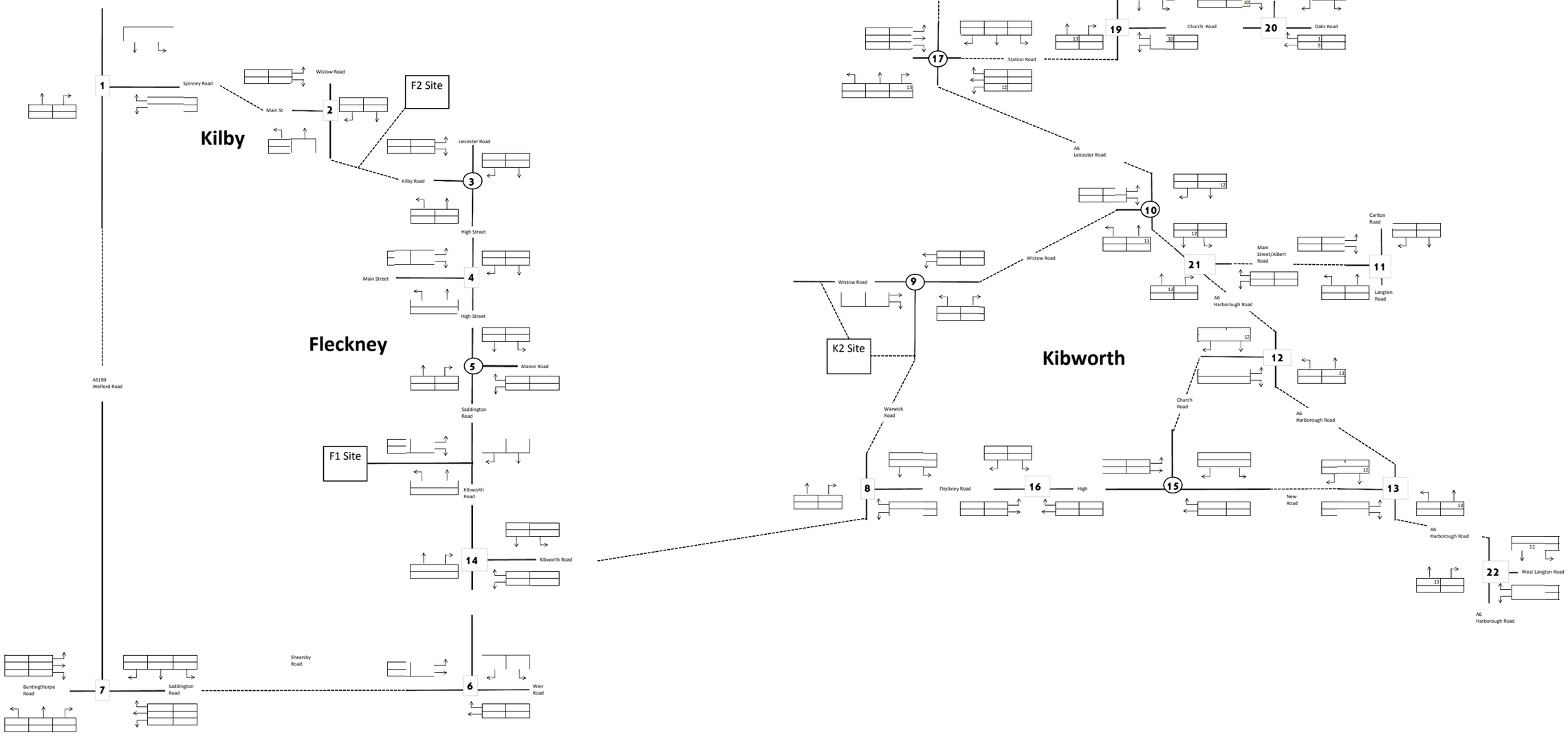
F2 PM DEV
16/00592/FUL
150 units, Kilby Road.



GG1 DEV AM

London Road ~ 150 units



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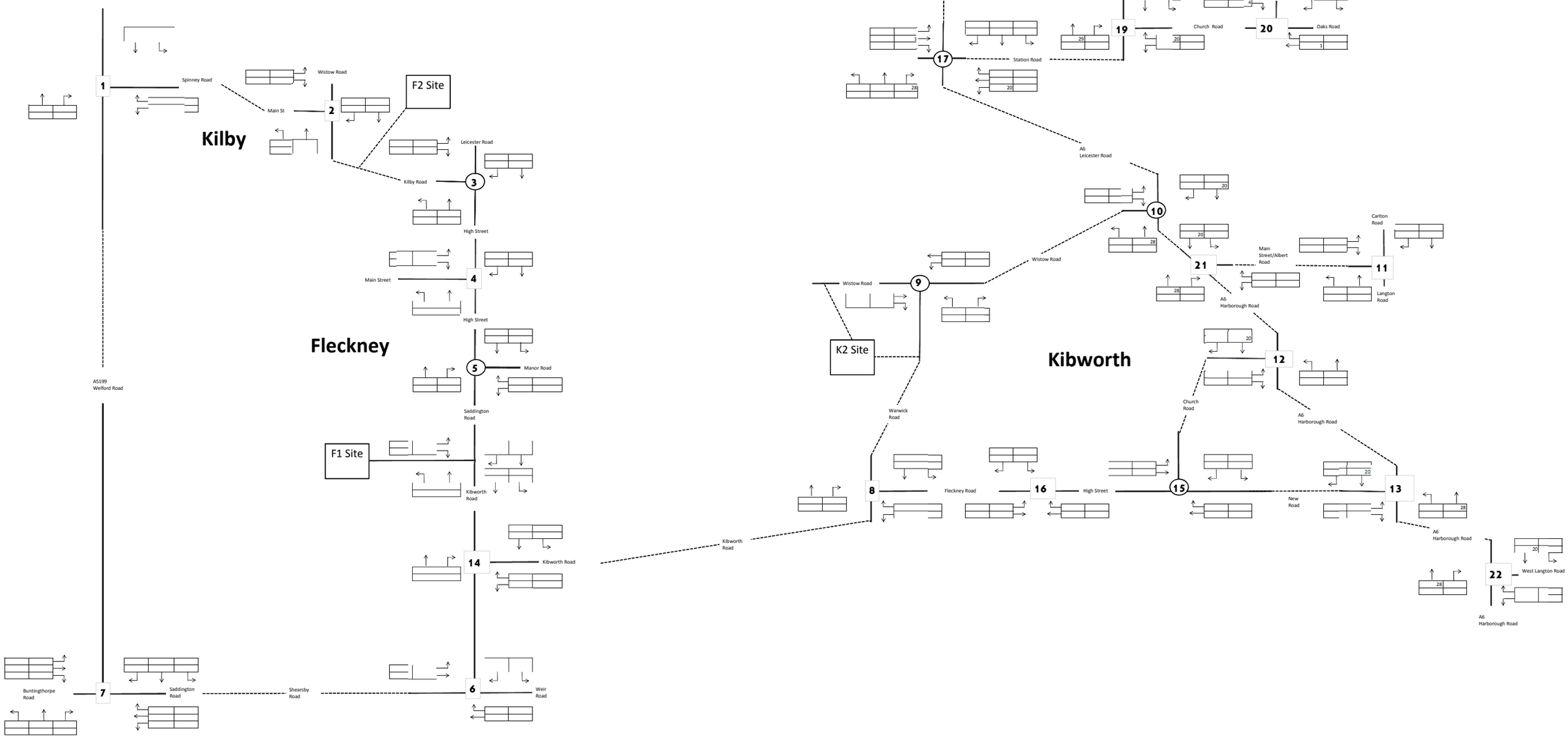
GG1 PM DEV

London Road ~ 150 units



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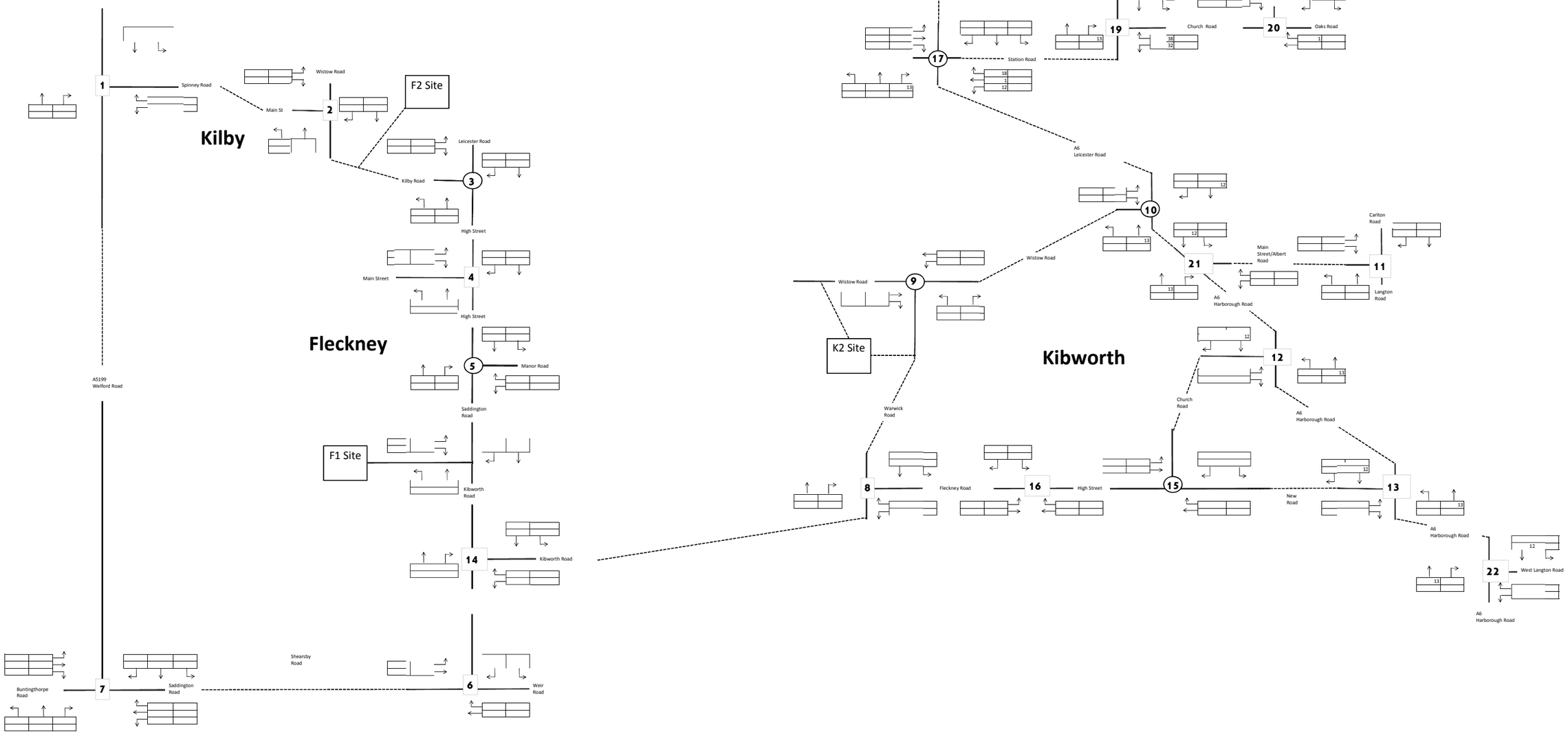
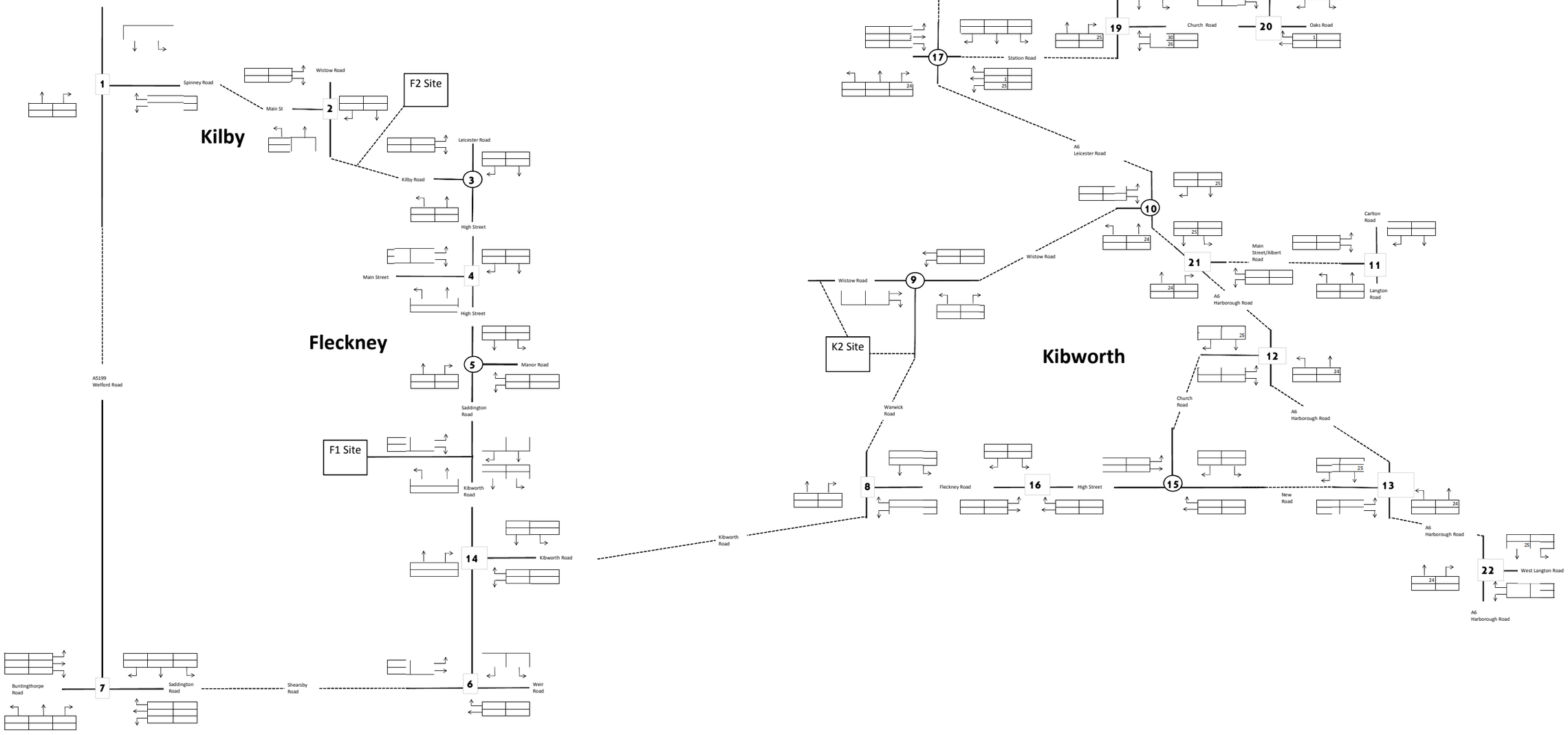
GG2 AM DEV
Pre Application
Stretton Road ~ 150 units



GG2 DEV PM
Pre Application
Stretton Road ~ 150 units



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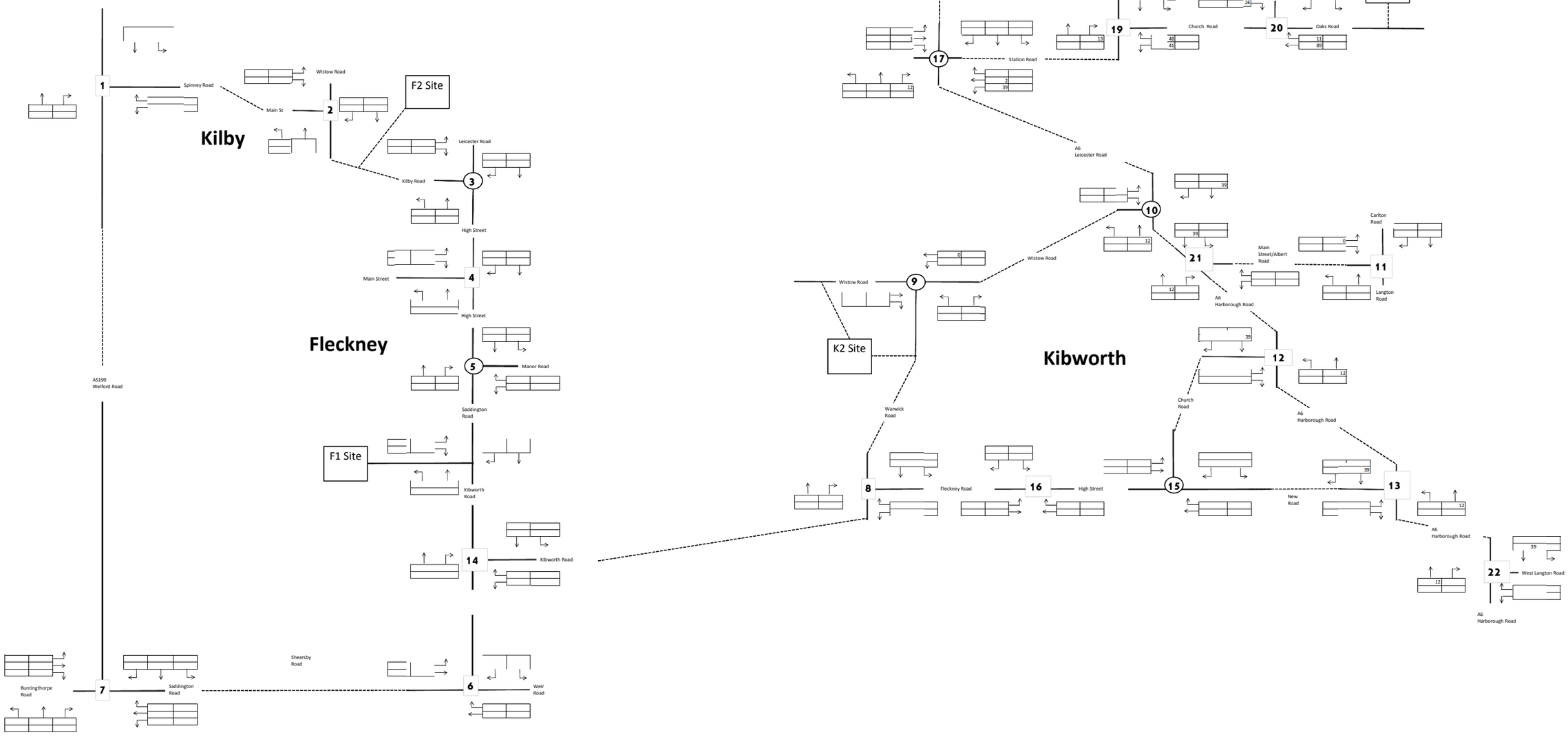
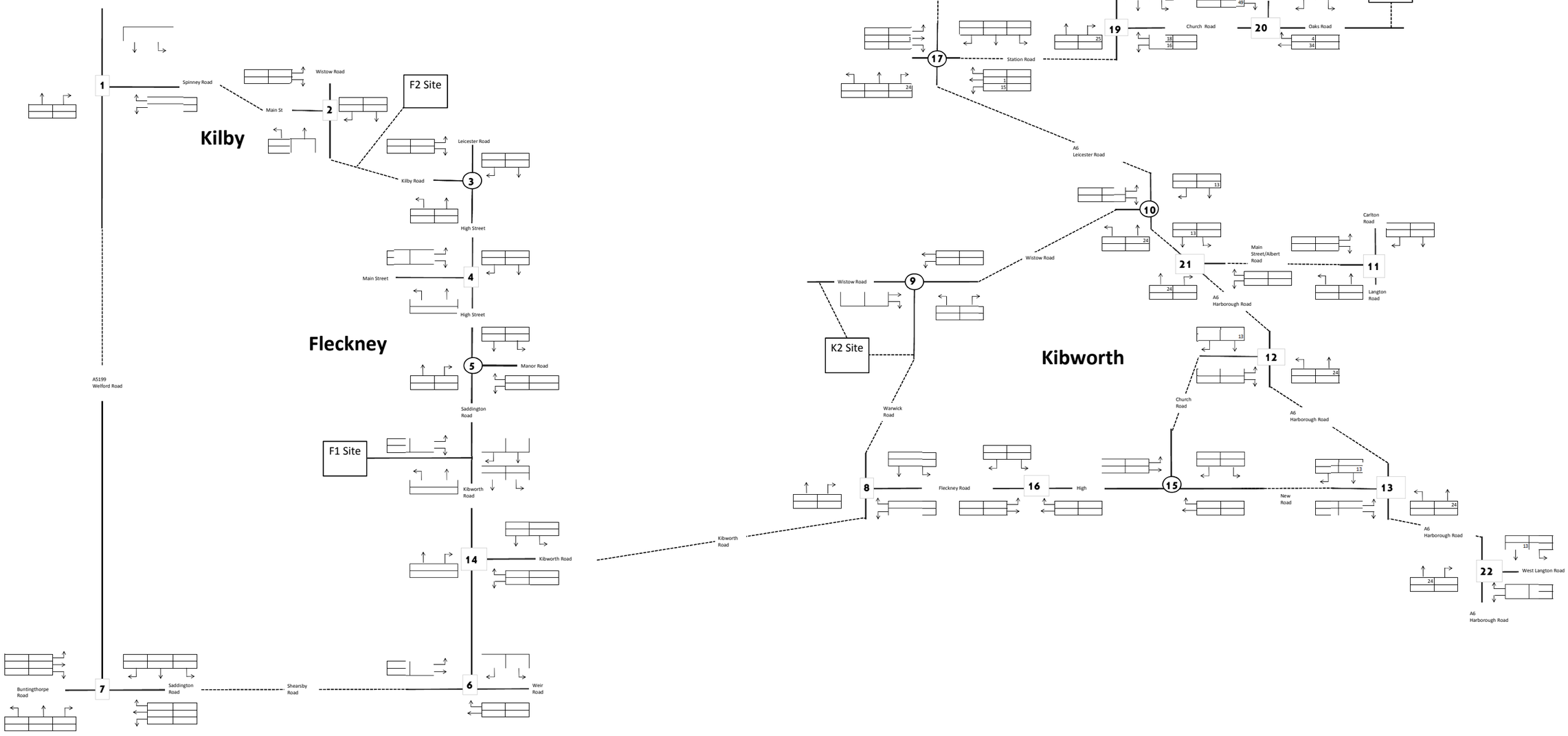
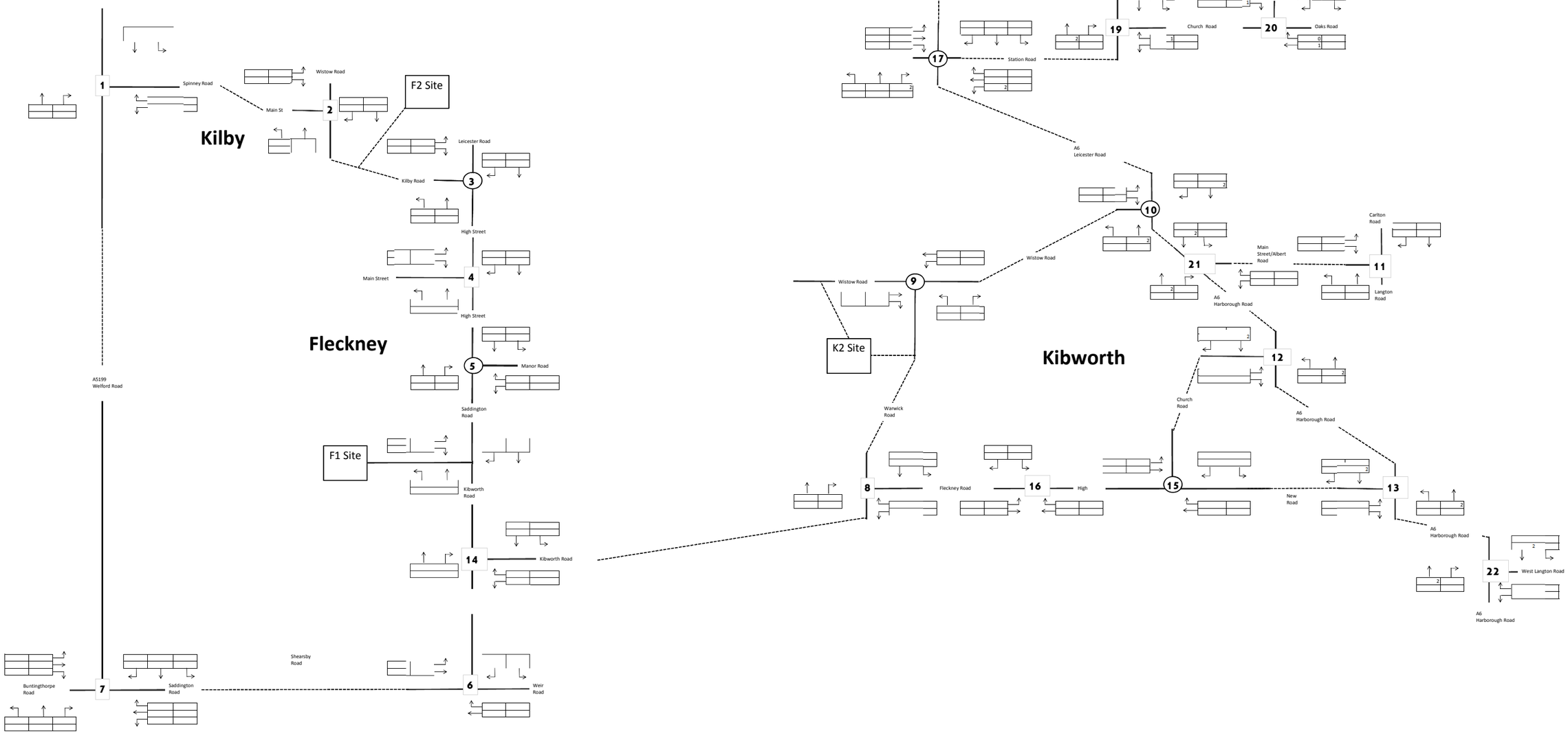
GG3 DEV AM
Pre Application
Oaks Road ~150 units



GG3 DEV PM
Pre Application
Oaks Road ~150 units



GG4 DEV AM
16/01382/OUT
London Road – 19 units



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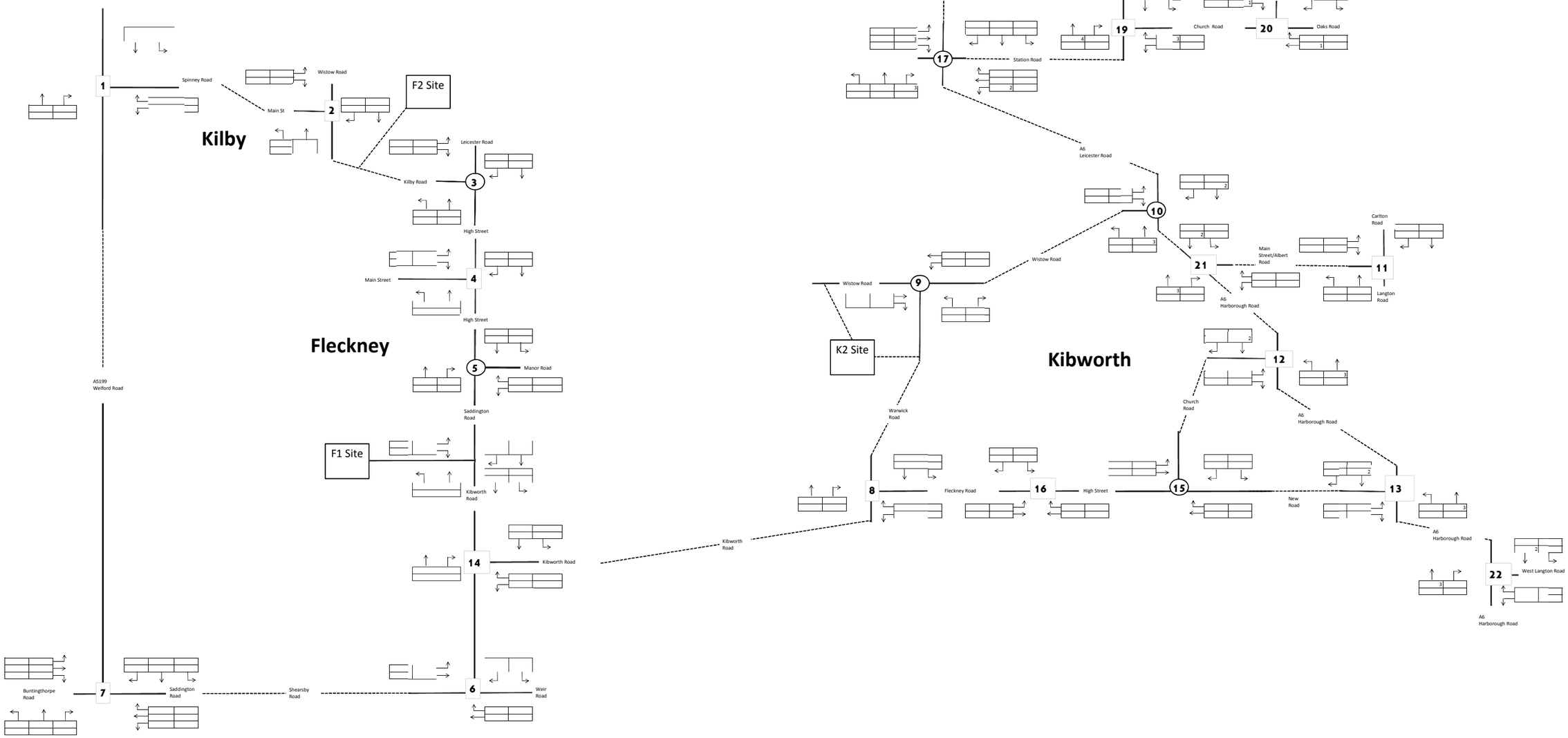
GG4 PM DEV
16/01382/OUT
London Road – 19 units



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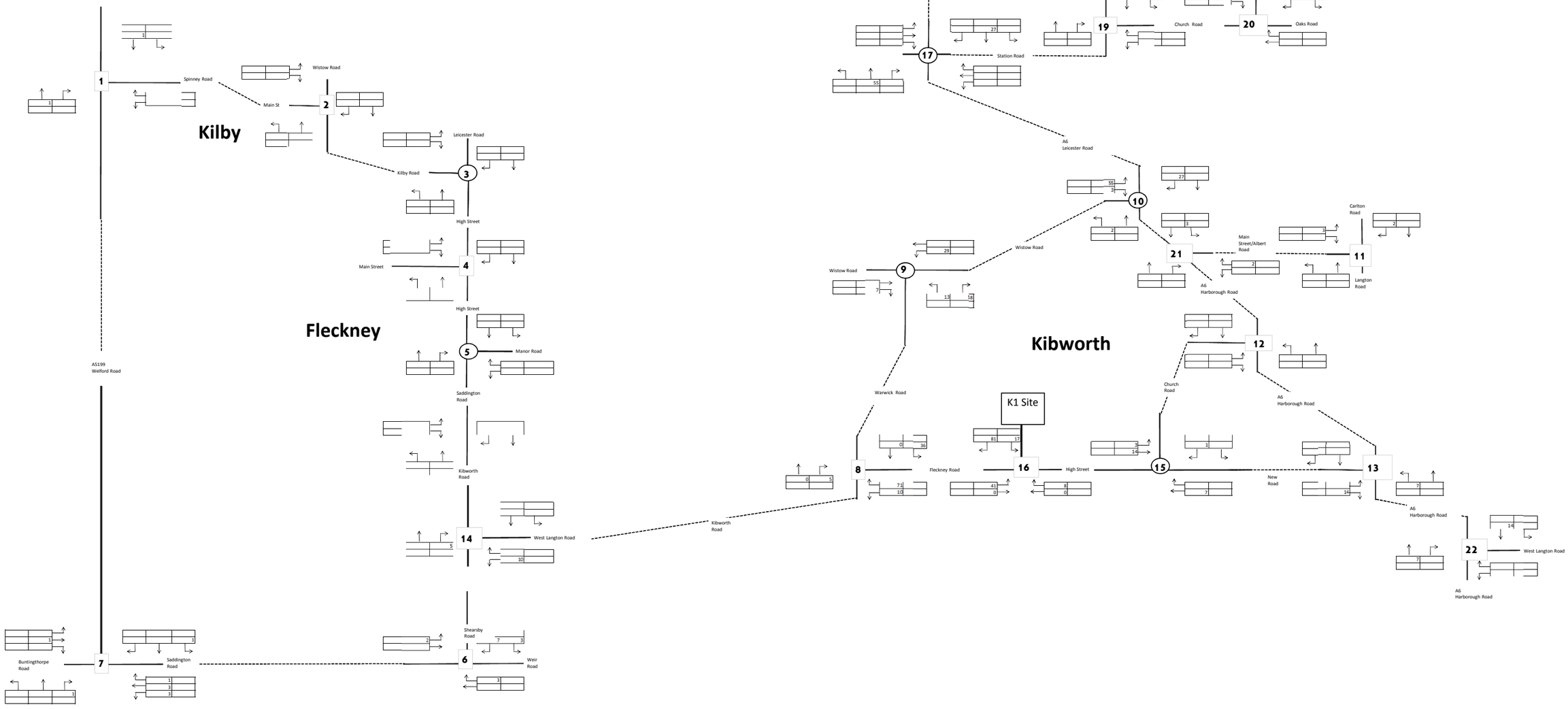
K1 AM DEV
16/00166/OUT
200 units Fleckney Road



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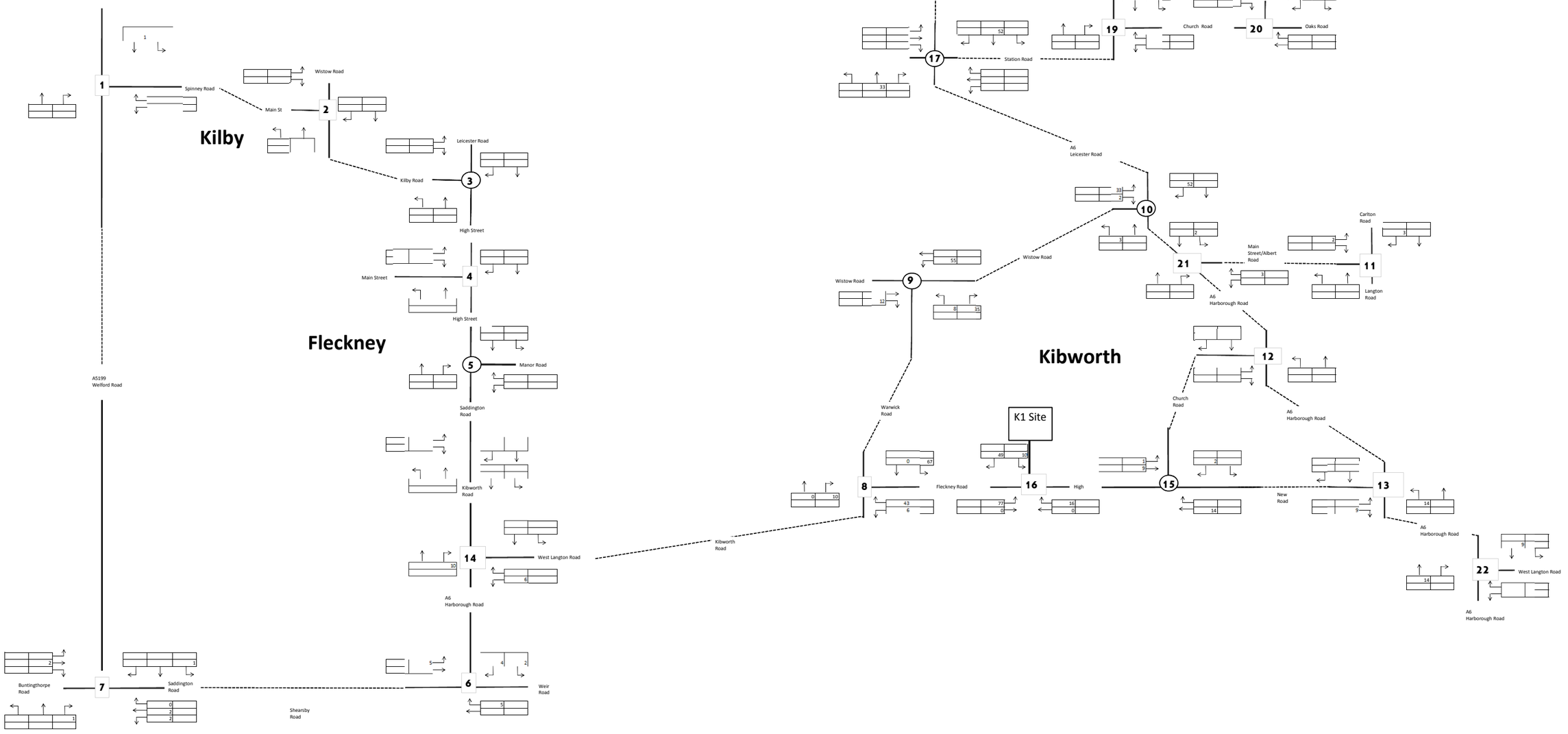
K1 DEV PM
16/00166/OUT
200 units Fleckney Road



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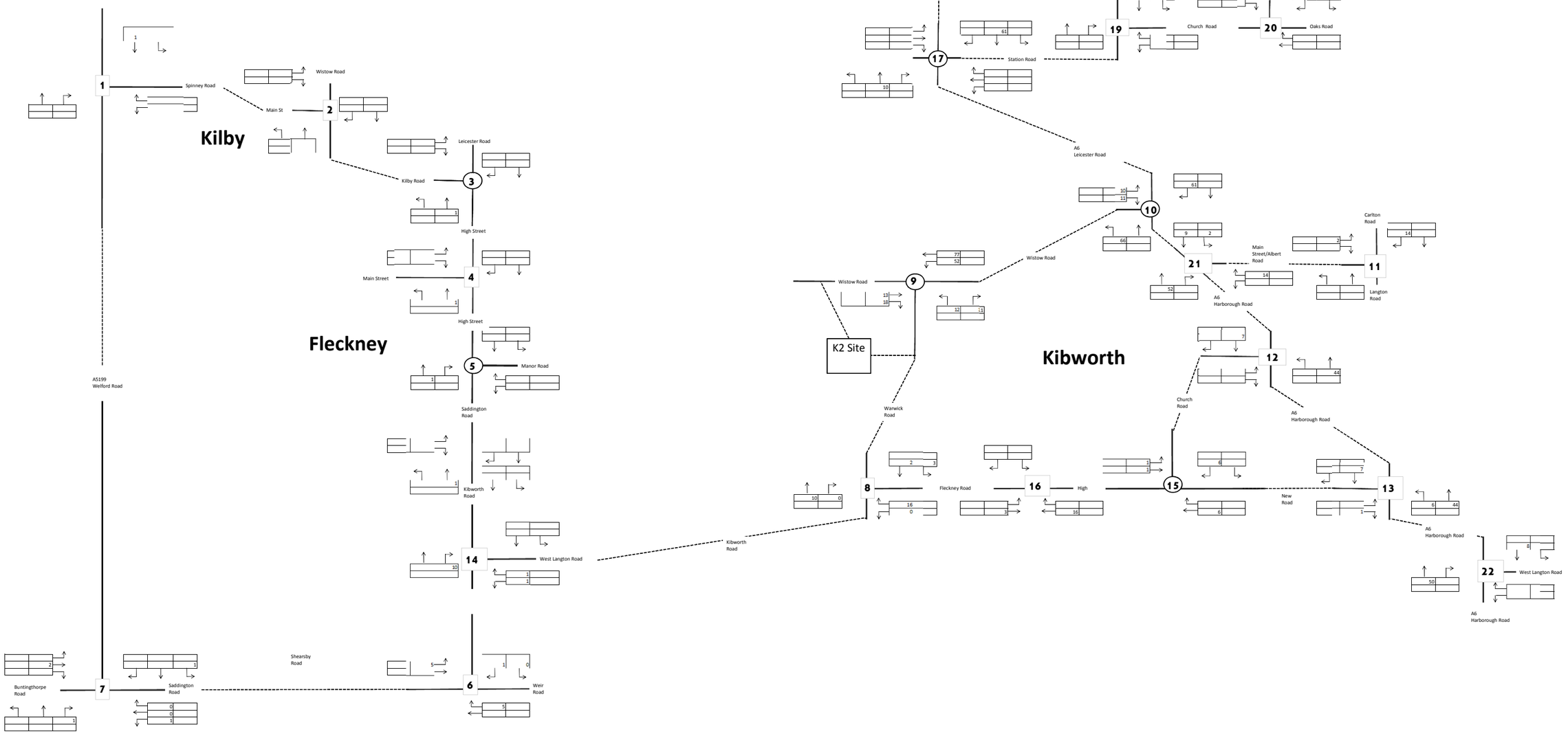
K2 DEV AM
16/00286/OUT
12,000sqm+ business floorspace at Priory Business Park, Wistow Road



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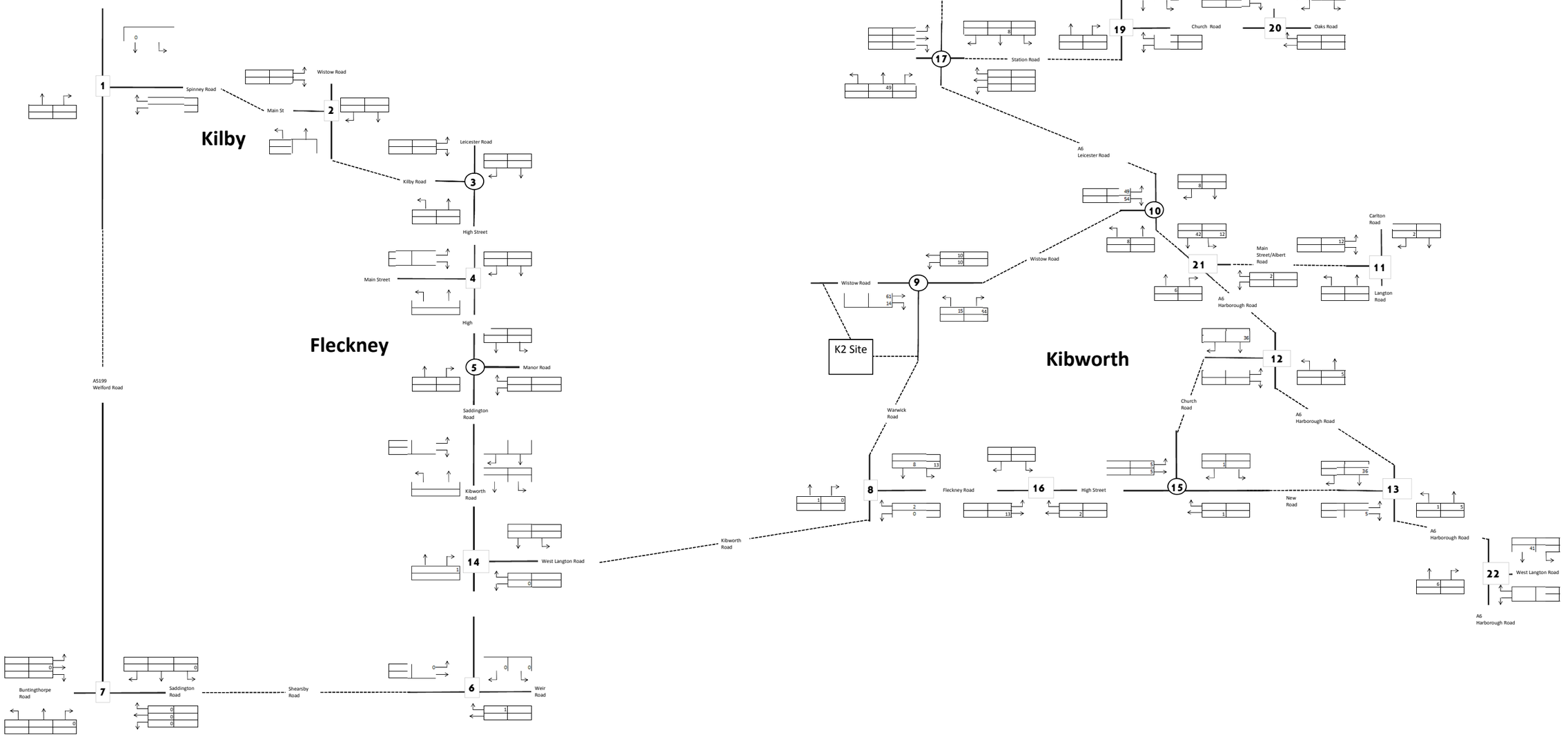
K2 DEV PM
16/00286/OUT
12,000sqm+ business floorspace at Priory Business Park, Wistow Road



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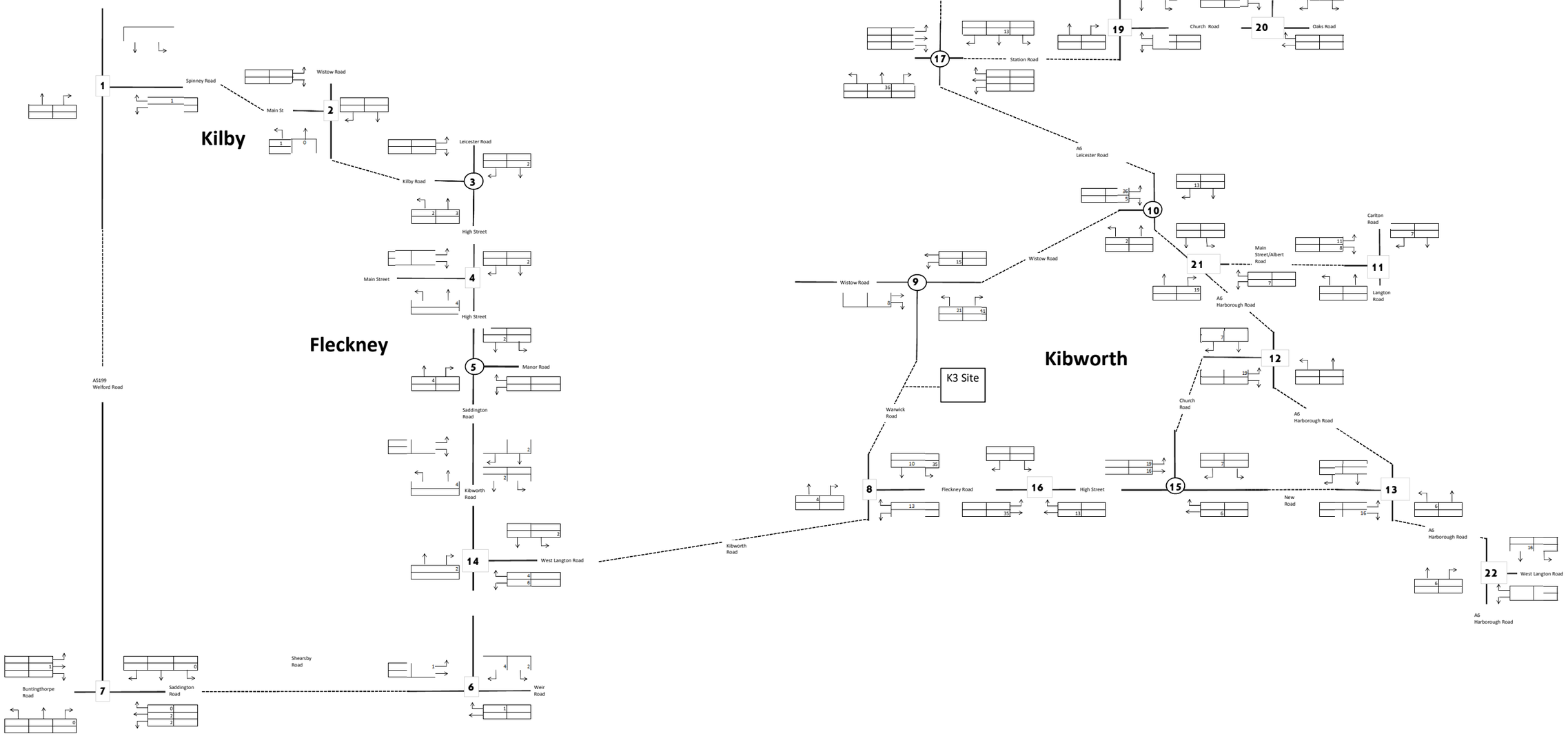
K3 DEV AM
15/01153/OUT
110 units South east of Warwick Road, Kibworth



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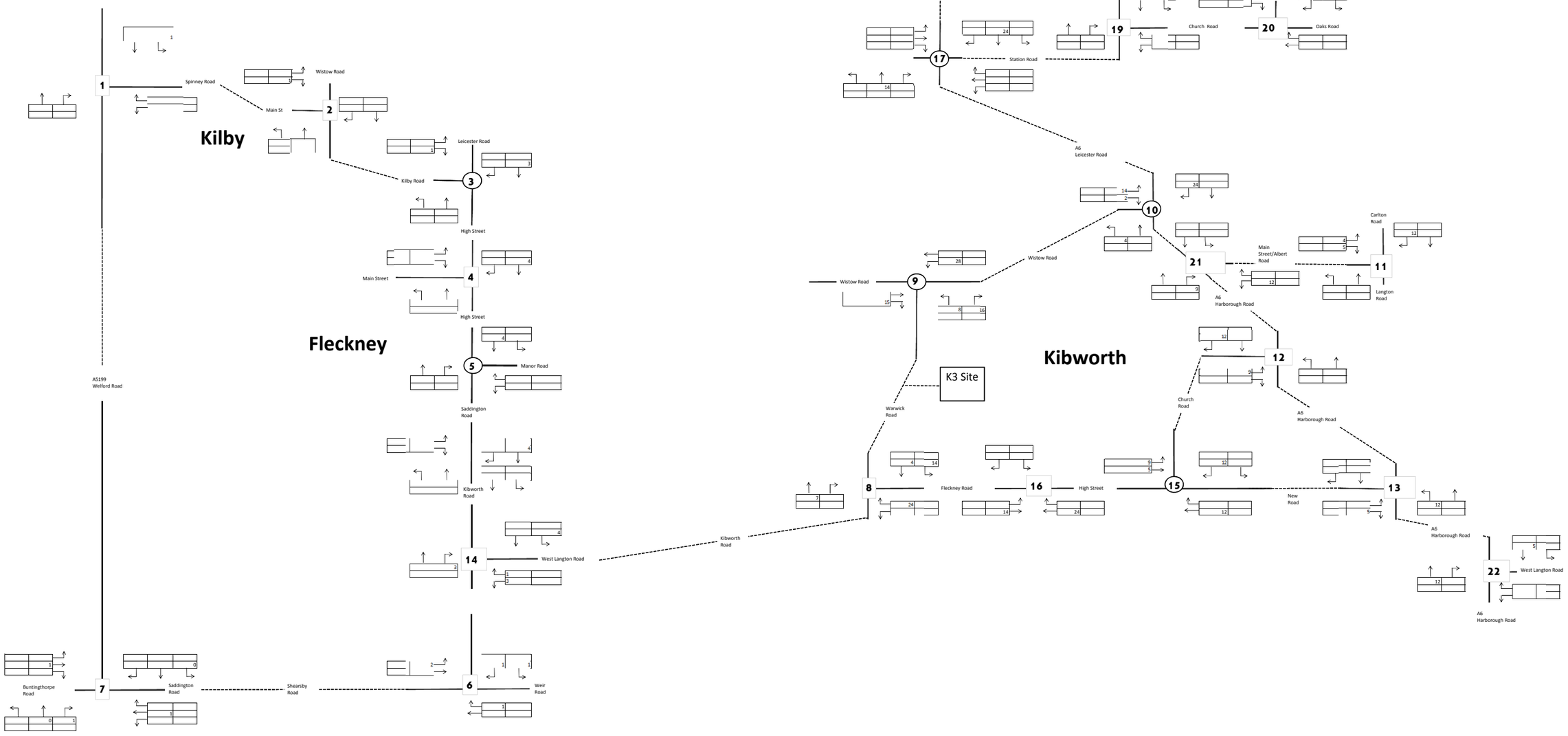
K3 DEV PM
15/01153/OUT
110 units South east of Warwick Road, Kibworth



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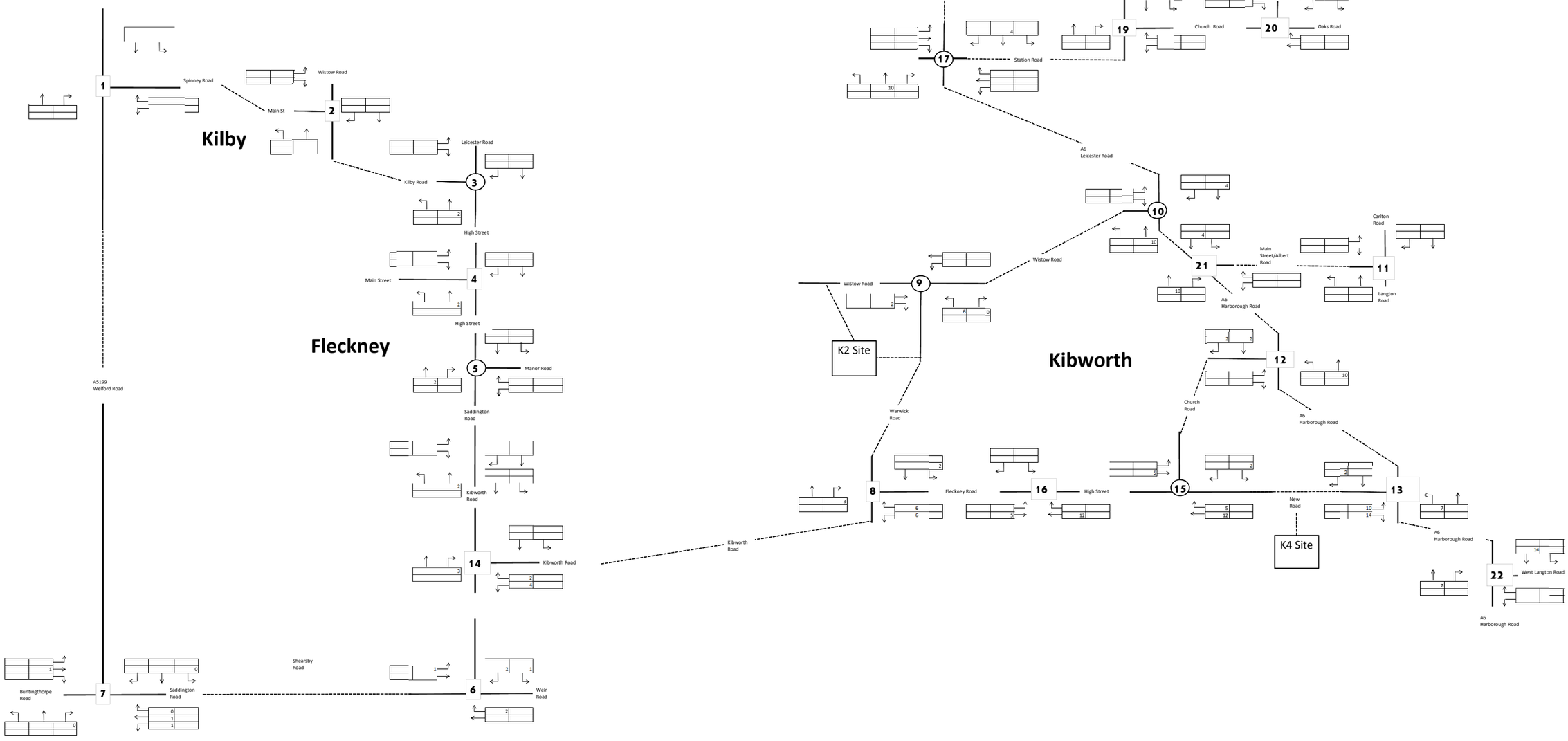
K4 DEV AM
15/01398/OUT
100 units east of Wentworth Close, Kibworth



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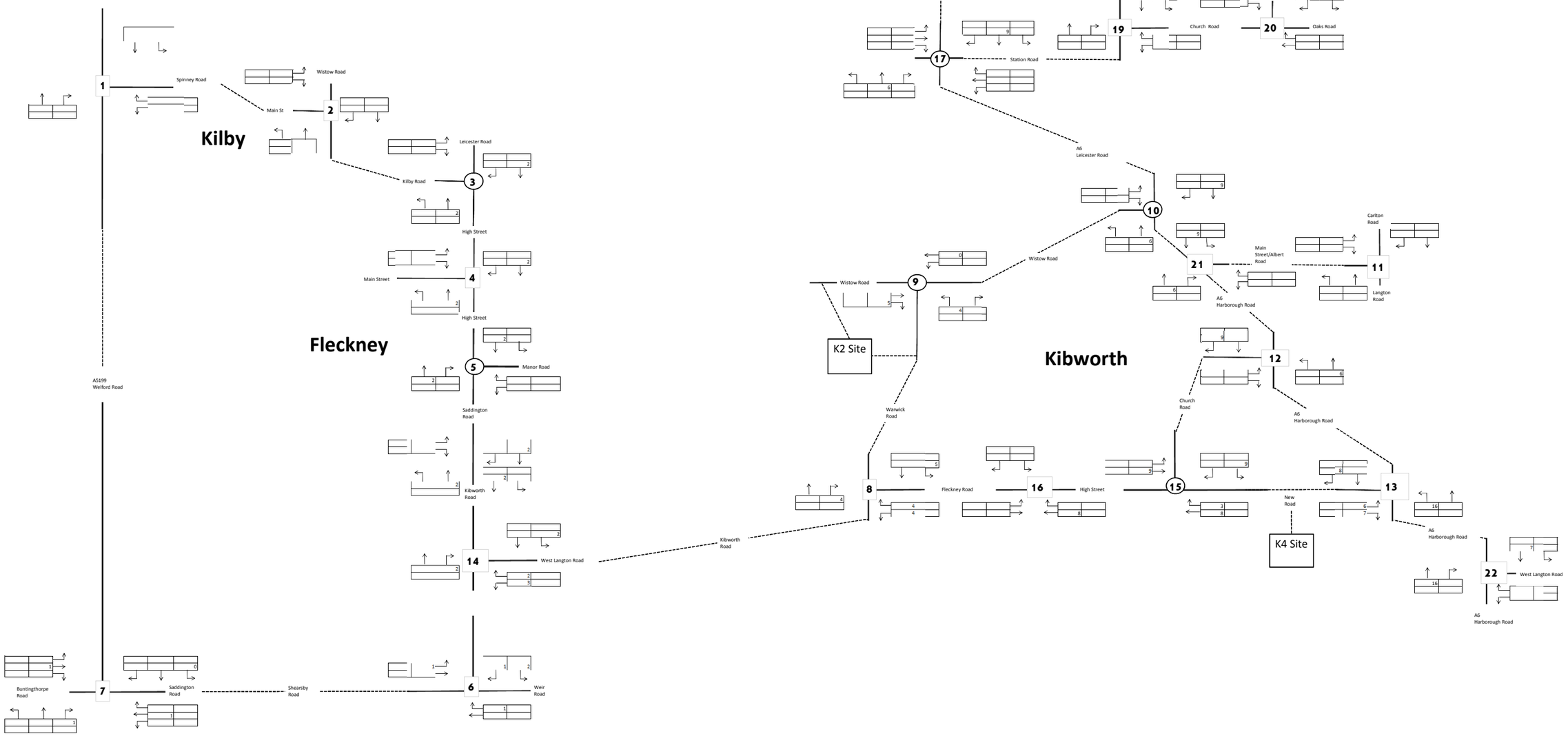
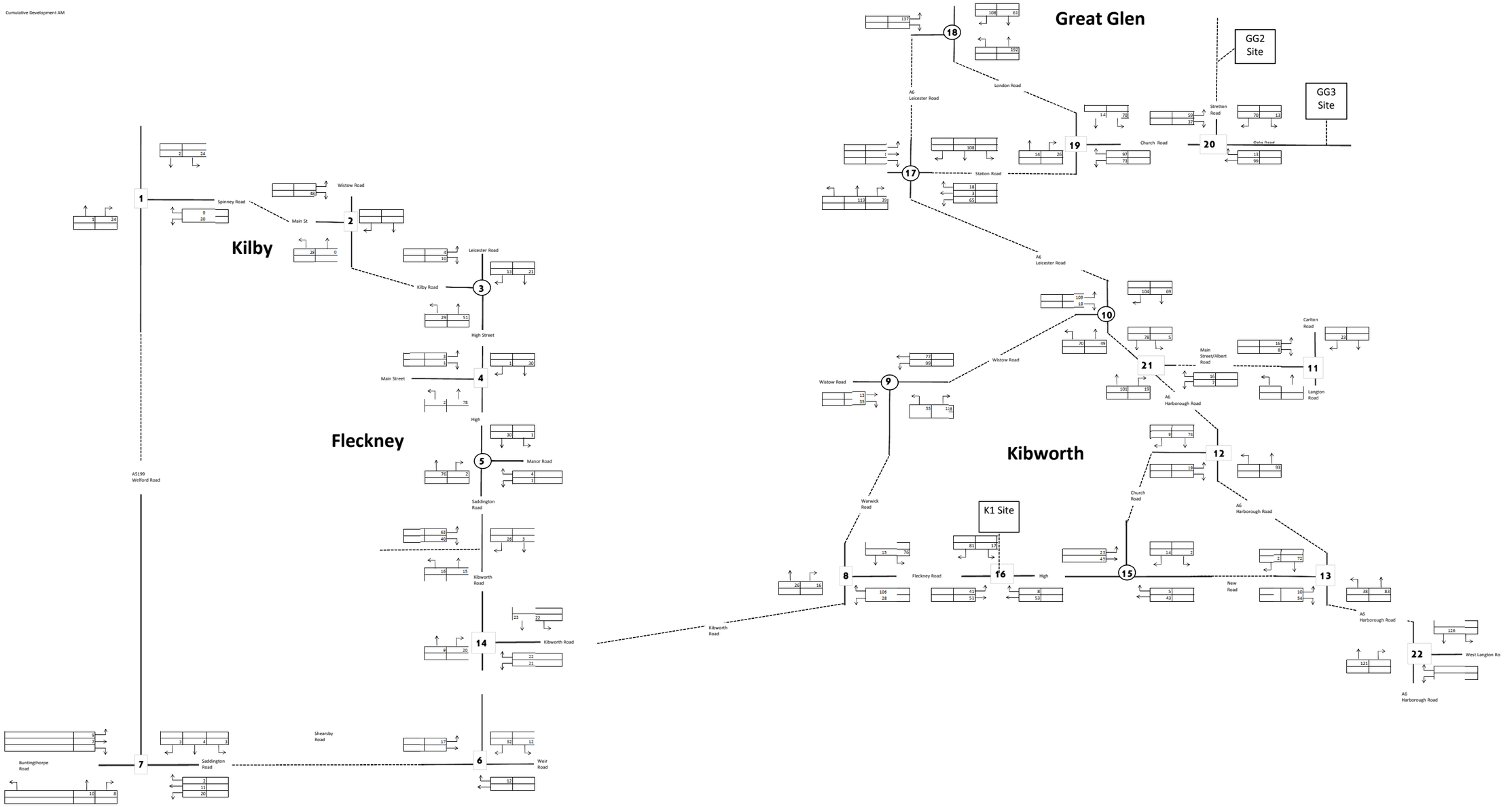
K4 DEV PM
15/01398/OUT
100 units east of Wentworth Close, Kibworth



Appendix D.

Cumulative Development AM



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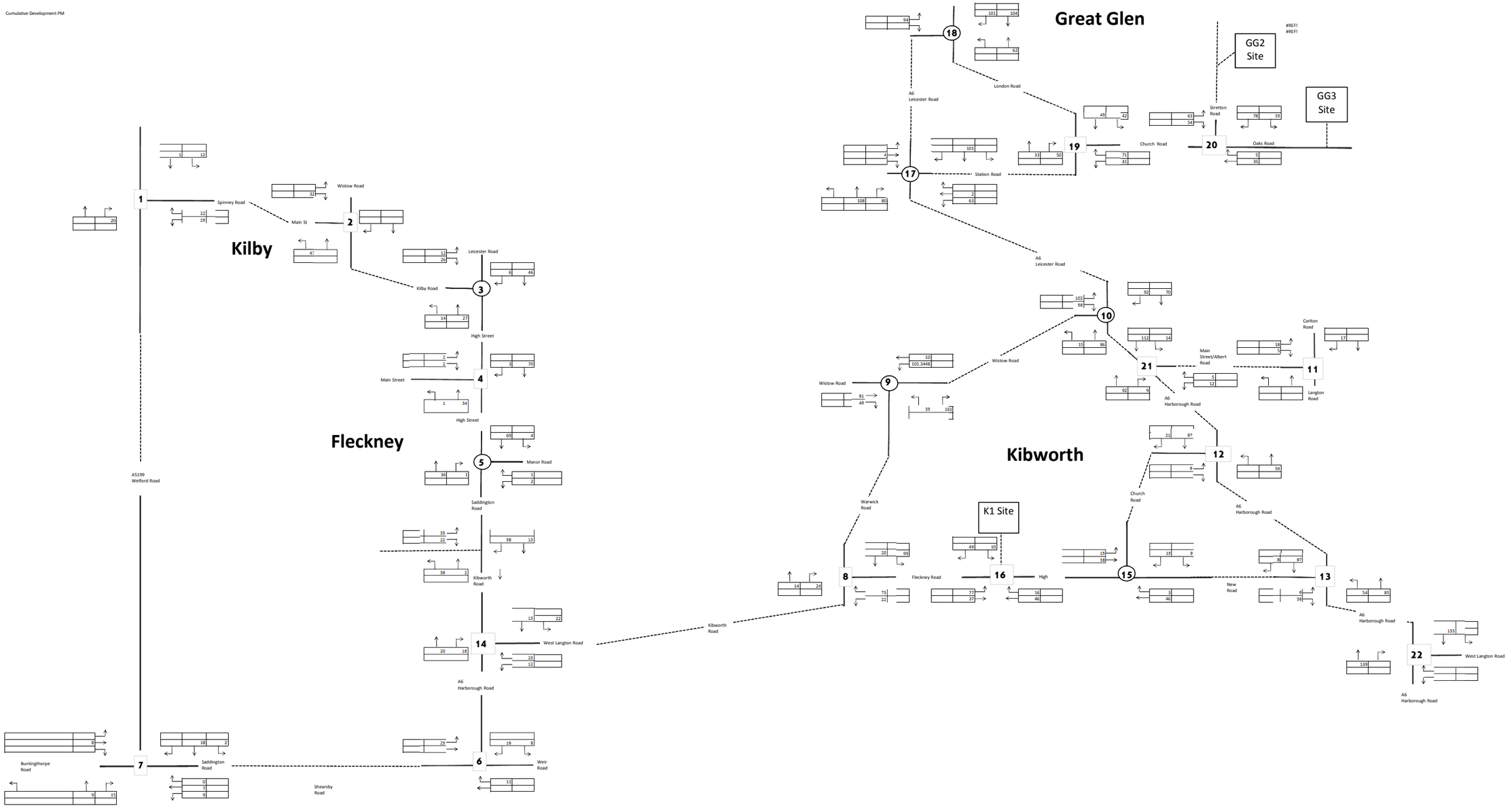
Cumulative Development PM



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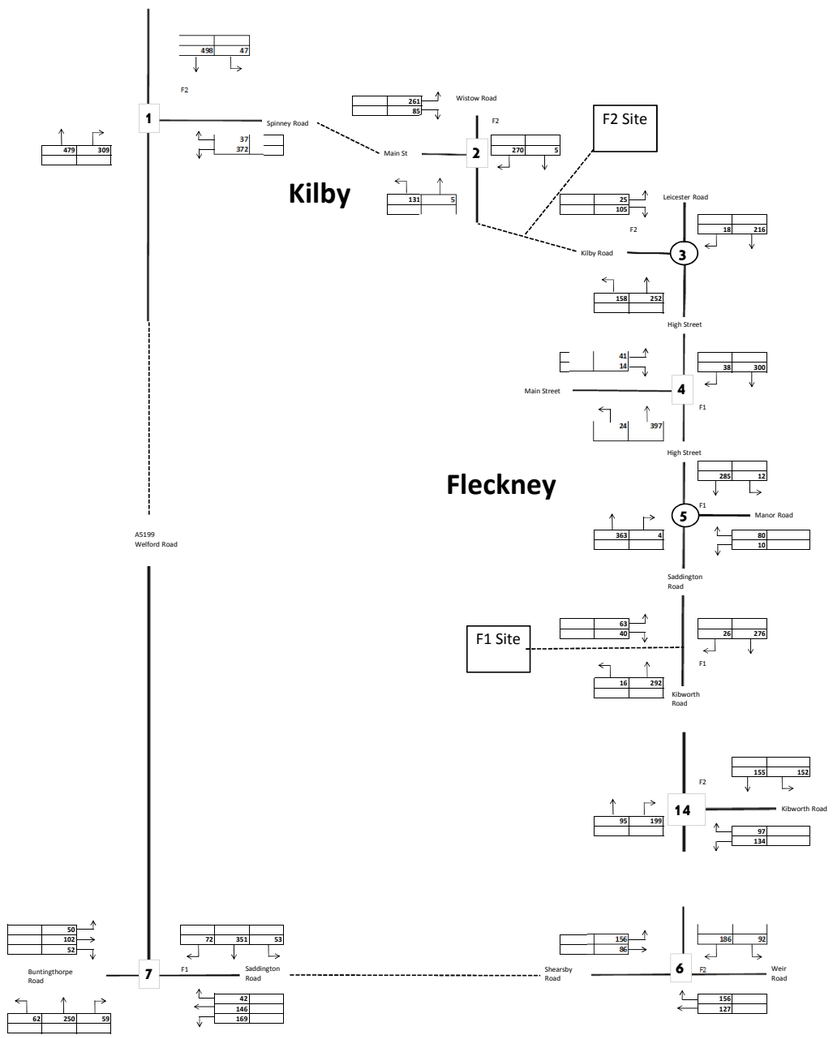
Appendix E.


Kilby
Fleckney
Great Glen
Kibworth
F2 Site
F1 Site
K1 Site
K2 Site
K3 Site
K4 Site
GG1 Site
GG2 Site
GG3 Site
A5199 Welford Road
Spinney Road
Main St
Wistow Road
Leicester Road
Kilby Road
High Street
Main Street
Saddington Road
Manor Road
Kibworth Road
Station Road
London Road
A6 Leicester Road
Stretton Road
Church Road
Oaks Road
Wistow Road
Church Street
Carlton Road
Langton Road
A6 Harborough Road
Marsh Dr
Warwick Road
Fleckney Road
New Road
West Langton Road
Buntingthorpe Road
Shearsby Road
Weir Road
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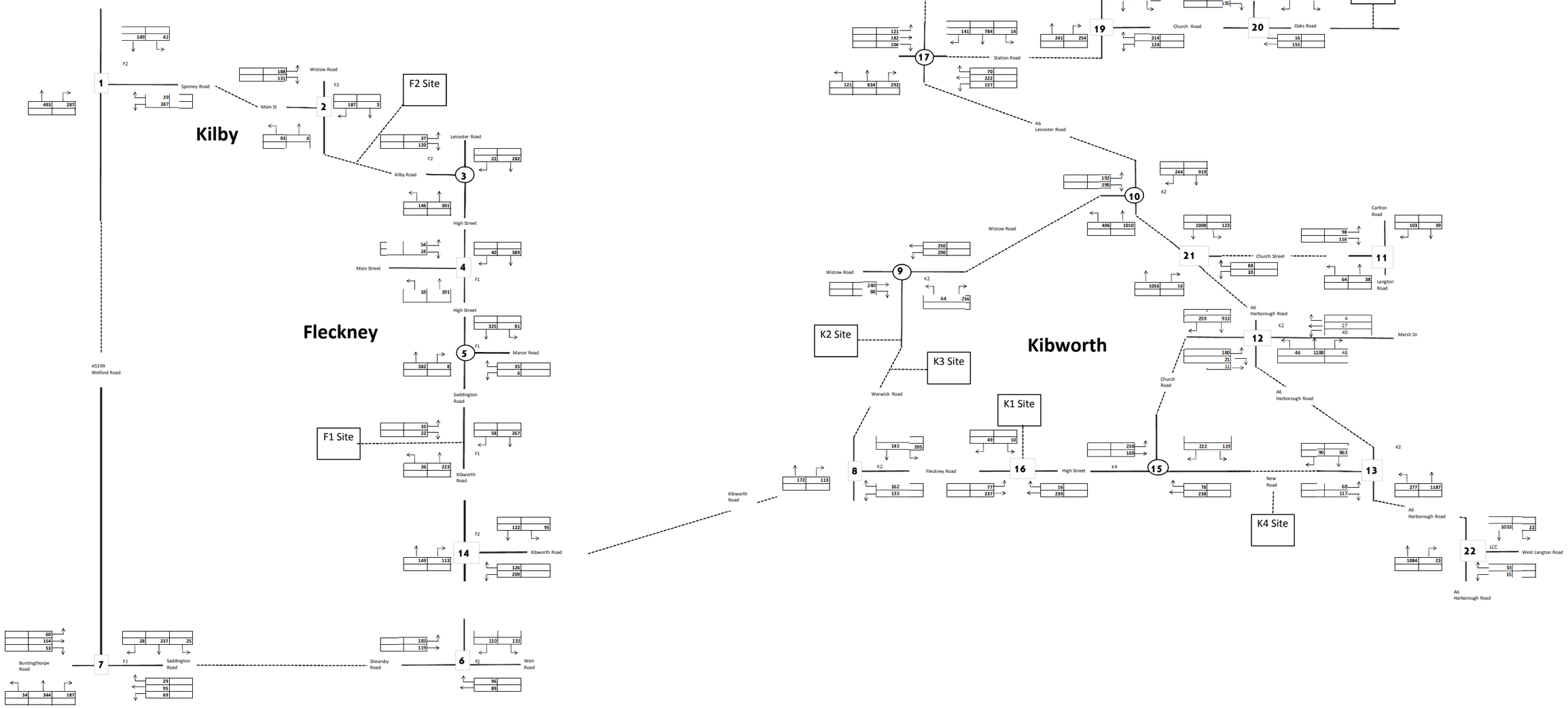
Baseline 2021 + Cumulative Devlopement PM



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Appendix F.

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 01_Glen Road_London Road_Leicester Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:02:40

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - London Road	0.6	4.38	0.37	A	0.3	3.42	0.21	A
2 - Leicester Road	0.9	2.56	0.47	A	0.5	1.89	0.34	A
3 - Glen Road	0.9	2.50	0.48	A	0.8	2.24	0.44	A
A1 - Baseline 2021 + Cumulative Development								
1 - London Road	1.2	6.34	0.55	A	0.4	3.86	0.28	A
2 - Leicester Road	1.2	3.19	0.55	A	0.6	2.05	0.38	A
3 - Glen Road	1.2	2.86	0.55	A	1.0	2.50	0.50	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Glen Road/London Road/Leicester Road Roundabout
Location	Kibworth
Site number	1
Date	24/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

(Default Analysis Set) - Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	2.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	London Road	
2	Leicester Road	
3	Glen Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - London Road	4.04	7.75	20.5	15.5	82.7	51.0	
2 - Leicester Road	9.71	12.28	4.1	12.2	82.7	35.0	
3 - Glen Road	9.99	11.24	6.4	12.3	82.7	54.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - London Road	0.457	1767
2 - Leicester Road	0.651	3047
3 - Glen Road	0.614	2888

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - London Road		✓	439	100.000
2 - Leicester Road		✓	1124	100.000
3 - Glen Road		✓	1210	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	12	427
	2 - Leicester Road	40	0	1084
	3 - Glen Road	359	851	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	0	2
	2 - Leicester Road	5	0	4
	3 - Glen Road	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - London Road	0.37	4.38	0.6	A
2 - Leicester Road	0.47	2.56	0.9	A
3 - Glen Road	0.48	2.50	0.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	331	639	1444	0.229	329	0.3	3.227	A
2 - Leicester Road	846	320	2737	0.309	844	0.4	1.899	A
3 - Glen Road	911	30	2780	0.328	909	0.5	1.922	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	396	765	1386	0.285	394	0.4	3.628	A
2 - Leicester Road	1010	383	2697	0.375	1010	0.6	2.134	A
3 - Glen Road	1088	36	2776	0.392	1087	0.6	2.131	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	483	936	1306	0.370	483	0.6	4.370	A
2 - Leicester Road	1238	469	2642	0.468	1236	0.9	2.558	A
3 - Glen Road	1332	44	2771	0.481	1331	0.9	2.500	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	483	937	1305	0.370	483	0.6	4.379	A
2 - Leicester Road	1238	470	2642	0.468	1238	0.9	2.563	A
3 - Glen Road	1332	44	2771	0.481	1332	0.9	2.501	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	395	766	1385	0.285	395	0.4	3.641	A
2 - Leicester Road	1010	385	2696	0.375	1012	0.6	2.139	A
3 - Glen Road	1088	36	2776	0.392	1089	0.6	2.134	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	331	641	1443	0.229	331	0.3	3.239	A
2 - Leicester Road	846	322	2736	0.309	847	0.4	1.907	A
3 - Glen Road	911	30	2780	0.328	912	0.5	1.927	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 01_Glen Road_London Road_Leicester Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:04:52

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - London Road	0.6	4.38	0.37	A	0.3	3.42	0.21	A
2 - Leicester Road	0.9	2.56	0.47	A	0.5	1.89	0.34	A
3 - Glen Road	0.9	2.50	0.48	A	0.8	2.24	0.44	A
A1 - Baseline 2021 + Cumulative Development								
1 - London Road	1.2	6.34	0.55	A	0.4	3.86	0.28	A
2 - Leicester Road	1.2	3.19	0.55	A	0.6	2.05	0.38	A
3 - Glen Road	1.2	2.86	0.55	A	1.0	2.50	0.50	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Glen Road/London Road/Leicester Road Roundabout
Location	Kibworth
Site number	1
Date	24/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

(Default Analysis Set) - Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	2.25	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	London Road	
2	Leicester Road	
3	Glen Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - London Road	4.04	7.75	20.5	15.5	82.7	51.0	
2 - Leicester Road	9.71	12.28	4.1	12.2	82.7	35.0	
3 - Glen Road	9.99	11.24	6.4	12.3	82.7	54.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - London Road	0.457	1767
2 - Leicester Road	0.651	3047
3 - Glen Road	0.614	2888

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - London Road		✓	261	100.000
2 - Leicester Road		✓	871	100.000
3 - Glen Road		✓	1142	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	8	253
	2 - Leicester Road	4	0	867
	3 - Glen Road	353	789	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	0	2
	2 - Leicester Road	2	0	0
	3 - Glen Road	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - London Road	0.21	3.42	0.3	A
2 - Leicester Road	0.34	1.89	0.5	A
3 - Glen Road	0.44	2.24	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	196	593	1464	0.134	196	0.2	2.838	A
2 - Leicester Road	656	190	2920	0.225	655	0.3	1.589	A
3 - Glen Road	860	3	2864	0.300	858	0.4	1.792	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	235	709	1411	0.166	234	0.2	3.059	A
2 - Leicester Road	783	227	2895	0.270	783	0.4	1.703	A
3 - Glen Road	1027	4	2863	0.359	1026	0.6	1.959	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	287	868	1340	0.215	287	0.3	3.420	A
2 - Leicester Road	959	278	2861	0.335	958	0.5	1.891	A
3 - Glen Road	1257	4	2863	0.439	1256	0.8	2.240	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	287	869	1339	0.215	287	0.3	3.421	A
2 - Leicester Road	959	279	2861	0.335	959	0.5	1.891	A
3 - Glen Road	1257	4	2863	0.439	1257	0.8	2.241	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	235	710	1411	0.166	235	0.2	3.061	A
2 - Leicester Road	783	228	2895	0.270	784	0.4	1.704	A
3 - Glen Road	1027	4	2863	0.359	1028	0.6	1.963	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	196	594	1463	0.134	197	0.2	2.845	A
2 - Leicester Road	656	191	2920	0.225	656	0.3	1.592	A
3 - Glen Road	860	3	2864	0.300	860	0.4	1.799	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 01_Glen Road_London Road_Leicester Road_Modified Flows_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 23/01/2017 10:59:49

«(Default Analysis Set) - Baseline 2021 + Cumulative Development, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - London Road	0.6	4.38	0.37	A	0.3	3.42	0.21	A
2 - Leicester Road	0.9	2.56	0.47	A	0.5	1.89	0.34	A
3 - Glen Road	0.9	2.50	0.48	A	0.8	2.24	0.44	A
A1 - Baseline 2021 + Cumulative Development								
1 - London Road	1.2	6.49	0.56	A	0.4	3.87	0.28	A
2 - Leicester Road	1.2	3.22	0.55	A	0.6	2.08	0.38	A
3 - Glen Road	1.2	2.87	0.55	A	1.0	2.51	0.50	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Glen Road/London Road/Leicester Road Roundabout
Location	Kibworth
Site number	1
Date	24/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

(Default Analysis Set) - Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	3.69	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	London Road	
2	Leicester Road	
3	Glen Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - London Road	4.04	7.75	20.5	15.5	82.7	51.0	
2 - Leicester Road	9.71	12.28	4.1	12.2	82.7	35.0	
3 - Glen Road	9.99	11.24	6.4	12.3	82.7	54.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - London Road	0.457	1767
2 - Leicester Road	0.651	3047
3 - Glen Road	0.614	2888

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - London Road		✓	631	100.000
2 - Leicester Road		✓	1261	100.000
3 - Glen Road		✓	1380	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	12	619
	2 - Leicester Road	40	0	1221
	3 - Glen Road	420	960	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	0	2
	2 - Leicester Road	5	0	4
	3 - Glen Road	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - London Road	0.56	6.49	1.2	A
2 - Leicester Road	0.55	3.22	1.2	A
3 - Glen Road	0.55	2.87	1.2	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	475	721	1406	0.338	473	0.5	3.850	A
2 - Leicester Road	949	464	2646	0.359	947	0.6	2.116	A
3 - Glen Road	1039	30	2780	0.374	1037	0.6	2.062	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	567	862	1340	0.423	566	0.7	4.649	A
2 - Leicester Road	1134	556	2587	0.438	1133	0.8	2.473	A
3 - Glen Road	1241	36	2776	0.447	1240	0.8	2.341	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	695	1056	1250	0.556	693	1.2	6.439	A
2 - Leicester Road	1388	680	2508	0.554	1387	1.2	3.204	A
3 - Glen Road	1519	44	2771	0.548	1518	1.2	2.868	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	695	1057	1249	0.556	695	1.2	6.490	A
2 - Leicester Road	1388	681	2507	0.554	1388	1.2	3.217	A
3 - Glen Road	1519	44	2771	0.548	1519	1.2	2.875	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	567	864	1339	0.424	569	0.7	4.687	A
2 - Leicester Road	1134	558	2586	0.438	1135	0.8	2.487	A
3 - Glen Road	1241	36	2776	0.447	1242	0.8	2.350	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	475	723	1405	0.338	476	0.5	3.879	A
2 - Leicester Road	949	467	2644	0.359	950	0.6	2.126	A
3 - Glen Road	1039	30	2780	0.374	1040	0.6	2.069	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 01_Glen Road_London Road_Leicester Road_Modified Flows_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 23/01/2017 11:00:37

«(Default Analysis Set) - Baseline 2021 + Cumulative Development, PM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - London Road	0.6	4.38	0.37	A	0.3	3.42	0.21	A
2 - Leicester Road	0.9	2.56	0.47	A	0.5	1.89	0.34	A
3 - Glen Road	0.9	2.50	0.48	A	0.8	2.24	0.44	A
A1 - Baseline 2021 + Cumulative Development								
1 - London Road	1.2	6.49	0.56	A	0.4	3.87	0.28	A
2 - Leicester Road	1.2	3.22	0.55	A	0.6	2.08	0.38	A
3 - Glen Road	1.2	2.87	0.55	A	1.0	2.51	0.50	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Glen Road/London Road/Leicester Road Roundabout
Location	Kibworth
Site number	1
Date	24/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

(Default Analysis Set) - Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	2.52	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	London Road	
2	Leicester Road	
3	Glen Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - London Road	4.04	7.75	20.5	15.5	82.7	51.0	
2 - Leicester Road	9.71	12.28	4.1	12.2	82.7	35.0	
3 - Glen Road	9.99	11.24	6.4	12.3	82.7	54.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - London Road	0.457	1767
2 - Leicester Road	0.651	3047
3 - Glen Road	0.614	2888

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - London Road		✓	326	100.000
2 - Leicester Road		✓	985	100.000
3 - Glen Road		✓	1298	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	8	318
	2 - Leicester Road	4	0	961
	3 - Glen Road	407	891	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - London Road	2 - Leicester Road	3 - Glen Road
From	1 - London Road	0	0	2
	2 - Leicester Road	2	0	0
	3 - Glen Road	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - London Road	0.28	3.87	0.4	A
2 - Leicester Road	0.38	2.06	0.6	A
3 - Glen Road	0.50	2.51	1.0	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	245	669	1429	0.172	245	0.2	3.039	A
2 - Leicester Road	727	239	2888	0.252	725	0.3	1.664	A
3 - Glen Road	977	3	2864	0.341	975	0.5	1.904	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	293	801	1370	0.214	293	0.3	3.342	A
2 - Leicester Road	868	286	2856	0.304	867	0.4	1.809	A
3 - Glen Road	1167	4	2863	0.408	1166	0.7	2.120	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	359	980	1289	0.278	358	0.4	3.867	A
2 - Leicester Road	1062	350	2814	0.378	1062	0.6	2.055	A
3 - Glen Road	1429	4	2863	0.499	1428	1.0	2.506	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	359	981	1289	0.279	359	0.4	3.872	A
2 - Leicester Road	1062	350	2813	0.378	1062	0.6	2.055	A
3 - Glen Road	1429	4	2863	0.499	1429	1.0	2.510	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	293	802	1369	0.214	294	0.3	3.347	A
2 - Leicester Road	868	286	2856	0.304	868	0.4	1.810	A
3 - Glen Road	1167	4	2863	0.408	1168	0.7	2.124	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - London Road	245	671	1428	0.172	246	0.2	3.047	A
2 - Leicester Road	727	240	2887	0.252	727	0.3	1.666	A
3 - Glen Road	977	3	2864	0.341	978	0.5	1.908	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 02_Leicester Road_Station Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:07:55

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - Leicester Road Northbound	1.3	3.27	0.57	A	0.7	2.03	0.40	A
2 - Station Road Eastbound	1.9	11.78	0.66	B	0.6	4.94	0.38	A
3 - Leicester Road Southbound	0.7	2.56	0.40	A	0.5	1.89	0.33	A
4 - Station Road Westbound	0.7	6.11	0.42	A	0.6	4.88	0.36	A
A1 - Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	1.8	3.95	0.64	A	0.9	2.29	0.47	A
2 - Station Road Eastbound	2.7	17.20	0.74	C	0.7	5.70	0.42	A
3 - Leicester Road Southbound	0.9	2.86	0.46	A	0.6	2.08	0.37	A
4 - Station Road Westbound	1.2	8.23	0.54	A	0.7	5.61	0.42	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Station Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

(Default Analysis Set) - Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	4.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Station Road Eastbound	
3	Leicester Road Southbound	
4	Station Road Westbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	9.74	12.28	5.5	18.8	84.7	23.0	
2 - Station Road Eastbound	4.02	7.47	12.2	21.5	84.7	42.0	
3 - Leicester Road Southbound	9.87	12.37	5.7	16.5	84.7	35.0	
4 - Station Road Westbound	3.89	8.08	8.2	19.6	84.7	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.703	3331
2 - Station Road Eastbound	0.454	1698
3 - Leicester Road Southbound	0.675	3214
4 - Station Road Westbound	0.448	1625

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1344	100.000
2 - Station Road Eastbound		✓	532	100.000
3 - Leicester Road Southbound		✓	868	100.000
4 - Station Road Westbound		✓	381	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	115	925	304
	2 - Station Road Eastbound	137	0	167	228
	3 - Leicester Road Southbound	747	111	0	10
	4 - Station Road Westbound	93	219	69	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	13	18	10
	2 - Station Road Eastbound	11	0	5	4
	3 - Leicester Road Southbound	13	14	0	22
	4 - Station Road Westbound	5	6	9	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.57	3.27	1.3	A
2 - Station Road Eastbound	0.66	11.78	1.9	B
3 - Leicester Road Southbound	0.40	2.56	0.7	A
4 - Station Road Westbound	0.42	6.11	0.7	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1012	299	2673	0.378	1009	0.6	2.161	A
2 - Station Road Eastbound	401	975	1116	0.359	398	0.6	4.999	A
3 - Leicester Road Southbound	653	502	2512	0.260	652	0.4	1.934	A
4 - Station Road Westbound	287	747	1174	0.244	286	0.3	4.045	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1208	358	2634	0.459	1207	0.8	2.521	A
2 - Station Road Eastbound	478	1166	1021	0.468	477	0.9	6.599	A
3 - Leicester Road Southbound	780	600	2449	0.319	780	0.5	2.157	A
4 - Station Road Westbound	343	894	1104	0.310	342	0.4	4.718	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1480	438	2582	0.573	1478	1.3	3.255	A
2 - Station Road Eastbound	586	1427	892	0.657	582	1.8	11.475	B
3 - Leicester Road Southbound	956	733	2383	0.404	955	0.7	2.555	A
4 - Station Road Westbound	419	1094	1009	0.416	418	0.7	6.083	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1480	439	2581	0.573	1480	1.3	3.267	A
2 - Station Road Eastbound	586	1429	891	0.658	586	1.9	11.784	B
3 - Leicester Road Southbound	956	736	2381	0.405	956	0.7	2.561	A
4 - Station Road Westbound	419	1095	1008	0.416	419	0.7	6.111	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1208	360	2634	0.459	1210	0.9	2.533	A
2 - Station Road Eastbound	478	1169	1020	0.469	482	0.9	6.742	A
3 - Leicester Road Southbound	780	605	2446	0.319	781	0.5	2.164	A
4 - Station Road Westbound	343	896	1103	0.310	344	0.5	4.744	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1012	301	2672	0.379	1013	0.6	2.170	A
2 - Station Road Eastbound	401	978	1115	0.359	402	0.6	5.061	A
3 - Leicester Road Southbound	653	505	2510	0.260	654	0.4	1.939	A
4 - Station Road Westbound	287	750	1173	0.245	287	0.3	4.069	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 02_Leicester Road_Station Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:08:22

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - Leicester Road Northbound	1.3	3.27	0.57	A	0.7	2.03	0.40	A
2 - Station Road Eastbound	1.9	11.78	0.66	B	0.6	4.94	0.38	A
3 - Leicester Road Southbound	0.7	2.56	0.40	A	0.5	1.89	0.33	A
4 - Station Road Westbound	0.7	6.11	0.42	A	0.6	4.88	0.36	A
A1 - Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	1.8	3.95	0.64	A	0.9	2.29	0.47	A
2 - Station Road Eastbound	2.7	17.20	0.74	C	0.7	5.70	0.42	A
3 - Leicester Road Southbound	0.9	2.86	0.46	A	0.6	2.08	0.37	A
4 - Station Road Westbound	1.2	8.23	0.54	A	0.7	5.61	0.42	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Station Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

(Default Analysis Set) - Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	2.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Station Road Eastbound	
3	Leicester Road Southbound	
4	Station Road Westbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	9.74	12.28	5.5	18.8	84.7	23.0	
2 - Station Road Eastbound	4.02	7.47	12.2	21.5	84.7	42.0	
3 - Leicester Road Southbound	9.87	12.37	5.7	16.5	84.7	35.0	
4 - Station Road Westbound	3.89	8.08	8.2	19.6	84.7	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.703	3331
2 - Station Road Eastbound	0.454	1698
3 - Leicester Road Southbound	0.675	3214
4 - Station Road Westbound	0.448	1625

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1059	100.000
2 - Station Road Eastbound		✓	405	100.000
3 - Leicester Road Southbound		✓	838	100.000
4 - Station Road Westbound		✓	384	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	121	726	212
	2 - Station Road Eastbound	106	0	121	178
	3 - Leicester Road Southbound	683	141	0	14
	4 - Station Road Westbound	94	220	70	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	1	2	2
	2 - Station Road Eastbound	0	0	1	1
	3 - Leicester Road Southbound	1	0	0	0
	4 - Station Road Westbound	0	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.40	2.03	0.7	A
2 - Station Road Eastbound	0.38	4.94	0.6	A
3 - Leicester Road Southbound	0.33	1.89	0.5	A
4 - Station Road Westbound	0.36	4.88	0.6	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	797	323	3043	0.262	796	0.4	1.602	A
2 - Station Road Eastbound	305	757	1337	0.228	304	0.3	3.482	A
3 - Leicester Road Southbound	631	372	2943	0.214	630	0.3	1.556	A
4 - Station Road Westbound	289	699	1306	0.221	288	0.3	3.532	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	952	387	2999	0.317	952	0.5	1.758	A
2 - Station Road Eastbound	364	906	1268	0.287	364	0.4	3.977	A
3 - Leicester Road Southbound	753	446	2894	0.260	753	0.4	1.681	A
4 - Station Road Westbound	345	836	1245	0.277	345	0.4	3.997	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1166	474	2939	0.397	1165	0.7	2.028	A
2 - Station Road Eastbound	446	1109	1175	0.380	445	0.6	4.927	A
3 - Leicester Road Southbound	923	545	2826	0.327	922	0.5	1.890	A
4 - Station Road Westbound	423	1023	1161	0.364	422	0.6	4.867	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1166	475	2938	0.397	1166	0.7	2.030	A
2 - Station Road Eastbound	446	1110	1175	0.380	446	0.6	4.939	A
3 - Leicester Road Southbound	923	546	2825	0.327	923	0.5	1.891	A
4 - Station Road Westbound	423	1024	1161	0.364	423	0.6	4.879	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	952	388	2998	0.318	953	0.5	1.762	A
2 - Station Road Eastbound	364	907	1268	0.287	365	0.4	3.991	A
3 - Leicester Road Southbound	753	447	2893	0.260	754	0.4	1.682	A
4 - Station Road Westbound	345	837	1244	0.277	346	0.4	4.009	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	797	325	3042	0.262	798	0.4	1.603	A
2 - Station Road Eastbound	305	759	1336	0.228	305	0.3	3.497	A
3 - Leicester Road Southbound	631	374	2942	0.214	631	0.3	1.557	A
4 - Station Road Westbound	289	701	1305	0.221	289	0.3	3.543	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 02_Leicester Road_Station Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:08:50

«(Default Analysis Set) - Baseline 2021 + Cumulative Development, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - Leicester Road Northbound	1.3	3.27	0.57	A	0.7	2.03	0.40	A
2 - Station Road Eastbound	1.9	11.78	0.66	B	0.6	4.94	0.38	A
3 - Leicester Road Southbound	0.7	2.56	0.40	A	0.5	1.89	0.33	A
4 - Station Road Westbound	0.7	6.11	0.42	A	0.6	4.88	0.36	A
A1 - Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	1.8	3.95	0.64	A	0.9	2.29	0.47	A
2 - Station Road Eastbound	2.7	17.20	0.74	C	0.7	5.70	0.42	A
3 - Leicester Road Southbound	0.9	2.86	0.46	A	0.6	2.08	0.37	A
4 - Station Road Westbound	1.2	8.23	0.54	A	0.7	5.61	0.42	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Station Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

(Default Analysis Set) - Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	6.10	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Station Road Eastbound	
3	Leicester Road Southbound	
4	Station Road Westbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	9.74	12.28	5.5	18.8	84.7	23.0	
2 - Station Road Eastbound	4.02	7.47	12.2	21.5	84.7	42.0	
3 - Leicester Road Southbound	9.87	12.37	5.7	16.5	84.7	35.0	
4 - Station Road Westbound	3.89	8.08	8.2	19.6	84.7	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.703	3331
2 - Station Road Eastbound	0.454	1698
3 - Leicester Road Southbound	0.675	3214
4 - Station Road Westbound	0.448	1625

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1501	100.000
2 - Station Road Eastbound		✓	533	100.000
3 - Leicester Road Southbound		✓	976	100.000
4 - Station Road Westbound		✓	488	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	115	1044	342
	2 - Station Road Eastbound	137	0	167	229
	3 - Leicester Road Southbound	855	111	0	10
	4 - Station Road Westbound	157	223	88	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	13	18	10
	2 - Station Road Eastbound	11	0	5	4
	3 - Leicester Road Southbound	13	14	0	22
	4 - Station Road Westbound	5	6	9	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.64	3.95	1.8	A
2 - Station Road Eastbound	0.74	17.20	2.7	C
3 - Leicester Road Southbound	0.46	2.86	0.9	A
4 - Station Road Westbound	0.54	8.23	1.2	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1130	316	2661	0.425	1127	0.7	2.343	A
2 - Station Road Eastbound	401	1107	1051	0.382	399	0.6	5.501	A
3 - Leicester Road Southbound	735	531	2494	0.295	733	0.4	2.043	A
4 - Station Road Westbound	352	828	1136	0.310	351	0.4	4.570	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1349	379	2620	0.515	1348	1.1	2.827	A
2 - Station Road Eastbound	479	1324	943	0.508	478	1.0	7.703	A
3 - Leicester Road Southbound	877	635	2426	0.362	877	0.6	2.323	A
4 - Station Road Westbound	421	991	1059	0.397	420	0.7	5.625	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1653	463	2565	0.644	1650	1.8	3.921	A
2 - Station Road Eastbound	587	1620	796	0.737	580	2.6	16.215	C
3 - Leicester Road Southbound	1075	774	2336	0.460	1073	0.8	2.847	A
4 - Station Road Westbound	515	1212	954	0.540	513	1.2	8.135	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1653	465	2564	0.645	1653	1.8	3.950	A
2 - Station Road Eastbound	587	1623	795	0.738	586	2.7	17.198	C
3 - Leicester Road Southbound	1075	779	2333	0.461	1075	0.9	2.859	A
4 - Station Road Westbound	515	1214	953	0.541	515	1.2	8.229	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1349	381	2619	0.515	1352	1.1	2.848	A
2 - Station Road Eastbound	479	1328	941	0.509	486	1.1	8.020	A
3 - Leicester Road Southbound	877	642	2422	0.362	879	0.6	2.335	A
4 - Station Road Westbound	421	994	1057	0.398	423	0.7	5.689	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1130	318	2660	0.425	1131	0.7	2.356	A
2 - Station Road Eastbound	401	1111	1049	0.383	403	0.6	5.590	A
3 - Leicester Road Southbound	735	534	2491	0.295	735	0.4	2.052	A
4 - Station Road Westbound	352	831	1135	0.310	353	0.5	4.611	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 02_Leicester Road_Station Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:09:12

«(Default Analysis Set) - Baseline 2021 + Cumulative Development, PM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
A1 - Baseline 2021								
1 - Leicester Road Northbound	1.3	3.27	0.57	A	0.7	2.03	0.40	A
2 - Station Road Eastbound	1.9	11.78	0.66	B	0.6	4.94	0.38	A
3 - Leicester Road Southbound	0.7	2.56	0.40	A	0.5	1.89	0.33	A
4 - Station Road Westbound	0.7	6.11	0.42	A	0.6	4.88	0.36	A
A1 - Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	1.8	3.95	0.64	A	0.9	2.29	0.47	A
2 - Station Road Eastbound	2.7	17.20	0.74	C	0.7	5.70	0.42	A
3 - Leicester Road Southbound	0.9	2.86	0.46	A	0.6	2.08	0.37	A
4 - Station Road Westbound	1.2	8.23	0.54	A	0.7	5.61	0.42	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Station Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

(Default Analysis Set) - Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout	3.15	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Station Road Eastbound	
3	Leicester Road Southbound	
4	Station Road Westbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	9.74	12.28	5.5	18.8	84.7	23.0	
2 - Station Road Eastbound	4.02	7.47	12.2	21.5	84.7	42.0	
3 - Leicester Road Southbound	9.87	12.37	5.7	16.5	84.7	35.0	
4 - Station Road Westbound	3.89	8.08	8.2	19.6	84.7	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.703	3331
2 - Station Road Eastbound	0.454	1698
3 - Leicester Road Southbound	0.675	3214
4 - Station Road Westbound	0.448	1625

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1243	100.000
2 - Station Road Eastbound		✓	409	100.000
3 - Leicester Road Southbound		✓	939	100.000
4 - Station Road Westbound		✓	426	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	121	834	288
	2 - Station Road Eastbound	106	0	121	182
	3 - Leicester Road Southbound	784	141	0	14
	4 - Station Road Westbound	134	222	70	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Leicester Road Northbound	2 - Station Road Eastbound	3 - Leicester Road Southbound	4 - Station Road Westbound
From	1 - Leicester Road Northbound	0	1	2	2
	2 - Station Road Eastbound	0	0	1	1
	3 - Leicester Road Southbound	1	0	0	0
	4 - Station Road Westbound	0	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.47	2.29	0.9	A
2 - Station Road Eastbound	0.42	5.70	0.7	A
3 - Leicester Road Southbound	0.37	2.08	0.6	A
4 - Station Road Westbound	0.42	5.61	0.7	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	936	325	3042	0.308	934	0.4	1.705	A
2 - Station Road Eastbound	308	896	1273	0.242	307	0.3	3.720	A
3 - Leicester Road Southbound	707	432	2902	0.244	706	0.3	1.639	A
4 - Station Road Westbound	321	776	1273	0.252	319	0.3	3.772	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1117	389	2998	0.373	1117	0.6	1.913	A
2 - Station Road Eastbound	368	1071	1192	0.308	367	0.4	4.359	A
3 - Leicester Road Southbound	844	517	2844	0.297	844	0.4	1.798	A
4 - Station Road Westbound	383	926	1205	0.318	382	0.5	4.376	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1369	476	2937	0.466	1367	0.9	2.292	A
2 - Station Road Eastbound	450	1311	1082	0.416	449	0.7	5.680	A
3 - Leicester Road Southbound	1034	633	2766	0.374	1033	0.6	2.076	A
4 - Station Road Westbound	469	1134	1111	0.422	468	0.7	5.586	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1369	477	2937	0.466	1369	0.9	2.295	A
2 - Station Road Eastbound	450	1312	1081	0.416	450	0.7	5.703	A
3 - Leicester Road Southbound	1034	634	2765	0.374	1034	0.6	2.079	A
4 - Station Road Westbound	469	1135	1111	0.422	469	0.7	5.607	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1117	390	2997	0.373	1119	0.6	1.916	A
2 - Station Road Eastbound	368	1073	1192	0.309	369	0.4	4.381	A
3 - Leicester Road Southbound	844	519	2843	0.297	845	0.4	1.803	A
4 - Station Road Westbound	383	928	1204	0.318	384	0.5	4.395	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	936	326	3041	0.308	936	0.4	1.713	A
2 - Station Road Eastbound	308	898	1272	0.242	308	0.3	3.740	A
3 - Leicester Road Southbound	707	434	2901	0.244	707	0.3	1.643	A
4 - Station Road Westbound	321	777	1272	0.252	321	0.3	3.788	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_KP_V2.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:29:25

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	9.1	23.70	0.91	C	7.6	20.00	0.89	C
2 - Wistow Road	4.2	20.40	0.82	C	0.8	5.79	0.43	A
3 - Leicester Road Southbound	4.9	15.24	0.84	C	2.4	7.96	0.71	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	46.1	97.06	1.04	F	27.2	62.89	1.00	F
2 - Wistow Road	14.2	58.28	0.97	F	1.6	8.91	0.62	A
3 - Leicester Road Southbound	18.2	49.32	0.97	E	5.1	14.94	0.84	B

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	20.03	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	3.86	8.01	10.2	21.8	44.7	23.5	
2 - Wistow Road	3.74	7.35	13.0	22.9	44.7	14.0	
3 - Leicester Road Southbound	4.33	7.18	20.5	12.4	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.648	1760
2 - Wistow Road	0.670	1817
3 - Leicester Road Southbound	0.648	1846

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1329	100.000
2 - Wistow Road		✓	700	100.000
3 - Leicester Road Southbound		✓	1086	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	250	1079
	2 - Wistow Road	477	0	223
	3 - Leicester Road Southbound	1012	74	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	4	7
	2 - Wistow Road	2	0	4
	3 - Leicester Road Southbound	5	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.91	23.70	9.1	C
2 - Wistow Road	0.82	20.40	4.2	C
3 - Leicester Road Southbound	0.84	15.24	4.9	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1001	55	1621	0.617	994	1.6	5.685	A
2 - Wistow Road	527	807	1206	0.437	524	0.8	5.253	A
3 - Leicester Road Southbound	818	357	1534	0.533	813	1.1	4.963	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1195	66	1614	0.740	1190	2.8	8.392	A
2 - Wistow Road	629	966	1096	0.574	627	1.3	7.648	A
3 - Leicester Road Southbound	976	427	1490	0.655	973	1.9	6.931	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1463	81	1605	0.912	1441	8.2	19.754	C
2 - Wistow Road	771	1170	954	0.808	761	3.8	17.822	C
3 - Leicester Road Southbound	1196	518	1432	0.835	1185	4.6	13.953	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1463	81	1605	0.912	1460	9.1	23.700	C
2 - Wistow Road	771	1185	943	0.817	769	4.2	20.404	C
3 - Leicester Road Southbound	1198	524	1429	0.837	1195	4.9	15.241	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1195	67	1614	0.740	1219	3.0	9.652	A
2 - Wistow Road	629	990	1079	0.583	640	1.4	8.400	A
3 - Leicester Road Southbound	976	436	1484	0.658	988	2.0	7.421	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1001	56	1621	0.617	1006	1.6	5.900	A
2 - Wistow Road	527	817	1200	0.439	530	0.8	5.391	A
3 - Leicester Road Southbound	818	361	1532	0.534	821	1.2	5.086	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_KP_V2.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:29:52

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	9.1	23.70	0.91	C	7.6	20.00	0.89	C
2 - Wistow Road	4.2	20.40	0.82	C	0.8	5.79	0.43	A
3 - Leicester Road Southbound	4.9	15.24	0.84	C	2.4	7.96	0.71	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	46.1	97.06	1.04	F	27.2	62.89	1.00	F
2 - Wistow Road	14.2	58.28	0.97	F	1.6	8.91	0.62	A
3 - Leicester Road Southbound	18.2	49.32	0.97	E	5.1	14.94	0.84	B

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	13.37	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	3.86	8.01	10.2	21.8	44.7	23.5	
2 - Wistow Road	3.74	7.35	13.0	22.9	44.7	14.0	
3 - Leicester Road Southbound	4.33	7.18	20.5	12.4	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.648	1760
2 - Wistow Road	0.670	1817
3 - Leicester Road Southbound	0.648	1846

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1315	100.000
2 - Wistow Road		✓	430	100.000
3 - Leicester Road Southbound		✓	1001	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	391	924
	2 - Wistow Road	340	0	90
	3 - Leicester Road Southbound	849	152	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	2	2
	2 - Wistow Road	3	0	0
	3 - Leicester Road Southbound	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.89	20.00	7.6	C
2 - Wistow Road	0.43	5.79	0.8	A
3 - Leicester Road Southbound	0.71	7.96	2.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	990	114	1654	0.598	984	1.5	5.326	A
2 - Wistow Road	324	692	1311	0.247	322	0.3	3.636	A
3 - Leicester Road Southbound	754	255	1631	0.462	750	0.9	4.070	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1182	136	1640	0.721	1178	2.5	7.718	A
2 - Wistow Road	387	828	1220	0.317	386	0.5	4.312	A
3 - Leicester Road Southbound	900	305	1599	0.563	898	1.3	5.127	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1448	167	1621	0.893	1430	7.1	17.351	C
2 - Wistow Road	473	1004	1103	0.429	472	0.7	5.699	A
3 - Leicester Road Southbound	1102	373	1554	0.709	1098	2.4	7.812	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1448	167	1620	0.893	1446	7.6	20.003	C
2 - Wistow Road	473	1016	1095	0.432	473	0.8	5.788	A
3 - Leicester Road Southbound	1102	374	1554	0.709	1102	2.4	7.963	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1182	137	1640	0.721	1202	2.7	8.580	A
2 - Wistow Road	387	845	1209	0.320	388	0.5	4.388	A
3 - Leicester Road Southbound	900	307	1598	0.563	904	1.3	5.222	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	990	115	1654	0.599	995	1.5	5.498	A
2 - Wistow Road	324	699	1308	0.248	324	0.3	3.667	A
3 - Leicester Road Southbound	754	256	1630	0.462	755	0.9	4.122	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_KP_V2.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:30:21

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	9.1	23.70	0.91	C	7.6	20.00	0.89	C
2 - Wistow Road	4.2	20.40	0.82	C	0.8	5.79	0.43	A
3 - Leicester Road Southbound	4.9	15.24	0.84	C	2.4	7.96	0.71	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	46.1	97.06	1.04	F	27.2	62.89	1.00	F
2 - Wistow Road	14.2	58.28	0.97	F	1.6	8.91	0.62	A
3 - Leicester Road Southbound	18.2	49.32	0.97	E	5.1	14.94	0.84	B

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	71.15	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	3.86	8.01	10.2	21.8	44.7	23.5	
2 - Wistow Road	3.74	7.35	13.0	22.9	44.7	14.0	
3 - Leicester Road Southbound	4.33	7.18	20.5	12.4	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.648	1760
2 - Wistow Road	0.670	1817
3 - Leicester Road Southbound	0.648	1846

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1446	100.000
2 - Wistow Road		✓	828	100.000
3 - Leicester Road Southbound		✓	1257	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	320	1126
	2 - Wistow Road	496	0	332
	3 - Leicester Road Southbound	1079	178	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	4	7
	2 - Wistow Road	2	0	4
	3 - Leicester Road Southbound	5	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	1.04	97.08	46.1	F
2 - Wistow Road	0.97	58.28	14.2	F
3 - Leicester Road Southbound	0.97	49.32	18.2	E

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1089	133	1573	0.692	1080	2.2	7.180	A
2 - Wistow Road	623	841	1181	0.528	619	1.1	6.352	A
3 - Leicester Road Southbound	946	371	1525	0.621	940	1.6	6.089	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1300	159	1556	0.835	1290	4.7	13.053	B
2 - Wistow Road	744	1005	1068	0.697	740	2.2	10.839	B
3 - Leicester Road Southbound	1130	443	1479	0.764	1124	3.1	9.969	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1592	190	1536	1.036	1497	28.5	50.509	F
2 - Wistow Road	912	1166	956	0.954	879	10.4	37.108	E
3 - Leicester Road Southbound	1384	527	1427	0.970	1341	13.9	32.170	D

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1592	194	1534	1.038	1522	46.1	97.084	F
2 - Wistow Road	912	1185	942	0.968	896	14.2	58.279	F
3 - Leicester Road Southbound	1384	537	1420	0.975	1366	18.2	49.323	E

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1300	168	1550	0.839	1460	6.2	55.581	F
2 - Wistow Road	744	1137	976	0.763	787	3.5	22.625	C
3 - Leicester Road Southbound	1130	472	1461	0.773	1189	3.6	15.747	C

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1089	135	1572	0.693	1104	2.3	7.947	A
2 - Wistow Road	623	860	1168	0.534	633	1.2	6.832	A
3 - Leicester Road Southbound	946	379	1520	0.623	954	1.7	6.448	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_KP_V2.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:30:48

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	9.1	23.70	0.91	C	7.6	20.00	0.89	C
2 - Wistow Road	4.2	20.40	0.82	C	0.8	5.79	0.43	A
3 - Leicester Road Southbound	4.9	15.24	0.84	C	2.4	7.96	0.71	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	46.1	97.06	1.04	F	27.2	62.89	1.00	F
2 - Wistow Road	14.2	58.28	0.97	F	1.6	8.91	0.62	A
3 - Leicester Road Southbound	18.2	49.32	0.97	E	5.1	14.94	0.84	B

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	35.21	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	3.86	8.01	10.2	21.8	44.7	23.5	
2 - Wistow Road	3.74	7.35	13.0	22.9	44.7	14.0	
3 - Leicester Road Southbound	4.33	7.18	20.5	12.4	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.648	1760
2 - Wistow Road	0.670	1817
3 - Leicester Road Southbound	0.648	1846

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1412	100.000
2 - Wistow Road		✓	580	100.000
3 - Leicester Road Southbound		✓	1160	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	406	1006
	2 - Wistow Road	398	0	192
	3 - Leicester Road Southbound	916	244	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	2	2
	2 - Wistow Road	3	0	0
	3 - Leicester Road Southbound	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	1.00	62.99	27.2	F
2 - Wistow Road	0.62	8.91	1.6	A
3 - Leicester Road Southbound	0.84	14.94	5.1	B

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1063	183	1611	0.660	1055	1.9	6.400	A
2 - Wistow Road	444	752	1276	0.348	442	0.5	4.309	A
3 - Leicester Road Southbound	873	298	1606	0.544	869	1.2	4.850	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1269	219	1588	0.799	1262	3.8	10.800	B
2 - Wistow Road	530	899	1177	0.451	529	0.8	5.546	A
3 - Leicester Road Southbound	1043	357	1568	0.665	1040	1.9	6.779	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1555	266	1558	0.998	1493	19.3	37.730	E
2 - Wistow Road	650	1063	1068	0.608	647	1.5	8.497	A
3 - Leicester Road Southbound	1277	436	1516	0.842	1265	4.9	13.758	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1555	268	1556	0.999	1523	27.2	62.988	F
2 - Wistow Road	650	1085	1053	0.617	649	1.6	8.908	A
3 - Leicester Road Southbound	1277	438	1515	0.843	1276	5.1	14.938	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1269	222	1586	0.800	1361	4.3	21.580	C
2 - Wistow Road	530	970	1130	0.469	533	0.9	6.058	A
3 - Leicester Road Southbound	1043	360	1566	0.666	1055	2.0	7.206	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1063	184	1610	0.660	1072	2.0	6.812	A
2 - Wistow Road	444	764	1268	0.350	446	0.5	4.387	A
3 - Leicester Road Southbound	873	301	1605	0.544	877	1.2	4.969	A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 05_Church Road_A6_Marsh Drive__KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:16:19

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	143.5	1893.88	9999999999	F	94.8	1686.07	9999999999.00	F
Stream B-AD	23.8	1981.20	9999999999	F	18.1	1088.35	9999999999.00	F
Stream A-BCD	1.7	4.42	0.31	A	2.7	4.70	0.45	A
Stream D-ABC	37.7	1762.29	9999999999	F	1.1	53.94	0.55	F
Stream C-B	1.0	18.58	0.51	C	2.1	29.52	0.69	D
Baseline 2021 + Cumulative Development								
Stream B-C	227.2	3244.24	9999999999.00	F	100.1	1421.78	9999999999.00	F
Stream B-AD	34.6	3339.14	9999999999.00	F	18.7	1486.25	9999999999.00	F
Stream A-BCD	3.2	4.93	0.42	A	4.4	5.87	0.57	A
Stream D-ABC	42.1	1652.34	9999999999.00	F	5.7	251.63	1.07	F
Stream C-B	1.3	23.89	0.58	C	3.4	45.77	0.79	E

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Church Road/ A6 / Marsh Drive
Location	Kibworth
Site number	
Date	28/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Church Road/A6/Marsh Drive	Right-Left Stagger	Two-way	245.73	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Leicester Road Westbound		Major
B	Church Road		Minor
C	Leicester Road Eastbound		Major
D	Marsh Drive		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Leicester Road Westbound	6.00				250.0	✓	0.00
C - Leicester Road Eastbound	6.00		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Church Road	One lane plus flare		10.00	8.40	4.04	3.26	3.12		3.00	60	31
D - Marsh Drive	One lane	4.23								24	68

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	719	-	-	-	0.278	0.278	0.278	-	0.278	-	-
1	B-AD	574	0.105	0.264	-	-	-	0.166	0.378	0.166	0.105	0.264
1	B-C	713	0.109	0.276	-	-	-	-	-	-	0.109	0.276
1	C-B	808	0.313	0.313	-	-	-	-	-	-	0.313	0.313
1	D-A	749	-	-	-	0.290	0.115	0.290	-	0.115	-	-
1	D-BC	583	0.169	0.169	0.383	0.268	0.106	0.268	-	0.106	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Leicester Road Westbound		✓	1019	100.000
B - Church Road		✓	290	100.000
C - Leicester Road Eastbound		✓	1396	100.000
D - Marsh Drive		✓	67	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	17	974	28
	B - Church Road	39	0	250	1
	C - Leicester Road Eastbound	1215	179	0	2
	D - Marsh Drive	25	18	24	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	11	6	7
	B - Church Road	11	0	6	0
	C - Leicester Road Eastbound	4	6	0	0
	D - Marsh Drive	0	8	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	9999999999	1898.88	143.5	F
B-AD	9999999999	1981.20	23.8	F
A-BCD	0.31	4.42	1.7	A
A-B				
A-C				
D-ABC	9999999999	1762.29	37.7	F
C-D				
C-A				
C-B	0.51	18.58	1.0	C

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	188	436	0.431	185	0.7	14.188	B
B-AD	30	133	0.227	29	0.3	34.378	D
A-BCD	89	979	0.091	88	0.2	4.041	A
A-B	12			12			
A-C	667			667			
D-ABC	50	223	0.226	49	0.3	20.593	C
C-D	2			2			
C-A	915			915			
C-B	135	519	0.260	133	0.3	9.300	A

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	225	330	0.680	220	1.9	31.359	D
B-AD	36	54	0.661	32	1.3	141.847	F
A-BCD	156	1065	0.146	155	0.4	3.962	A
A-B	13			13			
A-C	747			747			
D-ABC	60	131	0.458	58	0.8	47.999	E
C-D	2			2			
C-A	1092			1092			
C-B	161	471	0.341	160	0.5	11.545	B

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	275	0	9999999999	0	70.7	413.001	F
B-AD	44	0	9999999999	0	12.3	336.036	F
A-BCD	354	1197	0.295	349	1.5	4.267	A
A-B	13			13			
A-C	755			755			
D-ABC	74	0	9999999999	0	19.2	1762.294	F
C-D	2			2			
C-A	1338			1338			
C-B	197	405	0.486	195	0.9	17.010	D

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	275	0	9999999999	0	139.5	316.534	F
B-AD	44	0	9999999999	0	23.3	301.147	F
A-BCD	373	1196	0.312	373	1.7	4.418	A
A-B	13			13			
A-C	736			736			
D-ABC	74	0	9999999999	0	37.7	-993.171	?
C-D	2			2			
C-A	1338			1338			
C-B	197	390	0.505	197	1.0	18.578	C

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	225	209	1.075	209	143.5	1898.875	F
B-AD	36	35	1.042	34	23.8	1981.204	F
A-BCD	169	1057	0.160	174	0.5	4.107	A
A-B	13			13			
A-C	734			734			
D-ABC	60	96	0.628	93	29.3	1100.094	F
C-D	2			2			
C-A	1092			1092			
C-B	161	441	0.365	163	0.6	13.000	B

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	188	326	0.577	324	109.6	1408.130	F
B-AD	30	54	0.561	51	18.5	1468.046	F
A-BCD	95	965	0.098	96	0.2	4.149	A
A-B	12			12			
A-C	661			661			
D-ABC	50	191	0.264	166	0.4	272.825	F
C-D	2			2			
C-A	915			915			
C-B	135	496	0.272	136	0.4	10.008	B

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 05_Church Road_A6_Marsh Drive__KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:16:46

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	143.5	1893.88	9999999999.00	F	94.8	1686.07	9999999999.00	F
Stream B-AD	23.8	1981.20	9999999999.00	F	18.1	1088.35	9999999999.00	F
Stream A-BCD	1.7	4.42	0.31	A	2.7	4.70	0.45	A
Stream D-ABC	37.7	1762.29	9999999999.00	F	1.1	53.94	0.55	F
Stream C-B	1.0	18.58	0.51	C	2.1	29.52	0.69	D
Baseline 2021 + Cumulative Development								
Stream B-C	227.2	3244.24	9999999999.00	F	100.1	1421.78	9999999999.00	F
Stream B-AD	34.6	3339.14	9999999999.00	F	18.7	1486.25	9999999999.00	F
Stream A-BCD	3.2	4.93	0.42	A	4.4	5.87	0.57	A
Stream D-ABC	42.1	1652.34	9999999999.00	F	5.7	251.63	1.07	F
Stream C-B	1.3	23.89	0.58	C	3.4	45.77	0.79	E

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Church Road/ A6 / Marsh Drive
Location	Kibworth
Site number	
Date	28/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Church Road/A6/Marsh Drive	Right-Left Stagger	Two-way	134.60	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Leicester Road Westbound		Major
B	Church Road		Minor
C	Leicester Road Eastbound		Major
D	Marsh Drive		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Leicester Road Westbound	6.00				250.0	✓	0.00
C - Leicester Road Eastbound	6.00		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Church Road	One lane plus flare		10.00	8.40	4.04	3.26	3.12		3.00	60	31
D - Marsh Drive	One lane	4.23								24	68

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	719	-	-	-	0.278	0.278	0.278	-	0.278	-	-
1	B-AD	574	0.105	0.264	-	-	-	0.166	0.378	0.166	0.105	0.264
1	B-C	713	0.109	0.276	-	-	-	-	-	-	0.109	0.276
1	C-B	808	0.313	0.313	-	-	-	-	-	-	0.313	0.313
1	D-A	749	-	-	-	0.290	0.115	0.290	-	0.115	-	-
1	D-BC	583	0.169	0.169	0.383	0.268	0.106	0.268	-	0.106	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Leicester Road Westbound		✓	1223	100.000
B - Church Road		✓	203	100.000
C - Leicester Road Eastbound		✓	1059	100.000
D - Marsh Drive		✓	71	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	46	1129	48
	B - Church Road	21	0	171	11
	C - Leicester Road Eastbound	816	238	0	5
	D - Marsh Drive	40	27	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	5	1	0
	B - Church Road	11	0	4	0
	C - Leicester Road Eastbound	2	1	0	0
	D - Marsh Drive	6	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	9999999999	1686.07	94.8	F
B-AD	9999999999	1088.36	18.1	F
A-BCD	0.45	4.70	2.7	A
A-B				
A-C				
D-ABC	0.55	53.94	1.1	F
C-D				
C-A				
C-B	0.69	29.52	2.1	D

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	129	434	0.297	127	0.4	11.670	B
B-AD	24	156	0.154	23	0.2	26.989	D
A-BCD	155	1154	0.134	153	0.3	3.598	A
A-B	30			30			
A-C	736			736			
D-ABC	53	350	0.153	53	0.2	12.069	B
C-D	4			4			
C-A	614			614			
C-B	179	518	0.346	177	0.5	10.493	B

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	154	367	0.419	153	0.7	16.680	C
B-AD	29	81	0.355	27	0.5	65.731	F
A-BCD	269	1260	0.214	268	0.8	3.634	A
A-B	33			33			
A-C	798			798			
D-ABC	64	278	0.230	63	0.3	16.755	C
C-D	4			4			
C-A	734			734			
C-B	214	462	0.463	213	0.8	14.350	B

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	188	0	9999999999	0	47.8	1686.072	F
B-AD	35	0	9999999999	0	9.3	-2017.338	?
A-BCD	617	1419	0.435	610	2.5	4.486	A
A-B	29			29			
A-C	701			701			
D-ABC	78	158	0.496	76	0.9	42.811	E
C-D	6			6			
C-A	898			898			
C-B	262	385	0.681	258	2.0	27.364	D

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	188	0	9999999999	0	94.8	-1403.319	?
B-AD	35	0	9999999999	0	18.1	-1801.822	?
A-BCD	642	1421	0.452	641	2.7	4.701	A
A-B	28			28			
A-C	677			677			
D-ABC	78	143	0.547	77	1.1	53.943	F
C-D	6			6			
C-A	898			898			
C-B	262	383	0.685	262	2.1	29.519	D

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	154	270	0.569	267	66.4	1033.476	F
B-AD	29	51	0.561	49	13.1	1068.346	F
A-BCD	286	1258	0.227	293	0.9	3.776	A
A-B	32			32			
A-C	782			782			
D-ABC	64	255	0.250	67	0.3	19.439	C
C-D	4			4			
C-A	734			734			
C-B	214	459	0.466	219	0.9	15.253	C

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	129	381	0.338	375	4.7	350.962	F
B-AD	24	74	0.325	69	2.0	434.075	F
A-BCD	161	1148	0.140	163	0.4	3.670	A
A-B	30			30			
A-C	730			730			
D-ABC	53	335	0.159	54	0.2	12.826	B
C-D	4			4			
C-A	614			614			
C-B	179	517	0.347	181	0.5	10.747	B

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 05_Church Road_A6_Marsh Drive__KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:17:13

«Baseline 2021 + Cumulative Development, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	143.5	1893.88	9999999999.00	F	94.8	1686.07	9999999999.00	F
Stream B-AD	23.8	1981.20	9999999999.00	F	18.1	1088.35	9999999999.00	F
Stream A-BCD	1.7	4.42	0.31	A	2.7	4.70	0.45	A
Stream D-ABC	37.7	1762.29	9999999999.00	F	1.1	53.94	0.55	F
Stream C-B	1.0	18.58	0.51	C	2.1	29.52	0.69	D
Baseline 2021 + Cumulative Development								
Stream B-C	227.2	3244.24	9999999999.00	F	100.1	1421.78	9999999999.00	F
Stream B-AD	34.6	3339.14	9999999999.00	F	18.7	1486.25	9999999999.00	F
Stream A-BCD	3.2	4.93	0.42	A	4.4	5.87	0.57	A
Stream D-ABC	42.1	1652.34	9999999999.00	F	5.7	251.63	1.07	F
Stream C-B	1.3	23.89	0.58	C	3.4	45.77	0.79	E

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Church Road/ A6 / Marsh Drive
Location	Kibworth
Site number	
Date	28/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Church Road/A6/Marsh Drive	Right-Left Stagger	Two-way	382.61	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Leicester Road Westbound		Major
B	Church Road		Minor
C	Leicester Road Eastbound		Major
D	Marsh Drive		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Leicester Road Westbound	6.00				250.0	✓	0.00
C - Leicester Road Eastbound	6.00		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Church Road	One lane plus flare		10.00	8.40	4.04	3.26	3.12		3.00	60	31
D - Marsh Drive	One lane	4.23								24	68

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	719	-	-	-	0.278	0.278	0.278	-	0.278	-	-
1	B-AD	574	0.105	0.264	-	-	-	0.166	0.378	0.166	0.105	0.264
1	B-C	713	0.109	0.276	-	-	-	-	-	-	0.109	0.276
1	C-B	808	0.313	0.313	-	-	-	-	-	-	0.313	0.313
1	D-A	749	-	-	-	0.290	0.115	0.290	-	0.115	-	-
1	D-BC	583	0.169	0.169	0.383	0.268	0.106	0.268	-	0.106	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Leicester Road Westbound		✓	1111	100.000
B - Church Road		✓	309	100.000
C - Leicester Road Eastbound		✓	1477	100.000
D - Marsh Drive		✓	67	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	17	1066	28
	B - Church Road	39	0	269	1
	C - Leicester Road Eastbound	1287	188	0	2
	D - Marsh Drive	25	18	24	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	11	6	7
	B - Church Road	11	0	6	0
	C - Leicester Road Eastbound	4	6	0	0
	D - Marsh Drive	0	8	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	9999999999	3244.24	227.2	F
B-AD	9999999999	3339.14	34.6	F
A-BCD	0.42	4.93	3.2	A
A-B				
A-C				
D-ABC	9999999999	1652.34	42.1	F
C-D				
C-A				
C-B	0.58	23.89	1.3	C

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	203	411	0.493	199	0.9	16.688	C
B-AD	30	104	0.291	29	0.4	47.143	E
A-BCD	104	1023	0.101	103	0.2	3.911	A
A-B	12			12			
A-C	721			721			
D-ABC	50	193	0.262	49	0.3	24.868	C
C-D	2			2			
C-A	969			969			
C-B	142	497	0.285	140	0.4	10.025	B

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	242	154	1.568	150	24.0	1274.743	F
B-AD	36	24	1.528	20	4.4	1742.378	F
A-BCD	192	1122	0.171	191	0.5	3.872	A
A-B	13			13			
A-C	794			794			
D-ABC	60	90	0.669	56	1.5	94.668	F
C-D	2			2			
C-A	1157			1157			
C-B	169	445	0.379	168	0.6	12.945	B

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	296	0	9999999999	0	98.0	2658.774	F
B-AD	44	0	9999999999	0	15.4	2763.356	F
A-BCD	495	1274	0.388	486	2.7	4.614	A
A-B	11			11			
A-C	717			717			
D-ABC	74	0	9999999999	0	20.0	699.556	F
C-D	2			2			
C-A	1417			1417			
C-B	207	373	0.555	205	1.2	21.087	C

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	296	0	9999999999	0	172.1	2647.823	F
B-AD	44	0	9999999999	0	26.4	2736.288	F
A-BCD	532	1277	0.417	530	3.2	4.934	A
A-B	11			11			
A-C	680			680			
D-ABC	74	0	9999999999	0	38.4	532.449	F
C-D	2			2			
C-A	1417			1417			
C-B	207	356	0.581	206	1.3	23.890	C

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	242	21	11.331	21	227.2	3244.239	F
B-AD	36	3	11.060	3	34.6	3339.144	F
A-BCD	215	1119	0.192	225	0.7	4.089	A
A-B	12			12			
A-C	771			771			
D-ABC	60	46	1.319	46	42.1	1652.340	F
C-D	2			2			
C-A	1157			1157			
C-B	169	413	0.410	171	0.7	15.069	C

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	203	300	0.675	299	203.1	2592.930	F
B-AD	30	46	0.662	44	31.1	2677.193	F
A-BCD	114	1004	0.114	116	0.3	4.062	A
A-B	11			11			
A-C	711			711			
D-ABC	50	144	0.350	141	19.5	799.001	F
C-D	2			2			
C-A	969			969			
C-B	142	464	0.305	143	0.4	11.222	B

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 05_Church Road_A6_Marsh Drive__KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:17:37

«Baseline 2021 + Cumulative Development, PM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	143.5	1893.88	9999999999.00	F	94.8	1686.07	9999999999.00	F
Stream B-AD	23.8	1981.20	9999999999.00	F	18.1	1088.35	9999999999.00	F
Stream A-BCD	1.7	4.42	0.31	A	2.7	4.70	0.45	A
Stream D-ABC	37.7	1762.29	9999999999.00	F	1.1	53.94	0.55	F
Stream C-B	1.0	18.58	0.51	C	2.1	29.52	0.69	D
Baseline 2021 + Cumulative Development								
Stream B-C	227.2	3244.24	9999999999.00	F	100.1	1421.78	9999999999.00	F
Stream B-AD	34.6	3339.14	9999999999.00	F	18.7	1486.25	9999999999.00	F
Stream A-BCD	3.2	4.93	0.42	A	4.4	5.87	0.57	A
Stream D-ABC	42.1	1652.34	9999999999.00	F	5.7	251.63	1.07	F
Stream C-B	1.3	23.89	0.58	C	3.4	45.77	0.79	E

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Church Road/ A6 / Marsh Drive
Location	Kibworth
Site number	
Date	28/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Church Road/A6/Marsh Drive	Right-Left Stagger	Two-way	125.74	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Leicester Road Westbound		Major
B	Church Road		Minor
C	Leicester Road Eastbound		Major
D	Marsh Drive		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Leicester Road Westbound	6.00				250.0	✓	0.00
C - Leicester Road Eastbound	6.00		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Church Road	One lane plus flare		10.00	8.40	4.04	3.26	3.12		3.00	60	31
D - Marsh Drive	One lane	4.23								24	68

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	719	-	-	-	0.278	0.278	0.278	-	0.278	-	-
1	B-AD	574	0.105	0.264	-	-	-	0.166	0.378	0.166	0.105	0.264
1	B-C	713	0.109	0.276	-	-	-	-	-	-	0.109	0.276
1	C-B	808	0.313	0.313	-	-	-	-	-	-	0.313	0.313
1	D-A	749	-	-	-	0.290	0.115	0.290	-	0.115	-	-
1	D-BC	583	0.169	0.169	0.383	0.268	0.106	0.268	-	0.106	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Leicester Road Westbound		✓	1282	100.000
B - Church Road		✓	212	100.000
C - Leicester Road Eastbound		✓	1174	100.000
D - Marsh Drive		✓	71	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	46	1188	48
	B - Church Road	21	0	180	11
	C - Leicester Road Eastbound	910	259	0	5
	D - Marsh Drive	40	27	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Leicester Road Westbound	B - Church Road	C - Leicester Road Eastbound	D - Marsh Drive
From	A - Leicester Road Westbound	0	5	1	0
	B - Church Road	11	0	4	0
	C - Leicester Road Eastbound	2	1	0	0
	D - Marsh Drive	6	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	9999999999.00	1421.78	100.1	F
B-AD	9999999999.00	1486.25	18.7	F
A-BCD	0.57	5.87	4.4	A
A-B				
A-C				
D-ABC	1.07	251.63	5.7	F
C-D				
C-A				
C-B	0.79	45.77	3.4	E

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	136	419	0.324	134	0.5	12.545	B
B-AD	24	128	0.188	23	0.2	34.027	D
A-BCD	172	1176	0.147	171	0.4	3.584	A
A-B	30			30			
A-C	763			763			
D-ABC	53	320	0.167	53	0.2	13.404	B
C-D	4			4			
C-A	685			685			
C-B	195	504	0.387	193	0.6	11.483	B

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	162	313	0.516	160	1.0	23.080	C
B-AD	29	47	0.609	25	1.1	148.410	F
A-BCD	313	1290	0.242	310	1.0	3.687	A
A-B	31			31			
A-C	809			809			
D-ABC	64	238	0.268	63	0.4	20.527	C
C-D	4			4			
C-A	818			818			
C-B	233	445	0.523	231	1.1	16.653	C

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	198	0	9999999999.000	0	50.6	94.770	F
B-AD	35	0	9999999999.000	0	9.9	-23.716	?
A-BCD	788	1461	0.539	776	3.8	5.335	A
A-B	23			23			
A-C	600			600			
D-ABC	78	92	0.851	69	2.8	125.965	F
C-D	6			6			
C-A	1002			1002			
C-B	285	364	0.783	277	3.0	38.440	E

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	198	0	9999999999.000	0	100.1	28.599	D
B-AD	35	0	9999999999.000	0	18.7	-21.573	?
A-BCD	834	1467	0.568	832	4.4	5.868	A
A-B	22			22			
A-C	556			556			
D-ABC	78	73	1.067	66	5.7	251.628	F
C-D	6			6			
C-A	1002			1002			
C-B	285	359	0.793	284	3.4	45.771	E

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	162	192	0.842	190	93.0	1421.778	F
B-AD	29	35	0.812	34	17.5	1486.248	F
A-BCD	337	1293	0.261	350	1.2	3.902	A
A-B	30			30			
A-C	785			785			
D-ABC	64	211	0.302	85	0.5	32.951	D
C-D	4			4			
C-A	818			818			
C-B	233	438	0.532	242	1.2	19.118	C

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	136	342	0.398	338	42.3	724.446	F
B-AD	24	63	0.380	60	8.5	803.307	F
A-BCD	181	1169	0.155	184	0.4	3.680	A
A-B	29			29			
A-C	755			755			
D-ABC	53	300	0.178	54	0.2	14.697	B
C-D	4			4			
C-A	685			685			
C-B	195	503	0.388	197	0.6	11.863	B

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 04_Harborough Road_New Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:08:53

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	34.0	3024.68	3.18	F	17.7	1501.97	1.98	F
Stream B-A	53.3	3003.52	3.01	F	23.0	1470.22	1.93	F
Stream C-B	0.1	9.37	0.05	A	0.4	14.75	0.27	B
Baseline 2021 + Cumulative Development								
Stream B-C	70.2	45155.67	58.40	F	41.2	1794.15	9999999999.00	F
Stream B-A	134.7	43904.46	58.84	F	69.7	1772.31	9999999999.00	F
Stream C-B	0.1	10.57	0.06	B	0.5	18.95	0.34	D

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	28/11/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	268.78	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Harborough Road Northbound		Major
B	New Road		Minor
C	Harborough Road Southbound		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Harborough Road Southbound	6.09		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - New Road	One lane plus flare	10.00	10.00	8.65	6.98	6.46		6.00	59	79

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	624	0.113	0.286	0.180	0.409
1	B-C	726	0.111	0.280	-	-
1	C-B	809	0.312	0.312	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Harborough Road Northbound		✓	1031	100.000
B - New Road		✓	226	100.000
C - Harborough Road Southbound		✓	1216	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	156	875
	B - New Road	137	0	89
	C - Harborough Road Southbound	1198	18	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	4	8
	B - New Road	3	0	2
	C - Harborough Road Southbound	4	6	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	3.18	3024.68	34.0	F
B-A	3.01	3003.52	53.3	F
C-A				
C-B	0.05	9.37	0.1	A
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	67	448	0.150	66	0.2	9.421	A
B-A	103	225	0.458	100	0.8	28.061	D
C-A	902			902			
C-B	14	517	0.026	13	0.0	7.151	A
A-B	117			117			
A-C	659			659			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	80	305	0.262	79	0.3	15.873	C
B-A	123	152	0.811	115	2.8	84.095	F
C-A	1077			1077			
C-B	16	469	0.034	16	0.0	7.944	A
A-B	140			140			
A-C	787			787			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	98	31	3.180	29	17.5	979.277	F
B-A	151	50	2.999	50	28.1	1021.426	F
C-A	1319			1319			
C-B	20	404	0.049	20	0.1	9.372	A
A-B	172			172			
A-C	963			963			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	98	32	3.064	32	34.0	3024.680	F
B-A	151	50	3.007	50	53.3	3003.522	F
C-A	1319			1319			
C-B	20	404	0.049	20	0.1	9.374	A
A-B	172			172			
A-C	963			963			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	80	98	0.821	95	30.3	1117.910	F
B-A	123	152	0.811	149	46.8	1110.407	F
C-A	1077			1077			
C-B	16	469	0.034	16	0.0	7.946	A
A-B	140			140			
A-C	787			787			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	67	146	0.459	141	11.7	549.315	F
B-A	103	225	0.458	220	17.5	534.355	F
C-A	902			902			
C-B	14	517	0.026	14	0.0	7.157	A
A-B	117			117			
A-C	659			659			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 04_Harborough Road_New Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:09:16

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	34.0	3024.68	3.18	F	17.7	1501.97	1.98	F
Stream B-A	53.3	3003.52	3.01	F	23.0	1470.22	1.93	F
Stream C-B	0.1	9.37	0.05	A	0.4	14.75	0.27	B
Baseline 2021 + Cumulative Development								
Stream B-C	70.2	45155.67	58.40	F	41.2	1794.15	9999999999.00	F
Stream B-A	134.7	43904.46	58.84	F	69.7	1772.31	9999999999.00	F
Stream C-B	0.1	10.57	0.06	B	0.5	18.95	0.34	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	28/11/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	92.99	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Harborough Road Northbound		Major
B	New Road		Minor
C	Harborough Road Southbound		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Harborough Road Southbound	6.09		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - New Road	One lane plus flare	10.00	10.00	8.65	6.98	6.46		6.00	59	79

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	620	0.112	0.284	0.179	0.406
1	B-C	732	0.112	0.282	-	-
1	C-B	809	0.312	0.312	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Harborough Road Northbound		✓	1325	100.000
B - New Road		✓	143	100.000
C - Harborough Road Southbound		✓	848	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	223	1102
	B - New Road	81	0	62
	C - Harborough Road Southbound	766	82	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	2	1
	B - New Road	5	0	0
	C - Harborough Road Southbound	3	4	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	1.93	1501.97	17.7	F
B-A	1.93	1470.22	23.0	F
C-A				
C-B	0.27	14.75	0.4	B
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	47	442	0.106	46	0.1	9.085	A
B-A	61	218	0.280	59	0.4	22.508	C
C-A	577			577			
C-B	62	475	0.130	61	0.1	8.687	A
A-B	168			168			
A-C	830			830			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	56	370	0.151	56	0.2	11.438	B
B-A	73	146	0.499	71	0.9	46.569	E
C-A	689			689			
C-B	74	416	0.177	73	0.2	10.505	B
A-B	200			200			
A-C	991			991			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	68	35	1.976	32	9.4	619.708	F
B-A	89	46	1.918	44	12.2	612.662	F
C-A	843			843			
C-B	90	334	0.270	90	0.4	14.680	B
A-B	246			246			
A-C	1213			1213			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	68	35	1.928	35	17.7	1501.971	F
B-A	89	46	1.931	46	23.0	1470.218	F
C-A	843			843			
C-B	90	334	0.270	90	0.4	14.749	B
A-B	246			246			
A-C	1213			1213			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	56	112	0.500	106	5.2	378.596	F
B-A	73	145	0.501	139	6.3	384.642	F
C-A	689			689			
C-B	74	416	0.177	74	0.2	10.557	B
A-B	200			200			
A-C	991			991			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	47	429	0.109	67	0.1	10.509	B
B-A	61	217	0.281	85	0.4	31.867	D
C-A	577			577			
C-B	62	475	0.130	62	0.2	8.724	A
A-B	168			168			
A-C	830			830			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 04_Harborough Road_New Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:09:41

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	34.0	3024.68	3.18	F	17.7	1501.97	1.98	F
Stream B-A	53.3	3003.52	3.01	F	23.0	1470.22	1.93	F
Stream C-B	0.1	9.37	0.05	A	0.4	14.75	0.27	B
Baseline 2021 + Cumulative Development								
Stream B-C	70.2	45155.67	58.40	F	41.2	1794.15	9999999999.00	F
Stream B-A	134.7	43904.46	58.84	F	69.7	1772.31	9999999999.00	F
Stream C-B	0.1	10.57	0.06	B	0.5	18.95	0.34	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	28/11/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	4604.02	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Harborough Road Northbound		Major
B	New Road		Minor
C	Harborough Road Southbound		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Harborough Road Southbound	6.09		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - New Road	One lane plus flare	10.00	10.00	8.65	6.98	6.46		6.00	59	79

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	632	0.115	0.290	0.182	0.414
1	B-C	717	0.109	0.277	-	-
1	C-B	809	0.312	0.312	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Harborough Road Northbound		✓	1151	100.000
B - New Road		✓	290	100.000
C - Harborough Road Southbound		✓	1288	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	194	957
	B - New Road	191	0	99
	C - Harborough Road Southbound	1268	20	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	4	8
	B - New Road	3	0	2
	C - Harborough Road Southbound	4	6	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	58.40	45155.67	70.2	F
B-A	58.84	43904.46	134.7	F
C-A				
C-B	0.06	10.57	0.1	B
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	75	366	0.204	74	0.3	12.289	B
B-A	144	196	0.734	135	2.2	53.459	F
C-A	955			955			
C-B	15	488	0.031	15	0.0	7.600	A
A-B	148			148			
A-C	720			720			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	89	58	1.547	52	9.4	1062.629	F
B-A	172	115	1.488	112	17.2	1021.706	F
C-A	1140			1140			
C-B	18	436	0.041	18	0.0	8.617	A
A-B	174			174			
A-C	860			860			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	109	2	57.507	2	36.2	45155.674	F
B-A	210	4	58.264	4	68.8	43904.463	F
C-A	1396			1396			
C-B	22	363	0.061	22	0.1	10.567	B
A-B	214			214			
A-C	1054			1054			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	109	2	58.399	2	62.9	3044.800	F
B-A	210	4	58.836	4	120.5	3017.128	F
C-A	1396			1396			
C-B	22	363	0.061	22	0.1	10.571	B
A-B	214			214			
A-C	1054			1054			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	89	60	1.484	60	70.2	2763.131	F
B-A	172	115	1.492	115	134.7	2739.333	F
C-A	1140			1140			
C-B	18	436	0.041	18	0.0	8.624	A
A-B	174			174			
A-C	860			860			

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	75	102	0.731	100	63.7	2401.338	F
B-A	144	196	0.735	194	122.1	2379.601	F
C-A	955			955			
C-B	15	488	0.031	15	0.0	7.607	A
A-B	146			146			
A-C	720			720			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 04_Harborough Road_New Road_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:10:09

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
Stream B-C	34.0	3024.68	3.18	F	17.7	1501.97	1.98	F
Stream B-A	53.3	3003.52	3.01	F	23.0	1470.22	1.93	F
Stream C-B	0.1	9.37	0.05	A	0.4	14.75	0.27	B
Baseline 2021 + Cumulative Development								
Stream B-C	70.2	45155.67	58.40	F	41.2	1794.15	9999999999.00	F
Stream B-A	134.7	43904.46	58.84	F	69.7	1772.31	9999999999.00	F
Stream C-B	0.1	10.57	0.06	B	0.5	18.95	0.34	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	28/11/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	129.14	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Harborough Road Northbound		Major
B	New Road		Minor
C	Harborough Road Southbound		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Harborough Road Southbound	6.09		✓	3.35	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - New Road	One lane plus flare	10.00	10.00	8.65	6.98	6.46		6.00	59	79

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	629	0.114	0.288	0.181	0.412
1	B-C	720	0.110	0.278	-	-
1	C-B	809	0.312	0.312	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Harborough Road Northbound		✓	1460	100.000
B - New Road		✓	185	100.000
C - Harborough Road Southbound		✓	950	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	277	1183
	B - New Road	117	0	68
	C - Harborough Road Southbound	860	90	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Harborough Road Northbound	B - New Road	C - Harborough Road Southbound
From	A - Harborough Road Northbound	0	2	1
	B - New Road	5	0	0
	C - Harborough Road Southbound	3	4	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-C	9999999999	1794.15	41.2	F
B-A	9999999999	1772.31	69.7	F
C-A				
C-B	0.34	18.95	0.5	C
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	51	392	0.131	51	0.1	10.522	B
B-A	88	185	0.476	85	0.8	34.881	D
C-A	647			647			
C-B	68	444	0.153	67	0.2	9.534	A
A-B	209			209			
A-C	891			891			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	61	60	1.026	47	3.6	491.080	F
B-A	105	105	1.004	89	4.9	378.241	F
C-A	773			773			
C-B	81	379	0.214	81	0.3	12.053	B
A-B	249			249			
A-C	1063			1063			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	75	0	9999999999	0	22.4	286.099	F
B-A	129	0	9999999999	0	37.1	299.391	F
C-A	947			947			
C-B	99	289	0.343	98	0.5	18.775	C
A-B	305			305			
A-C	1303			1303			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	75	0	9999999999	0	41.1	235.801	F
B-A	129	0	9999999999	0	69.3	247.169	F
C-A	947			947			
C-B	99	289	0.343	99	0.5	18.952	C
A-B	305			305			
A-C	1303			1303			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	61	61	0.997	61	41.2	1794.146	F
B-A	105	104	1.011	103	69.7	1772.312	F
C-A	773			773			
C-B	81	379	0.214	82	0.3	12.160	B
A-B	249			249			
A-C	1063			1063			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-C	51	109	0.472	106	27.5	1174.847	F
B-A	88	184	0.478	182	46.3	1153.286	F
C-A	647			647			
C-B	68	444	0.153	68	0.2	9.590	A
A-B	209			209			
A-C	891			891			

Appendix G.

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_Revised_Design_V3_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:51:03

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	2.8	6.91	0.74	A	2.5	6.41	0.72	A
2 - Wistow Road	1.8	8.58	0.65	A	0.5	4.07	0.35	A
3 - Leicester Road Southbound	2.4	7.33	0.71	A	1.5	4.95	0.60	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	4.9	11.50	0.84	B	4.0	9.39	0.80	A
2 - Wistow Road	3.7	15.01	0.79	C	1.0	5.56	0.50	A
3 - Leicester Road Southbound	4.6	12.42	0.83	B	2.5	7.07	0.72	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	7.43	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	4.27	9.33	18.1	40.7	44.7	28.0	
2 - Wistow Road	3.61	8.81	25.0	46.6	44.7	22.0	
3 - Leicester Road Southbound	3.66	8.77	30.0	43.0	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.730	2170
2 - Wistow Road	0.734	2154
3 - Leicester Road Southbound	0.725	2159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1329	100.000
2 - Wistow Road		✓	700	100.000
3 - Leicester Road Southbound		✓	1086	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	250	1079
	2 - Wistow Road	477	0	223
	3 - Leicester Road Southbound	1012	74	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	4	7
	2 - Wistow Road	2	0	4
	3 - Leicester Road Southbound	5	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.74	6.91	2.8	A
2 - Wistow Road	0.65	8.58	1.8	A
3 - Leicester Road Southbound	0.71	7.33	2.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1001	55	2002	0.500	997	1.0	3.566	A
2 - Wistow Road	527	809	1479	0.356	525	0.6	3.767	A
3 - Leicester Road Southbound	818	358	1805	0.453	814	0.8	3.623	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1195	66	1995	0.599	1193	1.5	4.479	A
2 - Wistow Road	629	968	1357	0.464	628	0.9	4.930	A
3 - Leicester Road Southbound	976	428	1755	0.556	975	1.2	4.603	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1463	81	1984	0.738	1458	2.7	6.784	A
2 - Wistow Road	771	1184	1193	0.646	767	1.8	8.386	A
3 - Leicester Road Southbound	1196	523	1688	0.708	1191	2.4	7.180	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1463	81	1984	0.738	1463	2.8	6.911	A
2 - Wistow Road	771	1188	1190	0.648	771	1.8	8.584	A
3 - Leicester Road Southbound	1196	525	1686	0.709	1196	2.4	7.331	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1195	67	1994	0.599	1200	1.5	4.559	A
2 - Wistow Road	629	974	1353	0.466	633	0.9	5.029	A
3 - Leicester Road Southbound	976	431	1753	0.557	981	1.3	4.691	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1001	56	2002	0.500	1003	1.0	3.607	A
2 - Wistow Road	527	814	1475	0.357	528	0.6	3.810	A
3 - Leicester Road Southbound	818	360	1803	0.453	819	0.8	3.668	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_Revised_Design_V3_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:51:44

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	2.8	6.91	0.74	A	2.5	6.41	0.72	A
2 - Wistow Road	1.8	8.58	0.65	A	0.5	4.07	0.35	A
3 - Leicester Road Southbound	2.4	7.33	0.71	A	1.5	4.95	0.60	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	4.9	11.50	0.84	B	4.0	9.39	0.80	A
2 - Wistow Road	3.7	15.01	0.79	C	1.0	5.56	0.50	A
3 - Leicester Road Southbound	4.6	12.42	0.83	B	2.5	7.07	0.72	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	5.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	4.27	9.33	18.1	40.7	44.7	28.0	
2 - Wistow Road	3.61	8.81	25.0	46.6	44.7	22.0	
3 - Leicester Road Southbound	3.66	8.77	30.0	43.0	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.730	2170
2 - Wistow Road	0.734	2154
3 - Leicester Road Southbound	0.725	2159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1315	100.000
2 - Wistow Road		✓	430	100.000
3 - Leicester Road Southbound		✓	1001	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	391	924
	2 - Wistow Road	340	0	90
	3 - Leicester Road Southbound	849	152	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	2	2
	2 - Wistow Road	3	0	0
	3 - Leicester Road Southbound	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.72	6.41	2.5	A
2 - Wistow Road	0.35	4.07	0.5	A
3 - Leicester Road Southbound	0.60	4.95	1.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	990	114	2047	0.484	986	0.9	3.383	A
2 - Wistow Road	324	693	1594	0.203	323	0.3	2.829	A
3 - Leicester Road Southbound	754	255	1916	0.393	751	0.6	3.084	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1182	136	2031	0.582	1180	1.4	4.223	A
2 - Wistow Road	387	829	1495	0.259	386	0.3	3.248	A
3 - Leicester Road Southbound	900	305	1879	0.479	899	0.9	3.669	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1448	167	2009	0.721	1443	2.5	6.308	A
2 - Wistow Road	473	1014	1360	0.348	473	0.5	4.054	A
3 - Leicester Road Southbound	1102	374	1829	0.602	1100	1.5	4.919	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1448	167	2009	0.721	1448	2.5	6.409	A
2 - Wistow Road	473	1017	1358	0.349	473	0.5	4.071	A
3 - Leicester Road Southbound	1102	374	1829	0.603	1102	1.5	4.953	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1182	137	2031	0.582	1187	1.4	4.287	A
2 - Wistow Road	387	834	1491	0.259	387	0.4	3.264	A
3 - Leicester Road Southbound	900	306	1879	0.479	902	0.9	3.694	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	990	115	2047	0.484	992	0.9	3.420	A
2 - Wistow Road	324	697	1591	0.203	324	0.3	2.841	A
3 - Leicester Road Southbound	754	256	1915	0.394	755	0.7	3.107	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_Revised_Design_V3_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:52:12

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	2.8	6.91	0.74	A	2.5	6.41	0.72	A
2 - Wistow Road	1.8	8.58	0.65	A	0.5	4.07	0.35	A
3 - Leicester Road Southbound	2.4	7.33	0.71	A	1.5	4.95	0.60	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	4.9	11.50	0.84	B	4.0	9.39	0.80	A
2 - Wistow Road	3.7	15.01	0.79	C	1.0	5.56	0.50	A
3 - Leicester Road Southbound	4.6	12.42	0.83	B	2.5	7.07	0.72	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	12.63	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	4.27	9.33	18.1	40.7	44.7	28.0	
2 - Wistow Road	3.61	8.81	25.0	46.6	44.7	22.0	
3 - Leicester Road Southbound	3.66	8.77	30.0	43.0	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.730	2170
2 - Wistow Road	0.734	2154
3 - Leicester Road Southbound	0.725	2159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1446	100.000
2 - Wistow Road		✓	828	100.000
3 - Leicester Road Southbound		✓	1257	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	320	1126
	2 - Wistow Road	496	0	332
	3 - Leicester Road Southbound	1079	178	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	4	7
	2 - Wistow Road	2	0	4
	3 - Leicester Road Southbound	5	5	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.84	11.50	4.9	B
2 - Wistow Road	0.79	15.01	3.7	C
3 - Leicester Road Southbound	0.83	12.42	4.6	B

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1089	133	1948	0.559	1084	1.3	4.141	A
2 - Wistow Road	623	844	1450	0.430	620	0.7	4.322	A
3 - Leicester Road Southbound	946	372	1794	0.527	942	1.1	4.201	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1300	160	1929	0.674	1297	2.0	5.667	A
2 - Wistow Road	744	1010	1324	0.562	742	1.3	6.167	A
3 - Leicester Road Southbound	1130	445	1743	0.648	1127	1.8	5.822	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1592	194	1904	0.836	1581	4.8	10.809	B
2 - Wistow Road	912	1231	1155	0.789	903	3.5	13.802	B
3 - Leicester Road Southbound	1384	541	1675	0.826	1373	4.4	11.566	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1592	198	1903	0.837	1591	4.9	11.500	B
2 - Wistow Road	912	1239	1149	0.793	911	3.7	15.009	C
3 - Leicester Road Southbound	1384	546	1671	0.828	1383	4.6	12.417	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1300	162	1927	0.674	1311	2.1	5.944	A
2 - Wistow Road	744	1021	1315	0.566	754	1.3	6.516	A
3 - Leicester Road Southbound	1130	452	1738	0.650	1141	1.9	6.139	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1089	134	1947	0.559	1092	1.3	4.225	A
2 - Wistow Road	623	850	1445	0.431	626	0.8	4.402	A
3 - Leicester Road Southbound	946	375	1792	0.528	949	1.1	4.288	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 03_Leicester Road_Wistow Road_Revised_Design_V3_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 10:52:39

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Leicester Road Northbound	2.8	6.91	0.74	A	2.5	6.41	0.72	A
2 - Wistow Road	1.8	8.58	0.65	A	0.5	4.07	0.35	A
3 - Leicester Road Southbound	2.4	7.33	0.71	A	1.5	4.95	0.60	A
Baseline 2021 + Cumulative Development								
1 - Leicester Road Northbound	4.9	11.50	0.84	B	4.0	9.39	0.80	A
2 - Wistow Road	3.7	15.01	0.79	C	1.0	5.56	0.50	A
3 - Leicester Road Southbound	4.6	12.42	0.83	B	2.5	7.07	0.72	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Leicester Road/Wistow Road Roundabout
Location	Kibworth
Site number	
Date	25/11/2016
Version	1
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\Piedalk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	7.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Leicester Road Northbound	
2	Wistow Road	
3	Leicester Road Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Leicester Road Northbound	4.27	9.33	18.1	40.7	44.7	28.0	
2 - Wistow Road	3.61	8.81	25.0	46.6	44.7	22.0	
3 - Leicester Road Southbound	3.66	8.77	30.0	43.0	44.7	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Leicester Road Northbound	0.730	2170
2 - Wistow Road	0.734	2154
3 - Leicester Road Southbound	0.725	2159

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Leicester Road Northbound		✓	1412	100.000
2 - Wistow Road		✓	580	100.000
3 - Leicester Road Southbound		✓	1160	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	406	1006
	2 - Wistow Road	398	0	192
	3 - Leicester Road Southbound	916	244	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Leicester Road Northbound	2 - Wistow Road	3 - Leicester Road Southbound
From	1 - Leicester Road Northbound	0	2	2
	2 - Wistow Road	3	0	0
	3 - Leicester Road Southbound	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Leicester Road Northbound	0.80	9.39	4.0	A
2 - Wistow Road	0.50	5.56	1.0	A
3 - Leicester Road Southbound	0.72	7.07	2.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1063	183	1998	0.532	1059	1.1	3.814	A
2 - Wistow Road	444	754	1555	0.286	443	0.4	3.231	A
3 - Leicester Road Southbound	873	299	1888	0.463	870	0.9	3.526	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1269	219	1972	0.644	1267	1.8	5.084	A
2 - Wistow Road	530	903	1447	0.367	530	0.6	3.926	A
3 - Leicester Road Southbound	1043	357	1845	0.565	1041	1.3	4.470	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1555	268	1937	0.803	1546	3.9	9.020	A
2 - Wistow Road	650	1102	1301	0.499	648	1.0	5.500	A
3 - Leicester Road Southbound	1277	437	1786	0.715	1273	2.4	6.945	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1555	269	1937	0.803	1554	4.0	9.392	A
2 - Wistow Road	650	1107	1297	0.501	650	1.0	5.562	A
3 - Leicester Road Southbound	1277	438	1786	0.715	1277	2.5	7.074	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1269	220	1971	0.644	1278	1.8	5.254	A
2 - Wistow Road	530	910	1441	0.368	532	0.6	3.969	A
3 - Leicester Road Southbound	1043	359	1844	0.566	1047	1.3	4.547	A

18:00 - 18:15

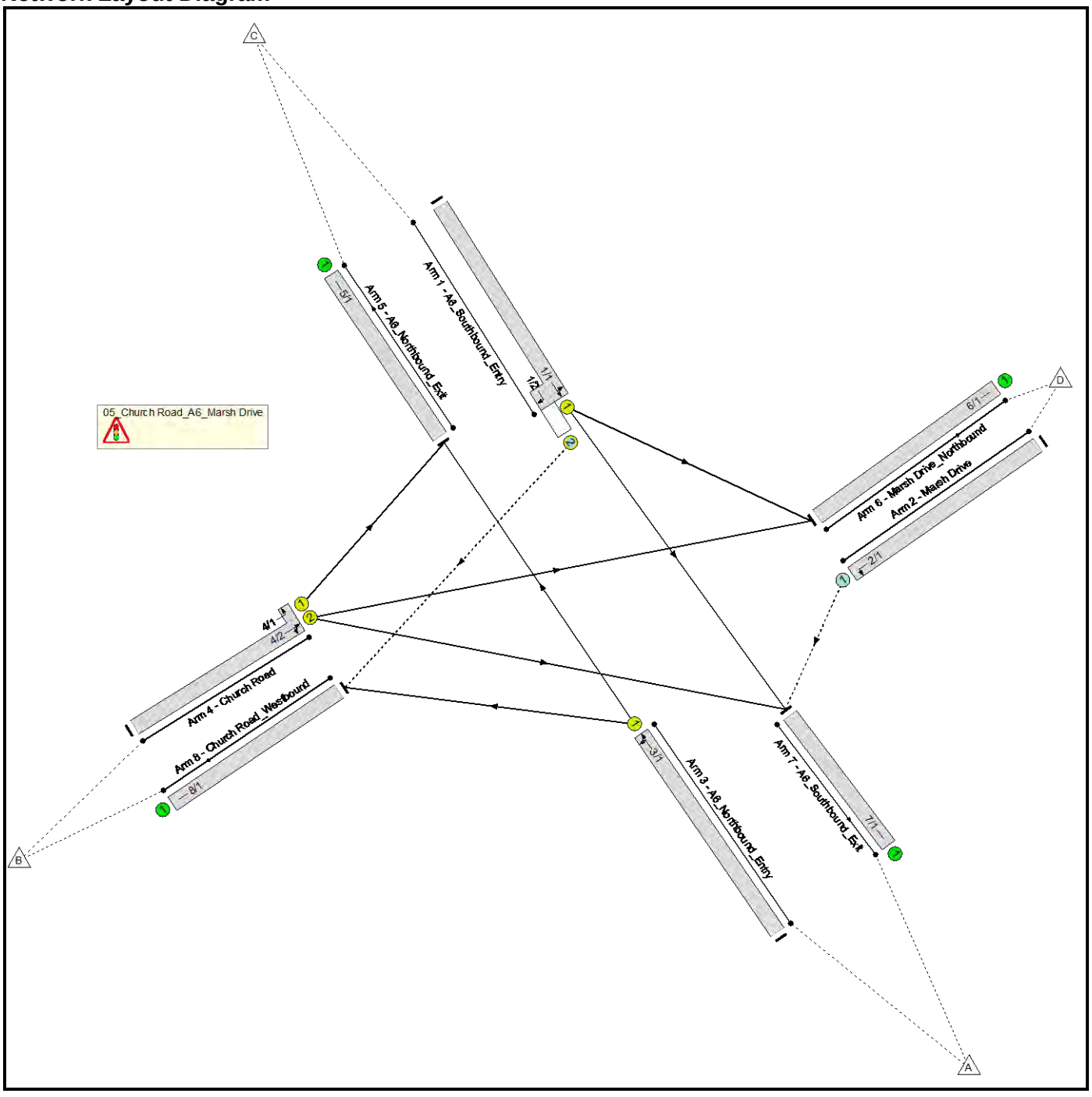
Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Leicester Road Northbound	1063	184	1997	0.532	1066	1.1	3.878	A
2 - Wistow Road	444	759	1551	0.286	445	0.4	3.257	A
3 - Leicester Road Southbound	873	300	1886	0.463	875	0.9	3.567	A

Full Input Data And Results

User and Project Details

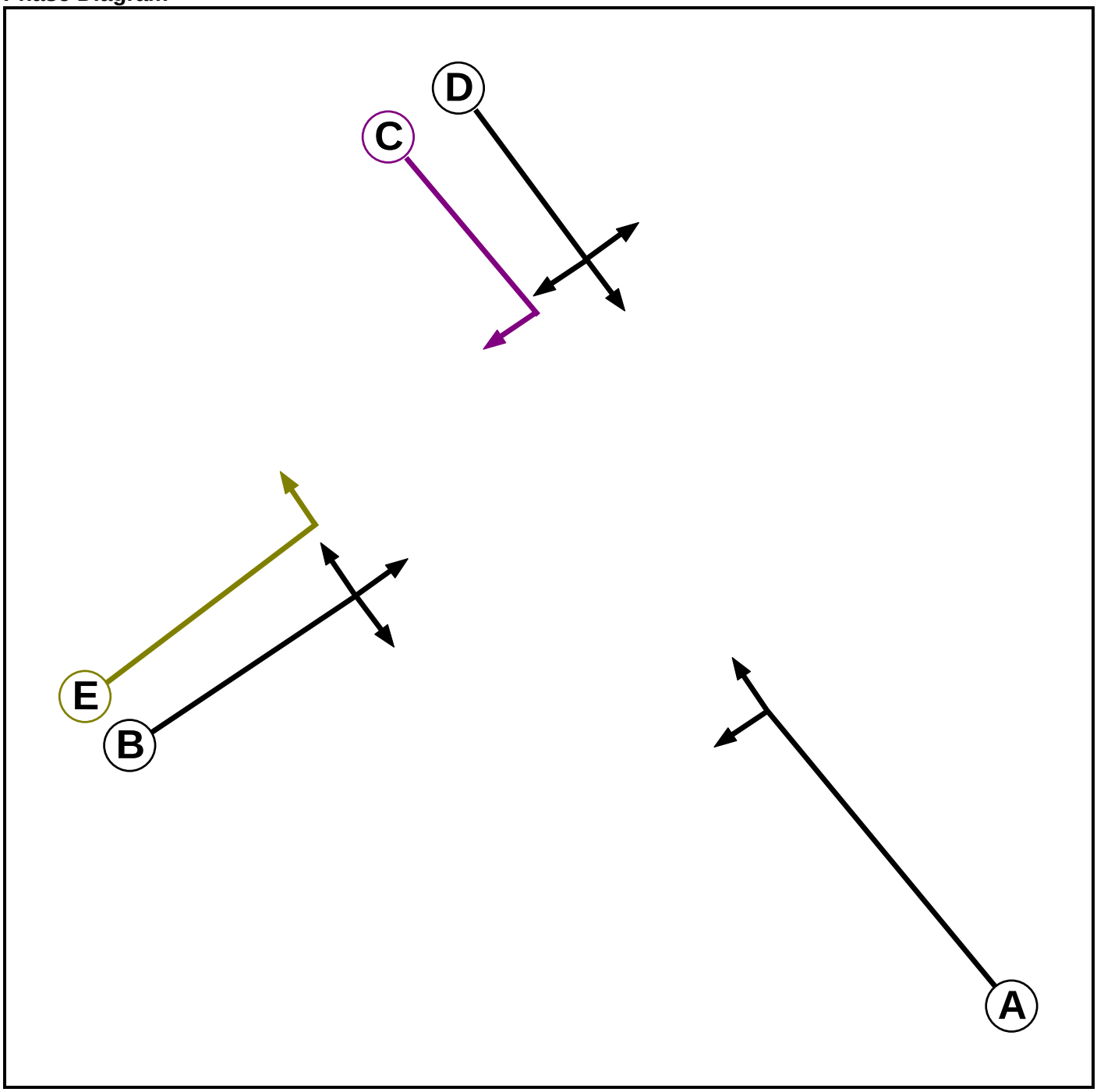
Project:	**LCCF Harborough DC Local Plan traffic assessment**
Title:	**Kibworth Cumulative Dev Impact Study**
Location:	A6/Church Road/Marsh Drive, Kibworth, Leicester
File name:	05_Signalised_Proposal_LinSig Model 6_MKchecked_DH.lsg3x
Author:	K.Piedallu (checked & updated by M Karantanos)
Company:	Jacobs
Address:	New City Court, 20 St Thomas Str, London SE1 9RS
Notes:	Proposed Model for A6/Church Road/Marsh Drive

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7
C	Ind. Arrow	D	-9999	4
D	Traffic		-9999	7
E	Filter	B	-9999	4

Full Input Data And Results

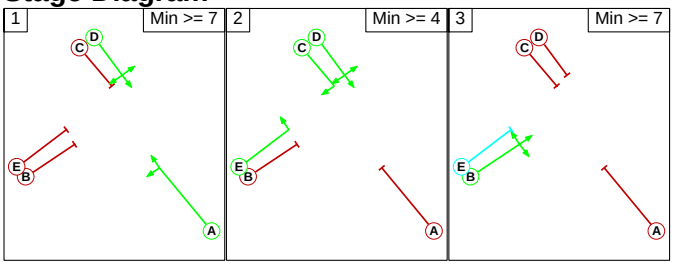
Phase Intergreens Matrix

Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		8	4	-	8
	B	5		5	5	-
	C	5	5		-	-
	D	-	5	-		-
	E	5	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A D
2	C D E
3	B

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	3	D	Losing	3	3

Prohibited Stage Change

From Stage	To Stage			
		1	2	3
	1		8	8
	2	X		5
	3	5	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: 05_Church Road_A6_Marsh Drive											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/2 (A6_Southbound_Entry)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	3.00	-	0.50	3	2.00
2/1 (Marsh Drive)	7/1 (Left)	715	0	1/1	0.22	All	-	-	-	-	-
				4/2	0.22	All					

Full Input Data And Results

Lane Input Data

Junction: 05_Church Road_A6_Marsh Drive												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A6_Southbound_Entry)	U	D	2	3	60.0	Geom	-	2.95	0.00	Y	Arm 6 Left	8.00
											Arm 7 Ahead	Inf
1/2 (A6_Southbound_Entry)	O	D C	2	3	2.0	Geom	-	2.95	0.00	Y	Arm 8 Right	10.00
2/1 (Marsh Drive)	O		2	3	60.0	Geom	-	3.07	0.00	Y	Arm 7 Left	10.00
3/1 (A6_Northbound_Entry)	U	A	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	11.00
4/1 (Church Road)	U	B E	2	3	1.1	Geom	-	3.45	0.00	Y	Arm 5 Left	20.00
4/2 (Church Road)	U	B	2	3	60.0	Geom	-	3.07	0.00	Y	Arm 6 Ahead	10.00
											Arm 7 Right	12.00
5/1 (A6_Northbound_Exit)	U		2	3	60.0	Geom	-	2.80	0.00	Y		
6/1 (Marsh Drive_Northbound)	U		2	3	60.0	Geom	-	3.00	0.00	Y		
7/1 (A6_Southbound_Exit)	U		2	3	60.0	Geom	-	2.90	0.00	Y		
8/1 (Church Road_Westbound)	U		2	3	60.0	Geom	-	3.14	0.00	Y		

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
5: 'RevA_Baseline 2021 AM'	08:00	09:00	01:00	
6: 'RevA_Baseline 2021 PM'	17:00	18:00	01:00	
7: 'RevA_Baseline 2021 + Cumul. Development AM'	08:00	09:00	01:00	
8: 'RevA_Baseline 2021 + Cumul. Development PM'	17:00	18:00	01:00	

Scenario 5: 'RevA_Baseline 2021 AM' (FG5: 'RevA_Baseline 2021 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	40	1104	0	1144
	B	45	0	271	1	317
	C	1277	193	0	2	1472
	D	69	0	0	0	69
	Tot.	1391	233	1375	3	3002

Traffic Lane Flows

Lane	Scenario 5: RevA_Baseline 2021 AM
Junction: 05_Church Road_A6_Marsh Drive	
1/1 (with short)	1472(In) 1279(Out)
1/2 (short)	193
2/1	69
3/1	1144
4/1 (short)	271
4/2 (with short)	317(In) 46(Out)
5/1	1375
6/1	3
7/1	1391
8/1	233

Lane Saturation Flows

Junction: 05_Church Road_A6_Marsh Drive								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 6 Left	8.00	0.2 %	1909	1909
				Arm 7 Ahead	Inf	99.8 %		
1/2 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 8 Right	10.00	100.0 %	1661	1661
2/1 (Marsh Drive)	3.07	0.00	Y	Arm 7 Left	10.00	100.0 %	1671	1671
3/1 (A6_Northbound_Entry)	3.60	0.00	Y	Arm 5 Ahead	Inf	96.5 %	1966	1966
				Arm 8 Left	11.00	3.5 %		
4/1 (Church Road)	3.45	0.00	Y	Arm 5 Left	20.00	100.0 %	1823	1823
4/2 (Church Road)	3.07	0.00	Y	Arm 6 Ahead	10.00	2.2 %	1708	1708
				Arm 7 Right	12.00	97.8 %		
5/1 (A6_Northbound_Exit)	2.80	0.00	Y				1895	1895
6/1 (Marsh Drive_Northbound)	3.00	0.00	Y				1915	1915
7/1 (A6_Southbound_Exit)	2.90	0.00	Y				1905	1905
8/1 (Church Road_Westbound)	3.14	0.00	Y				1929	1929

Scenario 6: 'RevA_Baseline 2021 PM' (FG6: 'RevA_Baseline 2021 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	78	1198	0	1276
	B	24	0	180	11	215
	C	842	239	0	5	1086
	D	74	0	0	0	74
	Tot.	940	317	1378	16	2651

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: RevA_Baseline 2021 PM
Junction: 05_Church Road_A6_Marsh Drive	
1/1 (with short)	1086(In) 847(Out)
1/2 (short)	239
2/1	74
3/1	1276
4/1 (short)	180
4/2 (with short)	215(In) 35(Out)
5/1	1378
6/1	16
7/1	940
8/1	317

Lane Saturation Flows

Junction: 05_Church Road_A6_Marsh Drive								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 6 Left	8.00	0.6 %	1908	1908
				Arm 7 Ahead	Inf	99.4 %		
1/2 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 8 Right	10.00	100.0 %	1661	1661
2/1 (Marsh Drive)	3.07	0.00	Y	Arm 7 Left	10.00	100.0 %	1671	1671
3/1 (A6_Northbound_Entry)	3.60	0.00	Y	Arm 5 Ahead	Inf	93.9 %	1959	1959
				Arm 8 Left	11.00	6.1 %		
4/1 (Church Road)	3.45	0.00	Y	Arm 5 Left	20.00	100.0 %	1823	1823
4/2 (Church Road)	3.07	0.00	Y	Arm 6 Ahead	10.00	31.4 %	1697	1697
				Arm 7 Right	12.00	68.6 %		
5/1 (A6_Northbound_Exit)	2.80	0.00	Y				1895	1895
6/1 (Marsh Drive_Northbound)	3.00	0.00	Y				1915	1915
7/1 (A6_Southbound_Exit)	2.90	0.00	Y				1905	1905
8/1 (Church Road_Westbound)	3.14	0.00	Y				1929	1929

Full Input Data And Results

Scenario 7: 'RevA_Baseline 2021 + Cumul Dev AM' (FG7: 'RevA_Baseline 2021 + Cumul. Development AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	40	1172	0	1212
	B	45	0	292	1	338
	C	1353	203	0	2	1558
	D	69	0	0	0	69
	Tot.	1467	243	1464	3	3177

Traffic Lane Flows

Lane	Scenario 7: RevA_Baseline 2021 + Cumul Dev AM
Junction: 05_Church Road_A6_Marsh Drive	
1/1 (with short)	1558(In) 1355(Out)
1/2 (short)	203
2/1	69
3/1	1212
4/1 (short)	292
4/2 (with short)	338(In) 46(Out)
5/1	1464
6/1	3
7/1	1467
8/1	243

Full Input Data And Results

Lane Saturation Flows

Junction: 05_Church Road_A6_Marsh Drive								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 6 Left	8.00	0.1 %	1909	1909
				Arm 7 Ahead	Inf	99.9 %		
1/2 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 8 Right	10.00	100.0 %	1661	1661
2/1 (Marsh Drive)	3.07	0.00	Y	Arm 7 Left	10.00	100.0 %	1671	1671
3/1 (A6_Northbound_Entry)	3.60	0.00	Y	Arm 5 Ahead	Inf	96.7 %	1966	1966
				Arm 8 Left	11.00	3.3 %		
4/1 (Church Road)	3.45	0.00	Y	Arm 5 Left	20.00	100.0 %	1823	1823
4/2 (Church Road)	3.07	0.00	Y	Arm 6 Ahead	10.00	2.2 %	1708	1708
				Arm 7 Right	12.00	97.8 %		
5/1 (A6_Northbound_Exit)	2.80	0.00	Y				1895	1895
6/1 (Marsh Drive_Northbound)	3.00	0.00	Y				1915	1915
7/1 (A6_Southbound_Exit)	2.90	0.00	Y				1905	1905
8/1 (Church Road_Westbound)	3.14	0.00	Y				1929	1929

Scenario 8: 'RevA_Baseline 2021 + Cumul Dev PM' (FG8: 'RevA_Baseline 2021 + Cumul. Development PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	78	1209	0	1287
	B	24	0	189	11	224
	C	939	261	0	5	1205
	D	74	0	0	0	74
	Tot.	1037	339	1398	16	2790

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: RevA_Baseline 2021 + Cumul Dev PM
Junction: 05_Church Road_A6_Marsh Drive	
1/1 (with short)	1205(In) 944(Out)
1/2 (short)	261
2/1	74
3/1	1287
4/1 (short)	189
4/2 (with short)	224(In) 35(Out)
5/1	1398
6/1	16
7/1	1037
8/1	339

Lane Saturation Flows

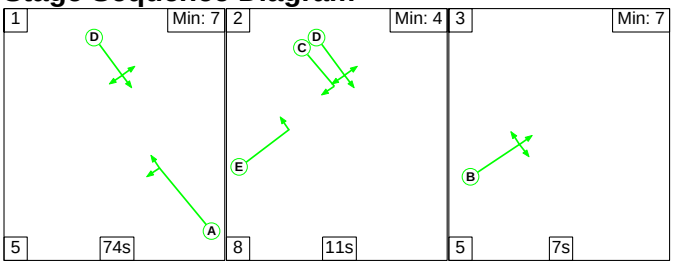
Junction: 05_Church Road_A6_Marsh Drive

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 6 Left	8.00	0.5 %	1908	1908
				Arm 7 Ahead	Inf	99.5 %		
1/2 (A6_Southbound_Entry)	2.95	0.00	Y	Arm 8 Right	10.00	100.0 %	1661	1661
2/1 (Marsh Drive)	3.07	0.00	Y	Arm 7 Left	10.00	100.0 %	1671	1671
3/1 (A6_Northbound_Entry)	3.60	0.00	Y	Arm 5 Ahead	Inf	93.9 %	1959	1959
				Arm 8 Left	11.00	6.1 %		
4/1 (Church Road)	3.45	0.00	Y	Arm 5 Left	20.00	100.0 %	1823	1823
4/2 (Church Road)	3.07	0.00	Y	Arm 6 Ahead	10.00	31.4 %	1697	1697
				Arm 7 Right	12.00	68.6 %		
5/1 (A6_Northbound_Exit)	2.80	0.00	Y				1895	1895
6/1 (Marsh Drive_Northbound)	3.00	0.00	Y				1915	1915
7/1 (A6_Southbound_Exit)	2.90	0.00	Y				1905	1905
8/1 (Church Road_Westbound)	3.14	0.00	Y				1929	1929

Full Input Data And Results

Scenario 5: 'RevA_Baseline 2021 AM' (FG5: 'RevA_Baseline 2021 AM', Plan 1: 'Network Control Plan 1')

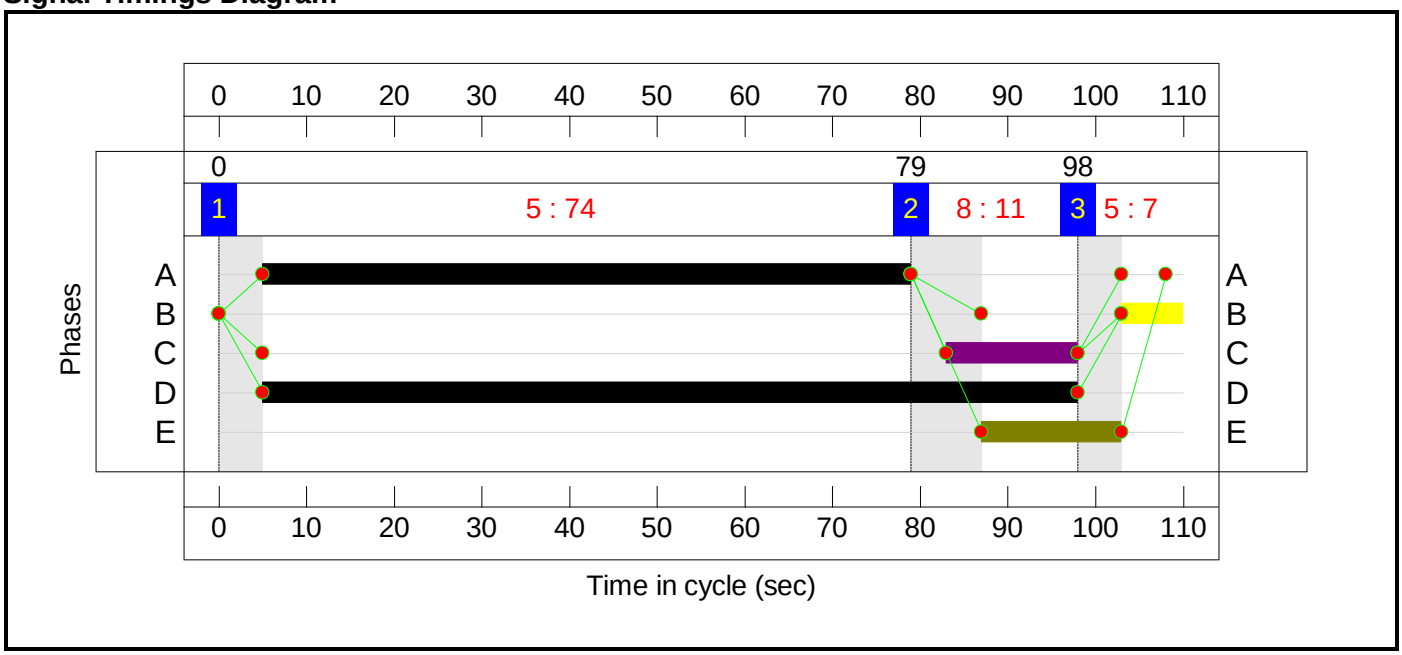
Stage Sequence Diagram



Stage Timings

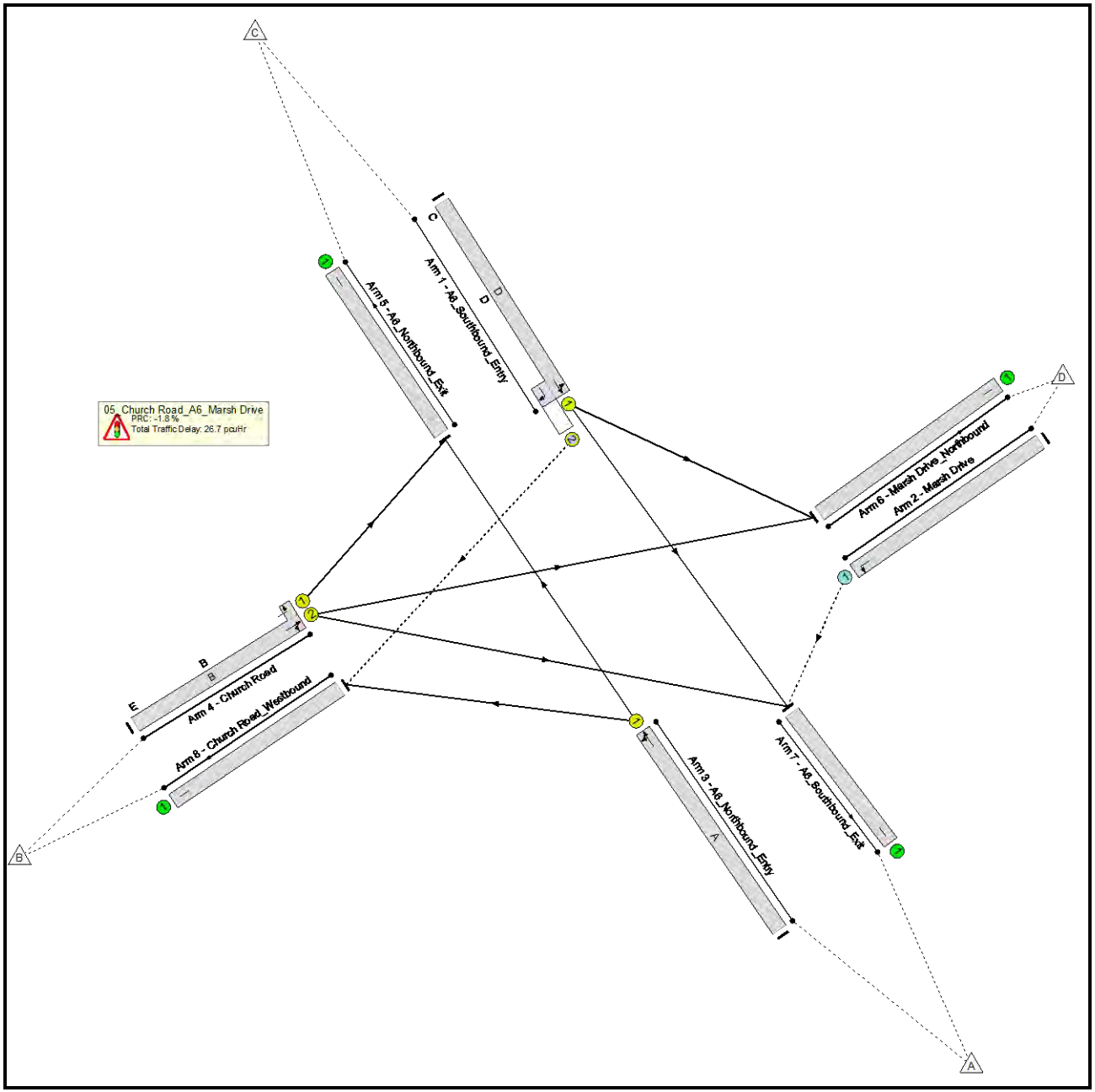
Stage	1	2	3
Duration	74	11	7
Change Point	0	79	98

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Kibworth Cumulative Dev Impact Study	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.6%**
05_Church Road_A6_Marsh Drive	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.6%**
1/1+1/2	A6_Southbound_Entry Left Ahead Right	U+O	N/A	N/A	D	C	1	93	15	1472	1909:1661	1397+211	91.6 : 91.6%
2/1	Marsh Drive Left	O	N/A	N/A	-		-	-	-	69	1671	423	16.3%
3/1	A6_Northbound_Entry Ahead Left	U	N/A	N/A	A		1	74	-	1144	1966	1340	85.3%
4/2+4/1	Church Road Left Ahead Right	U	N/A	N/A	B	E	1	7:23	16	317	1708:1823	50+296	91.5 : 91.5%
5/1	A6_Northbound_Exit	U	N/A	N/A	-		-	-	-	1375	1895	1895	72.6%
6/1	Marsh Drive_Northbound	U	N/A	N/A	-		-	-	-	3	1915	1915	0.2%
7/1	A6_Southbound_Exit	U	N/A	N/A	-		-	-	-	1391	1905	1905	73.0%
8/1	Church Road_Westbound	U	N/A	N/A	-		-	-	-	233	1929	1929	12.1%

Full Input Data And Results

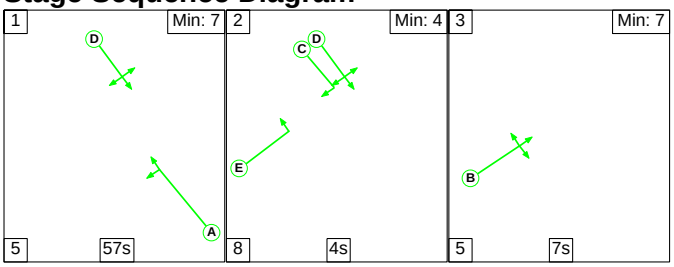
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**109**	**147**	**5**	**10.2**	**14.9**	**1.5**	**26.7**	**-**	**-**	**-**	**-**
05_Church Road_A6_Marsh Drive	**-**	**-**	**109**	**147**	**5**	**10.2**	**14.9**	**1.5**	**26.7**	**-**	**-**	**-**	**-**
1/1+1/2	1472	1472	45	142	5	2.3	5.1	1.5	8.8	21.6	29.1	5.1	34.2
2/1	69	69	64	5	0	0.0	0.1	-	0.1	5.1	0.0	0.1	0.1
3/1	1144	1144	-	-	-	4.2	2.8	-	7.1	22.2	26.4	2.8	29.2
4/2+4/1	317	317	-	-	-	3.7	4.2	-	7.9	90.0	9.2	4.2	13.4
5/1	1375	1375	-	-	-	0.0	1.3	-	1.3	3.5	19.0	1.3	20.3
6/1	3	3	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
7/1	1391	1391	-	-	-	0.0	1.3	-	1.3	3.5	0.0	1.3	1.3
8/1	233	233	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1

C1 PRC for Signalled Lanes (%): -1.8 Total Delay for Signalled Lanes (pcuHr): 23.82 Cycle Time (s): 110
PRC Over All Lanes (%): -1.8 Total Delay Over All Lanes(pcuHr): 26.66

Full Input Data And Results

Scenario 6: 'RevA_Baseline 2021 PM' (FG6: 'RevA_Baseline 2021 PM', Plan 1: 'Network Control Plan 1')

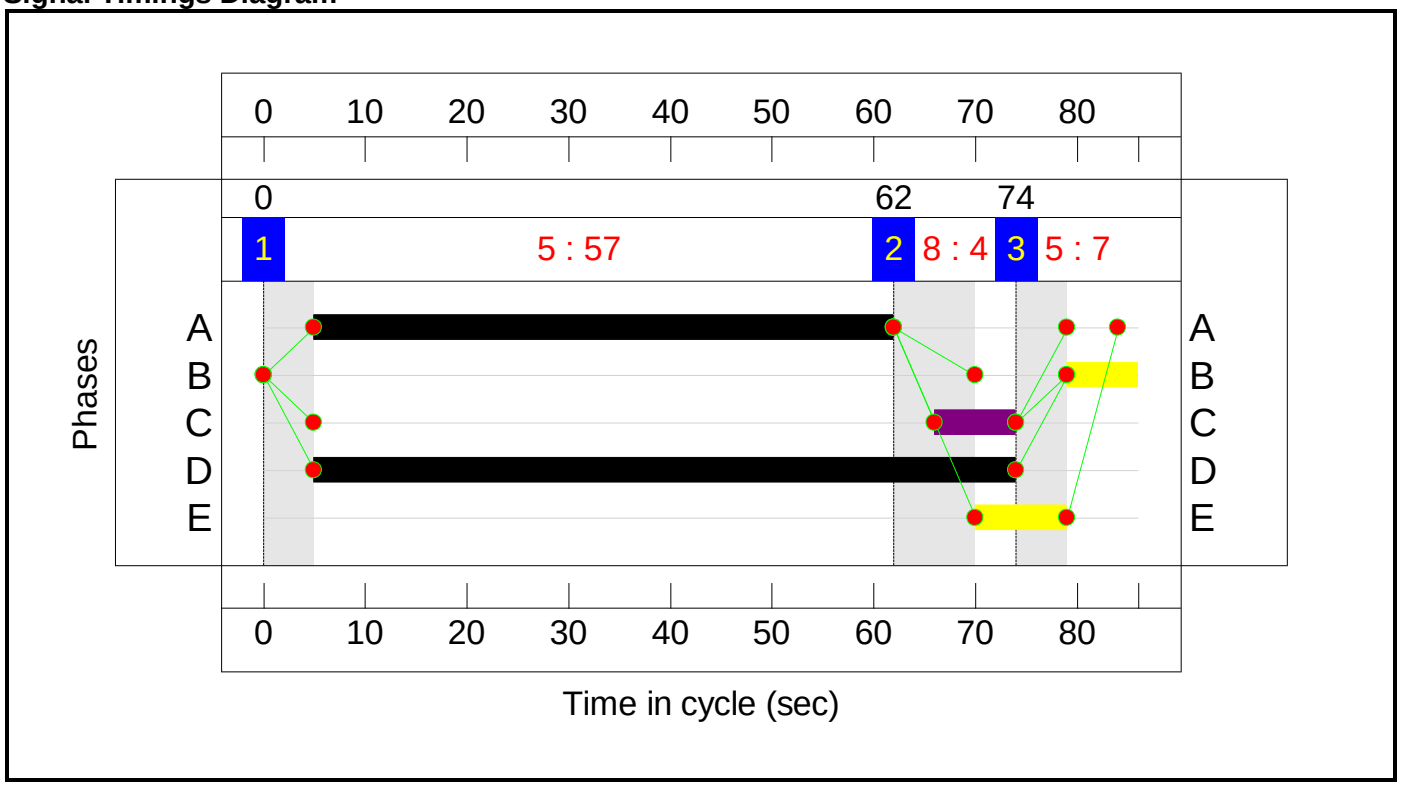
Stage Sequence Diagram



Stage Timings

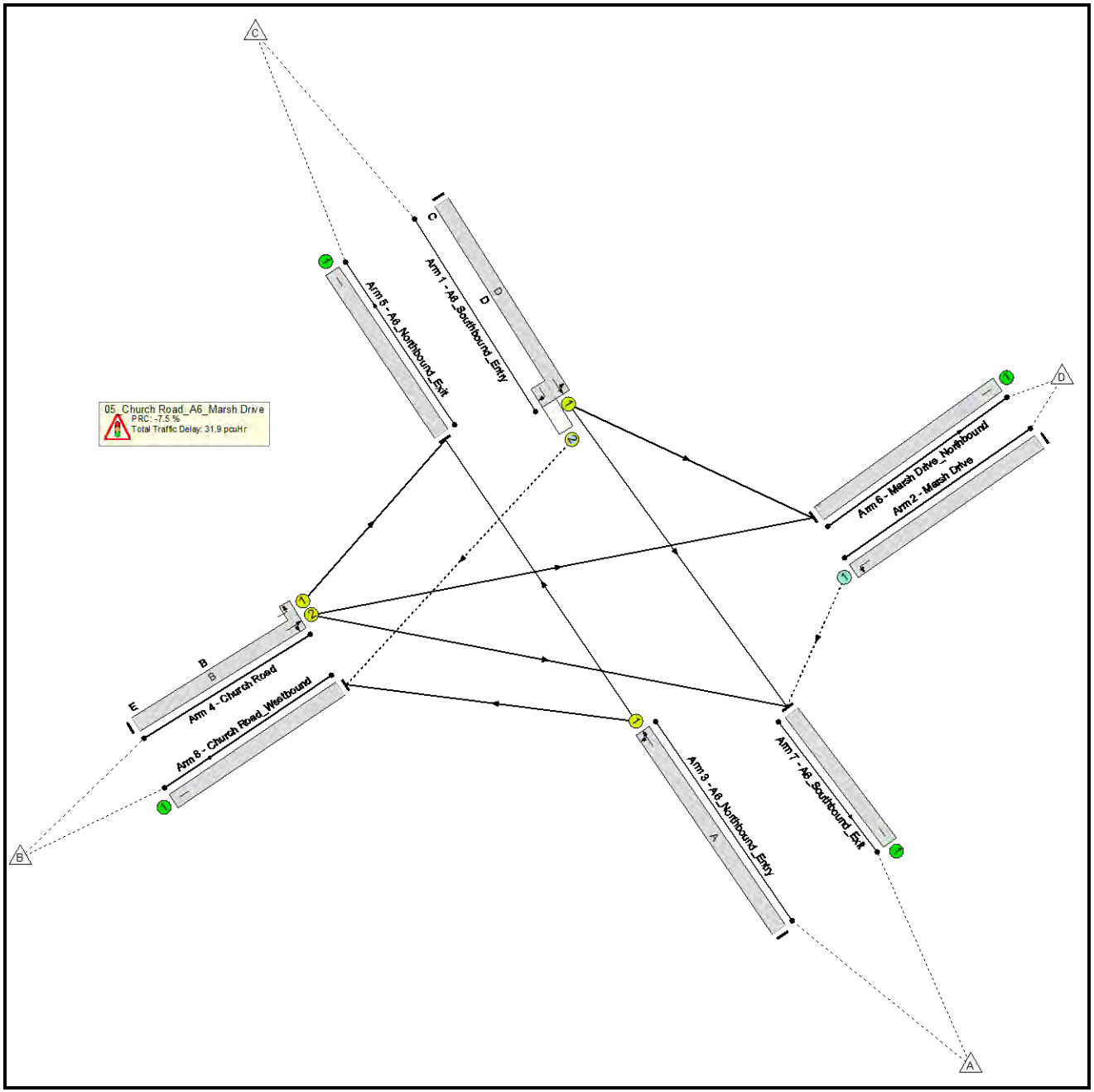
Stage	1	2	3
Duration	57	4	7
Change Point	0	62	74

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Kibworth Cumulative Dev Impact Study	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.7%**
05_Church Road_A6_Marsh Drive	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.7%**
1/1+1/2	A6_Southbound_Entry Left Ahead Right	U+O	N/A	N/A	D	C	1	69	8	1086	1908:1661	876+247	96.7 : 96.7%
2/1	Marsh Drive Left	O	N/A	N/A	-		-	-	-	74	1671	521	14.2%
3/1	A6_Northbound_Entry Ahead Left	U	N/A	N/A	A		1	57	-	1276	1959	1321	96.6%
4/2+4/1	Church Road Left Ahead Right	U	N/A	N/A	B	E	1	7:16	9	215	1697:1823	59+305	59.1 : 59.1%
5/1	A6_Northbound_Exit	U	N/A	N/A	-		-	-	-	1378	1895	1895	72.7%
6/1	Marsh Drive_Northbound	U	N/A	N/A	-		-	-	-	16	1915	1915	0.8%
7/1	A6_Southbound_Exit	U	N/A	N/A	-		-	-	-	940	1905	1905	49.3%
8/1	Church Road_Westbound	U	N/A	N/A	-		-	-	-	317	1929	1929	16.4%

Full Input Data And Results

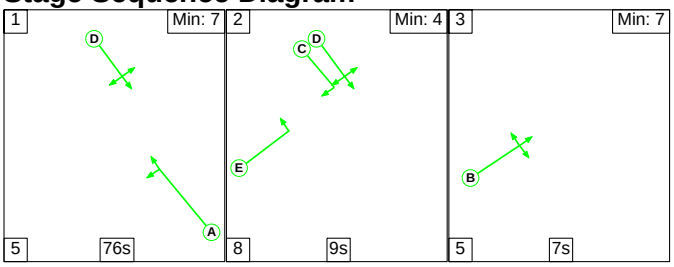
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**70**	**200**	**43**	**7.9**	**22.2**	**1.8**	**31.9**	**-**	**-**	**-**	**-**
05_Church Road_A6_Marsh Drive	**-**	**-**	**70**	**200**	**43**	**7.9**	**22.2**	**1.8**	**31.9**	**-**	**-**	**-**	**-**
1/1+1/2	1086	1086	3	193	43	1.4	9.7	1.8	12.8	42.5	10.3	9.7	20.0
2/1	74	74	67	7	0	0.0	0.1	-	0.1	4.0	0.0	0.1	0.1
3/1	1276	1276	-	-	-	4.6	9.8	-	14.5	40.8	28.4	9.8	38.2
4/2+4/1	215	215	-	-	-	1.9	0.7	-	2.6	43.9	4.4	0.7	5.1
5/1	1378	1378	-	-	-	0.0	1.3	-	1.3	3.5	0.0	1.3	1.3
6/1	16	16	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
7/1	940	940	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
8/1	317	317	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1

C1 PRC for Signalled Lanes (%): -7.5 Total Delay for Signalled Lanes (pcuHr): 29.92 Cycle Time (s): 86
PRC Over All Lanes (%): -7.5 Total Delay Over All Lanes(pcuHr): 31.92

Full Input Data And Results

Scenario 7: 'RevA_Baseline 2021 + Cumul Dev AM' (FG7: 'RevA_Baseline 2021 + Cumul. Development AM', Plan 1: 'Network Control Plan 1')

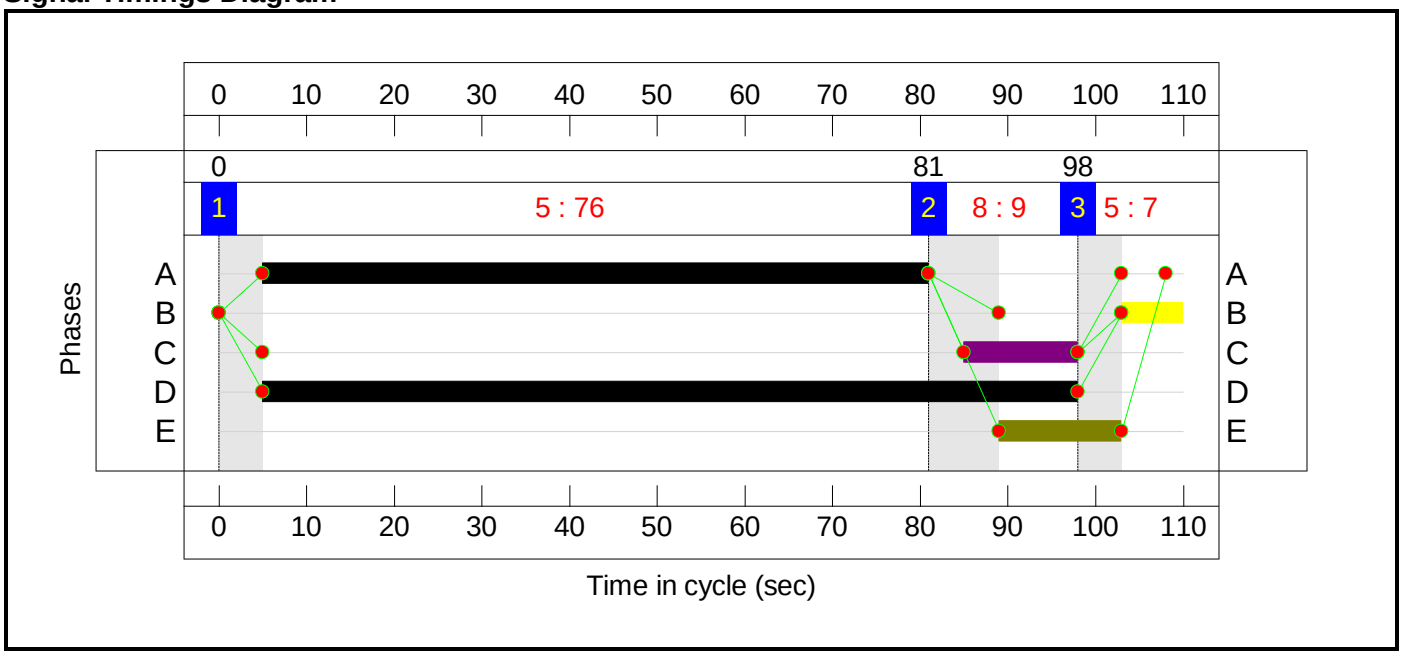
Stage Sequence Diagram



Stage Timings

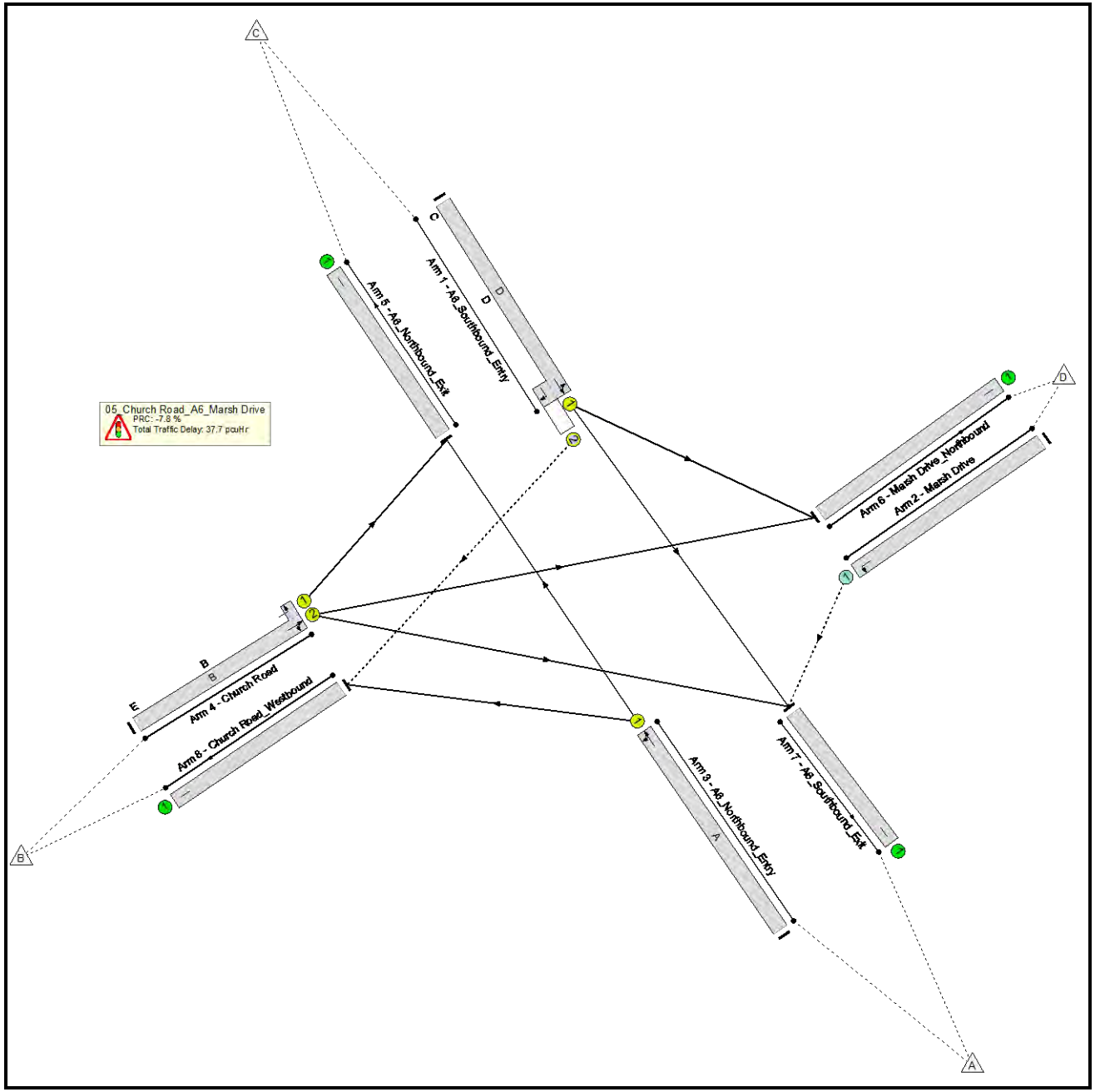
Stage	1	2	3
Duration	76	9	7
Change Point	0	81	98

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.1%**
05_Church Road_A6_Marsh Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.1%**
1/1+1/2	A6_Southbound_Entry Left Ahead Right	U+O	N/A	N/A	D	C	1	93	13	1558	1909:1661	1396+209	97.1 : 97.1%
2/1	Marsh Drive Left	O	N/A	N/A	-		-	-	-	69	1671	407	17.0%
3/1	A6_Northbound_Entry Ahead Left	U	N/A	N/A	A		1	76	-	1212	1966	1376	88.1%
4/2+4/1	Church Road Left Ahead Right	U	N/A	N/A	B	E	1	7:21	14	338	1708:1823	48+305	95.8 : 95.8%
5/1	A6_Northbound_Exit	U	N/A	N/A	-		-	-	-	1464	1895	1895	77.3%
6/1	Marsh Drive_Northbound	U	N/A	N/A	-		-	-	-	3	1915	1915	0.2%
7/1	A6_Southbound_Exit	U	N/A	N/A	-		-	-	-	1467	1905	1905	77.0%
8/1	Church Road_Westbound	U	N/A	N/A	-		-	-	-	243	1929	1929	12.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**89**	**177**	**6**	**11.7**	**24.5**	**1.6**	**37.7**	**-**	**-**	**-**	**-**
05_Church Road_A6_Marsh Drive	**-**	**-**	**89**	**177**	**6**	**11.7**	**24.5**	**1.6**	**37.7**	**-**	**-**	**-**	**-**
1/1+1/2	1558	1558	25	172	6	3.2	11.2	1.6	16.0	36.9	39.5	11.2	50.7
2/1	69	69	64	5	0	0.0	0.1	-	0.1	5.3	0.0	0.1	0.1
3/1	1212	1212	-	-	-	4.3	3.5	-	7.9	23.4	29.0	3.5	32.5
4/2+4/1	338	338	-	-	-	4.1	6.2	-	10.4	110.2	10.0	6.2	16.2
5/1	1464	1464	-	-	-	0.0	1.7	-	1.7	4.2	22.7	1.7	24.4
6/1	3	3	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
7/1	1467	1467	-	-	-	0.0	1.7	-	1.7	4.1	0.0	1.7	1.7
8/1	243	243	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1

C1

PRC for Signalled Lanes (%): -7.8
PRC Over All Lanes (%): -7.8

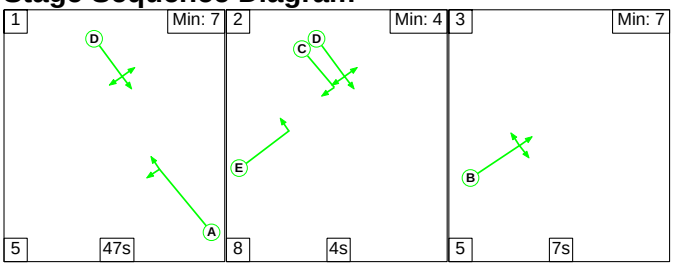
Total Delay for Signalled Lanes (pcuHr): 34.21
Total Delay Over All Lanes(pcuHr): 37.75

Cycle Time (s): 110

Full Input Data And Results

Scenario 8: 'RevA_Baseline 2021 + Cumul Dev PM' (FG8: 'RevA_Baseline 2021 + Cumul. Development PM', Plan 1: 'Network Control Plan 1')

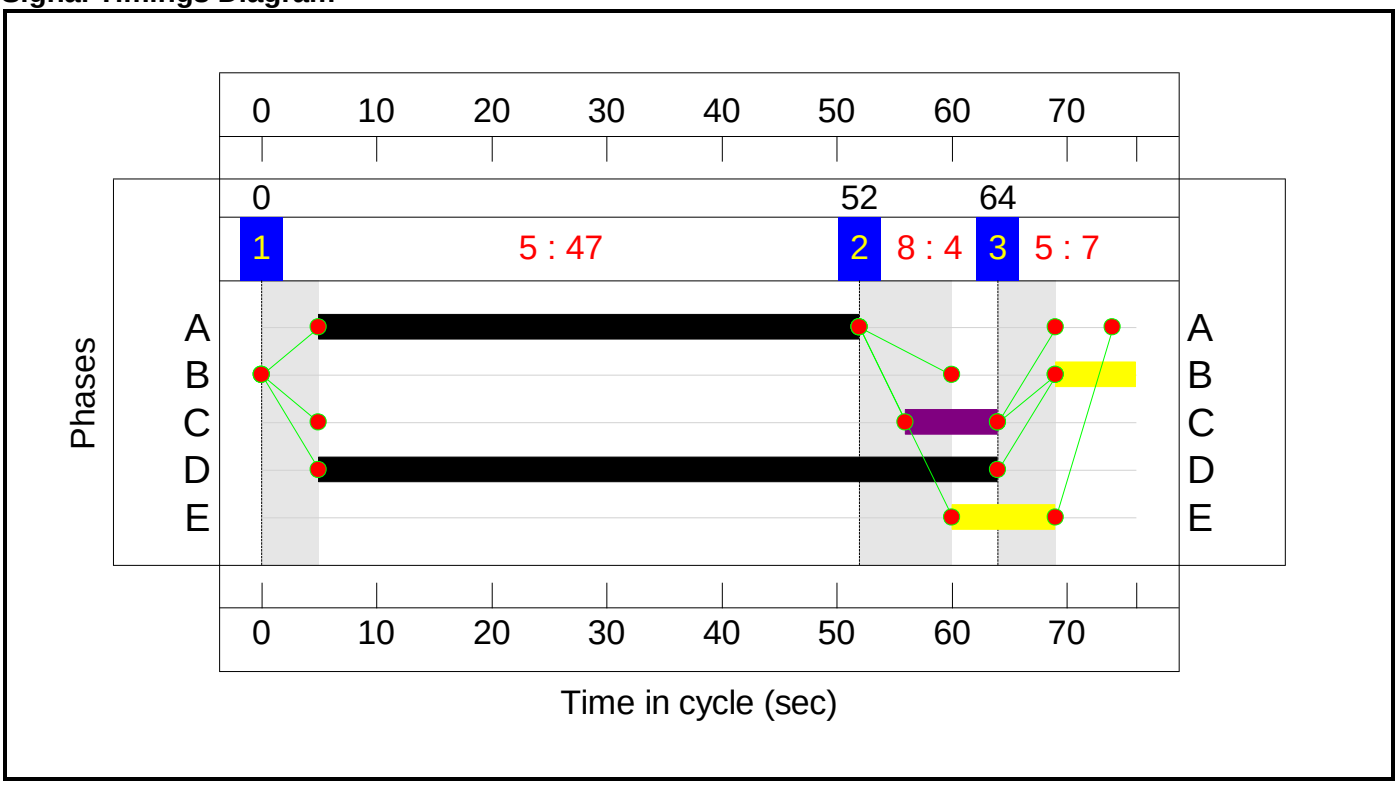
Stage Sequence Diagram



Stage Timings

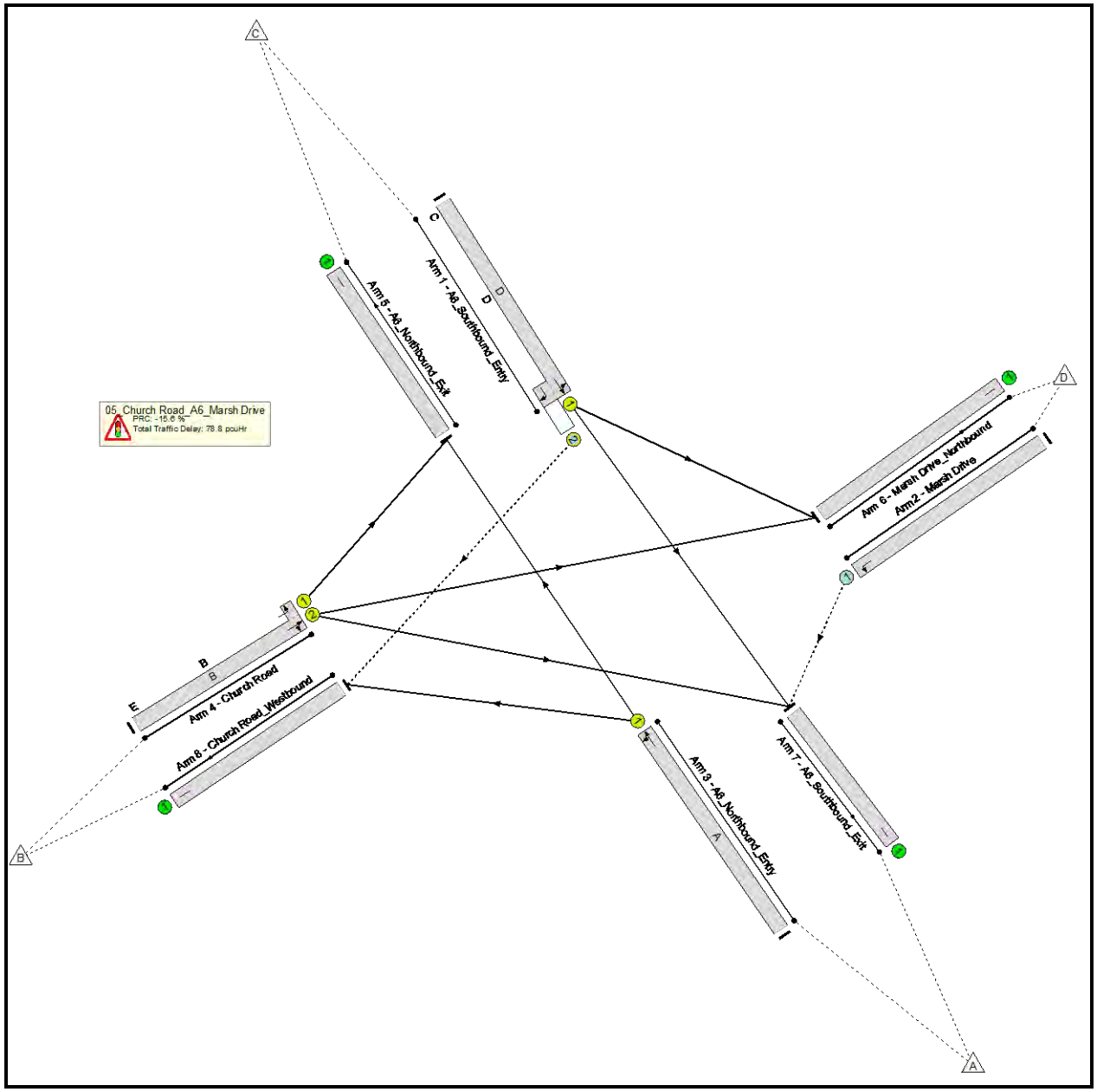
Stage	1	2	3
Duration	47	4	7
Change Point	0	52	64

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.0%**
05_Church Road_A6_Marsh Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.0%**
1/1+1/2	A6_Southbound_Entry Left Ahead Right	U+O	N/A	N/A	D	C	1	59	8	1205	1908:1661	914+253	103.3 : 103.3%
2/1	Marsh Drive Left	O	N/A	N/A	-		-	-	-	74	1671	506	14.6%
3/1	A6_Northbound_Entry Ahead Left	U	N/A	N/A	A		1	47	-	1287	1959	1237	104.0%
4/2+4/1	Church Road Left Ahead Right	U	N/A	N/A	B	E	1	7:16	9	224	1697:1823	65+348	54.3 : 54.3%
5/1	A6_Northbound_Exit	U	N/A	N/A	-		-	-	-	1398	1895	1895	71.3%
6/1	Marsh Drive_Northbound	U	N/A	N/A	-		-	-	-	16	1915	1915	0.8%
7/1	A6_Southbound_Exit	U	N/A	N/A	-		-	-	-	1037	1905	1905	52.9%
8/1	Church Road_Westbound	U	N/A	N/A	-		-	-	-	339	1929	1929	17.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Kibworth Cumulative Dev Impact Study	**-**	**-**	**66**	**226**	**34**	**11.0**	**66.3**	**1.5**	**78.8**	**-**	**-**	**-**	**-**
05_Church Road_A6_Marsh Drive	**-**	**-**	**66**	**226**	**34**	**11.0**	**66.3**	**1.5**	**78.8**	**-**	**-**	**-**	**-**
1/1+1/2	1205	1166	0	219	34	2.7	29.5	1.5	33.7	100.6	16.0	29.5	45.5
2/1	74	74	66	8	0	0.0	0.1	-	0.1	4.2	0.0	0.1	0.1
3/1	1287	1237	-	-	-	6.7	34.3	-	40.9	114.5	28.2	34.3	62.5
4/2+4/1	224	224	-	-	-	1.7	0.6	-	2.2	36.1	3.9	0.6	4.5
5/1	1351	1351	-	-	-	0.0	1.2	-	1.2	3.3	0.0	1.2	1.2
6/1	16	16	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
7/1	1007	1007	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
8/1	328	328	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1

C1

PRC for Signalled Lanes (%): -15.6
PRC Over All Lanes (%): -15.6

Total Delay for Signalled Lanes (pcuHr): 76.86
Total Delay Over All Lanes(pcuHr): 78.85

Cycle Time (s): 76

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 04_Harborough Road_New Road_Revised_Design_V2_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:12:29

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Harborough Road, Northbound	1.3	4.31	0.56	A	2.8	7.02	0.74	A
2 - New Road	0.3	4.52	0.23	A	0.2	4.98	0.17	A
3 - Harborough Road, Southbound	4.6	13.38	0.83	B	1.3	5.14	0.56	A
Baseline 2021 + Cumulative Development								
1 - Harborough Road, Northbound	1.7	5.07	0.62	A	4.3	9.98	0.82	A
2 - New Road	0.5	5.38	0.32	A	0.3	5.83	0.24	A
3 - Harborough Road, Southbound	7.9	22.14	0.90	C	1.8	6.35	0.64	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	03_Harborough Road_New Road
Location	Kibworth
Site number	
Date	07/12/2016
Version	2
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\PiedallK
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Baseline 2021	AM	ONE HOUR	07:45	09:15	15

Baseline 2021, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	8.79	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Harborough Road, Northbound	
2	New Road	
3	Harborough Road, Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Harborough Road, Northbound	3.87	7.98	16.1	43.1	30.6	8.5	
2 - New Road	4.01	8.01	7.6	19.0	30.6	22.0	
3 - Harborough Road, Southbound	5.04	8.69	5.7	10.0	30.6	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Harborough Road, Northbound	0.759	2046
2 - New Road	0.667	1709
3 - Harborough Road, Southbound	0.630	1711

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Harborough Road, Northbound		✓	960	100.000
2 - New Road		✓	220	100.000
3 - Harborough Road, Southbound		✓	1169	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	150	810
	2 - New Road	133	0	87
	3 - Harborough Road, Southbound	1152	17	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	4	8
	2 - New Road	3	0	2
	3 - Harborough Road, Southbound	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Harborough Road, Northbound	0.56	4.31	1.3	A
2 - New Road	0.23	4.52	0.3	A
3 - Harborough Road, Southbound	0.83	13.38	4.6	B

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	723	13	1898	0.381	720	0.6	3.056	A
2 - New Road	166	608	1239	0.134	165	0.2	3.351	A
3 - Harborough Road, Southbound	880	100	1583	0.556	875	1.2	5.052	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	863	15	1894	0.456	862	0.8	3.486	A
2 - New Road	198	728	1155	0.171	198	0.2	3.761	A
3 - Harborough Road, Southbound	1051	119	1570	0.669	1048	2.0	6.848	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1057	19	1891	0.559	1055	1.3	4.297	A
2 - New Road	243	891	1040	0.233	242	0.3	4.508	A
3 - Harborough Road, Southbound	1287	146	1554	0.828	1277	4.5	12.571	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1057	19	1891	0.559	1057	1.3	4.315	A
2 - New Road	243	892	1039	0.233	243	0.3	4.517	A
3 - Harborough Road, Southbound	1287	146	1554	0.828	1286	4.6	13.379	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	863	15	1894	0.456	865	0.8	3.503	A
2 - New Road	198	730	1153	0.172	198	0.2	3.773	A
3 - Harborough Road, Southbound	1051	120	1570	0.669	1061	2.1	7.206	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	723	13	1896	0.381	724	0.6	3.075	A
2 - New Road	166	611	1237	0.134	166	0.2	3.364	A
3 - Harborough Road, Southbound	880	100	1582	0.556	883	1.3	5.173	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 04_Harborough Road_New Road_Revised_Design_V2_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:13:03

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Harborough Road, Northbound	1.3	4.31	0.56	A	2.8	7.02	0.74	A
2 - New Road	0.3	4.52	0.23	A	0.2	4.98	0.17	A
3 - Harborough Road, Southbound	4.6	13.38	0.83	B	1.3	5.14	0.56	A
Baseline 2021 + Cumulative Development								
1 - Harborough Road, Northbound	1.7	5.07	0.62	A	4.3	9.98	0.82	A
2 - New Road	0.5	5.38	0.32	A	0.3	5.83	0.24	A
3 - Harborough Road, Southbound	7.9	22.14	0.90	C	1.8	6.35	0.64	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	03_Harborough Road_New Road
Location	Kibworth
Site number	
Date	07/12/2016
Version	2
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\PiedalK
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Baseline 2021	PM	ONE HOUR	16:45	18:15	15

Baseline 2021, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	6.21	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Harborough Road, Northbound	
2	New Road	
3	Harborough Road, Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Harborough Road, Northbound	3.87	7.98	16.1	43.1	30.6	8.5	
2 - New Road	4.01	8.01	7.6	19.0	30.6	22.0	
3 - Harborough Road, Southbound	5.04	8.69	5.7	10.0	30.6	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Harborough Road, Northbound	0.759	2046
2 - New Road	0.667	1709
3 - Harborough Road, Southbound	0.630	1711

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Harborough Road, Northbound		✓	1310	100.000
2 - New Road		✓	139	100.000
3 - Harborough Road, Southbound		✓	823	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	219	1091
	2 - New Road	77	0	62
	3 - Harborough Road, Southbound	744	79	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	2	1
	2 - New Road	5	0	0
	3 - Harborough Road, Southbound	3	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Harborough Road, Northbound	0.74	7.02	2.8	A
2 - New Road	0.17	4.98	0.2	A
3 - Harborough Road, Southbound	0.56	5.14	1.3	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	986	59	1976	0.499	982	1.0	3.606	A
2 - New Road	105	818	1127	0.093	104	0.1	3.519	A
3 - Harborough Road, Southbound	619	58	1623	0.382	617	0.6	3.569	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1177	71	1967	0.599	1175	1.5	4.537	A
2 - New Road	125	979	1021	0.123	125	0.1	4.018	A
3 - Harborough Road, Southbound	739	69	1615	0.458	739	0.8	4.101	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1442	87	1956	0.738	1437	2.7	6.887	A
2 - New Road	153	1197	878	0.174	153	0.2	4.960	A
3 - Harborough Road, Southbound	906	85	1605	0.564	904	1.3	5.119	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1442	87	1955	0.738	1442	2.8	7.017	A
2 - New Road	153	1201	876	0.175	153	0.2	4.983	A
3 - Harborough Road, Southbound	906	85	1605	0.564	906	1.3	5.144	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1177	71	1987	0.599	1182	1.5	4.618	A
2 - New Road	125	986	1017	0.123	125	0.1	4.037	A
3 - Harborough Road, Southbound	739	70	1615	0.458	741	0.9	4.126	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	986	59	1976	0.499	988	1.0	3.650	A
2 - New Road	105	823	1123	0.093	105	0.1	3.537	A
3 - Harborough Road, Southbound	619	58	1623	0.382	620	0.6	3.593	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 04_Harborough Road_New Road_Revised_Design_V2_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:13:47

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Harborough Road, Northbound	1.3	4.31	0.56	A	2.8	7.02	0.74	A
2 - New Road	0.3	4.52	0.23	A	0.2	4.98	0.17	A
3 - Harborough Road, Southbound	4.6	13.38	0.83	B	1.3	5.14	0.56	A
Baseline 2021 + Cumulative Development								
1 - Harborough Road, Northbound	1.7	5.07	0.62	A	4.3	9.98	0.82	A
2 - New Road	0.5	5.38	0.32	A	0.3	5.83	0.24	A
3 - Harborough Road, Southbound	7.9	22.14	0.90	C	1.8	6.35	0.64	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	03_Harborough Road_New Road
Location	Kibworth
Site number	
Date	07/12/2016
Version	2
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\PiedallK
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Baseline 2021 + Cumulative Development	AM	ONE HOUR	07:45	09:15	15

Baseline 2021 + Cumulative Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	13.16	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Harborough Road, Northbound	
2	New Road	
3	Harborough Road, Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Harborough Road, Northbound	3.87	7.98	16.1	43.1	30.6	8.5	
2 - New Road	4.01	8.01	7.6	19.0	30.6	22.0	
3 - Harborough Road, Southbound	5.04	8.69	5.7	10.0	30.6	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Harborough Road, Northbound	0.759	2046
2 - New Road	0.667	1709
3 - Harborough Road, Southbound	0.630	1711

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Harborough Road, Northbound		✓	1073	100.000
2 - New Road		✓	282	100.000
3 - Harborough Road, Southbound		✓	1238	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	187	886
	2 - New Road	185	0	97
	3 - Harborough Road, Southbound	1219	19	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	4	8
	2 - New Road	3	0	2
	3 - Harborough Road, Southbound	4	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Harborough Road, Northbound	0.62	5.07	1.7	A
2 - New Road	0.32	5.38	0.5	A
3 - Harborough Road, Southbound	0.90	22.14	7.9	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	808	14	1898	0.426	805	0.7	3.291	A
2 - New Road	213	866	1198	0.177	212	0.2	3.645	A
3 - Harborough Road, Southbound	932	139	1558	0.598	926	1.5	5.645	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	964	17	1894	0.509	963	1.0	3.883	A
2 - New Road	254	796	1106	0.230	254	0.3	4.221	A
3 - Harborough Road, Southbound	1113	166	1541	0.722	1109	2.5	8.247	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1181	20	1891	0.624	1179	1.6	5.034	A
2 - New Road	311	974	982	0.317	310	0.5	5.357	A
3 - Harborough Road, Southbound	1363	204	1518	0.899	1344	7.3	18.916	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1181	21	1891	0.625	1181	1.7	5.069	A
2 - New Road	311	976	980	0.317	311	0.5	5.379	A
3 - Harborough Road, Southbound	1363	204	1518	0.898	1361	7.9	22.136	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	964	17	1894	0.509	967	1.0	3.893	A
2 - New Road	254	799	1104	0.230	255	0.3	4.241	A
3 - Harborough Road, Southbound	1113	167	1541	0.722	1134	2.7	9.279	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	808	14	1896	0.426	809	0.7	3.316	A
2 - New Road	213	668	1196	0.178	213	0.2	3.665	A
3 - Harborough Road, Southbound	932	140	1558	0.598	937	1.5	5.840	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 04_Harborough Road_New Road_Revised_Design_V2_KP.j9
Path: I:\UNIF\Projects\LCCF Harborough DC Local Plan traffic assessment\Kibworth Cumulative Dev Impact Study\Graphic\CAD\Junctions9_Model
Report generation date: 10/01/2017 11:14:13

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Baseline 2021								
1 - Harborough Road, Northbound	1.3	4.31	0.56	A	2.8	7.02	0.74	A
2 - New Road	0.3	4.52	0.23	A	0.2	4.98	0.17	A
3 - Harborough Road, Southbound	4.6	13.38	0.83	B	1.3	5.14	0.56	A
Baseline 2021 + Cumulative Development								
1 - Harborough Road, Northbound	1.7	5.07	0.62	A	4.3	9.98	0.82	A
2 - New Road	0.5	5.38	0.32	A	0.3	5.83	0.24	A
3 - Harborough Road, Southbound	7.9	22.14	0.90	C	1.8	6.35	0.64	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	03_Harborough Road_New Road
Location	Kibworth
Site number	
Date	07/12/2016
Version	2
Status	Evaluation
Identifier	
Client	
Jobnumber	
Enumerator	JEGINTL\PiedallK
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Baseline 2021 + Cumulative Development	PM	ONE HOUR	16:45	18:15	15

Baseline 2021 + Cumulative Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	8.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Harborough Road, Northbound	
2	New Road	
3	Harborough Road, Southbound	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Harborough Road, Northbound	3.87	7.98	16.1	43.1	30.6	8.5	
2 - New Road	4.01	8.01	7.6	19.0	30.6	22.0	
3 - Harborough Road, Southbound	5.04	8.69	5.7	10.0	30.6	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Harborough Road, Northbound	0.759	2046
2 - New Road	0.667	1709
3 - Harborough Road, Southbound	0.630	1711

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Harborough Road, Northbound		✓	1443	100.000
2 - New Road		✓	179	100.000
3 - Harborough Road, Southbound		✓	921	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	272	1171
	2 - New Road	111	0	68
	3 - Harborough Road, Southbound	835	87	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Harborough Road, Northbound	2 - New Road	3 - Harborough Road, Southbound
From	1 - Harborough Road, Northbound	0	2	1
	2 - New Road	5	0	0
	3 - Harborough Road, Southbound	3	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Harborough Road, Northbound	0.82	9.98	4.3	A
2 - New Road	0.24	5.83	0.3	A
3 - Harborough Road, Southbound	0.64	6.35	1.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1086	65	1971	0.551	1081	1.2	4.024	A
2 - New Road	135	878	1084	0.125	135	0.1	3.790	A
3 - Harborough Road, Southbound	694	84	1606	0.432	691	0.8	3.919	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1297	78	1961	0.661	1294	1.9	5.375	A
2 - New Road	161	1051	971	0.166	161	0.2	4.443	A
3 - Harborough Road, Southbound	828	100	1596	0.519	827	1.1	4.676	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1589	95	1948	0.816	1580	4.2	9.548	A
2 - New Road	198	1282	820	0.241	197	0.3	5.778	A
3 - Harborough Road, Southbound	1015	122	1581	0.642	1012	1.8	6.291	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1589	95	1948	0.816	1588	4.3	9.982	A
2 - New Road	198	1289	815	0.242	198	0.3	5.828	A
3 - Harborough Road, Southbound	1015	123	1581	0.642	1015	1.8	6.350	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1297	78	1961	0.661	1306	2.0	5.574	A
2 - New Road	161	1060	965	0.167	162	0.2	4.487	A
3 - Harborough Road, Southbound	828	100	1595	0.519	831	1.1	4.728	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Harborough Road, Northbound	1086	65	1971	0.551	1089	1.2	4.096	A
2 - New Road	135	884	1080	0.125	135	0.1	3.811	A
3 - Harborough Road, Southbound	694	84	1606	0.432	695	0.8	3.958	A