Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

Applicant's response to deadline 3 submissions [Appendix B - Transport 2023 Update]

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APPENDICES

1. INTRODUCTION

1.1 The Hinckley National Rail Freight Interchange (HNRFI) ISH Hearing took place on 31 October 2023 during which time comments were raised about various parts of the Transport Assessment. This 2023 Transport Update has been produced to respond to a number of those points, written representations and as discussed at additional highway workshops with LCC, NH and WCC. This includes the following:

- Updated junction modelling of the junctions where physical mitigation is being proposed or possible contributions sought, using new traffic turning count survey data in the furnessing process. This was at the request of the LCC/WCC to allow confirmation of the proposed package of highway mitigation or proposed contributions. This follows concerns that the previous junction modelling was based on turning count survey data that pre-dated the Covid pandemic.

- Inclusion of a VISSIM Model, in line with the newly introduced NH protocol (REP1-182), utilising a model provided to the applicant on the 2nd of November 2023 that includes the A47/A5 Longshoot signalled junction and A47/A5/B4666 Dodwell roundabout.

- Inclusion of the traffic, mitigation and high sided vehicle assignment agreed within the Padge Hall Farm application within the VISSIM Models on the A5 atLongshoot/Dodwell and M69 Junction 1 as above.

- The effects of the sustainable transport strategy on reducing the number of single occupancy car trips through each of the key junctions.

- Modelling of M1 Junction 21 with the approved Lutterworth Urban Extension mitigation scheme and a sensitivity assessment assigning all development trips on top of 'without development' forecasts to eliminate redistribution effects.

1.2 The latest modelling retains the junction models from the submitted Transport Assessment and updates them to test the new turning traffic flows, which have been derived using the agreed furnessing methodology with the 2023 surveys.

2. REVISED JUNCTION MODELLING

Introduction

2.1 Leicestershire County Council raised concerns that the turning count traffic survey data used in the Transport Assessment pre-dates the Covid pandemic. The Authority requested for the furnessed flows to be updated and the subsequent junction modelling using current survey data. New traffic surveys were commissioned and undertaken on the 23rd (to avoid local road closures and diversions associated with planned road works as agreed with LCC) and the 29th November 2023 at the following 7 junctions where mitigation was being proposed in the Transport Assessment and summarised in Table 9.1 (document reference 6.2.8.1B, REP3-157). A list of which is below in **Table 1**.

Table 1: Junctions with Mitigation proposed in the Transport/ES Assessment

Junction ID	No.	LA/LHA	Location
37	B1	Blaby DC / LCC	Junction of B581 Station Road / New Road and Hinckley Road, Stoney Stanton
39	B2	Blaby DC / LCC	B4669 Hinckley Road and Stanton Lane, west of Sapcote
J3	B5	Blaby DC / LCC	B4114 Coventry Road/B581 Broughton Road
J6	B6	Blaby DC / LCC	B4114 Coventry Road and Croft Road, south-west of Narborough
J1	HB1	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way and A447 Ashby Road, Hinckley
J24	HB2	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way / Leicester Road, the B4668 Leicester Road and The Common, south-east of Barwell
J27	H1	Harborough DC / National Highways	Cross in Hand roundabout at the junction of the A5 Watling Street, A4303 Coventry Road, B4027 Lutterworth Road and Coal Pit Lane, west of Lutterworth

2.2 In addition to the above, surveys were also carried out on the strategic road network (SRN) at M69 J1, J2 and J3 (M1 J21) where changes are proposed at the existing junctions for access, signal timings and/or with further review and updates required to that within the submission and as highlighted in the Introduction.

2.3 Finally, following the recent National Highways protocol, to provide updates on modelling and or financial contribution at the following Junctions. These were also surveyed for this update:

- Junction 4: A47/A5 Longshoot (between Hinckley and Nuneaton)
- Junction 14: A5/B4666/A47 Dodwells (Hinckley)
- Junction 26: A5/A426/Gibbet Lane (south of Lutterworth)

2.4 The following section summarises the revised modelling results for each of the above junctions and confirms whether the current package of mitigation continues to be suitable in alleviating the impacts of the HNRFI development. Modelling of Junction 4 (A47/A5 Longshoot) and Junction 14 (A5/B4666/A47 Dodwells) has now been undertaken using VISSIM software and is set out in Section 3.

Traffic Flow Forecasting

2.5 The Pan Regional Transport Model (PRTM) is a strategic transport model that was run at an opening year of 2026 and future year of 2036. Future forecast traffic flows have been furnessed using the 2023 surveyed flows and outputs from the PRTM in accordance with the previously agreed methodology to derive traffic flows for the following scenarios:

- Without Development (WoD) – background traffic growth only
- Without Development, with scheme (WoDWS) – which includes the proposed south facing slips at M69 Junction 2 and the A47 link road which forms the access infrastructure for the development.
- With Development, With Scheme (WDWS) – with the proposed development and the A47 link road and the south facing slips at M69 Junction 2.

2.6 The methodology agreed with the Transport Working Group for deriving traffic flows has been retained. The previously agreed formula is set out below, albeit now based on the 2023 surveyed flows which should provide robustness given there is extended growth applied from the PRTM flows. It applies the PRTM growth between 2019 and 2036 to the 2023 surveyed flows and hence includes an additional 4 years of growth.

- Forecast Flows = 2023 Survey Flow + ('2036 PRTM' – '2019 PRTM')

2.7 The turning count matrices showing the future forecast traffic flows have been issued separately to the Highway Authorities for review and approval on the 18th of December 2023.

Junction Modelling Results

Introduction

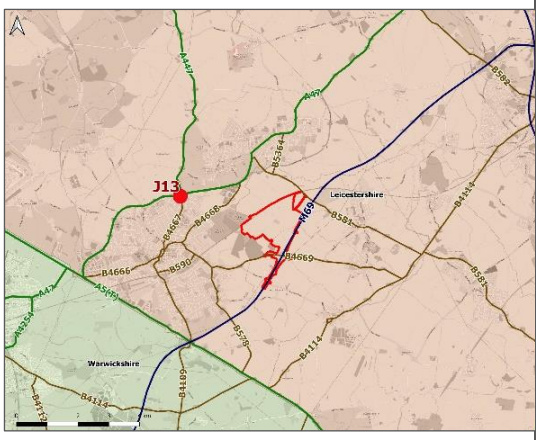
2.8 The junctions listed above have been re-modelled in terms of capacity using the new forecast flows. The base junction models have been retained without any changes to ensure a like for like comparison to the results in the Transport Assessment, albeit some mitigation designs have been updated on the back of this updated assessment. These are listed in Table 9.1 in this document as an update to Table 9.1 of the submitted Transport Assessment.

Junction 1 (HB1) - A47 Normandy Way / Ashby Rd

2.9 The A47 Normandy Way/Ashby Road junction is a 4-arm signalised junction operating under MOVA control, with two lane flared entries at each arm. There are dropped kerb pedestrian crossings and markings on the carriageway, but there are no signals for pedestrians at the existing junction.

2.10 Table 2shows the location, form and summarises the operation of the A47/Ashby Road Signal Junction, whilst the outputs are included at **Appendix 1**..

Table 2: Junction 1 Linsig Capacity Assessment



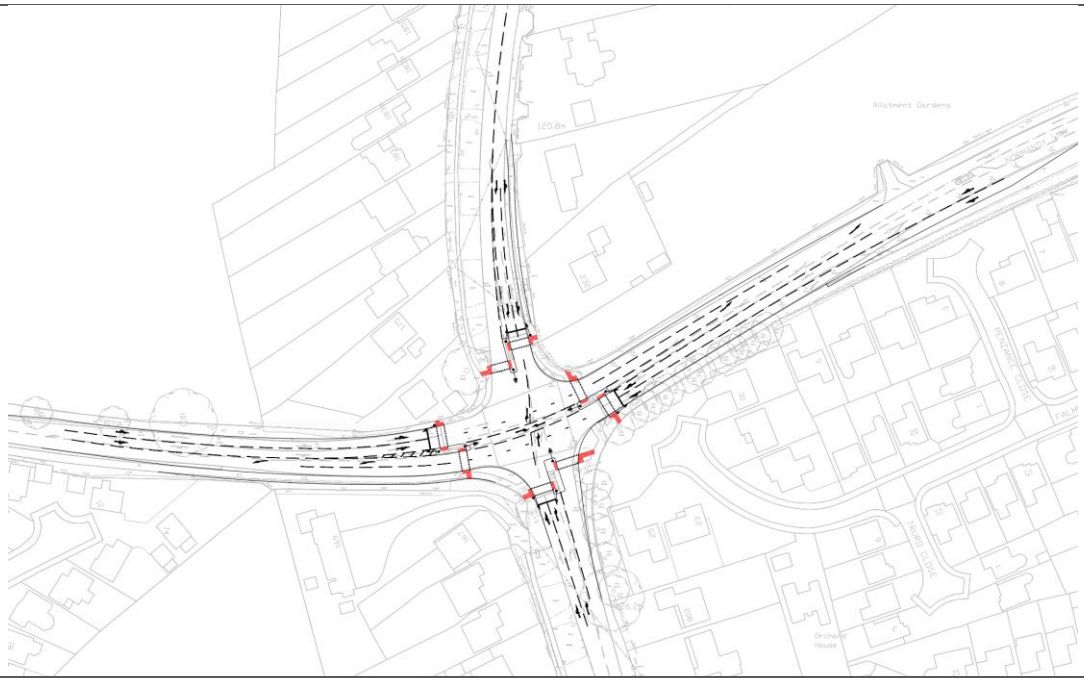
2036 Capacity Result							
ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	86.4%	19.0	85.3%	18.6	95.2%	28.3
B	Normandy Way (E)	83.7%	15.8	86.3%	16.9	92.5%	20.7
C	Ashby Rd (S)	61.1%	8.5	69.0%	7.8	101.8%	10.3
D	Normandy Way (W)	85.2%	9.1	69.1%	8.2	97.7%	11.4
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		4.2%	26.6	4.3%	25.9	-13.1%	40.2
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	68.8%	8.2	68.1%	8.1	77.6%	10.5
B	Normandy Way (E)	78.4%	12.0	83.3%	13.1	87.6%	15.5
C	Ashby Rd (S)	78.7%	15.6	86.3%	19.6	89.3%	21.0
D	Normandy Way (W)	79.2%	11.7	72.7%	10.6	72.3%	11.4

	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes	13.6%	25.5	4.3%	27.7	0.8%	31.9

2.11 The 2036 WoD scenarios have spare capacity in both the AM and PM peak hours. This improves slightly at the WoDWS scenario, but then deteriorates with the WDWS scenario, particularly in the AM peak hour.

2.12 The Transport Assessment proposed a scheme of mitigation including geometric improvements such as lengthened flares on all arms and introducing an indicative right turn from Normandy Way (W) to Ashby Road (S) as well as providing two lanes through the junction in a westbound direction. This mitigation scheme has been retained and modelled, with the results summarised at **Table 3** and the outputs included in **Appendix 2.**

Table 3: Junction 1 Linsig Capacity Assessments Mitigation with dedicated crossing facilities

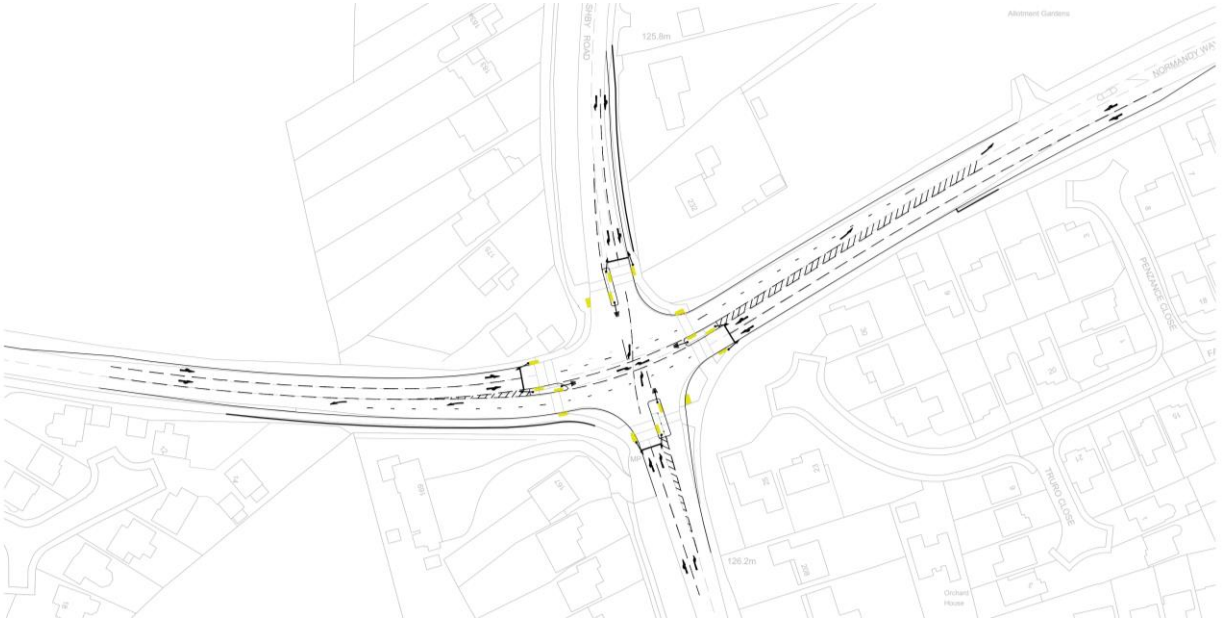


2036 Capacity Result					
ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	100.1%	40.4	65.2%	14.1
B	Normandy Way (E)	100.7%	25.9	92.4%	12.4
C	Ashby Rd (S)	73.4%	8.7	91.8%	19.7
D	Normandy Way (W)	69.9%	10.1	92.6%	16.8
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-12.1%	59.6	-2.9%	35.9

2.13 The results show that the junction performance would be better compared to the results in the Transport Assessment as overall traffic flows have reduced. However, the mitigation scheme would not mitigate the proposed development impacts in full, with the junction expected to be over capacity in the AM Peak hour at -12.1% compared to 4.2% in the 2036 WoD scenario. In the PM Peak hour, the capacity of the junction deteriorates from 13.6% to -2.9%, an impact of 16.5%. However, there would be significant improvements to pedestrian accessibility.

2.14 Alternatively, the mitigation scheme has been modelled without the signal-controlled pedestrian crossings and with the geometric and traffic phase changes only. Retaining the walk with pedestrian crossing facilities already in place. The results are summarised in **Table 4,** with the outputs included in **Appendix 3**.

Table 4: Junction 1 Linsig Capacity Assessments Mitigation



2036 Capacity Result					
ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	85.0%	18.3	67.5%	7.7
B	Normandy Way (E)	84.7%	12.0	81.5%	9.7
C	Ashby Rd (S)	73.0%	7.2	84.2%	18.0
D	Normandy Way (W)	74.4%	10.1	84.7%	12.9
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		5.9%	28.8	6.2%	28.5

2.15 The results show that the overall PRC at the junction would be within capacity in both the AM and PM 2036 WDWS scenarios and therefore the proposed layout mitigates the impact of the development at the junction.

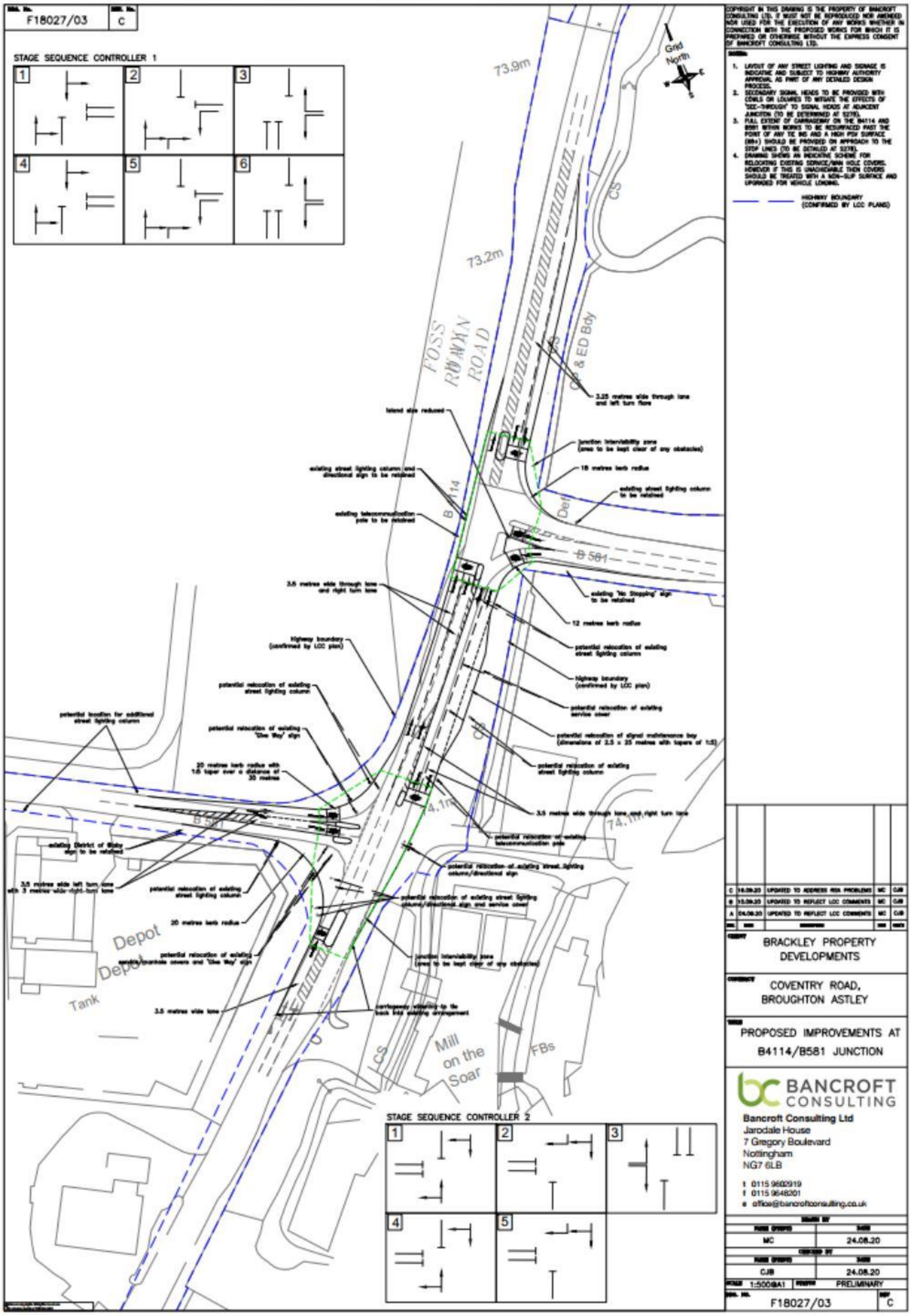
2.16 Whilst there would be better capacity benefits without the pedestrian crossings signalised, the benefits to pedestrian connectivity should be seen as favourable. The operation and resultant capacity at the junction with the crossings also depends on how often the pedestrian facilities are called during the peak periods. The MOVA control system would also optimise the capacity at the junction during each cycle depending on the demand at the crossings and as a result, the actual impact of the introduction of formal crossing facilities would be less than that shown in the table above. As such, it is considered that the scheme including the signal controlled pedestrian crossings provides a betterment by prioritising pedestrians.

Junction 3 (B5) – B4114 Coventry Road / B581 Broughton Road

2.17 The B4114 Coventry Road/B581 Broughton Road junction is currently a staggered part signal, part ghost island priority junction. The B581 crosses the B4114 between Stoney Stanton and Broughton Astley in form of a 3-arm signal-controlled junction (towards Broughton Astley) and a 3-arm ghost-island priority junction (towards Stoney Stanton). Southern and eastern arms of the signalised junction comprise two lanes, and the northern arm one lane. The southern arm benefits from advanced stop line for cyclists.

2.18 As outlined in the Transport Assessment the junction has been reviewed as part of a committed development in Broughton Astley (Planning Reference: 19/00856/OUT) and a committed S278 scheme is proposed to provide a fully signal controlled staggered crossroads. The scheme is shown in Figure 2.1below.

Figure 2.1: Committed Highway Improvement Scheme



F18027/03
C
STAGE SEQUENCE CONTROLLER 1
73.9m
Grid North
73.2m
FOSS
ROAD
3.25 metres wide through lane and left turn flare
Island size reduced
Junction intervisibility zone (area to be kept clear of any obstacles)
18 metres kerb radius
existing street lighting column and directional sign to be retained
existing street lighting column to be retained
existing telecommunication pole to be retained
B 581
existing 'No Stopping' sign to be retained
3.5 metres wide through lane and right turn lane
12 metres kerb radius
highway boundary (confirmed by LCC plan)
potential relocation of existing street lighting column
potential relocation of existing service cover
potential location for additional street lighting column
potential relocation of existing 'Give Way' sign
potential relocation of signal maintenance bay (dimensions of 2.5 x 25 metres with tapers of 1:5)
20 metres kerb radius with 1:5 taper over a distance of 30 metres
potential relocation of existing street lighting column
3.5 metres wide through lane and right turn lane
potential relocation of existing telecommunication pole
existing District of Blaby sign to be retained
potential relocation of existing street lighting column/directional sign
3.5 metres wide left turn lane with 3 metres wide right turn lane
20 metres kerb radius
potential relocation of existing street lighting column/directional sign and service cover
Depot
Junction intervisibility zone (area to be kept clear of any obstacles)
3.5 metres wide lane
Tank
Mill on the Soar
FBs
STAGE SEQUENCE CONTROLLER 2
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NOTES:
1. LAYOUT OF ANY STREET LIGHTING AND SIGNAGE IS INDICATIVE AND SUBJECT TO HIGHWAY AUTHORITY APPROVAL AS PART OF ANY DETAILED DESIGN PROCESS.
2. SECONDARY SIGNAL HEADS TO BE PROVIDED WITH COWLS OR LOUVRES TO MITIGATE THE EFFECTS OF 'SEE-THROUGH' TO SIGNAL HEADS AT ADJACENT JUNCTION (TO BE DETERMINED AT S278).
3. FULL EXTENT OF CARRIAGEWAY ON THE B4114 AND B581 WITHIN WORKS TO BE RESURFACED PAST THE POINT OF ANY TIE INS AND A HIGH PSV SURFACE (68+) SHOULD BE PROVIDED ON APPROACH TO THE STOP LINES (TO BE DETAILED AT S278).
4. DRAWING SHOWS AN INDICATIVE SCHEME FOR RELOCATING EXISTING SERVICE/MAN HOLE COVERS. HOWEVER IF THIS IS UNACHIEVABLE THEN COVERS SHOULD BE TREATED WITH A NON-SLIP SURFACE AND UPGRADED FOR VEHICLE LOADING.
HIGHWAY BOUNDARY (CONFIRMED BY LCC PLANS)
C 14.09.20 UPDATED TO ADDRESS RSA PROBLEMS MC CJB
B 15.09.20 UPDATED TO REFLECT LCC COMMENTS MC CJB
A 04.09.20 UPDATED TO REFLECT LCC COMMENTS MC CJB
BRACKLEY PROPERTY DEVELOPMENTS
COVENTRY ROAD, BROUGHTON ASTLEY
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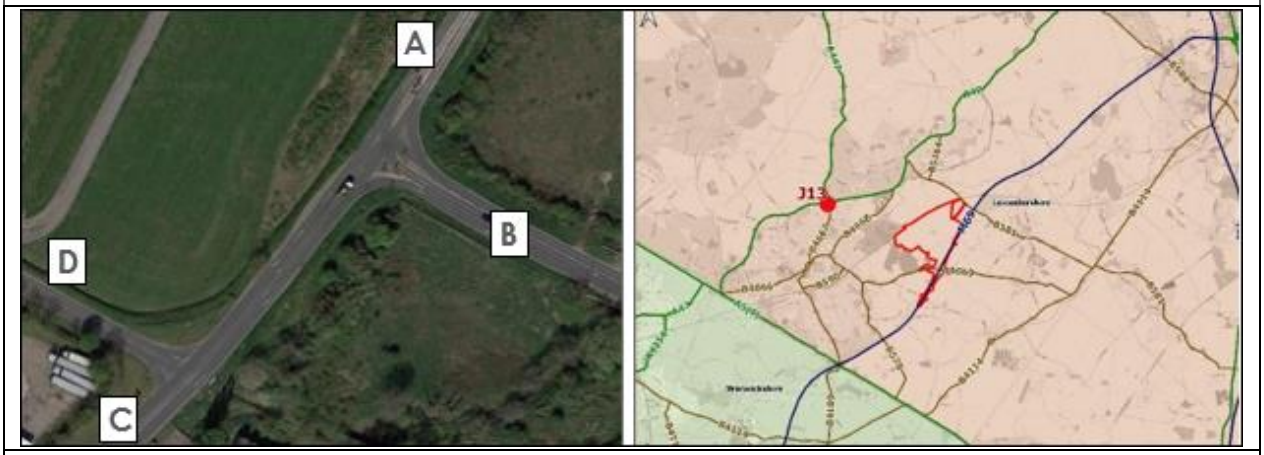
PRELIMINARY
F18027/03
C

2.19 The committed scheme has been modelled as the base case (WoD scenario) for the purposes of this assessment, with the results summarised in **Table 5** and the outputs included in **Appendix 4**.

Table 5 Junction 3 LINSIG Capacity Assessments



2036 Capacity Result (Committed Scheme)							
ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	68.6%	7.2	72.7%	8.0	73.9%	8.7
B	B581 (E)	73.9%	9.2	74.6%	9.3	75.7%	9.6
C	Coventry Rd (S)	56.2%	10.2	63.4%	12.5	63.3%	12.5
D	Broughton Rd (W)	70.8%	13.0	74.4%	13.2	74.0%	12.7
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		21.8%	27.00	20.5%	28.91	18.9%	29.41
ARM		PM Peak Hour (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	73.1%	8.6	67.6%	8.5	69.0%	8.9
B	B581 (E)	73.4%	7.2	69.1%	6.3	67.6%	6.1
C	Coventry Rd (S)	88.7%	22.0	74.6%	16.7	68.7%	13.9
D	Broughton Rd (W)	87.4%	14.5	71.3%	7.9	69.2%	6.7
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		1.4%	34.95	20.6%	24.68	30.0%	22.96

2.20 The B4114 Coventry Road/B581 Broughton Road junction would still operate within capacity in all scenarios. As a result, no further works are required at this junction as part of the HNRFI proposals.

2.21 However, if for any reason, the committed scheme does not get constructed prior to the HNRFI Access Infrastructure opening, an alternative scheme has been proposed which mitigates the impact of the HNRFI proposals and this remains the same as those included in the Transport Assessment.. This option is broadly based on the committed scheme

however the widening of the Coventry Road (E) approach has been removed as these are not required to accommodate the HNRFI proposals.

2.22

2.23

2.24

2.25 Table 6 sets out the form and summarises the operation of the alternative B4114 Coventry Road/B581 Broughton Road Signal Junction, with the outputs included at **Appendix 5**.

Table 6: Alternative Junction Mitigation Layout

ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	68.6%	7.2	72.7%	8.0	73.9%	8.7
B	B581 (E)	73.9%	9.2	74.6%	9.2	75.7%	9.6
C	Coventry Rd (S)	56.2%	10.2	63.4%	12.5	63.3%	12.5
D	Broughton Rd (W)	70.8%	13.0	74.4%	13.2	74.0%	12.7
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		21.8%	26.54	20.5%	28.47	18.9%	28.95
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ

A	Coventry Rd (N)	73.6%	8.6	65.5%	6.5	69.1%	8.4
B	B581 (E)	73.4%	7.4	74.4%	8.3	68.2%	8.4
C	Coventry Rd (S)	88.7%	22.0	74.6%	16.7	68.7%	13.9
D	Broughton Rd (W)	87.4%	14.5	71.3%	7.9	69.2%	6.7
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		1.4%	34.48	20.6%	23.19	30.0%	21.72

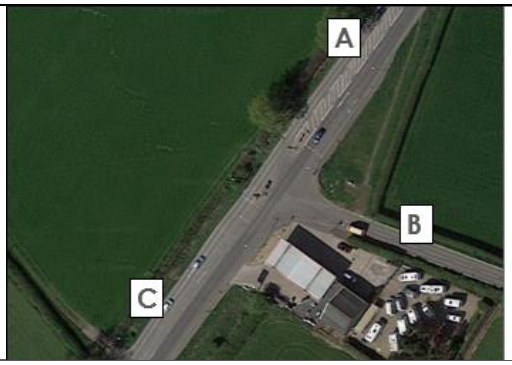
2.26 The alternative scheme at the B4114 Coventry Road/B581 Broughton Road junction would operate within capacity in all scenarios. As a result, the alternative scheme should be acceptable should the S278 scheme not be provided by the committed scheme which is secured through requirement 5 of the DCO.

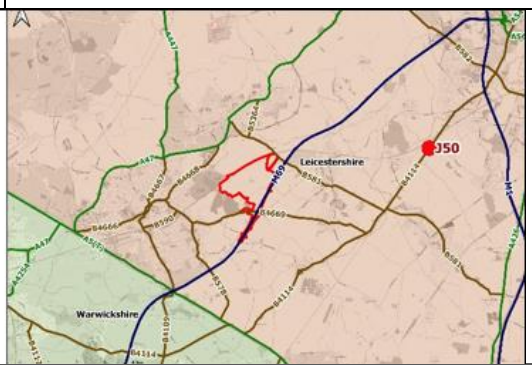
Junction 6 (B6) – Coventry Road / Croft Road

2.27 The Coventry Road / Croft Road junction is a 3-arm signalised junction to the east of Croft village. Coventry Road includes a 30m long left-turn lane in southbound direction and a 65m long right-turn lane in northbound direction, that operates under a separate traffic phase. Croft Road includes one lane only. There is a footway adjacent to the southern side of Coventry Road, but signals for pedestrians are excluded.

2.28 **Table 7**shows the location, form and summarises the operation of the Coventry Road / Croft Road junction, with the outputs included at **Appendix 6**.

Table 7: Junction 6 LINSIG Capacity Assessments





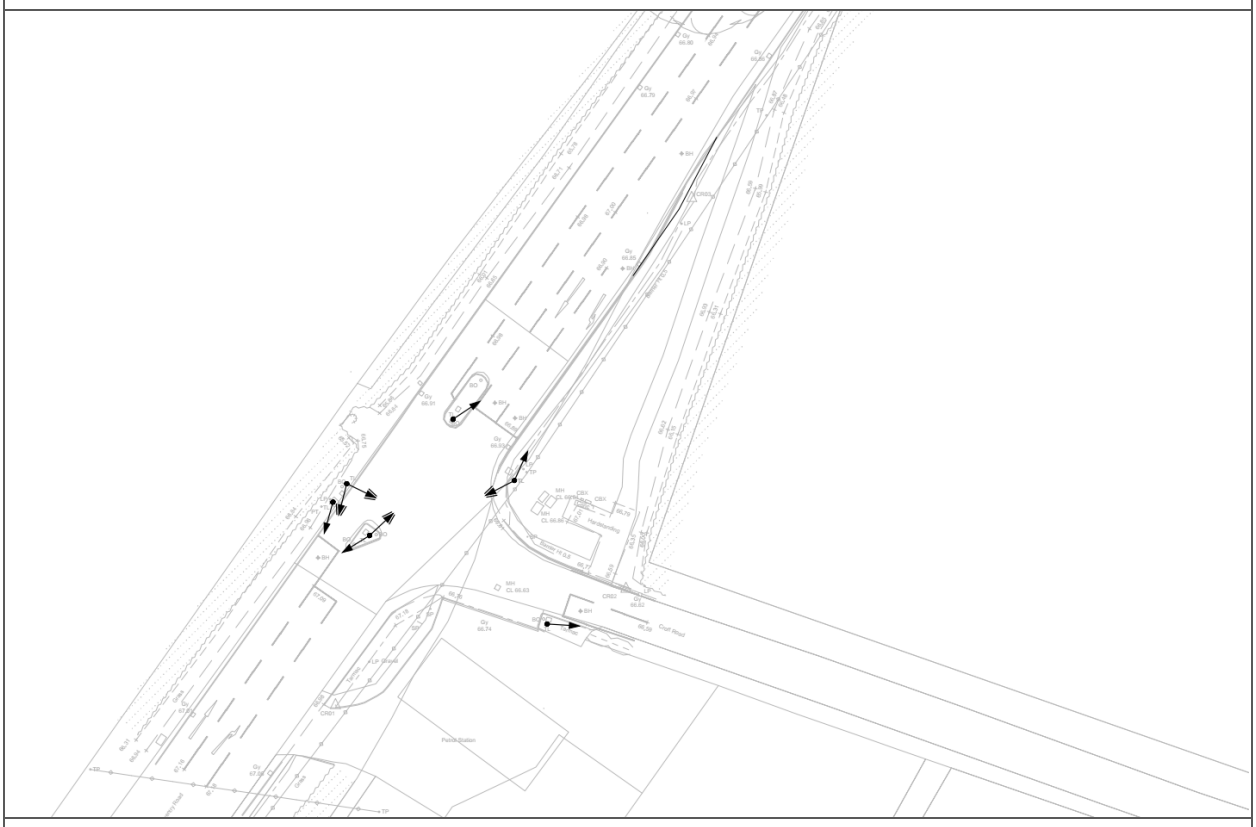
2036 Capacity Result							
ARM		**WoD**		**WoDWS**		**WDWS**	
		AM Peak Hour (08:00-09:00)					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	Coventry Road (N)	78.7%	13.3	78.5%	13.6	80.5%	14.4
B	Croft Road (E)	80.1%	10.4	79.3%	9.6	79.3%	9.6
C	Coventry Road (S)	78.0%	15.5	78.2%	15.3	79.1%	16.0
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		12.3%	17.7	13.6%	17.3	11.8%	17.9
ARM		**PM (17:00 -18:00)**					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**

A	Coventry Road (N)	90.2%	22.0	91.2%	23.1	92.9%	24.5
B	Croft Road (E)	90.6%	9.6	85.4%	8.1	92.1%	10.2
C	Coventry Road (S)	86.5%	11.6	91.6%	13.1	93.0%	14.0
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		-0.7%	22.9	-1.8%	23.9	-3.3%	27.5

2.29 The results show that the junction is expected to operate in capacity during all scenarios in the AM peak hour. However, in the PM peak hour, the junction is predicted to exceed capacity, even in the 2036 WoD scenario, with the junction PRC worsening at the WoDWS and deteriorating further at the WDWS scenario.

2.30 **Appendix 7** contains the proposed mitigation within the Transport Assessment and Highway Works plans, which enhances the capacity by extending the flare on Coventry Road to the North. The revised modelling results are summarised in **Table 8**.

Table 8: Junction 6 LINSIG Capacity Assessments Mitigation



2036 Capacity Result					
ARM		**AM Peak Hour (08:00-09:00)**		**PM Peak Hour (17:00-18:00)**	
		DoS	**MMQ**	**DoS**	**MMQ**
A	Coventry Road (N)	78.4%	13.3	91.3%	23.0
B	Croft Road (E)	75.7%	9.2	87.9%	9.1
C	Coventry Road (S)	79.0%	16.0	92.3%	13.6
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**

PRC over all lanes	13.9%	17.15	-2.5%	24.93

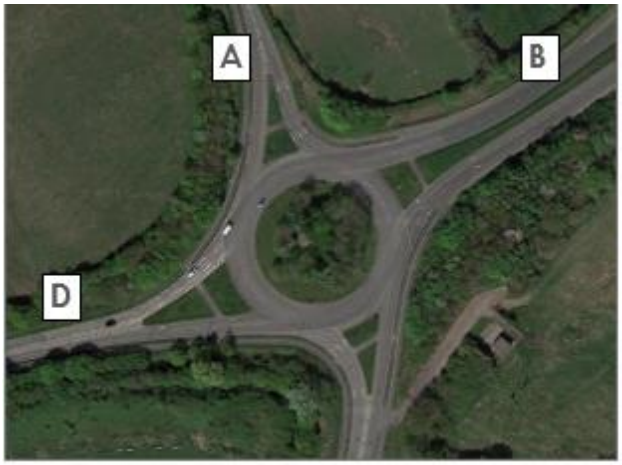
2.31 The results show that the overall PRC at the junction would improve in the AM peak hour compared to the 2036 WoD scenario. Whilst the PM peak hour shows some improvement, the mitigation scheme does not mitigate the full impact of the development traffic. It does however reduce the impact of the development at the junction to only 0.8% which is considered an acceptable level and therefore not a significant effect.

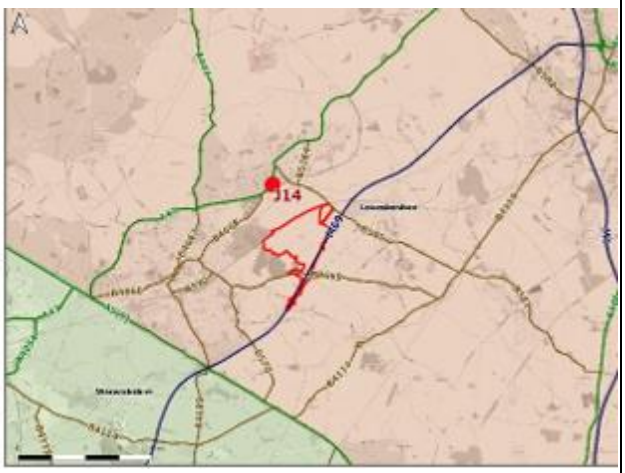
Junction 24 (HB2) – The Common Barwell / A47 / B4668 Leicester Road Roundabout

2.32 The Common Barwell / A47 / B4668 Leicester Road Roundabout is a 3-arm priority roundabout with an ICD of approximately 78m. A shared footway/cycleway exists around the junction with crossing points on all arms.

2.33 **Table 9**shows the location, form and summarises the operation of the Common Barwell / A47 / B4668 Leicester Road Roundabout, with the outputs included at **Appendix 8.**

Table 9: Junction 24 Junctions 10 Capacity Assessments





2036 Capacity Result							
ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	The Common Barwell	36%	0.6	54%	1.2	57%	1.3
B	A47 Leicester Road (E)	60%	1.5	69%	2.2	72%	2.6
C	B4668 Leicester Road	42%	0.7	55%	1.2	57%	1.3
D	A47 (W)	41%	0.7	51%	1.0	57%	1.3
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	The Common Barwell	26%	0.3	36%	0.6	38%	0.6
B	A47 Leicester Road (E)	52%	1.1	54%	1.2	54%	1.2
C	B4668 Leicester Road	68%	2.1	92%	9.9	96%	15.8

D	A47 (W)	59%	1.4	70%	2.3	76%	3.0

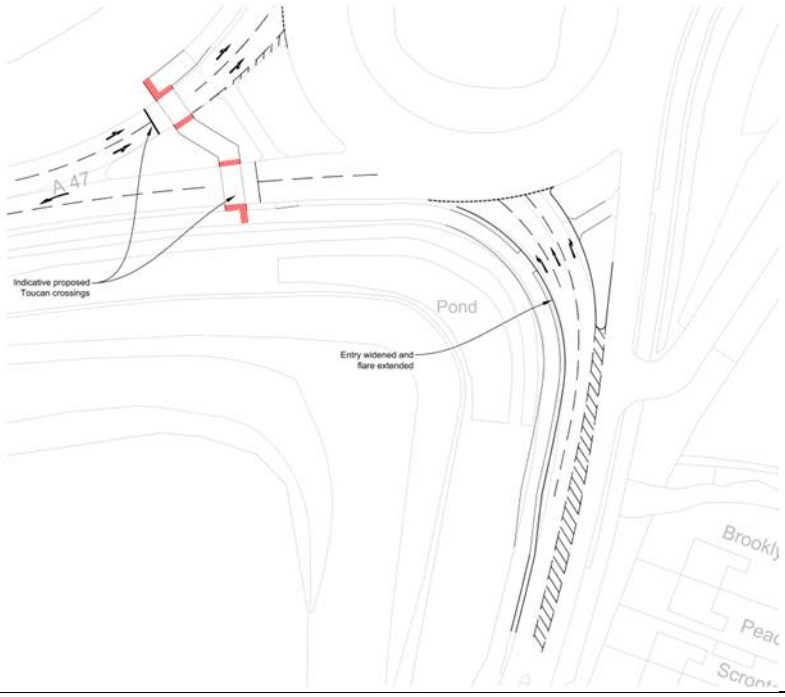
2.34 The results show that the junction is expected to operate within capacity during all scenarios in the AM peak hour. In the PM peak hour, the 2036 WoD operates within capacity, however the RFC exceeds 85% in the WoDWS scenario and deteriorates further at the WDWS scenario.

2.35 **Appendix 9** includes the proposed scheme of mitigation which enhances capacity by introducing a small flare on the entry arm (B4668) with the carriageway being widened from 8.5m to 10.6m at the entry to the roundabout. In addition, a Toucan crossing will also be provided on the western arm of the junction which has also been assessed within the mitigation scheme.

2.36 This proposed mitigation scheme remains unchanged from the Transport Assessment, however there is a proposed toucan crossing identified in the Sustainable Transport Strategy (STS) and this has now been included in the modelling and the STS will be secured via requirement 9.

2.37 **Table 10** shows the proposed scheme layout and summarises the junction performance results with the mitigation scheme.

Table 10: Junction 24 Junctions 10 Capacity Assessments Mitigation



2036 Capacity Result					
ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		RFC	QUEUE	RFC	QUEUE
A	The Common Barwell	57%	1.3	39%	0.6
B	A47 Leicester Road	72%	2.6	54%	1.2
C	B4668 Leicester Road	50%	1.0	84%	5.0
D	A47 (W)	57%	1.3	82%	4.1

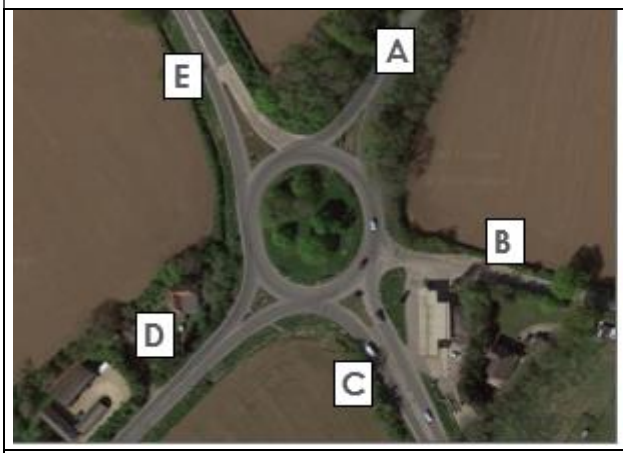
2.38 The results show that with mitigation in place and also including for the Toucan crossing on the western arm, the junction is forecast to operate within capacity during both the AM and PM peak hours at the WDWS scenario.

Junction 26 – A5 / A426 / Gibbet Lane

2.39 The A5 / A426 / Gibbet Lane junction is a 5-arm roundabout to the south of Lutterworth with an ICD of 77/62m. All arms are single carriageways. The junction is lit, no signals are currently present and no facilities are provided for cyclists/pedestrians.

2.40 **Table 11**shows the location, form and summarises the operation of the A5 / A426 / Gibbet Lane junction, with the outputs included in **Appendix 10**.

Table 11: Junction 26 LINSIG Capacity Assessments



2036 Capacity Result

ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Rugby Road	50%	1.0	50%	1.0	52%	1.1
B	Gibbet Lane	100%	13.9	99%	13.2	110%	26.3
C	A5 (S)	112%	72.9	112%	71.6	113%	77.9
D	A426	40%	0.7	38%	0.6	38%	0.6
E	A5 (N)	47%	0.9	47%	1.0	50%	1.0
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Rugby Road	61%	1.5	60%	1.5	61%	1.6
B	Gibbet Lane	57%	1.3	55%	1.2	61%	1.5
C	A5 (S)	101%	26.2	100%	23.2	103%	33.2
D	A426	74%	2.7	72%	2.5	76%	3.0
E	A5 (N)	52%	1.1	52%	1.1	54%	1.1

2.41 The A5 / A426 / Gibbet Lane junction would operate over capacity in all 2036 Scenarios, including the 2036 WoD scenario.

2.42 National Highways previously had a drawing showing a proposed signal scheme at the junction, which was included in the Transport Assessment. However, this has since been disregarded because of land ownership issues. National Highways are in the process of designing a new scheme and are seeking or already have contributions from local developments. Therefore, **Table 12** shows the percentage increase in traffic flows through the junction between the WoD and WDWS scenarios to highlight the impacts and level of contribution that could be sought from the HNRFI proposals.

Table 12: Percentage Increase in Traffic at A5 / A426 / Gibbet Lane

	WoD	WDWS	Difference	%
AM peak hour	3258	3328	70	2.1%
PM peak hour	3541	3609	68	1.9%

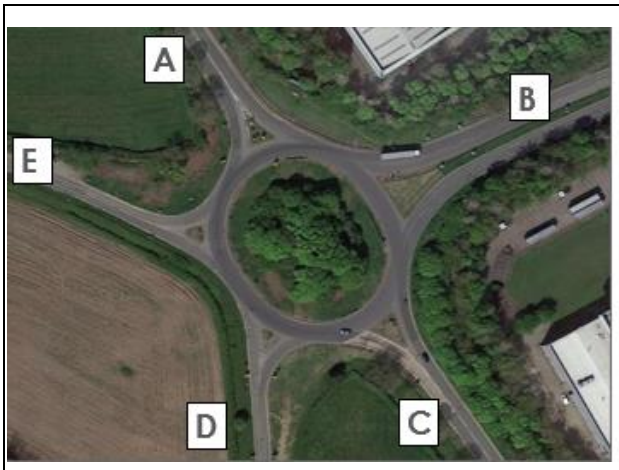
2.43 In line with the predicted impacts, it is considered reasonable for the HNRFI proposals to contribute up to 2% towards the costs of any future improvements.

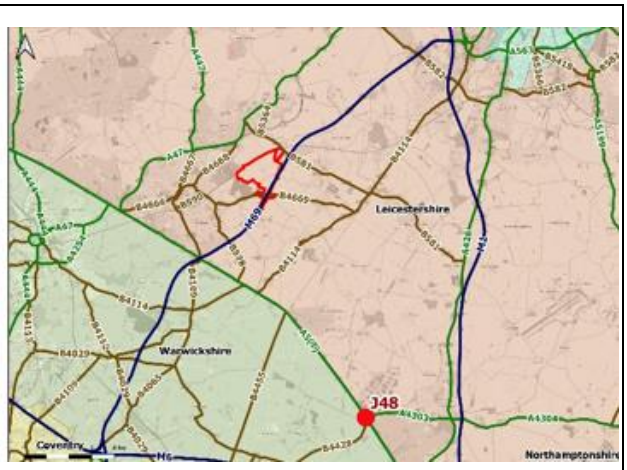
Junction 27 (H1) – A5 / A4303 / B4027 / Coal Pit Lane Roundabout

2.44 The A5 / A4303 / B4027 / Coal Pit Lane Roundabout is a 5-arm priority controlled roundabout junction near Magna Park with an ICD of 91/78m. The A4303 is a dual carriageway, whilst all other arms are single carriageways. The Junction is lit, no signals are present and there are no facilities for cyclists/pedestrians.

2.45 **Table 13** shows the location, form and summarises the operation of the A5 / A4303 / B4027 / Coal Pit Lane Roundabout, with the outputs included at Appendix 11.

Table 13: Junction 27 Junctions 10 Capacity Assessments





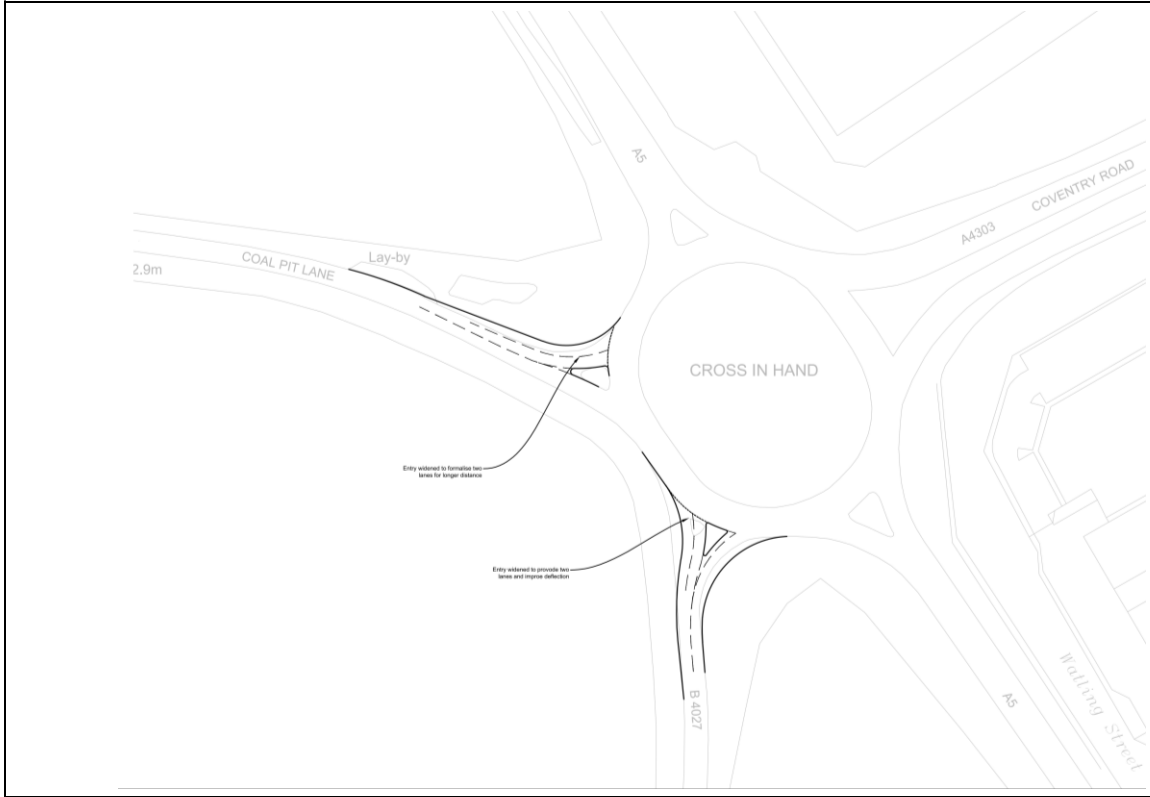
2036 Capacity Result							
ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	A5 (N)	70%	2.3	71%	2.4	69%	2.2
B	A4303 (E)	62%	1.6	62%	1.6	65%	1.8
C	A5 (S)	55%	1.2	55%	1.2	60%	1.5
D	B4027 (S)	75%	2.9	74%	2.8	80%	3.8
E	Coal Pit Lane (W)	86%	5.1	83%	4.4	110%	30.0
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	A5 (N)	65%	1.8	65%	1.9	70%	2.3
B	A4303 (E)	72%	2.6	72%	2.5	72%	2.6
C	A5 (S)	63%	1.7	63%	1.7	68%	2.1
D	B4027 (S)	63%	1.7	57%	1.3	62%	1.6
E	Coal Pit Lane (W)	28%	0.4	26%	0.3	28%	0.4

2.46 The results show that the junction is expected to operate within capacity during all scenarios in the PM peak hour. During the WoD scenario in the AM peak hour, the Coal Pit Lane (W) arm is expected to operate with an RFC of 86%. The capacity is expected to improve slightly at the WoDWS scenario and then deteriorate at the WDWS scenario.

2.47 The Transport Assessment previously proposed mitigation across all arms, however, the latest modelling show that the impacts of the HNRFI proposals are focused on Coal Pit Lane only. In addition, geometry improvements were also previously shown to the B4027 approach to increase the deflection and therefore lower entry speeds. This improvement is maintained with the latest updates to the proposed mitigation, although it was not required for capacity purposes.

2.48 **Appendix 12** contains the revised mitigation scheme showing how Coal Pit Lane would be widened to provide a short flare and two lanes at the give way line, along with the geometry improvements on the B4027, whilst the results of the revised mitigation are summarised in **Table 14**.

Table 14: Junction 27 Junctions 10 Capacity Assessments Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		RFC	QUEUE	RFC	QUEUE
A	A5 (N)	70%	2.3	70%	2.3
B	A4303 (E)	65%	1.9	72%	2.6
C	A5 (S)	60%	1.5	68%	2.1
D	B4027 (S)	68%	2.1	52%	1.1
E	Coal Pit Lane (W)	58%	1.3	15%	0.2

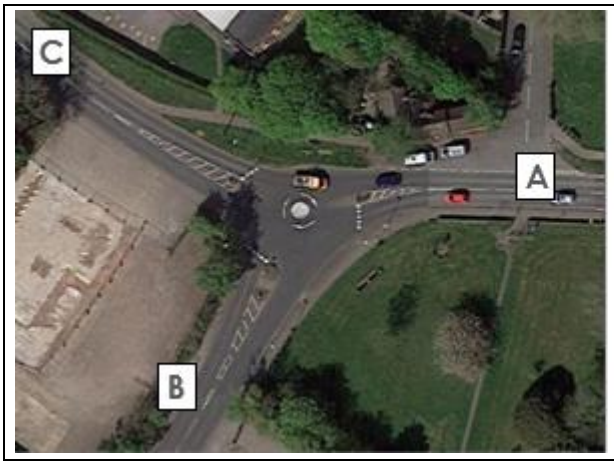
2.49 The results show that revised mitigation scheme would address the impacts of the HNRFI proposals and improve capacity compared to the WoD scenario under the existing junction layout. This revised mitigation will be discussed further with the highway authorities and updating of the highway works plans and DCO if agreed will be undertaken for Deadline 5.

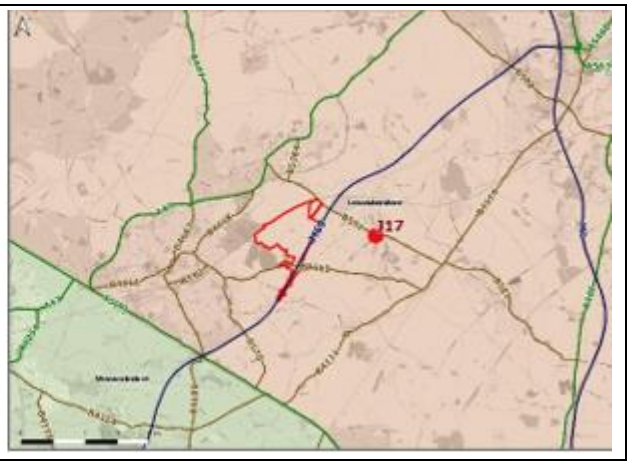
Junction 37 (B1) – Hinckley Road / New Road / B581 mini roundabout

2.50 The Hinckley Road / New Road / B581 junction is a 3-arm mini roundabout in the middle of Stoney Stanton village with dropped kerb crossing facilities provided on the southern arm.

2.51 **Table 15** shows the location, form and summarises the operation of the Hinckley Road / New Road / B581 mini roundabout, with outputs included at **Appendix 13**.

Table 15: Junction 37 Junctions 10 Capacity Assessments



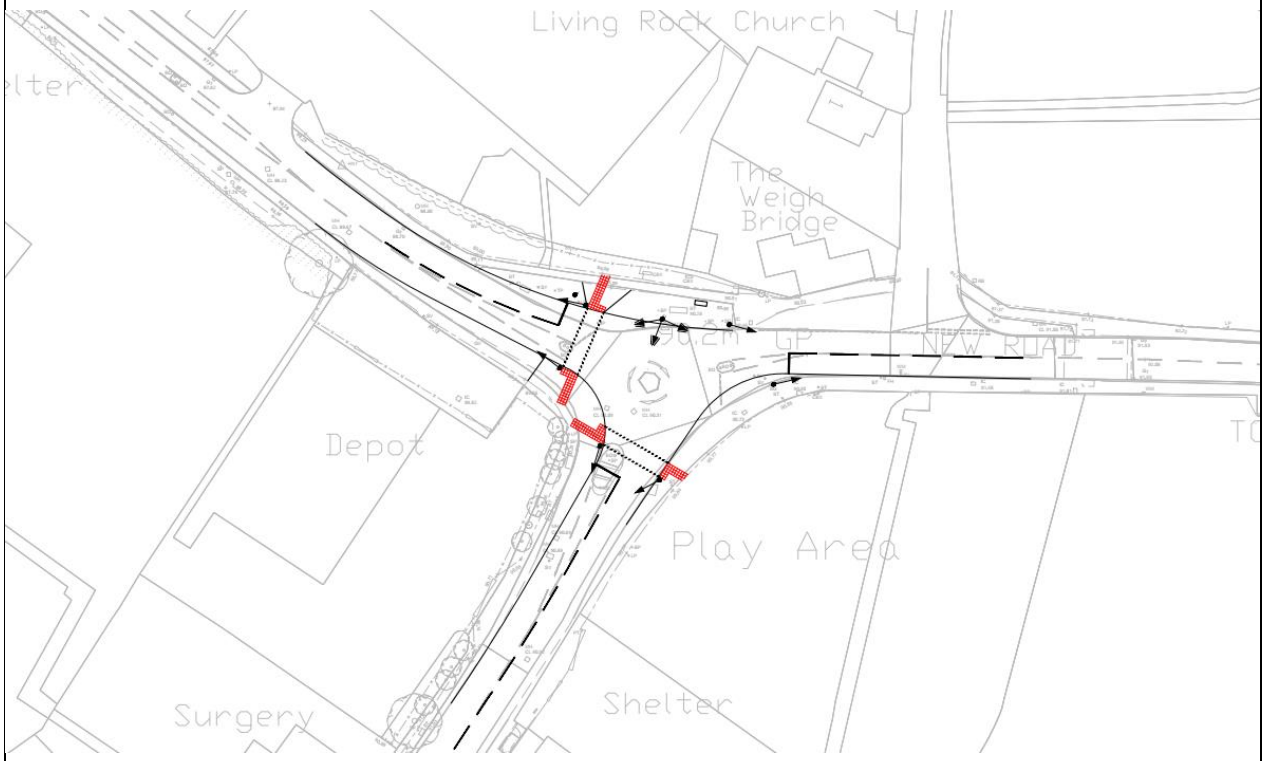


2036 Capacity Result							
ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	New Road (E)	84%	4.9	82%	4.3	88%	6.2
B	Hinckley Road (S)	53%	1.1	53%	1.1	56%	1.3
C	B581 (W)	114%	58.6	96%	12.3	107%	36.2
ARM		PM Peak Hour (17:00 -18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	New Road (E)	107%	40.7	94%	10.6	102%	25.7
B	Hinckley Road (S)	70%	2.2	89%	6.5	117%	47.2
C	B581 (W)	86%	5.4	72%	2.5	84%	4.6

2.52 The results show that the Hinckley Road / New Road / B581 mini roundabout would operate over capacity during all scenarios in both peak hours. As a result, the mitigation within the Transport Assessment has been reviewed and the proposed layout is included at **Appendix 14** which introduces a 3-arm signal-controlled junction. This generally remains unchanged from the Transport Assessment, with some slight amendments following the Interim RSA and comments from LCC regarding positioning of the existing car park exits, which is secured through highway works plan and detailed in the Geometric Design Strategy Record (document reference 2.29A).

2.53 The highway improvement scheme has been modelled to demonstrate the capacity improvement at the junction. The form of the junction and the results are provided in **Table 16** and outputs included at **Appendix 14**.

Table 16: Junction 37 LinSig Capacity Assessments Mitigation



2036 Capacity Result					
ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	New Road (E)	52.1%	10.5	76.3%	17.9
B	Hinckley Road (S)	72.0%	7.9	86.7%	16.4
C	B581 (W)	73.3%	17.4	87.5%	15.7
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		22.7%	10.69	2.9%	18.66

2.54 The results show that the signalisation of the Hinckley Road / New Road / B581 junction continues to result in the junction operating within capacity at the WDWS scenarios during both the AM and PM peak hours.

Junction 39 (B2) – B4669 / Stanton Lane junction

2.55 The B4669 / Stanton Lane junction is a 3-arm priority T-junction to the west of Sapcote village. Main road (B4669) is subject to a 50mph speed limit. No facilities are provided for pedestrians.

2.56 **Table 17** shows the location, form and summarises the operation of the B4669 / Stanton Lane junction, with the outputs included in **Appendix 15**.

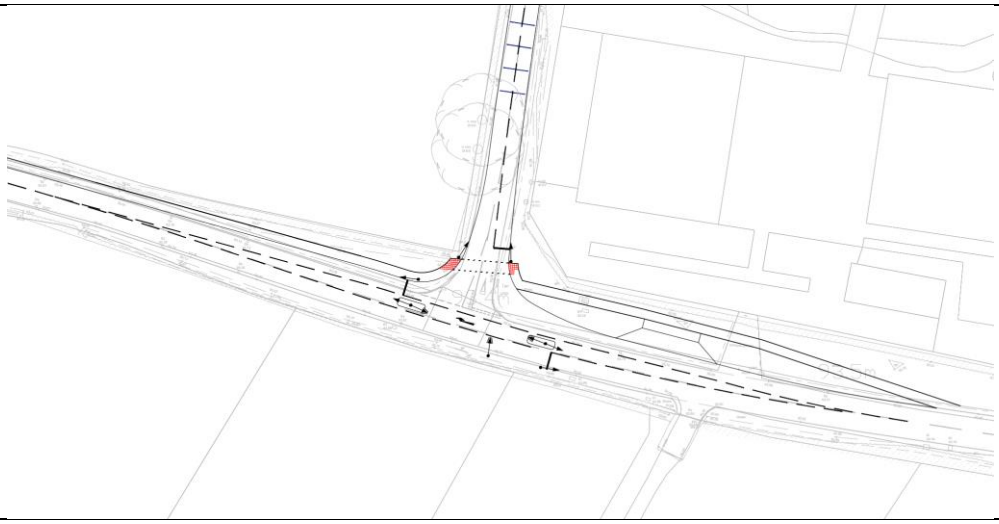
Table 17: Junction 39 Junctions 10 Capacity Assessments

2036 Capacity Result

ARM		WoD		WoDWS		WDWS	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Stanton Lane to	78%	3.4	144%	172.1	155%	227.7
C-AB	B4669 (E) to Stanton	30%	0.5	90%	8.6	85%	6.4
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Stanton Lane to	48%	0.9	103%	16.1	100%	11.0
C-AB	B4669 (E) to Stanton	67%	2.4	118%	87.7	121%	108.8

2.57 The B4669 / Stanton Lane junction would operate over capacity in all but the WoD scenarios. As a result, the mitigation proposed in the Transport Assessment has been reviewed and the proposed junction layout is included in **Appendix 16** which introduces a 3-arm signal-controlled junction. The proposed mitigation remains unchanged from the Transport Assessment and Highway Works plans. The modelling results are shown in **Table 18**.

Table 18: Junction 39 LinSig Capacity Assessments Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	Stanton Lane	82.4%	10.0	84.7%	7.5
B	B4699 (E)	83.0%	16.1	45.9%	4.5
C	B4669 (W)	60.8%	9.0	87.5%	23.2
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		8.4%	12.6	2.9%	12.0

2.58 Signalising this junction with a simple 3 phase, 2 stage arrangement results in the junction operating within capacity at the WDWS scenarios.

2.59 However, the existing footway located over Stanton Lane would require a crossing point to be integrated into the junction. If this was staggered, then the junction would still operate within capacity, but limited available land and swept paths mean a suitable refuge island cannot be provided.

2.60 As a result, a crossing point has been proposed across the full width of Stanton Lane which requires an all-red stage that impacts negatively on the junction capacity. The junction would operate just over capacity if the crossing was double cycled, however it is unlikely that the crossing would be called often enough to require this. As a result the crossing has been called every three cycles in the mitigation scenario, which shows positive results and the junction operating within capacity. This is considered reasonable given its rural location on the edge of Sapcote where the pedestrian demand is expected to be low given it is beyond the typical 2 kilometres walking distance of the site.

3. VISSIM MODELLING

Introduction

3.1 As per the Transport Assessment M69 J1 and 2 have been modelled using VISSIM and this section reviews the forecast models with the updated flows as requested by Leicestershire County Council. In addition Longshoot and Dodwells have now been modelled in VISSIM with the introduction of the NH protocol and model provided as outlined in section 1. All of the four junctions have been modelled in VISSIM to provide a more detailed understanding on the future performance:

- M69 Junction 1
- M69 Junction 2
- A47/A5 Longshoot signals
- A47/A5/B4666 Dodwell roundabout

3.2 As outlined in Section 2, traffic flow matrices from PRTM have been furnessed in line with the previously agreed methodology but utilising the 2023 survey as a basis for the furnessing.

Junction ID 13 - M69 Junction 1

Traffic Flows

3.3 The flow differences between WoD and WD scenarios have been extracted from the PRTM model to illustrate the forecast increase/decrease in traffic flows at all approaches of M69 Junction 1. These are presented in **Table 19**.

Table 19: M69 J1 PRTM Flow Comparison

	AM						PM					
	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
Rugby Road	1161	1082	-79	1011	1089	78	803	813	10	845	884	39
M69 SB	566	944	378	601	1014	413	602	1086	484	595	1080	485
A5 NB	938	820	-118	1061	866	-195	764	740	-24	977	907	-70
B4109	618	728	110	700	827	127	609	703	94	650	758	109
M69 NB	794	531	-263	983	676	-307	1736	1176	-560	1869	1285	-585
A5 SB	906	891	-15	971	982	11	870	852	-18	906	912	6

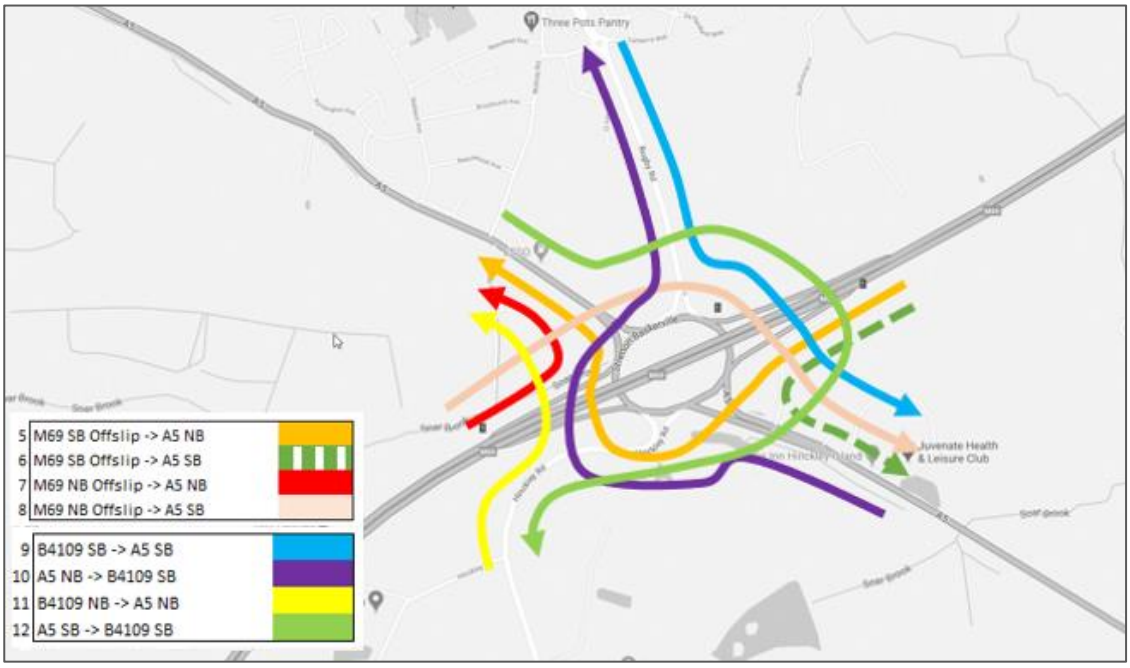
3.4 **Table 19** illustrates that flows are forecast to significantly reduce from M69 NB and increase from M69 SB. This is as a result of the provision of south facing slip roads on M69 Junction 2.

Vehicle Journey Time Comparison

3.5 A total of 12 journey time routes have been assessed in each of the forecast modelling scenarios. These are illustrated in **Figure 3.1** and **Figure 3.2**.

Figure 3.1 Journey Time Routes (1)

Figure 3.2: Journey Time Routes (2)



3.6 A summary of the journey time comparison have been presented in **Table 20** and **Table 21**.

Table 20: M69 J1 AM Journey Time Summary

		AM					
		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
0730-0830	Route 1	221	186	-35	478	216	-261
	Route 2	205	197	-7	214	205	-9
	Route 3	120	120	0	120	121	0
	Route 4	122	123	1	123	124	1

	Route 5	258	253	-4	268	260	-8
	Route 6	166	167	1	169	170	1
	Route 7	180	159	-21	211	181	-30
	Route 8	180	159	-21	211	181	-30
	Route 9	195	161	-34	205	371	166
	Route 10	162	151	-11	183	161	-22
	Route 11	183	172	-11	205	179	-26
	Route 12	230	194	-36	487	225	-262
0830-0930	Route 1	187	176	-10	359	211	-148
	Route 2	199	192	-7	206	202	-4
	Route 3	120	120	0	120	121	0
	Route 4	122	123	1	123	124	1
	Route 5	244	241	-3	254	259	5
	Route 6	157	158	0	162	171	8
	Route 7	157	151	-6	181	177	-4
	Route 8	157	151	-6	181	177	-4
	Route 9	134	136	2	152	297	145
	Route 10	153	147	-6	165	157	-8
	Route 11	165	160	-5	181	173	-9
	Route 12	195	183	-12	367	220	-147

Table 21: M69 J1 PM Journey Time Summary

		PM					
		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
1630-1730	Route 1	194	189	-6	203	203	0
	Route 2	418	310	-108	465	474	9
	Route 3	125	122	-3	154	122	-32
	Route 4	119	121	1	119	121	1
	Route 5	258	254	-4	269	267	-2
	Route 6	153	157	3	160	164	3
	Route 7	164	161	-2	204	171	-33
	Route 8	164	161	-2	204	171	-33
	Route 9	138	147	9	143	167	24
	Route 10	373	265	-108	423	425	2
	Route 11	184	184	0	194	202	8
	Route 12	203	198	-5	212	212	-1
1730-1830	Route 1	185	182	-3	186	190	4
	Route 2	453	263	-189	485	450	-35
	Route 3	134	122	-12	249	122	-127
	Route 4	119	121	2	119	121	2
	Route 5	250	249	-2	253	257	4
	Route 6	149	153	4	151	158	7
	Route 7	169	154	-16	290	162	-127
	Route 8	169	154	-16	290	162	-127
	Route 9	131	140	9	131	151	19
	Route 10	408	216	-192	440	401	-39
	Route 11	177	179	2	181	189	8
	Route 12	194	189	-4	195	199	4

3.7 **Table 20** illustrates that in the 2026 forecast modelling scenario, the WD scenario provides a betterment to the operation of the junction.

3.8 A review of the 2036 journey time comparison indicates that there is an increase along Route 9 however there is a reduction in journey times on Routes 1 and 12. This is as a result of the reduction in flow from M69 NB which allows more green time to be utilised by A5 SB.

3.9 **Table 21** illustrates a general reduction in journey time between the WoD and WD scenarios.

Network Performance

3.10 Overall network performance statistics are used to assess the operational assessment of one modelled scenario to another. Key statistics used to provide a comparison between modelled scenarios are as follows:

- Average Delay - measure of the Total Delay / (Number of vehicles in the network + number of vehicles that have arrived).
- Average network speed - measure of the Total distance / Total Travel time.
- Vehicles Arrived - measure of the number of vehicles that have entered the network and reached their destination.
- Latent Demand is a measure of the number of vehicles that are unable to enter the network.

3.11 A comparison of the Network Performance is presented in **Table 22 and Table 23**.

Table 22: M69 J1 Network Performance AM

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
0730-0830	2026 WoD	49	40	8321	1
	2026 WD	38	43	8232	0
	2036 WoD	84	33	8763	59
	2036 WD	65	37	8912	213
0830-0930	2026 WoD	33	44	7008	0
	2026 WD	31	44	6946	0
	2036 WoD	65	37	7647	0
	2036 WD	61	37	7910	18

Table 23: M69 J1 Network Performance PM

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
1630-1730	2026 WoD	59	38	9225	37
	2026 WD	48	41	9163	6
	2036 WoD	81	34	9683	352
	2036 WD	66	37	9712	273
17 30 - 19	2026 WoD	66	37	8415	40

	2026 WD	45	41	8337	0
	2036 WoD	131	28	8768	631
	2036 WD	63	37	8919	383

3.12 **Table 22** and **Table 23** illustrate that the WD scenario shows a reduction in average delay, an increase in network speed and a reduction in latent demand when compared to the WoD scenario. This indicates that M69 Junction 1 operates better in the WD scenario when compared to the WoD scenario.

Queue Comparison

3.13 A comparison of the average queue outputs are presented for the forecast modelling scenarios in **Table 24** and **Table 25**.

Table 24: M69 J1 Queue Comparison AM

		AM					
		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
0730-0830	A5 SB	10	3	-7	177	7	-170
	B4109 SB	30	13	-17	26	84	58
	M69 WB	3	6	3	4	7	3
	A5 NB	6	6	0	7	6	-1
	B4109 NB	3	3	0	5	4	-1
	M69 EB	4	2	-2	7	4	-3
0830-0930	A5 SB	4	2	-2	145	5	-140
	B4109 SB	8	6	-2	9	69	60
	M69 WB	2	4	2	3	6	3
	A5 NB	6	5	-1	6	6	0
	B4109 NB	1	1	0	2	3	1
	M69 EB	3	2	-1	4	3	-1

Table 25: M69 J1 Queue Comparison PM

		PM					
		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
1630-1730	A5 SB	4	2	-2	6	4	-2
	B4109 SB	4	5	1	5	8	3
	M69 WB	3	6	3	3	7	4
	A5 NB	82	45	-37	110	112	2
	B4109 NB	1	3	2	2	4	2
	M69 EB	5	3	-2	6	4	-2
1730-1830	A5 SB	3	2	-1	3	3	0
	B4109 SB	3	4	1	4	5	1
	M69 WB	2	5	3	2	6	4
	A5 NB	100	41	-59	113	111	-2
	B4109 NB	1	2	1	1	3	2
	M69 EB	4	3	-1	4	3	-1

3.14 **Table 24** illustrates that there is an increase in queues on the B4109 approach arm however there is a decrease in queue along A5 SB. As the junction operates on MOVA, some increases/decreases in queues on approach arms are expected as MOVA dynamically assigns green times based on arrival pattern to ensure the junction operates as efficiently as possible.

3.15 **Table 25** illustrates that there is negligible difference in queues during the PM peak hour with an improvement in queues noted along A5 NB in 2026.

Conclusion

3.16 Based on the analysis above, it can be concluded that overall the proposed development will have no material impact on the operation of M69 Junction 1. Therefore, no mitigation measures would be required. Previously the Transport Assessment set out that MOVA re configuration would be required, however this is no longer necessary from this review.

3.17 However this will be confirmed when the Padge Hall Farm Traffic has been run through the model. At the time of completion of this report, this model run has not been completed. This will follow on as a matter of urgency and provided to LCC,WCC and National Highways to review prior to the next deadline.

Junction ID 20 -_M69 Junction 2

3.18 As part of the proposed development, south facing slip roads are proposed at M69 Junction 2 and it is anticipated to be fully signalised and operate on MOVA. Therefore the WD assessment has been undertaken utilising PCMOVA in VISSIM.

Network Performance

3.19 A comparison of the network performance has been presented in **Table 26** and **Table 27.**

Table 26: M69 J2 Network Performance AM

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
0730-0830	2026 WoD	7	58	6758	0
	2026 WD	31	48	9725	0
	2036 WoD	8	58	7381	0
	2036 WD	37	47	10444	0
0830-0930	2026 WoD	5	59	5520	0
	2026 WD	24	50	7896	0
	2036 WoD	6	59	6009	0
	2036 WD	25	50	8474	0

Table 27: M69 J2 Network Performance PM

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
1630-1730	2026 WoD	6	59	5983	0
	2026 WD	30	48	8139	0
	2036 WoD	7	59	6254	0
	2036 WD	34	47	8468	0
1730-1830	2026 WoD	6	59	5814	0
	2026 WD	27	49	7556	0
	2036 WoD	7	59	6079	1
	2036 WD	29	49	7869	0

3.20 **Table 26** and **Table 27** indicate that the overall speed of the network decreases, whilst average delay increases within the network. This is to be expected, as the junction currently operates as a priority-controlled roundabout and as part of the development traffic signals are being introduced which will add some delay to the junction.

Queue Results

3.21 A summary of the queue results of WD scenario is presented in **Table 28**.

Table 28: M69 J2 Queue Results

		2026 AM	2026 PM	2036 AM	2036 PM
Hour 1	M69 N Off Slip	4	4	5	5

	B4669 East	2	0	8	0
	B4669 West	2	2	2	4
	M69 S Off Slip	6	7	10	10
	Site Access	6	7	13	9
Hour 2	M69 N Off Slip	2	3	3	4
	B4669 East	0	0	0	0
	B4669 West	1	1	1	2
	M69 S Off Slip	4	6	5	9
	Site Access	3	5	4	7

3.22 **Table 28** shows that M69 Junction 2 operates well with minimal queues observed on the approach arms of the junction.

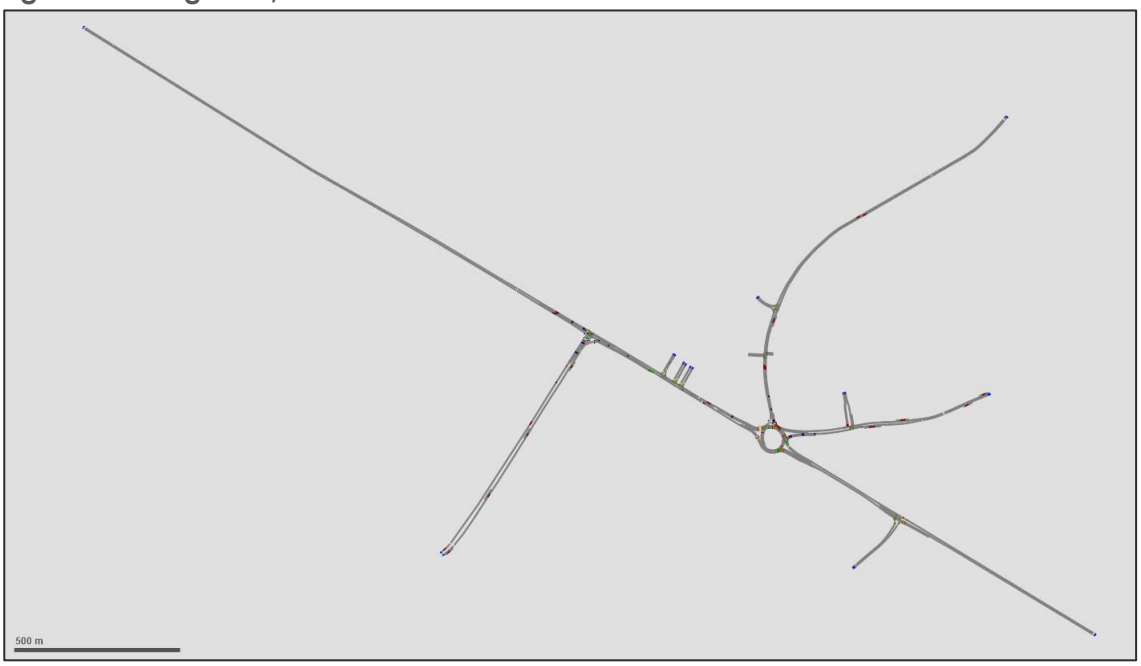
Conclusion

3.23 A review of the VISSIM model indicates that the proposed layout at M69 Junction 2 operates within capacity and so the proposed development will not have a material impact on the operation of the junction.

Junction ID 4 and 14 - A47/A5 Longshoot & Dodwells VISSIM

3.24 A VISSIM network comprising of Longshoot and Dodwells roundabout was provided to BWB by National Highways. This has been utilised to assess the future year impact of the proposed development on the highway network. The extents of the VISSIM model are illustrated in **Figure 3.3**.

Figure 3.3: Longshoot/Dodwells VISSIM Extents



3.25 Initial model runs indicated grid locking due to queues blocking back as a result of reduced speed area coded into the model to reflect queues extending from M69 Junction 1.

3.26 Therefore, additional priority rules have been added to the model which are included in 'Modifications' 22 – 25 of the VISSIM model.

Traffic Flows

3.27 The flow differences between WoD and WD scenarios have been extracted from the PRTM model to illustrate the forecast increase/decrease in traffic flows at all approaches of Dodwells Roundabout and Longshoot junction. These are presented in **Table 29**.

Table 29: Longshoot/Dodwells PRTM Flow Comparison

		AM						PM					
		2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
Dodwells	Dodwells Road	698	609	-89	754	671	-84	479	412	-68	454	412	-43
	Coventry Road	833	810	-23	852	816	-37	1039	1012	-27	1041	1005	-36
	A5 Watling St SE	913	866	-47	929	898	-31	906	892	-14	1006	996	-10
	A5 Watling St NW	1481	1502	21	1555	1553	-2	1607	1603	-3	1616	1615	-1
Longshoot	Watling Street E	1526	1500	-26	1544	1515	-28	1591	1571	-19	1624	1626	2
	A47 The Long Shoot	712	737	24	702	706	4	854	863	9	859	868	9
	Watling Street W	771	767	-4	856	843	-12	748	742	-6	750	748	-2

3.28 **Table 29** shows that in general there is a reduction in traffic flows forecast by PRTM between the WoD and WD scenarios.

3.29 It was requested by LCC/NH that the Padge Hall Farm development traffic should be included within the VISSIM model. Therefore, all assessed scenarios are inclusive of the Padge Hall farm development flows.

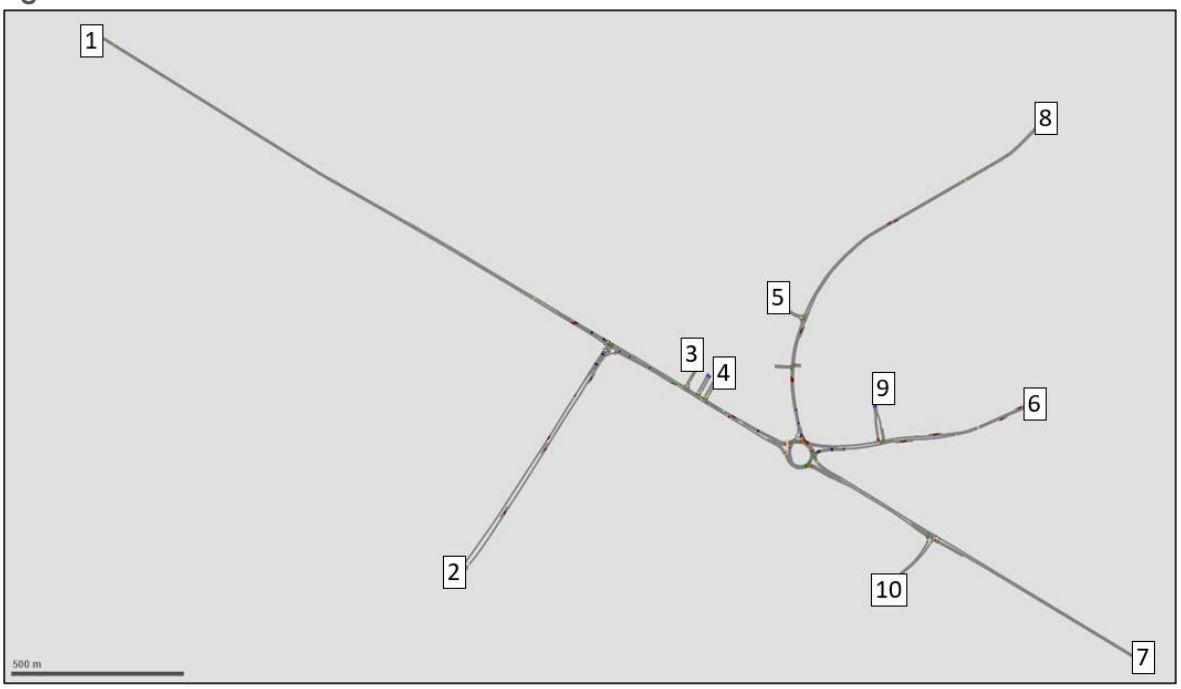
Journey Time Comparison

3.30 The zones coded within VISSIM are as follows:

- Zone 1: A5 N
- Zone 2: The Long Shoot
- Zone 3: Aldi
- Zone 4: Dodwells Service Station
- Zone 5: Jacknell Road
- Zone 6: B4666
- Zone 7: A5 S
- Zone 8: Dodwells Road
- Zone 9: Harrowbrook Road

3.31 The Zones above are illustrated in **Figure 3.4**.

Figure 3.4: VISSIM Zones



3.32 A summary of the journey time comparison is presented in **Table 30** and **Table 31.**

Table 30: AM Journey Time Comparison

From Zone	To Zone	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
7	1	294	286	-8	297	290	-6
7	2	227	220	-7	231	222	-9
7	8	256	243	-13	263	251	-12
7	6	198	185	-13	204	193	-12
2	1	366	367	1	416	443	28
2	8	576	571	-5	644	689	45
2	6	514	500	-13	591	623	32
2	7	883	875	-8	973	1002	29
1	8	559	554	-4	721	793	72
1	6	497	491	-6	660	733	73
1	7	874	865	-9	1010	1067	58
1	2	327	338	11	494	563	69
8	7	1072	1001	-71	1253	1299	45
8	6	783	749	-34	1005	1030	25
8	2	817	773	-44	1041	1055	15
8	1	874	820	-55	1060	1107	47
6	7	683	654	-29	703	709	6
6	2	365	334	-31	375	373	-2
6	1	427	392	-34	437	432	-5
6	8	407	380	-27	422	418	-4

Table 31: PM Journey Time Comparison

From Zone	To Zone	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
7	1	592	574	-18	626	610	-15
7	2	538	523	-15	570	556	-14
7	8	582	565	-17	608	596	-12
7	6	522	512	-10	550	529	-21
2	1	187	187	0	186	187	1
2	8	298	299	1	299	300	0
2	6	221	222	2	222	222	-1
2	7	265	266	0	267	267	0
1	8	327	327	0	328	328	0
1	6	248	249	1	251	251	0
1	7	296	296	0	298	299	1
1	2	182	181	-1	182	184	2
8	7	312	258	-55	285	264	-22
8	6	261	207	-54	236	212	-24
8	2	353	303	-50	326	304	-22
8	1	416	365	-51	389	369	-21
6	7	154	155	1	156	155	0
6	2	194	195	1	194	196	1
6	1	258	260	2	258	258	0
6	8	240	240	1	239	237	-2

3.33 **Table 30** and **Table 31** indicate that whilst improvements in journey times are noted in the WD scenario during the evening peak hour period, an increase in journey times are noted eastbound along A5 in 2036 morning peak hour period. A review of the model indicated that this was due to the Reduced Speed Area (RSA) input into the model to reflect queues from M69 Junction 1 when it was initially validated.

3.34 However, the microsimulation modelling undertaken for M69 Junction 1 indicated that the queues along A5 would not extend towards Dodwells Junction. Furthermore, an improvement in journey time was noted along A5 SB in the WD scenario.

3.35 Therefore, the Reduced Speed Area (RSA) has been removed from the morning peak hour models and subsequently the models were re-run. A summary of the journey time output is presented in **Table 32.**

Table 32: AM Journey Time Comparison (No RSA)

From Zone	To Zone	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
7	1	290	285	-5	294	292	-2
7	2	227	222	-5	230	225	-5
7	8	248	242	-6	255	247	-8
7	6	186	180	-6	193	185	-7
2	1	205	208	4	211	216	5
2	8	320	320	0	342	339	-3
2	6	244	245	1	263	263	0

2	7	263	267	4	286	287	1
1	8	342	344	2	358	356	-2
1	6	263	265	2	279	277	-2
1	7	287	289	2	301	302	1
1	2	199	201	2	203	203	0
8	7	271	236	-36	366	264	-103
8	6	243	211	-32	340	237	-103
8	2	335	304	-31	427	329	-98
8	1	400	366	-34	489	392	-96
6	7	138	137	-1	139	137	-2
6	2	209	208	-1	209	208	-1
6	1	267	266	-1	269	269	0
6	8	243	241	-2	244	241	-4

3.36 **Table 32** shows that there is a reduction in journey time in the WD scenario when compared to the WoD scenario.

Network Performance

3.37 A summary of the network performance is presented in **Table 33.**

Table 33: Longshoot/Dodwells Network Performance

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
AM Peak	2026 WoD	76	22	4131	1
	2026 WD	69	23	4002	0
	2036 WoD	104	20	4231	19
	2036 WD	80	22	4147	0
PM Peak	2026 WoD	158	16	3970	260
	2026 WD	147	17	3893	247
	2036 WoD	159	16	3959	382
	2036 WD	154	16	3892	370

3.38 **Table 33** shows a reduction in average delay, increase in average speed and a reduction in latent demand, thereby indicating that the WD scenario operates better than the WoD scenario.

Queue Comparison

3.39 A summary of the queue comparison is presented in **Table 34** and **Table .**

Table 34: Longshoot Dodwells Queue Comparison AM

		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
Dodwells Roundabout	A5 Watling St EB	8	8	0	13	13	0
	Dodwells Road SB	23	8	-15	90	19	-71
	3: Coventry Road	3	2	-1	3	2	-1
	A5 Watling Road WB	9	6	-3	11	8	-3
Longshoot	A5 Longshoot EB	2	2	0	3	3	0

	A5 Longshoot WB	3	3	0	4	4	0
	A47 Longshoot	3	4	1	5	6	1

Table 35: Longshoot Dodwells Queue Comparison PM

		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
Dodwells Roundabout	A5 Watling St EB	4	3	-1	4	3	-1
	Dodwells Road SB	28	7	-21	16	8	-8
	3: Coventry Road	2	2	0	2	2	0
	A5 Watling Road WB	66	65	-1	68	67	-1
Longshoot Junction	A5 Longshoot EB	2	2	0	2	2	0
	A5 Longshoot WB	2	2	0	2	3	1
	A47 Longshoot	3	3	0	3	3	0

3.40 **Table 34** and **Table** show a general reduction in queues in the WD scenario.

Dodwells Roundabout Committed Scheme

3.41 As part of the Padge Hall Farm application, an improvement scheme was identified at Dodwells Roundabout. This included the widening of the A5 Watling Street westbound approach to provide three entry lanes. Furthermore, a new toucan facility is proposed on the A5 Western arm.

3.42 The VISSIM model provided to BWB by National Highways included for scenarios incorporating the proposed changes above, therefore the models have been re-run utilising the PRTM furnessed traffic flows.

Journey Time Comparison

3.43 A summary of the journey time comparison is provided in **Table** and **Table 37**.

Table 36: Journey Time Comparison AM (Committed Scheme)

From Zone	To Zone	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
7	1	291	290	-1	292	296	4
7	2	227	227	0	227	228	0
7	8	230	229	-1	233	230	-3
7	6	167	169	3	171	168	-2
2	1	189	190	1	191	193	2
2	8	312	310	-2	322	317	-5
2	6	236	237	1	247	244	-3
2	7	256	259	3	268	266	-2
1	8	336	335	-1	344	341	-3
1	6	259	259	0	267	264	-3
1	7	281	283	2	290	289	-1
1	2	184	186	2	186	187	1

8	7	256	231	-25	339	253	-86
8	6	228	206	-22	314	226	-88
8	2	331	307	-23	411	328	-83
8	1	395	371	-24	474	393	-80
6	7	138	136	-2	140	138	-2
6	2	219	217	-2	219	219	-1
6	1	278	276	-2	279	280	1
6	8	244	242	-2	244	241	-2

Table 37: Journey Time Comparison PM (Committed Scheme)

From Zone	To Zone	2026 WoD	2026 WD	Difference	2036 WoD	2036 WD	Difference
7	1	340	340	0	341	339	-2
7	2	272	270	-2	271	270	-2
7	8	272	273	2	273	269	-4
7	6	206	204	-1	202	199	-3
2	1	189	191	2	190	192	1
2	8	301	301	0	299	300	1
2	6	221	223	2	221	222	1
2	7	269	269	1	267	270	3
1	8	327	327	-1	326	327	1
1	6	248	248	-1	247	248	0
1	7	297	298	1	297	299	2
1	2	185	187	2	186	183	-2
8	7	310	293	-17	298	292	-6
8	6	259	242	-17	249	240	-10
8	2	366	349	-16	355	349	-6
8	1	431	413	-18	417	411	-6
6	7	155	155	0	154	153	-1
6	2	213	212	-1	212	214	2
6	1	278	276	-2	277	278	2
6	8	240	239	-1	239	240	1

3.44 **Table** and **Table 37** show that in general there is a reduction in journey time when compared to the WoD scenario.

Network Performance

3.45 A summary of the network performance comparison is presented in **Table 38.**

Table 38: Network Performance Comparison (Committed Scheme)

		Avg Delay	Avg Speed	Veh Arrived	Latent Demand
AM Peak	2026 WoD	71	23	4145	0
	2026 WD	67	23	4008	0
	2036 WoD	92	21	4265	7
	2036 WD	73	23	4163	0

PM Peak	2026 WoD	89	21	4300	0
	2026 WD	86	21	4298	0
	2036 WoD	87	21	4301	0
	2036 WD	84	21	3826	0

3.46 **Table 38** shows a reduction in average delay and increase in average speed thereby indicating that the WD scenario operates better than the WoD scenario.

Queue Comparison

3.47 A summary of the queue comparison is presented in

3.48 **Table** 39 and **Table 42.**

Table 39: Queue Comparison AM (Committed Scheme)

		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
Dodwells Roundabout	A5 Watling St EB	5	5	0	6	6	0
	Dodwells Road SB	17	6	-11	70	14	-56
	3: Coventry Road	3	2	-1	3	2	-1
	A5 Watling Road WB	2	2	0	2	2	0
Longshoot Junction	A5 Longshoot EB	2	2	0	3	3	0
	A5 Longshoot WB	4	3	-1	4	4	0
	A47 Longshoot	3	3	0	4	3	-1

Table 40: Queue Comparison PM (Committed Scheme)

		2026			2036		
		WoD	WD	Diff.	WoD	WD	Diff.
Dodwells Roundabout	A5 Watling St EB	3	3	0	3	3	0
	Dodwells Road SB	26	21	-5	22	19	-3
	3: Coventry Road	2	2	0	2	2	0
	A5 Watling Road WB	17	16	-1	17	14	-3
Longshoot Junction	A5 Longshoot EB	2	2	0	2	2	0
	A5 Longshoot WB	3	3	0	3	3	0
	A47 Longshoot	3	3	0	3	4	1

3.49

3.50 **Table** 39 and **Table 42** show a general reduction in queues in the WD scenario.

Conclusion

3.51 A review of the modelling results indicate that the proposed development would not have a material impact on the operation of the junctions and therefore no mitigation measures are still not required.

4. BENEFITS OF SUSTAINABLE TRANSPORT STRATEGY

Introduction

4.1 As part of the Sustainable Transport Strategy (STS), various measures are being proposed to reduce the number of single occupancy car trips generated by the HNRFI development. Full details are provided in the STS report (doc ref: HNRFI-BWB-GEN-XX-RP-TR-0014), which aim to reduce the modal share of single occupancy car trips from 75% to 60% over a 10-year period, with these trips being transferred to car sharing, public transport and active travel.

4.2 The base modal split and 5 to 10 year forecasts are shown in **Table 41** (following initial occupation). The morning and evening peak hour person trip generation are subsequently shown in **Table 42** and **Table 43**, along with the difference between the base and 10 year forecast change in modal shift, with **Appendix 17** containing figures showing the calculations and reductions in car traffic.

Table 41: Modal Split Forecasts

Mode of Travel	Base Year	5 Years	10 Years
Car Driver	75%	65%	60%
Car Passenger	9%	12%	14%
Public Transport	8%	15%	15%
Active Travel	4%	5%	8%
Motorbike	1%	1%	1%
Working from Home	2%	2%	2%
Other	1%	0%	0%

Table 42: Morning Peak Hour Person Trip Generation Forecasts

Mode of Travel	Base Year	5 Years	10 Years	Difference (base vs 10 years)
Car Driver	1016	881	813	-203
Car Passenger	122	163	190	+68
Public Transport	108	203	203	+95
Active Travel	54	68	108	+54
Motorbike	14	14	14	0
Working from Home	27	27	27	0
Other	14	0	0	-14
Total	1355	1355	1355	0

Table 43: Evening Peak Hour Person Trip Generation Forecasts

Mode of Travel	Base Year	5 Years	10 Years	Difference (base vs 10 years)
Car Driver	1273	1103	1018	-255
Car Passenger	153	204	238	+85
Public Transport	136	255	255	+119

Mode of Travel	Base Year	5 Years	10 Years	Difference (base vs 10 years)
Active Travel	68	85	136	+68
Motorbike	17	17	17	0
Working from Home	34	34	34	0
Other	17	0	0	-17
Total	1697	1697	1697	0

4.3 The details show that with the modal shift away from single occupancy car travel, there are expected to be increases in the number of car passenger, public transport and active travel trips.

4.4 To understand the benefits of the STS measures on reducing development traffic flows at off-site junctions, various assumptions have been made to understand where the increases in car passenger, public transport and active travel trips would originate and hence where the reductions in car trips are likely to occur. The assumptions are listed below, whilst plans illustrating where the reductions in car trips would occur are included at **Appendix 17**.

- The proportion of car sharing trips from settlements in the local area have been taken from the Liftshare information and are expected to be split as follows:
  - 40% Leicester
  - 15% Coventry
  - 20% Birmingham/Solihull
  - 5% Rugby
  - 20% Other (split 5% to Lutterworth, A5 west, A444 north & Ashby Road north)
- The proportion of public transport trips from settlements in the local area have been derived by taking into account the future public transport strategy and direction of bus services past the site and general population, and are expected to be split as follows:
  - 37% Leicester
  - 1% Lutterworth
  - 37% Coventry
  - 2% Burbage
  - 14% Nuneaton
  - 5% Hinckley
  - 1% Earl Shilton and Barwell
  - 3% Eastern villages
- The proportion of cycling trips has been derived based on the population of each settlement within a 5 kilometres catchment area of the site and are expected to be split as follows:
  - 53% Hinckley
  - 10% Barwell

- 11% Earl Shilton
- 4% Stoney Stanton
- 3% Sapcote
- 1% Sharnford
- 17% Burbage

4.5 The following tables show the original development car trips forecast to travel through each of the key junctions and the total reduction in development car trips as a result of the STS measures. It also calculates the % decrease in development trips to understand the benefits at each junction.

Table 44: Change in Development Traffic (Ashby Road/A47)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	150	8	5%
Evening Peak Hour	213	10	5%

Table 45: Change in Development Traffic (B4114 Coventry Road/B681 Broughton Road)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	124	4	3%
Evening Peak Hour	156	5	3%

Table 46: Change in Development Traffic (A47/A5 Longshoot)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	36	13	36%
Evening Peak Hour	70	16	23%

Table 47: Change in Development Traffic (Coventry Road/Croft Road)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	54	3	6%
Evening Peak Hour	82	4	5%

Table 48: Change in Development Traffic (A5/B4666/A47 Dodwells)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	42	13	31%
Evening Peak Hour	73	16	22%

Table 49: Change in Development Traffic (Comon Barwell/A47/B4668 Leicester Road)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	314	25	8%
Evening Peak Hour	458	32	7%

Table 50: Change in Development Traffic (A5/A426/Gibbet Lane)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	41	2	5%
Evening Peak Hour	69	3	4%

Table 51: Change in Development Traffic (A5/A4303/B4027/Coal Pit Lane)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	89	6	7%
Evening Peak Hour	123	8	7%

Table 52: Change in Development Traffic (Hinckley Road/New Road/B581)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	72	3	4%
Evening Peak Hour	104	4	4%

Table 53: Change in Development Traffic (B4669/Stanton Lane)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	241	11	5%
Evening Peak Hour	348	14	4%

Table 54: Change in Development Traffic (M69 Junction 1)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	278	38	14%
Evening Peak Hour	351	48	14%

Table 55: Change in Development Traffic (M69 Junction 2)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	1355	160	12%
Evening Peak Hour	1892	201	11%

Table 56: Change in Development Traffic (M1 Junction 21)

	Original Development Traffic	Development Trips Removed	% Change
Morning Peak Hour	397	38	10%
Evening Peak Hour	380	48	13%

4.6 The details in the tables above show that the measures being proposed as part of the STS would have a positive effect on reducing development traffic through the key off-site junctions thereby reducing the impacts of the development further beyond the mitigation schemes being proposed.

5. MODELLING OF M1 JUNCTION 21

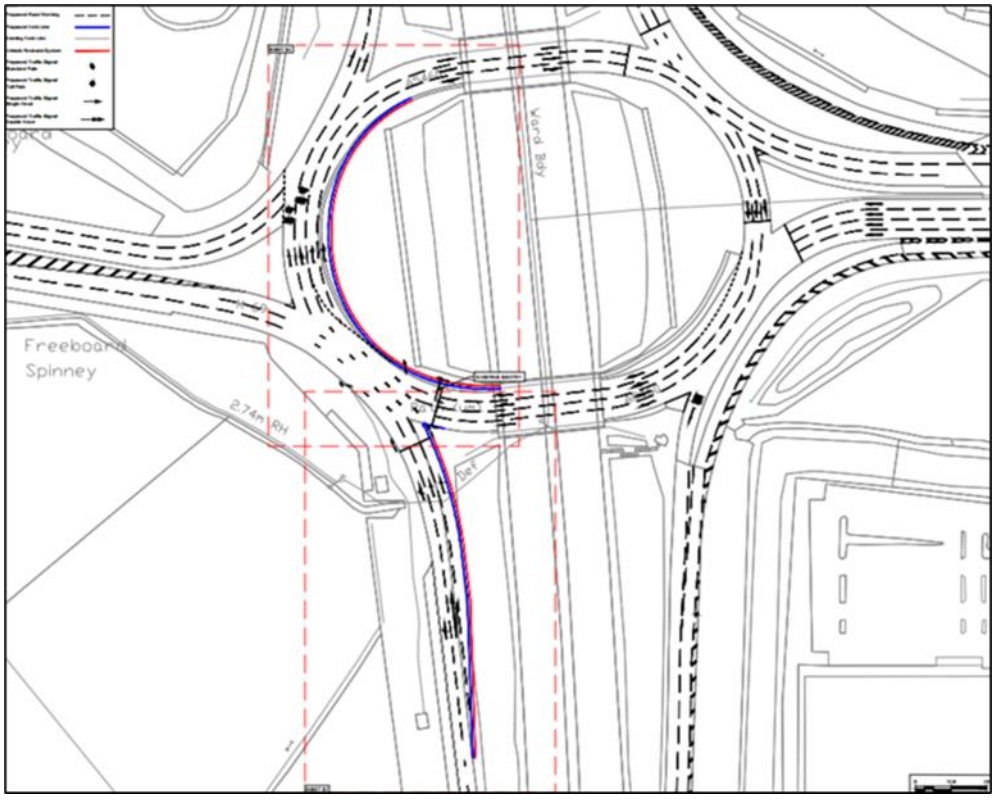
Background

5.1 Current capacity constraints at Junction 21 are longstanding and driven by the restricted width of the M1 underbridges on the circulatory carriageway. The mainline flows on the M1 and baseline traffic already trigger the need to upgrade the north and southbound slip roads. Improvement to address these constraints would be of a significant magnitude and require considerable Government investment. Whilst there is a clear aspiration from both Leicestershire County Council and National Highways to improve the junction, there is currently no scheme identified.

5.2 The PRTM2.2 model includes M1 Junction 21 under its existing layout as agreed with the TWG. Since running the PRTM, the Lutterworth East Sustainable Urban Extension (LUE) (19/00250/OUT) has been granted planning permission. The traffic associated with this development had been included within PRTM2.2, but the S106 at the time of the run had not been signed off, so the mitigation was therefore not included in the Infrastructure Log as requested by LCC/NH. Consequently, it was not considered within the Transport Assessment.

5.3 Figure 4.1 shows the approved Lutterworth East SUE mitigation scheme, which involves widening the M1 northbound off-slip to provide two lanes and a flare, as well as widening the western circulatory carriageway from three to four lanes. The resulting arrangement provides two dedicated lanes onto A5460, a single dedicated lane onto M1 northbound on-slip and a third offside lane shared between the two movements.

Figure 5.1: LUE Mitigation Scheme



Junction Modelling

5.4 The traffic flows extracted from PRTM have been furnessed for M1 Junction 21 using the new 2023 survey data and in accordance with the agreed methodology. Subsequently the derived forecast matrices have been utilised in the modelling assessment of M1 Junction 21.

5.5 Due to the existing constraints at M1 Junction 21, the PRTM demonstrates that some of the background demand traffic is not able to travel through the junction during the modelled hour either due to capacity constraints or issues in the network prior to getting to the junction and may find alternative routes.

5.6 However, LCC has requested a sensitivity test if no re-routing occurs when the development is in place. Therefore, the development traffic has been manually added to the 'without development' flows and modelled for this test.

5.7 Consequently, the following scenarios have been assessed:

- Scenario 1: 2036 WoD AM/PM
- Scenario 2: 2036 WD AM/PM
- Sensitivity Test: 2036 WoD AM/PM + Development Traffic

5.8 The LinSig model developed as part of the LUE development has been replicated and used to test the above scenarios alongside the model of the existing layout to understand how the committed scheme will operate with the HNRFI development traffic. **Table 57** and **Table 58** summarise the results for the morning and evening peak hours, with the outputs included at **Appendix 18**.

Table 57: M1 Junction 21 Modelling Results (AM peak hour)

PRC Max Per Approach						
	Existing Layout			LUE Committed Layout		
	2036WoD	2036 WD	2036 WoD +Dev	2036WoD	2036 WD	2036 WoD +Dev
M1 SB Off Slip	73%	55%	75%	68%	67%	69%
A5460	117%	116%	121%	117%	116%	121%
M1 NB Off slip	96%	96%	96%	64%	65%	64%
M69 W	103%	106%	101%	97%	98%	94%
AM Average Delay (s)						
M1 SB Off Slip	27	16	27	23	23	23
A5460	301	294	362	302	293	362
M1 NB Off slip	118	118	118	49	49	49
M69 W	138	161	103	70	81	57
AM Total MMQ (PCU)						
M1 SB Off Slip	10	7	10	9	9	9
A5460	88	86	103	88	86	104
M1 NB Off slip	10	10	10	4	4	4
M69 W	45	53	36	17	20	13

Table 58: M1 Junction 21 Modelling Results (PM peak hour)

PRC Max Per Approach						
	Existing Layout			LUE Committed Layout		
	2036WoD	2036 WD	2036 WoD +Dev	2036WoD	2036 WD	2036 WoD +Dev
M1 SB Off Slip	51%	70%	61%	68%	67%	63%
A5460	102%	101%	111%	81%	89%	92%
M1 NB Off slip	100%	92%	89%	67%	69%	67%
M69 W	58%	64%	65%	61%	65%	71%
PM Average Delay (s)						
M1 SB Off Slip	12	25	19	25	23	20
A5460	110	90	224	23	30	40
M1 NB Off slip	151	89	79	50	52	50
M69 W	17	23	18	17	21	22
PM Total MMQ (PCU)						
M1 SB Off Slip	6	9	8	9	9	9
A5460	35	33	60	15	18	19
M1 NB Off slip	12	9	8	4	4	4
M69 W	3	4	4	4	4	5

5.9 The results show that the differences between the WoD and WD scenarios are minimal and the junction does not require any further mitigation than that already committed by the LUE development. The mitigation scheme improves junction capacity overall during the PM Peak and improves delay during both peak hours.

5.10 In the AM Peak hour both the northbound and southbound M1 slip approaches operate within capacity in all scenarios, with the M69 approach being slightly over capacity in all scenarios, but the impact being minimal across all. The A5460 approach is over capacity in all scenarios but the impact is minimal even when accounting for the sensitivity scenario requested by LCC. During the PM Peak hour all arms are within capacity in all scenarios, except the sensitivity scenario on the A5460 approach which is shown at operating at 92% (still within 100% Degree of Saturation of the capacity of the junction).

5.11 The impact of the HNRFI development traffic is not deemed severe when compared to forecast background traffic flows at this junction.

5.12 The results above also reflect the full development trip generation prior to any reductions as a result of the Sustainable Transport Strategy, further details of which are provided below.

Effect of the Sustainable Transport Strategy

5.13 The Sustainable Transport Strategy aims to reduce the car driver mode share from 75% to 60% by 2036. A high proportion of this reduction is expected to be transferred to car sharing and public transport trips to/from Leicester. Overall, there are expected to be a reduction of between 10% and 13% of development traffic routing through M1 Junction 21 during the morning and evening peak hours, as shown in **Table 56**.

5.14 **Table 59** and **Table 60** show the effect of these reductions on the capacity of M1 Junction 21, with the outputs included at **Appendix 19**.

Table 59: M1 Junction 21 Modelling Results – Reduced Employee Traffic (AM peak)

	LUE Committed Layout		Sensitivity Test	
	2036 WD	2036 WD with STS reduction	2036 WoD + Dev	2036 WoD + Dev With STS reduction
PRC Max Per Approach				
M1 SB Off Slip	67%	67%	69%	69%
A5460	116%	116%	121%	121%
M1 NB Off slip	65%	65%	64%	64%
M69 W	98%	98%	94%	94%
PM Average Delay (s)				
M1 SB Off Slip	23	23	23	23
A5460	293	292	362	362
M1 NB Off slip	49	49	49	49
M69 W	81	81	57	57
PM Total MMQ (PCU)				
M1 SB Off Slip	9	9	9	9
A5460	86	85	104	104
M1 NB Off slip	4	4	4	4
M69 W	20	20	13	14

Table 60: M1 Junction 21 Modelling Results – Reduced Employee Traffic (PM peak)

	LUE Committed Layout		Sensitivity Test	
	2036 WD	2036 WD with STS reduction	2036 WoD + Dev	2036 WoD + Dev With STS reduction
PRC Max Per Approach				
M1 SB Off Slip	67%	67%	63%	87%
A5460	89%	89%	92%	86%
M1 NB Off slip	69%	69%	67%	67%
M69 W	65%	65%	71%	71%
PM Average Delay (s)				
M1 SB Off Slip	23	23	20	29
A5460	30	30	40	29
M1 NB Off slip	52	52	50	50
M69 W	21	21	22	21
PM Total MMQ (PCU)				
M1 SB Off Slip	9	9	9	12
A5460	18	18	19	16
M1 NB Off slip	4	4	4	4
M69 W	4	4	5	5

5.15 The implementation of the Sustainable Transport Strategy shows a small degree of betterment at M1 Junction 21. However, the original conclusions remain, that the impact of the development traffic at M1 Junction 1 is not severe and physical mitigation would not be proportionate given the limited opportunity for enhancement presented at the junction.

6. SUMMARY AND CONCLUSIONS

6.1 The Hinckley National Rail Freight Interchange (HNRFI) ISH Hearing took place on 31 October 2023 during which time comments were raised about various parts of the Transport Assessment. This 2023 Transport Update has been produced to respond to a number of those points, written representations and as discussed at additional highway workshops with LCC, NH and WCC.. The key conclusions are as follows:

- New traffic surveys were undertaken at key junctions across the study area where mitigation was being proposed within the Transport Assessment.
- The traffic flows were furnessed using outputs from the PRTM to derive future forecast traffic flows in accordance with the previously agreed methodology.
- Each junction was tested with the future forecast flows derived using the junction models from the original Transport Assessment to understand whether the mitigation strategy would continue to be suitable in addressing the impacts of the proposed development.
- In addition to the mitigation junctions VISSIM Models were updated at M69 J1 and J2, a new assessment undertaken using the NH VISSIM Model in line with the recent NH Protocol for A5 Longshoot and Dodwell Junctions

6.2 A Linsig assessment utilising the Lutterworth East Mitigation scheme model at M69 J3/M1 J21 has been undertaken. This follows the signing of the S106 Agreement for the development and the works at M1 J21. The delivery of this committed mitigation scheme, mitigates alongside the STS the HNFRI development impact, so no further mitigation is required.

6.3 The results show that changes to the mitigation to those outlined in the Transport Assessment is required for three junctions, B1 following the Interim RSA and initial design review by LCC, HB2 includes the introduction of a Toucan crossing from the STS and finally H1 Cross in Hand Roundabout does not require as comprehensive a mitigation scheme as outlined previously in the TA and the DCO. All the works above remain within the order limits and within highway boundary.

6.4 Otherwise, the mitigation proposed within the Transport Assessment will continue to mitigate the HNRFI and are suitable in addressing the impacts of the proposed development. The proposed development does not have a severe impact on the surrounding highway network.

6.5 None of the amendments to the mitigation works will affect any of the environmental chapters and assessments undertaken as part of the submission, other than to update the Table of Proposed Mitigation in line with the below.

Table 61: Proposed Mitigation

Junction ID	No.	LA/LHA	Location	Proposed Mitigation
37	B1	Blaby DC / LCC	Junction of B581 Station Road / New Road and Hinckley Road, Stoney Stanton	No change other than some very minor amendments in line with comments from LCC and shown in geometric Design Straetgy Record (document reference 2.29A). All works remain within the redline, highway boundary and within the DCO. The existing mini-roundabout will still be replaced by a signal junction with controlled crossings.
39	B2	Blaby DC / LCC	B4669 Hinckley Road and Stanton Lane, west of Sapcote	No change Traffic Signals will be introduced with a phase to allow pedestrians and cyclists to cross.
J3	B5	Blaby DC / LCC	B4114 Coventry RoadlB581 Broughton Road	No change New traffic signals are already scheduled to be introduced as part of the Broughton Astley S278 works (Planning Ref: 19/00856/OUT). Should the above committed scheme not come forward in advance of the opening of the HNRFI access infrastructure, the applicant proposes to undertake a mitigation scheme. This would include signalisation of the ghost island junction with the Broughton Road with separate right and left turn lanes and connecting to the existing signalled junction at Coventry Road on the B4114. This layout differs from the S278 proposals by removing the Coventry Road widening, the traffic levels forecast do not require improvements on this arm.
J6	B6	Blaby DC / LCC	B4114 Coventry Road and Croft Road, south-west of Narborough	No change Lane widening on junction approaches

Junction ID	No.	LA/LHA	Location	Proposed Mitigation
J1	HB1	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way and A447 Ashby Road, Hinckley	No change It is proposed that the approach roads to this junction would all be widened to accommodate additional traffic. Indicative right turn and two lanes would be provided through the junction in a westbound direction. Formal signal-controlled pedestrian crossing points would be introduced.
J24	HB2	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way / Leicester Road, the B4668 Leicester Road and The Common, south-east of Barwell	Minor change is the Introduction of a Toucan crossing on the A47 to the west of the B4668 Leicester Road (as proposed in the Sustainable Transport Strategy) Widening of the entry arm on the B4668 Leicester Road remains the same.
J27	H1	Harborough DC / National Highways	Cross in Hand roundabout at the junction of the A5 Watling Street, A4303 Coventry Road, B4027 Lutterworth Road and Coal Pit Lane, west of Lutterworth	Reduced Mitigation to only include the increased roundabout radius and widened lane entries on Coal Pit Lane and B4027 Lutterworth Road. Update identified that works no longer required on the A5 and or the A4303, subject to agreement with LCC, NH and WCC and update of Highway works plans will follow for Deadline 5.

6.6 No Mitigation is required at M69 J1 from the results of the updated assessment and VISSIM Model, removing the need for MOVA calibration as outlined in the original assessment in the TA. However, the Padge Hall Farm traffic flows have yet to be assigned through the junction in a model run. The impact has been tested adjacent to the Padge Hall Site within the A5 Longshoot and Dodwell VISSIM as below and the HNRFI has no impact.

6.7 The VISSIM Model undertaken for the A5 Longshoot and Dodwell junctions demonstrates that no mitigation is required for the HNRFI with and without the Padge Hall Farm traffic, proposed mitigation works and agreed reassignment of HGVs onto the A5.

6.8 The impact at Gibbet Lane Roundabout is 2.1% in the morning peak and 1.9% in the PM peak hours. National Highways have informed the applicant that they have a new proposed scheme, albeit not in the public domain, that they are seeking to use existing and new contributions to fund. The HNRFI proportionate impact will be taken into consideration and a contribution will be considered.

6.9 Whilst the modelling and mitigation reflects the full development trips/impacts, the Sustainable Transport Strategy is proposing various measures with the aim of achieving a 15% modal shift away from single occupancy car travel (75% mode share reducing to 60% over a 10 year period). Whilst this has not been accounted for within the junction modelling, other than for Junction 21, it would have a positive effect on further reducing the impacts of the development to what has been assessed and mitigated.

6.10 In summary, this 2023 Transport Update has demonstrated how the previous conclusions of the Transport Assessment are valid and demonstrate how a robust assessment has been carried out to determine the impacts and level of mitigation required.

APPENDICES

Appendix 1: Ashby Road/A47 Existing Junction Results

Appendix 2: Ashby Road/A47 Mitigation Results (with crossings)

Appendix 3: Ashby Road/A47 Mitigation Results (without crossings)

Appendix 4: B581/B4114 Coventry Road Committed Junction Results

Appendix 5: B581/B4114 Coventry Road Alternative Junction Results

Appendix 6: Coventry Road/Croft Road Existing Junction Results

Appendix 7: Coventry Road/Croft Road Mitigation Results

Appendix 8: Common Barwell/A47/B4668 Existing Junction Results

Appendix 9: Common Barwell/A47/B4668 Mitigation Results

Appendix 10: A5/A426/Gibbet Lane Existing Junction Results

Appendix 11: A5/A4303/B4027/Coal Pit Lane Existing Junction Results

Appendix 12: A5/A4303/B4027/Coal Pit Lane Mitigation Results

Appendix 13: Hinckley Road/New Road/B581 Existing Junction Results

Appendix 14: Hinckley Road/New Road/B581 Mitigation Results

Appendix 15: B4669/Stanton Lane Existing Junction Results

Appendix 16: B4669/Stanton Lane Mitigation Results

Appendix 17: Sustainable Transport Statement Figures

Appendix 18: M1 Junction 21 Existing Junction Results

Appendix 19: M1 Junction 21 LUE Committed Layout Results

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