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Development Management
(Aylesbury Area)
Planning, Growth & Sustainability
Buckinghamshire Council

8th January 2021

F.A.O. Helen Fadipe

Dear Helen

Application Number: 16/01040/AOP
Proposal: Outline application with means of access (in part) to be considered for up to 102,800 sqm employment (B1/B2/B8), up to 1,100 dwellings (C3), 60 residential extra care units (C2), mixed-use local centre of up to 4,000 sq m (A1/A2/A5/D1), up to 5,700 sq m hotel and Conference Centre (C1), up to 3,500 sq m Leisure facilities (A1/A3/A4), up to 16 ha for sports village and pitches, Athletes Accommodation (10 x 8 bed apartments), and up to 2 ha for a primary school (D1), with a strategic link road connecting with the ELR (N) and the A41 Aston Clinton Road, transport infrastructure, landscape, open space, flood mitigation and drainage
Location: Aylesbury Woodlands, College Road North, Aston Clinton

Thank you for your consultation dated 4th December 2020 with regard to the above planning application.

You will be aware that the Highway Authority has previously provided comments regarding this application, which were dated 30th May 2017, 7th June 2017 and 13th October 2017. The final comments on the proposal at that time concluded that the impact of the proposed development could be appropriately mitigated through planning conditions and S106 Obligations.

The planning application was previously considered by the former Aylesbury Vale District Council Planning Committee on 25th October 2017 and a resolution to grant planning consent subject to the completion of a S106 agreement was passed.

Strategic Model Update

Since the resolution to grant planning consent, the Buckinghamshire Council; Aylesbury Transport Model (ATM) has been updated. The Aylesbury Transport Model is derived as a cordon model of the Countywide model for Buckinghamshire maintained by Jacobs on behalf of Buckinghamshire Council (BC). The Aylesbury Transport Model has been updated primarily to support a full business case that has been submitted to the DfT for the South East Aylesbury Link Road (SEALR), but with a secondary purpose of supporting other business cases in the area (if required in the future) and also for use in Development Management. DfT require a model developed in line with Transport Analysis Guidance (TAG) to a high degree of rigour in order to consider a full business case. As has been stated previously the level of rigour expected in a full business case exceeds that required for the assessment of planning applications. Whilst updating the model the opportunity has also been taken to extend the model coverage area further southeast to cover Wendover and Halton. This allows Local Plan allocation sites such as RAF Halton to be considered in detail using the updated model data if and when a planning application is developed in the future.

The model has been built to represent traffic conditions in the base year 2017 and utilises traffic counts and Automatic Number Plate Recognition (ANPR) surveys and journey time data collected using Traffic master for assignment calibration and validation. Two types of trip matrices were created: Observed, based on the Trip Information System (TIS) Mobile Phone Data procured through Telefonica; and Synthetic, using demographic data to synthesise likely movements through the study area. The two matrices were combined to provide the set of origin-destination movements to use in the model; the mobile phone data comprised the majority of the final matrices, but with synthetic matrices used to represent short-distance trips which tend to be under-represented in mobile data. Modelled flows and journey times were compared against independent data and data used as part of the model building process. In validating the model it was found that journey times exceeded the confidence criteria set out in guidance, and in the majority of time periods model derived traffic flows met or exceeded the confidence criteria set out in TAG.

The model therefore performs well against relevant standards and this provides confidence and reassurance that the model is representative of current conditions.

The updated Aylesbury Transport Model (ATM) is a VISUM based highway model that includes weekday AM Peak, inter-peak and PM Peak period data. The Future Forecast Year is 2036 with an interim year of 2022 for the purposes of the first phase of Woodlands have been developed to account for committed developments and infrastructure coming forward in the Aylesbury area and to account for the growth outlined within the emerging Vale of Aylesbury Local Plan (VALP). Full details of the updated model preparation and validation can be found in the Local Model Validation Report (LMVR) and Forecasting Report both of which are available using the following link;

<https://www.buckscc.gov.uk/services/transport-and-roads/transport-modelling/checking-the-transport-model-is-fit-for-purpose/>

Buckinghamshire Council is now requiring all major applications which do not yet have planning consent to utilise this new model to assess their impacts. Whilst this application did receive a resolution to grant consent in October 2017, formal planning consent was not issued. As such it is necessary for the transport modelling and impact evidence base that supported the application to be updated.

As a result, the applicant has submitted a Transport Assessment Addendum (TAA) dated November 2020. The TAA has utilised the new model data to update the previous traffic impact assessments. No other highway related changes to the application are understood to have been made since the resolution to grant was passed in October 2017 other than those discussed in the TAA, and therefore all other highway and transport aspects of the proposed development remain the same as previously agreed in 2017.

The comments hereon-in consider the additional information provided by the applicant and should be read in conjunction with the previous consultation responses issued in 2017.

Traffic Impact Assessment

Given the relationship of the Aylesbury Woodlands development with the Hampden Fields development (planning application no. 16/0424/AOP), as part of the updated submissions both the Hampden Fields and Woodlands developers have commissioned and undertaken a comprehensive assessment of the both the standalone and cumulative impacts of the development proposals on the operation of the highway network. The forecast years for the updated assessments for Woodlands are 2022 and 2036 and includes background traffic growth and other committed developments in the town.

The following model scenarios have been considered in the updated assessments for Aylesbury Woodlands:

- 2017 Baseline;
- 2022 Do Minimum (Future Baseline);
- 2022 Do Something 'stand-alone' (2022 Do Minimum + Proposed Aylesbury Woodlands first phase Development);
- 2036 Do Minimum (Future Baseline + Eastern Link Road (ELR) North + Stoke Mandeville Relief Road (SMRR));
- 2036 Do Cumulative 1 (2036 Do Something + Hampden Fields including Eastern Link Road (ELR) South + South East Aylesbury Link Road (SEALR));
- 2036 Do Cumulative 2 (2036 Do Cumulative 1 + All live planning applications, including South West Link Road); and
- 2036 Do Cumulative 3 (2036 Do Cumulative 2 + Other VALP sites).

The assessments were undertaken on a sifting basis using the outputs from the strategic traffic model for Aylesbury to identify likely areas and traffic flow scenarios where the proposals would individually or cumulatively have a material impact. On the basis of this information more detailed assessments of the operation of a total of 62 junctions across the town have taken place.

The following section discusses each of the junctions assessed and the results of the relevant assessments concluding whether they are acceptable or not to the highway authority. Where mitigation measures are required, they are identified and it is explained how they assist in offsetting the material impacts of the individual and cumulative development proposals. All mitigation measures are expected to be fully funded by the developments and subject to a S106 requirement for a Joint Delivery Strategy which will set out which developer will implement the scheme and when it will be implemented.

Junction 1 - A41 / Tring Hill / Aylesbury Road / B4009

This junction is a grade-separated dumbbell roundabout arrangement. Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 3036 Do Cumulative 2.

The assessments show that both the eastern and western roundabout junction operation is acceptable with the development individually and with cumulative development.

In 2017 mitigation was proposed and agreed at these two dumbbell roundabouts for the 2022 Do Something scenario. However, the updated model results demonstrate that this mitigation is no longer required. As such, no works to this junction are proposed and the impact of Aylesbury Woodlands individually and cumulatively is acceptable to the Highway Authority.

Junction 2 - A41 / Lower Icknield Way



The A41/Lower Icknield Way junction takes the form of grade-separated priority junctions with Junction 1 the slip road off the A41 dual carriageway and Junction 2 the slip road onto the A41 dual carriageway.

The junctions have been modelled with the Picady junction modelling programme. The geometry and data entry have been checked and are correct.

Assessments of the impact at these junctions were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The output files attached in the TAA appendix match the result tables.

Table 3.8.1 shows that the junction operates with spare capacity in both 2022 scenarios and that delay on some of the arms improves in the 2022 Do Something scenario.

Table 3.8.2 shows that the junction operates with spare capacity in the Do Cumulative 1 and 2 scenarios.

Table 3.8.1 – Summary of the A41 / Lower Icknield Way Priority Junction– 2022 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (Veh)	Delay (s)	Queue (veh)	Delay (s)
2022 Do Minimum				
J1				
A41 Overbridge	0	0	0	0
A41 Off-Slip	1	9	1	12
Lower Icknield Way (E)	0	0	0	0
Junction Delay (s)	1.33		3.19	
J2				
Lower Icknield Way (W)	0	0	0	0
A41 On-Slip	0	0	0	0
A41 Overbridge	0	2	0	1
Junction Delay (s)	1.19		0.35	
2022 Do Something				
J1				
A41 Overbridge	0	0	0	0
A41 Off-Slip	1	8	1	11
Lower Icknield Way (E)	0	0	0	0
Junction Delay (s)	1.58		3.24	
J2				
Lower Icknield Way (W)	0	0	0	0
A41 On-Slip	0	0	0	0
A41 Overbridge	0	1	0	1
Junction Delay (s)	0.82		0.54	

Table 3.8.2 – Summary of the A41 / Lower Icknield Way Priority Junction– 2036 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (Veh)	Delay (S)	Queue (Veh)	Delay (S)
2036 Do Minimum				
J1				
A41 Overbridge	0	0	0	0
A41 Off-Slip	1	10	1	11
Lower Icknield Way (E)	0	0	0	0
Junction Delay (s)	1.15		2.81	
J2				
Lower Icknield Way (W)	0	0	0	0
A41 On-Slip	0	0	0	0
A41 Overbridge	1	2	0	2
Junction Delay (s)	1.24		0.74	
2036 Do Cumulative 1				
J1				
A41 Overbridge	0	0	0	0
A41 Off-Slip	1	9	1	12
Lower Icknield Way (E)	0	0	0	0
Junction Delay (s)	1.71		3.99	
J2				
Lower Icknield Way (W)	0	0	0	0
A41 On-Slip	0	0	0	0
A41 Overbridge	1	3	0	3
Junction Delay (s)	1.77		1.21	
2036 Do Cumulative 2				
J1				
A41 Overbridge	0	0	0	0
A41 Off-Slip	1	10	1	13
Lower Icknield Way (E)	0	0	0	0
Junction Delay (s)	1.87		3.90	
J2				
Lower Icknield Way (W)	0	0	0	0
A41 On-Slip	0	0	0	0
A41 Overbridge	1	3	1	3
Junction Delay (s)	1.95		1.23	

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development. The results are acceptable to the Highway Authority.

Junction 3 - A41 / College Road North

This junction comprises of two left in/left out merge/diverge slip roads which serve College Road North from the eastbound and westbound carriageways of the A41. The junction has been assessed against the parameters set out in the Design Manual for Roads and Bridges (DMRB) document CD 122 'Geometric design of grade separated junctions' Revision 1 (formerly TD 22/06), to determine whether the existing junction layout is adequate to accommodate the predicted traffic. This approach is consistent with the previous assessment approach adopted in the April 2017 Addendum Transport Assessment for Aylesbury Woodlands.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The existing configuration of the merge/diverge slip roads is acceptable to accommodate the additional traffic with standalone and cumulative development, so no mitigation works to this junction are proposed.

Junction 8 - London Road/Weston Road/Aylesbury Road Roundabout

This junction takes the form of a mini roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction operates with spare capacity in the 2022 Do Something scenario as well as the 2036 Do Cumulative scenarios. No works are therefore proposed as the operation is acceptable with standalone and cumulative development.

Junction 9 - A41 Woodlands Roundabout

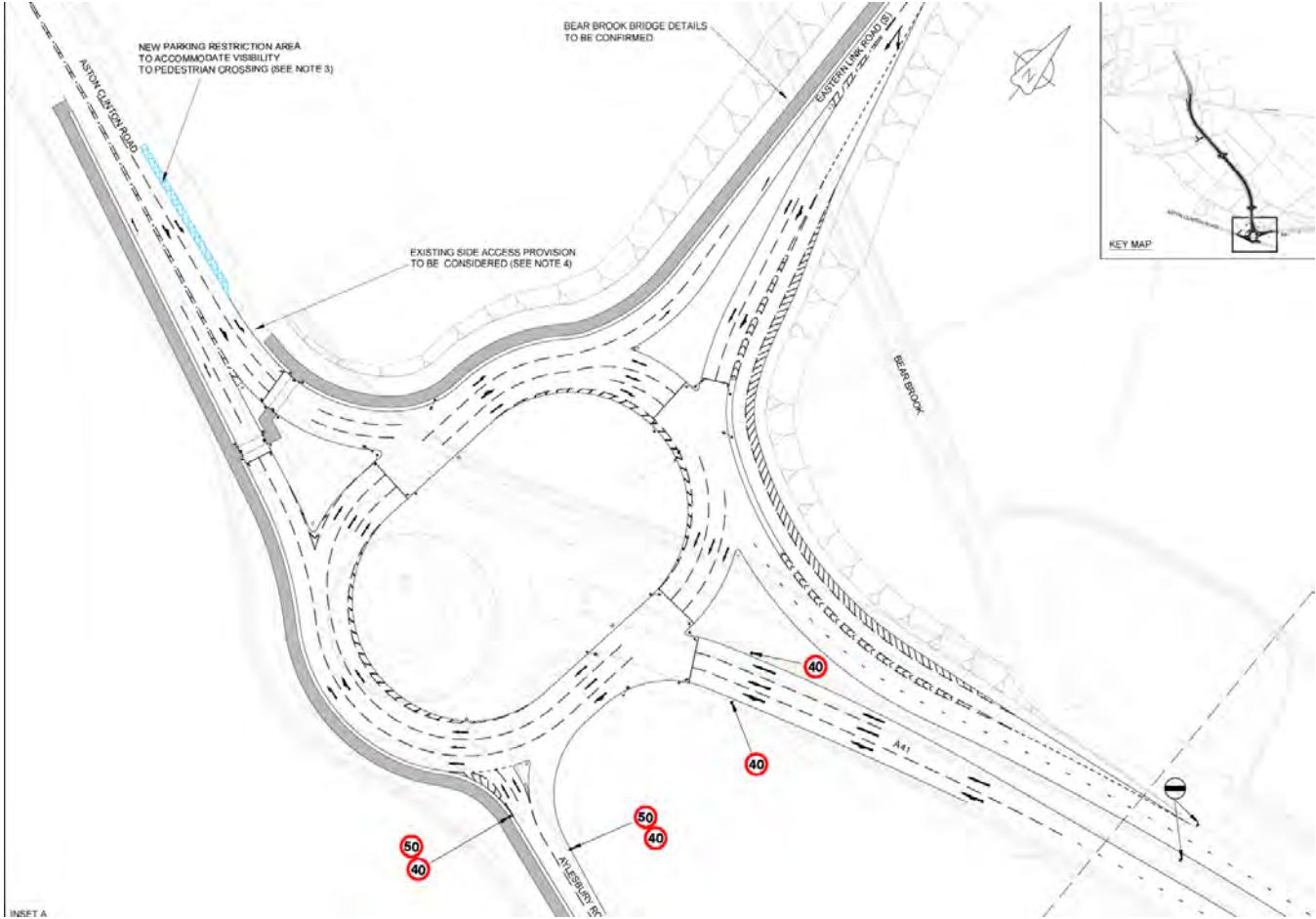
The existing Woodlands roundabout is a 3 arm roundabout connecting the A41 Aston Clinton Bypass with the A41 Aston Clinton Road which connects to the centre of Aylesbury. The third arm is a minor road known as Aylesbury Road, leading to Aston Clinton.



Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

To accommodate the Woodlands development the applicants propose to improve the junction as shown on drawing D-045 Rev 2 which is contained at Appendix D of the TAA and is the same as presented in 2017. This is an interim improvement pending a more comprehensive improvement to accommodate cumulative development. An extract from drawing 045 Rev 2 showing the interim scheme to accommodate standalone development is below for ease of reference;

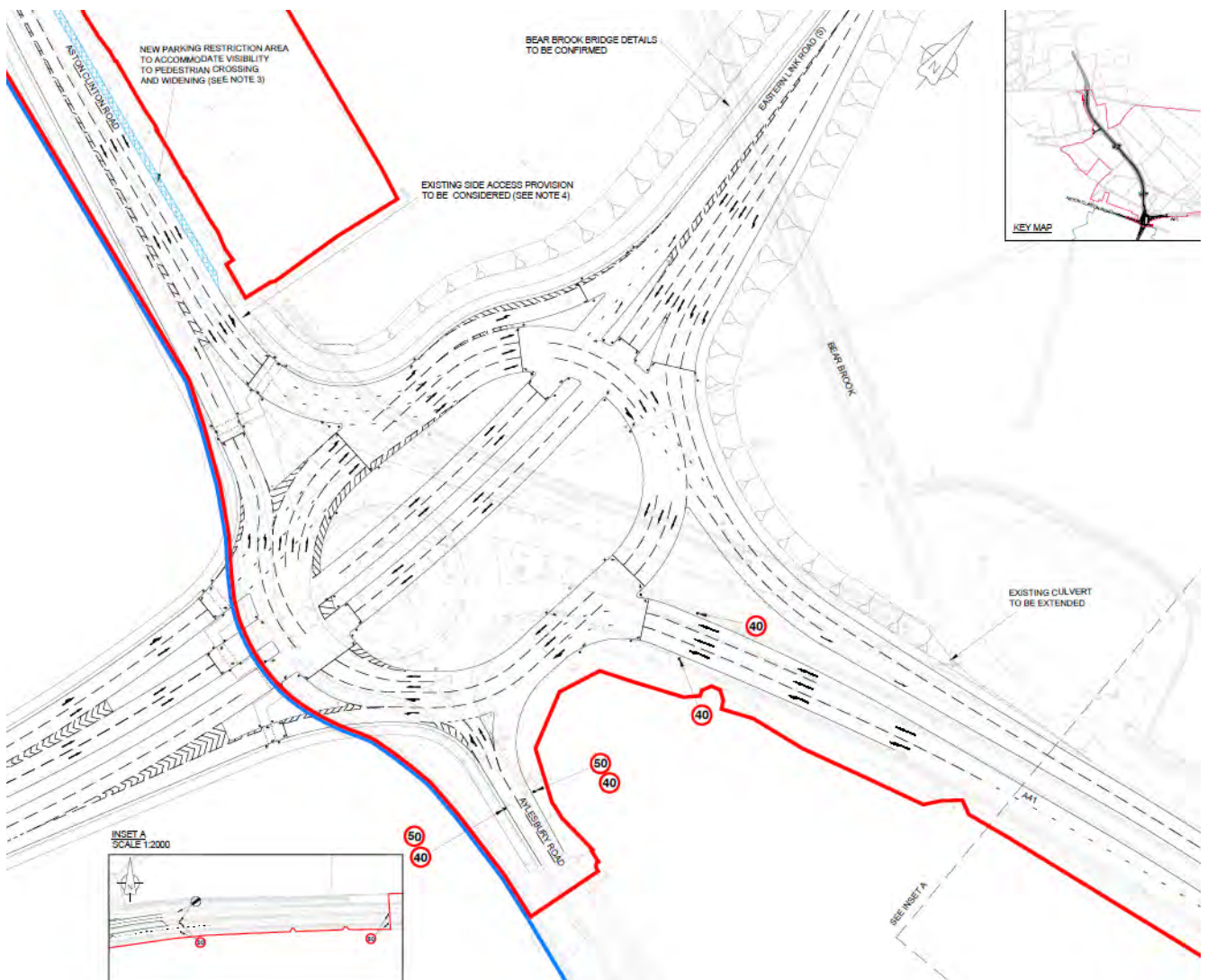


The results of the 2022 Do Something scenario based on the layout above are set out below and show that the junction would operate within capacity with the standalone Woodlands development.

Table 3.11.1 – Summary of the A41 Woodlands Roundabout – 2022 Do Something

Link	AM		PM	
	Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2022 Do Something				
ELR North	39%	3	28%	3
A41 East	50%	5	83%	12
Aylesbury Road Southeast	28%	0	16%	0
A41 West	47%	7	45%	8
Circulatory at ELR North	42%	1	37%	1
Circulatory at A41 West	72%	5	35%	3
Circulatory at A41 East	52%	3	39%	3
Exit Crossing Southwest	42%	7	51%	4
A41 Westbound Exit	43%	7	63%	7
ELR North Exit	14%	4	10%	1
Total Delay (PCU/hr)	18.6		23.1	
Cycle Time (s)	52		56	

To accommodate cumulative development it is proposed to upgrade the existing junction further, as shown on Jacobs Drawing B12798C7-0000-D-0048 rev1, an extract of which is below. This junction arrangement is again the same as presented and considered in 2017.



Jacobs have updated the junction capacity tests using the forecast traffic flows from the 2020 Aylesbury Traffic Model. The results of the assessment show that the junction would operate better in all 2036 Do Cumulative scenarios when compared to the existing roundabout configuration in the 2036 Do Minimum scenario. For ease of reference the 2036 Do Minimum capacity assessment results of the existing roundabout are set out below;

Table 3.11.2 – Summary of the A41 Woodlands Roundabout – Existing Layout - 2036 Do Minimum Scenario

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
Aston Clinton Road	76	127	1.07	2	6	0.70
A41 East	264	1008	1.41	1444	5073	2.44
Aylesbury Road	1	9	0.52	0	6	0.30
Junction Delay (s)	427.86			2974.62		

In cumulative 3 with all of the VALP sites and infrastructure the proposed roundabout’s degree of saturation and mean maximum queues are predicted to be as follows;

Table 3.11.3 – Summary of the A41 Woodlands Roundabout – 2036 Scenarios

Link	AM		PM	
	Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Cumulative 3				
ELR North	56%	10	100%	30
A41 East	77%	12	101%	54
Aylesbury Road Southeast	18%	0	15%	0
SLR South	75%	9	88%	12
A41 West	84%	9	34%	5
Northbound cut-through	52%	7	81%	11
Southbound cut-through	51%	1	80%	8
Circulatory at ELR North	59%	5	40%	8
Circulatory at A41 West	60%	6	50%	5
Circulatory at SLR South	43%	3	44%	4
Circulatory at A41 East	42%	7	62%	6
Exit Crossing A41 West	32%	1	37%	2
Exit Crossing SLR South	75%	4	84%	3
Total Delay (PCU/hr)	57.3		103.9	
Cycle Time (s)	60		88	

The results of the analysis are considered acceptable to the Highway Authority and show that the improvements to the junction offer benefits to the operation of the highway compared to the Do Minimum scenario. These junction improvements will need to be secured as part of a S106 Agreement in the event that planning permission is granted.

Junction 10 - College Road North / Woodlands/ Arla Access Roundabout

This new junction is a proposed 4-arm roundabout which will form an access to the Aylesbury Woodlands development. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction is forecast to operate within capacity in the 2022 Do Something scenario as well as the 2036 Do Cumulative scenarios. No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 13 - Eastern Link Road (ELR) / Stocklake Link East

This junction takes the form of a 4 arm roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 14 – Eastern Link Road (N) / Village 4 Roundabout

The ELR N/Site Road Village 4 junction is a consented 4-arm roundabout junction which forms part of the new Eastern Link Road (North), which the Kingsbrook development is facilitating. The junction has been modelled with Arcady and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction is forecast to operate within capacity in the 2022 Do Something scenario as well as the 2036 Do Cumulative scenarios. No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 15 - ELR (North) / A418

This junction takes the form of a 3 arm signalised junction. The junction has been modelled with the LinSig modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 16 – A418 / Burcott Lane / Brick Kiln Lane

This junction is a priority crossroad junction with Brick Kiln Lane a small cul de sac. The junction has been modelled with the Picady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction is forecast to operate within capacity in the Do Cumulative 1 and 2 scenarios. No works to this junction are proposed as the operation is acceptable with cumulative development.

Junction 19 – Bellingham Way / Burcott Lane

This junction takes the form of a priority junction. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 20a – Bellingham Way / Southern Site Access

The Bellingham Way / Southern Site access junction is a 3-arm priority junction providing access into the Kingsbrook development. The junction has been modelled with the Picady junction programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction is forecast to operate within capacity in the 2022 Do Something scenario as well as the 2036 Do Cumulative scenarios. No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 20b – Bellingham Way / Northern Site Access

The Bellingham Way / Northern Site access junction is a 3-arm priority junction providing access into the Kingsbrook development. The junction has been modelled with Picady and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction is forecast to operate within capacity in the 2022 Do Something scenario as well as the 2036 Do Cumulative scenarios. No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 21 - Bellingham Way / Broughton Lane / Stocklake

This junction takes the form of a priority junction. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with cumulative development.

Junction 22 – A41 / Broughton Lane/Bedgrove



The A41 / Broughton Lane / Bedgrove junction includes 2 linked signalised junctions, forming a staggered road arrangement. It is a problematic junction on the network, and this is in part due to the number of side roads competing for green time at the existing signals.

The junction has been modelled as a linked junction in the Linsig modelling programme. Geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.21.1 summarises how the existing junction will operate under 2036 Do Minimum, 2036 Do Cumulative 1 and 2036 Do Cumulative 2 traffic conditions. It shows that in the 2036 Do Minimum Scenario, the junction is expected to operate significantly over theoretical capacity in the AM peak period, with mean maximum queues estimated to be c146 vehicles on the A41 westbound and c100 vehicles on the A41 Eastbound. In the PM peak period, the junction will also exceed capacity with mean maximum queues estimated to be c39 vehicles on the A41 westbound.

Table 3.21.1 shows that under the two 2036 Do Cumulative scenarios, there is slight improvement in the AM peak period, with the longest mean maximum queue now estimated to be c92 vehicles. However, there is a deterioration of performance in the PM peak period when compared with the 2036 Do Minimum results, with the A41 westbound showing an estimated mean maximum queue increase of c21 vehicles from 39 to 60 vehicles. The junction is expected to operate significantly above theoretical capacity in both 2036 Do Cumulative scenarios.

Table 3.21.1 – Summary of Bedgrove / Broughton Lane / A41 Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Minimum					
1/1	A41 EB Entry Left Ahead	85.8	15	40	8
1/2	A41 EB Entry Right Ahead	80.8	13	37.8	8
2/1	Tring Road Entry Right Ahead Left	36.8	2	83.2	6
3/1	A41 WB (Internal) Ahead Left	141.5	146	93.0	39
3/2	A41 WB (Internal) Ahead Right	142.1	140	91.1	36
6/2 + 6/1	Bedgrove Entry Left Ahead Right	134.1:134.1	75	91.1:91.1	10
8/1	A41 EB (Internal) Left Ahead	119.2	100	66.3	18
8/2	A41 EB (Internal) Ahead	96.8	25	54.8	16
10/2 + 10/1	Broughton Lane Entry Right Left	130.3:130.3	61	84.9:84.9	14
11/1	A41 WB Entry Ahead	57.2	7	75.9	23
11/2 + 11/3	A41 WB Entry Ahead Right	54.4:54.4	7	71.7:71.7	21
PRC (%)		-57.9		-3.3	
Cycle Time (s)		65		120	
2036 Do Cumulative 1					
1/1	A41 EB Entry Left Ahead	48.3	10	39.8	8
1/2	A41 EB Entry Right Ahead	45.5	10	37.6	8
2/1	Tring Road Entry Right Ahead Left	104.0	12	107.4	15
3/1	A41 WB (Internal) Ahead Left	64.9	17	61.6	17
3/2	A41 WB (Internal) Ahead Right	129.8	92	113.9	60
6/2 + 6/1	Bedgrove Entry Left Ahead Right	129.3:129.3	83	113.7:113.7	40
8/1	A41 EB (Internal) Left Ahead	58.8	17	61.0	17
8/2	A41 EB (Internal) Ahead	45.8	5	49.0	8
10/2 + 10/1	Broughton Lane Entry Right Left	119.6:119.6	29	74.1:74.1	8
11/1	A41 WB Entry Ahead	34.9	4	38.6	6
11/2 + 11/3	A41 WB Entry Ahead Right	35.3:49.4	4	56.4:88.0	7
PRC (%)		-44.2		-26.5	
Cycle Time (s)		116		118	
2036 Do Cumulative 2					
1/1	A41 EB Entry Left Ahead	48.8	11	38.8	8
1/2	A41 EB Entry Right Ahead	46.0	11	36.6	8
2/1	Tring Road Entry Right Ahead Left	95.4	8	112.2	17
3/1	A41 WB (Internal) Ahead Left	68.4	19	62.0	13
3/2	A41 WB (Internal) Ahead Right	123.9	82	112.2	57
6/2 + 6/1	Bedgrove Entry Left Ahead Right	122.2:122.2	75	112.3:112.3	38
8/1	A41 EB (Internal) Left Ahead	60.3	20	54.9	14
8/2	A41 EB (Internal) Ahead	45.1	5	44.3	13
10/2 + 10/1	Broughton Lane Entry Right Left	108.9:108.9	19	107.6:107.6	22
11/1	A41 WB Entry Ahead	34.4	4	36.0	5
11/2 + 11/3	A41 WB Entry Ahead Right	35.1:55.5	4	45.7:76.2	5
PRC (%)		-37.6		-24.8	
Cycle Time (s)		120		116	

A mitigation scheme has been proposed making use of Council land to the north of the junction. The scheme involves removing the northern arm of the Bedgrove junction (Richmond Road /Tring Road local), linking it instead with Broughton Lane to the east by way of a priority junction. The process of diverting Richmond Road would simplify the operation of the signal junction, thereby creating additional capacity. This proposed scheme, illustrated on WSP Drawing 1769-SK-150-F and shown below, has previously been agreed as acceptable mitigation for this junction between the applicant, BC and the applicant of Aylesbury Woodlands.

Table 3.22.1 – Summary of Bedgrove / Broughton Lane / A41 Signalised Junction – 2036 Scenarios + mitigation

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Cumulative 1 + Mitigation					
1/1	A41 WB (Internal) Left Ahead	71.7	18	60.2	11
1/2	A41 WB (Internal) Ahead	59.5	15	52.2	8
2/2+2/1	Bedgrove Entry Right Left	72.2:72.2	9	55.5:55.5	6
3/1	A41 EB Entry Ahead	49.8	11	42.4	9
3/2+3/3	A41 EB Entry Right Ahead	50.9:50.9	12	38.2:38.2	8
6/1	A41 WB Entry Ahead	33.5	6	32.3	6
6/2+6/3	A41 WB Entry Ahead Right	50.0:50.0	8	58.4:58.4	9
7/1	A41 EB (Internal) Left Ahead	60.0	16	63.0	17
7/2	A41 EB (Internal) Ahead	69.6	24	63.5	16
8/2+8/1	Broughton Lane Entry Right Left	70.1:70.1	10	62.8:62.8	10
PRC (%)		24.7		41.7	
Cycle Time (s)		120		120	
2036 Do Cumulative 2 + Mitigation					
1/1	A41 WB (Internal) Left Ahead	69.0	16	55.6	10
1/2	A41 WB (Internal) Ahead	71.7	18	47.8	9
2/2+2/1	Bedgrove Entry Right Left	71.3	10	62.7:62.7	7
3/1	A41 EB Entry Ahead	57.8	14	37.6	8
3/2+3/3	A41 EB Entry Right Ahead	47.3:47.3	11	34.9:34.9	7
6/1	A41 WB Entry Ahead	28.2	5	31.8	6
6/2+6/3	A41 WB Entry Ahead Right	53.9:53.9	9	58.5:58.5	9
7/1	A41 EB (Internal) Left Ahead	64.6	20	61.3	16
7/2	A41 EB (Internal) Ahead	63.2	23	62.2	15
8/2+8/1	Broughton Lane Entry Right Left	67.7:67.7	9	63.2:63.2	10
PRC (%)		25.5		42.3	
Cycle Time (s)		120		120	

Junction 23 - Bellingham Way / A4157 / Stocklake



This is a 4 arm traffic signalised crossroads. The configuration of the right turn lane facility from the A4157 Douglas Road northern arm into Stocklake urban is currently being considered following completion of a Stage 3 Road Safety Audit (RSA3) prepared in connection with the Kingsbrook development. At present this lane is hatched out with white paint and with bollards, pending satisfactory resolution of the matters raised by the RSA3. It has therefore been agreed that for the purposes of undertaking further assessments of the junction using LinSig, this right turn lane is removed from the model, to reflect the current arrangement.

It is noted that the LinSig model does not include the pedestrian crossing on the Stocklake left turn movement. However, having reviewed the staging diagram it would be possible for this crossing to run during Phase 4. This would have minimal impact on the operation of the junction, as it would not require any additional time to run.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results for 2022 Do Something extracted below show that the junction continues to operate within capacity in both the AM and PM peak hours in 2022 with the addition of the development traffic.

Table 3.22.1 – Summary of Bellingham Way / A4157 / Stocklake Signalised Junction – 2022 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2022 Do Minimum					
1/2+1/1	SLR Left Ahead	31.6%	2	37.5%	3
1/3+1/4	SLR Ahead Right	29.1%	3	36.3%	4
2/2+2/1	A4157 Oakfield Road (S) Left Ahead	49.3%	4	88.4%	17
2/3	A4157 Oakfield Road (S) Right	88.2%	10	48.0%	5
3/2+3/1	Stocklake Ahead Left	27.2%	2	68.0%	6
3/3	Stocklake Right	19.9%	1	56.4%	4
7/2+7/1	A4157 Douglas Road (N) Left Ahead	83.9%	10	56.7%	5
7/3+7/4	A4157 Douglas Road (N) Ahead Right	83.7%	11	46.3%	5
PRC (%)		2.1%		1.8%	
Cycle Time (s)		78		82	
2022 Do Something					
1/2+1/1	SLR Left Ahead	34.2%	3	51.8%	4
1/3+1/4	SLR Ahead Right	36.1%	4	56.3%	6
2/2+2/1	A4157 Oakfield Road (S) Left Ahead	52.8%	5	89.5%	18
2/3	A4157 Oakfield Road (S) Right	48.8%	4	26.6%	3
3/2+3/1	Stocklake Ahead Left	55.2%	4	77.0%	7
3/3	Stocklake Right	13.5%	1	45.2%	3
7/2+7/1	A4157 Douglas Road (N) Left Ahead	75.8%	5	56.9%	4
7/3+7/4	A4157 Douglas Road (N) Ahead Right	56.1%	6	32.1%	3
PRC (%)		18.8%		0.6%	
Cycle Time (s)		78		82	

The results of the 2036 assessments, extracted below, show that the junction would operate over capacity in the PM peak in the 2036 Do Minimum scenario. The operation of the junction worsens in the 2036 Do Cumulative 1 scenario in the PM peak, however the 2036 Do Cumulative 2 scenario is similar to Do Minimum. In the AM peak hour the operation of the junction improves in both the 2036 Do Cumulative scenarios.

Table 3.22.2 – Summary of Bellingham Way / A4157 / Stocklake Signalised Junction – 2036 Scenarios

		AM		PM	
Link	Lane Description	Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Minimum					
1/2+1/1	SLR Left Ahead	60.3%	5	48.4%	4
1/3+1/4	SLR Ahead Right	52.9%	6	38.4%	4
2/2+2/1	A4157 Oakfield Road (S) Left Ahead	54.3%	9	93.8%	36
2/3	A4157 Oakfield Road (S) Right	84.1%	15	77.2%	15
3/2+3/1	Stocklake Ahead Left	56.4%	4	94.2%	16
3/3	Stocklake Right	34.3%	2	71.9%	8
7/2+7/1	A4157 Douglas Road (N) Left Ahead	82.8%	14	46.0%	4
7/3+7/4	A4157 Douglas Road (N) Ahead Right	80.8%	15	28.0%	6
PRC (%)		7.0%		-4.7%	
Cycle Time (s)		104		120	
2036 Do Cumulative 1					
1/2+1/1	SLR Left Ahead	70.7%	9	81.4%	11
1/3+1/4	SLR Ahead Right	72.8%	10	85.1%	12
2/2+2/1	A4157 Oakfield Road (S) Left Ahead	69.6%	14	103.5%	61
2/3	A4157 Oakfield Road (S) Right	73.5%	10	48.9%	7
3/2+3/1	Stocklake Ahead Left	72.4%	7	104.7%	40
3/3	Stocklake Right	21.9%	2	60.3%	8
7/2+7/1	A4157 Douglas Road (N) Left Ahead	72.6%	8	58.6%	4
7/3+7/4	A4157 Douglas Road (N) Ahead Right	49.3%	9	31.2%	6
PRC (%)		22.4%		-16.3%	
Cycle Time (s)		104		120	
2036 Do Cumulative 2					
1/2+1/1	SLR Left Ahead	71.7%	9	83.1%	12
1/3+1/4	SLR Ahead Right	73.3%	10	86.3%	12
2/2+2/1	A4157 Oakfield Road (S) Left Ahead	66.8%	13	94.4%	35
2/3	A4157 Oakfield Road (S) Right	72.5%	11	50.3%	7
3/2+3/1	Stocklake Ahead Left	69.2%	7	94.0%	18
3/3	Stocklake Right	16.3%	1	58.6%	7
7/2+7/1	A4157 Douglas Road (N) Left Ahead	73.1%	7	56.9%	4
7/3+7/4	A4157 Douglas Road (N) Ahead Right	49.0%	8	29.7%	6
PRC (%)		22.7%		-4.9%	
Cycle Time (s)		104		120	

Whilst the operation of the junction worsens in the 2036 Do Cumulative 1 scenario, it is recognised that this scenario is primarily to allow a direct comparison against the 2016 TA cumulative assessments but would be unlikely to exist in reality. Effectively that scenario has been replaced by the 2036 Do Cumulative 2 scenario which takes into account all live planning applications. This shows that Cumulative 2, when compared to the Do Minimum, does not show a significant impact and as such the Highway Authority can be satisfied that the operation of the junction is acceptable with standalone and cumulative development without the need for any mitigation scheme.

Junction 24 – A4157 Elmhurst Road / A418 Bierton Road



This junction is a 4 arm roundabout and has been modelled in Arcady in the 2036 Do Cumulative 1 and 2036 Do Cumulative 2 Scenarios. The flows have been checked and are correct. The geometry is also largely correct although, as we have pointed out previously, the inscribed circle diameter (ICD) is 63m at the entry points rather than 51-54m which is the narrowest part of the junction. This will not affect the results as a lower ICD will provide less capacity and therefore creates a robust result.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Tables 3.23.1 and 3.23.2 show that this junction operates within capacity in all scenarios. The operation of the junction will improve with the cumulative scenarios due to the introduction of the orbital route.

Table 3.23.1 – Summary of the A4157 / A418 Roundabout – 2022 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum						
A418 (NE)	1	3	0.47	0	2	0.24
A4157 Douglas Road (S)	1	8	0.50	2	10	0.71
A418 (SW)	1	5	0.33	2	10	0.65
A4157 Elmhurst Road (W)	1	5	0.55	2	6	0.59
Junction Delay (s)	4.91			7.51		
2022 Do Something						
A418 (NE)	1	3	0.48	0	2	0.25
A4157 Douglas Road (S)	1	9	0.55	3	12	0.76
A418 (SW)	1	5	0.33	2	11	0.68
A4157 Elmhurst Road (W)	1	5	0.57	2	7	0.60
Junction Delay (s)	5.25			8.39		

Table 3.23.2 – Summary of the A4157 / A418 Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
A418 (NE)	2	5	0.61	0	2	0.30
A4157 Douglas Road (S)	2	13	0.69	4	15	0.82
A418 (SW)	1	7	0.48	8	25	0.92
A4157 Elmhurst Road (W)	2	7	0.64	4	14	0.78
Junction Delay (s)	7.13			15.20		
2036 Do Cumulative 1						
A418 (NE)	2	5	0.61	1	3	0.35
A4157 Douglas Road (S)	4	16	0.79	5	18	0.86
A418 (SW)	1	7	0.42	3	15	0.76
A4157 Elmhurst Road (W)	2	7	0.65	3	10	0.74
Junction Delay (s)	8.28			11.86		
2036 Do Cumulative 2						
A418 (NE)	2	5	0.60	1	3	0.36
A4157 Douglas Road (S)	4	16	0.78	5	17	0.84
A418 (SW)	1	6	0.40	3	15	0.75
A4157 Elmhurst Road (W)	2	7	0.65	3	9	0.72
Junction Delay (s)	8.10			11.16		

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 26 – Park Street / A41 Tring Road / Walton Road / A41 High Street



This is a 5 arm roundabout with the 5th arm providing access to the Tesco superstore. The junction has been modelled with Arcady and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.24.1 shows that the roundabout will operate within capacity in the 2022 Do Something Scenario. Given the layout of the junction, this junction has also been tested using the Lane Simulation tool of Junctions 9. Table 3.24.2 shows that overall delay has increased to 24.88 seconds and the maximum queue has increased to 14 vehicles.

Table 3.24.1 – Summary of the A41 / Park Street Roundabout – 2022 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2022 Do Minimum						
A41 Tring Road	1	3	0.43	1	3	0.39
Walton Road	1	7	0.50	1	5	0.41
A41 High Street	1	4	0.46	1	3	0.38
Park Street	0	4	0.23	0	3	0.24
Tesco Access	0	4	0.03	0	4	0.13
Junction Delay (s)	4.05			3.45		
2022 Do Something						
A41 Tring Road	1	3	0.43	1	3	0.39
Walton Road	1	7	0.56	1	5	0.42
A41 High Street	1	4	0.47	1	3	0.39
Park Street	0	4	0.20	0	3	0.21
Tesco Access	0	4	0.03	0	4	0.13
Junction Delay (s)	4.37			3.48		

Lane Simulation

Table 3.24.2 – Summary of the A41 / Park Street Roundabout – 2022 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (Veh)	Delay (S)	Queue (Veh)	Delay (S)
2022 Do Minimum				
A41 Tring Road	2	8	2	7
Walton Road	6	36	2	17
A41 High Street	4	18	3	11
Park Street	1	8	1	8
Tesco Access	0	9	0	10
Junction Delay (s)	16.88		10.24	
2022 Do Something				
A41 Tring Road	2	8	2	6
Walton Road	14	71	3	22
A41 High Street	4	17	3	12
Park Street	1	8	1	8
Tesco Access	0	8	0	10
Junction Delay (s)	24.88		11.42	

Table 3.24.1 shows that the roundabout is approaching practical capacity with a maximum RFC of 0.81 in the 2036 Do Minimum scenario although queues are still relatively low. With the 2036 Do Cumulative scenarios, the RFC and queue lengths reduce further.

Table 3.24.1 – Summary of the A41 / Park Street Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
A41 Tring Road	1	4	0.52	1	4	0.52
Walton Road	4	19	0.81	1	7	0.49
A41 High Street	1	6	0.58	1	4	0.45
Park Street	0	4	0.30	1	4	0.32
Tesco Access	0	5	0.04	0	5	0.17
Junction Delay (s)	7.96			4.34		
2036 Do Cumulative 1						
A41 Tring Road	1	4	0.55	1	3	0.32
Walton Road	1	8	0.55	1	5	0.39
A41 High Street	1	4	0.50	1	3	0.46
Park Street	1	4	0.34	1	4	0.32
Tesco Access	0	4	0.04	0	5	0.17
Junction Delay (s)	4.77			3.58		
2036 Do Cumulative 2						
A41 Tring Road	1	3	0.47	1	3	0.33
Walton Road	1	8	0.55	1	5	0.35
A41 High Street	1	4	0.45	1	3	0.41
Park Street	0	4	0.30	0	4	0.29
Tesco Access	0	4	0.04	0	5	0.16
Junction Delay (s)	4.36			3.33		

The operation of the junction improves with the Do Cumulative scenarios. No works to this junction are therefore proposed as the operation is acceptable with standalone and cumulative development.

Junction 28 – A418 / Stocklake / A418 Park Street / A418 Sapphire Way



This junction is a 4 arm roundabout and has been modelled with Arcady. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.25.1 shows that the roundabout will operate within capacity in the 2022 Do Something Scenario. Given the layout of the junction, this junction has also been tested using the Lane Simulation tool of Junctions 9. Table 3.25.2 demonstrates that this has minimal effect and the junction still operates with minimal delay.

Table 3.25.1 – Summary of the A4157 / A418 Roundabout – 2022 Scenarios

	AM			PM		
Approach	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum						
Sapphire Way	1	4	0.45	0	4	0.31
Stocklake	1	6	0.41	1	6	0.52
Park Street	1	4	0.32	0	4	0.29
Vale Park Drive	1	3	0.35	1	3	0.41
Junction Delay (s)	4.32			4.29		
2022 Do Something						
Sapphire Way	1	5	0.50	1	4	0.33
Stocklake	1	6	0.45	1	7	0.58
Park Street	1	4	0.31	1	4	0.32
Vale Park Drive	1	3	0.41	1	3	0.41
Junction Delay (s)	4.67			4.73		

Lane Simulation

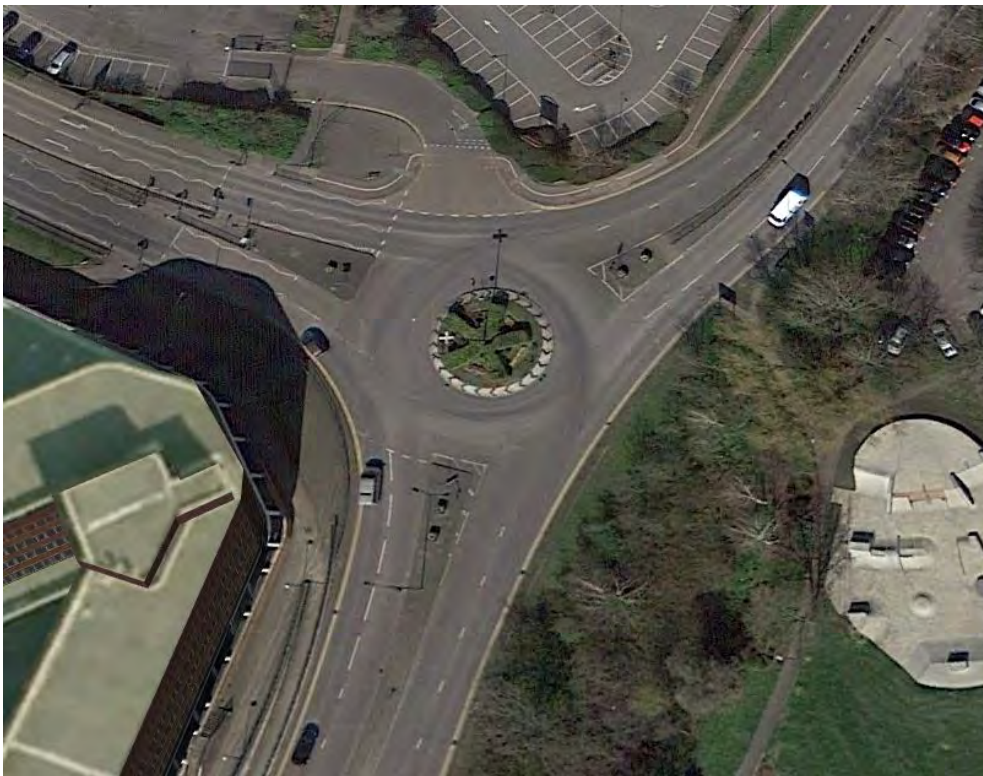
	AM		PM	
Approach	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2022 Do Minimum				
Sapphire Way	2	10	2	8
Stocklake	1	9	2	10
Park Street	1	8	1	8
Vale Park Drive	2	11	3	15
Junction Delay (s)	9.61		11.02	
2022 Do Something				
Sapphire Way	2	12	1	8
Stocklake	1	9	2	10
Park Street	1	9	1	9
Vale Park Drive	4	16	3	14
Junction Delay (s)	12.11		10.80	

Table 3.25.3 – Summary of the A4157 / A418 Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
Sapphire Way	2	7	0.61	1	5	0.46
Stocklake	2	11	0.69	4	14	0.78
Park Street	1	8	0.56	1	7	0.55
Vale Park Drive	1	4	0.47	2	7	0.69
Junction Delay (s)	7.34			8.60		
2036 Do Cumulative 1						
Sapphire Way	1	6	0.55	1	5	0.40
Stocklake	3	14	0.76	3	13	0.77
Park Street	1	5	0.39	1	4	0.31
Vale Park Drive	1	4	0.41	1	4	0.51
Junction Delay (s)	7.70			7.19		
2036 Do Cumulative 2						
Sapphire Way	1	6	0.57	1	5	0.39
Stocklake	3	15	0.77	4	15	0.80
Park Street	1	5	0.37	0	5	0.31
Vale Park Drive	1	4	0.42	1	4	0.53
Junction Delay (s)	8.00			8.03		

Table 3.25.3 demonstrates that the junction will operate within capacity in the 2036 Do Cumulative scenarios. No works to this junction are therefore proposed as the operation is acceptable with standalone and cumulative development.

Junction 29 - A418 Sapphire Way / A418 Upper Hundreds Way / A418 Vale Park Drive



This junction is a 3 arm roundabout junction in the strategic model. The model inputs are correct, with the exception of pedestrian flows not being taken into account at the signalised crossing point on A418 Upper Hundreds Way. To assess the impact of including pedestrian flows on the capacity of the junction, we have run the model with pedestrian flows of 30 and 60 in each of the network peak hours. The inclusion of the pedestrian flows did not impact the overall functionality of the junction.

As shown in the table extracted below, the results show that the junction would operate over capacity in the AM peak hour in 2036 Do Minimum, with an RFC of 1.01 and an estimated queue length of 30 PCU's on the A418 (NE) Upper Hundreds Way arm. However, the capacity of the junction improves in both 2036 Do Cumulative 1 and 2036 Do Cumulative 2 scenarios, with the RFC falling below capacity, and queue length and delay reducing.

Table 3.26.2 – Summary of the A418 Sapphire Way / Vale Park Drive Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
A418 (NE)	30	76	1.01	2	8	0.71
A418 (SW)	2	6	0.66	4	10	0.80
A418 (W)	3	6	0.71	2	6	0.68
Junction Delay (s)	29.45			7.89		
2036 Do Cumulative 1						
A418 (NE)	8	27	0.91	2	7	0.65
A418 (SW)	2	6	0.65	2	5	0.63
A418 (W)	3	6	0.74	2	5	0.66
Junction Delay (s)	12.47			5.44		
2036 Do Cumulative 2						
A418 (NE)	6	17	0.86	2	6	0.65
A418 (SW)	2	6	0.61	2	5	0.62
A418 (W)	2	5	0.66	2	6	0.70
Junction Delay (s)	9.07			5.85		

No works to this junction have therefore been proposed as the operation of the junction is shown to be acceptable with cumulative development. A standalone assessment of this junction was not required as the traffic flow changes were not material and it was therefore sifted out of assessment.

Junction 30 - A4157 / Broughton Avenue

This is a ghost island priority junction and has been modelled with the Picady modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;

The modelling shows that the roundabout will operate with spare capacity in the 2022 Do Something Scenario. No works to this junction are therefore proposed as the operation is acceptable with standalone development.

Junction 31 - A418 Upper Hundreds Way / Cambridge Street



This junction is a 4 arm roundabout and has been modelled using standard ARCADY methods and using the lane simulation option, to assess the impact of uneven lane usage. Given the high traffic flows at this junction and how it operates, lane simulation is considered to provide the most accurate reflection of how the junction would operate on the ground.

Whilst the results forecast capacity issues at the existing junction in the 2022 Do Minimum scenario, the results of both the 'standard' and lane simulation analysis show that the development would have a detrimental impact in the AM peak hour, but a betterment in the PM peak hour.

With the existing junction layout, the results show that the junction would operate over capacity in the 2036 Do Minimum scenario in both the AM and PM peak hours, and would deteriorate further with the addition of the development traffic in the AM peak in the 2036 Do Cumulative 2 scenario. Whilst it is noted that the junction operation deteriorates significantly in the 2036 Do Cumulative 1 scenario when compared to the Do Minimum, it is recognised that Do Cumulative 2 is the more likely cumulative scenario as it takes into account all current live planning applications for strategic development.

In 2017 mitigation works were proposed to this junction as a result of the cumulative impact. The mitigation proposals were shown on PBA Drawing 32113/5501/022 Revision E and involve changing the lane allocation on Upper Hundreds Way to allow ahead movements in both lanes, increasing the merge length on the A418 north exit, increasing the flare length on the A418 north approach and relocating bus stops on the A418 north. An extract of the drawing is given below.



The effects of this previously proposed mitigation scheme have been assessed using the updated model flows. The results of the ARCADY lane simulation model for the existing junction layout (table 3.28.2) versus the proposed mitigation scheme (table 3.28.4) in 2022 are extracted below.

Table 3.28.2 – Summary of the A418 / Cambridge Street Roundabout – 2022 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2022 Do Minimum				
Cambridge Street (N)	1	18	1	10
Upper Hundreds Way	200	813	311	792
Cambridge Street (S)	1	10	1	12
New Street	105	246	144	353
Junction Delay (s)	346.51		473.03	
2022 Do Something				
Cambridge Street (N)	1	17	1	9
Upper Hundreds Way	280	747	215	584
Cambridge Street (S)	0	9	2	14
New Street	210	463	20	69
Junction Delay (s)	508.46		267.04	

Table 3.28.4 – Summary of the A418 / Cambridge Street Roundabout – Mitigated Layout - 2022 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2022 Do Something + Mitigation				
Cambridge Street (N)	2	25	1	11
Upper Hundreds Way	6	17	4	12
Cambridge Street (S)	1	14	3	25
New Street	238	524	23	66
Junction Delay (s)	263.88		34.60	

When comparing the 2022 Do Minimum (existing layout) to the 2022 Do Something with mitigation, queues on New Street are estimated to increase from 105 to 236 PCU's in the AM peak hour. However, queues on Upper Hundreds Way reduce significantly as a result of the proposed scheme in both the AM and PM peak hours. There is also an overall betterment to the junction performance, with total junction delay reducing significantly, especially in the PM peak hour.

The effects of the proposed mitigation scheme the 2036 scenarios have also been assessed using the updated model flows. The results of the ARCADY lane simulation model for the existing junction layout (table 3.28.6) versus the proposed mitigation scheme (table 3.28.8) in 2036 are extracted below.

Table 3.28.6 – Summary of the A418 / Cambridge Street Roundabout – 2036 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2036 Do Minimum				
Cambridge Street (N)	2	20	1	10
Upper Hundreds Way	471	1173	406	971
Cambridge Street (S)	1	10	2	14
New Street	369	744	333	748
Junction Delay (s)	806.85		714.34	
2036 Do Cumulative 1				
Cambridge Street (N)	2	22	1	11
Upper Hundreds Way	684	1520	395	959
Cambridge Street (S)	0	9	2	15
New Street	574	998	470	918
Junction Delay (s)	1081.98		784.26	
2036 Do Cumulative 2				
Cambridge Street (N)	2	20	1	11
Upper Hundreds Way	552	1318	287	714
Cambridge Street (S)	0	9	2	15
New Street	384	769	270	630
Junction Delay (s)	892.06		550.66	

Table 3.28.8 – Summary of the A418 / Cambridge Street Roundabout – Mitigated Layout - 2036 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2036 Do Cumulative 1 + Mitigation				
Cambridge Street (N)	4	41	1	14
Upper Hundreds Way	122	245	8	21
Cambridge Street (S)	1	24	5	41
New Street	603	1047	447	847
Junction Delay (s)	608.37		409.05	
2036 Do Cumulative 2 + Mitigation				
Cambridge Street (N)	3	34	1	13
Upper Hundreds Way	40	94	5	15
Cambridge Street (S)	1	20	3	28
New Street	418	822	251	585
Junction Delay (s)	431.44		269.18	

When comparing the 2036 Do Minimum (existing layout) to the Do Cumulative 2 scenario with the proposed mitigation scheme, it can be seen that queues on New Street are estimated to increase from 369 to 418 PCU's in the AM peak hour. However, queues on Upper Hundreds Way again reduce significantly as a result of the proposed scheme in both the AM and PM peak hours. There is also an overall betterment to the junction performance, with total junction delay approximately halving. Therefore, on balance, the impact of the cumulative development on this junction is considered to be acceptable subject to the implementation of the improvement scheme.

Junction 33 - A418 / Fleet Street



This junction takes the form of a simple priority junction. The junction has been modelled with the Picady junction modelling programme, and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;

The operation of the junction is shown to deteriorate slightly in 2022 in the AM peak hour with the addition of the development traffic, although there is an improvement in the PM peak hour. An extract of the results is shown below.

Table 3.29.1 – Summary of the A418 / Aqua Way Priority Junction – 2022 Scenarios

Stream	Movement	AM			PM		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum							
B-AC	Fleet Street(N) – A418 (W) and A418 (E)	0	18	0.13	0	14	0.23
C-A	A418 (E) – A418 (W)	19	41	0.91	119	191	1.13
C-B	A418 (E) – Fleet Street (N)	0	34	0.88	3	130	1.08
Junction Delay (s)		19.19			106.78		
2022 Do Something							
B-AC	Fleet Street (N) – A418 (W) and A418 (E)	1	24	0.39	1	242	0.58
C-A	A418 (E) – A418 (W)	43	78	0.99	83	108	1.04
C-B	A418 (E) – Fleet Street (N)	1	55	0.93	1	73	0.98
Junction Delay (s)		36.57			65.21		

It is accepted that the impact of the development traffic on this junction is relatively small and would only be a short-term issue in reality. Overall, on balance, the impact is considered acceptable to the Highway Authority.

Junction 35 - A41 Tring Road / Limes Avenue

This junction takes the form of a priority junction with a ghost island right turn lane. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results show that the impact of the development on this junction is not material and as such no mitigation works are required or proposed to this junction.

Junction 36 – A41 Tring Road / King Edward Avenue / A4157 Oakfield Road



This junction takes the form of a 4 arm left right staggered signalised junction. The junction has been modelled with the Linsig junction modelling programme for signalised junctions. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.31.1 shows that the junction is forecast to operate over capacity in the 2022 scenarios, although the operation of the junction improves in the 2022 Do Something scenario with the PRC increasing by 0.6% in the AM and 3.9% in the PM.

Table 3.31.1 – Summary of the A41 / King Edward Avenue Signalised Junction – 2022 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2022 Do Minimum					
1/1	A41 Tring Road (EB) Ahead Left	84.8	24	113.7	89
1/2	A41 Tring Road (EB) Ahead	23.8	5	24.0	5
2/2+2/1	Oakfield Road Left Right	84.5:84.5	19	114.9:82.1	21
3/1	A41 Tring Road Internal (WB) Ahead	86.4	28	46.8	3
3/2	A41 Tring Road Internal (WB) Right	85.2	11	88.9	24
4/1	A41 Tring Road Internal (EB) Ped Ahead	44.5	1	38.0	12
4/2	A41 Tring Road Internal (EB) Ped Ahead	35.3	3	29.7	2
5/1	A41 Tring Road Internal (EB) Ahead	44.2	0	37.7	1
5/2	A41 Tring Road Internal (EB) Ahead Right	79.6	5	84.2	5
6/1	A41 Tring Road (WB) Ahead Left	84.5	28	57.6	13
6/2	A41 Tring Road (WB) Ahead	20.2	4	32.8	6
7/1+7/2	King Edwards Avenue Left Right	59.7:59.7	9	114.9:114.9	38
PRC (%)		5.6		-27.7	
Cycle Time (s)		120		120	
2022 Do Something					
1/1	A41 Tring Road (EB) Ahead Left	83.9	23	111.4	82
1/2	A41 Tring Road (EB) Ahead	23.4	4	24.4	4.5
2/2+2/1	Oakfield Road Left Right	84.6:84.6	12	110.9:100.0	24
3/1	A41 Tring Road Internal (WB) Ahead	88.3	28	45.6	5
3/2	A41 Tring Road Internal (WB) Right	84.8	12	89.5	19
4/1	A41 Tring Road Internal (EB) Ped Ahead	38.7	2	36.4	11
4/2	A41 Tring Road Internal (EB) Ped Ahead	30.8	7	28.8	1
5/1	A41 Tring Road Internal (EB) Ahead	38.4	0	36.1	1
5/2	A41 Tring Road Internal (EB) Ahead Right	84.3	14	65.8	3
6/1	A41 Tring Road (WB) Ahead Left	84.1	27	62.9	15
6/2	A41 Tring Road (WB) Ahead	17.0	3	26.5	5
7/1+7/2	King Edwards Avenue Left Right	72.8:72.8	10	109.4:109.4	32
PRC (%)		6.2		-23.8	
Cycle Time (s)		115		112	

Table 3.31.2 shows that the junction will operate significantly over theoretical capacity in the 2036 Do Minimum scenario, with mean maximum queues estimated to be c89 vehicles in the AM peak period and c201 vehicles in the PM peak period. Practical Reserve Capacity (PRC) is -21.8 in the AM and -104.8 in the PM.

The 2036 Do Cumulative 1 scenario shows a slight improvement in the AM compared to the 2036 Do minimum with estimated mean maximum queues of c77 vehicles. In the PM there is a significant improvement with the estimated mean maximum queue reducing from c201 to c113 vehicles. Overall, there is a slight improvement in the operation of the junction in the AM peak period as the PRC increases to -17.7. In the PM period there is a significant improvement in PRC as it increases to -31.6.

The 2036 Do Cumulative 2 scenario shows further improvements with the mean maximum queue estimated to reduce to c44 vehicles in the AM peak period and c92 vehicles in the PM peak period. The PRC is -8.2 in the AM and -25.5 in the PM and therefore a significant improvement in PRC over the 2036 Do Minimum scenario.

It can be concluded that the junction performs better in the 2022 Do Something Scenario compared to Do Minimum and all 2036 Do Something scenarios compared to the 2036 Do Minimum scenario.. The development does not worsen the operation of the junction and there is therefore no basis for a requirement of the previously secured improvements to this junction.

Table 3.31.2 – Summary of the A41 / King Edward Avenue Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Minimum					
1/1	A41 Tring Road (EB) Ahead Left	107.8	65	184.4	201
1/2	A41 Tring Road (EB) Ahead	38.2	8	56.2	4
2/2+2/1	Oakfield Road Left Right	106.2:106.2	48	61.3:61.3	3
3/1	A41 Tring Road Internal (WB) Ahead	70.4	31	29.3	0
3/2	A41 Tring Road Internal (WB) Right	89.0	12	87.1	10
4/1	A41 Tring Road Internal (EB) Ped Ahead	51.0	1	32.0	4
4/2	A41 Tring Road Internal (EB) Ped Ahead	40.7	3	35.2	5
5/1	A41 Tring Road Internal (EB) Ahead	50.6	0	31.7	0
5/2	A41 Tring Road Internal (EB) Ahead Right	89.9	16	39.2	0
6/1	A41 Tring Road (WB) Ahead Left	109.6	89	166.4	140
6/2	A41 Tring Road (WB) Ahead	21.9	4	173.7	166
7/1+7/2	King Edwards Avenue Left Right	50.5:50.5	8	45.6:45.6	4
PRC (%)		-21.8		-104.8	
Cycle Time (s)		115		56	
2036 Do Cumulative 1					
1/1	A41 Tring Road (EB) Ahead Left	84.1	24	118.4	113
1/2	A41 Tring Road (EB) Ahead	24.5	5	25.0	5
2/2+2/1	Oakfield Road Left Right	96.1:74.6	14	68.8:68.8	14
3/1	A41 Tring Road Internal (WB) Ahead	70.5	34	39.8	2
3/2	A41 Tring Road Internal (WB) Right	78.5	8	89.2	23
4/1	A41 Tring Road Internal (EB) Ped Ahead	43.9	1	40.8	10
4/2	A41 Tring Road Internal (EB) Ped Ahead	34.8	2	33.2	2
5/1	A41 Tring Road Internal (EB) Ahead	43.6	0	40.5	1
5/2	A41 Tring Road Internal (EB) Ahead Right	89.2	5	44.9	0
6/1	A41 Tring Road (WB) Ahead Left	106.0	77	57.1	14
6/2	A41 Tring Road (WB) Ahead	17.0	3	33.0	7
7/1+7/2	King Edwards Avenue Left Right	75.2:75.2	13	72.1:72.1	12
PRC (%)		-17.7		-31.6	
Cycle Time (s)		118		120	
2036 Do Cumulative 2					
1/1	A41 Tring Road (EB) Ahead Left	75.0	20	113.0	92
1/2	A41 Tring Road (EB) Ahead	20.3	4	23.5	5
2/2+2/1	Oakfield Road Left Right	94.5:84.3	17	72.7:72.7	16
3/1	A41 Tring Road Internal (WB) Ahead	71.8	34	37.3	2
3/2	A41 Tring Road Internal (WB) Right	89.5	17	89.7	22
4/1	A41 Tring Road Internal (EB) Ped Ahead	40.8	3	41.2	11
4/2	A41 Tring Road Internal (EB) Ped Ahead	34.7	11	33.7	1
5/1	A41 Tring Road Internal (EB) Ahead	40.5	0	40.9	1
5/2	A41 Tring Road Internal (EB) Ahead Right	93.8	17	44.3	0
6/1	A41 Tring Road (WB) Ahead Left	97.4	44	52.6	12
6/2	A41 Tring Road (WB) Ahead	17.4	3	31.3	7
7/1+7/2	King Edwards Avenue Left Right	83.9:83.9	15	69.9:69.9	12
PRC (%)		-8.2		-25.5	
Cycle Time (s)		116		120	

7/1+7/2	King Edwards Avenue Left Right	75.2:75.2	13	72.1:72.1	12
PRC (%)			-17.7		-31.6
Cycle Time (s)			118		120
2036 Do Cumulative 2					
1/1	A41 Tring Road (EB) Ahead Left	75.0	20	113.0	92
1/2	A41 Tring Road (EB) Ahead	20.3	4	23.5	5
2/2+2/1	Oakfield Road Left Right	94.5:84.3	17	72.7:72.7	16
3/1	A41 Tring Road Internal (WB) Ahead	71.8	34	37.3	2
3/2	A41 Tring Road Internal (WB) Right	89.5	17	89.7	22
4/1	A41 Tring Road Internal (EB) Ped Ahead	40.8	3	41.2	11
4/2	A41 Tring Road Internal (EB) Ped Ahead	34.7	11	33.7	1
5/1	A41 Tring Road Internal (EB) Ahead	40.5	0	40.9	1
5/2	A41 Tring Road Internal (EB) Ahead Right	93.8	17	44.3	0
6/1	A41 Tring Road (WB) Ahead Left	97.4	44	52.6	12
6/2	A41 Tring Road (WB) Ahead	17.4	3	31.3	7
7/1+7/2	King Edwards Avenue Left Right	83.9:83.9	15	69.9:69.9	12
PRC (%)			-8.2		-25.5
Cycle Time (s)			116		120

Junction 37 - Wendover Way / Turnfurlong Lane / King Edward Avenue

This junction takes the form of a mini roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 38 – Marroway / Worlds End Lane



The Marroway/Worlds End Lane junction is a 3-arm mini-roundabout and has been modelled with Arcady. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.33.1 demonstrates that the junction will operate above practical capacity in the AM in the 2022 Do minimum scenario but in the 2022 So Something scenario the operation of the junction will improve and the junction will be within practical capacity.

Table 3.33.1 – Summary of the Marroway / Worlds End Lane Roundabout – 2022 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2022 Do Minimum						
Main Street	7	44	0.88	2	12	0.62
Worlds End Lane	0	9	0.21	1	11	0.35
Marroway	2	14	0.70	2	13	0.67
Junction Delay (s)	27.52			12.50		
2022 Do Something						
Main Street	5	30	0.83	1	9	0.51
Worlds End Lane	0	9	0.25	1	11	0.45
Marroway	2	14	0.69	1	10	0.55
Junction Delay (s)	20.60			10.13		

Table 3.33.2 shows that the junction will operate over theoretical capacity in the AM peak hour of the 2036 Do Minimum scenario with an RFC of 1.07 on Main Street and estimated queues of c55 vehicles. In the PM, the RFC exceeds practical capacity on Main Street, but queues are still low.

Table 3.33.2 – Summary of the Marroway / Worlds End Lane Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
Main Street	55	287	1.07	7	42	0.88
Worlds End Lane	0	9	0.20	1	14	0.43
Marroway	5	25	0.83	4	21	0.81
Junction Delay (s)	145.45			28.40		
2036 Do Cumulative 1						
Main Street	2	18	0.71	1	9	0.47
Worlds End Lane	1	10	0.43	3	22	0.78
Marroway	1	8	0.42	1	7	0.32
Junction Delay (s)	13.19			14.86		
2036 Do Cumulative 2						
Main Street	4	25	0.80	1	11	0.59
Worlds End Lane	1	9	0.38	2	16	0.66
Marroway	1	9	0.49	1	9	0.48
Junction Delay (s)	16.97			12.18		

In the 2036 Cumulative Scenarios the operation of the junction will improve significantly due to the introduction of the radial route with the queue on Main Street estimated to reduce from c55 vehicles to c4 vehicles in the AM peak period.

No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Junction 41 - Turnfurlong Lane / Westmorland Avenue

This junction takes the form of a priority junction. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 43 - Turnfurlong Lane / Camborne Avenue

This junction takes the form of a priority junction. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

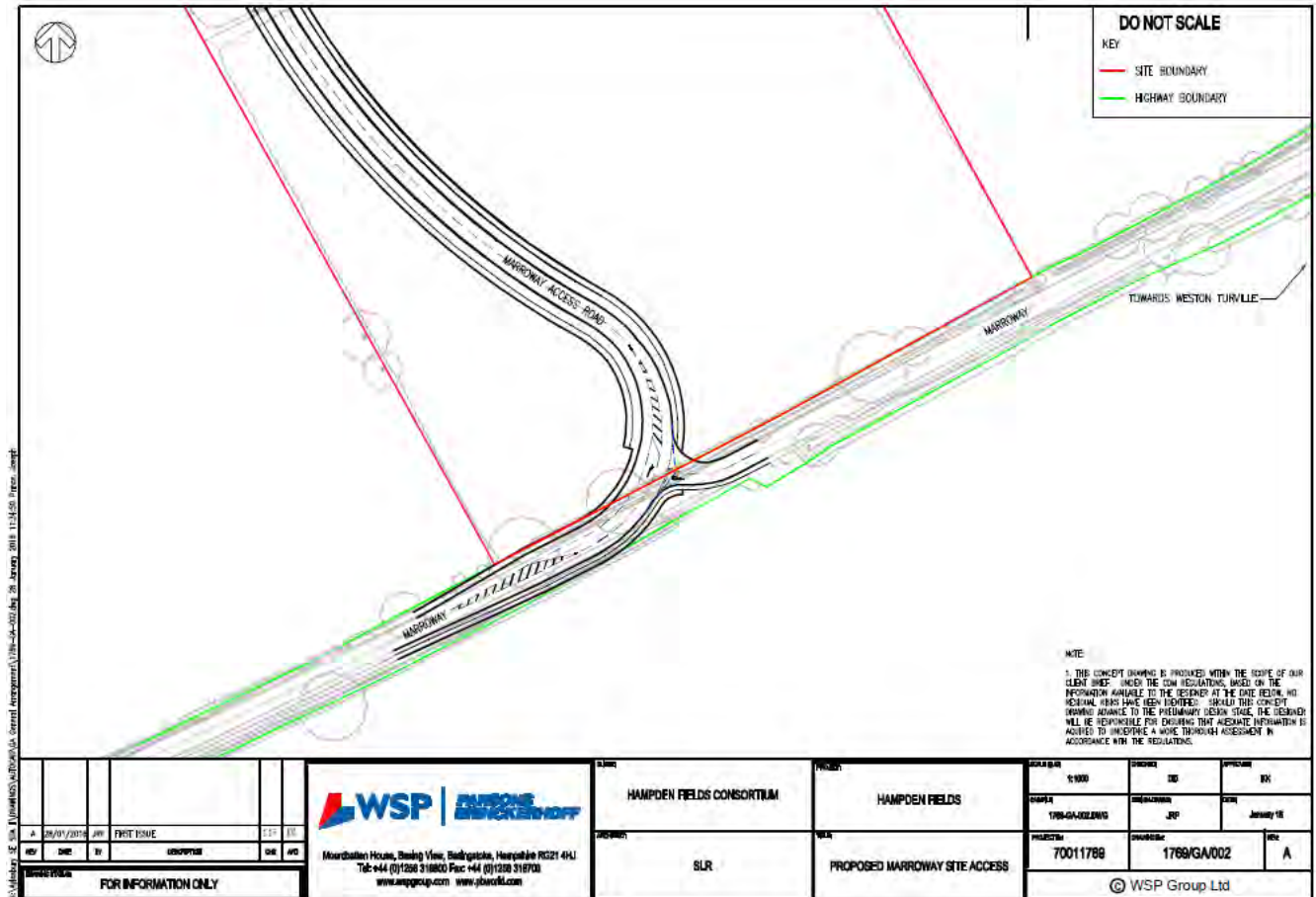
Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 44 – Marroway / Marroway Link Road

The Marroway / Marroway Link Road junction is proposed as a 3-arm 'reverse' priority junction with the primary route Marroway west– Marroway Link Road and the Marroway east arm the minor arm of a new ghost island priority junction. The proposed junction arrangement is indicated on WSP Drawing 1769-GA-002A reproduced below and is that same as that considered in 2017.



The junction has been modelled with the Picady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

Table 3.36.1 shows that the junction has been modelled for all three 2036 Do Cumulative scenarios. The junction is predicted to operate with a significant amount of spare capacity in all 2036 scenarios, with a maximum RFC of 0.69 in the 2036 Do Cumulative 2 scenario and a maximum queue estimated to be c2 vehicles.

The operation of the proposed junction is acceptable with cumulative development.

Table 3.36.1 – Summary of the Marroway Link Road Priority Junction – 2036 Scenarios

Stream	Movement	AM			PM		
		Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Cumulative 1							
B-C	Marroway (E) – Marroway (W)	0	6	0.12	0	9	0.06
B-A	Marroway (E) – MLR	0	9	0.19	2	20	0.67
C-AB	Marroway (W) – MLR/Marroway (E)	0	9	0.18	0	9	0.22
Junction Delay (s)		3.15			10.17		
2036 Do Cumulative 2							
B-C	Marroway (E) – Marroway (W)	0	8	0.24	0	10	0.09
B-A	Marroway (E) – MLR	0	7	0.09	2	23	0.69
C-AB	Marroway (W) – MLR/Marroway (E)	0	9	0.20	1	10	0.36
Junction Delay (s)		2.83			10.82		
2036 Do Cumulative 3							
B-C	Marroway (E) – Marroway (W)	1	9	0.33	0	10	0.07
B-A	Marroway (E) – MLR	0	8	0.10	2	23	0.68
C-AB	Marroway (W) – MLR/Marroway (E)	0	9	0.24	1	9	0.32
Junction Delay (s)		3.51			9.43		

Junction 45 - Marroway Link Road (MLR) / Southern Link Road (SLR)

In 2017 this new junction within the Hampden Fields development was proposed to be a roundabout. Having considered the suitability of this configuration based on the updated flows from the 2020 Aylesbury Transport Model outputs, the junction form has been revised to be configured as a 3 arm traffic signalised junction. The SLR itself continues to be specified as a dual carriageway link, the alignment of which has been revised locally to the junction to reflect its change from a roundabout to signals. The proposed junction arrangement is included on RPS Drawing JNY10535-DR-009. An extract of the drawing is given below.



The junction has been modelled with the LinSig modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

Table 3.37.1 – Summary of the Marroway Link Road / SLR Roundabout – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Cumulative 1					
1/1	SLR (WB) Left	7.4	1	13.9	2
1/2	SLR (WB) Ahead	88.9	20	87.8	33
1/3	SLR (WB) Ahead	89.0	20	87.7	33
2/1	MLR Left	43.1	8	58.3	10
2/2	MLR Right	84.1	13	87.8	13
3/1	SLR (EB) Ahead	84.5	31	79.6	26
3/2+3/3	SLR (EB) Ahead Right	75.4:75.4	6	0.0:88.0	10
PRC (%)		6.5		2.3	
Cycle Time (s)		118		120	
2036 Do Cumulative 2					
1/1	SLR (WB) Left	8.4	1	16.5	3
1/2	SLR (WB) Ahead	80.3	24	91.6	36
1/3	SLR (WB) Ahead	80.4	24	91.6	36
2/1	MLR Left	26.4	5	51.2	9
2/2	MLR Right	79.1	14	91.0	14
3/1	SLR (EB) Ahead	80.1	26	79.9	26
3/2+3/3	SLR (EB) Ahead Right	80.3:80.3	12	0.0:90.5	12
PRC (%)		11.9		-1.8	
Cycle Time (s)		118		118	
2036 Do Cumulative 3					
1/1	SLR (WB) Left	8.7	1	29.3	5
1/2	SLR (WB) Ahead	81.2	24	87.0	31
1/3	SLR (WB) Ahead	81.2	24	87.0	31
2/1	MLR Left	25.2	4	45.7	8
2/2	MLR Right	81.3	15	87.4	14
3/1	SLR (EB) Ahead	79.2	26	85.5	32
3/2+3/3	SLR (EB) Ahead Right	80.6:80.6	12	0.0:86.3	9
PRC (%)		10.6		3.0	
Cycle Time (s)		117		117	

The results show that the operation of the proposed junction is acceptable with standalone and cumulative development.

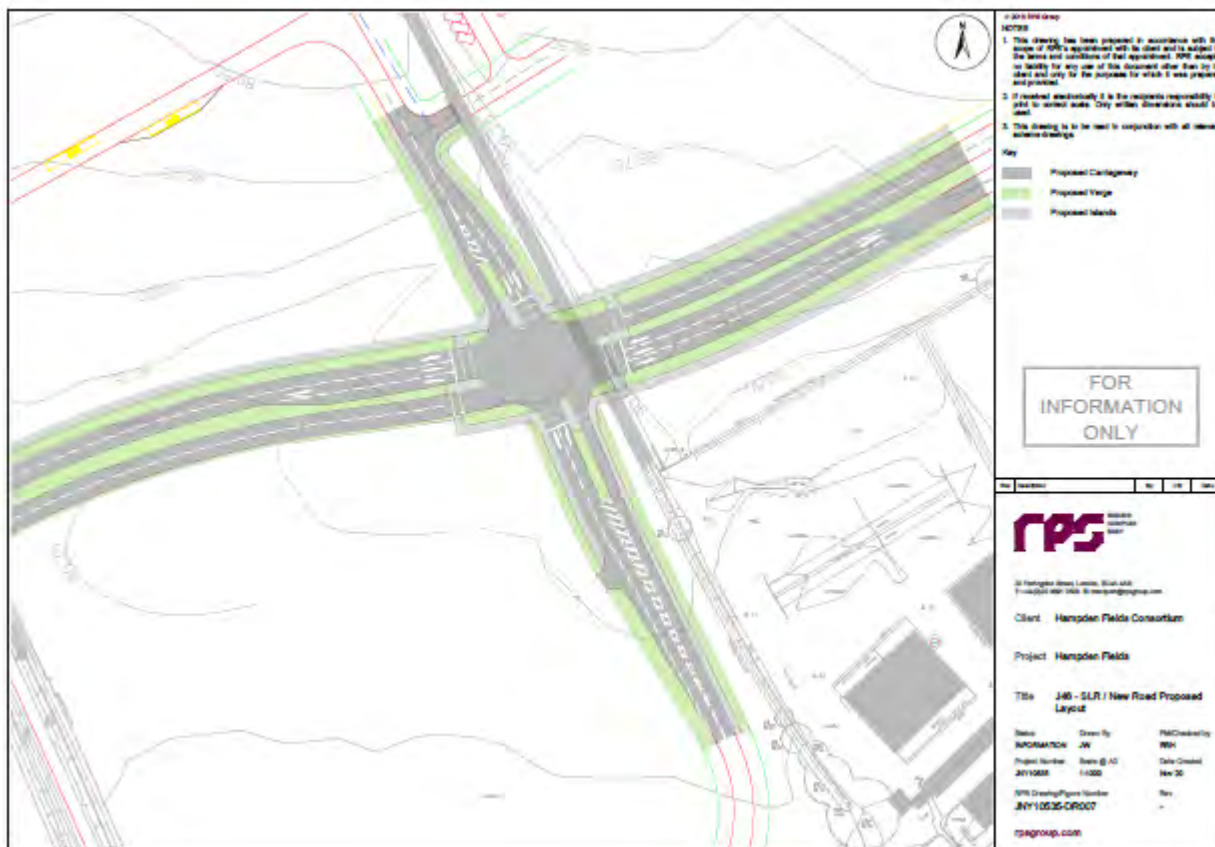
Junction 46 – SLR / New Road

The SLR / New Road junction is a proposed 4-arm signalised junction at the point where the new SLR dual carriageway crosses the existing New Road which is subject to re-alignment. The proposed layout is shown on RPS Drawing JNY10535-DR-007 and reproduced below.

The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.



The output files match Table 3.38.1 apart from 2036 Do Cumulative 1 AM where the PRC on the output file is 29.2 rather than 23.3 and the cycle time is 240.

Paragraph 4.153 states that “Junction performance under the 2036 Do Cumulative 2 (Reg 22) scenario at this location also shows slight betterment over the 2036 Do Cumulative 1 (HF+AW) during the AM peak, and a slight worsening during the PM peak with overall PRC levels of 11.9% and -1.8% respectively with corresponding maximum queue figures of 26 and 36 PCUs.” This is incorrect, PRC reduces from 29.2% in Do Cumulative 1 AM to 23.3% in Do Cumulative 2 AM. In the PM the PRC reduces from 8.2% in Do Cumulative 1 to 2.7% in Do Cumulative 2, not -1.8%.

The junction operates within capacity in all scenarios. The model assumes pedestrian crossings run every other stage, but it is likely to run less often and therefore the junction would have more capacity than shown in Table 3.38.1.

The operation of the proposed junction is acceptable with cumulative development.

Table 3.38.1 – Summary of the New Road / SLR Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Cumulative 1					
1/1	SLR (WB) Left Ahead	59.7	17	81.7	30
1/2+1/3	SLR (WB) Ahead Right	61.2	19	83.2	34
2/2+2/1	New Road South Right Left Ahead	64.9	9	83.2	11
3/1	SLR (EB) Ahead Left	67.6	21	59.6	16
3/2+3/3	SLR (EB) Ahead Right	69.6	24	61.4	18
4/2+4/1	New Road North Left Ahead Right	69.4	10	76.0	8
PRC (%)		23.3		8.2	
Cycle Time (s)		239		239	
2036 Do Cumulative 2					
1/1	SLR (WB) Left Ahead	62.9	18	86.5	33
1/2+1/3	SLR (WB) Ahead Right	64.8	21	87.6	37
2/2+2/1	New Road South Right Left Ahead	72.9	10	86.6	14
3/1	SLR (EB) Ahead Left	71.1	23	60.1	15
3/2+3/3	SLR (EB) Ahead Right	73.0	26	62.1	18
4/2+4/1	New Road North Left Ahead Right	61.4	8	85.0	8
PRC (%)		23.3		2.7	
Cycle Time (s)		239		240	
2036 Do Cumulative 3					
1/1	SLR (WB) Left Ahead	63.2	19	86.0	33
1/2+1/3	SLR (WB) Ahead Right	65.1	22	88.3	37
2/2+2/1	New Road South Right Left Ahead	74.3	11	87.4	14
3/1	SLR (EB) Ahead Left	72.9	25	63.2	17
3/2+3/3	SLR (EB) Ahead Right	74.6	29	64.8	19
4/2+4/1	New Road North Left Ahead Right	60.1	8	68.1	7
PRC (%)		20.6		1.9	
Cycle Time (s)		240		240	

Junction 47 - Halton Village Road / Brook End

This junction takes the form of a priority junction. It has been modelled with the Picady junction modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 48 - Halton Village Road / Chestnut Avenue

This is a ghost island priority junction with Halton Village Road North to Chestnut Avenue the main carriageway. The junction has been modelled with the Picady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The junction will operate above practical capacity in the PM in the 2022 Do Minimum scenario but improves in the 2022 Do Something scenario and will operate within practical capacity.

Table 3.40.1 - Summary of the Halton Village Road / Chestnut Avenue Priority Junction – 2022 Scenarios

		AM			PM		
Stream	Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum							
B-C	Halton Village (W) – Halton Village (N)	0	17	0.14	3	233	0.93
B-A	Halton Village (W) – Chestnut Avenue (S)	3	36	0.77	10	90	0.95
C-AB	Halton Village (N) – Chestnut Avenue (S) and Halton Village (W)	0	9	0.23	0	8	0.17
Junction Delay (s)		9.23			34.82		
2022 Do Something							
B-C	Halton Village (W) – Halton Village (N)	0	11	0.05	0	12	0.21
B-A	Halton Village (W) – Chestnut Avenue (S)	2	25	0.63	2	23	0.62
C-AB	Halton Village (N) – Chestnut Avenue (S) and Halton Village (W)	1	10	0.37	1	10	0.34
Junction Delay (s)		6.06			6.96		

The junction will operate within capacity in the Do Cumulative Scenarios with a maximum queue estimated to be c2 vehicles in the PM peak period.

No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Junction 50 - Aylesbury Road / Halton Lane



This junction takes the form of a mini roundabout and has been modelled with the Arcady modelling programme. The geometry and flows have been checked and are correct. However there is an error in Table 3.41.1 where the modelling output files show that the queue on Halton Lane in the 2022 Do Minimum should be 209 vehicles not 279.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.41.1 demonstrates that the junction is forecast to operate above theoretical capacity in the AM peak on the Halton Lane arm with an RFC of 1.47 and corresponding estimated queue of c209. In the 2022 Do Something scenario this increases to an RFC of 1.52 and queue of c238 vehicles.

The TAA explains that total flow through the junction in 2022 is forecast to increase from 1,782 to 1,809 PCUs which is a 1.5% increase which is not considered to be significant.

Table 3.41.1 - Summary of the Aylesbury Road / Halton Lane Roundabout– 2022 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2022 Do Minimum						
Aylesbury Road (S)	1	7	0.43	1	9	0.58
Aylesbury Road (N)	3	18	0.78	3	15	0.73
Halton Lane	279	1491	1.47	5	41	0.84
Junction Delay (s)	557.46			20.02		
2022 Do Something						
Aylesbury Road (S)	1	7	0.47	1	7	0.50
Aylesbury Road (N)	2	14	0.71	2	10	0.61
Halton Lane	238	1660	1.52	6	49	0.87
Junction Delay (s)	646.12			21.12		

Table 3.41.2 shows that in the 2036 Do Minimum scenario, the junction operates above theoretical capacity, with a maximum RFC of 2.0 on the Halton Lane arm during the AM peak hour and a corresponding estimated queue of c347 vehicles. In the PM peak hour, the junction also exceeds theoretical capacity with an RFC is 1.06 and queues of c38 vehicles.

The operation of the junction improves slightly with the Do Cumulative scenarios with the RFC on Halton Lane in the AM peak hour reducing to 1.87 in Do Cumulative 1 AM and 1.89 in Do Cumulative 2 AM. There is also a slight improvement on Halton Lane in the PM with the RFC reducing to 0.98 in Do Cumulative 1 and 0.95 in Do Cumulative 2.

Halton Lane is the subject to a degree of short-cutting at present, by drivers choosing to access the A413 corridor at this location. The Council would not wish to encourage these movements by seeking to improve the performance of the junction that would serve to encourage this driver behaviour.

The two Do Cumulative scenarios show a slight improvement in the operation of the junction compared to the 2036 Do Minimum scenario. As such no additional mitigation is therefore being identified for this junction. This is considered acceptable as mitigation measures to improve capacity at the junction would further encourage short-cutting, which would undermine traffic calming efforts locally.

Table 3.41.2 - Summary of the Aylesbury Road / Halton Lane Roundabout– 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
Aylesbury Road (S)	1	7	0.48	2	11	0.63
Aylesbury Road (N)	4	21	0.81	5	23	0.83
Halton Lane	347	3146	2.00	38	283	1.06
Junction Delay (s)	1135.05			88.45		
2036 Do Cumulative 1						
Aylesbury Road (S)	1	7	0.54	3	13	0.71
Aylesbury Road (N)	3	15	0.74	2	14	0.69
Halton Lane	324	2748	1.87	17	141	0.98
Junction Delay (s)	987.29			45.83		
2036 Do Cumulative 2						
Aylesbury Road (S)	1	6	0.47	2	12	0.71
Aylesbury Road (N)	4	20	0.79	3	16	0.75
Halton Lane	304	2802	1.89	12	112	0.95
Junction Delay (s)	974.09			36.26		

Junction 51 - Aylesbury Road / Grenville Avenue

This junction takes the form of a priority junction with a ghost island right turn lane. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 52 - A413 / Wendover Road



This junction is a 3 arm roundabout and has been modelled with the Arcady modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The modelling shows that the roundabout will operate within capacity in the 2022 Do Something Scenario.

Table 3.43.1 shows that in the 2036 Do Minimum scenario the junction is expected to operate slightly above practical capacity in the AM peak with an RFC of 0.9 on the Wendover Road East arm.

In the two Do Cumulative scenarios the junction performance improves and the junction operates within capacity with a maximum RFC of 0.75 on the Wendover Road East arm and an indicated queue of c3 vehicles.

No works to this junction are therefore proposed as the operation is acceptable with standalone and cumulative development.

Table 3.43.1 - Summary of the A413 / Wendover Road Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
Wendover Road (E)	8	28	0.90	1	6	0.59
A413	1	3	0.47	2	5	0.69
Wendover Road (W)	2	6	0.68	1	4	0.42
Junction Delay (s)	12.10			4.90		
2036 Do Cumulative 1						
Wendover Road (E)	2	9	0.70	1	4	0.42
A413	1	3	0.46	2	4	0.60
Wendover Road (W)	1	4	0.52	1	3	0.36
Junction Delay (s)	5.09			3.52		
2036 Do Cumulative 2						
Wendover Road (E)	3	10	0.75	1	4	0.47
A413	1	3	0.50	1	4	0.58
Wendover Road (W)	1	5	0.58	1	3	0.42
Junction Delay (s)	5.86			3.67		

Junction 55 - South East Aylesbury Link Road (SEALR) / Lower Road

This junction is a proposed new 4 arm large diameter roundabout, and is currently the subject of a live planning application for SEALR. The proposed junction design is indicated on AECOM Drawing 60535364-ACM-00-XX-SKE-CE-0100, an extract of which is shown below.

Table 3.44.1 - Summary of the SEALR / Lower Road Roundabout – 2036 Scenarios – Standard Assessment

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
1 – SEALR	0	0	0.00	0	0	0.00
2 – Lower Road South	1	6	0.53	1	5	0.51
3 – SMRR	1	4	0.42	1	5	0.47
4 – Lower Road North	2	6	0.70	1	4	0.55
Junction Delay (s)	5.81			4.65		
2036 Do Cumulative 1						
1 – SEALR	2	5	0.83	2	6	0.70
2 – Lower Road South	1	9	0.55	2	16	0.71
3 – SMRR	5	19	0.83	2	14	0.70
4 – Lower Road North	4	10	0.78	3	9	0.75
Junction Delay (s)	10.35			9.18		
2036 Do Cumulative 2						
1 – SEALR	4	9	0.80	3	8	0.77
2 – Lower Road South	7	41	0.89	5	29	0.85
3 – SMRR	5	21	0.84	6	23	0.85
4 – Lower Road North	5	15	0.84	3	11	0.77
Junction Delay (s)	17.95			14.91		
2036 Do Cumulative 3						
1 – SEALR	2	5	0.63	4	8	0.80
2 – Lower Road South	3	15	0.75	7	39	0.89
3 – SMRR	3	11	0.73	5	21	0.84
4 – Lower Road North	6	16	0.85	3	11	0.77
Junction Delay (s)	11.35			16.23		

Junction 56 - SLR / A413 Wendover Road / SEALR

The proposed junction layout which is proposed as part of the SEALR planning application is a 4-arm roundabout which lies at the eastern end of the SEALR and provides a connection point to the A413 Wendover Road and the SLR. The proposed roundabout is indicated on AECOM Drawing 60535364-ACM-00-XX-SKE-CE-0104 contained in Appendix D and reproduced below.

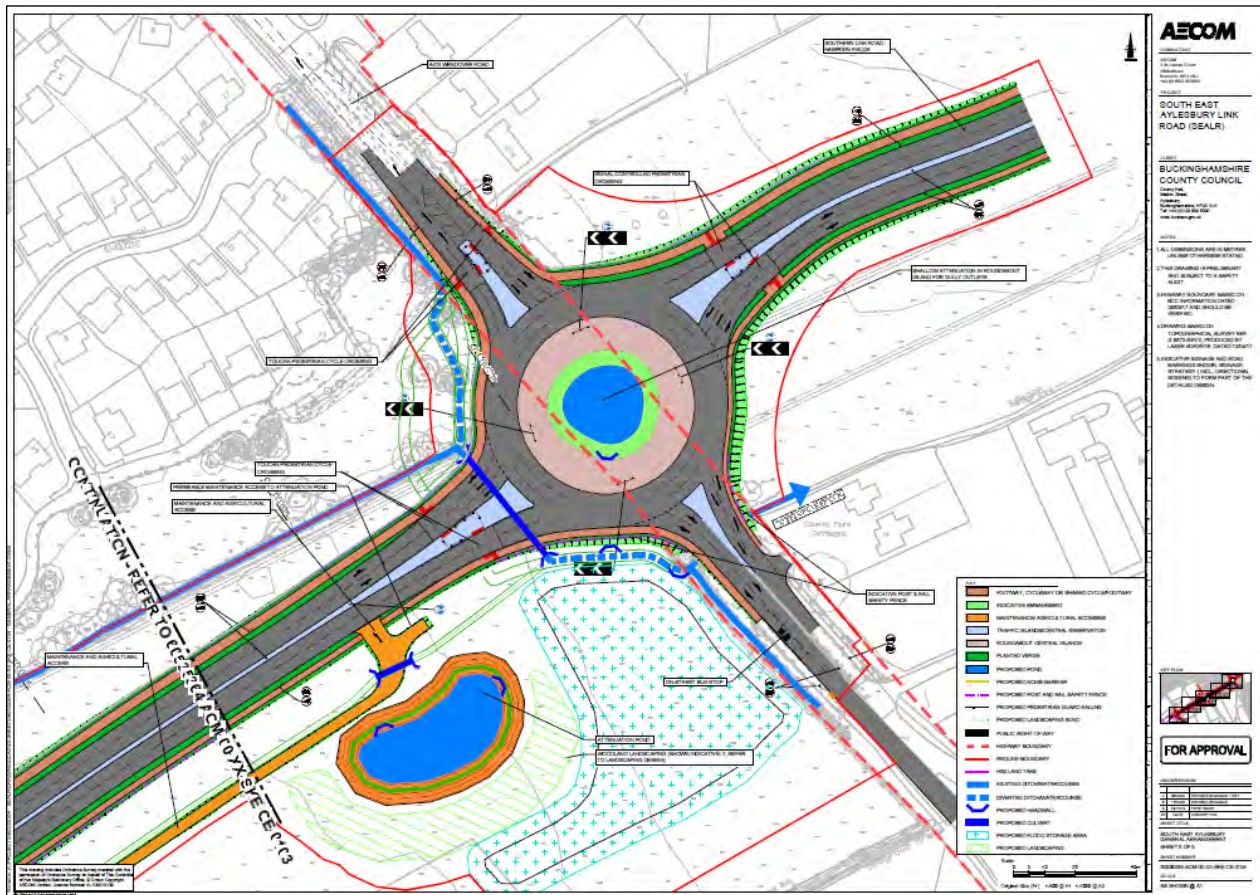


Figure 1: A413 Wendover Road / SLR / SEALR Roundabout Layout

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

The roundabout junction has been modelled with the Arcady modelling programme. The geometry and flows have been checked and are correct and the results are shown in Table 3.45.1 below;

Table 3.45.1 - Summary of the SEALR / Wendover Road Roundabout – 2036 Scenarios – Standard Assessment

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Cumulative 1						
Wendover Road South	5	17	0.84	5	20	0.83
SEALR	2	6	0.65	2	6	0.67
Wendover Road North	6	14	0.86	3	7	0.74
SLR	3	6	0.73	8	13	0.90
Junction Delay (s)	10.25			11.25		
2036 Do Cumulative 2						
Wendover Road South	5	15	0.84	6	26	0.87
SEALR	2	7	0.71	2	6	0.67
Wendover Road North	5	13	0.83	3	8	0.76
SLR	2	5	0.68	12	18	0.92
Junction Delay (s)	9.50			14.38		
2036 Do Cumulative 3						
Wendover Road South	5	16	0.84	4	17	0.82
SEALR	2	7	0.71	2	6	0.66
Wendover Road North	4	12	0.82	4	10	0.79
SLR	2	5	0.68	7	11	0.87
Junction Delay (s)	9.42			10.40		

Table 3.45.1 shows that in the 2036 Do Cumulative 1 scenario there is a maximum RFC of 0.9 in the PM peak hour with an estimated maximum queue of c8 vehicles on the SLR arm. The results for the 2036 Do Cumulative 2 scenario show that the junction slightly exceeds practical capacity with an RFC of 0.92 on the SLR arm in the PM peak and an estimated maximum queue of c12 vehicles.

In the 2036 Do Cumulative 3 (VALP) scenario the operation of the junction improves and remains below practical capacity with an RFC of 0.87 in the PM Peak with a corresponding maximum queue of c7 vehicles.

The junction has also been modelled with Lane simulation as shown in Table 3.45.2. This shows that overall delay improves with cumulative development and the delivery of additional infrastructure.

The operation of the proposed roundabout junction is acceptable with cumulative development.

Table 3.45.2 - Summary of the SEALR / Wendover Road Roundabout – 2036 Scenarios – Lane Simulation Assessment

	AM		PM	
Approach	Queue (Veh)	Delay (S)	Queue (Veh)	Delay (S)
2036 Do Cumulative 1				
Wendover Road South	7	22	6	22
SEALR	18	56	18	50
Wendover Road North	69	147	28	65
SLR	7	13	85	100
Junction Delay (s)	59.48		70.18	
2036 Do Cumulative 2				
Wendover Road South	8	21	8	32
SEALR	48	116	14	39
Wendover Road North	36	86	57	130
SLR	5	12	39	54
Junction Delay (s)	55.86		65.01	
2036 Do Cumulative 3				
Wendover Road South	7	21	6	22
SEALR	29	73	9	26
Wendover Road North	28	72	39	89
SLR	6	11	30	46
Junction Delay (s)	42.09		48.41	

Junction 57 - Lower Road / Southern Hospital Access

This junction is configured as a 3 arm priority junction arrangement. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 58 –Lower Road / Kyneston Avenue

This is a ghost island priority junction and has been modelled with the Picady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

This junction is indicated to operate within capacity with a maximum RFC of 0.15.

No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Junctions 60 & 61 - Lower Road / Churchill Avenue & Lower Road / Hospital Access



The Lower Road/Churchill Avenue and Lower Road/Hospital Access junctions are both 4 arm roundabouts. As the two junctions exhibit an interaction with one another they have been modelled as linked junctions so that their interaction with one another can be fully understood and assessed. This approach is consistent with that adopted and agreed in the 2017 assessment.

The junctions have been modelled using standard ARCADY methods and using the lane simulation option, to assess the impact of unequal lane usage. Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results of the 2022 standard ARCADY and lane simulation assessments are copied below in tables 3.48.1 and 3.48.2 respectively. Both results suggest that the junction would experience improved capacity in the 2022 Do Something scenario when compared with the 2022 Do Minimum scenario.

Table 3.48.1 - Summary of the Lower Road / Hospital Roundabout and Lower Road / Churchill Avenue Roundabout – Standard Assessment – 2022 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	2	11	0.67	1	5	0.42
Stadium Approach	9	405	1.02	0	12	0.19
Lower Road (S)	1	5	0.56	9	21	0.90
Churchill Avenue (W)	3	9	0.75	1	6	0.52
Junction Delay (S)	20.82			13.83		
Lower Road / Hospital Roundabout						
Winterton Drive	0	16	0.15	1	57	0.43
Lower Road (N)	8	19	0.89	1	3	0.45
Hospital Access (E)	0	6	0.18	1	5	0.41
Lower Road (S)	5	15	0.83	17	53	0.96
Junction Delay (s)	16.56			27.71		
2022 Do Something						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	2	9	0.61	1	5	0.41
Stadium Approach	3	95	0.73	0	11	0.19
Lower Road (S)	1	5	0.53	6	14	0.85
Churchill Avenue (W)	3	9	0.73	1	5	0.50
Junction Delay (S)	10.52			10.01		
Lower Road / Hospital Roundabout						
Winterton Drive	0	13	0.13	0	30	0.28
Lower Road (N)	4	11	0.81	1	3	0.41
Hospital Access (E)	0	6	0.15	1	5	0.37
Lower Road (S)	3	10	0.75	6	21	0.86
Junction Delay (s)	10.44			12.12		

Table 3.48.2 - Summary of the Lower Road / Hospital Roundabout and Lower Road / Churchill Avenue Roundabout – Lane Simulation Assessment – 2022 Scenarios

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2022 Do Minimum				
Lower Road / Churchill Avenue Roundabout				
Mandeville Road	159	609	3	14
Stadium Approach	1	14	0	9
Lower Road (S)	2	9	5	14
Churchill Avenue (W)	459	1344	3	12
Junction Delay (S)	721.77		13.47	
Lower Road / Hospital Roundabout				
Winterton Drive	0	12	0	13
Lower Road (N)	11	40	6	24
Hospital Access (E)	0	8	3	25
Lower Road (S)	170	440	488	1347
Junction Delay (s)	242.72		644.48	
2022 Do Something				
Lower Road / Churchill Avenue Roundabout				
Mandeville Road	95	465	2	10
Stadium Approach	1	16	0	9
Lower Road (S)	3	9	7	15
Churchill Avenue (W)	395	1165	2	1210
Junction Delay (S)	585.79		12.39	
Lower Road / Hospital Roundabout				
Winterton Drive	0	12	0	12
Lower Road (N)	11	40	4	17
Hospital Access (E)	0	8	3	19
Lower Road (S)	88	240	380	1112
Junction Delay (s)	135.73		522.45	

The results of the 2036 standard Arcady and lane simulation assessments are copied below in Tables 3.48.3 and 3.48.4 respectively.

Table 3.48.3 - Summary of the Lower Road / Hospital Roundabout and Lower Road / Churchill Avenue Roundabout – Standard Assessment – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	14	68	0.98	1	6	0.51
Stadium Approach	98	599999	99999	0	16	0.27
Lower Road (S)	2	5	0.60	23	53	0.97
Churchill Avenue (W)	6	17	0.86	2	7	0.60
Junction Delay (s)	1759079.20			30.74		
Lower Road / Hospital Roundabout						
Winterton Drive	1	24	0.38	3	200	0.78
Lower Road (N)	194	363	1.12	1	4	0.53
Hospital Access (E)	0	8	0.24	1	7	0.52
Lower Road (S)	7	19	0.87	167	448	1.13
Junction Delay (s)	210.47			210.66		
2036 Do Cumulative 1						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	2	13	0.69	1	6	0.45
Stadium Approach	47	6598	3.14	0	21	0.25
Lower Road (S)	2	6	0.64	6	16	0.87
Churchill Avenue (W)	4	12	0.81	3	8	0.70
Junction Delay (s)	164.04			11.68		
Lower Road / Hospital Roundabout						
Winterton Drive	0	32	0.26	1	56	0.43
Lower Road (N)	58	121	1.02	2	6	0.66
Hospital Access (E)	0	7	0.17	1	7	0.46
Lower Road (S)	135	297	1.08	447	1044	1.33
Junction Delay (s)	198.76			537.58		
2036 Do Cumulative 2						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	3	13	0.71	1	6	0.49
Stadium Approach	40	2862	1.91	0	16	0.21
Lower Road (S)	1	4	0.52	5	13	0.84
Churchill Avenue (W)	4	10	0.78	1	6	0.59
Junction Delay (S)	95.72			9.57		
Lower Road / Hospital Roundabout						
Winterton Drive	0	18	0.19	1	57	0.46
Lower Road (N)	38	84	1.00	1	5	0.58
Hospital Access (E)	0	8	0.22	0	5	0.31
Lower Road (S)	6	18	0.87	54	139	1.02
Junction Delay (s)	53.08			71.60		

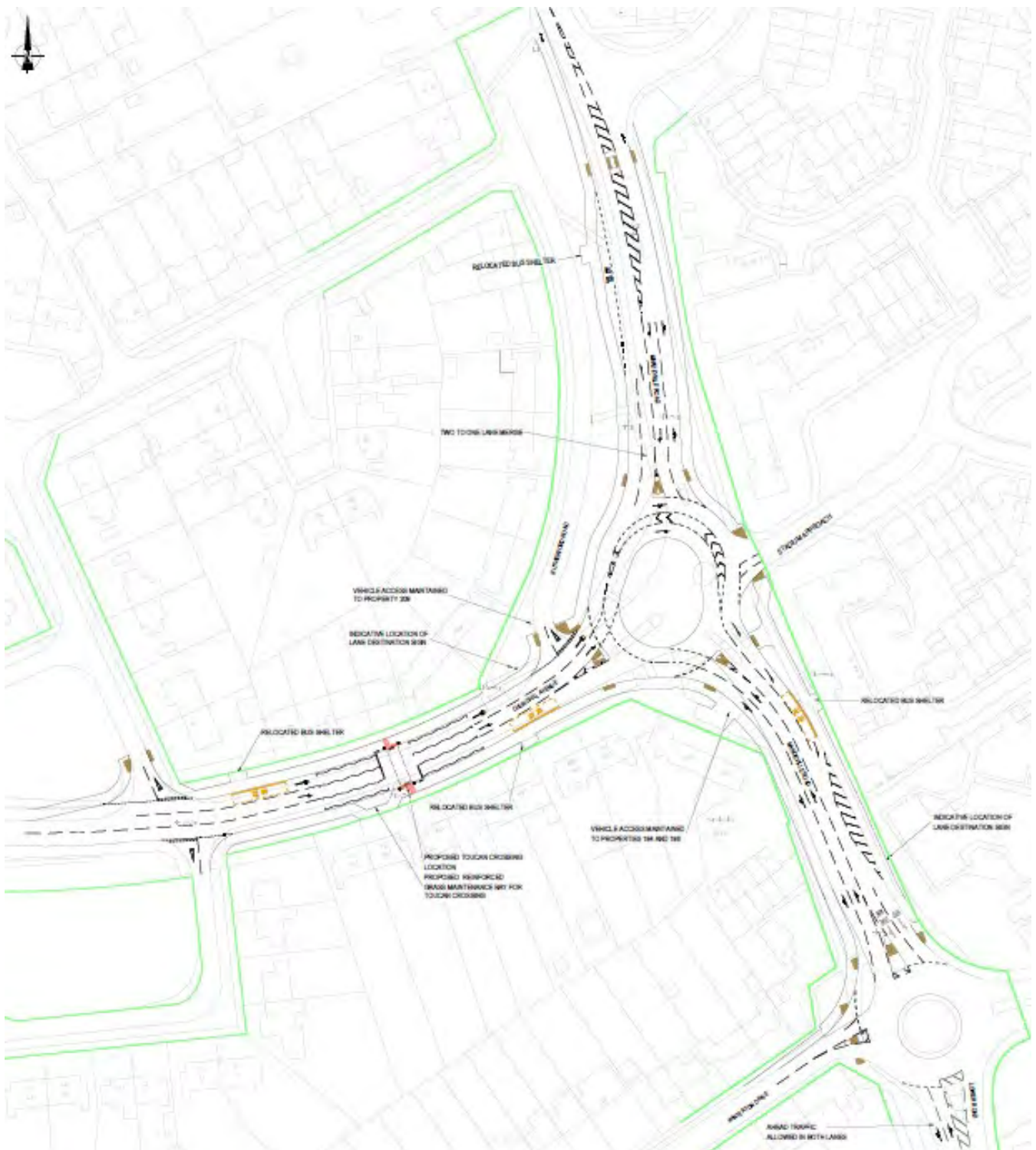
Table 3.48.4 - Summary of the Lower Road / Hospital Roundabout – 2036 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2036 Do Minimum				
Lower Road / Churchill Avenue Roundabout				
Mandeville Road	313	1186	33	148
Stadium Approach	1	16	0	13
Lower Road (S)	3	19	6	19
Churchill Avenue (W)	724	1754	33	124
Junction Delay (S)	1065.33		81.27	
Lower Road / Hospital Roundabout				
Winterton Drive	1	15	0	15
Lower Road (N)	11	40	10	39
Hospital Access (E)	1	8	18	98
Lower Road (S)	256	638	689	1709
Junction Delay (s)	340.50		825.48	
2036 Do Cumulative 1				
Lower Road / Churchill Avenue Roundabout				
Mandeville Road	123	605	7	41
Stadium Approach	0	13	0	13
Lower Road (S)	3	10	4	15
Churchill Avenue (W)	621	1651	212	620
Junction Delay (S)	885.17		264.14	
Lower Road / Hospital Roundabout				
Winterton Drive	0	13	0	12
Lower Road (N)	11	40	11	37
Hospital Access (E)	0	8	2	12
Lower Road (S)	556	1110	1033	1769
Junction Delay (s)	659.65		967.19	
2036 Do Cumulative 2				
Lower Road / Churchill Avenue Roundabout				
Mandeville Road	192	830	29	140
Stadium Approach	0	13	0	12
Lower Road (S)	2	8	3	11
Churchill Avenue (W)	583	1657	34	125
Junction Delay (S)	911.91		80.10	
Lower Road / Hospital Roundabout				
Winterton Drive	0	15	0	12
Lower Road (N)	11	43	10	37
Hospital Access (E)	0	8	1	12
Lower Road (S)	141	355	581	1395
Junction Delay (s)	206.96		713.10	

The assessments both concluded that the junctions would operate better in the 2036 Do Cumulative 2 scenario when compared to the 2036 Do Minimum scenario. This is because the level of traffic through the junctions is forecast to reduce in the 2036 Do Cumulative 2 scenario due to the addition of the South West Link Road (SWLR) as part of the South West Aylesbury planning application. Therefore, no mitigation is considered necessary for 2036 Do Cumulative 2 scenario.

The standard ARCADY assessment forecasts the 2036 Do Cumulative 1 to operate with significant betterment in the AM peak, although there would be a deterioration in conditions in the PM peak when compared to the 2036 Do Minimum scenario (Lower Road / Hospital roundabout). The lane simulation results also forecast the Hospital Roundabout to operate worse than the 2036 Do Minimum scenario in the AM peak hour, with both roundabouts operating worse in the PM peak hour.

As part of the previous technical work in 2017, mitigation through a financial contribution was agreed for this network for the joint cumulative scenario (2036 Do Cumulative 1). The mitigation was shown on PBA drawing 32113/5511/004, an extract of which is shown below.



For the northern roundabout, the design includes two right turn lanes on Churchill Avenue and two ahead lanes on Lower Road (south). The B4443 Lower Road (south) entry arm arrangement currently has a separate ahead and right turn lane, and the proposed changes are to introduce two ahead lanes with only minor physical alterations to the junction.

The proposed mitigation scheme has also been assessed using the standard ARCADY methods and lane simulation. The results are copied below in tables 3.48.5 and 3.48.6.

Table 3.48.5 - Summary of the Lower Road / Hospital Roundabout – 2036 Scenarios – Standard – Mitigation Review

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum – Existing Layout						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	14	68	0.96	1	6	0.51
Stadium Approach	98	599999	99999	0	16	0.27
Lower Road (S)	2	5	0.60	23	53	0.97
Churchill Avenue (W)	6	17	0.86	2	7	0.60
Junction Delay (s)	1759079.20			30.74		
Lower Road / Hospital Roundabout						
Winterton Drive	1	24	0.38	3	200	0.78
Lower Road (N)	194	363	1.12	1	4	0.53
Hospital Access (E)	0	8	0.24	1	7	0.52
Lower Road (S)	7	19	0.87	167	446	1.13
Junction Delay (s)	210.47			210.66		
2036 Do Cumulative 1 – Mitigation Layout						
Lower Road / Churchill Avenue Roundabout						
Mandeville Road	2	9	0.61	1	5	0.41
Stadium Approach	1	24	0.33	0	9	0.12
Lower Road (S)	1	4	0.56	3	7	0.74
Churchill Avenue (W)	4	12	0.81	2	8	0.70
Junction Delay (s)	9.01			6.95		
Lower Road / Hospital Roundabout						
Winterton Drive	0	10	0.10	0	12	0.13
Lower Road (N)	9	21	0.91	1	4	0.59
Hospital Access (E)	0	7	0.18	1	7	0.46
Lower Road (S)	136	299	1.08	447	1044	1.33
Junction Delay (s)	149.67			536.46		

Table 3.48.6 - Summary of the Lower Road / Hospital Roundabout – 2036 Scenarios – Lane Simulation – Mitigation Review

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2036 Do Minimum – Existing Layout				
Mandeville Road	280	1047	24	115
Stadium Approach	1	17	0	15
Lower Road (S)	3	10	9	25
Churchill Avenue (W)	755	1787	42	152
Junction Delay (S)	1041.12		85.10	
Winterton Drive	1	15	0	14
Lower Road (N)	11	40	10	39
Hospital Access (E)	1	8	22	122
Lower Road (S)	242	607	700	1722
Junction Delay (s)	326.05		837.25	
2036 Do Cumulative 1 – Mitigation Layout				
Mandeville Road	255	1341	38	225
Stadium Approach	0	14	0	15
Lower Road (S)	3	10	11	28
Churchill Avenue (W)	446	1122	86	249
Junction Delay (S)	743.73		136.12	
Winterton Drive	0	19	0	22
Lower Road (N)	5	17	5	15
Hospital Access (E)	0	9	3	17
Lower Road (S)	197	398	549	952
Junction Delay (s)	234.03		509.13	

In the 2036 Do Cumulative 1 scenario the results of the standard assessment show that the operation of the junctions improve in the AM peak hour with the proposed mitigation scheme, although the Lower Road / Hospital roundabout junction would worsen in the PM peak.

The results of the lane simulation assessment show that the junctions overall would improve in the 2036 Do Cumulative 1 scenario in both the AM and PM peak hours when compared to the 2036 Do Minimum scenario.

In summary, the proposed improvements continue to offset the impacts of the 2036 Do Cumulative 1 scenario. However, should the SWRR come forward (cumulative 2) then it is accepted that the mitigation scheme is not required and it is agreed that the funds will be diverted to the advancement of the link roads.

Junction 62 - Churchill Avenue / Ellen Road

This is a 3 arm roundabout junction and has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

This junction is predicted to operate within capacity in all scenarios.

No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Junction 64 – Ellen Road / Anton Way

This is a 3 arm roundabout junction and has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2;
- 2036 Do Cumulative 3.

The junction operates within capacity in all scenarios.

No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Junction 67 - A418 / Churchill Avenue



This junction is a signalised crossroad junction. It has been modelled with the LinSig modelling programme and the geometry and flows have been checked and are correct. Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results show that the junction performance would improve in the 2036 Do Cumulative 2 scenario when compared to 2036 Do Minimum. However, in the 2036 Do Cumulative 1 scenario, capacity and queue lengths worsen slightly in the PM peak hour on some arms.

Table 3.52.1 - Summary of the A418 / Churchill Avenue Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Minimum					
1/2+1/1	Oxford Road (N) Left Ahead	109.5%	38	100.4%	30
1/3+1/4	Oxford Road (N) Ahead Right	108.3%	38	100.7%	33
2/1+2/2	Churchill Avenue (E) Left Ahead	110.2%	63	98.5%	22
3/2+3/1	Oxford Road (S) Ahead Left	100.9%	30	80.9%	15
4/2+4/1	Fowler Road (W) Left Ahead Right	106.8%	39	97.3%	20
PRC (%)		-22.4%		-11.8%	
Cycle Time (s)		120		120	
2036 Do Cumulative 1					
1/2+1/1	Oxford Road (N) Left Ahead	76.7%	10	103.3%	41
1/3+1/4	Oxford Road (N) Ahead Right	87.5%	12	86.5%	14
2/1+2/2	Churchill Avenue (E) Left Ahead	101.8%	35	102.1%	28
3/2+3/1	Oxford Road (S) Ahead Left	101.8%	32	64.6%	10
4/2+4/1	Fowler Road (W) Left Ahead Right	102.8%	31	104.2%	29
PRC (%)		-14.2%		-15.8%	
Cycle Time (s)		120		120	
2036 Do Cumulative 2					
1/2+1/1	Oxford Road (N) Left Ahead	89.1%	15	100.5%	37
1/3+1/4	Oxford Road (N) Ahead Right	85.4%	14	78.5%	15
2/1+2/2	Churchill Avenue (E) Left Ahead	101.3%	31	99.8%	20
3/2+3/1	Oxford Road (S) Ahead Left	100.8%	32	72.8%	12
4/2+4/1	Fowler Road (W) Left Ahead Right	102.2%	29	98.4%	20
PRC (%)		-13.6%		-11.7%	
Cycle Time (s)		120		120	

Notwithstanding this marginal reduction in capacity on some arms, it is acknowledged that Do Cumulative 2 is the more likely cumulative scenario as it takes into account all current live planning applications for strategic development. The main purpose of the 2036 Do Cumulative 1 scenario is to allow a direct comparison against the 2016 TA junction cumulative assessments. The scenario is unlikely to exist in reality, and would only be an interim scenario in any event. The operation of the junction is therefore deemed to be acceptable with standalone and cumulative development, without the need for any mitigation scheme.

Junction 72 – A418 / Coldharbour Way



The A418/Coldharbour Way junction is currently a 3 arm roundabout, but it will become a 4 arm roundabout with the proposed South West Link Road (SWLR) which is being proposed as part of the South West Aylesbury Development that is currently subject to a live planning application. The proposed design including the SWLR is indicated on PFA Consulting Drawing G250-55-Rev A contained in Appendix D and reproduced below;



However, the applicants for that site are in the process of updating their strategic modelling and as such the layout of this junction will need to be retested and the design changed to reflect the updated traffic demands. As that has not yet happened the applicants for Hampden Fields can only test the previous design that was available in the public domain.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.53.1 - Summary of the A418 / Coldharbour Way Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
A418 (NW)	171	511	1.26	122	390	1.19
A418 (NE)	121	286	1.15	22	55	0.98
SWRR (S)	NOT OPEN IN THIS SCENARIO					
A418 (SW)	72	139	1.08	235	554	1.29
Junction Delay (s)	303.33			349.40		
2036 Do Cumulative 1						
A418 (NW)	154	482	1.26	110	344	1.17
A418 (NE)	126	303	1.16	41	90	1.03
SWRR (S)	NOT OPEN IN THIS SCENARIO					
A418 (SW)	45	94	1.03	187	439	1.23
Junction Delay (s)	283.38			287.47		
2036 Do Cumulative 2						
A418 (NW)	263	762	1.38	573	2170	1.95
A418 (NE)	59	133	1.07	2	9	0.70
SWRR (S)	264	897	1.43	311	831	1.42
A418 (SW)	1	4	0.51	5	12	0.84
Junction Delay (s)	472.03			810.14		

The results show that the existing roundabout in 2036 Do Minimum is forecast to be substantially over-capacity in both peak hours. The existing roundabout in 2036 Do Cumulative 1 is forecast to improve in both peaks, with overall junction delay reduced, except for the A418 (NE) entry arm in the PM peak which marginally worsens.

The proposed 4 arm roundabout with the SWRR in 2036 Do Cumulative 2 is forecast to operate significantly over capacity in both peaks. The operation of the roundabout has worsened compared to the 2036 Do Minimum scenario.

This junction has been assessed for completeness. The junction design will need to be updated by the SW Aylesbury development to accommodate all traffic demands arising from the VALP cumulative test, given that it forms the main point of access to their development site. Mitigation by the applicant for this application is therefore not required.

Junction 77 - Wendover Road / Eascote Road



This junction is a 3 arm priority junction with a ghost island right turn lane off the main A413 Wendover Road arm. It has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct. Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

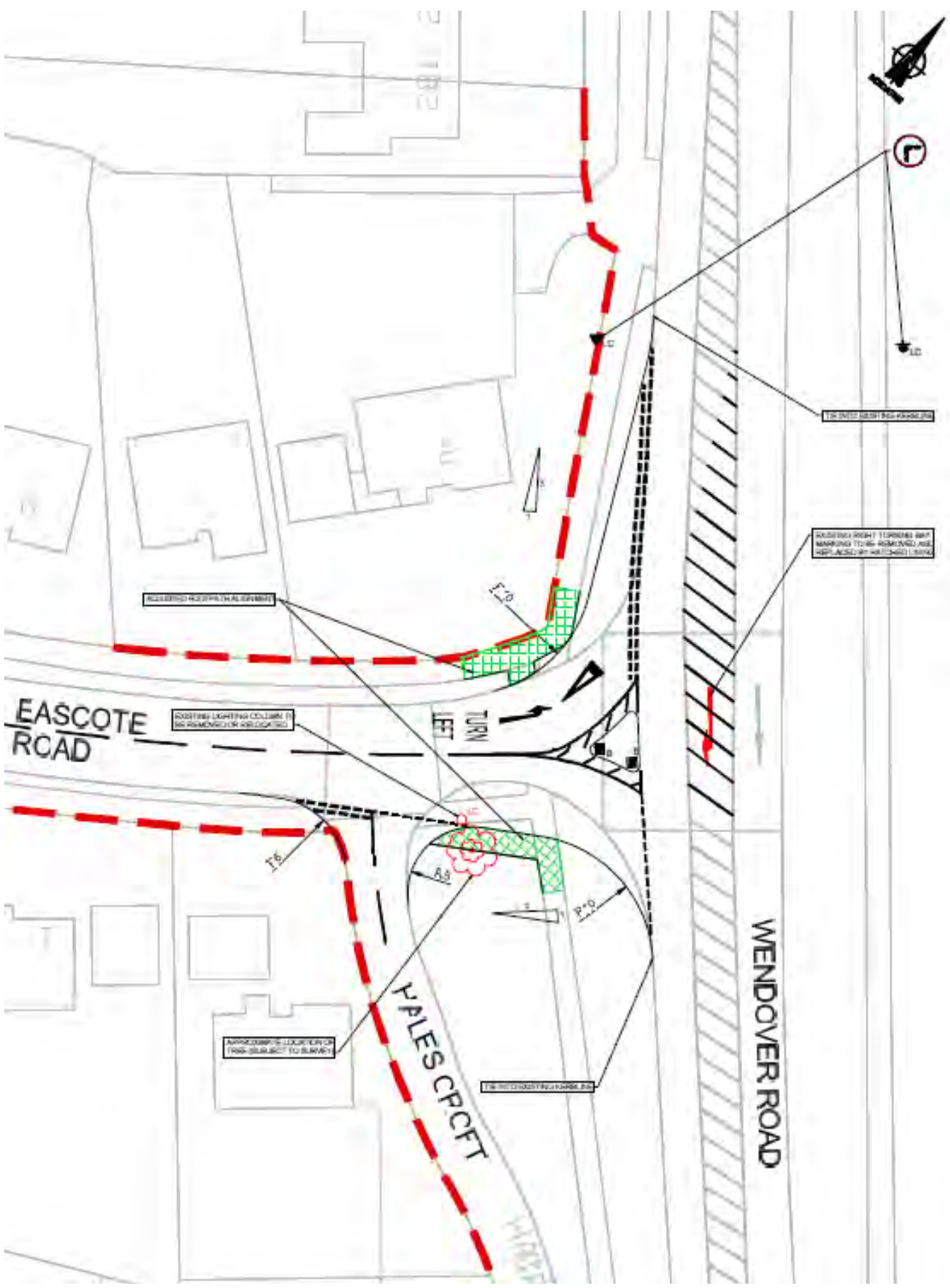
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results, extracted below, for the 2036 Do Minimum scenario indicate that the junction is expected to exceed capacity during both the AM and PM peak hours, with significant queuing predicted to form along Eascote Road, the minor arm. The results for the 2036 Do Cumulative 1 and 2036 Do Cumulative 2 scenarios predict a further deterioration of junction performance, with increased queuing on Eascote Road.

Table 3.54.1 - Summary of the Wendover Road / Eascote Road Priority Junction – 2036 Scenarios

		AM			PM		
Stream	Movement	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum							
Stream B-C	Eascote Rd – Wendover Rd (N)	176	59999	99999	59	996	1.29
Stream B-A	Eascote Rd – Wendover Rd (S)	200	59999	99999	0	0	0.00
Stream C-AB	Wendover Rd (N) – Wendover Rd (S)/Eascote Rd	0	11	0.10	1	18	0.33
Junction Delay (s)		6774817.45			76.20		
2036 Do Cumulative 1							
Stream B-C	Eascote Rd – Wendover Rd (N)	26	59999	99999	11	59999	99999
Stream B-A	Eascote Rd – Wendover Rd (S)	486	59999	99999	340	59999	99999
Stream C-AB	Wendover Rd (N) – Wendover Rd (S)/Eascote Rd	0	14	0.01	0	20	0.04
Junction Delay (s)		9210550.46			6051892.04		
2036 Do Cumulative 2							
Stream B-C	Eascote Rd – Wendover Rd (N)	19	59999	99999	12	59999	99999
Stream B-A	Eascote Rd – Wendover Rd (S)	374	59999	99999	339	59999	99999
Stream C-AB	Wendover Rd (N) – Wendover Rd (S)/Eascote Rd	0	13	0.01	0	17	0.04
Junction Delay (s)		7504128.08			6292985.40		

The Transport Assessment submitted as part of the SEALR planning application (currently awaiting determination) has proposed an alternative junction arrangement to provide a left-in and left-out only configuration which prevents right turn movements. This arrangement is illustrated on AECOM Drawing 60535364-SKE-C-0019-A, an extract of which is shown below.



Whilst the proposed junction arrangement reduces queuing at the junction compared to the existing junction arrangement, there remains significant queuing on the side road in all scenarios, as shown in the results extracted below.

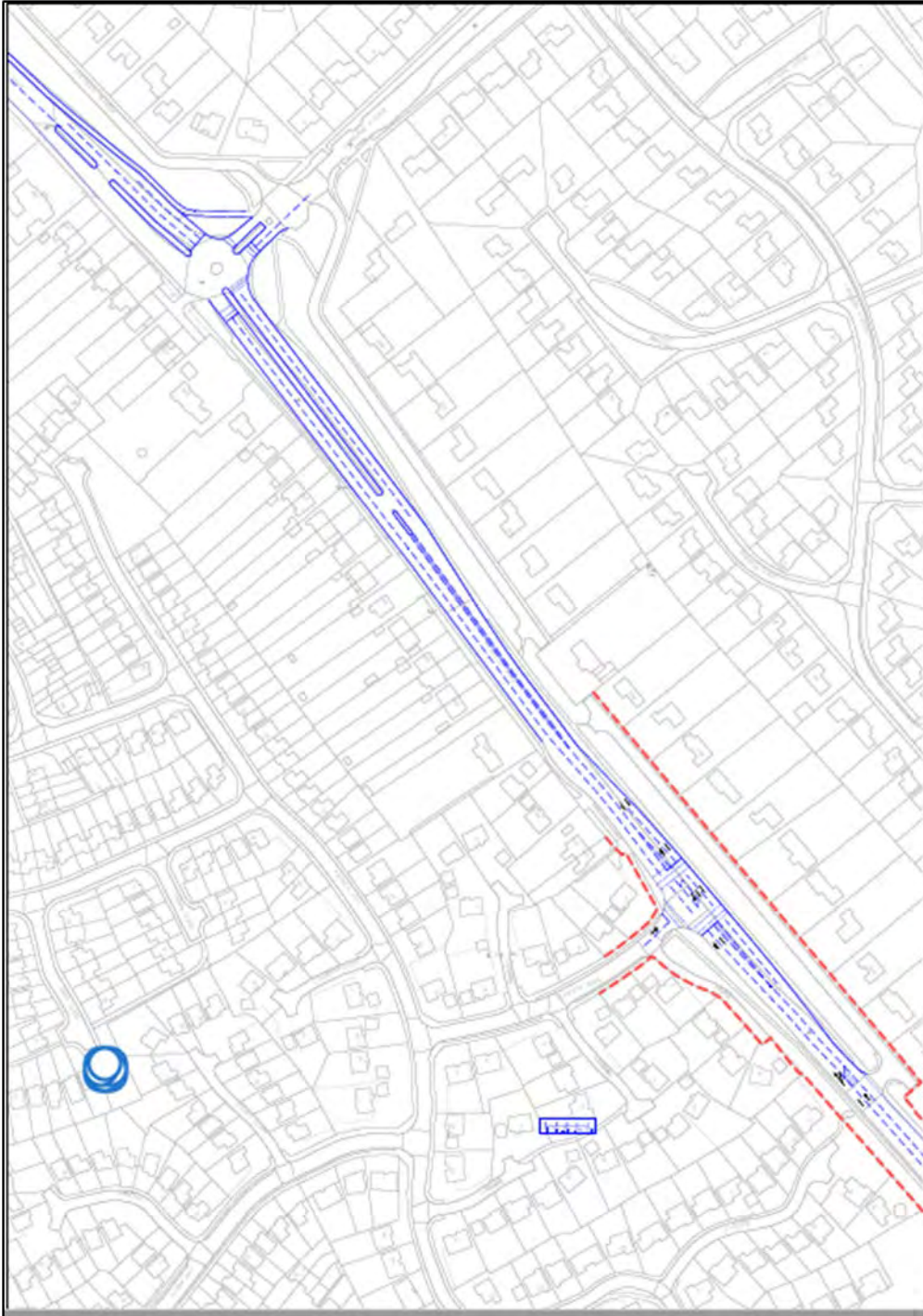
Table 4.55 – Junction 77 – Wendover Road / Eascote Road – Proposed Configuration (SEALR TA)

Stream	Movement	AM			PM		
		Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Something (HF)							
Stream B-C	Eascote Rd – Wendover Rd (N)	3	40	0.75	102	1693	1.52
Stream B-A	Eascote Rd – Wendover Rd (S)	0	0	0.00	0	0	0.00
Stream C-B	Wendover Rd (N) –/Eascote Rd	0	0	0.00	0	0	0.00
Junction Delay (s)		3.76			148.55		
2036 Do Cumulative 1 (HF + AW)							
Stream B-C	Eascote Rd – Wendover Rd (N)	308	4764	2.50	184	3460	2.08
Stream B-A	Eascote Rd – Wendover Rd (S)	0	0	0.00	0	0	0.00
Stream C-B	Wendover Rd (N) –/Eascote Rd	0	0	0.00	0	0	0.00
Junction Delay (s)		731.64			349.02		
2036 Do Cumulative 2 (Reg 22)							
Stream B-C	Eascote Rd – Wendover Rd (N)	168	2350	1.73	157	2556	1.80
Stream B-A	Eascote Rd – Wendover Rd (S)	0	0	0.00	0	0	0.00
Stream C-B	Wendover Rd (N) –/Eascote Rd	0	0	0.00	0	0	0.00
Junction Delay (s)		293.87			268.09		

The applicant suggests that this situation is unlikely to occur because such delays are likely to encourage drivers to seek existing alternative routes that are available to exit the housing area which Eascote Road serves. On balance, there is an overall improvement in queue lengths across both the peak hours. It is also noted that the restriction of the right turn movement would present a significant road safety improvement at this junction.

Buckinghamshire Council are also considering the potential for a signalised junction arrangement to be delivered at this junction as part of the SEALR proposals, in tandem with the signalisation of the Camborne Avenue / A413 Wendover Road junction.

The SEALR Transport Assessment has presented an indicative preliminary design for the linked signalised junctions. An extract of the potential junction drawing is shown below.



The applicants for SEALR have assessed the junction using the 2036 Do Something flows (which are the same as the Hampden Fields Do Cumulative 3 assessment), as shown below.

Table 32 – Junction 7 & 24: A413 Wendover Road / Camborne Avenue signalised three-arm junction and A413 / Eascote Road three-arm junction

Scenario	Junction 7				Junction 24			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Max DoS	Max Q	Max DoS	Max Q	Max DoS	Max Q	Max DoS	Max Q
2036 Do Nothing	77.5%	16.2	83.9%	21.6	73.0%	16.7	71.3%	15.0
2036 Do Something	85.8%	24.4	83.6%	20.8	87.5%	23.0	88.7%	24.4

The results illustrate that the indicative preliminary signalised junction design would be sufficient to cater for the level of traffic identified for the 2036 Do Cumulative 3 scenario and would therefore be an adequate mitigation should traffic flows reach the levels identified for 2036.

The delivery of any such scheme will be linked to a manage and monitor regime which is to be secured through an appropriate S106 Obligation, given that the justification for the scheme is a prediction arising from the revised model, rather than something that may be required.

As a result, it is considered that the proposed left-in/left-out arrangement is suitable to ensure the continued safe operation of the junction, but that a commitment to monitor and manage the performance of the junction is required. The junction will be monitored by BC, so a contingent financial contribution would need to be secured to fund the more comprehensive works at the junction in the event that they are required to mitigate the developments impact.

Junction 80 - A413 Wendover Road / Wendover Way mini roundabout



This junction takes the form of a mini roundabout. The junction has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.55.1 - Summary of the Wendover Road / Wendover Way mini-roundabout – 2022 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2022 Do Minimum						
Wendover Road (S)	93	242	1.06	28	79	0.99
Wendover Road (N)	81	260	1.07	126	382	1.11
Wendover Way	69	661	1.20	63	566	1.17
Junction Delay (s)	307.11			270.49		
2022 Do Something						
Wendover Road (S)	31	85	0.98	11	32	0.92
Wendover Road (N)	54	187	1.02	118	372	1.07
Wendover Way	126	1178	1.24	158	1456	1.30
Junction Delay (s)	305.11			274.73		

Table 3.55.1 shows that the junction operates above theoretical capacity in the 2022 Do Minimum scenario with an RFC of 1.20 in the AM and an estimated queue of 93 vehicles. In the PM the RFC is 1.17 with an estimated queue length of 126 vehicles.

In the 2022 Do Something scenario with just Woodlands first phase, the operation of the junction worsens slightly with the RFC increasing to 1.24 and an estimated queue length of c126 vehicles on Wendover Way in the AM peak although the Wendover Road arms improve with reductions of c62 and c27 vehicles. There is a slight reduction in overall junction delay from 307.11 seconds to 205.11 seconds. In the PM the operation of the junction worsens compared to the Do Minimum scenario with an increase in the largest estimated queue from c126 to c158 vehicles. There is a slight increase in overall junction delay from 270.49 seconds to 274.73 seconds.

Table 3.55.1 - Summary of the Wendover Road / Wendover Way mini-roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
Wendover Road (S)	271	675	1.21	382	894	1.28
Wendover Road (N)	80	256	1.07	256	785	1.24
Wendover Way	72	624	1.19	26	242	1.03
Junction Delay (s)	516.39			777.74		
2036 Do Cumulative 1						
Wendover Road (S)	108	283	1.08	4.3	14	0.82
Wendover Road (N)	30	112	1.00	100	296	1.08
Wendover Way	7	68	0.89	2	31	0.64
Junction Delay (s)	190.79			148.60		
2036 Do Cumulative 2						
Wendover Road (S)	100	267	1.07	4.3	14	0.82
Wendover Road (N)	13	53	0.94	136	414	1.12
Wendover Way	26	200	1.02	5	62	0.85
Junction Delay (s)	183.50			203.89		

The 2036 Do Cumulative scenarios show significant improvement in the operation of the junction with maximum estimated queues reducing from c271 vehicles in the AM of the 2036 Do Minimum Scenario to c108 vehicles in the 2036 Do Cumulative Scenario. In the PM the estimated queue length on Wendover Road south reduces from c382 to c4 vehicles.

It can be concluded that, although the junction still operates above theoretical capacity, the junction performs better in all 2036 Do Cumulative scenarios compared to the 2036 Do Minimum scenario. A short term abortive improvement to deal with minor 2022 impacts is not therefore considered appropriate given that cumulative development improves conditions. As such, the impacts of the development at this junction are considered acceptable.

No works to this junction are therefore proposed as the operation is acceptable with standalone and cumulative development.

Junction 82 - Walton Road / Turnfurlong / Highbridge Road



This junction is a simple priority crossroads junction and has been modelled with the Picady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.56.1 shows that the junction operates above theoretical capacity in the 2036 Do Minimum scenario with an RFC of 1.96 in the AM and an estimated queue of c168 vehicles. In the PM the junction operates just below theoretical capacity with an RFC is 0.97 and an estimated queue length of c10 vehicles.

In the 2036 Do Cumulative 1 scenario, the operation of the junction improves significantly in the AM Peak with the RFC reducing to 1.05 and an estimated queue length of c15 vehicles. However, in the PM the RFC increases to 1.34 with an estimated queue length of c58 vehicles.

In the 2036 Do Cumulative 2 scenario, the operation of the junction is improved compared to the 2036 Do Minimum scenario with the RFC reducing to 1.26 and an estimated queue length of c41 vehicles, which is a reduction of c127 vehicles. In the PM the highest RFC remains at 0.97 with an estimated queue length of c10 vehicles.

It can be concluded that there is generally an improvement in the operation of the junction in the cumulative scenarios when compared to the 2036 Do Minimum scenario, with the exception of the Do Cumulative 1 scenario PM.

As stated elsewhere in this response, the Cumulative 1 scenario is a tool to allow the applicants a direct comparison against the 2016 TA junction assessments and formed the cumulative assessment at that time. A number of other strategic applications have since been submitted that remain in the planning system and as such the updated cumulative position is most likely that shown in Cumulative 2. Junction capacity does not worsen in the cumulative 2 scenario and no assessment was required to deal with standalone impacts. As such the impact of Woodlands at this junction is considered acceptable.

Table 3.56.1 - Summary of the Walton Road / Turnfurlong Priority Junction – 2036 Scenarios

Stream	Movement	AM			PM		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum							
B-ACD	Turnfurlong (E)	168	1686	1.96	10	129	0.97
A-BC	Walton Road (E) – Turnfurlong (S) and Walton Road (W)	1	7	0.29	1	7	0.36
A-D	Walton Road (E) – Highbridge Road (N)	0	7	0.30	0	7	0.36
D-ABC	Highbridge Road (N)	1	41	0.59	1	17	0.33
C-ABD	Walton Road (W)	2	11	0.59	1	6	0.22
Junction Delay (s)		498.26			30.44		
2036 Do Cumulative 1							
B-ACD	Turnfurlong (E)	15	201	1.05	58	611	1.34
A-BC	Walton Road (E) – Turnfurlong (S) and Walton Road (W)	1	7	0.34	1	3	0.33
A-D	Walton Road (E) – Highbridge Road (N)	0	7	0.34	0	0	0.00
D-ABC	Highbridge Road (N)	1	23	0.47	0	15	0.30
C-ABD	Walton Road (W)	1	10	0.48	1	8	0.33
Junction Delay (s)		43.24			169.98		
2036 Do Cumulative 2							
B-ACD	Turnfurlong (E)	41	434	1.26	10	123	0.97
A-BC	Walton Road (E) – Turnfurlong (S) and Walton Road (W)	1	7	0.30	1	3	0.29
A-D	Walton Road (E) – Highbridge Road (N)	0	7	0.31	0	0	0.00
D-ABC	Highbridge Road (N)	1	24	0.46	0	13	0.23
C-ABD	Walton Road (W)	1	10	0.49	1	8	0.35
Junction Delay (s)		103.79			31.98		

Junction 83 - A41 Friarage Road / Walton Street / Exchange Street

This junction takes the form of a 3 arm roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 84 – A41 / Station Way

This junction is a 3 arm roundabout and has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;

No works are proposed as the impact of the Woodlands development on the operation of the junction is acceptable with standalone development.

Junction 85 - Gatehouse Road / Gatehouse Way

This junction takes the form of a priority junction with a ghost island right turn lane. The junction has been modelled with the Picady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 86 - A418 Oxford Road / A41 Gatehouse Road



This is a 4 arm roundabout junction and has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.60.1 demonstrates that the junction is at theoretical capacity in the 2022 Do Minimum scenario with a maximum RFC of 0.97 in the AM and 1.11 in the PM on the A41 South arm and estimated queue of c58 vehicles.

In the 2022 Do Something scenario the operation of the junction deteriorates slightly with the maximum RFC increasing to 1 in the AM and in the PM peak from 1.11 to 1.15.

The TAA explains that the roundabout is forecast to have around 4,000 vehicles total junction inflow, and the 2022 Do Something scenario only adds 2 to 3% extra flow.

Table 3.60.1 - Summary of the A418 / Gatehouse Road Roundabout – 2022 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum						
A41 (N)	6	19	0.85	18	56	0.98
A418 (E)	2	9	0.68	1	7	0.57
A41 (S)	15	66	0.97	58	187	1.11
A418 (W)	14	40	0.95	13	38	0.95
Junction Delay (s)	35.82			81.97		
2022 Do Something						
A41 (N)	6	19	0.86	11	39	0.94
A418 (E)	2	10	0.68	2	7	0.61
A41 (S)	21	83	1.00	77	235	1.15
A418 (W)	26	67	1.00	24	62	0.99
Junction Delay (s)	49.51			101.74		

Table 3.60.2 shows that in the 2036 Do Minimum, the existing roundabout is forecast to be over capacity in both peaks, with an RFC of 1.17 an estimated queue of c80 vehicles in the AM and an RFC of 1.34 an estimated queue of c180 vehicles in the PM.

In the 2036 Do Cumulative 1 scenario the junction continues to operate above theoretical capacity with an increase in the largest queue length of c18 vehicles in the AM peak and c21 vehicles in the PM peak. Overall junction delay has increases in the AM but reduces in the PM.

In the 2036 Do Cumulative 2 scenario the operation of the junction improves in the AM peak compared to 2036 Do Minimum. In the PM peak hour, there is an estimated increase in the queue on the A41 north arm of c35 vehicles, but the overall junction delay reduces by 36.1 seconds.

Whilst there may be some relatively minor standalone and cumulative 1 impacts at this junction it can be seen that the link road strategy as it progresses to cumulative 2 leads to an overall improvement to delay at this junction. It is therefore considered on balance that no improvement works to this junction are required and the impacts are acceptable.

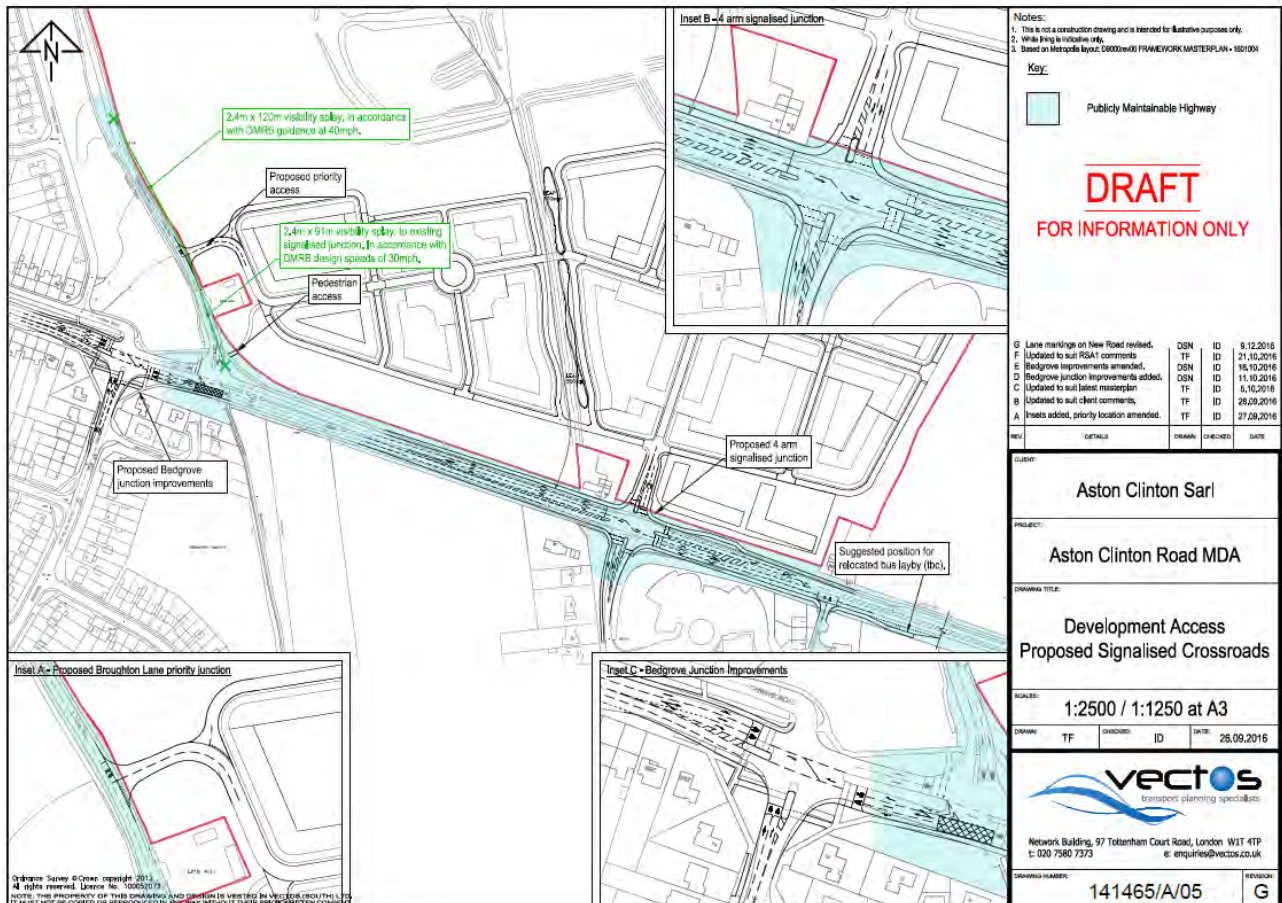
Table 3.60.2 - Summary of the A418 / Gatehouse Road Roundabout – 2036 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2036 Do Minimum						
A41 (N)	21	63	0.99	148	473	1.26
A418 (E)	3	12	0.72	2	8	0.66
A41 (S)	80	260	1.17	180	651	1.34
A418 (W)	36	89	1.02	68	145	1.08
Junction Delay (s)	106.70			335.42		
2036 Do Cumulative 1						
A41 (N)	13	41	0.95	201	534	1.32
A418 (E)	3	11	0.73	1	7	0.59
A41 (S)	98	322	1.21	108	367	1.20
A418 (W)	28	73	1.00	19	53	0.98
Junction Delay (s)	119.30			284.95		
2036 Do Cumulative 2						
A41 (N)	8	27	0.90	215	584	1.35
A418 (E)	3	11	0.75	2	8	0.67
A41 (S)	80	284	1.19	111	421	1.23
A418 (W)	13	37	0.95	11	32	0.93
Junction Delay (s)	89.69			299.32		

Junction 98 – New Road / A41 Aston Clinton Road



This is a signal controlled crossroads junction providing access to the new MDA residential development as well as New Road. The layout of the junction is shown on Vectos Drawing 15-03806-AOP-141465-A-05-REV-G reproduced below.



The geometry and flows have been checked and a number of intergreens were missing as well as some flows were entered as vehicles rather than PCUS. These errors have been discussed and the model was amended and provided to us on the 8th January 2021.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 3.61.1 demonstrates that the junction will be operating above theoretical capacity in the AM peak hour in 2036 Do Minimum scenario with a PRC of -4.9%. In the PM peak hour the junction approaches theoretical capacity with a PRC of 4.1%.

However, in the Do Cumulative scenarios the operation of the junction will improve significantly due to the introduction of the partial orbital route, with the PRC increasing to 35.1% in the Do Cumulative 2 AM and 44.5% in the Do Cumulative 2 PM. In both 2036 Do Cumulative scenarios the junction will now operate with spare capacity.

It can be concluded that with the Do Cumulative scenarios the operation of the junction improves significantly. No works to this junction are therefore proposed as the operation is acceptable with cumulative development.

Table 3.61.1 - Summary of the New Road / A41 Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Minimum					
1/1	A41 WB Entry Left Ahead	71.6%	19	85.7%	27
1/2+1/3	A41 WB Entry Right Ahead	72.6%	20	86.4%	29
2/1+2/2	New Road Entry Right Ahead Left	64.5%	9	63.8%	9
3/1	A41 EB Internal Ahead Left	91.1%	33	60.1%	15
3/2+3/3	A41 EB Internal Ahead Right	94.4%	37	65.7%	15
4/2+4/1	MDA Site Access Entry Left Ahead Right	34.8%	2	58.9%	4
PRC		-4.9%		4.1%	
Cycle Time		120		120	
2036 Do Cumulative 1					
1/1	A41 WB Entry Left Ahead	52.6%	11	61.5%	14
1/2+1/3	A41 WB Entry Right Ahead	53.9%	12	62.6%	15
2/1+2/2	New Road Entry Right Ahead Left	65.3%	11	60.6%	10
3/1	A41 EB Internal Ahead Left	56.7%	14	49.0%	11
3/2+3/3	A41 EB Internal Ahead Right	66.3%	15	61.5%	13
4/2+4/1	MDA Site Access Entry Left Ahead Right	45.4%	3	56.0%	4
PRC		35.8%		43.9%	
Cycle Time		120		120	
2036 Do Cumulative 2					
1/1	A41 WB Entry Left Ahead	48.7%	10	59.8%	13
1/2+1/3	A41 WB Entry Right Ahead	50.2%	11	60.8%	14
2/1+2/2	New Road Entry Right Ahead Left	66.0%	11	60.8%	10
3/1	A41 EB Internal Ahead Left	58.4%	14	50.7%	12
3/2+3/3	A41 EB Internal Ahead Right	66.6%	16	62.3%	14
4/2+4/1	MDA Site Access Entry Left Ahead Right	61.0%	4	58.8%	4
PRC		35.1%		44.5%	
Cycle Time		120		120	

Junction 99 - Walton Street Gyratory



The Walton Street Gyratory junction is a key junction in Aylesbury town centre. It is complex linked traffic signal-controlled junction with 4 main routes which join and circulate around a central area of residential and commercial properties.

The junction has been modelled with the LinSig modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;
- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

The results of the assessment, as copied below, show that the operation of the Gyratory in 2022 would remain similar to Do Minimum in the AM peak hour and slightly improve in the PM peak hour with the addition of the development.

Table 3.62.1 - Summary of the Walton St Gyratory Signalised Junction – 2022 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2022 Do Minimum					
1/2+1/1	Walton Street Entry Ahead	85.8	14	104.5	55.6
1/3	Walton Street Entry Ahead	32.9	3	49.8	5
2/2+2/1	Walton Road Entry Left Ahead	79.8	7	83.7	5
3/1	Walton Road Entry Ahead	75.1	13	78.7	14
3/2	Walton Road Entry Ahead	42.0	5	33.9	4
4/1 + 4/2	Stoke Road Entry Left	134.3	201	109.3	70
9/1 + 9/2	Walton Street Stopline Right	78.7	5	75.3	5
10/1	Walton Road Stopline Left	28.7	2	24.5	1
10/2	Walton Road Stopline Ahead	92.1	23	106.8	87
10/3	Walton Road Stopline Right	30.0	4	44.2	7
11/1	Wendover Road Stopline Right	0.0	0	0.0	0
11/2	Wendover Road Stopline Right	58.4	7	87.3	7
12/2	Stoke Road Stopline Right	130.8	72	105.3	24
12/3	Stoke Road Stopline Right	131	72	105.8	24
13/1	Crown Court Entry Left Left2	15.7	0	17.3	0
15/1	Walton Street Connector Ahead Left	28.8	4	34.0	4
15/2	Walton Street Connector Ahead	44.0	4	38.0	4
15/3	Walton Street Connector Right	24.2	0	25.4	0
PRC Over All Lanes (%)		-49.3		-21.4	
Cycle Time (s)		64		64	
2022 Do Something					
1/2+1/1	Walton Street Entry Ahead	86.5	14	102.4	46
1/3	Walton Street Entry Ahead	30.5	3	40.3	4
2/2+2/1	Walton Road Entry Left Ahead	82.1	7	78.5	7
3/1	Walton Road Entry Ahead	78.2	13	76.3	13
3/2	Walton Road Entry Ahead	41.8	5	36.6	4
4/1 + 4/2	Stoke Road Entry Left	134.5	207	108.8	58
9/1 + 9/2	Walton Street Stopline Right	77.9	8	88.4	9
10/1	Walton Road Stopline Left	31.2	2	28.4	2
10/2	Walton Road Stopline Ahead	85.4	19	104.5	56
10/3	Walton Road Stopline Right	25.1	3	36.8	6
11/1	Wendover Road Stopline Right	0.0	0	0.0	0
11/2	Wendover Road Stopline Right	57.9	7	83.0	5
12/2	Stoke Road Stopline Right	130.0	70	80.9	7
12/3	Stoke Road Stopline Right	130.2	71	108.1	27
13/1	Crown Court Entry Left Left2	18.3	0	17.1	0
15/1	Walton Street Connector Ahead Left	25.8	4	22.1	3
15/2	Walton Street Connector Ahead	45.1	4	47.1	5
15/3	Walton Street Connector Right	27.8	0	26.3	0
PRC Over All Lanes (%)		-49.4		-18.7	
Cycle Time (s)		64		64	

In all 2036 scenarios the operation of the Gyratory would improve with the addition of the development traffic, as shown below. As such, no works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Table 3.62.2 - Summary of the Walton St Gyratory Signalised Junction – 2036 Scenarios

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Minimum					
1/2+1/1	Walton Street Entry Ahead	96.8	26	112.4	102
1/3	Walton Street Entry Ahead	41.3	4	49.8	5
2/2+2/1	Walton Road Entry Left Ahead	88.9	10	86.4	8
3/1	Walton Road Entry Ahead	83.8	17	85.6	18
3/2	Walton Road Entry Ahead	47.1	6	40.3	5
4/1 + 4/2	Stoke Road Entry Left	150.5	287	123.4	140
9/1 + 9/2	Walton Street Stopline Right	92.0	11	87.4	8
10/1	Walton Road Stopline Left	33.8	2	25.7	2
10/2	Walton Road Stopline Ahead	96.8	28	105.7	62
10/3	Walton Road Stopline Right	38.8	5	47.8	7
11/1	Wendover Road Stopline Right	0.5	0	0.0	0
11/2	Wendover Road Stopline Right	69.5	9	73.0	9
12/2	Stoke Road Stopline Right	146.0	102	125.0	60
12/3	Stoke Road Stopline Right	146.8	105	125.8	62
13/1	Crown Court Entry Left Left2	18.6	0	19.2	0
15/1	Walton Street Connector Ahead Left	41.1	5	30.4	4
15/2	Walton Street Connector Ahead	31.6	4	43.3	5
15/3	Walton Street Connector Right	24.0	0	22.3	0
PRC Over All Lanes (%)		-67.2		-39.7	
Cycle Time (s)		64		64	

2036 Do Cumulative 1					
1/2+1/1	Walton Street Entry Ahead	82.3	13	107.3	77
1/3	Walton Street Entry Ahead	28.5	3	34.2	3
2/2+2/1	Walton Road Entry Left Ahead	80.3	8	90.5	10
3/1	Walton Road Entry Ahead	62.7	9	56.7	8
3/2	Walton Road Entry Ahead	45.4	6	38.6	5
4/1 + 4/2	Stoke Road Entry Left	118.1	103	92.4	16
9/1 + 9/2	Walton Street Stopline Right	78.3	7	90.4	9
10/1	Walton Road Stopline Left	30.1	2	27.2	2
10/2	Walton Road Stopline Ahead	88.0	19	106.8	68
10/3	Walton Road Stopline Right	28.5	4	34.4	4
11/1	Wendover Road Stopline Right	0.0	0	0.0	0
11/2	Wendover Road Stopline Right	59.1	8	58.7	8
12/2	Stoke Road Stopline Right	114.6	48	82.1	10
12/3	Stoke Road Stopline Right	115.0	49	82.3	10
13/1	Crown Court Entry Left Left2	18.8	0	19.2	0
15/1	Walton Street Connector Ahead Left	36.9	6	36.6	5
15/2	Walton Street Connector Ahead	44.0	6	37.0	5
15/3	Walton Street Connector Right	20.4	0	0.0	0
PRC Over All Lanes (%)		-31.2		-19.3	
Cycle Time (s)		64		64	
2036 Do Cumulative 2					
1/2+1/1	Walton Street Entry Ahead	81.8	12	105.3	65
1/3	Walton Street Entry Ahead	27.0	2	41.4	4
2/2+2/1	Walton Road Entry Left Ahead	76.8	7	89.4	9
3/1	Walton Road Entry Ahead	60.0	9	55.5	8
3/2	Walton Road Entry Ahead	41.3	5	33.5	4
4/1 + 4/2	Stoke Road Entry Left	114.2	89	88.3	13
9/1 + 9/2	Walton Street Stopline Right	76.0	7	92.7	11
10/1	Walton Road Stopline Left	32.3	2	29.1	2
10/2	Walton Road Stopline Ahead	81.0	16	103.9	54
10/3	Walton Road Stopline Right	25.3	3	40.7	6
11/1	Wendover Road Stopline Right	0.0	0	0.0	0
11/2	Wendover Road Stopline Right	59.1	8	65.7	8
12/2	Stoke Road Stopline Right	111.7	40	75.3	8
12/3	Stoke Road Stopline Right	111.7	40	75.5	8
13/1	Crown Court Entry Left Left2	18.9	0	18.4	0
15/1	Walton Street Connector Ahead Left	33.9	5	32.8	4
15/2	Walton Street Connector Ahead	43.8	5	33.2	4
15/3	Walton Street Connector Right	22.4	0	20.8	0
PRC Over All Lanes (%)		-26.9		-17.0	
Cycle Time (s)		64		64	

Junction 101 - Wendover Road / Marroway



This junction takes the form of a 3 arm roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 116 – New Road / Brook End / Main Street



This is a 3 arm mini roundabout in Weston Turville and has been modelled with the Arcady junction modelling programme. The geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

Table 5.61.4 shows that in the 2036 Do Minimum scenario the junction will operate above practical capacity, with an RFC of 0.93 in the AM and 0.96 in the PM peak hour for the Main Street approach, with associated maximum queues estimates of 11 and 14 vehicles respectively.

In the Do Cumulative 1 scenario the operation of the junction improves and now operates within practical capacity, with a maximum RFC of 0.78 in the AM and an RFC of 0.79 in the PM on New Road.

In the Do Cumulative 2 scenario the junction exceeds practical capacity again and the operation in the AM peak hour worsens slightly compared to the 2036 Do Minimum scenario within the highest RFC increasing from 0.93 to 0.96 and an estimated increase in queue length of 1 vehicle. It is now New Road which shows the largest queue in the AM peak hour. In the PM the junction experiences an improvement compared to the 2036 Do Minimum scenario with the RFC reducing from 0.96 to 0.9 and an estimated queue reduction of 6 vehicles.

Although this junction will operate at capacity in 2036, mitigation is not desirable. Increasing capacity could attract more traffic to the village contrary to the aims of the link road strategy and based on previous discussions, the views of Weston Turville Parish Council. Another form of mitigation is therefore required, and it is considered most appropriate to attempt to reinforce the existing traffic calming to discourage traffic from using the routes through the village rather than increasing capacity.

Table 5.64.1 – New Road / Brook End / Main St mini-roundabout– 2036 Scenarios

Approach	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
2036 Do Minimum						
New Road	6	70	0.88	3	38	0.75
Marrow Way East (Brook End)	4	25	0.82	2	12	0.66
Marrow Way West (Main Street)	11	67	0.93	14	83	0.96
Junction Delay (s)	49.97			47.58		
2036 Do Cumulative 1						
New Road	3	38	0.78	4	36	0.79
Marrow Way East (Brook End)	1	11	0.57	1	7	0.35
Marrow Way West (Main Street)	3	22	0.74	3	20	0.72
Junction Delay (s)	22.65			21.92		
2036 Do Cumulative 2						
New Road	12	108	0.95	6	56	0.86
Marrow Way East (Brook End)	2	16	0.67	1	8	0.41
Marrow Way West (Main Street)	3	26	0.78	8	49	0.90
Junction Delay (s)	48.25			40.41		

The TAA explains that this location is subject to a traffic calming scheme which is being brought forward as part of the Aylesbury Woodlands and Hampden Fields developments to discourage the use of routes through Weston Turville. It is expected that the implementation of this scheme will lead to a reduction in traffic flows as drivers would seek alternative routes.

It should also be noted that as part of planning application for Land South of Aston Clinton Road (18/02495/APP) which received a resolution to grant planning permission on 01/10/2020 a traffic calming scheme is proposed for New Road north of the roundabout as shown on Cotswold Transport Planning drawing CTP-15-174 Sk11 A reproduced below.



No works to this junction are therefore proposed as the operation is acceptable with cumulative development subject to the committed traffic calming scheme as shown on drawing 2826-SK-133 and the commitments towards additional measures provided by the applicants.

Junction 117 - A413 Wendover Road / Station Road

This junction takes the form of a 3 arm roundabout. The junction has been modelled with the Arcady modelling programme and the geometry and flows have been checked and are correct.

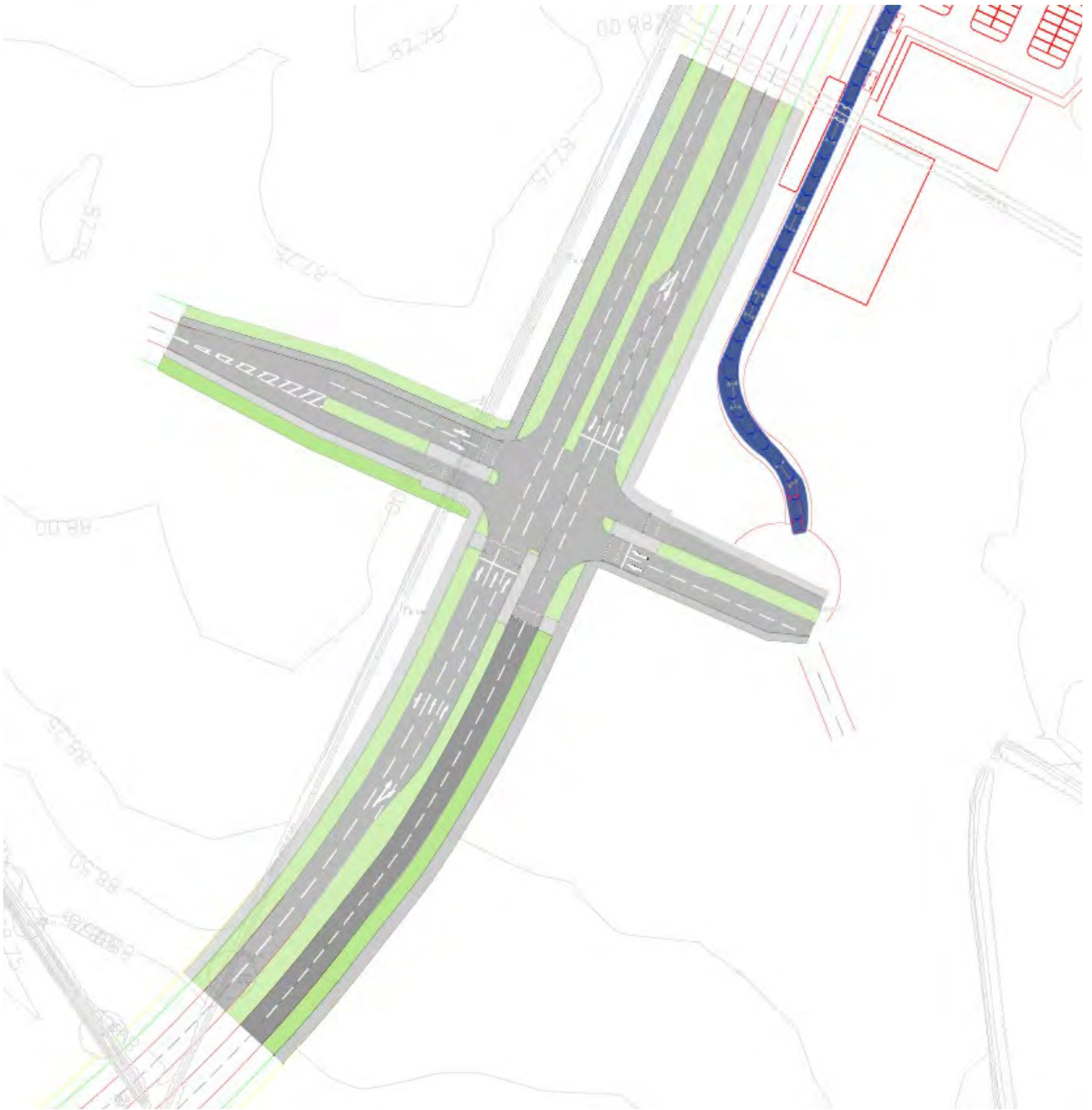
Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Junction 121 - Southern Link Road (SLR) / Employment Access

The SLR/Employment Access junction is a proposed signalised crossroads arrangement which connects the SLR with the main employment zone proposed within the Hampden Fields development. The junction is an internal part of the Hampden Fields development and is not an external access, therefore its exact configuration is likely to be the subject of a Reserved Matters application that will be submitted for the primary strategic infrastructure for Hampden Fields. The proposed junction is illustrated on RPS Drawing JNY10535-DR-010, an extract of which is shown below.



Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 3.

The results of the assessment copied below, show that the junction would operate within capacity.

Table 3.66.1 - Summary of the SLR / Employment Access Signalised Junction – 2036 Do Cumulative 3 Scenario

Link	Lane Description	AM		PM	
		Deg Sat (%)	MMQ	Deg Sat (%)	MMQ
2036 Do Cumulative 3					
1/1	EW Link (WB) Left Ahead	73.5%	21	87.1%	31
1/2+1/3	EW Link (WB) Ahead Right	75.5%	24	87.8%	34
2/1+2/2	Employment Access Right Left Ahead	72.7%	4	88.6%	13
3/1	EW Link (EB) Ahead Left	68.3%	19	73.1%	20
3/2+3/3	EW Link (EB) Ahead Right	73.9%	8	75.2%	22
4/2+4/1	Residential Access Left Ahead Right	33.9%	2	35.9%	1
PRC		19.2%		1.5	
Cycle Time		120		120	

Junction 141 - Station Road / Risborough Road / Lower Road



This junction takes the form of a 3 arm roundabout junction. Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2022 Do Something;

It has been modelled using standard ARCADY methods and using the lane simulation option, to assess the impact of uneven lane usage. The results are copied below in tables 3.67.1 and 3.67.2 respectively.

Table 3.67.1 - Summary of the Station Road / Risborough Road / Lower Road Roundabout- 2022 Scenarios

Approach	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2022 Do Minimum						
Station Road (E)	57	280	1.07	2	16	0.70
Risborough Road (S)	19	86	0.97	78	304	1.08
Lower Road (W)	4	13	0.79	2	8	0.69
Junction Delay (s)	107.59			121.35		
2022 Do Something						
Station Road (E)	13	72	0.94	1	11	0.57
Risborough Road (S)	8	41	0.90	14	61	0.95
Lower Road (W)	2	8	0.68	2	7	0.63
Junction Delay (s)	36.45			29.00		

Table 3.67.2 - Summary of the Station Road / Risborough Road / Lower Road Roundabout- 2022 Scenarios – Lane Simulation

Approach	AM		PM	
	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
2022 Do Minimum				
Station Road (E)	263	1134	129	688
Risborough Road (S)	270	1023	350	1225
Lower Road (W)	69	195	7	24
Junction Delay (s)	703.20		625.08	
2022 Do Something				
Station Road (E)	192	833	25	166
Risborough Road (S)	223	848	288	1051
Lower Road (W)	16	56	4	18
Junction Delay (s)	530.80		450.71	

The junction is shown to exceed capacity in the 2022 Do Minimum scenario in both the AM and PM peak hours. With the addition of the development, the junction would remain over capacity, but there is a clear improvement in the junction's performance.

As part of the previous technical work in 2017, the Woodlands Phase 1 standalone was required to provide a signalisation mitigation scheme at this junction. However, in light of the revised modelling of this junction which shows that the operation is acceptable with standalone and cumulative development, the mitigation scheme is no longer required.

Junction 143 - Mandeville Road / Stoke Road

This junction takes the form of a 3 arm traffic signal controlled junction. The junction has been modelled with the LinSig modelling programme and the geometry and flows have been checked and are correct.

Assessments of the impact at this junction were required for the following scenarios based on the predicted traffic impact;

- 2036 Do Cumulative 1;
- 2036 Do Cumulative 2.

No works to this junction are proposed as the operation is acceptable with standalone and cumulative development.

Conclusion

It is concluded that full and detailed assessments of the application both individually and cumulatively, have demonstrated that any adverse effects of the proposals can be appropriately mitigated through planning conditions and S106 obligations.

The position reached in 2017 remains the same, and therefore the Council can confirm that it has no objections subject to Conditions and S106 Obligations to be advised.

Yours sincerely

Del Tester

**Highways Development Management Consultant
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**Jo Thornton
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