HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and Additional Provision 4 Environmental Statement

Volume 5 | Technical appendices

Transport Assessment

(TR-001-000)

Revised version issued 30 October 2015

SES3 and AP4 ES 3.5.1.10.1

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NOTE: this document was updated on 30th October 2015 to correct specific traffic data relating to CFAs 7, 8, 10, 11, 12, 13 and 15. The corrected text is highlighted in yellow.

These corrections do not affect the outcome of the traffic assessments.

October 2015

SES3 and AP4 ES 3.5.1.10.1

Department for Transport

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Contents

1 Introduction

1.1 Background

1.1.1 The Bill for High Speed Rail between London and the West Midlands was submitted to Parliament together with the main Environmental Statement (ES) in November 2013. The Additional Provision 1 Environmental Statement (AP1), which was submitted in September 2014, contained generally minor amendments to the design of the original scheme (i.e. the scheme submitted in November 2013) and included no changes in Community Forum Areas (CFA) in London (CFA1-6).

1.1.2 The Supplementary Environmental Statement (SES) and Additional Provision 2 Environmental Statement (AP2) was submitted in July 2015, containing route-wide amendments to the design of the original and AP1 scheme. The Supplementary Environmental Statement 2 (SES2) and Additional Provision 3 Environmental Statement (AP3) was submitted in September 2015, containing amendments to the design of the original scheme in London (CFA1-6), primarily around Euston (CFA1).

1.1.3 The Bill and associated Additional Provisions to the Bill, if enacted by Parliament, will provide the powers to construct, operate and maintain Phase One of HS2.

1.1.4 Since the submission of the main ES, AP1 ES, AP2 ES and AP3 ES, a number of changes or updates to environmental information and scheme design or assumptions have occurred.

1.1.5 In order to differentiate between the original proposals and subsequent changes, the following terms are used:

- 'the original scheme' - the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES;
- 'the AP1 revised scheme' - the original scheme as amended by AP1 submitted in September 2014;
- 'the SES scheme' - the original scheme with the design changes described in the SES submitted in July 2015;
- 'the AP2 revised scheme' - the SES scheme as amended by AP2 submitted in July 2015;
- 'the SES2 scheme' - the original scheme as updated by the SES scheme, with the design changes described in the SES2 submitted in September 2015;
- 'the AP3 revised scheme' - the SES2 scheme as amended by AP3 submitted in September 2015;
- 'the SES3 scheme' - the SES2 scheme with the design changes described in this SES3; and
- 'the AP4 revised scheme' - the SES3 scheme as amended by this AP4.

1.1.6 The following terms are also used to differentiate between design changes included in the SES3 and those included in the AP4 ES:

- 'SES3 design changes' - changes to the scheme reported in the SES3 that do not require amendments to the Bill; and
- 'AP4 amendments' - changes to the scheme reported in the AP4 ES that require amendments to the Bill.

The purpose of this report

1.1.7 This Transport Assessment (TA) addendum provides updates to the TA previously reported in the main ES, SES and AP2 ES (Volume 5 Appendix, Transport Assessment, TR-001-000), SES2 and AP3 ES (Volume 5 Appendix Transport Assessment, TR-001-000) as a result of the SES3 and AP4 revised scheme. This TA addendum includes, as necessary, updates to:

- baseline and baseline surveys;
- a summary of scheme changes relevant to traffic and transport; and
- the assessment of impacts in each Community Forum Area (CFA) between Kilburn and Old Oak Common (CFA4) and Washwood Heath to Curzon Street (CFA26) as a result of the SES3 and AP4 revised scheme, and other changes and corrections.

1.1.8 There are no changes in CFA1 to CFA3, Euston Station and Approach (CFA1) to Primrose Hill to Kilburn (CFA3).

1.1.9 Unless otherwise stated, where text, tables or figures are not discussed they are unchanged from the main TA.

1.1.10 Where not specifically stated all paragraph, table and figure references are references to the main TA in Volume 5 Appendix: Transport Assessment (TR-001-000) of the main ES.

2 London Region

2.1 Kilburn (Brent) to Old Oak Common (CFA4)

Kilburn (Brent) to Old Oak Common (CFA4) SES3 and AP4 revised scheme changes

2.1.1 The original scheme is described in paragraphs 6.7.1 to 6.7.34 of the main TA and as amended in section 2.2 in the SES and AP2 TA (construction) and section 3.6 of the SES2 and AP3 TA (operation).

2.1.2 The only SES3 and AP4 revised scheme change in traffic and transport terms in this area is:

- AP4-004-001 relating to the relocation of the former vent shaft compound at Salusbury Road to Canterbury Works.

2.1.3 This amendment replaces the vent shaft previously proposed to be located at Salusbury Road with an equivalent vent shaft at Canterbury Works. Except as referenced below, references in the main TA to the vent shaft at Salusbury Road should be replaced with references to the proposed vent shaft at Canterbury Works. The capabilities, related construction activities and construction traffic movements and the operational requirements for the vent shaft are unchanged.

Construction description

2.1.4 Para 6.7.14 describing the Salusbury Road Shaft main site compound is replaced by:

"The shaft at Canterbury Works will occupy a site currently being used as a car repair garage and a number of industrial units and warehouses known as Canterbury Works. The proposed site boundary does not include Canterbury House as it is of local historical interest. The site also includes a Railway substation along with a rail access point used for road/rail plant access and material laydown."

2.1.5 The future baseline is unchanged from the main TA, as updated in the SES and AP2 TA.

Compounds and construction sites

2.1.6 References to Salusbury Road shaft main compound have been replaced, therefore the first bullet point in paragraph 6.7.80 in the main TA is amended:

- "Canterbury Works vent shaft main compound"

2.1.7 References in Table 6-231 and Table 6-232 and paragraphs 6.7.85 in the main TA to Salusbury Road compound should be replaced by references to Canterbury Works. The workforce and vehicle trip generation are unchanged, with HGV traffic of 75 two-way HGV trips per day during the busy period and 100 in the peak month.

2.1.8 Paragraph 6.7.86 is replaced by:

"This site will be accessed via Canterbury Terrace, Canterbury Road and the B413 Carlton Vale and B414 Kilburn Park Road to the A5 Maida Vale."

2.1.9 Paragraph 6.7.87 is replaced by:

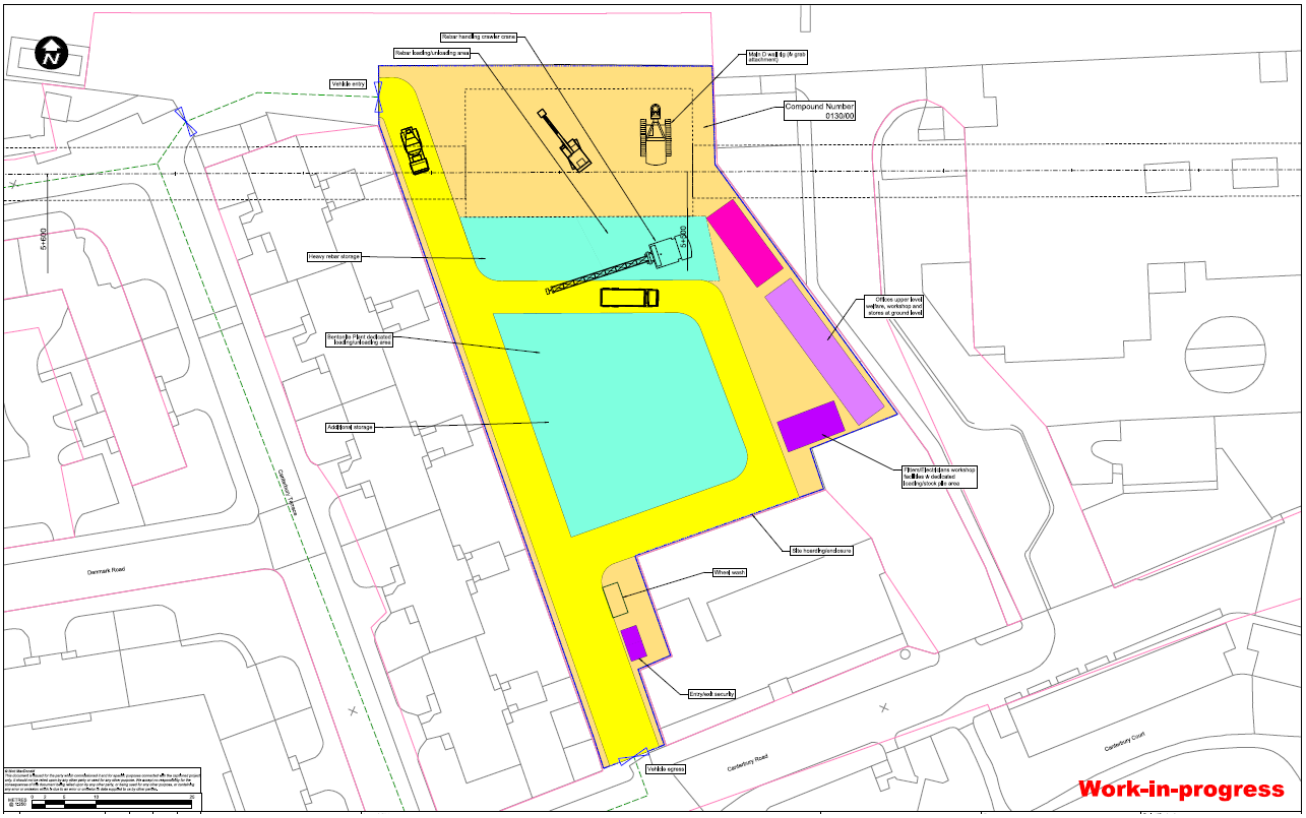
"This site does not require any removal of car parking spaces or bus shelters. No temporary diversions of road, footpaths or cycleways will be required."

2.1.10 Paragraph 6.7.88 is replaced by:

"No diversion of existing utilities is required"

2.1.11 Figure 6-188 in the main TA is replaced by the following figure:

Figure 6-188: Canterbury Works vent shaft



Construction lorry routes

2.1.12 Paragraph 6.7.117 in the main TA is replaced by:

"Where reasonably practicable, site access to the Canterbury Works compound for construction traffic will adopt a left in – left out circulation principle to minimise disruption to traffic by avoiding right turns across existing traffic."

2.1.13 The last sentence of paragraph 6.7.119 is replaced by:

"It would then continue along B413 Kilburn Lane, along Albert Road, Canterbury Terrace turning left onto Canterbury Road and into the site."

2.1.14 Paragraph 6.7.120 is replaced by:

"HGVs routed from the east would approach the site and exit the A501 from the Marylebone Flyover, turning into the A5 Edgware Road and continuing along A5 Maida Vale. HGVs would then turn right into the B413 Carlton Vale, right into Albert Road, along Canterbury Terrace, turning left onto Canterbury Road and into the site. "

Traffic management, road closures and diversions

Canterbury Road vent shaft

2.1.15 With the relocation of the former Salusbury Road Vent Shaft compound to Canterbury Road there will no longer be a temporary loss of the pedestrian route on the west side footway between Kilburn Lane and Salusbury Road. Therefore, paragraph 6.7.130 in the main TA is deleted.

2.1.16 With the relocation of the former Salusbury Road Vent Shaft compound to Canterbury Road no pedestrian diversion will be required. Therefore, paragraph 6.7.131 in the main TA is deleted.

Assessment of construction impacts

Key construction transport issues

2.1.17 Paragraph 6.7.144 in the main TA is replaced by:

"The temporary transport impacts within this CFA are due to construction vehicle movements to/from the vent shaft construction compounds at Canterbury Road, which equates to under 100 vehicle movements per day (50 in and 50 out), and the substantial movements associated with the major engineering works in the Old Oak Common areas."

Junction Performance

2.1.18 The construction traffic generation from the replacement vent shaft and the wider routes used are unchanged from the main TA and SES and AP2 TA. Consequently there are no material changes to the junction analyses reported in the SES and AP2 TA as a result of the relocation of the former Salusbury Road vent shaft compound to Canterbury Works.

Parking and loading

2.1.19 Due to relocation of the vent shaft compound from Salusbury Road to Canterbury Road, the temporary loss of parking spaces within a pay and display car park reported previously in the main TA is no longer required. Therefore paragraph 6.7.185 is deleted.

Operations description and assessment of operation impacts

2.1.20 The relocation of the vent shaft from Salusbury Road to Canterbury Works removes the impact on parking reported in the main TA in 6.7.310. There are no other changes to section 6.7 of the main TA as a result of the changes in CFA4.

2.2 Northolt Corridor (CFA5)

Northolt Corridor (CFA5) SES3 and AP4 revised scheme changes

2.2.1 The original scheme is described in paragraphs 6.8.1 to 6.8.20 of the main TA and as amended in section 2.3 in the SES and AP2 TA (construction) and section 3.6 of the SES2 and AP3 TA (operation).

2.2.2 The only SES3 and AP4 revised scheme change in traffic and transport terms in this area is:

- AP5-005-001 relating to the relocation of the West Gate vent shaft to the Westec car park.

West Gate Shaft

2.2.3 Paragraph 6.8.11 in the main TA is replaced by:

"The proposed shaft at West Gate will be located approximately 480m west of Hanger Lane and 300m west of West Gate, within the Manhattan business car park (see Map CT-06-011). The shaft will have an area of hard standing to the north, east and west of the headhouse to provide access for maintenance and for the emergency services, and will be accessed from West Gate."

Construction description

Construction lorry routes

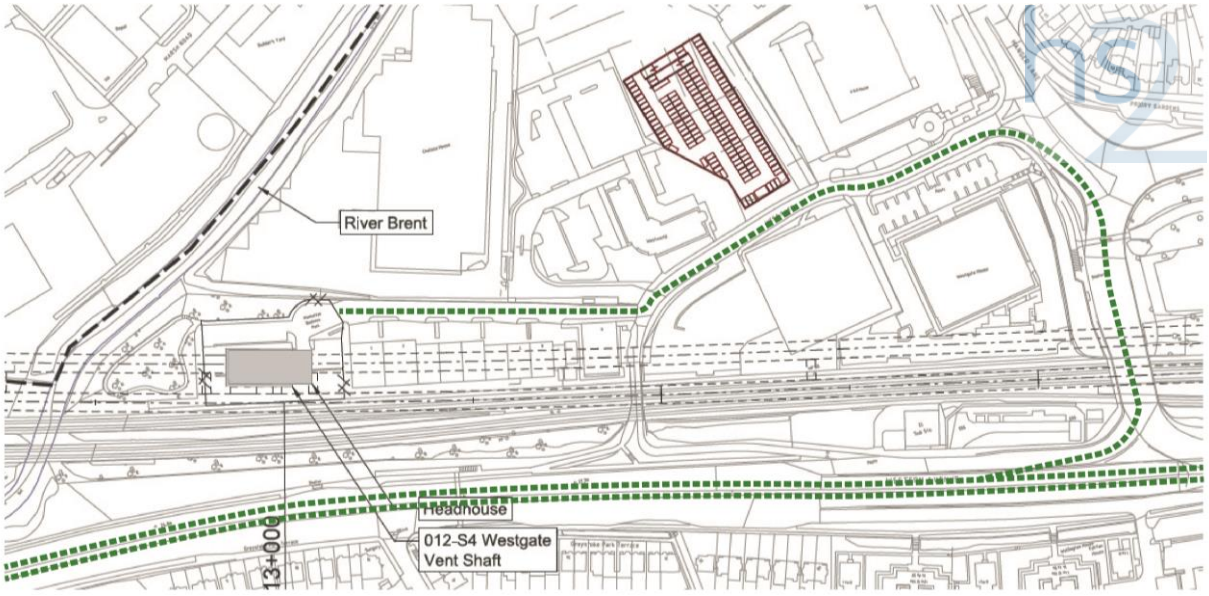
West Gate Main Site Compound

2.2.4 Paragraph 6.8.59 in the main TA is replaced by:

"Figure 6-210 below shows the main access and egress for the West Gate vent shaft site from the east via a traffic signal controlled junction at West Gate A4005 Hanger Lane and thence to the A40 Western Avenue. To the east of the site access is limited as West Gate passes beneath a railway bridge with a height limit of 11'6" (3.5m) and thence to the A40 Western Avenue via a 7'0" (2.1m) width limit."

2.2.5 Figure 6-210 in the main TA is replaced by the following figure.

Figure 6-210: West Gate vent shaft site and local access and egress



Parking and loading

2.2.6 Paragraph 6.8.101 in the main TA is replaced by:

"Due to relocation of the West Gate vent shaft, the construction will result in the relocation of approximately 160 car parking spaces at the following locations:

- the Westgate Hanger Lane Ltd car park (approximately 105 car parking spaces);
- the Manhattan Business Park Management Co. overflow car park (approximately 27 car parking spaces); and
- the Westgate access road during construction (approximately 25 car parking spaces).

2.2.7 Replacement parking spaces will be provided at a site to the north of West Gate as shown in replacement Figure 6-210. This will provide for 160 parking spaces.

2.2.8 The 25 parking spaces in the Westgate access road will be reinstated following completion of the vent shaft works. The remainder will be retained permanently at the site to the north of West Gate (refer to the SES3 and AP4 ES Volume 2, CFA 5 Map Book: Maps CT-05-011 and CT-06-011)."

2.2.9 The relocated parking spaces will change the average distance for users to the respective parking spaces. For the Westgate Hanger Lane Ltd users it is expected that there would, on average be a reduction in travel distance. There would, however, be an increase in travel distance for the other car parks as follows:

- Manhattan Business Park Management Limited – an average increase in travel distance of 150m; and
- Westgate access road – an average increase of 250m.

Operations description and assessment of operation impacts

2.2.10 There are no changes from those reported in section 6.8 of the main TA as a result of the changes in CFA5.

2.3 South Ruislip to Ickenham (CFA6)

South Ruislip to Ickenham (CFA6) SES3 and AP4 revised scheme changes

2.3.1 The original scheme is described in paragraphs 6.9.1 to 6.9.21 of the main TA and as amended in section 2.4 in the SES and AP2 TA.

2.3.2 The SES3 and AP4 revised scheme changes in traffic and transport terms in this area is:

- SES3-006-002 revisions relating to temporary diversion of footpaths U36, U37 and U38.
- AP4-006-003 revisions relating to temporary diversion of footpaths U43, U45 and U47.
- AP4-006-004 additional land required for the provision of a haul road through Uxbridge Golf Course.

2.3.3 The temporary provision of a haul road through Uxbridge Golf Course, located within CFA7, is proposed to reduce the level of construction traffic on Swakeleys Road/Harvil Road. The haul road and associated construction compounds are located in CFA7. However access to the haul road and compounds uses roads that are reported in CFA6 (although they form the boundary of CFA6 and CFA7).The assessment of these roads is reported in this CFA.

2.3.4 The haul road will connect at its southern end with the eastbound slip road to the A40 Western Avenue/B467 Swakeleys Road roundabout. The southern section of the haul road will pass to the west of, and parallel to, The Drive. The northern section will pass through Uxbridge Golf Course and land to the west of Harvil Road within CFA7. The haul road will connect with Harvil Road at its northern end. New signal-controlled junctions will be provided temporarily at both ends of the haul road, with part-signalisation of the roundabout between the A40 and Swakeleys Road.

2.3.5 The above SES3 and AP4 scheme changes lead to a number of changes to the main TA and SES and AP2 TA.

Assessment methodology

2.3.6 The assessment methodology for the original scheme is described in Section 6.2 of the main TA.

2.3.7 The updated 2014 baseline WeLHAM traffic model has generally been used by HS2 Ltd to provide revised future baseline forecasts and these are reported in section 2.4 of the SES and AP2 TA.

Existing baseline

2.3.8 The baseline traffic and transport information for South Ruislip to Ickenham (CFA6) is described in section 5.8 of the main TA and section 2.4 of the SES and AP2 TA.

2.3.9 Supplementary traffic surveys were undertaken in June 2014 and December 2014 at locations not previously surveyed and are reported in the SES and AP2 TA Annex B(ii).

Future Âaseline

2.3.10 Future baseline conditions for the original scheme are described in Section 6.9 of the main TA and the SES and AP2 TA.

Construction description

2.3.11 The original scheme construction description is set out in section 6.9 of the main TA, as amended by the SES and AP2 revised scheme outlined in the SES and AP2 TA. Any changes as a result of the SES3 and AP4 revised scheme are outlined below.

Compound and Construction sites

2.3.12 A new Table 6-322.1 is added to provide information for the additional construction compounds in CFA7 that are required for the construction of the new haul road through the Uxbridge Golf Course. While one compound (Uxbridge Golf Course Haul Road Satellite Compound) is a new compound specifically being used for the construction and removal of the haul road, the construction and removal from the north end of the haul road will be managed from the Northolt Tunnel and Earthworks Main Compound.

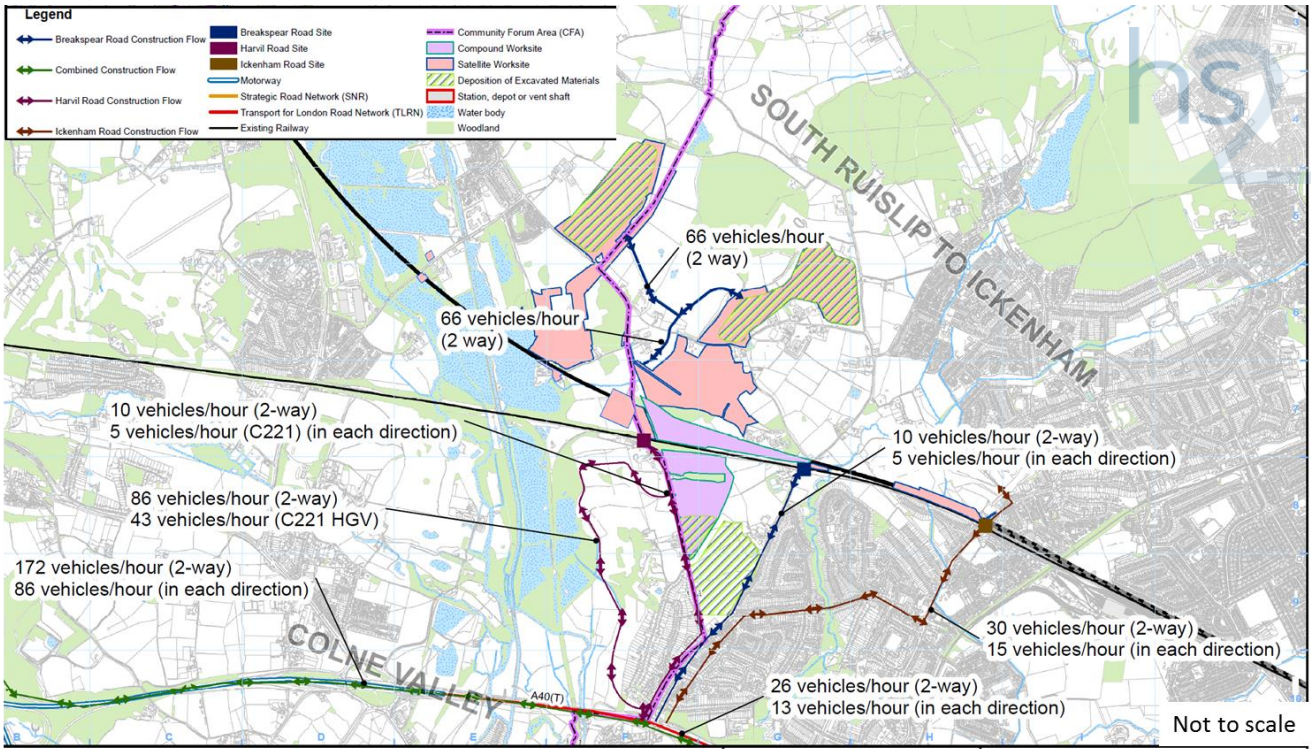
Table 6-322.1: Colne Valley (CFA7) typical vehicle trip generation for haul road construction compounds

Compound type	Location	Access	Indicative start / set up date	Estimated duration of use (years)	Estimated duration with busy vehicle movements (Years)	Typical daily number of combined two way trips	
						Cars/ LGVs	HGVs
Satellite Compound	Northolt Tunnel and Earthworks Main Compound	Harvil Road	2017	10 years	4 months (during construction) 2.5 months (during removal)	10-15	100
Satellite Compound	Uxbridge Golf Course Haul Road Satellite Compound	A40 Western Avenue	2017	12 months in 2017 and 12 months in 2023	5 months (during construction) 2.5 months (during removal)	10-15	45

Construction lorry routes and HGV movements

2.3.13 Figure 6-218 in the SES and AP2 TA has been updated to show the revised lorry routes and hourly HGV movements due to the inclusion of the new haul road through Uxbridge Golf Course.

Figure 6-218: CFA6 HS2 HGV route loading



PRoW closures and diversions

2.3.14 The PRoW diversions described in the main TA have been updated. The following section replaces paragraphs 6.9.69 to 6.9.72 and 6.9.74 to 6.9.76 and Figures 6-220 to 6-222 and 6-224 to 6-226 of the main TA. Temporary traffic management relating to the works for all the PRoW closures and diversions will consider all modes including associated pedestrian movements.

Footpaths U36, U37 and U38.

Alternative diversions and phasing of sustainable placement

2.3.15 The phasing of the sustainable deposition in South Ruislip to Ickenham (CFA6) is to be adjusted so that only footpath U36 or U37 is closed at any one time. As such, it is proposed that the following sequence of deposition and temporary diversions/closures take place:

- Stage 1 (Figure 6-219.1)
  - Footpaths U36 & U37 remain open with staffed crossing point(s) for haul road;
  - Temporary diversion of U38 within field boundary with a short section along Newyears Green Lane (to avoid Arbrem (Big Red) Soil and Stone Remediation site at St Leonard's Farm)
  - Topsoil strip area east of U36;
  - Deposition of sustainable placement materials east of U36;

- Stage 2 (Figure 6-219.2)
  - Divert U36 along U37 with short stretch along Newyears Green Lane with alternative off-road section;
  - Topsoil strip area east of U37;
  - Deposition of sustainable placement materials east of U37;
  - Re-soil area east of U37;
- Stage 3 (Figure 6-219.3)
  - Re-instate U38 (crossing area east of U36);
  - Re-instate U36, remove haul road crossing U36;
  - Divert U37 along U36 with short stretch along Newyears Green Lane with alternative off-road section;
  - Topsoil strip remaining area west of U36;
  - Deposition of sustainable placement materials west of U36;
  - Re-soil remaining area west of U36;
  - Re-instate U37, remove haul road crossing U37.

2.3.16 During stages 1 and 2 it may be possible to route the on-road section of the diversion for U38 along the route shown in orange on Figures 6-219.1 and 6-219.2. (Note: the section of the route through St. Leonard's Farm is effectively blocked by commercial operations taking place. This has also been noted by Hillingdon borough council in their Rights of Way & Permissive Routes Improvement Plan for Hillingdon 2011-2021 report.)

2.3.17 There is currently no footpath connection between footpaths U38 and U36 other than along Newyears Green Lane.

2.3.18 The aforementioned diversion routes and closures will only be in place during the deposition of sustainable placement which commences in May 2017 and lasts for approximately 10 months.

Figure 6-219.1: Temporary PRoW diversions of footpath U36, U37 and U38 (Stage 1)

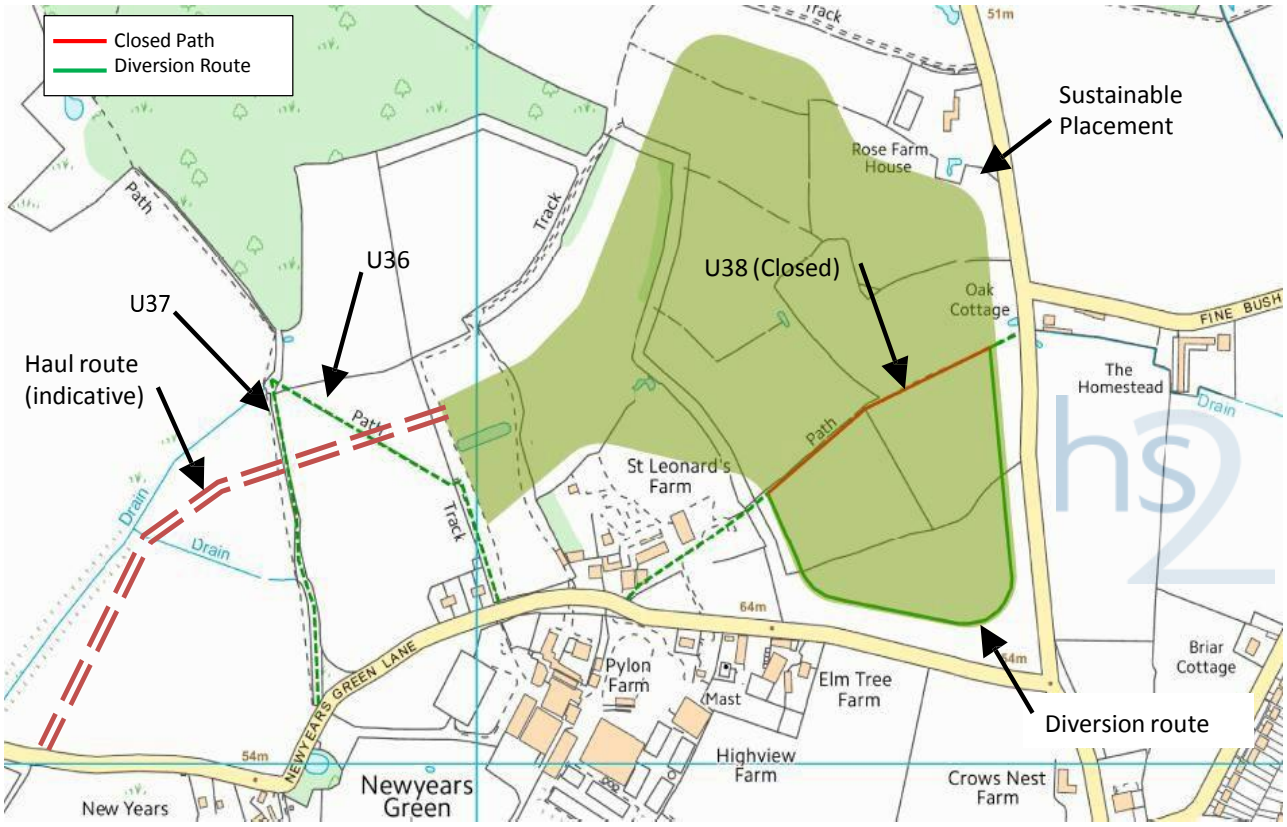


Figure 6-219.2: Temporary PRoW diversions of footpath U36, U37 and U38 (Stage 2)

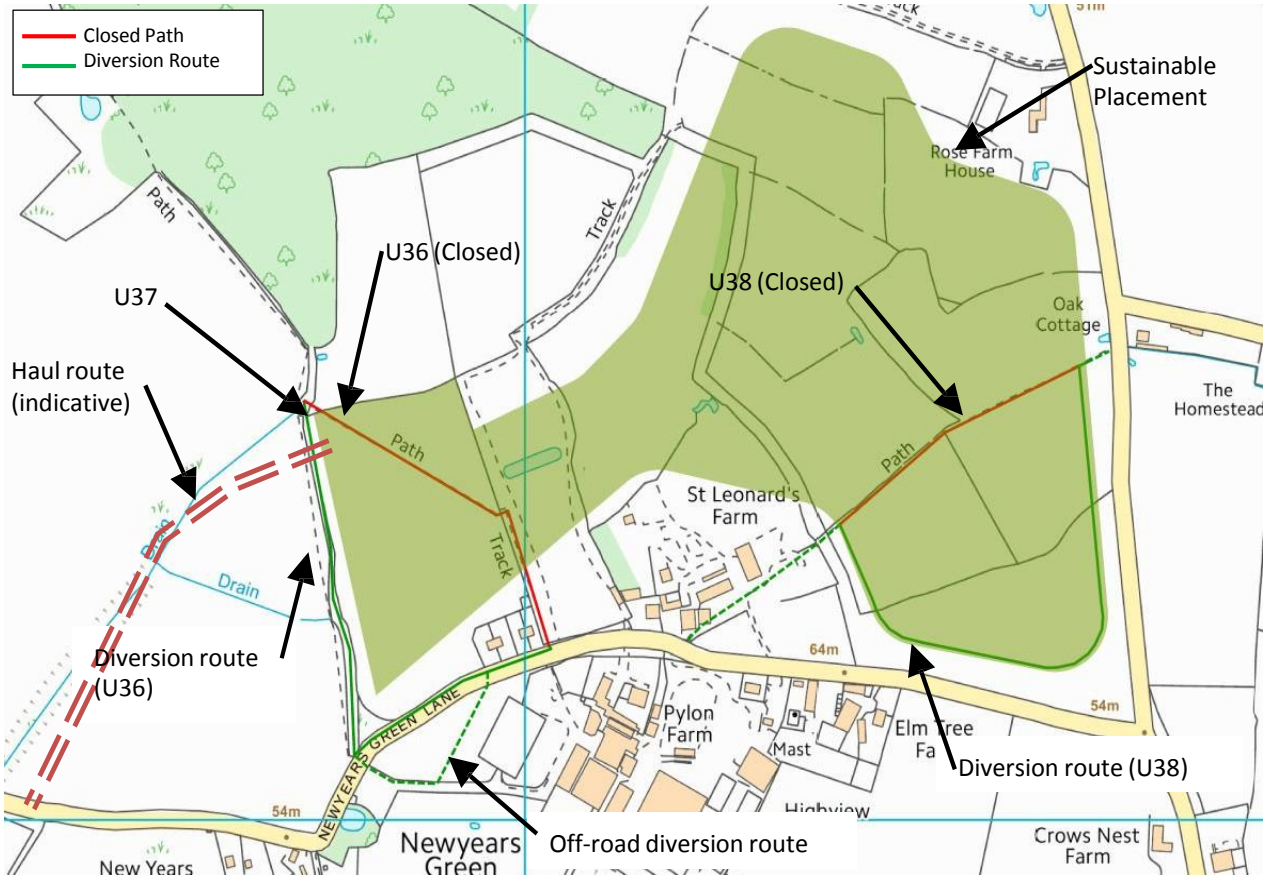
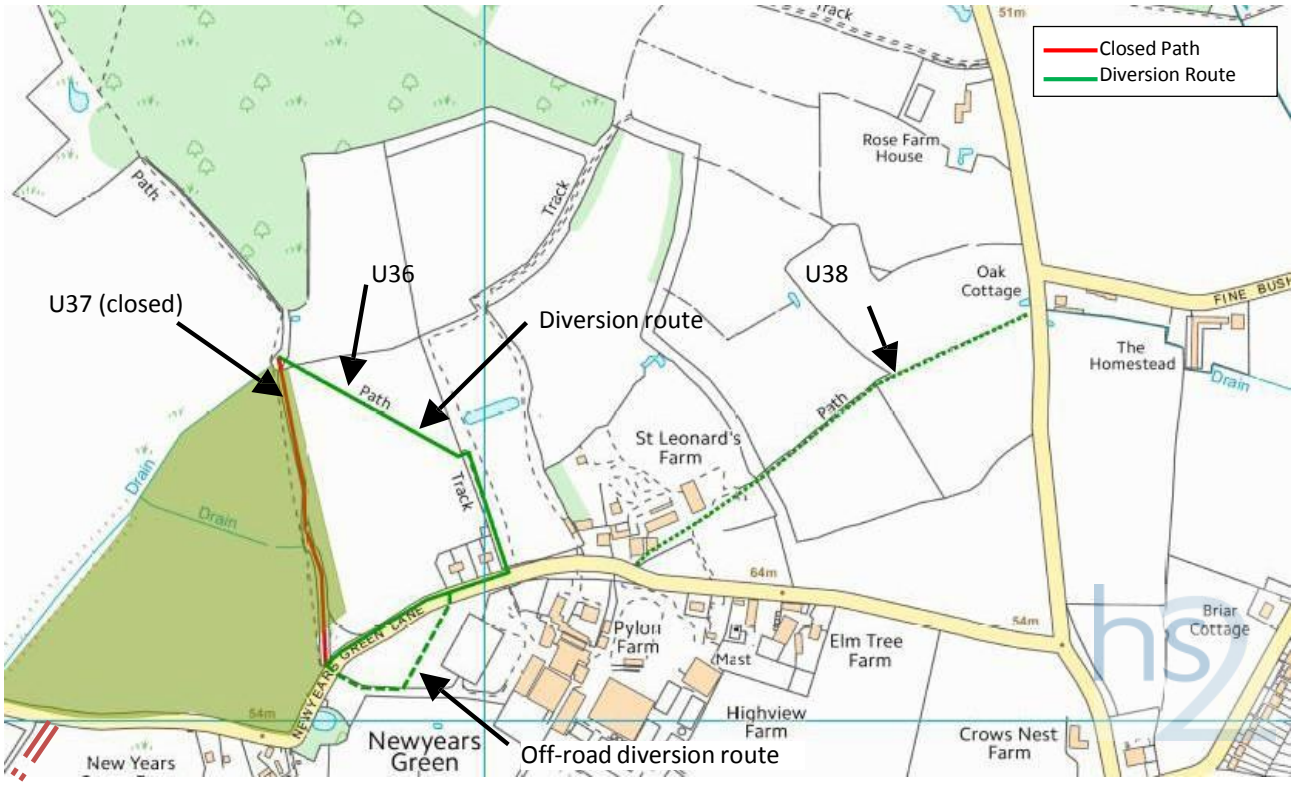


Figure 6-219.3: Temporary PRoW diversions of footpath U36, U37 and U38 (Stage 3)



Footpath U43 - Breakspear Road South to PRoW U44/45.

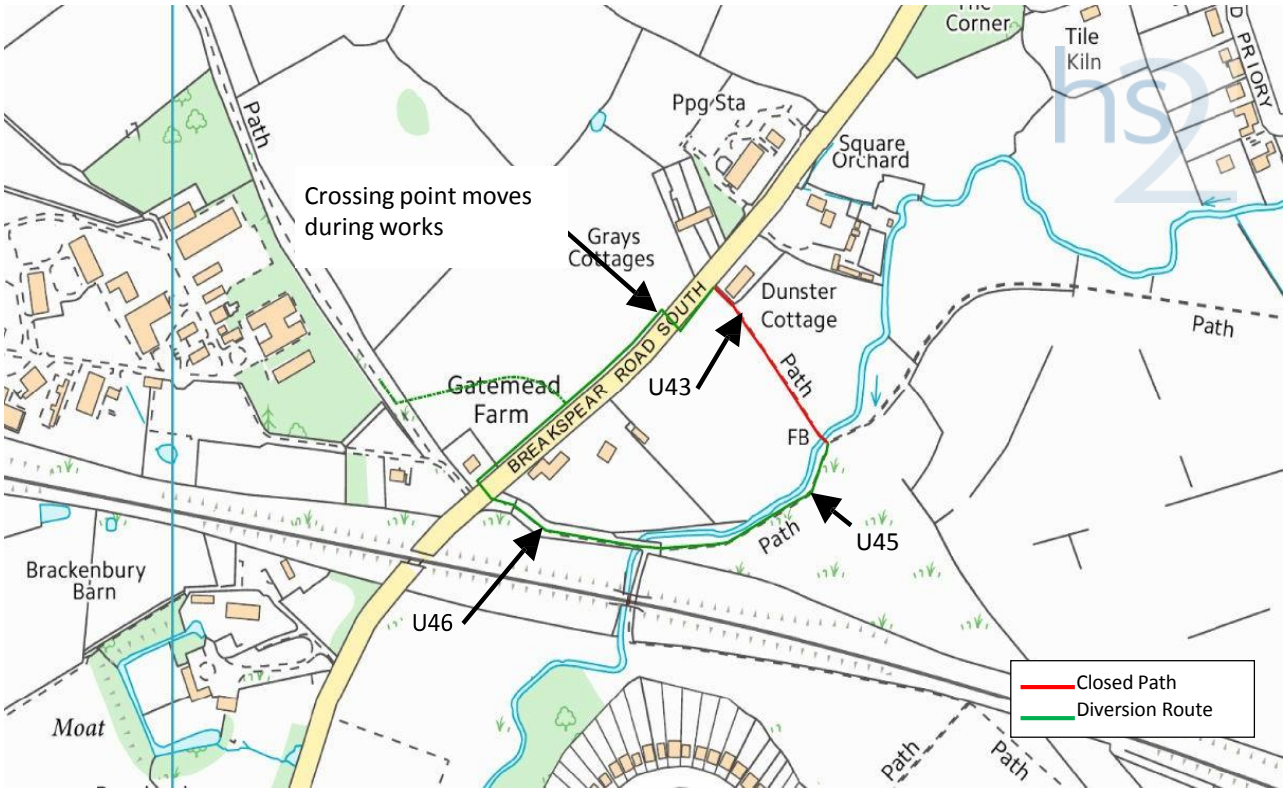
2.3.19 Footpath U43 (Figure 6-219.4) will be temporarily closed and diverted along Footpath U45, along the east side of the River Pinn to the adjacent Footpath U46 (170m to south) during construction of a replacement floodplain storage area. At this stage of construction footpath U46 will still be in use and emerges onto Breakspear Road South approximately 250m to the south of the Footpath U43 junction with the same road.

2.3.20 The Breakspear Road South verges between the two footpaths are narrow and comprise a small bund then a drainage channel. A temporary footpath along the western side of Breakspear Road South will be provided.

2.3.21 Following reinstatement of Footpath U43 there will be no further temporary diversions of this footpath required and it will serve as a temporary diversion route for other footpaths (U45 and U46) whilst they are affected by the works.

2.3.22 The footpath will be closed for approximately two months commencing late April 2017.

Figure 6-219.4: Temporary PRoW diversions of footpath U43



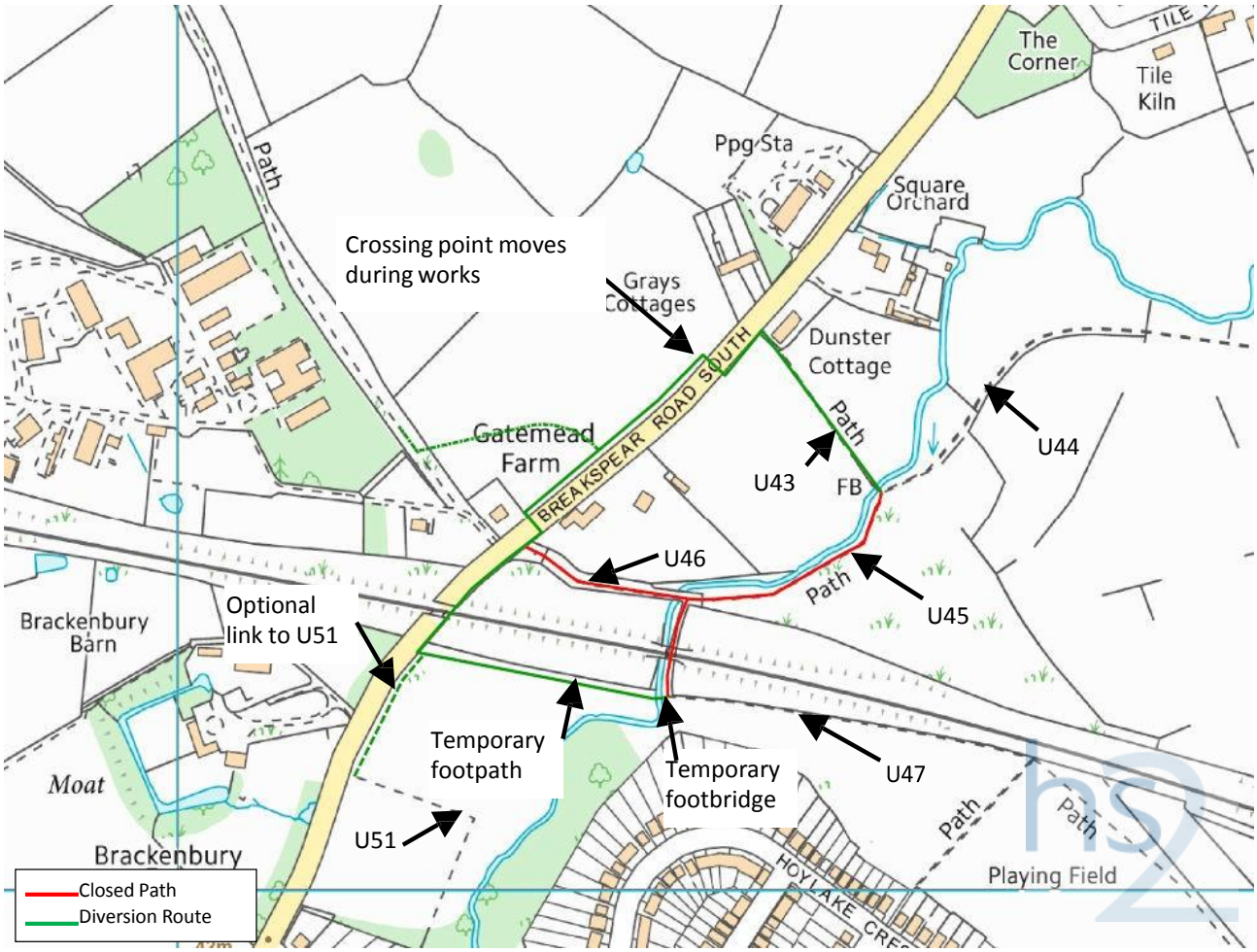
Footpath U45 – U46/47 to U43/44 (alongside River Pinn)

2.3.23 Footpath U45 (Figure 6-219.5) will be temporarily closed and diverted along Footpath U43, along Breakspear Road South then via a temporary footpath to a temporary footbridge over the River Pinn to join up with footpath U47 to the south of the Network Rail Chiltern Lines.

2.3.24 A temporary footpath along the western side of Breakspear Road South will be required/provided.

2.3.25 The footpaths will remain closed during the construction of the embankment, River Pinn bridge, Breakspear Road South bridge and to allow for the removal of the haul road alongside these works. This is expected to last for approximately 12.5 months commencing late June 2017.

Figure 6-219.5: Temporary PRoW diversions of footpath U45

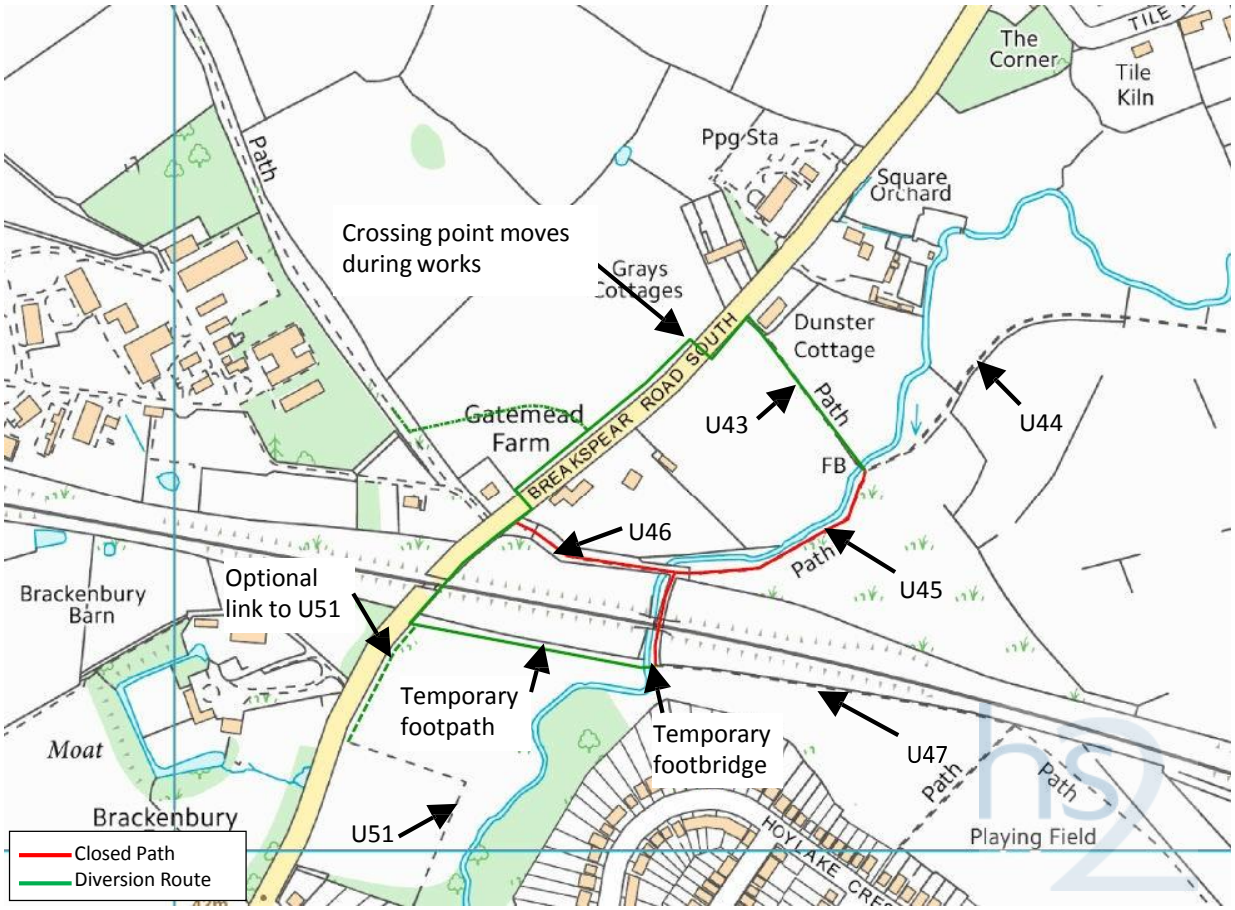


Footpath U47 – River Pinn to Playing Fields

2.3.26 The proposed alternative diversion route for footpath U47, as shown in Figure 6-219.6, is the reverse of that proposed for footpath U45.

2.3.27 Footpath U47 will remain closed during the construction of the River Pinn bridge and whilst the haul road crossing the footpath is in use. This is expected to last for approximately 14 months commencing July 2017.

Figure 6-219.6: Temporary PRoW diversions of footpath U47



Footpath U49 – Breakspear Road South to Harvil Road, and part of U50

2.3.28 There are three potential diversions routes for U49, as shown on Figure 6-219.7, these are:

- option 1: diversion of footpath along southern end of Copthall Covert and along Harvil Road to U50.
- option 2A: diversion of footpath along south-eastern edge of the construction site and along Harvil Road to footpath U50.
- option 2B: diversion of footpath along south-eastern edge of the construction site, via The Drive and the golf course access road to U50.

2.3.29 Option 1 will require the crossing of the main haul route into the construction site and will require a staffed crossing point. Due to the crossing of the main haul route, in use for 3½ years (see 10.2.6), it is envisaged that this would be the least desirable option, however, this is the shortest possible diversion

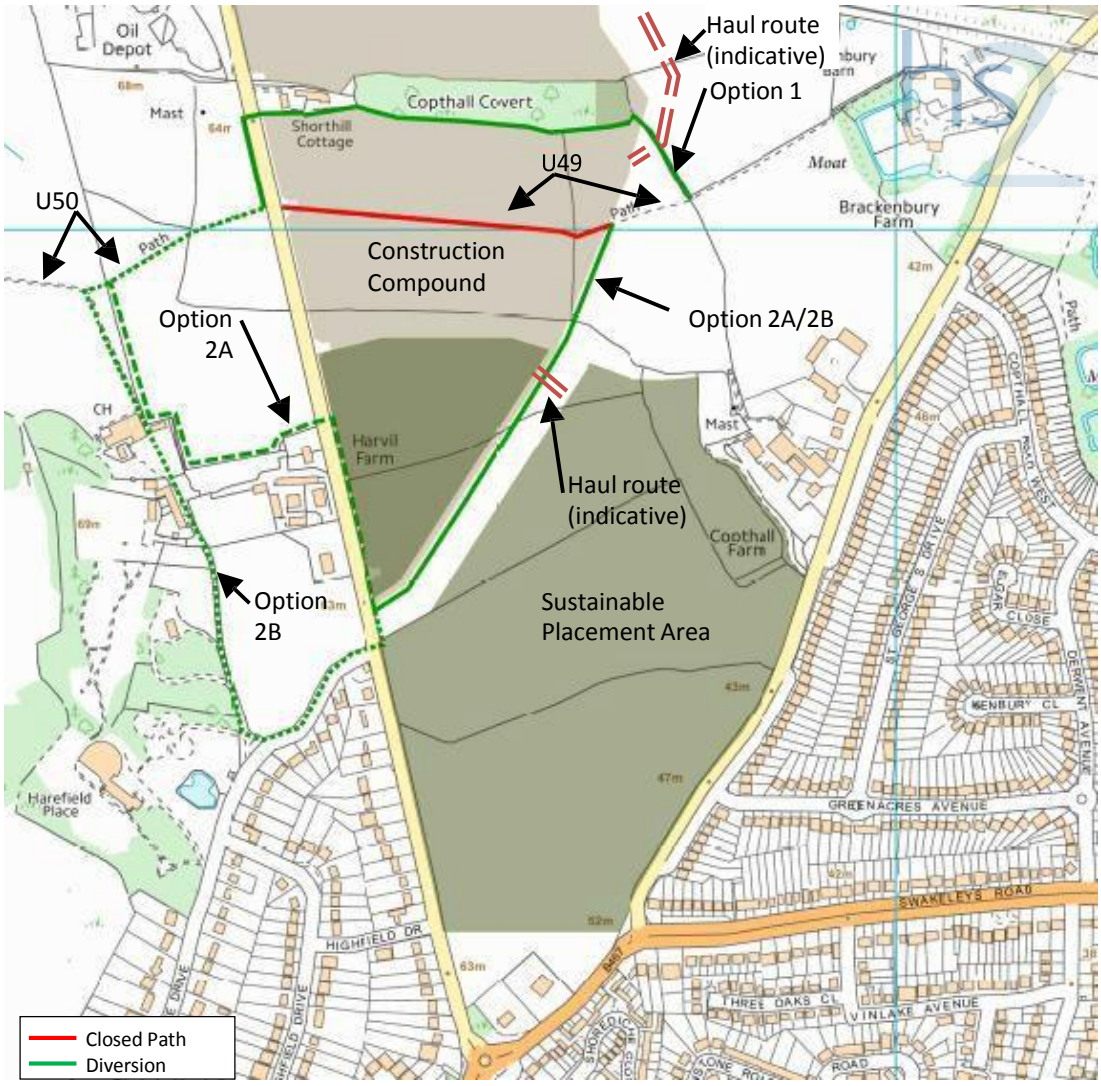
2.3.30 For options 2A and 2B the crossing of the haul route between deposition areas will only be required during the deposition of the sustainable placement materials and for the replacing of top soil for Copthall Cutting. This will be in place for approximately 10 months commencing May 2017 and for a couple of months towards the end of the civils works in late 2021/early 2022

2.3.31 Option 2A runs along Harvil Road and will require temporary footpaths to be constructed along this length of the diversion. Due to the nature and volume of traffic on Harvil Road this is envisaged to be less desirable than Option 2B which runs along quieter residential roads and a golf course access road.

2.3.32 All options will require a crossing point across Harvil Road, as does the existing footpath.

2.3.33 The diversion of footpath U49 will need to be in place for the full duration of the civils and environmental works in this area (March 2017 to December 2021)

Figure 6-219.7: Temporary PRoW diversions of footpath U49



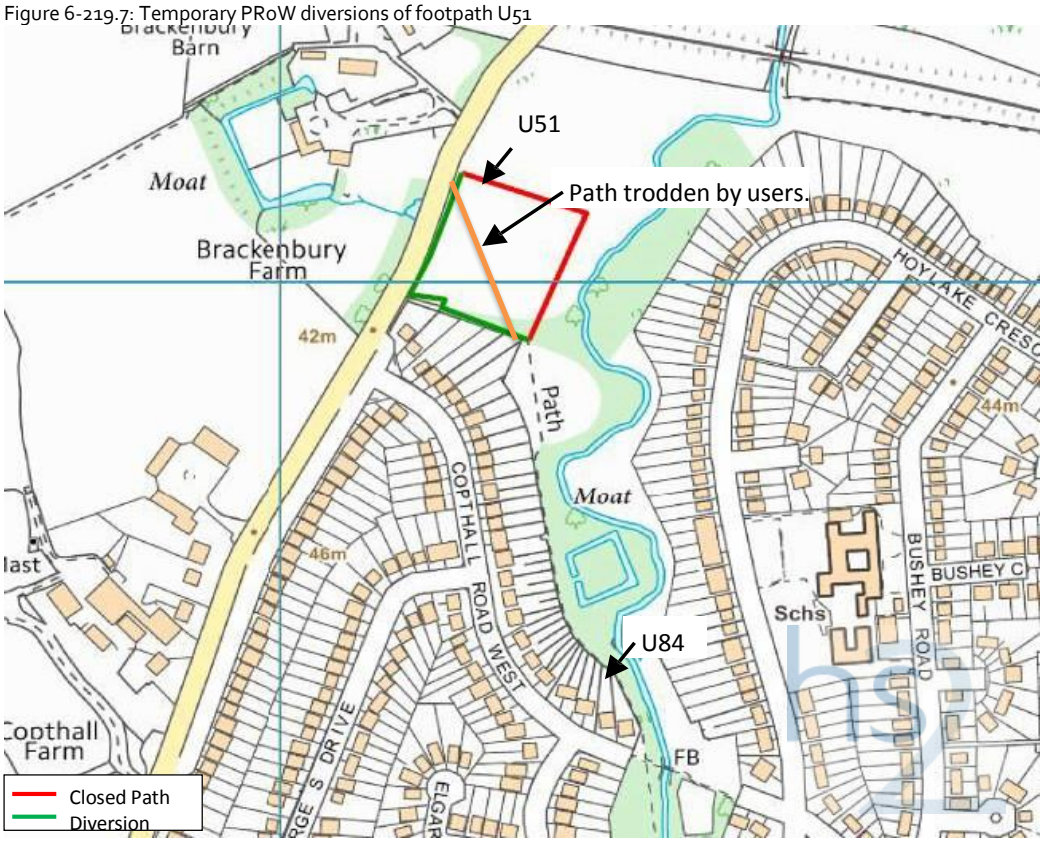
Footpath U51 – Breakspear Road South to Footpath U84.

2.3.34 Footpath U51, shown in Figure 6-219.8, will be temporarily closed (if required) due to the area of proposed habitat creation and diverted around the southern and western edges of this area.

2.3.35 It is anticipate that the diversion is unlikely to be required as the habitat creation works can be undertaken either side of the existing footpath with minimal impact on users of the path.

2.3.36 If required the footpath would be closed for a few months towards the end of the construction works in this area in late 2021/early 2022.

Figure 6-219.7: Temporary PRoW diversions of footpath U51



Assessment of construction impacts

Strategic and local road network traffic flows

2.3.37 Tables 6-323 and 6-325 in the SES and AP2 TA that compare 2021 baseline and construction scenario flows across a screenline through the area has been updated to reflect the changes arising from the new haul road.

2.3.38 It should be noted that the main TA and SES and AP2 TA showed forecasts for two construction scenarios:

- Test 1 which refers to late 2017 / early 2018 with peak construction HGV movements leading up to the start of the Wilesden Railhead in CFA4 for HS2 construction movements
- Test 2 refers to the planned closure of old Oak Common Lane in CFA4 for construction purposes for periods within 2023 to 2024.

2.3.39 Within CFA6, there is no material difference between the two tests construction scenarios and the results for a single test are shown in the updated tables.

2.3.40 This analysis shows that the traffic impacts on the general traffic flows are generally confined to the areas around the main construction interventions Swakeleys Road/Harvil Road (CFA6).

2.3.41 Table 6-324 & 6-326 in the SES and AP2 TA have also been updated.

Table 6-323: WeLHAM AM peak hour model screenline analysis for SES3 and AP4 revised scheme

Location	Direction	Future baseline 2021		2021 construction		Change from 2021 future baseline			
		All veh	HGVs	All veh	HGVs	All veh	HGVs	All veh %	HGVs %
CFA6									
West End Road	NB	634	29	611	30	-23	0	-4%	1%
	SB	538	15	518	15	-20	0	-4%	3%
Ickenham Road	NB	961	39	904	59	-57	20	-6%	50%
	SB	945	29	940	52	-5	22	-1%	75%
Breakspear Road	NB	602	24	577	35	-25	11	-4%	48%
	SB	671	5	550	16	-121	11	-18%	231%
Harvil Road	NB	434	20	410	23	-24	3	-6%	14%
	SB	470	11	369	12	-101	1	-22%	5%
Swakeleys Road (south)	NB	1240	81	1103	111	-137	30	-11%	37%
	SB	971	51	711	68	-260	17	-27%	34%
New Haul Road (Through Uxbridge Golf Course)	NB	0	0	0	43	0	43	N/A	N/A
	SB	0	0	0	43	0	43	N/A	N/A

Table 6-325: WeLHAM PM peak hour model screenline analysis for SES3 and AP4 revised scheme

Location	Direction	Future baseline 2021		2021 construction		Change from 2021 future baseline			
		All veh	HGVs	All veh	HGVs	All veh	HGVs	All veh %	HGVs %
CFA6									
West End Road	NB	877	12	862	12	-15	0	-2%	4%
	SB	540	11	527	11	-13	0	-2%	1%
Ickenham Road	NB	1232	20	1208	36	-24	16	-2%	81%
	SB	964	18	932	35	-32	17	-3%	94%
Breakspear Road	NB	928	10	891	20	-37	10	-4%	96%
	SB	585	9	530	21	-55	12	-9%	122%
Harvil Road	NB	361	10	281	15	-80	4	-22%	41%
	SB	450	9	417	15	-33	6	-7%	65%
Swakeleys Road (south)	NB	1718	72	1512	111	-206	39	-12%	54%
	SB	1325	29	1185	62	-140	33	-11%	112%
New Haul Road (Through Uxbridge Golf Course)	NB	-	-	0	43	0	43	N/A	N/A
	SB	-	-	0	43	0	43	N/A	N/A

Table 6-324: Non Screenline links with substantial traffic changes AM peak

Location	Direction	Future Baseline 2021		2021 construction		Change from 2021 future baseline			
		All Vehicles	HGV & Buses	All Vehicles	HGV & Buses	All Vehicles	HGV & Buses	All Vehicles %	HGV & Buses %
Swakeleys Drive / Woodstock Drive	EB	77	0	64	0	-13	0	-16%	N/A
	WB	0	0	10	0	10	0	2545%	N/A
Swakeleys Roundabout	WB	513	40	572	122	59	81	11%	201%
Ladygate Lane	EB	41	3	37	3	-3	0	-8%	0%
	WB	392	3	392	3	0	0	0%	0%
A40 eastbound off-slip	EB	948	47	854	121	-93	73	-10%	154%
A40 westbound on-slip	WB	747	54	797	136	50	82	7%	153%

Table 6-326: Non Screenline links with substantial traffic changes PM peak

Location	Direction	Future Baseline 2021		2021 construction		Change from 2021 future baseline			
		All Vehicles	HGV & Buses	All Vehicles	HGV & Buses	All Vehicles	HGV & Buses	All Vehicles %	HGV & Buses %
Swakeleys Drive / Woodstock Drive	EB	28	0	27	0	-1	0	-3%	N/A
	WB	22	0	30	0	8	0	35%	N/A
Swakeleys Roundabout	WB	1030	32	1090	117	60	85	6%	269%
Ladygate Lane	EB	295	3	301	3	6	0	2%	0%
	WB	227	3	236	3	9	0	4%	3%
A40 eastbound off-slip	EB	402	35	491	125	89	90	22%	260%
A40 westbound on-slip	WB	794	15	804	103	10	87	1%	574%

Junction Performance

2.3.42 Tables 6-328 to 6-330 in the SES and AP2 TA have been updated to show construction impacts at various junctions within this CFA.

Table 6-328 Construction impacts at High Road, Ickenham / Long Lane / Swakeleys Road junction

CFA6	**2021 future baseline**			**2021 future baseline with SES3 and AP4 construction**		
AM Peak (08:00-09:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
High Road, Ickenham	1140	86	13	1152	89	7
Long Lane	762	81	10	788	83	4
Swakeleys Road	467	97	13	465	98	15
	2021 future baseline			**2021 future baseline with SES3 and AP4 construction**		
PM Peak (17:00-18:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
High Road, Ickenham	1034	77	8	1005	74	6
Long Lane	1034	101	11	1060	103	21
Swakeleys Road	272	73	8	256	68	3

Table 6-329 Construction impacts at Breakspear Road / Swakeleys Road junction

CFA6	**2021 future baseline**			**2021 future baseline with SES3 and AP4 construction**		
AM Peak (08:00-09:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
Breakspear Road	678	83	1	585	71	0
Swakeleys Road (WB)	292	56	0	254	48	0
Swakeleys Road (EB)	1057	103	3	1050	103	18

	2021 future baseline			2021 future baseline with SES3 and AP4 construction		
PM Peak (17:00-18:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
Breakspear Road	598	72	0	575	68	0
Swakeleys Road (WB)	198	33	0	200	32	0
Swakeleys Road (EB)	1270	102	3	1229	96	0

Table 6-340 Construction impacts at Harvil Road / Swakeleys Road junction

CFA6	**2021 future baseline**			**2021 future baseline with SES3 and AP4 construction**		
AM Peak (08:00-09:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
Harvil Road	484	37	0	393	31	0
Swakeleys Road (WB)	966	62	0	808	51	0
Swakeleys Road (EB)	1018	67	0	1040	71	0
	2021 future baseline			**2021 future baseline with SES3 and AP4 construction**		
PM Peak (17:00-18:00)	**Flow**	**RFC**	**Max Queue**	**Flow**	**RFC**	**Max Queue**
Harvil Road	460	41	0	448	38	0
Swakeleys Road (WB)	769	51	0	745	49	0
Swakeleys Road (EB)	1450	91	0	1336	82	0

2.3.43 An additional Table 6-340.1 is provided to show the impact of building a New Haul Road together with partial signalisation and associated works on the operation of A40/Swakeleys Road roundabout in the SES3 and AP4 scheme. The assessment in Part 2 of the SES3 and AP4 ES has been based upon the direct WeLHAM model outputs that indicate increased delays and represent a reasonable worst case. To provide a more detailed assessment of the impact of the reductions in construction traffic on Swakeleys Road and the introduction of the haul road, this table presents the outputs from a local LinSig model that enables the details of traffic signals to be modelled. So as to understand the maximum reasonable potential impact, this is based upon the construction traffic at the junction being overlaid on the baseline 2014 traffic. In practice, it is expected that there would be diversion of some traffic away from the junction and the Swakeleys Road corridor if construction traffic were to increase journey times or delays.

Table 6-340.1: Construction impacts at Western Avenue / Swakeleys Road junction –LinSig model with haul road and partial signalisation

	2014 Baseline				**2014 Baseline with HS2 construction traffic, Haul Road and partial signalisation**			
	Average demand (PCU)	**Max RFC**	**Max queue (veh)**	**Delay (min)**	**Average demand (PCU)**	**Max RFC**	**Max queue (veh)**	**Delay (min)**
AM Peak (08:00-09:00)								
A40 Western Avenue (W)	1184	0.872	8.9	0.42	1346	0.55	7.5	0.21
Swakeleys Road (N)	1476	1.016	89.8	3.12	1538	1.02	47.5	1.74 (1.67 - 1.74)
A40 Western Avenue (E)	565	0.884	6.8	0.7	566	0.88 (0.45 - 0.88)	9.4 (3.3 - 9.4)	0.95 (0.47 - 0.95)
Park Road (S)	1025	0.69	1.7	0.1	1022	0.43 (0.38 - 0.43)	2.9 (1.6 - 2.9)	0.68 (0.06 - 0.68)
Haul Road	-				110	Included in A40 Western Avenue flows		
Total	**4250**				**4582**			
PM Peak (17:00-18:00)								
A40 Western Avenue (W)	588	0.76	3.2	0.32	746	0.63 (0.33 - 0.63)	6.6 (3.1 - 6.6)	0.42 (0.32 - 0.42)
Swakeleys Road (N)	1215	0.745	3.2	0.15	1272	0.64	2	0.11 (0.07 - 0.11)
A40 Western Avenue (E)	756	0.762	3.2	0.24	754	0.47 (0.30 - 0.47)	5.8 (3.2 - 5.8)	0.25 (0.22 - 0.25)
Park Road (S)	1535	0.863	6.5	0.24	1535	0.7 (0.67 - 0.70)	5.8	0.18 (0.17- 0.18)
Haul Road	-				110	Included in A40 Western Avenue flows		
Total	**4094**				**4307**			

2.3.44 The modelling of the A40/Swakeleys Road roundabout indicates that with the introduction of the haul road and partial signalisation of the roundabout there would be only small changes to queues and delays compared to the baseline.

Pedestrian, cyclist and equestrians

2.3.45 Table 6-331 in the main TA has been amended.

Table 6-331: Assessment of PRoW diversion – partial replacement

Name	Location	Diversion route (Under AP4)	Approximate length of diversions (Under AP4)	Programme	Duration
Footpath U43	From east side of Breakspear Road South connecting with footpaths U44 and U45	Initially, footpath U43 will be diverted along Footpath U45, along the east side of the River Pinn, to the adjacent footpath U46 (170m to south) during construction. At this stage of construction footpath U46 will still be in use. FootpathU43 will then be diverted along Breakspear Road South	390m	Starting Q2 2017	2 months
Footpath U51	From east side of Breakspear Road South to Copthall Road West	Breakspear Road South and parallel to north of Copthall Road West towards start of U84	-21m	Q4 2021 – Q1 2022	6 months
Footpaths U36,	From the north side of Newyears Green Lane connecting to the footpath U86	Footpaths U36 and U37 will remain in their current position with only one being closed at any one time, therefore maintaining a link between footpath U35 and Newyears Green Lane	Less than 200m	Starting Q2 2017	10 months
Footpaths U37	From the north side of Newyears Green Lane connecting to the footpath U86	Footpaths U36 and U37 will remain in their current position with only one being closed at any one time, therefore maintaining a link between footpath U35 and Newyears Green Lane	Less than 200m	Starting Q2 2017	10 months
Footpath U38	From north side of Newyears Green Lane connecting with Breakspear Road South	Around the sustainable placement site, within the field boundaries along the northern edge of Newyears Green Lane and western edge of Breakspear Road North. The footpath is to be segregated from the deposition works by a temporary fence	220m	Starting Q2 2017	10 months

Name	Location	Diversion route (Under AP4)	Approximate length of diversions (Under AP4)	Programme	Duration
Footpath U49	From east side of Harvil Road to Breakspear Road South	Along the south-eastern edge of the Northolt Tunnel and Earthworks main construction compound and part way along the western boundary, adjacent to Harvil Road. The footpath is to be segregated from the works with a temporary fence and from Harvil Road by the existing hedgerow/fence	Option 2A: 870m Other options considered: Option 1: 400m Option 2B: 1010m	Q1 2017 – Q4 2021	5 years
U45	Swakeleys Road and new alignment to the north of the existing PRoW	It will be diverted along the reinstated footpath U43, along Breakspear Road South then via a temporary footpath to a temporary footbridge over the River Pinn, to join up with footpath U47 to the south of the Chiltern Main Lines	670m	Starting Q3 2017	12.5 months
U47	From footpath U47, along footpath U48, Bushey Road, Copthall Road West and Breakspear Road South to the start of footpath U46	The proposed alternative diversion route for footpath U47 is the reverse of the situation proposed for footpath U45	670m	Starting Q3 2017	14 months

Operation description and assessment of operation impacts

2.3.46 There are no changes from those reported in section 6.9 of the main TA as a result of the changes in CFA6.

3 Country Region

3.1 Colne Valley (CFA7)

Colne Valley (CFA7) SES3 and AP4 revised scheme changes

3.1.1 The original scheme in this area is as described in section 7.3 of the main TA. This has since been amended by the SES and AP2 scheme described in section 3.1 of the SES and AP2 TA.

3.1.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-007-004 the revised construction assumptions relating to the use of M25 slip roads and routeing of construction traffic in the Colne Valley area.
- The following AP4 amendments have the potential to change the construction traffic vehicle trips by road within CFA7:
  - AP4-006-002 additional land required for the amended sustainable placement proposals in CFA6 and CFA7 and realignment of footpath U50
  - AP4-006-004 additional land required for the provision of a haul road through Uxbridge Golf Course. This road is located on the boundary of CFAs 6 and 7 and its impacts on the wider highway network are reported in CFA 6
  - AP4-009-001 extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works in CFA9

3.1.3 Additional traffic surveys have been undertaken at the following junctions and on sections of highway in the Colne Valley area to supplement the information reported in the main TA and SES and AP2 TA:

- A412 Denham Avenue/ Old Rectory Lane;
- A412 Denham Avenue/ Moorfield Road; and
- A412 Denham Way/ Chalfont Road.

3.1.4 A change to the workforce trip assignment has been made on the A40 (between A412 Denham Way and A413) and the A412 within this area, resulting in a change in all vehicle construction trips. However, the changes in forecast traffic flows are less than four car/LGV two-way trips a day (12 hour) and is not considered to have a substantial impact upon the main TA and SES and AP2 TA.

3.1.5 Additional construction excavated material is generated at the Chiltern tunnel main compound by the extension of the Chiltern tunnel amendment. This material is to be routed via Chalfont Lane and the M25 temporary slip lanes. This additional material will not increase daily construction traffic. It will, however, will extend the duration of the movement of excavated material at this location from approximately one year to approximately four years.

3.1.6 The revisions to construction routes in the Colne Valley area, relating to the use of the dedicated M25 slip roads by HGV construction traffic. The M25 slip lanes are to be used as a construction route for HGVs generated by: the Chiltern tunnel main compound/Chiltern tunnel south portal (rail systems), the Colne Valley viaduct main compound, the Colne Valley viaduct north embankment satellite compound, the Colne Valley viaduct north launch satellite compound and the Colne Valley viaduct laydown satellite compound. It is assumed that 50% of HGV traffic from the remaining two compounds in the Colne Valley area (Colne Valley viaduct jetty storage and Colne Valley viaduct storage satellite compounds) will use the temporary M25 slips (and then Chalfont Lane, the A412 Denham Way and Moorfield/Moorhall Road), with the remaining 50% using the M40, A40, A412 Denham Way and Moorfield/Moorhall Road.

3.1.7 The supplementary traffic data and the changes to construction routes, relating to the use of the dedicated M25 slip roads by HGV construction traffic, lead to a number of changes to the traffic a-nd transport assessment in the Colne Valley (CFA7) area reported in the main TA and SES and AP2 TA, and these are described later in this chapter. Noted changes to paragraphs are in relation to the main TA or the SES and AP2 TA.

3.1.8 The changes to the sustainable placement areas within CFA7 affect traffic and transport. Although material will be moved on haul roads within the worksites, a temporary crossing of Harvil Road is required. In addition, PRoW U50 will be temporarily diverted around the southern stockpile area.

3.1.9 The northern extent of the proposed haul route through Uxbridge Golf Course (AP4-006-004) will result in PRoW U50 being crossed by the haul road.

3.1.10 As with the SES and AP2 TA, impacts upon the A40 Western Avenue, the B467 Swakeleys Road and Harvil Road are solely reported in CFA 6.

Assessment methodology

3.1.11 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.1.12 Baseline conditions in this area are as described in Section 5.9 of the main TA and in the SES and AP2 TA, updated by the additional traffic survey data.

Future baseline

3.1.13 Future baseline conditions are as described in Section 7.3 of the main TA and in the SES and AP2 TA, updated by the additional traffic survey data.

Construction description

Construction trip assumptions

3.1.14 Table 7-7 of the main TA is amended. The average-peak daily two-way HGV trips generated by the Chiltern tunnel main compound/Chiltern tunnel south portal (rail systems), compound is 490-1050, compared to 860-920 in the main TA scheme and 580-1060 as reported in the SES and AP2 TA. Car/LGV trips are also amended from 350-370 in the SES and AP2 TA to 350-430. The changes are due to the proposed Chiltern Tunnel extension amendment in CFA9 (AP4-009-001).

Construction lorry routes

3.1.15 Paragraph 7.3.50 of the main TA is changed so that relevant bullet points be replaced with those below.

- 'Colne Valley viaduct main compound will be accessed via M25, the temporary M25 slip roads and Chalfont Lane';
- 'Colne Valley viaduct storage satellite compound will be accessed via M40, A40, A412 Denham Way/North Orbital Road and Moorhall Road, or via M25, the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road';
- 'Colne Valley viaduct jetty storage satellite compound will be accessed via M40, A40, A412 Denham Way/North Orbital Road and Moorhall Road, or via M25, the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road';
- 'Colne Valley viaduct laydown satellite compound will be accessed via the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road';
- 'Colne Valley viaduct north launch satellite compound will be accessed via the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road';
- Colne Valley viaduct north embankment satellite compound will be accessed via the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road'; and
- 'Chiltern tunnel main construction compound and Chiltern tunnel south portal (rail systems) satellite compound will be accessed via the temporary M25 slip roads, Chalfont Lane and A412 Denham Way/North Orbital Road'.

PRoW closures and diversions

3.1.16 Table 7-9 of the main TA is also changed to add the following PRoW, which is subject to temporary diversion under the AP4 revised scheme, due to additional land required for the amended sustainable placement proposals in CFA6 and CFA7 and realignment of footpath U50 (AP4-006-002). In addition, a controlled crossing will be provided for Footpath U50 across the proposed haul road through Uxbridge Golf Course (AP4-006-004).

Table 7-9: Colne Valley temporary footpath, cycleway and bridleway closures and diversions – partial replacement

PRoW/ pedestrian route	Location	Location (chainage)	Diversion length (Approx.)	Reason for diversion and diversion route
Footpath U50	South Harefield	25+400	350m	Additional land required for amended sustainable placement proposals in CFA6 and CFA7. Temporary diversion around the edge of the temporary material stockpile and Harvil Road.

Assessment of construction impacts

Highway network

3.1.17 Changes to forecast traffic flows, primarily due to the revision to construction routes for HGVs (but also as a result of the AP4 revised scheme) are presented in the following sections. Other than revisions to the baseline as necessary arising from the new survey information, there are no changes to other forecast flows presented in the main TA and SES and AP2 TA.

3.1.18 The main changes due to the revision to construction route assumptions compared to the relevant SES and AP2 TA are:

- A412 Denham Way (between A40 and satellite compounds) and the A40 (between M40 J1 and A412 Denham Way) - decrease in HGV construction vehicles by approximately 35 two-way trips a day;
- A412 Denham Way /North Orbital Road (between satellite compounds and Chalfont Lane) - increase in HGV construction vehicles by approximately 35 two-way trips a day;
- A412 Denham Way /North Orbital Road (north of Chalfont Lane) and A405 Denham Way /North Orbital Road (north of A412) - decrease in HGV construction vehicles by approximately 55 two-way trips a day;
- M25 junction 16 to 17 - increase in HGV construction vehicles by approximately 160 two-way trips a day (south of temporary slip roads); and
- M25 temporary slip lanes - increase in HGV construction vehicles by approximately 40 a day, on each slip lane.

3.1.19 It should be noted that the 'A412 Denham Way/ North Orbital Road (south of satellite compounds)' link has been revised and split into two separate links: 'A412 Denham Way /North Orbital Road (between satellite compounds and Denham Green Lane)' and ' A412 Denham Way /North Orbital Road (between Moorfield Rd and Denham Green Lane)'.

Strategic road network

3.1.20 Table 7-10 and 7-11 of the main TA (and accounting for changes presented in the SES and AP2 TA) are replaced by the following tables.

Table 7-2: Colne Valley strategic road network construction traffic flows (vehicles) - AM peak

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
M25 Junction 17	AC Offslip	930	995	1017	62	22	0	2%	0%
	CW Offslip	343	367	511	153	144	132	39%	617%
	AC Onslip	527	564	697	148	133	132	24%	823%
	CW Onslip	524	561	561	9	0	0	0%	0%
M25 Junction 16 to 17 (north of temp slip roads)	AC J17 to J16	4681	5009	5142	611	133	132	3%	28%
	CW J16 to J17	5102	5459	5603	688	144	132	3%	24%
M25 Junction 16 to 17 (south of temp slip roads)	AC J17 to J16	4681	5009	5076	546	67	67	1%	14%
	CW J16 to J17	5102	5459	5537	623	78	67	1%	12%
A40 (between Denham Roundabout and A412)	NB	2077	2681	2755	69	74	4	3%	6%
	SB	1785	2176	2184	180	8	4	0%	2%
A40, between the A412 Denham Way and the A413 (Note: new link in SES and AP2 TA with a 10% or more change in all veh or HGV peak hour flow)	EB	884	1349	1355	32	6	2	0%	8%
	WB	1164	1822	1834	27	12	2	1%	10%

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A412 Denham Way (between A40 and Moorfield Road)	NB	953	953	1015	42	62	1	7%	4%
	SB	1293	1284	1286	107	2	1	0%	1%
A412 Denham Way /North Orbital Road (between Moorfield Rd and Denham Green Lane)	NB	354	388	443	10	56	1	14%	16%
	SB	551	603	611	17	8	1	1%	9%
A412 Denham Way /North Orbital Road (between satellite compounds and Denham Green Lane) ('A412 Denham Way/ North Orbital Road (south of satellite compounds)' in main TA)	NB	354	388	449	10	62	1	16%	16%
	SB	551	603	757	19	154	3	26%	19%
A412 Denham Way/ North Orbital Road (north of satellite compounds)	NB	354	388	401	16	13	7	3%	78%
	SB	551	603	817	24	214	9	35%	54%
A412 Denham Way/ North Orbital Road	NB	418	458	458	18	0	0	0%	0%
	SB	715	783	844	31	61	0	8%	0%
A405 Denham Way/ North Orbital Road	NB	739	807	807	25	0	0	0%	0%
	SB	1169	1277	1310	78	33	0	3%	0%

Table 7-3: Colne Valley strategic road network construction traffic flows (vehicles) - PM peak

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
M25 Junction 17	AC Offslip	499	524	524	21	0	0	0%	0%
	CW Offslip	300	315	438	135	123	122	39%	972%
	AC Onslip	221	232	366	132	134	122	58%	1295%
	CW Onslip	648	680	702	4	22	0	3%	0%
M25 Junction 16 to 17 (north of temp slip roads)	AC J17 to J16	5028	5279	5413	463	134	122	3%	36%
	CW J16 to J17	6285	6599	6722	534	123	122	2%	30%
M25 Junction 16 to 17 (south of temp slip roads)	AC J17 to J16	5028	5279	5352	402	73	61	1%	18%
	CW J16 to J17	6285	6599	6661	473	62	61	1%	15%
A40 (between Denham Roundabout and A412)	NB	2180	2368	2374	64	6	3	0%	4%
	SB	1238	1285	1358	56	73	3	6%	5%
A40, between the A412 Denham Way and the A413 (Note: new link in SES and AP2 TA with a 10% or more change in all veh or HGV peak hour flow)	EB	518	527	538	16	11	2	2%	14%
	WB	1884	2110	2116	24	6	2	0%	9%

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A412 Denham Way (between A40 and Moorfield Road)	NB	990	979	979	44	1	0	0%	1%
	SB	1050	1081	1142	43	61	0	6%	1%
A412 Denham Way /North Orbital Road (between Moorfield Rd and Denham Green Lane)	NB	596	657	664	5	7	0	1%	10%
	SB	433	477	532	4	55	0	11%	12%
A412 Denham Way /North Orbital Road (between satellite compounds and Denham Green Lane)	NB	596	657	684	5	27	0	4%	10%
('A412 Denham Way/ North Orbital Road (south of satellite compounds)' in main TA)	SB	433	477	552	5	75	1	16%	27%
A412 Denham Way/ North Orbital Road (north of satellite compounds)	NB	596	657	740	7	83	2	13%	46%
	SB	433	477	500	7	22	3	5%	74%
A412 Denham Way/ North Orbital Road	NB	810	893	954	13	61	0	7%	0%
	SB	412	454	454	10	0	0	0%	0%
A405 Denham Way/ North Orbital Road	NB	977	1072	1105	14	33	0	3%	0%
	SB	723	793	793	30	0	0	0%	0%

3.1.21 A revision to construction route assumptions within the area has primarily resulted in a decrease in forecast HGV construction traffic on the A412 Denham Way /North Orbital Road (between A40 and satellite compounds; and north of Chalfont Lane), the A40 (between M40 J1 and A412 Denham Way) and the A405 Denham Way /North Orbital Road (north of the A412). It has also resulted in an increase in forecast HGV construction traffic on the A412 Denham Way /North Orbital Road (between satellite compounds and Chalfont Lane) and M25 between junctions 16 and 17. The changes in flows have also accounted for the minor changes due to the AP4 revised scheme.

3.1.22 Table 7-12 of the main TA is replaced. The revision to construction route assumptions and the AP4 revised scheme have resulted in an increase in construction traffic using the temporary slip roads during construction, in comparison to the SES scheme.

Table 7-12: Colne Valley 2021 M25 temporary slip road construction traffic flows

Location	Direction	Total veh (HGVs)
M25 anti-clockwise (Temporary offslip to revised scheme compounds)	AM peak	74
	PM peak	64
M25 clockwise (Temporary onslip to revised scheme compounds)	AM peak	74
	PM peak	64

Junction capacity

3.1.23 The assessment of junctions where additional traffic surveys were undertaken in 2015 have been reviewed.

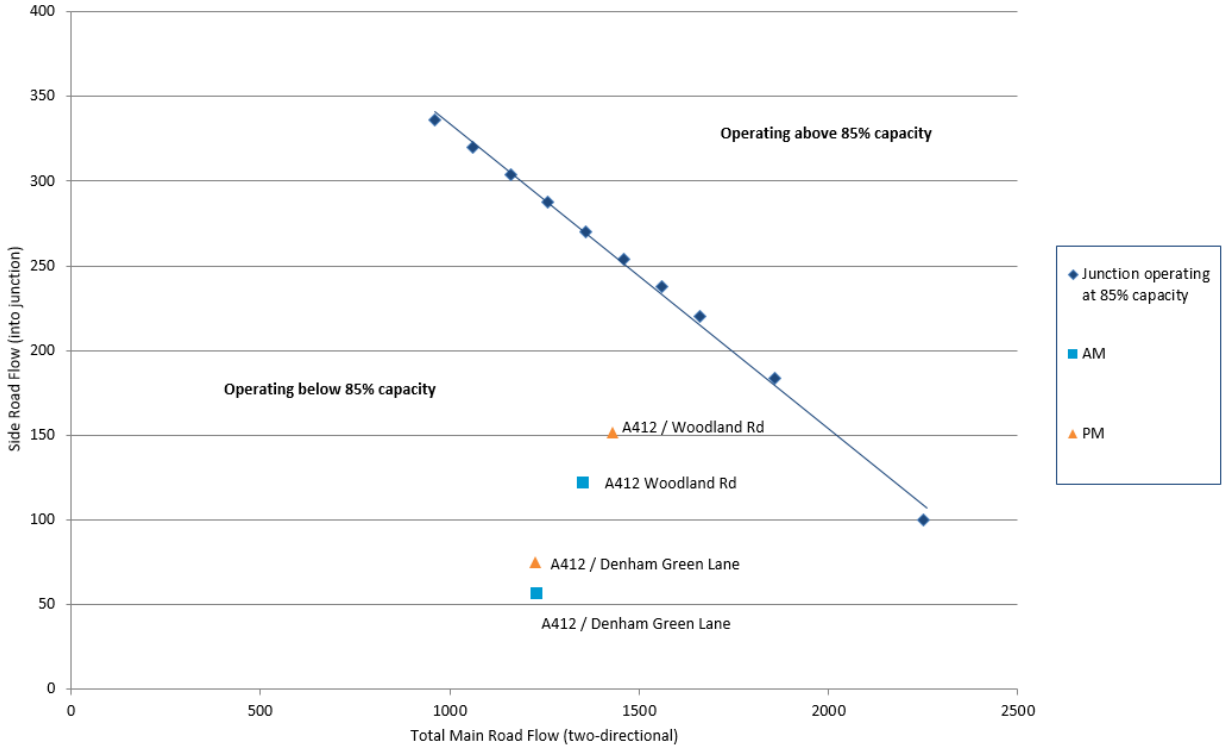
3.1.24 The A412 North Orbital Road with Denham Green Lane and A412 Denham Way with Woodland Road priority junctions have been re-assessed based upon the traffic flows for the SES3 and AP4 revised scheme. Table 7-15 of the SES and AP2 TA (which updated the main TA) is changed by the following table.

Table 7-15: Colne Valley priority junction flows – partial replacement

Junction	2021 With HS2 construction traffic			
	AM peak		PM peak	
	Main road flow (PCUs)	Side road flow (PCUs)	Main road flow (PCUs)	Side road flow (PCUs)
A412 North Orbital Road /Denham Green Lane	1229	57	1226	75
A412 Denham Way /Woodland Road	1350	122	1431	152

3.1.25 Figure 7-2 in the SES and AP2 TA (which updated the figure in the main TA) is replaced by the following figure.

Figure 7-2: Colne Valley priority junction assessment 2021



3.1.26 This indicates that the A412 North Orbital Road/Denham Green Lane and A412 Denham Way/Woodland Road junctions fall below the 'threshold' of capacity during both the AM and PM peaks and are forecast to operate within their theoretical capacity during construction of the SES3 and AP4 revised scheme. As a result, it is not considered necessary to assess these individually with junction assessment software.

3.1.27 Using the supplementary survey data, additional assessment of the A412 Denham Avenue/Chalfont Road junction has been carried out, using industry standard software (two models were required for assessment of this junction). The results are shown in Table 7-15.1 and Table 7-15.2 and update the assessment within the main TA and SES and AP2 TA for this junction.

3.1.28 The modelling results indicate that the A412 Denham Avenue/Chalfont Road junction will operate within capacity during construction, during both the AM and PM peak periods. This updates the assessment within the main TA and SES and AP2 TA (paragraph 3.1.21 in the SES and AP2 TA) for this junction, which indicated that construction traffic may potentially cause additional intermittent traffic congestion and delay in the AM peak period.

Table 7-15.1: Forecast baseline and construction scenario performance at A412 Denham Avenue/Chalfont Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A412 Denham Way South	516	0%	0	516	0%	0
Chalfont Road	302	49%	1	346	56%	1
A412 Denham Way North	975	0%	0	1036	0%	0
Total	N/A	49%	N/A	N/A	56%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A412 Denham Way South	976	0%	0	1037	0%	0
Chalfont Road	249	52%	1	275	59%	2
A412 Denham Way North	660	0%	0	660	0%	0
Total	N/A	52%	N/A	N/A	59%	N/A

Table 7-15.2: Forecast baseline and construction scenario performance at A412 Denham Avenue/Chalfont Road junction (Maple Lodge Close)

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Denham Way N Right Ahead Left	1173	72%	14	1264	77%	15
Denham Way S Right Ahead Left	530	37%	6	530	37%	6
Maple Lodge Close Right Ahead Left	58	36%	2	58	36%	2
Total	N/A	72%	N/A	N/A	77%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Denham Way N Right Ahead Left	981	57%	7	1019	58%	7
Denham Way S Right Ahead Left	969	68%	18	1030	73%	20
Maple Lodge Close Right Ahead Left	82	53%	3	82	53%	3
Total	N/A	68%	N/A	N/A	73%	N/A

3.1.29 Using the supplementary survey data, assessment of the A412 Denham Avenue/Old Rectory Lane and A412 Denham Avenue/Moorfield Road junctions has been undertaken. The results are shown in Table 7-15.3 and Table 7-15.4.

3.1.30 The modelling results indicate that the A412 Denham Avenue/Old Rectory Lane junction will operate within capacity during construction of the revised scheme in the AM peak, with the highest percentage of flow to capacity at 84% on the Denham Avenue (south) arm. Within the PM peak, however, the highest percentage of flow to capacity is 90% on the Denham Avenue (south) arm, which indicates that the junction may experience intermittent traffic congestion and delay during the evening peak, during construction. However, there is no substantial difference in operation following addition of revised scheme construction traffic, with the junction also forecast to operate over capacity in the 2021 baseline.

3.1.31 The modelling results indicate that the A412 Denham Avenue/Moorfield Road junction will operate over capacity during construction of the revised scheme during both the AM peak and PM peak, with the highest percentage of flow to capacity at 108% and 113% on the Moorfield Road arm, respectively. However, although there is an increase of up to 11% in the flow to capacity ratio, the junction is forecast to operate over capacity in the 2021 baseline.

Table 7-15.3: Forecast baseline and construction scenario performance at A412 Denham Avenue/Old Rectory Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A412 Denham Ave North Right Ahead	1403	82%	28	1406	82%	29
Old Rectory Lane Left Right	138	79%	6	138	79%	6
A412 Denham Ave South Ahead Left	1201	79%	30	1266	84%	34
Total	N/A	82%	N/A	N/A	84%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A412 Denham Ave North Right Ahead	1130	74%	24	1192	78%	27
Old Rectory Lane Left Right	311	89%	14	311	89%	14
A412 Denham Ave South Ahead Left	1174	90%	38	1175	90%	38
Total	N/A	90%	N/A	N/A	90%	N/A

Table 7-15.4: Forecast baseline and construction scenario performance at A412 Denham Avenue with Moorfield Road

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
North Orbital Rd Ahead Left	821	99%	31	801	107%	50
South Orbital Rd Right Ahead	963	99%	22	1100	107%	55
Moorfield Rd Left Right	491	99%	20	495	108%	33
Total	N/A	99%	N/A	N/A	108%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
North Orbital Rd Ahead Left	832	101%	36	857	112%	69
South Orbital Rd Right Ahead	1027	100%	24	1102	109%	64
Moorfield Rd Left Right	501	103%	26	513	113%	43
Total	N/A	103%	N/A	N/A	113%	N/A

3.1.32 The A412 Denham Way/ Chalfont Lane and A412 Denham Way/A405 North Orbital Road/ A412 Uxbridge Road junctions have been re-modelled, based upon adjusted traffic flows within CFA7 as a result of the SES3 changes (including revised construction traffic route assumptions) and the AP4 revised scheme,. Table 7-16 and Table 7-17 of the SES and AP2 TA are replaced by those below.

3.1.33 There is no substantial change to the result of the assessment carried out and reported in the main TA and SES and AP2 TA, whereby the modelling results indicate that both the A412 Denham Way/ Chalfont Lane and A412 Denham Way/A405 North Orbital Road/ A412 Uxbridge Road junctions will operate within capacity during construction.

Table 7-16: Forecast baseline and construction scenario performance at A412 Denham Way/Chalfont Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Chalfont Lane (E)	239	29%	1	239	31%	1
A412 (S)	476	32%	1	494	33%	1
Chalfont Lane (W)	87	13%	1	105	16%	0
A412 (N)	814	47%	1	875	51%	1
Total	N/A	47%	N/A	N/A	51%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Chalfont Lane (E)	371	36%	1	371	37%	1
A412 (S)	906	63%	2	985	68%	2
Chalfont Lane (W)	53	13%	1	71	19%	0
A412 (N)	464	26%	1	464	26%	0
Total	N/A	63%	N/A	N/A	68%	N/A

Table 7-17: Forecast baseline and construction scenario performance at A412 Denham Way/ A405 North Orbital Road/ A412 Uxbridge Road

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A412 (N) Uxbridge Road	939	50%	1	967	52%	1
A412 (S) Denham Way	476	19%	1	476	19%	0
A405 North Orbital Road	1355	53%	2	1388	54%	1
Total	N/A	53%	N/A	N/A	54%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A412 (N) Uxbridge Road	668	29%	1	668	29%	1
A412 (S) Denham Way	1489	56%	2	1550	59%	2
A405 North Orbital Road	823	34%	1	823	36%	1
Total	N/A	56%	N/A	N/A	59%	N/A

Pedestrians, cyclists and equestrians

3.1.34 Table 7-19 of the main TA is amended to add the following PRoW which is subject to diversion under the AP4 revised scheme, due to additional land required for the amended sustainable placement proposals in CFA6 and CFA7 and temporary realignment of footpath U50 (AP4-006-002).

3.1.35 In addition, Footpath U50 will be crossed by the proposed haul road through Uxbridge Golf Course (AP4-006-004). A controlled crossing will be provided for Footpath U50 across the haul road.

Table 7-19: Colne Valley summary of PRoW severance (construction)

PRoW	Location	Location (chainage)	Construction Activity	Temporary Diversion Route	Daily Users	Maximum Diversion Length	Maximum Diversion Journey Time (nearest minute)
Footpath U50	South Harefield	25+400	Amended sustainable placement proposals in CFA6 and CFA7.	Temporary diversion around the edge of the temporary material stockpile and Harvil Road.	Up to 200	350m	5 mins

Operation description and assessment of operation impacts

3.1.36 There is no change to section 7.3 of the main TA with regard to the assessment of the original scheme during operation.

3.2 The Chalfonts and Amersham (CFA8)

The Chalfonts and Amersham (CFA8) SES3 and AP4 revised scheme changes

3.2.1 The original scheme in this area is as described in section 7.4 of the main TA. This has since been amended by the SES and AP2 scheme described in section 3.2 of the SES and AP2 TA.

3.2.2 The third bullet point of paragraph 3.2.3 of the SES and AP2 TA, discussing A404 Wheilden Lane (between A413 Amersham bypass and Whielden Street), is deleted. This section of road remains in use for the movement of excavated material.

3.2.3 Additional traffic surveys have been undertaken at the following junctions and on sections of highway in The Chalfonts and Amersham area (CFA9) to supplement the information reported in the main TA and SES and AP2 TA:

- A413/ School Lane (Amersham Old Town)/ Shardeloes;
- A413 Amersham Bypass with A404 Whielden Lane;
- A40 London Road/ A355 Pyebush Roundabout;
- A404 Whielden Lane/ Whielden Street;
- A355/ Ledborough Lane;
- A40 London Road/ A355 London End;
- A413 Amersham Road, between Joiners Lane and Chalfont St Giles; and
- A40 London Road, between London End and Pyebush Roundabout.

3.2.4 A revision to forecast construction traffic on the A404 Whielden Lane, to account for the movement of excavated material between A413 Amersham Bypass and Whielden Street, has been made. This has resulted in a change in all vehicle construction trips on this section of road. The forecast flows for the A404 Whielden Lane presented in Tables 7-30 and 7-31 in the SES and AP2 TA are unchanged but relate to the A404 Whielden Lane, west of Whielden Street.

3.2.5 The following AP4 revised scheme change, located in CFA9 (Central Chilterns), has necessitated a revision to the number of construction vehicle trips by road within CFA8:

- extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works in CFA9 (AP4-009-001).

3.2.6 The changes lead to a number of changes to the traffic and transport assessment in The Chalfonts and Amersham area (CFA8) reported in the main TA and SES and AP2 TA. Noted changes to paragraphs are in relation to the main TA or the SES and AP2 TA.

Assessment methodology

3.2.7 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.2.8 Baseline conditions in this area are as described in Section 5.10 of the main TA and SES and AP2 TA, updated by the additional traffic survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.2.9 Future baseline conditions in this area are as described in Section 7.4 of the main TA and SES and AP2 TA, updated by the additional traffic survey data.

3.2.10 Table 7-22 and Table 7-23 are partially replaced to include the following links, whereby new baseline data is provided, due to additional traffic data collected.

Table 7-22: The Chalfonts and Amersham strategic road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015)		2021		2026		2041							
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV	2021	2026	2041	2021	2026	2041
A413 Amersham Road (between Joiners Lane and Chalfont St Giles)	NB	686	7	743	7	792	8	915	9	+57	+106	+229	8%	15%	33%
	SB	1044	12	1132	13	1206	14	1394	16	+88	+162	+350	8%	16%	34%
A40 London Road, between London End and Pyebush Roundabout	EB	1398	22	1511	24	1604	25	1861	29	+113	+206	+463	7%	15%	33%
	WB	1370	29	1481	31	1572	33	1825	38	+111	+202	+455	7%	15%	33%

Table 7-23: The Chalfonts and Amersham strategic road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041							
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV	2021	2026	2041	2021	2026	2041
A413 Amersham Road (between Joiners Lane and Chalfont St Giles)	NB	1017	4	1103	4	1179	5	1371	5	+86	+162	+354	8%	16%	35%
	SB	662	3	718	3	767	3	892	3	+56	+105	+230	8%	16%	35%
A40 London Road, between London End and Pyebush Roundabout	EB	1093	5	1181	5	1256	5	1464	6	+88	+163	+371	7%	15%	34%
	WB	1306	28	1410	30	1500	32	1749	37	+104	+194	+443	7%	15%	34%

Construction description

Construction trip assumptions

Assignment

3.2.11 Paragraphs 3.2.3 and 3.2.18 of the SES and AP2 TA are amended to remove the reference that Joiners Lane and Chesham Lane/Denham Lane (between Joiners Lane and Chalfont St. Peter ventilation shaft satellite compound) are new routes for the movement of excavated material. These roads were utilised for the movement of excavated material in the original scheme and remain so in the SES3 and AP4 revised scheme.

3.2.12 Paragraph 3.2.13 of the SES and AP2 TA describing construction routes is replaced by:

"A413 (between the boundary with CFA7 and Bottom House Farm Lane, and between the A355 Gore Hill and the boundary with CFA 9), A355 Gore Hill/Amersham Road (between A413 Amersham Bypass and M40), Bottom House Farm Lane (between Chalfont St Giles ventilation shaft satellite construction compound and A413 Amersham Road), A404 Wheilden Lane, between the A413 Amersham Bypass and Whielden Street, Joiners Lane and Chesham Lane/Denham Lane (between Joiners Lane and Chalfont St Peter ventilation shaft satellite construction compound)."

3.2.13 Paragraph 3.2.14 of the SES and AP2 TA is amended to remove '330 cars/LGVs and 100 HGVs per day (two way)', and this is replaced by:

"280 cars/LGVs per day (two way) and 90 HGVs per day (two way)."

3.2.14 This change is in relation to a difference in trips generated by compounds within CFA9, related to the Chiltern Tunnel extension.

Assessment of construction impacts

Highway network

3.2.15 Changes to forecast traffic flows as a result of the SES3 and AP4 revised scheme, including the revised flows on the A404 Whielden Lane, between A413 Amersham Bypass and Whielden Street, are presented. Forecast flows for the sections of road whereby the baseline was updated by supplementary traffic data are also shown. There are no changes to other forecast flows presented in the main TA and SES and AP2 TA.

3.2.16 The SES3 and AP4 revised scheme has resulted in the following changes to forecast traffic flows within CFA8 during construction, in comparison to the SES scheme:

- A413, between the B485 Frith Hill/Chesham Road (in CFA9) and the A355 Gore Hill - a decrease in all construction vehicles by approximately 75 two-way trips a day. There is also a decrease in all construction vehicles on the A413 south of theA355 Gore Hill, but by a marginal amount (approximately two two-way trips a day); and
- A355 Gore Hill / /Amersham Road - a decrease in all construction vehicles by approximately 75 two-way trips a day.

Strategic road network

3.2.17 Table 7-30 and Table 7-31 of the SES and AP2 TA are partially replaced.

Table 7-30: The Chalfonts and Amersham strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 Amersham Bypass between A355 Gore Hill and A404 Whielden Lane (Amersham)	EB	1396	1539	1564	109	25	22	2%	25%
	WB	876	965	1031	110	65	22	7%	25%
A413 Amersham Road, between A404 Whielden Lane and Hyde Lane (in CFA9) (Great Missenden)	EB	1135	1237	1268	51	31	21	2%	72%
Named 'A413 Amersham Road, between A404 Whielden Lane and B485 Frith Hill/Chesham Road (Little Missenden) (in CFA9)' in SES and AP2 TA	WB	659	718	815	34	97	21	14%	164%
A355 Gore Hill/Amersham Road, between A413 Amersham Bypass and M40	NB	840	917	964	35	47	22	5%	170%
	SB	936	1022	1048	29	26	22	3%	314%
A413 Amersham Road (between Joiners Lane and Chalfont St Giles)	NB	686	743	769	10	25	2	3%	35%
	SB	1044	1132	1135	15	3	2	0%	19%
A40 London Road, between London End and Pyebush Roundabout	EB	1398	1511	1537	46	26	22	2%	94%
	WB	1370	1481	1521	53	40	22	3%	72%
A404 Whielden Lane, between A413 Amersham Bypass and Whielden Street	EB	874	964	1011	61	47	11	5%	23%
	WB	733	808	824	17	16	11	2%	209%

Table 7-31: The Chalfonts and Amersham strategic road network construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 Amersham Bypass between A355 Gore Hill and A404 Whielden Lane (Amersham)	EB	868	958	1015	53	58	16	6%	45%
	WB	1529	1686	1704	85	18	16	1%	24%
A413 Amersham Road, between A404 Whielden Lane and Hyde Lane (in CFA9) (Great Missenden)	EB	591	643	734	26	90	16	14%	162%
Named 'A413 Amersham Road, between A404 Whielden Lane and B485 Frith Hill/Chesham Road (Little Missenden) (in CFA9)' in SES and AP2 TA	WB	1195	1301	1325	38	24	16	2%	75%
A355 Gore Hill/Amersham Road, between A413 Amersham Bypass and M40	NB	939	1024	1042	23	18	17	2%	254%
	SB	699	762	801	19	39	17	5%	662%
A413 Amersham Road (between Joiners Lane and Chalfont St Giles)	NB	1017	1103	1105	6	2	2	0%	47%
	SB	662	718	742	5	25	2	3%	75%
A40 London Road, between London End and Pyebush Roundabout	EB	1093	1181	1213	21	32	17	3%	342%
	WB	1306	1410	1428	46	18	17	1%	56%
A404 Whielden Lane, between A413 Amersham Bypass and Whielden Street	EB	602	664	680	33	16	11	2%	49%
	WB	915	1009	1055	16	46	11	5%	212%

3.2.18 The SES3 and AP4 revised scheme has resulted in a decrease in forecast construction traffic on the A413 across the area and on the A355 Gore Hill/ Amersham Road. This is related to a difference in trips generated by compounds associated with the Chiltern Tunnel extension within CFA9. Additional or revised baseline data and forecast construction traffic flows are provided on A413 Amersham Road (between Joiners Lane and Chalfont St Giles) and A40 London Road, between London End and Pyebush Roundabout, based upon the supplementary traffic data collected.

3.2.19 Paragraph 3.2.18 of the SES and AP2 TA is amended to remove "The A404 Whielden Lane, between the A413 Amersham Bypass and Whielden Street, is also no longer used for the movement of excavated material". This section of road is used for the movement of excavated material. Paragraph 3.2.19 of the SES and AP2 TA is amended to include additional bullet point to recognise the use of this road as a construction route:

- "A404 Whielden Lane, between A413 Amersham Bypass and Whielden Street".

Junction capacity

3.2.20 Additional traffic surveys have been undertaken at the following junctions to supplement the information reported in the main TA and SES and AP2 TA:

- A413 with School Lane (Amersham Old Town) /Shardeloes;
- A413 Amersham Bypass/ A404 Whielden Lane;
- A40 London Road/A355 Pyebush Roundabout;
- A404 Whielden Lane/ Whielden Street;
- A355/Ledborough Lane; and
- A40 London Road/ A355 London End.

3.2.21 Using the supplementary survey data, a further assessment of the A413/School Lane (Amersham Old Town)/ Shardeloes and A413 Amersham Bypass/A404 Whielden Lane junctions has been carried out, using industry standard software. The results are shown in Tables 7-33.1 and 7-33.2, and updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.2.22 Revision to paragraph 3.2.20 of the SES and AP2 TA , with the deletion of text for the A413/School Lane (Amersham Old Town) and Shardeloes junction "increased traffic during the most intensive periods of construction has high potential to cause additional intermittent traffic congestion and delay at these junctions during peak periods". The modelling results indicate that the junction will operate within capacity during construction of the revised scheme within the AM peak, with the highest percentage of flow to capacity at 72% on the A413 (north arm). Within the PM peak, the highest percentage of flow to capacity is 87% on the A413 (south arm). However, this arm is forecast to operate at 84% flow to capacity in the 2021 baseline, which indicates that the revised scheme traffic is unlikely to result in a substantial change in operation.

3.2.23 The modelling results indicate that the A413 with Whielden Lane junction is predicted to operate within capacity during construction of the revised scheme in the AM Peak, with the highest percentage of flow to capacity predicted as 78% on the A413 (east) arm. Within the PM Peak, however, the highest percentage of flow to capacity is predicted as 106% on the A413 (east) arm. This indicates that the junction will experience significant traffic congestion and delay during the evening peak, during construction. However, the junction is forecast to operate over capacity in the 2021 baseline (101%) and therefore, although there is an increase in maximum queue lengths, there would be significant delays regardless of HS2 construction.

Table 7-33.1: Forecast baseline and construction scenario performance at A413 with School Lane (Amersham Old Town)/Shardeloes junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
High Street	161	22%	0	161	23%	0
A413 South	676	39%	1	801	46%	1
Shardeloes	6	1%	0	6	1%	0
A413 North	1686	69%	2	1744	72%	3
Total	N/A	69%	N/A	N/A	72%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
High Street	399	34%	1	399	36%	1
A413 South	1323	84%	5	1368	87%	7
Shardeloes	9	3%	0	9	4%	0
A413 North	713	29%	0	824	34%	1
Total	N/A	84%	N/A	N/A	87%	N/A

Table 7-33.2: Forecast baseline and construction scenario performance at A413 Amersham Bypass/A404 Whielden Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 East	1136	71%	3	1250	78%	4
Whielden Ln.	914	52%	1	977	58%	2
A413 West	1384	52%	1	1437	53%	1

Total	N/A	71%	N/A	N/A	78%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 East	1804	101%	53	1868	106%	125
Whielden Ln.	1170	81%	4	1199	83%	5
A413 West	606	11%	0	717	17%	0
Total	N/A	101%	N/A	N/A	106%	N/A

3.2.24 Using the supplementary survey data, assessment of the A40 London Road/A355 Pyebush Roundabout, A404 Whielden Lane/ Whielden Street, A355/Ledborough Lane and A40 London Road/A355 London End junctions has been undertaken. The results are shown in Tables 7-33.3 to 7-33.6.

3.2.25 The modelling results indicate that the junctions of A40 London Road/A355 Pyebush Roundabout, A404 Whielden Lane/Whielden Street, and A355/Ledborough Lane will operate within capacity during construction of the revised scheme. The highest percentage of flow to capacity at each of these junctions is below 85%, (below which congestion would not be expected), with construction traffic resulting in a maximum increase of 3%. The impact of the revised scheme is therefore not considered to have a material impact on capacity at this junction.

3.2.26 The modelling results indicate that the junction of A40 London Road/A355 London End will experience intermittent traffic congestion and delay during construction, with the A40 London Road and A355 Park Lane arms over 85% percentage of flow to capacity during both AM and PM peaks. However, these arms are also forecast to operate at similar levels of flow to capacity ratio in the 2021 baseline, which indicates that revised scheme traffic will not result in a substantial change in operation.

Table 7-33.3: Forecast baseline and construction scenario performance at A40 London Road/A355 Pyebush Roundabout junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A40 London Road East	1037	67%	2	1037	69%	3
A355 Pyebush	1797	74%	3	1866	77%	4
A40 London Road West	1501	78%	4	1557	81%	5
Total	N/A	78%	N/A	N/A	81%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A40 London Road East	819	50%	1	819	52%	1
A355 Pyebush	1821	75%	3	1861	77%	3
A40 London Road West	1404	72%	3	1457	75%	3
Total	N/A	75%	N/A	N/A	77%	N/A

Table 7-33.4: Forecast baseline and construction scenario performance at A404 Whielden Lane/Whielden Street junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A404 East	1014	0	0	1047	0	0
Whielden Lane	196	37%	1	222	39%	1
A404 West	1025	0	0	1063	0	0
Total	N/A	37%	N/A	N/A	39%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A404 East	932	0	0	992	0	0
Whielden Lane	234	42%	1	266	45%	1
A404 West	839	0	0	839	0	0
Total	N/A	42%	N/A	N/A	45%	N/A

Table 7-33.5: Forecast baseline and construction scenario performance at A355/ Ledborough Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A355 South	820	0	0	896	0	0
Ledborough Ln.	225	35%	1	225	37%	1
A355 North	1199	37%	1	1254	38%	1
Total	N/A	37%	N/A	N/A	38%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A355 South	1262	0	0	1301	0	0
Ledborough Ln.	151	29%	0	151	30%	0
A355 North	805	34%	1	866	34%	1
Total	N/A	34%	N/A	N/A	34%	N/A

Table 7-33.6: Forecast baseline and construction scenario performance at A40 London Road/A355 London End junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Minerva Way	11	12%	0	11	15%	0
A40 London Road	1740	98%	31	1809	102%	68
A40 London End	880	77%	3	888	80%	4
A355 Park Ln.	1049	90%	9	1105	95%	16
Total	N/A	98%	N/A	N/A	102%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Minerva Way	13	8%	0	13	15%	0
A40 London Road	1762	94%	14	1802	104%	88
A40 London End	857	74%	3	857	83%	5
A355 Park Ln.	1052	80%	4	1112	93%	12
Total	N/A	94%	N/A	N/A	104%	N/A

Operation description and assessment of operation impacts

3.2.27 There is no change to the section 7.4 of the main TA and section 3.2 of the SES and AP2 TA with regard to the assessment of the original scheme during operation.

3.3 Central Chilterns (CFA9)

Central Chilterns (CFA9) SES3 and AP4 revised scheme changes

3.3.1 The original scheme in this area is as described in section 7.5 of the main TA. This has since been amended by the SES and AP2 scheme described in section 3.3 of the SES and AP2 TA.

3.3.2 Additional traffic surveys have been undertaken at the following junctions and section of highway in the Central Chilterns area to supplement the information reported in the main TA and SES and AP2 TA:

- A40 West Wycombe Road/ A4010 Chapel Lane;
- A40 West Wycombe Road/ A4010 Bradenham Road;
- A413 Missenden bypass/ Weedon Hill;
- A413/ Chalk Lane/ Tatlors Lane;
- A413/ London Road;
- A413/ Leather Lane;
- A4010 New Road/ Cressex Road;
- B485 Frith Hill (Chesham Road)/ Hyde Heath Road;
- B485 Frith Hill (Chesham Road) /Kings Lane;
- B485 Frith Hill (Chesham Road) /Frith Hill;
- A413/ Aylesbury Road; and
- A4010 Wycombe Road, between Princes Risborough and A40 at West Wycombe.

3.3.3 A revision to the workforce trip assignment has been made on Leather Lane and Bowood Lane within this area. This has resulted in a small reduction in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment.

3.3.4 The following AP4 amendment in this CFA has necessitated a revision to the number and routeing of construction vehicle trips by road within this area:

- extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works in CFA9 (AP4-009-001).

3.3.5 These changes lead to a number of changes to the traffic and transport assessment in the Central Chilterns (CFA9) area reported in the main TA and SES and AP2 TA. Noted changes to paragraphs are in relation to the main TA or the SES and AP2 TA.

Assessment methodology

3.3.6 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.3.7 Baseline conditions in this area are as described in Section 5.11 of the main TA and the SES and AP2 TA, updated by the additional traffic survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.3.8 Future baseline conditions in this area are as described in Section 7.5 of the main TA and the SES and AP2 TA, updated by the additional traffic survey data.

3.3.9 Table 7-37 and Table 7-38 are amended to include the following road, whereby new baseline data is provided from the additional traffic data collected.

Table 7-37: Central Chilterns strategic road network future baseline flows (vehicles) - AM peak

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A4010 Wycombe Road, between Princes Risborough and A40 at West Wycombe	NB	524	8	575	8	617	9	740	11	+51	+93	+216	10%	18%	41%
	SB	567	6	622	6	668	6	801	8	+55	+101	+234	10%	18%	41%

Table 7-38: Central Chilterns strategic road network future baseline flows (vehicles) - PM peak

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A4010 Wycombe Road, between Princes Risborough and A40 at West Wycombe)	NB	760	2	833	2	894	2	1074	3	+73	+134	+314	10%	18%	41%
	SB	552	2	605	2	649	2	780	2	+53	+97	+228	10%	18%	41%

Construction description

Construction activities

3.3.10 Paragraph 7.5.31 of the main TA is amended to remove bullet points 'South Heath green tunnel' and 'South Heath cutting' which are no longer construction elements within this area.

Compounds and construction sites

3.3.11 Table 7-41 is replaced by the table below.

Table 7-41: Central Chilterns assumed workforce at construction sites

Compound type	Location	Assumed daily workforce per site for duration of the construction programme	
		Average	Peak
Satellite	Little Missenden vent shaft	32	62
Satellite	Chesham Road vent shaft	30	60
Satellite	Chiltern tunnel north portal (civil engineering)/ Chiltern tunnel north portal access road satellite compound	40	70
Satellite	Chiltern tunnel north portal (railway systems)	70	110

Construction trip assumptions

Trip generation

3.3.12 Table 7-42 in the main TA is amended as follows, due to the Chiltern Tunnel extension amendment revising the compounds within the area and the trips generated by:

- Little Missenden ventilation shaft satellite compound: The average-peak daily two-way HGV trips generated is 210-220, in relation to 160-200 in the SES and AP2 TA (Cars/LGV trips also amended from 50-90 in the SES and AP2 TA to 20-30);
- Chiltern tunnel north portal (civil engineering)/(railway systems) satellite compound: The average-peak daily two-way HGV trips generated is 70-230, in relation to 30-40 in the main TA and SES and AP2 TA (Cars/LGV trips also amended from 80-110 in the SES and AP2 TA to 150-210). This compound will be located on the northern side of Frith Hill (in the main TA it was on southern side of Hyde Heath Lane);

- The South Heath green tunnel (south) satellite compound (civil engineering)/ Chilterns main compound (rail systems), and the South Heath green tunnel (north) satellite compound (civil engineering)/ South Heath tunnel (north portal) satellite compound (rail systems) are removed from Table 7-42, as these compounds are removed due to the Chiltern tunnel extension. Chesham Road vent shaft satellite compound, associated with the Chiltern tunnel extension, is added to Table 7-42 as below.

Table7-42: Central Chilterns typical vehicle trip generation for construction site compounds – partial replacement

Compound Type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movements (Months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Cars/LGV	HGV
Satellite	Chesham Road vent shaft	A413 and B485 Frith Hill/Chesham Road	2019	Six years and eleven months	Four months	80-90	180-220

Assignment

3.3.13 As a result of the changes in routeing due to the Chiltern Tunnel extension amendment (AP4-009-001), paragraph 3.3.13 of the SES and AP2 TA is deleted and paragraph 7.5.40 of the main TA be amended to state:

"within the study area, movement of excavated material has been assigned to the A413 across the whole of the area and the B485 Frith Hill/ Chesham Road between the A413 and Chesham Road vent shaft satellite compound."

Construction lorry routes

3.3.14 Paragraph 7.5.45 of the main TA is amended to remove bullet points relating to South Heath green tunnel (south) satellite compound (civil engineering)/Chilterns main compound (rail systems) and the South Heath green tunnel (north) satellite compound (civil engineering)/ South Heath tunnel (north portal) satellite compound (rail systems).

3.3.15 Paragraph 7.5.45 of the main TA is amended to include the following bullet point:

- "Chiltern tunnel north portal (civil engineering)/(railway systems) satellite compound will be accessed via a link road from the A413."

3.3.16 Paragraph 7.5.45 of the main TA is amended to include the following bullet point:

- "Chesham Road vent shaft satellite compound will be accessed via the A413 and B485 Frith Hill/ Chesham Road."

Traffic management, road closures and diversions

3.3.17 Paragraphs 7.5.46 to 7.5.48 and Table 7-43 of the main TA are removed. This is due to the Chiltern Tunnel extension (AP4-009-001) removing the need to temporarily close Frith Hill and Hyde Lane. These roads will remain open to general traffic during construction of the revised scheme.

PRoW closures and diversions

3.3.18 Table 7-44 of the main TA is amended to remove the references to closure/diversion of the following PRoW. This is due to the Chiltern Tunnel extension (AP4-009-001) removing the need to temporarily close these PRoW during construction of the revised scheme.

- Frith Hill;
- Hyde Lane;
- Footpath GMI/79/2;
- Footpath GMI/80/1;
- Footpath GMI/79/1;
- Footpath GMI/28/1;
- Footpath GMI/28/2;
- Footpath LMI/17/2; and
- Footpath GMI/23/6.

3.3.19 Table 7-44 is also amended to add the following PRoW, which are subject to diversion under the SES3 and AP4 revised scheme, due to the Chiltern Tunnel extension (AP4-009-001).

Table 7-44: Central Chilterns temporary footpath, cycleway and bridleway closures and diversions

PRoW/ pedestrian route	Location	Location (chainage)	Programme	Diversion length (Approx.) and duration	Reason for diversion and diversion route
Footpath GMI/13/3	South Heath	47+400	September 2017	690m Up to five years	Construction of Chiltern Tunnel extension Temporary diversion to the A413 to join Footpath GMI/12 to cross HS2 corridor then temporarily diverted around the edge of the revised scheme boundary and Jenkins Wood.

PRoW/ pedestrian route	Location	Location (chainage)	Programme	Diversion length (Approx.) and duration	Reason for diversion and diversion route
Footpath GMI/33/4	South Heath	46+100	February 2019	600m Up to 10 months (1st phase) Up to 6 months (2nd phase)	Construction of Chiltern Tunnel extension Temporary diversion west along field boundary to join Footpath GMI33/5 and GMI/33/3.

3.3.20 Paragraph 7.5.53 of the main TA is amended to remove bullet point 'GMI/13/3 (public footpath)', as this PRoW is temporarily diverted under the AP4 revised scheme, due to the Chiltern Tunnel extension (AP4-009-001).

3.3.21 Due to the Chiltern Tunnel extension (AP4-009-001) removing the need to permanently close these PRoW during operation of the revised scheme paragraph 7.5.55 of the main TA is amended to remove the following PRoW:

- King's Lane;
- B485 Chesham Road;
- Footpath GMI/33/4;
- Footpath GMI/33/2;
- Footpath GMI/33/3;
- Footpath GMI/27/1
- Footpath GMI/23/7; and
- Footpath LMI/21/1.

Assessment of construction impacts

Key construction transport issues

3.3.22 Paragraph 7.5.65 of the main TA is amended to remove bullet points ' temporary road closures and associated diversions of motorised users' and 'temporary road closures and associated diversions of bus services', as these are no longer construction impacts due to the Chiltern Tunnel extension (AP4-009-001).

Highway network

3.3.23 Changes to forecast traffic flows as a result of the SES3 and AP4 revised scheme are presented in the following section. There are no changes to other forecast flows presented in the main TA and SES and AP2 TA. .

3.3.24 The SES3 and AP4 revised scheme results in the following key changes within Central Chilterns (CFA9) during construction, compared to the SES and AP2 scheme:

- changes to forecast construction traffic flows, due to a difference in trips generated by compounds within the area related to the Chiltern tunnel extension. This results in an increase in all construction vehicles (by up to 20 two-way trips a day) on the A413 north of B485 Frith Hill/Chesham Road and a decrease in all construction vehicles (by up to 75 two-way trips a day) on the A413 south of the B485 Frith Hill/Chesham Road. There is also a decrease in all construction vehicles (by up to 10 two-way trips a day) on the B485 Frith Hill/ Chesham Road, between the Chesham Road Vent Shaft satellite compound and the A413;

- revised construction routes as a result of the Chiltern Tunnel extension, resulting in the removal of all construction traffic from Hyde Heath Road, Potter Row, King's Lane (between Frith Hill and B485 Frith Hill/ Chesham Road) and Frith Hill. Construction traffic assessing Leather Lane Overbridge satellite compound and Bowood Lane Overbridge satellite compound, which previously used Potter Row and King's Lane, will now use the new A413 link road to Chiltern Tunnel North Portal satellite compound and internal compound haul roads;

- revised construction routes as a result of the new A413 link road to Chiltern Tunnel North Portal satellite compound. This has enabled 50% of trips related to the movement of excavated material from Hunts Green (previously all using Rocky Lane) to be routed via the new A413 link road, the A413 between the link road and B4009 Nash Lee Road, and Nash Lee Road. This revision to construction routes will have the following impact:

  - A413, between Chiltern Tunnel North Portal satellite compound link road and Rocky Lane (in CFA 10) - increase in HGV flows;

  - removal of temporary road closures of Hyde Lane and Frith Hill, resulting in the removal of diverted traffic from the A413 (between Hyde Lane and B485 Frith Hill/ Chesham Road), the B485 Frith Hill/ Chesham Road (between the A413 and Hyde Heath Road) and King's Lane (between the B485 Frith Hill/ Chesham Road and Frith Hill); and

  - changes to temporary and permanent diversions of PRoW.

Strategic road network

3.3.25 Table 7-45 and Table 7-46 in the SES and AP2 TA are replaced.

Table 7-45: Central Chilterns strategic road network construction traffic flows (vehicles) - AM peak

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A413, between A404 Whielden Lane (in CFA8) and Hyde Lane (Great Missenden)	EB	1135	1237	1268	51	31	21	2%	72%
Named 'A413 Amersham Road (Little Missenden)' in main TA.	WB	659	718	815	34	97	21	14%	164%
A413, between Hyde Lane (Great Missenden) and B485 Frith Hill/Chesham Road	NB	745	812	897	48	85	20	10%	75%
Named 'A413 Missenden Bypass (South of B485)' in main TA	SB	1293	1409	1438	77	29	20	2%	36%
A413 London Road between B485 Frith Hill/Chesham Road and Rocky Lane (in CFA10)	NB	661	720	805	41	84	21	12%	100%
Named 'A413 Missenden Bypass (North of B485)' in main TA	SB	1105	1204	1245	70	41	21	3%	42%
B485 Frith Hill/Chesham Road, between A413 and King's Lane	EB	521	568	593	27	26	14	5%	105%
Named 'B485 Chesham Road/Frith Hill (west of King's Lane)' in main TA	WB	393	428	473	43	45	14	10%	47%

Table 7-46: Central Chilterns strategic road network construction traffic flows (vehicles) - PM peak

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A413, between A404 Whielden Lane (in CFA8) and Hyde Lane (Great Missenden)	EB	591	643	734	26	90	16	14%	162%
Named 'A413 Amersham Road (Little Missenden)' in main TA.	WB	1195	1301	1325	38	24	16	2%	75%
A413, between Hyde Lane (Great Missenden) and B485 Frith Hill/Chesham Road	NB	1002	1091	1115	32	23	16	2%	98%
Named 'A413 Missenden Bypass (South of B485)' in main TA	SB	712	775	854	21	79	16	10%	294%
A413 London Road between B485 Frith Hill/Chesham Road and Rocky Lane (in CFA10)	NB	1039	1131	1166	34	35	16	3%	93%
Named 'A413 Missenden Bypass (North of B485)' in main TA	SB	648	706	784	21	78	16	11%	371%
B485 Frith Hill/Chesham Road, between A413 and King's Lane	EB	367	400	443	18	44	14	11%	316%
Named 'B485 Chesham Road/Frith Hill (west of King's Lane)' in main TA	WB	503	548	572	18	25	14	5%	316%

Local road network

3.3.26 Removal of paragraphs 7.5.69 and 7.5.71 of the main TA, as there are no temporary road closures within this area in the SES3 and AP4 revised scheme.

3.3.27 Table 7-47 and Table 7-48 of the main TA are amended to remove rows for King's Lane (between Frith Hill and B485 Chesham Road), Frith Hill (between Potter Row/King's Lane and B485 Frith Hill), Hyde Heath Road and Potter Row (between Frith Hill and Leather Lane). All construction traffic is removed from these links, due to the Chiltern Tunnel extension (AP4-009-001).

3.3.28 Revised construction assumptions have resulted in an increase in HGV movements on the A413, between the Chiltern Tunnel North Portal satellite compound link road and Rocky Lane (in CFA10). This section of road is a new route for the movement of excavated material, in comparison with the SES and AP2 scheme. There is also the removal of all construction traffic from Hyde Heath Road, Potter Row, King's Lane (between Frith Hill and B485 Frith Hill/ Chesham Road) and Frith Hill. This is due to construction traffic generated by Leather Lane Overbridge satellite compound and Bowood Lane Overbridge satellite compound now using the new A413 link road to Chiltern Tunnel North Portal satellite compound and internal compound haul road.

3.3.29 The SES3 and AP4 revised scheme (specifically the Chiltern Tunnel extension amendment) has resulted in an increase in all construction vehicles (by up to 20 two-way trips a day) on the A413 north of B485 Frith Hill/Chesham Road and a decrease in all construction vehicles (by up to 75 two-way trips a day) on the A413 south of B485 Frith Hill/Chesham Road. There is also a decrease in all construction vehicles (by up to 10 two-way trips a day) on the B485 Frith Hill/ Chesham Road between the Chesham Road Vent Shaft satellite compound and the A413.

3.3.30 The SES3 and AP4 revised scheme has also resulted in the removal of temporary road closures of Frith Hill and Hyde Lane, therefore removing traffic from previous diversion routes of the A413 (between Hyde Lane and B485 Frith Hill/ Chesham Road), the B485 Frith Hill/ Chesham Road (between the A413 and Hyde Heath Road) and King's Lane (between the B485 Frith Hill/ Chesham Road and Frith Hill).

3.3.31 As a result of the change in routeing due to the Chiltern Tunnel extension (AP4-009-001), paragraph 7.5.72 of the SES and AP2 TA is amended to replace "the A413 across the whole of the study area" with "the A413 across the whole of the area and the B485 Frith Hill/ Chesham Road between the A413 and Chesham Road vent shaft satellite compound".

Junction capacity

3.3.32 The supplementary traffic survey data, has been used to update the assessments of the B485 Chesham Road/Frith Hill, B485 Chesham Road/King's Lane and B485 Chesham Road/Hyde Heath Road junctions, using industry standard software. Re-assessment of the A413/Leather Lane junction has also been undertaken, due to the introduction of excavated material movements on this section of road, as a result of the Chiltern Tunnel extension (AP4-009-001). The results are shown in Tables 7-48.1 to 7-48.4.

3.3.33 There is no change to the result of the assessment carried out and reported in the main TA (paragraph 7.5.80) and SES and AP2 TA (paragraph 3.3.22), as the modelling results indicate that the B485 Chesham Road/Frith Hill, B485 Chesham Road/King's Lane and B485 Chesham Road/Hyde Heath Road junctions will operate within capacity during construction.

3.3.34 The modelling results indicate that the A413/Leather Lane junction will operate within capacity during construction, in the PM peak, with the highest percentage of flow to capacity forecast at 18% on the Leather Lane arm. However, the results show the Leather Lane minor arm at over 85% flow to capacity during construction during the AM peak. This indicates that the junction will experience intermittent traffic congestion and delay, which replaces the assessment in paragraph 3.3.19 of the SES and AP2 TA, outlining that the junction was 'unlikely to experience additional intermittent traffic congestion and delay during peak periods'. However, traffic flow on the Leather Lane arm of the junction is low and the SES3 and AP4 revised scheme does not add to this in the AM peak. It is therefore the increase in the A413 through traffic that is impacting upon junction operation at this location.

Table 7-48.1: Central Chilterns comparison forecast baseline and construction scenario performance at B485 Chesham Road/ Frith Hill junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Road West	771	0%	0	815	0%	0
Frith Hill	136	44%	1	136	47%	1
B485 Chesham Road East	398	0%	0	461	0%	0
Total	N/A	44%	N/A	N/A	47%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Road West	632	0%	0	693	0%	0
Frith Hill	71	22%	0	71	24%	0
B485 Chesham Road East	530	1%	0	572	1%	0
Total	N/A	22%	N/A	N/A	24%	N/A

Table 7-48.2: Central Chilterns comparison forecast baseline and construction scenario performance at B485 Chesham Road/ King's Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Road West	687	0%	0	730	0%	0
King's Lane	107	17%	0	107	17%	0
B485 Chesham Road East	434	10%	0	497	10%	0
Total	N/A	17%	N/A	N/A	17%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Road West	380	0%	0	441	0%	0
King's Lane	43	6%	0	43	6%	0
B485 Chesham Road East	613	14%	0	656	14%	0
Total	N/A	14%	N/A	N/A	14%	N/A

Table 7-48.3: Central Chilterns comparison forecast baseline and construction scenario performance at B485 Chesham Road/ Hyde Heath Road junction

0800-09:00		2021 baseline			2021 with HS2 construction traffic		
Junction arm	**Approach (from)**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Rd /Hyde Heath Rd	B485 Chesham Road East	331	0%	0	372	0%	0
	Hyde Heath Road	104	18%	0	104	19%	0
	B485 Chesham Road West	764	38%	1	766	38%	1
Hyde Heath Rd /B485 Chesham Rd	Hyde Heath Road North	236	0%	0	236	0%	0
	B485 Chesham Road.	45	7%	0	45	7%	0
King's Lane	Hyde Heath Road South	131	4%	0	131	4%	0

0800-09:00		2021 baseline			2021 with HS2 construction traffic		
Junction arm	**Approach (from)**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Rd /Hyde Heath Road	B485 Chesham Road East	376	0%	0	417	0%	0
	Hyde Heath Road.	27	7%	0	27	7%	0
	B485 Chesham Road West	528	0%	0	530	0%	0
Total		N/A	38%	N/A	N/A	38%	N/A
17:00-18:00		**2021 baseline**			**2021 with HS2 construction traffic**		
Junction arm	**Approach (from)**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B485 Chesham Rd /Hyde Heath Rd	B485 Chesham Road East	444	0%	0	444	0%	0
	Hyde Heath Road	167	31%	1	167	31%	1
	B485 Chesham Road West	393	17%	0	433	17%	0
Hyde Heath Rd /B485 Chesham Rd King's Lane	Hyde Heath Road North	101	0%	0	101	0%	0
	B485 Chesham Road.	28	4%	0	28	4%	0
	Hyde Heath Road South	182	2%	0	182	2%	0
B485 Chesham Rd /Hyde Heath Road	B485 Chesham Road East	472	0%	0	472	0%	0
	Hyde Heath Road.	14	4%	0	15	3%	0
	B485 Chesham Road West	292	0%	0	332	0%	0
Total		N/A	31%	N/A	N/A	31%	N/A

Table 7-48.4: Central Chilterns comparison forecast baseline and construction scenario performance at A413/ Leather Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 North	1431	0%	0	1505	0%	0
Leather Lane	42	26%	0	42	111%	8
A413 South	882	5%	0	994	8%	0
Total	N/A	26%	N/A	N/A	111%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 North	861	0%	0	954	0%	0
Leather Lane	15	5%	0	29	18%	0
A413 South	1444	7%	0	1500	7%	0
Total	N/A	7%	N/A	N/A	18%	N/A

3.3.35 Using the supplementary survey data, revised assessment has been undertaken of the Missenden bypass/Weedon Hill, A413/Chalk Lane/ Taylors Lane, A413/ London Road, A413/ Aylesbury Road, A4010 New Road/Cressex Road, A40 West Wycombe Road/A4010 Chapel Lane and A40 West Wycombe Road/A4010 Bradenham Road junctions. The results are shown in Table 7-48.5 to Table 7-48.11.

3.3.36 The modelling results indicate that the junctions of Missenden bypass/Weedon Hill, A413/Chalk Lane with Taylors Lane, A413/London Road, A413/ Aylesbury Road and A40 West Wycombe Road/ A4010 Bradenham Road will operate within capacity during construction, with the highest percentage of flow to capacity below 85% and construction traffic resulting in a maximum increase of 11%. This is not expected to result in congestion and, therefore, the revised scheme is not considered to have a material impact on capacity at these junctions.

3.3.37 The modelling results indicate that the junctions of A4010 New Road/Cressex Road will operate over capacity during the AM peak only, with the highest percentage of flow to capacity at 102% on the Cressex Road (west) arm. This indicates that the junction will experience intermittent traffic congestion and delay during construction. However, this arm is forecast to operate at 97% flow to capacity in the 2021 baseline, and construction traffic results in a maximum increase of 5% on any arm, which indicates that the revised scheme traffic is unlikely to result in a substantial change in operation.

3.3.38 The results also show that the A40 West Wycombe Road/A4010 Chapel Lane junction will operate over capacity, during both AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction.

However, this junction is forecast to operate at up to 113% flow to capacity in the 2021 baseline (West Wycombe Road Ahead Left lane in the AM peak), and construction traffic results in a maximum increase of 6% on any arm. This indicates that the revised scheme traffic is unlikely to result in a substantial change in operation.

Table 7-48.5: Central Chilterns comparison forecast baseline and construction scenario performance at Missenden bypass/ Weedon Hill junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 Missenden Bypass West	1476	0%	0	1529	0%	0
Weedon Hill	254	46%	1	254	47%	1
A413 Missenden Bypass East	833	18%	0	958	19%	0
Total	N/A	46%	N/A	N/A	47%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 Missenden Bypass West	674	0%	0	785	0%	0
Weedon Hill	47	6%	0	47	7%	0
A413 Missenden Bypass East	1680	25%	0	1721	25%	0
Total	N/A	25%	N/A	N/A	25%	N/A

Table 7-48.6: Central Chilterns comparison forecast baseline and construction scenario performance at A413/ Chalk Lane/ Taylors Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 East	748	2%	0	866	2%	0
Taylors Lane	13	7%	0	13	9%	0
A413 West	1456	0%	0	1513	0%	0
Chalk Lane	15	12%	0	15	23%	0
Total	N/A	12%	N/A	N/A	23%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 East	1517	1%	0	1561	1%	0
Taylors Lane	6	10%	0	6	18%	0
A413 West	662	0%	0	768	0%	0
Chalk Lane	5	2%	0	5	3%	0
Total	N/A	10%	N/A	N/A	18%	N/A

Table 7-48.7: Central Chilterns comparison forecast baseline and construction scenario performance at A413/ London Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 South	795	0%	0	913	0%	0
London Road	40	6%	0	40	7%	0
A413 North	1640	11%	0	1696	12%	0
Total	N/A	11%	N/A	N/A	12%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 South	1381	0%	0	1425	0%	0
London Road	25	6%	0	25	6%	0
A413 North	770	4%	0	876	4%	0
Total	N/A	6%	N/A	N/A	6%	N/A

Table 7-48.8: Central Chilterns comparison forecast baseline and construction scenario performance at A413/ Aylesbury Road junction

0800-09:00		**2021 baseline**			**2021 with HS2 construction traffic**		
Junction arm	**Approach (from)**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 /Aylesbury Road	A413 South	761	0%	0	872	0%	0
	(Un-named link)	36	18%	0	36	24%	0
	A413 North	1285	0%	0	1353	0%	0
A413 /Aylesbury Road	Aylesbury Road North	180	0%	0	180	0%	0
	A413	17	3%	0	17	3%	0
	Aylesbury Road South	178	6%	0	178	6%	0
Aylesbury Road /A413	A413 South	744	0%	0	855	0%	0
	(Un-named link)	142	23%	0	178	73%	3
	A413 North	1465	31%	1	1533	33%	1
Total		N/A	31%	N/A	N/A	73%	N/A
17:00-18:00		**2021 baseline**			**2021 with HS2 construction traffic**		
Junction arm	**Approach (from)**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 /Aylesbury Road	A413 South	12	0%	0	12	0%	0
	(Un-named link)	1643	2%	0	1683	3%	0
	A413 North	799	0%	0	799	0%	0
A413 /Aylesbury Road	Aylesbury Road North	982	0%	0	1042	0%	0
	A413	0	3%	0	0	39%	1
	Aylesbury Road South	0	1%	0	0	18%	0
Aylesbury Road /A413	A413 South	0	0%	0	0	0%	0
	(Un-named link)	0	38%	1	0	41%	1
	A413 North	0	31%	1	0	32%	1
Total		N/A	38%	N/A	N/A	39%	N/A

Table 7-48.9: Central Chilterns comparison forecast baseline and construction scenario performance at A4010 New Road /Cressex Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Cressex Road East	389	41%	1	389	42%	1
A4010 John Hall Way	546	41%	1	583	43%	1
Cressex Road West	706	97%	17	706	102%	33
A4010 New Road North	938	75%	3	952	76%	3
Total	N/A	97%	N/A	N/A	102%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Cressex Road East	638	65%	2	638	66%	2
A4010 John Hall Way	562	46%	1	566	47%	1
Cressex Road West	550	79%	4	550	79%	4
A4010 New Road North	939	72%	3	967	74%	3
Total	N/A	79%	N/A	N/A	79%	N/A

Table 7-48.10: Central Chilterns comparison forecast baseline and construction scenario performance at A40 West Wycombe Road /A4010 Chapel Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
West Wycombe Road Ahead Left	900	113%	64	900	108%	49
West Wycombe Road Ahead Right	1289	107%	47	1303	112%	74
Chapel Road Left	470	70%	1	507	76%	2
Total	N/A	113%	N/A	N/A	112%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
West Wycombe Road Ahead Left	884	111%	56	884	111%	56
West Wycombe Road Ahead Right	1294	110%	64	1322	114%	87
Chapel Road Left	706	105%	44	711	106%	46
Total	N/A	111%	N/A	N/A	114%	N/A

Table 7-48.11: Central Chilterns comparison forecast baseline and construction scenario performance at A40 West Wycombe Road/ A4010 Bradenham Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A40 West Wycombe Road East	1238	63%	2	1274	65%	2
A40 West Wycombe Road West	723	67%	2	723	68%	2
A4010 Bradenham Road	617	47%	1	631	48%	1
Total	N/A	67%	N/A	N/A	68%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A40 West Wycombe Road East	1403	74%	3	1407	74%	3
A40 West Wycombe Road West	656	71%	2	656	71%	2
A4010 Bradenham Road	851	61%	2	879	63%	2
Total	N/A	74%	N/A	N/A	74%	N/A

3.3.39 The A413 London Road/A4128 Link Road and A413 London Road/B485 Frith Hill junctions have been re-assessed using industry standard software, based upon SES3 and AP4 revised scheme forecast traffic flows. The new A413 link road to Chiltern Tunnel North Portal satellite compound has been added to the A413 London Road/A4128 Link Road junction, for the construction year of assessment. Table 7-51 and Table 7-52 of the SES and AP2 TA are replaced by the substitute tables below.

3.3.40 Revisions to the A413 London Road/B485 Frith Hill junction base model have been made and therefore the results presented are not wholly comparable with those in the SES and AP2 TA.

3.3.41 The modelling results indicate that the junctions of A413 with B485 Frith Hill and A413 London Road with A4128 Link Road/ new link road are predicted to operate over theoretical capacity during both AM and PM peaks, with the B485 Frith Hill junction operating at 135% and the Link Road junction operating just over 128% flow to capacity. This indicates that the junctions will experience intermittent traffic congestion and delay during construction. However, both junctions are also forecast to operate over capacity in the 2021 baseline, with the increase in flow to capacity ratio due to construction traffic by up to 16% in the AM Peak and 13% in the PM Peak for the A413 with B485 Frith Hill junction, and by up to 16% in the AM Peak and 13% in the PM Peak for the A413 London Road with A4128 Link Road/ new link road junction. This assessment replaces that presented in paragraphs 3.3.19, 3.3.24 and 3.3.26 of the SES and AP2 TA, which stated that the junctions are 'predicted to operate well within capacity during construction'.

Table 7-51: Central Chilterns comparison forecast baseline and construction scenario performance at A413/B485 Frith Hill/Chesham Road junction (priority roundabout)

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B485 Frith Hill	593	119%	48	654	135%	97
A413 (S) London Road	827	98%	15	947	108%	53
A413 (N) London Road	1802	87%	6	1831	89%	7
Total	N/A	119%	N/A	N/A	135%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B485 Frith Hill	623	96%	10	666	109%	24
A413 (S) London Road	1085	89%	7	1129	93%	11
A413 (N) London Road	1052	77%	3	1153	85%	5
Total	N/A	96%	N/A	N/A	109%	N/A

Table 7-52: Central Chilterns comparison forecast baseline and construction scenario performance at A413/A4128 Link Road junction (priority roundabout)

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 (S) Missenden Bypass	1103	54%	1	1229	61%	2
A4128 Link Road	683	112%	44	683	128%	87
A413 (N) Missenden Bypass	1204	113%	69	1268	117%	97
New link road	0	N/A	N/A	47	9%	0
Total	N/A	113%	N/A	N/A	128%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 (S) Missenden Bypass	1487	71%	3	1500	73%	3
A4128 Link Road	540	118%	33	540	126%	46
A413 (N) Missenden Bypass	706	108%	25	805	121%	65
New link road	0	N/A	N/A	95	11%	1
Total	N/A	118%	N/A	N/A	126%	N/A

Pedestrians, cyclists and equestrians

3.3.42 Table 7-53 of the main TA is amended to remove the following PRoW. This is due to the Chiltern Tunnel extension (AP4-009-001) removing the need to temporarily close these PRoW during construction.

- Frith Hill;
- Hyde Lane;
- Footpath GMI/79/2;
- Footpath GMI/80/1;
- Footpath GMI/79/1;
- Footpath GMI/28/1;
- Footpath GMI/28/2;
- Footpath LMI/17/2; and
- Footpath GMI/23/6.

3.3.43 Table 7-53 of the main TA is also amended to add the following PRoW which are subject to diversion under the AP4 revised scheme, due to the Chiltern Tunnel extension (AP4-009-001).

Table 7-53: Central Chilterns summary of PRoW severance (construction)

PRoW	Location	Location (chainage)	Construction Activity	Temporary Diversion Route	Daily Users	Maximum Diversion Length	Maximum Diversion Journey Time (nearest minute)
Footpath GMI/13/3	South Heath	47+400	Construction of Chiltern Tunnel extension	Temporary diversion to the A413 to join Footpath GMI/12 to cross HS2 corridor then temporarily diverted around the edge of the revised scheme boundary and Jenkins Wood.	57	690m	10 mins
Footpath GMI/33/4	South Heath	46+100	Construction of Chiltern Tunnel extension	Temporary diversion west along field boundary to join Footpath GMI33/5 and GMI/33/3.	0	600m	8 mins

Operations description

3.3.44 This is as described in Section 7.7 of the main TA.

Assessment of operation impacts

Pedestrians, cyclists and equestrians

3.3.45 Table 7-54 of the main TA and SES and AP2 TA is amended to remove the following PRoW. This is due to the Chiltern Tunnel extension (AP4-009-001) removing the need to temporarily close these PRoW during operation:

- King's Lane;
- B485 Chesham Road;
- Footpath GMI/33/4;
- Footpath GMI/33/2;
- Footpath GMI/33/3;
- Footpath GMI/27/1;
- Footpath GMI/23/7 ; and
- Footpath LMI/21/1.

3.4 Dunsmore, Wendover and Halton (CFA10)

Dunsmore, Wendover and Halton (CFA10) SES3 and AP4 revised scheme changes

3.4.1 The original scheme is described in section 7.6 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.4), including the removal of sustainable placement area at Hunt's Green Farm (SES-010-199).

3.4.2 The following AP4 amendment, located in CFA9 (Central Chilterns), has necessitated a revision to the number of construction vehicle trips by road within CFA10:

- extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works in CFA9 (AP4-009-001).

3.4.3 In addition to this, and exploiting the opportunity presented by this amendment, the principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- changes to forecast construction traffic flows, due to a difference in trips generated by compounds within the area related to the Chiltern Tunnel extension.;
- Bowood Lane Overbridge satellite compound is now accessed via the new haul road linking to the Chiltern Tunnel North Portal satellite compound ; and
- revised construction routes as a result of the new A413 link road to the Chiltern Tunnel North Portal satellite compound, particularly in relation to Hunts Green.

3.4.4 Additional traffic surveys have been undertaken at the following junctions in the Dunsmore, Wendover and Halton area to supplement the information reported in the main TA and SES and AP2 TA :

- A413 /Rocky Lane/ Chesham Lane;
- A4010 Risborough Road /B4009 Nash Lee Road /Chalkshire Road; and
- A4010 Risborough Road /North Lee Road.

3.4.5 A change to the workforce trip assignment has been made on Small Dean Lane within this area. This has resulted in a change in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment.

3.4.6 In addition, there is a correction to the diversion distance for non-motorised users at Footpath ELL/25.

Assessment methodology

3.4.7 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.4.8 Baseline conditions in this area are as described in Section 5.12 of the main TA and the SES and AP2 TA, updated by the additional survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.4.9 Future baseline traffic conditions are as described in Section 7.6 of the main TA and the SES and AP2 TA, updated by the additional survey data. .

Construction description

Compounds and construction sites

3.4.10 Table 7-60 is updated to incorporate the South Heath MPATS (rail systems) at the Leather Lane overbridge satellite compound (civil engineering), which is a result of the extension of Chiltern tunnel amendment in CFA9 (AP4-009-001).

Table 7-60: Dunsmore, Wendover & Halton assumed workforce at construction sites

Compound type	Location	Assumed daily workforce per site for duration of the construction programme	
		Average	Peak
Satellite	Leather Lane overbridge satellite compound (civil engineering)/ South Heath MPATS (rail systems)	40	90

Construction trip assumptions

Trip generation

3.4.11 Table 7-61 in the main TA and SES and AP2 TA is amended. The average-peak daily two-way HGV trips generated for the South Heath MPATS (rail systems), which is part of the Leather Lane overbridge satellite compound (civil engineering) satellite compound as a result of the Chiltern tunnel extension amendment, is 30-50, whilst cars/LGVs are 80-110. The average-peak daily two-way HGV trips generated for the Small Dean viaduct launch satellite compound is 20-30, in relation to 290-450 in the SES and AP2 TA. Likewise, the HGV trip generation for the Rocky Lane underbridge/Wendover auto-transformer station satellite compound is 140-230, in relation to less than 10 in the SES and AP2 TA. These changes are due to the revised construction assumptions within this area, relating to 50% of excavated material trips previously using Rocky Lane to be routed via new A413 link road. It is also due to now assigning excavated material trips to the Rocky Lane underbridge/Wendover auto-transformer station satellite compound, rather than the Small Dean viaduct launch satellite compound, to reflect site activities, although this has no impact upon the traffic and transport assessment.

Assignment

3.4.12 Paragraph 3.4.13 of the SES and AP2 TA is amended to remove 'the A413 between Rocky Lane and B4009 Nash lee Road' and this text is replaced by 'the A413 between the boundary of Central Chilterns (CFA9) and B4009 Nash Lee Road'. This is due to revised construction assumptions, due to the Chiltern Tunnel extension (AP4-009-001), in CFA9.

3.4.13 Paragraph 3.4.14 of the SES and AP2 TA is amended to remove '70 cars/LGVs and 30 HGVs per day (two way)', in relation to cumulative construction flow to the south, and this text is replaced with '120 cars/LGVs per day (two way) and 30 HGVs per day (two way)'. This is due to different construction compound vehicle trip generation in the Central Chilterns (CFA9), as a result of the Chiltern Tunnel extension (AP4-009-001).

Construction lorry routes

3.4.14 Paragraph 7.6.46 of the main TA is amended as follows. This is due to revised construction route assumptions due to the Chiltern Tunnel extension (AP4-009-001), in CFA9:

- 'Leather Lane overbridge satellite compound will be accessed via Leather Lane and the new haul road from Chiltern Tunnel North Portal satellite compound via the Chiltern Tunnel North Portal satellite compound link road from the A413'; and
- 'Bowood Lane overbridge satellite compound will be accessed via Bowood Lane and the new haul road from Chiltern Tunnel North Portal satellite compound, via the Chiltern Tunnel North Portal satellite compound link road from the A413'.

PRoW closures and diversions

3.4.15 Table 7-63 of the main TA is amended to change the references to diversion of the Footpath ELL/25. The distance of the diversion is amended to 450m for the same duration of 12-18 months.

Assessment of construction impacts

Highway network

3.4.16 Changes to forecast traffic flows as a result of the SES3 and AP4 revised scheme are presented in the following sections. There are no changes to other forecast flows presented in the main TA and SES and AP2 TA.

3.4.17 The key changes in this CFA are:

- changes to forecast construction traffic flows, due to a difference in trips generated by compounds within the area related to the Chiltern Tunnel extension.;

- revised construction route assumption, resulting in a decrease in all construction vehicles on King's Lane (Kingsash) between Rocky Lane (also known as Chesham Lane) and Bowood Lane, by up to 20 two-way trips a day. Under the AP4 revised scheme, Bowood Lane Overbridge satellite compound is now accessed via the new haul road linking to the Chiltern Tunnel North Portal satellite compound ; and
- revised construction routes as a result of the new A413 link road to the Chiltern Tunnel North Portal satellite compound. This has enabled 50% of trips related to the movement of excavated material from Hunts Green (previously all using Rocky Lane) to be routed via new A413 link road, the A413 between the link road and B4009 Nash Lee Road, and Nash Lee Road. This revision to construction routes will have the following impacts:
  - Rocky Lane, between the A413 London Road and Rocky Lane underbridge satellite construction compound - decrease in HGV flows; and
  - A413, between Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane - increase in HGV flows.

3.4.18 The impacts of these changes are considered in the following section.

Strategic and local road network

3.4.19 Tables 7-64 and Table 7-67 of the SES and AP2 TA are amended.

Table 7-64: Dunsmore, Wendover & Halton strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 London Road between B485 Frith Hill/Chesham Road (in CFA9) and Rocky Lane	NB	661	720	805	41	84	21	12%	100%
	SB	1105	1204	1245	70	41	21	3%	42%
A413 London Road, between Rocky Lane and Small Dean Lane	NB	749	875	927	44	52	35	6%	348%
	SB	1156	1351	1457	59	107	35	8%	139%
A413 Nash Lee Road, between Small Dean Lane and the B4009 Nash Lee Road	NB	604	706	759	63	53	38	8%	151%
	SB	808	945	1052	68	107	38	11%	126%
B4009 Nash Lee Rd, between A4010 Aylesbury Road and A413 Nash Lee Road	EB	519	608	687	47	79	38	13%	430%
	WB	584	684	732	44	49	38	7%	629%

Table 7-65: Dunsmore, Wendover & Halton strategic road network construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 London Road between B485 Frith Hill/Chesham Road (in CFA9) and Rocky Lane	NB	1039	1131	1166	34	35	16	3%	93%
	SB	648	706	784	21	78	16	11%	371%
A413 London Road, between Rocky Lane and Small Dean Lane	NB	1232	1453	1560	38	107	30	7%	398%
	SB	776	916	968	36	52	30	6%	542%
A413 Nash Lee Road, between Small Dean Lane and the B4009 Nash Lee Road	NB	901	1063	1161	43	99	31	9%	261%
	SB	565	667	712	46	45	31	7%	212%
B4009 Nash Lee Rd, between A4010 Aylesbury Road and A413 Nash Lee Road	EB	582	688	727	37	40	31	6%	564%
	WB	467	552	623	33	71	31	13%	1473%

Table 7-66: Dunsmore, Wendover & Halton local road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
Rocky Lane (also known as Chesham Lane), between the A413 London Road and Rocky Lane underbridge satellite compound.	NB	77	85	127	19	42	19	50%	4241%
	SB	63	68	115	19	47	19	68%	5655%
King's Lane (Kingsash), between Rocky Lane and Bowood Lane	NB	1	1	1	0	0	0	0%	0%
(Note that due to low traffic flows, %'s are reflective of numerical rounding of low figures)	SB	2	2	3	0	1	0	21%	0%

Table 7-67: Dunsmore, Wendover & Halton local road network construction traffic flows (vehicles) - PM – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
Rocky Lane (also known as Chesham Lane), between the A413 London Road and Rocky Lane underbridge satellite compound.	NB	67	73	115	16	42	15	58%	14125%
	SB	48	53	91	15	39	15	73%	-
King's Lane (Kingsash), between Rocky Lane and Bowood Lane	NB	1	2	2	0	0	0	0%	0%
(Note that due to low traffic flows, %'s are reflective of numerical rounding of low figures)	SB	1	1	2	0	1	0	67%	0%

3.4.20 Revised construction assumptions have resulted in an increase in HGV movements on the A413, between the Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane. This section of road is a new route for the movement of excavated material, in comparison with the SES scheme. There is also a reduction in HGV vehicle movements on Rocky Lane.

3.4.21 The SES3 and AP4 revised scheme has resulted in an increase in construction traffic movements on the A413, between B485 Frith Hill/ Chesham Road (in CFA9) and B4009 Nash Lee Road, and on B4009 Nash Lee Road. It has also resulted in a decrease in construction traffic movements on King's Lane (Kingsash), between Rocky Lane and Bowood Lane. This is related to a difference in trips generated by compounds within the area due to the Chiltern Tunnel extension (AP4-009-001) in CFA9. The change in flows, however, is 20 two-way vehicle trips a day or fewer.

3.4.22 Due to the revised construction assumptions, paragraph 3.4.19 of the SES and AP2 TA is amended to remove '"A413, between Rocky Lane and the B4009 Nash Lee Road", which is replaced by "A413 between the boundary of Central Chilterns (CFA9) and B4009 Nash Lee Road".

Junction capacity

3.4.23 Paragraph 3.4.20 of the SES and AP2 TA noted that the junctions of A413 London Road/Dunsmore Lane and A413 London Road/Bowood Lane would not be likely to experience additional intermittent traffic congestion and delay during peak periods with the SES3 and AP4 revised scheme is deleted. There junctions are likely to be affected due to revised construction assumptions increasing HGV construction traffic on the A413 between the Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane. This section of road is now used for the movement of excavated material.

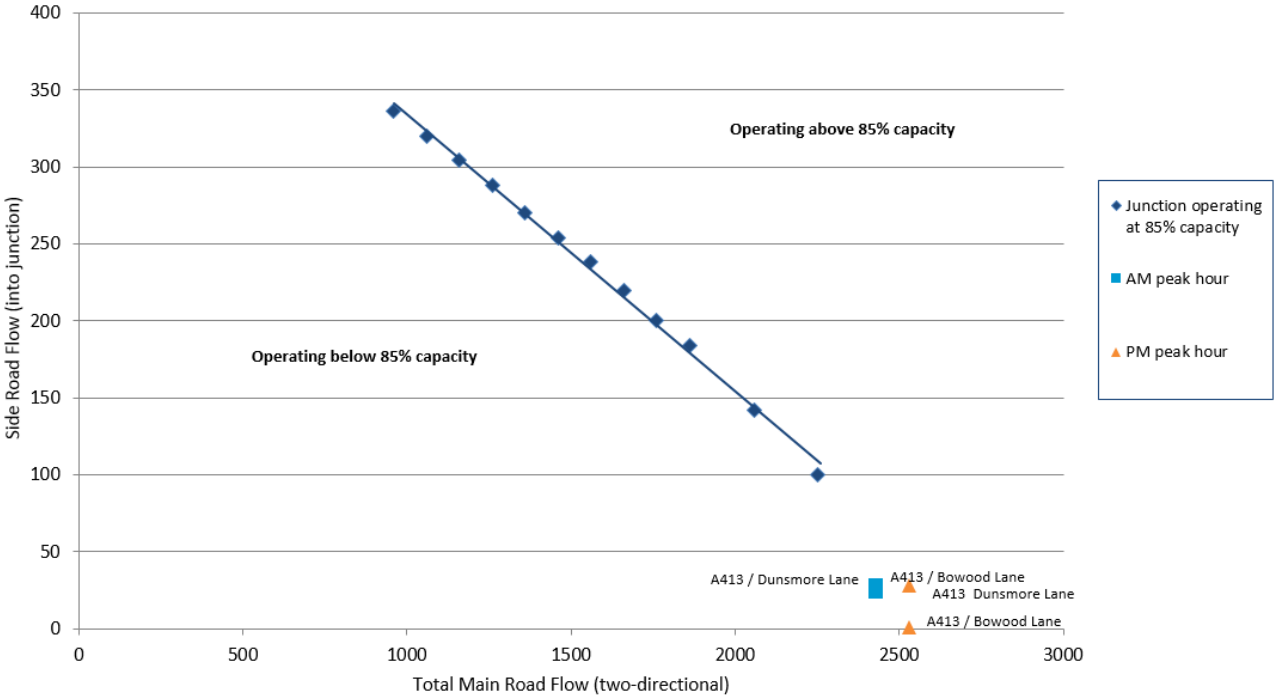
3.4.24 These priority junctions have been re-assessed based upon the revised traffic flows as a result of the SES3 and AP4 revised scheme (as well as a refinement to trips assigned on Bowood Lane). Table 7-68 of the SES and AP2 TA is replaced.

Table 7-68: Dunsmore, Wendover & Halton priority junction flows

Junction	**2021 With HS2 construction traffic**			
	AM peak		**PM peak**	
	Main road flow (PCUs)	**Side road flow (PCUs)**	**Main road flow (PCUs)**	**Side road flow (PCUs)**
A413 London Road with Bowood Lane	2427	28	2528	1
A413 London Road Dunsmore Lane	2427	24	2528	28

3.4.25 Figure 7-7 of the SES and AP2 TA is also replaced.

Figure 7-7: Dunsmore, Wendover & Halton priority junction assessment 2021



3.4.26 This indicates that the A413 London Road/Dunsmore Lane and A413 London Road/Bowood Lane junctions fall below the 'threshold' of capacity during both AM and PM peaks and are therefore not forecast to be at capacity during construction of the revised scheme. As a result, they are not considered for individual assessment and have not been further assessed with junction assessment software.

3.4.27 The A413 London Road/Small Dean Lane and A413 Nash Lee Road/B4009 Nash Lee Road non-priority junctions have been re-assessed using industry standard software, based upon SES3 and AP4 revised scheme forecast traffic flows. Table 7-69 and Table 7-70 of the SES and AP2 TA are replaced.

3.4.28 There is little change to the result of the assessment carried out and reported in the main TA and SES and AP2 TA, whereby the modelling results indicate that both the A413 London Road/Small Dean Lane and A413 Nash Lee Road/B4009 Nash Lee Road junctions will operate within capacity during construction. The highest percentage of flow to capacity at each of these junctions is below 85%, with construction traffic resulting in a maximum increase of 16% on any arm. The impact of the SES3 and AP4 revised scheme is therefore not considered to have a substantial impact upon operation of these junctions.

Table 7-69: Forecast baseline and construction scenario performance at A413 London Road/ Small Dean Lane junction (priority roundabout)

0800-09:00	**2021 baseline**			**2021 With HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
London Road /South Street	443	34%	1	443	37%	0.6
A413 London Road (s)	885	39%	1	1000	45%	0.9
Small Dean Lane	3	0%	0	12	2%	0
A413 London Road (N)	975	49%	1	1122	57%	1.5
Total	N/A	49%	N/A	N/A	45%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
London Road /South Street	277	18%	1	277	19%	0.2
A413 London Road (s)	1461	65%	2	1577	72%	2.7
Small Dean Lane	10	3%	0	53	19%	0.3
A413 London Road (N)	682	37%	1	765	43%	0.8
Total	N/A	65%	N/A	N/A	72%	N/A

Table 7-70: Forecast baseline and construction scenario performance at A413 Nash Lee Road/ B4009 Nash Lee Road junction (priority roundabout)

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 (NE)	1070	51%	1	1111	55%	1
A413 (S) Nash Lee Road	731	37%	1	829	42%	1
B4009 Nash Lee Road	617	34%	1	743	41%	1
Total	N/A	51%	N/A	N/A	55%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 (NE)	817	37%	1	817	38%	1
A413 (S) Nash Lee Road	1075	53%	2	1222	60%	2
B4009 Nash Lee Road	694	42%	1	778	48%	1
Total	N/A	53%	N/A	N/A	60%	N/A

3.4.29 The supplementary survey data has been used in a further assessment of the A413/Rocky Lane/ Chesham Lane and A4010 Risborough Road/B4009 Nash Lee Road/ Chalkshire Road junctions, using industry standard software. The results are shown in Tables 7-70.1 and 7-70.2, and this updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.4.30 The modelling results indicate that the junction of A413/Rocky Lane/ Chesham Lane will operate over capacity, with the Rocky Lane minor arm over 85% percentage of flow to capacity during both AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction. However, this arm is forecast to be well in excess of capacity in the 2021 baseline, which indicates that junction is likely to be under operational stress prior to the introduction of construction traffic. The high flow to capacity percentage on the Rocky Lane arm indicates that the level of through flow traffic on the A413 makes it difficult for vehicles to exit from Rocky Lane onto the A413.

3.4.31 The modelling results indicate that the junction of A4010 Risborough Road/B4009 Nash Lee Road/ Chalkshire Road will operate within capacity during construction, with the highest percentage of flow to capacity at 83%. The revised scheme is not considered to have a substantial impact on capacity at this junction.

Table 7-70.1: Forecast baseline and construction scenario performance at A413 /Rocky Lane/ Chesham Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 North	1492	0	0	1624	0	0
Rocky Lane	69	198%	30	112	999%	95
A413 South	937	2%	0	1039	14%	0
Total	N/A	198%	N/A	N/A	999%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	Flow (all PCU)	Flow/ capacity %	Max queue	Flow (all PCU)	Flow/ capacity %	Max queue
A413 North	1001	0	0	1113	0	0
Rocky Lane	49	102%	4	128	685%	86
A413 South	1598	2%	0	1677	2%	0
Total	N/A	102%	N/A	N/A	685%	N/A

Table 7-70.2: Forecast baseline and construction scenario performance at A4010 Risborough Road/ B4009 Nash Lee Road /Chalkshire Road junction

0800-09:00		2021 baseline			2021 with HS2 construction traffic		
Junction arm	Approach (from)	Flow (All PCU)	Flow/ capacity %	Max queue	Flow (All PCU)	Flow/ capacity %	Max queue
A4010 Risborough Rd / B4009 Nash Lee Rd	B4009 Nash Lee Road	831	76%	3	866	79%	4
	A4010 Risborough Rd West	814	53%	1	888	58%	2
	A4010 Risborough Rd North	1144	80%	4	1146	83%	5
A4010 Risborough Rd / B4009 Nash Lee Rd / Chalkshire Rd	B4009 Nash Lee Road East	673	0	0	708	0	0
	Chalkshire Road	211	46%	1	211	47%	1
	B4009 Nash Lee Road West	877	61%	2	938	62%	2
Total		N/A	80%	N/A	N/A	83%	N/A
17:00-18:00		2021 baseline			2021 with HS2 construction traffic		
Junction arm	Approach (from)	Flow (all PCU)	Flow/ capacity %	Max queue	Flow (all PCU)	Flow/ capacity %	Max queue
A4010 Risborough Rd / B4009 Nash Lee Rd	B4009 Nash Lee Road	906	78%	4	950	83%	5
	A4010 Risborough Rd West	1037	73%	3	1045	74%	3
	A4010 Risborough Rd North	985	75%	3	1010	78%	4

A4010 Risborough Rd / B4009 Nash Lee Rd / Chalkshire Rd	B4009 Nash Lee Road East	680	0	0	723	0	0
	Chalkshire Road	288	73%	3	288	75%	3
	B4009 Nash Lee Road West	1002	37%	1	1022	38%	1
Total		N/A	78%	N/A	N/A	83%	N/A

3.4.32 Using the supplementary survey data, assessment of the A4010 Risborough Road/North Lee Road junction has been undertaken. The results are shown in Table 7-70.3.

3.4.33 The modelling results indicate that the junction of A4010 Risborough Road/North Lee Road will operate over capacity during construction of the revised scheme, with the North Lee Road minor arm over 85% percentage of flow to capacity during both AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction.

Table 7-70.3: Forecast baseline and construction scenario performance at A4010 Risborough Road with North Lee Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Risborough Road (South)	948	0%	0	973	0%	0
North Lee Road	137	80%	4	267	141%	80
A4010 Risborough Road (North)	998	0%	0	1112	27%	0
Total	N/A	80%	N/A	N/A	141%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Risborough Road (South)	1154	0%	0	1155	0	0
North Lee Road	70	52%	1	175	107%	19
A4010 Risborough Road (North)	933	2%	0	1069	31%	1
Total	N/A	52%	N/A	N/A	107%	N/A

Operation description and assessment of operation impacts

3.4.34 There is no change to the assessment described in section 7.6 of the main TA.

3.5 Stoke Mandeville and Aylesbury (CFA11)

Stoke Mandeville and Aylesbury (CFA11) SES3 and AP4 revised scheme changes

3.5.1 The original scheme is described in section 7.7 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.5).

3.5.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are set out below.

3.5.3 Additional traffic surveys have been undertaken at the following junctions and sections of highway in the Stoke Mandeville and Aylesbury area to supplement the information reported in the main TA and SES and AP2 TA:

- A4157 Elmhust Road/A418 Bierton Road;
- A413 Buckingham Road/A4157 Weedon Road;
- A41 Friarage Road/A418 Oxford Road;
- A41 Bicester Road/A4157 Haydon Road;
- A418 Oxford Road/Churchill Ave /Fowler Road;
- A41/Griffin Lane;
- A4010 New Road/A4129 Longwick Road;
- A418 Oxford Road/Ellen Road;
- A418 Oxford Road/Coldharbour Way;
- A41/Broadfields;
- A41/Meadowcroft;
- A41/Rabans Lane;
- A41/Jackson Road /Dickins Way;
- A41/Aylesbury Way Parkway;
- A4129 Thame Road, between the A418 and Princes Risborough (A4010); and
- A418 Oxford Road, between the M40 and the A4129.

3.5.4 A change to the workforce trip assignment has been made on the A4010 Risborough Road, south of Stoke Mandeville Bypass (south of North Lee Lane), the A418 Oxford Road (between the route and the A41 in Aylesbury) and the A41 (between the A418 Oxford Road and Blackgrove Road). This has resulted in a decrease in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment.

3.5.5 The following AP4 amendment, located in CFA9 (Central Chilterns), has necessitated a minor revision to the number of construction vehicle trips by road within CFA11:

- extension of Chiltern tunnel in CFA9 (AP4-009-001).

3.5.6 The changes lead to a number of changes to the traffic and transport assessment in the Stoke Mandeville and Aylesbury (CFA11) area reported in the main TA and SES and AP2 TA.

Assessment methodology

3.5.7 The assessment methodology is described in Section 7.2 of the main TA.

Existing baseline

3.5.8 Baseline conditions in this area are as described in Section 5.13 of the main TA and the SES and AP2, updated by the additional traffic survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.5.9 Future baseline conditions in this area are as described in Section 7.7 of the main TA and the SES and AP2, updated by the additional traffic survey data.

3.5.10 Tables 7-75 and 7-76 of the main TA are amended to include the following roads, whereby new baseline data is provided from the additional traffic data.

Table 7-75: Stoke Mandeville and Aylesbury strategic road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A4129 Thame Road, between the A418 and Princes Risborough	EB	571	5	629	5	676	5	818	6	58	105	247	10%	18%	43%
	WB	484	6	533	6	573	7	693	8	49	89	209	10%	18%	43%
A418 Oxford Road, between the M40 and the A4129	EB	592	16	643	17	685	18	796	21	51	93	204	9%	16%	34%
	WB	639	17	694	18	740	20	859	23	55	101	220	9%	16%	34%

Table 7-76: Stoke Mandeville and Aylesbury strategic road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A4129 Thame Road, between the A418 and Princes Risborough	EB	468	2	515	2	555	2	672	2	47	87	204	10%	19%	44%
	WB	577	2	636	2	684	2	828	3	59	107	251	10%	19%	44%
A418 Oxford Road, between the M40 and the A4129	EB	673	8	732	8	782	í	916	10	59	109	243	9%	16%	36%
	WB	591	9	643	10	687	10	805	12	52	96	214	9%	16%	36%

Construction description

Highway network

3.5.11 Changes to forecast traffic flows as a result of the SES3 and AP4 revised scheme are presented in the following sections. Forecast flows for sections of road where supplementary baseline traffic data has been collected are shown. There are no other changes to forecast flows presented in the main TA and SES and AP2 TA.

Strategic road network

3.5.12 Table 7-82 and Table 7-83 of the main TA and SES and AP2 TA are amended.

Table 7-82: Stoke Mandeville and Aylesbury strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A4010 Aylesbury Road/ Risborough Road (Little Kimble)	EB	679	794	851	19	58	11	7%	130%
	WB	767	896	912	21	16	11	2%	115%
A4129 Thame Road, between the A418 and Princes Risborough	EB	571	629	654	10	25	5	4%	111%
	WB	484	533	540	12	7	5	1%	91%
A418 Oxford Road, between the M40 and the A4129	EB	592	643	697	24	54	8	8%	45%
	WB	639	694	704	26	9	8	1%	41%

Table 7-83: Stoke Mandeville and Aylesbury strategic road network construction traffic flows (vehicles) - PM peak - partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A4010 Aylesbury Road/ Risborough Road (Little Kimble)	EB	852	1006	1013	6	7	4	1%	163%
	WB	566	667	716	6	48	4	7%	135%
A4129 Thame Road, between the A418 and Princes Risborough	EB	468	515	518	3	2	2	0%	111%
	WB	577	636	655	4	20	2	3%	83%
A418 Oxford Road, between the M40 and the A4129	EB	673	732	735	11	3	3	0%	31%
	WB	591	643	691	12	47	3	7%	26%

3.5.13 The SES3 and AP4 revised scheme has resulted in an increase in construction traffic movements on the A4010 Aylesbury Road /Risborough Road (Little Kimble), between Princes Risborough and B4009 Nash Lee Road. This is related to a difference in trips generated by compounds within the area, due to the Chiltern Tunnel extension. The change in flows is 16 two-way trips a day or fewer.

3.5.14 Supplementary baseline data and the forecast construction traffic flows are shown for A4129 Thame Road, between the A418 and Princes Risborough, and A418 Oxford Road, between the M40 and the A4129. There is no change in flow on these sections of road resulting from the SES3 and AP4 revised scheme.

Junction capacity

3.5.15 Using the supplementary traffic survey data, re-assessment of the surveyed junctions has been carried out, using industry standard software. The results are shown in Tables 7-83.1 to 7-83.14 and updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.5.16 The modelling results indicate that the junction of A41/Aylesbury Way Parkway will operate within capacity during construction, with the highest percentage of flow to capacity at 75% on the A41 (west) arm in the PM peak and construction traffic results in a maximum increase of 5%. The revised scheme is not considered to have a material impact on capacity at this junction. This is consistent with the assessment as presented in paragraph 3.5.20 of the SES and AP2 TA.

3.5.17 The modelling results indicate that the remaining junctions assessed will operate over capacity, during both AM and PM peaks. This indicates that these junctions will experience intermittent traffic congestion and delay during construction. Therefore, paragraphs 3.5.19 and 3.5.20 of the SES and AP2 TA are removed, these stated that 'no junctions within the study area meet the junction assessment criteria and therefore none are considered to be substantially impacted by the Proposed Scheme'. However, all of these junctions are assessed as being over capacity on one or more arm in the 2021 baseline without construction traffic. The increase in percentage of flow to capacity due to the impact of construction traffic is, in general, 5% or less on any arm, which indicates that the SES3 and AP4 revised scheme traffic is unlikely to result in a substantial change in operation.

Table 7-83.1: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance at A4157 Elmhust Road /A418 Bierton Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A418 Bierton Road North	1166	69%	2	1204	71%	3
A4157 Douglas Road.	811	87%	7	823	91%	9
A418 Bierton Road South	614	50%	1	614	51%	1
A4157 Elmhurst Road	1224	107%	96	1230	108%	101
Total	N/A	107%	N/A	N/A	108%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A418 Bierton Road North	905	48%	1	906	48%	1
A4157 Douglas Road.	1059	89%	8	1059	88%	8
A418 Bierton Road South	888	78%	4	909	80%	4
A4157 Elmhurst Road	1095	115%	145	1109	118%	170
Total	N/A	115%	N/A	N/A	118%	N/A

Table 7-83.2: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance at A413 Buckingham Road/A4157 Weedon Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Buckingham Road N Left	623	82%	22	623	82%	22
Buckingham Road N Right Ahead	912	108%	74	912	109%	77
Weedon Rd Left Ahead	587	109%	46	593	106%	40
Buckingham Road S Ahead Left	146	22%	4	239	37%	7
Buckingham Road S Ahead Right	215	29%	4	122	24%	2
Elmhurst Road Ahead Left	587	103%	47	616	107%	58
Elmhurst Road Right	311	106%	31	311	106%	31
Total	N/A	109%	N/A	N/A	109%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Buckingham Road N Left	450	86%	19	450	78%	17
Buckingham Road N Right Ahead	474	84%	13	474	76%	12
Weedon Rd Left Ahead	854	107%	63	879	109%	73
Buckingham Road S Ahead Left	406	106%	34	490	110%	48
Buckingham Road S Ahead Right	473	106%	38	389	74%	12
Elmhurst Road Ahead Left	362	44%	10	364	48%	11
Elmhurst Road Right	442	105%	36	442	109%	43
Total	N/A	107%	N/A	N/A	110%	N/A

Table 7-83.3: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance at A41 Friarage Road /A418 Oxford Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A418 Oxford Road North	749	84%	5	749	85%	6
A41 Friarage Road	1206	84%	6	1224	86%	6
A418 Oxford Road South	1114	67%	2	1129	69%	2
A41 Gatehouse Road	979	87%	7	993	88%	8
Total	N/A	87%	N/A	N/A	88%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A418 Oxford Road North	777	83%	5	777	83%	5
A41 Friarage Road	1444	102%	49	1444	102%	51
A418 Oxford Road South	1333	86%	6	1352	88%	7
A41 Gatehouse Road	1099	113%	188	1119	115%	225
Total	N/A	113%	N/A	N/A	115%	N/A

Table 7-83.4: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance at A41 Bicester Road /A4157 Haydon Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A4157 Haydon Road	683	98%	19	712	102%	33
Bicester Road East	852	111%	86	867	115%	111
A41 Gatehouse Road	750	31%	1	774	31%	1
Bicester Road West	1834	103%	76	1845	103%	83
Total	N/A	111%	N/A	N/A	115%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A4157 Haydon Road	706	88%	7	707	87%	7
Bicester Road East	862	96%	16	862	96%	16
A41 Gatehouse Road	1325	89%	8	1335	90%	8
Bicester Road West	1761	118%	263	1815	122%	321
Total	N/A	118%	N/A	N/A	122%	N/A

Table 7-83.5: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance at A418 Oxford Road /Churchill Ave /Fowler Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Oxford Rd N Ahead Left	607	98%	27	543	85%	17
Oxford Rd N Right Ahead	317	83%	15	403	92%	19
Fowler Road Left Right Ahead	444	106%	40	444	106%	40
Oxford Rd S Ahead Left	756	106%	49	771	108%	57
Churchill Ave Right Ahead Left	575	107%	47	575	107%	48
Total	N/A	107%	N/A	N/A	108%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Oxford Rd N Ahead Left	699	102%	38	603	92%	21
Oxford Rd N Right Ahead	546	103%	40	653	107%	57
Fowler Road Left Right Ahead	464	105%	40	464	107%	43
Oxford Rd S Ahead Left	777	104%	41	796	106%	53
Churchill Ave Right Ahead Left	526	105%	39	526	105%	39
Total	N/A	105%	N/A	N/A	107%	N/A

Table 7-83.6: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Griffin Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A41 Bicester Road East	1549	99%	36	1609	103%	73
Griffin Lane	689	109%	62	689	112%	797
A41 Bicester Road West	1570	113%	183	1582	113%	184
Total	N/A	113%	N/A	N/A	113%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A41 Bicester Road East	1768	113%	204	1775	113%	209
Griffin Lane	552	113%	68	552	113%	69
A41 Bicester Road West	1487	97%	22	1542	101%	44
Total	N/A	113%	N/A	N/A	113%	N/A

Table 7-83.7: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A4010 New Road /A4129 Longwick Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Aylesbury Road	688	55%	1	716	57%	1
A4010 New Road	1016	71%	3	1053	74%	3
A4129 Longwick Road	532	83%	5	569	94	12
Tesco Access	116	13%	0	116	14%	0
Total	N/A	83%	N/A	N/A	94%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Aylesbury Road	566	45%	1	622	50%	1
A4010 New Road	1175	82%	5	1180	83%	5
A4129 Longwick Road	489	99%	20	494	101%	23
Tesco Access	239	30%	0	239	31%	0
Total	N/A	99%	N/A	N/A	101%	N/A

Table 7-83.8: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A418 Oxford Road /Ellen Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Thame Road S	65	8%	0	65	8%	0
Ellen Road	895	62%	2	895	63%	2
A418 Oxford Road West	1090	62%	2	1105	63%	2
A418 Oxford Road North	686	39%	1	708	40%	1
Total	N/A	62%	N/A	N/A	63%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Thame Road S	19	3%	0	19	3%	0
Ellen Road	678	47%	1	678	48%	1
A418 Oxford Road West	1575	88%	7	1594	89%	8
A418 Oxford Road North	821	54%	1	832	55%	1
Total	N/A	88%	N/A	N/A	89%	N/A

Table 7-83.9: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A418 Oxford Road /Coldharbour Way junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Pearson Close Access	0	Exit only	Exit only	0	Exit only	Exit only
A418 Oxford Road East	1430	108%	70	1453	110%	81
A418 oxford Road West	1189	81%	4	1203	82%	5
Coldharbour Way	1101	80%	4	1101	80%	4
Total	N/A	108%	N/A	N/A	110%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Pearson Close Access	0	Exit only	Exit only	0	Exit only	Exit only
A418 Oxford Road East	1281	88%	7	1309	90%	8
A418 Oxford Road West	1580	112%	101	1599	113%	111
Coldharbour Way	1098	85%	6	1098	85%	6
Total	N/A	112%	N/A	N/A	113%	N/A

Table 7-83.10: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Broadfields junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A41 East	1150	55%	1	1210	58%	2
Broadfields	358	24%	0	358	25%	0
A41 West	1475	76%	3	1487	76%	4
Total	N/A	76%	N/A	N/A	76%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A41 East	1689	85%	6	1696	86%	6
Broadfields	904	76%	3	904	76%	3
A41 West	1292	74%	3	1347	78%	4
Total	N/A	85%	N/A	N/A	86%	N/A

Table 7-83.11: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Meadowcroft junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Meadowcroft	357	71%	2	357	72%	3
A41 East	1012	60%	2	1072	64%	2
Devereux Place	22	4%	0	22	5%	0
A41 West	1321	58%	2	1333	59%	2
Total	N/A	71%	N/A	N/A	72%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Meadowcroft	250	45%	1	250	47%	1
A41 East	1569	90%	9	1576	91%	9
Devereux Place	15	6%	0	15	6%	0
A41 West	1320	61%	2	1375	64%	2
Total	N/A	90%	N/A	N/A	91%	N/A

Table 7-83.12: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Rabans Lane junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A41 East	1035	90%	9	1095	95%	17
Rabans Lane	468	56%	1	468	58%	2
A41 West	1618	101%	52	1630	102%	60
Total	N/A	101%	N/A	N/A	102%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A41 East	1367	111%	145	1374	112%	151
Rabans Lane	666	103%	37	666	104%	38
A41 West	1259	85%	6	1315	89%	8
Total	N/A	111%	N/A	N/A	112%	N/A

Table 7-83.13: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Jackson Road /Dickins Way junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Jacksons Road	361	85%	5	361	87%	6
A41 South	1019	55%	1	1079	59%	2
Dickens Way	146	27%	0	146	29%	0
A41 North	1539	86%	7	1551	87%	7
Total	N/A	86%	N/A	N/A	87%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Jacksons Road	301	48%	1	301	51%	1
A41 South	1496	81%	4	1503	82%	5
Dickens Way	313	97%	14	313	99%	15
A41 North	1205	72%	3	1261	75%	3
Total	N/A	97%	N/A	N/A	99%	N/A

Table 7-83.14: Stoke Mandeville and Aylesbury comparison forecast baseline and construction scenario performance A41 /Aylesbury Way Parkway junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Paradise Orchard	373	44%	1	373	44%	1
A41 East	881	65%	2	941	70%	3
Aylesbury Vale Parkway	20	3%	0	20	3%	0
A41 West	936	66%	2	948	66%	2
Total	N/A	66%	N/A	N/A	70%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Paradise Orchard	89	11%	0	89	11%	0
A41 East	968	68%	2	975	68%	2
Aylesbury Vale Parkway	34	4%	0	34	4%	0
A41 West	1000	71%	3	1055	75%	3
Total	N/A	71%	N/A	N/A	75%	N/A

Operation description and assessment of operation impacts

3.5.18 There is no change to the section 7.7 of the main TA or section 3.5 of the SES and AP2 TA with regard to the assessment of the scheme during operation.

3.6 Waddesdon and Quainton (CFA12)

Waddesdon and Quainton (CFA12) SES3 and AP4 revised scheme changes

3.6.1 The original scheme is described in section 7.8 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.6).

3.6.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are set out below.

3.6.3 Additional traffic surveys have been undertaken at the following junctions in the Waddesdon and Quainton area to supplement the information reported in the main TA and SES and AP2 TA:

- A41/ Blackgrove Road (Waddesdon Crossroads);
- A41/ Station Road;
- A41 Aylesbury Road/ The Broadway;
- Edgcott Road with Main Street/ The Broadway; and
- Grendon Road/Edgcott Road/ Marsh Gibbon Road.

3.6.4 This data has been used to update the assessment of junctions. This is the only change to the main TA and SES and AP2 TA considered n this CFA, with no AP4 amendments of relevance to traffic and transport.

3.6.5 A change to the workforce trip assignment has been made on the A41 (between Blackgrove Road and The Broadway) and Edgcott Road. This has resulted in a decrease in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment and is not considered further.

Assessment methodology

3.6.6 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.6.7 Baseline conditions in this area are as described in section 5.14 of the main TA and the SES and AP2 TA, updated by the additional survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.6.8 Future baseline conditions in this area are as described in section 7.8 of the main TA and the SES and AP2 TA, updated by the additional survey data.

Assessment of construction impacts

Highway network

Junction capacity

3.6.9 Using the supplementary traffic survey data, a further assessment of junctions has been carried out, using industry standard software. The results are shown in Tables 105.1 to 105.5 and update the results within the main TA and SES and AP2 TA for these junctions.

3.6.10 The modelling results for the A41/Blackgrove Road (Waddesdon crossroads) junction indicate that the junction will operate over capacity during both the AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction. Within the PM peak, the critical Waddesdon Hill arm is forecast to operate over 85% in the 2021 baseline, with construction traffic adding a maximum of 6% flow to capacity upon this. Consequently, during this period, the impact of the revised scheme is not considered to have a substantial impact on capacity at this junction.

3.6.11 Paragraph 3.6.22 of the SES and AP2 TA is amended, so that the assessment text stating that the A41/Blackgrove Road junction is 'unlikely to experience additional intermittent traffic congestion and delay during peak periods' is removed. However, the revised scheme includes changes to this junction as part of the A41 Bicester Road overbridge and realignment of the A41. It is therefore considered that the new junction will be designed to provide sufficient capacity to meet expected traffic flows and not result in material traffic congestion and delay once implemented.

3.6.12 The modelling results for the junctions of the A41/Station Road, A41 Aylesbury Road/The Broadway, Edgcott Road/Main Street and The Broadway, and Grendon Road with Edgcott Road and Marsh Gibbon Road indicate that the junctions will operate within capacity during the construction of the revised scheme. The highest percentage of flow to capacity at each of these junctions is below 85%. The impact of the revised scheme is not considered to have a material impact on capacities at these junctions.

Table 7-105.1: Forecast baseline and construction scenario performance at A41 /Blackgrove Road (Waddesdon Crossroads)

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Waddesdon Hill (left)	76	18%	0	79	22%	0
Waddesdon Hill (Right)	77	46%	1	94	61%	2
A41 (e)	979	10%	0	1014	10%	0
Blackgrove Road (left)	29	16%	0	45	88%	3
Blackgrove Road (right)	201	82%	4	203	91%	7
A41 (w)	1015	24%	0	1036	24%	0
Total	N/A	82%	N/A	N/A	91%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Waddesdon Hill (left)	73	100%	5	73	101%	7
Waddesdon Hill (Right)	218	95%	10	218	101%	16
A41 (e)	888	14%	0	936	18%	0
Blackgrove Road (left)	17	4%	0	17	4%	0
Blackgrove Road (right)	91	45%	1	91	52%	1
A41 (w)	1062	10%	0	1098	10%	0
Total	N/A	100%	N/A	N/A	101%	N/A

Table 7-105.2: Forecast baseline and construction scenario performance at A41Station Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A41 West	785	0%	0	871	0%	0
Station Road	107	36%	0	111	43%	1
A41 East	752	4%	0	834	7%	0
Total	N/A	36%	N/A	N/A	43%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A41 West	987	0%	0	1056	4%	0
Station Road	55	24%	0	73	33%	1
A41 East	729	5%	0	800	6%	0
Total	N/A	24%	N/A	N/A	33%	N/A

Table 7-105.3: Forecast baseline and construction scenario performance at A41 Aylesbury Rd/The Broadway junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A41 West	662	0%	0	776	0%	0
The Broadway	260	51%	1	263	61%	2
A41 East	705	10%	0	793	17%	0
Total	N/A	51%	N/A	N/A	61%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A41 West	765	0%	0	820	0%	0
The Broadway	109	27%	0	169	45%	1
A41 East	785	23%	0	864	24%	0
Total	N/A	27%	N/A	N/A	45%	N/A

Table 7-105.4: Forecast baseline and construction scenario performance at Edgcott Road/Main St/ The Broadway junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Edgcott Road.	341	0%	0	345	0%	0
Main Street.	106	16%	0	106	16%	0
The Broadway	106	2%	0	169	2%	0
Total	N/A	16%	N/A	N/A	16%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Edgcott Road.	156	0%	0	215	0%	0
Main Street.	136	28%	0	136	29%	0
The Broadway	255	4%	0	257	4%	0
Total	N/A	28%	N/A	N/A	29%	N/A

Table 7-105.5: Forecast baseline and construction scenario performance at Grendon Road/ Edgcott Road/ Marsh Gibbon Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Edgcott Road.	166	0%	0	229	0%	0
Marsh Gibbon Road.	26	5%	0	26	5%	0
Grendon Road.	314	0%	0	317	0%	0
Total	N/A	16%	N/A	N/A	16%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Edgcott Road.	354	0%	0	355	0%	0
Marsh Gibbon Road.	20	3%	0	20	3%	0
Grendon Road.	148	1%	0	208	1%	0
Total	N/A	28%	N/A	N/A	29%	N/A

Operation description and assessment of operation impacts

3.6.13 There is no change to section 7.8 of the main TA and section 3.6 of the SES and AP2 TA with regard to the assessment during operation.

3.7 Calvert, Steeple Claydon, Twyford and Chetwode (CFA13)

Calvert, Steeple Claydon, Twyford and Chetwode (CFA13) SES3 and AP4 revised scheme changes

3.7.1 The original scheme is described in section 7.9 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.7).

3.7.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are set out below.

3.7.3 Additional traffic surveys have been undertaken at the following junctions and on sections of highway in the Calvert, Steeple Claydon, Twyford and Chetwode area to supplement the information reported in the main TA and SES and AP2 TA:

- A421/ A413;
- A421/ A413 London Road/ London Road;
- A421/ Gawcott Road;
- A421 Tingewick bypass/ Barton Road;
- A421/ A4421/ Sandpit Hill;
- A41, between The Broadway (Grendon Underwood) (in CFA12) and A4421 (Bicester);
- A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road;
- A4421 Charbridge Lane, between A41 and A4421 Buckingham Road ; and
- A41 Boundary Way, between A4421 Charbridge Lane and B4030 Oxford Road.

3.7.4 Further assessment of the junction of School Hill with Perry Hill has also been undertaken, using existing traffic data.

3.7.5 A change to the workforce trip assignment has been made on Perry Hill (north of School Hill) and School End. This has resulted in a decrease in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment.

3.7.6 There are no AP4 amendments of relevance to traffic and transport in this CFA.

Assessment methodology

3.7.7 The assessment methodology is as described in section 7.2 of the main TA.

Existing baseline

3.7.8 Baseline conditions in this area are as described in section 5.15 of the main TA and the SES and AP2 TA, updated by the additional survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.7.9 Future baseline conditions in this area are as described in section 7.9 of the main TA and the SES and AP2 TA, updated by the additional survey data.

3.7.10 Table 7-119 and Table 7-120 are amended to include the following roads, whereby new baseline data is provided from additional traffic data.

Table 7-119: Calvert, Steeple Claydon, Twyford and Chetwode strategic road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road	EB	820	40	920	45	1002	49	1236	60	100	182	416	12%	22%	51%
	WB	889	50	998	56	1086	61	1341	75	109	197	452	12%	22%	51%
A41 Aylesbury Rd, between Broadway and Bicester	EB	443	21	482	22	516	24	601	28	39	73	158	9%	16%	36%
	WB	492	23	535	24	574	26	668	31	43	82	176	9%	17%	36%
A4421 Charbridge La, between A41 and A4421 Buckingham Road	NB	631	31	686	34	735	36	860	42	55	104	229	9%	16%	36%
	SB	579	39	630	42	675	45	789	53	51	96	210	9%	17%	36%
A41 Boundary Way, between A4421 Charbridge Lane and B4030	NB	1156	46	1257	49	1347	53	1576	62	101	191	420	9%	17%	36%
	SB	860	44	935	47	1002	51	1172	59	75	142	312	9%	17%	36%

Table 7-120: Calvert, Steeple Claydon, Twyford and Chetwode strategic road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road	EB	984	29	1111	33	1215	36	1523	45	127	231	539	13%	23%	55%
	WB	867	24	978	27	1071	29	1342	36	111	204	475	13%	24%	55%
A41 Aylesbury Rd, between Broadway and Bicester	EB	612	7	668	8	719	8	848	10	56	107	236	9%	17%	39%
	WB	441	13	481	14	518	15	611	17	40	77	170	9%	17%	39%
A4421 Charbridge La, between A41 and A4421 Buckingham Road	NB	659	20	718	21	772	23	912	27	59	113	253	9%	17%	38%
	SB	579	20	634	21	682	23	806	27	55	103	227	9%	18%	39%
A41 Boundary Way, between A4421 Charbridge Lane and B4030	NB	1033	15	1126	16	1211	18	1431	21	93	178	398	9%	17%	39%
	SB	1200	36	1307	39	1406	42	1662	50	107	206	462	9%	17%	39%

Assessment of construction impacts

Highway Network

3.7.11 Forecast flows for the sections of road where the baseline has been updated by supplementary traffic data are shown. There are no other changes to forecast flows presented in the main TA and SES and AP2 TA.

Strategic road network

3.7.12 Table 7-127 and Table 7-128 of the main TA and SES and AP2 TA are amended to include the additional traffic data and the forecast construction traffic flows on: A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road; A41 Aylesbury Road, between Broadway and Bicester; A4421 Charbridge Lane, between A41 and A4421 Buckingham Road; and A41 Boundary Way, between A4421 Charbridge Lane and B4030. There are no other changes in flows on these sections of road resulting from the SES3 and AP4 revised scheme.

Table 7-127: Calvert, Steeple Claydon, Twyford and Chetwode strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 Base	2021 Base	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road	EB	820	920	953	50	33	5	4%	11%
	WB	889	998	1025	61	28	5	3%	9%
A41 Aylesbury Rd, between Broadway and Bicester	EB	443	482	563	48	81	26	17%	114%
	WB	492	535	561	50	26	26	5%	104%
A4421 Charbridge La, between A41 and A4421 Buckingham Road	NB	631	686	725	57	39	23	6%	68%
	SB	579	630	653	65	23	23	4%	54%
A41 Boundary Way, between A4421 Charbridge Lane and B4030	NB	1156	1257	1278	70	21	21	2%	42%
	SB	860	935	1009	68	74	21	8%	44%

Table 7-128: Calvert, Steeple Claydon, Twyford and Chetwode strategic road network construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2012 Base	2021 Base	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A421 Tingewick Bypass, between A4421 and Gawcott Road/ Buckingham Road	EB	984	1111	1137	37	27	4	2%	12%
	WB	867	978	1002	31	24	4	3%	15%
A41 Aylesbury Rd, between Broadway and Bicester	EB	612	668	692	31	24	23	4%	307%
	WB	441	481	560	37	79	23	16%	172%
A4421 Charbridge La, between A41 and A4421 Buckingham Road	NB	659	718	740	44	23	23	3%	107%
	SB	582	634	672	44	38	23	6%	107%
A41 Boundary Way, between A4421 Charbridge Lane and B4030	NB	1033	1126	1197	35	71	18	6%	112%
	SB	1200	1307	1326	57	18	18	1%	46%

Junction capacity

3.7.13 Using the supplementary survey data, a further assessment of A421/ Buckingham Road (Gawcott Road), A421 Tingewick bypass/Barton Road and A421/A4421 and Sandpit Hill junctions has been carried out, using industry standard software. The results are shown in Tables 7-129.1 to 7-129.3, and this updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.7.14 The modelling results for the junctions of A421/A4421 and Sandpit Hill, A421 Tingewick bypass/Barton Road, and A421/Buckingham Road (Gawcott Road) indicate that the junctions will operate within capacity during the construction of the revised scheme. The highest percentage of flow to capacity at each of these junctions is below 85%, with construction traffic resulting in a maximum increase of 5%. The impact of the revised scheme is not considered to have a material impact on capacity at these junctions. This is consistent with the assessment conclusions provided in the main TA (paragraph 7.9.94) and SES and AP2 TA (pparagraph3.7.26) for these junctions.

Table 7-129.1: Forecast baseline and construction scenario performance at A421/Buckingham Road (Gawcott Road)

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Embleton Way	180	21%	0	180	22%	0
A421 East	1170	76%	4	1204	79%	4
Gawcott Road	220	27%	0	232	29%	0
A421 West	915	58%	2	943	60%	2
Total	N/A	76%	N/A	N/A	79%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Embleton Way	152	20%	0	152	21%	0
A421 East	1262	81%	5	1276	82%	5
Gawcott Road	158	19%	0	188	23%	0
A421 West	1133	71%	3	1166	73%	3
Total	N/A	81%	N/A	N/A	82%	N/A

Table 7-129.2: Forecast baseline and construction scenario performance at A421 Tingewick Bypass/Barton Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	1039	0%	0	1092	0%	0
Barton Road	33	6%	0	41	8%	0
A421 West	0	0%	0	28	0%	0
Total	N/A	6%	N/A	N/A	8%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	992	0%	0	1003	0%	0
Barton Road	29	5%	0	53	10%	0
A421 West	0	0%	0	0	0%	0
Total	N/A	5%	N/A	N/A	10%	N/A

Table 7-129.3: Forecast baseline and construction scenario performance at A421/A4421 and Sandpit Hill

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Sandpit Hill	170	15%	0	170	15%	0
A421 East	1076	42%	1	1107	43%	1
Finmere Access	5	1%	0	5	1%	0
A4421	509	37%	1	519	38%	1
A421 West	584	42%	1	607	44%	1
Total	N/A	42%	N/A	N/A	44%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Sandpit Hill	81	8%	0	81	8%	0
A421 East	1051	40%	1	1080	41%	1
Finmere Access	11	1%	0	11	1%	0
A4421	759	56%	1	775	57%	1
A421 West	581	46%	1	598	48%	1
Total	N/A	56%	N/A	N/A	57%	N/A

3.7.15 Using the supplementary survey data, assessment of the A421/A413 and A421 /A413 London Road/ London Road junctions has been undertaken. The results are shown in Table 7-129.4 to Table 7-129.5.

3.7.16 The modelling results indicate that the junction of A412/A413 London Road will operate within capacity during construction, with the highest percentage of flow to capacity at below 85% and construction traffic resulting in a maximum increase of 2%. Consequently, the revised scheme is not considered to have a material impact on capacity at this junction.

3.7.17 The modelling results indicate that the junction of A421/A413 London Road/ London Road will operate over on the A412 east and west arms, during both the AM and PM peaks. This indicates that the junction will experience intermittent traffic congestions and delay duration construction. However, these arms are also forecast to operate over 85% flow to capacity in the 2021 baseline, with construction traffic resulting in a maximum increase of 2%. Therefore, the revised scheme is not considered to have a material impact on capacity at this junction.

Table 7-129.4: Forecast baseline and construction scenario performance at A421/A413 London Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	908	62%	2	942	64%	2
A421 West	1230	64%	2	1238	64%	2
A413 London Road	899	52%	1	899	53%	1
Total	N/A	64%	N/A	N/A	64%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	825	53%	1	835	54%	1
A421 West	1362	71%	3	1398	73%	3
A413 London Road	736	46%	1	736	46%	1
Total	N/A	71%	N/A	N/A	73%	N/A

Table 7-129.5: Forecast baseline and construction scenario performance at A421 with A413 London Road/ London Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	1304	97%	22	1338	99%	34
A413 London Road South	1024	83%	5	1024	84%	5
A421 West	1165	87%	7	1173	87%	7
London Road North	713	73%	3	713	74%	3
Total	N/A	97%	N/A	N/A	99%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A421 East	1096	82%	5	1106	83%	5
A413 London Road South	909	64%	2	909	64%	2
A421 West	1550	111%	159	1585	113%	192
London Road North	593	72%	3	593	73%	3
Total	N/A	111%	N/A	N/A	113%	N/A

3.7.18 A further assessment of the School Hill/Perry Hill junction has been undertaken, using existing traffic survey data. The results are shown in Table 7-129.6 and updates the assessment within the main TA and SES and AP2 TA for this junction.

3.7.19 The modelling results indicate that the junction of School Hill with Perry Hill will operate within capacity during construction, with the highest percentage of flow to capacity at 43% on the School Hill (west arm) in the PM peak. Therefore, the revised scheme is not considered to have a material impact on capacity at this junction. This is consistent with the assessment as presented in paragraph 3.7.25 of the SES and AP2 TA.

Table 7-129.6: Forecast baseline and construction scenario performance at School Hill/ Perry Hill junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
School Hill East	124	15%	0	150	20%	0
Perry Hill North	109	1%	0	249	2%	0
School Hill West	69	15%	0	155	38%	1
Perry Hill South	131	7%	0	192	11%	0
Total	N/A	15%	N/A	N/A	38%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
School Hill East	128	15%	0	187	24%	0
Perry Hill North	73	1%	0	186	2%	0
School Hill West	89	20%	0	179	43%	1
Perry Hill South	206	13%	0	212	14%	0
Total	N/A	20%	N/A	N/A	43%	N/A

Operation description and assessment of operation impacts

3.7.20 There is no change to section 7.9 of the main TA or section 3.7 of the SES and AP2 TA with regard to the assessment during operation.

3.8 Newton Purcell to Brackley (CFA14)

Newton Purcell to Brackley (CFA14) SES3 and AP4 revised scheme changes

3.8.1 The original scheme is described in section 7.10 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.8).

3.8.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are set out below.

3.8.3 A change to the HGV and workforce trip assignment has been made on the A43, the A422 Brackley Road, the A421 London Road and Radstone Road within this area. This has resulted in a change in all vehicle construction trips. This is not considered to have a substantial impact upon the main TA and SES and AP2 TA technical assessment.

3.8.4 Since submission of the Bill, further traffic modelling has been undertaken for M40 junction 10 and the A43 corridor, to supplement the information reported in the main TA. The updated assessment from this revised modelling is the only change reported within this chapter.

3.8.5 There are no AP4 amendments of relevance to traffic and transport in this CFA.

Assessment methodology

3.8.6 The assessment methodology is as described in Section 7.2 of the main TA.

Existing and future baseline

3.8.7 Baseline and future baseline conditions in this area are as described in section 5.16 and section 7.10 of the main TA respectively.

Construction description

3.8.8 There is no change from that reported in section 7.10 of the main TA and section 3. Of the SES and AP2 TA.

Assessment of construction impacts

Highway network

Junction capacity

3.8.9 Traffic modelling, using industry standard software, has been undertaken for M40 junction 10 and for junctions along the A43 corridor, to provide an updated and supplementary assessment to that reported in the section 7.10 of the main TA.

M40 Junction 10

3.8.10 The M40 junction 10 modelling includes the following junctions for assessment:

- A43 /B4100 (Baynards Green Roundabout);
- A43 /M40 SB Off-Slip (Padbury Roundabout);
- A43 /Cherwell Services (Cherwell Roundabout); and

- A43 /M40 NB Off-Slip /B430 (Ardley Roundabout).

3.8.11 The modelling results are presented with regard to journey time, queue length and junction delay comparison between the 2021 baseline and 2021 with HS2 construction traffic. Tables 7-154.1 to 7-154.3 are added.

Table 7-154.1: Newton Purcell to Brackley comparison forecast baseline and construction scenario journey time comparison at M40 junction 10

Vehicle Type	Direction	Journey Time Origin	Journey Time Destination	08:00-09:00		17:00-18:00	
				2021 baseline	2021 With HS2 construction traffic	2021 baseline	2021 With HS2 construction traffic
Car	Northbound	Ardley Roundabout - A43 North exit	Baynards Green Roundabout – A43 South approach	89	91	93	94
	Southbound	Baynards Green Roundabout – A43 South exit	Ardley Roundabout - A43 North approach	99	101	97	101
HGV	Northbound	Ardley Roundabout - A43 North exit	Baynards Green Roundabout – A43 South approach	102	103	106	106
	Southbound	Baynards Green Roundabout – A43 South exit	Ardley Roundabout - A43 North approach	114	114	114	118

Table 7-154.2: Newton Purcell to Brackley comparison forecast baseline and construction scenario queue length (m) comparison at M40 junction 10

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /B4100 (Baynards Green Roundabout)	A43 North	732	1123	67	95
	B4100 East	982	1163	749	1360
	A43 South	4	50	78	83
	B4100 West	402	569	865	991
A43 /M40 SB Off-Slip (Padbury Roundabout)	A43 North	64	76	42	51
	A43 South	1	0	1	3
	M40 SB off-slip	80	152	92	180

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /Cherwell Services (Cherwell Roundabout)	A43 North	74	86	76	98
	Services Access	56	56	48	48
	A43 South	31	42	35	32
A43 /M40 NB Off-Slip /B430 (Ardley Roundabout)	A43 North	41	40	23	24
	M40 NB off-slip	161	280	98	112
	B430 South	29	31	34	39

3.8.12 There is little change to the result of the original assessment carried out and reported in the main TA, which concluded that increased traffic during the most intensive periods of construction is forecast to cause additional intermittent traffic congestion and delay at the junctions during peak periods. The impact of construction traffic is considered to be most substantial at Baynards Green Roundabout (A43 with B4100).

A43 Brackley corridor

3.8.13 The A43 Brackley corridor modelling includes the following junctions for assessment:

- A43 /Northampton Road /Petrol Services roundabout;
- A43 /A422 /Buckingham Road roundabout;
- A43 /A422 /Oxford Road roundabout;
- A43 /Broad Lane roundabout; and
- A43 /A421 /B4031 roundabout.

3.8.14 The modelling results are presented with regard to journey time, queue length and junction delay comparison between the 2021 baseline and 2021 with HS2 construction traffic. Tables 7-154.4 to 7-154.6 are added.

Table 7-154.4: Newton Purcell to Brackley comparison forecast baseline and construction scenario journey time comparison at A43 Brackley corridor

Vehicle Type	Direction	Journey Time Origin	Journey Time Destination	08:00-09:00		17:00-18:00	
				2021 baseline	2021 With HS2 construction traffic	2021 baseline	2021 With HS2 construction traffic
Car	Northbound	A43 /A421 roundabout - A43 North exit	A43 /Buckingham Road roundabout - A43 North exit	257	263	291	332
	Southbound	A43 /Northampton Road roundabout - A43 North	A43 /Broad Lane roundabout - A43 South exit	496	773	280	349
HGV	Northbound	A43 /A421 roundabout - A43 North exit	A43 /Buckingham Road roundabout - A43 North exit	317	319	341	378
	Southbound	A43 /Northampton Road roundabout - A43 North	A43 /Broad Lane roundabout - A43 South exit	557	831	345	433

Table 7-154.5: Newton Purcell to Brackley comparison forecast baseline and construction scenario queue length (m) comparison at A43 Brackley corridor

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /Northampton Road roundabout	A43 North	57	129	20	19
	A43 South	26	28	59	56
	Northampton Road	37	33	33	31
	Petrol Station	57	66	113	104
A43 /A422 /Buckingham Road roundabout	A43 North	438	1116	64	189
	A422 East	301	433	100	811
	A43 South	35	48	44	52
	Buckingham Road	29	32	511	754

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /A422 /Oxford Road roundabout	Oxford Road	1582	1715	1771	1814
	A43 East	173	85	37	43
	A43 South	63	75	184	346
	A422 West	1225	1550	638	991
A43 /Broad Lane roundabout	A43 North	23	22	12	13
	Broad Lane	18	16	10	10
	A43 South	29	38	53	64
	Charlton	25	28	24	26
A43 /A421 /B4031 roundabout	A43 North	178	200	59	67
	A421 East	771	736	108	352
	A43 South	37	51	170	333
	B4031 West	79	143	1129	1257

Table 7-154.6: Newton Purcell to Brackley comparison forecast baseline and construction scenario junction delay (sec) comparison at A43 Brackley corridor

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /Northampton Road roundabout	A43 North	4	4	1	1
	A43 South	2	4	7	6
	Northampton Road	17	16	32	27
	Petrol Station	101	129	297	232

Location	Approach (from)	08:00-09:00		17:00-18:00	
		2021 baseline	2021 with HS2 construction traffic	2021 baseline	2021 with HS2 construction traffic
A43 /A422 /Buckingham Road roundabout	A43 North	41	65	11	46
	A422 East	93	77	53	107
	A43 South	3	5	4	7
	Buckingham Road	15	18	126	143
A43 /A422 /Oxford Road roundabout	Oxford Road	123	161	218	230
	A43 East	33	17	3	4
	A43 South	9	10	22	28
	A422 West	126	155	168	185
A43 /Broad Lane roundabout	A43 North	2	3	1	2
	Broad Lane	26	22	10	15
	A43 South	2	3	5	6
	Charlton	17	19	28	33
A43 /A421 /B4031 roundabout	A43 North	33	38	9	14
	A421 East	185	188	43	118
	A43 South	3	4	25	48
	B4031 West	54	92	417	503

3.8.15 There is no substantial change to the result of the original assessment carried out and reported in the main TA, with increased traffic during the most intensive periods of construction forecast to cause additional intermittent traffic congestion and delay at the junctions of A43 with A422/ Buckingham Road roundabout, A43 with A422/ Oxford Road roundabout and A43 with A421 roundabout, during peak periods.

3.8.16 The junctions of A43 with Broad Lane roundabout and A43 with Northampton Road roundabout were not assessed within the main TA and the modelling results indicate that the impact of construction traffic is small at these locations.

Operations description and assessment of operation impacts

3.8.17 There is no change to section 7.10 of the main TA or section 3.8 of the SES and AP2 TA with regard to the assessment during operation.

3.9 Greatworth to Lower Boddington (CFA15)

Greatworth to Lower Boddington (CFA15) SES3 and AP4 revised scheme changes

3.9.1 The original scheme is described in section 7.11 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.9), including the reduction of earthworks near Lower Boddington (SES-015-200) and the provision of a Chipping Warden bypass (AP2-015-009).

3.9.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- additional land required for junction improvements at the B4525 and Sulgrave Road (Marston Road) (AP4-015-001); and
- additional land required for junction improvements at the A361 and Welsh Road (AP4-015-004).

3.9.3 Additional traffic surveys have been undertaken at the following junctions and section of highway in the Greatworth to Lower Boddington area to support the assessment of the amendments and supplement the information reported in the main TA and SES and AP2 TA:

- B4525/ Sulgrave Road (Marston Road);
- A361/ Welsh Road; and
- A422, between B4525 and M40 J11.

3.9.4 Further assessment of the M40 junction 11 has also been undertaken, using existing traffic data.

Assessment methodology

3.9.5 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.9.6 Baseline conditions in this area are as described in Section 5.17 of the main TA and the SES and AP2 TA, updated by the additional traffic surveys. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.9.7 Future baseline conditions in this area are as described in Section 7.11 of the main TA and the SES and AP2 TA, updated by the additional traffic surveys.

3.9.8 Table 7-159 and Table 7-160 of the main TA are amended to include the following roads, where the additional traffic data provide new baseline data.

Table 7-159: Greatworth and Lower Boddington strategic road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A422 (between B4525 and M40 J11)	EB	776	38	857	43	922	46	1088	54	+81	+146	+312	10%	19%	40%
	WB	1315	55	1471	62	1583	66	1869	78	+156	+268	+554	12%	20%	42%

Table 7-160: Greatworth and Lower Boddington strategic road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flow								All vehicles actual change from 2012			All vehicles % change from 2012		
		2012/2015		2021		2026		2041		2021	2026	2041	2021	2026	2041
		All vehs	HGV	All vehs	HGV	All vehs	HGV	All vehs	HGV						
A422 (between B4525 and M40 J11)	EB	1244	27	1397	30	1510	33	1806	39	+153	+266	+562	12%	21%	45%
	WB	926	21	1039	24	1124	25	1344	30	+113	+198	+418	12%	21%	45%

Assessment of construction impacts

Highway network

3.9.9 Forecast flows for the sections of road where the baseline has been updated by supplementary traffic data are included. There are no other changes to forecast flows presented in the main TA and SES and AP2 TA.

Strategic road network

3.9.10 Tables 7-167 and 7-168 of the main TA and SES and AP2 TA are amended to include the following roads, where the additional traffic data provides new baseline data.

Table 7-167: Greatworth and Lower Boddington strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 Base	2021 Base	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A422 (between B4525 and M40 J11)	EB	776	857	953	110	96	68	11%	160%
	WB	1315	1471	1539	129	68	68	5%	110%

Table 7-168: Greatworth and Lower Boddington strategic road network construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2012 Base	2021 Base	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A422 (between B4525 and M40 J11)	EB	1244	1397	1463	96	65	65	5%	215%
	WB	926	1039	1133	89	94	65	9%	277%

Junction capacity

3.9.11 Using the supplementary survey data, a further assessment of these junctions has been carried out, using industry standard software. The results are shown in Tables 7-171.1 and 7-171.2 and updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.9.12 The supplementary modelling results indicate that the junctions of B4525/Sulgrave Road (Marston Road) and A361/Welsh Road will operate within capacity during construction of the revised scheme. The highest percentage of flow to capacity at each of these junctions is well below 85%, with construction traffic resulting in a maximum increase of 10%. The impact of the revised scheme is therefore not considered to have a substantial impact on capacity at this junction.

3.9.13 The proposed amendment AP4-015-001 will widen approaches to the B4525/Sulgrave Road (Marston Road) junction and provide road markings to separate on-coming traffic, a safe turning area and lighting. The main TA did not identify any material

safety issues at this junction, and the revised junction assessment indicates that the junction will operate within capacity during construction. The proposed amendment will not substantially alter the technical assessment carried out. However, it is considered that the amendment will provide a level of benefit with regard to capacity and safety in comparison to the existing layout.

3.9.14 The proposed amendment AP4-015-004 will provide improvements through a permanent staggered T-junction with lighting at A361/Welsh Road, to improve traffic safety during construction. The main TA did not identify any material safety issues at this junction, and the revised junction assessment indicates that the junction will operate within capacity during construction. The proposed amendment will not substantially alter the technical assessment carried out; however, it is considered that the amendment will provide a level of benefit with regard to capacity and safety in comparison to the existing layout.

Table 7-171.1: Forecast baseline and construction scenario performance at B4525 with Marston Road (Dump Road)

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B4525 East	331	0%	0	362	0%	0
Marston Road (Dump Road)	40	7%	0	83	17%	0
B4525 West	402	4%	0	430	4%	0
Total	N/A	7%	N/A	N/A	17%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B4525 East	276	0%	0	328	0%	0
Marston Road (Dump Road)	18	3%	0	32	6%	0
B4525 West	383	7%	0	395	9%	0
Total	N/A	7%	N/A	N/A	9%	N/A

Table 7-171.2: Forecast baseline and construction scenario performance atA361 with Welsh Road

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A361 North	591	3%	0	649	7%	0
Welsh Road East	42	5%	0	64	14%	0
A361 South	284	1%	0	321	5%	0
Welsh Road West	109	20%	0	121	29%	0
Total	N/A	20%	N/A	N/A	29%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A361 North	254	5%	0	259	7%	0
Welsh Road East	34	7%	0	62	14%	0
A361 South	606	3%	0	649	8%	0
Welsh Road West	54	9%	0	71	17%	0
Total	N/A	9%	N/A	N/A	17%	N/A

3.9.15 The M40 junction 11 has been re-assessed using industry standard software and these results are shown in Tables 7-171.3 (AM peak) and 7-171.4 (PM peak). Flows through this junction remain unchanged by the SES3 and AP4 revised scheme. The modelling results indicate that the junction will operate over capacity during both AM and PM peaks in the 2021 year of construction assessment, with and without the revised scheme construction traffic. There is no change from the assessment of the SES and AP2 TA, which stated in paragraph 3.9.31 that 'increased traffic during the most intensive periods of construction has high potential to cause additional intermittent traffic congestion and delay at this junction during peak periods'.

Table 7-171.3: Forecast baseline and construction scenario performance at M40 junction 11 (AM peak)

Approach (from)	Link	2021 baseline			2021 with HS2 construction traffic		
		Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)	Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)
M40 N	M40 N - SB Offslip	269	78%	6	379	84%	10
	M40 N - SB Offslip	274	79%	7	341	76%	8
	M40 N - SB Offslip	271	78%	6	338	75%	8
	Circulating at M40 N	836	66%	8	1039	87%	19
	Circulating at M40 N	751	59%	6	784	66%	11
A361	A361	360	69%	4	598	129%	79
	A361	359	75%	5	447	125%	55
	Circulating at A361	929	24%	0	939	25%	0
	Circulating at A361	1139	30%	0	1296	34%	4
A422 E	A422 East	855	127%	105	905	146%	155
	A422 East	807	122%	87	907	149%	163
	Circulating at A422 E	581	61%	10	653	63%	4
	Circulating at A422 E	446	61%	5	463	58%	10
	Circulating at A422 E	624	66%	5	688	67%	13
M40 S	M40 S - NB Offslip	294	102%	15	359	124%	43
	M40 S - NB Offslip	294	102%	15	359	124%	43
	M40 S - NB Offslip	152	53%	3	267	92%	9
	Circulating at M40 S	1065	80%	34	1038	77%	33
	Circulating at M40 S	1286	97%	23	1295	96%	31
	Circulating at M40 S	-	-	-	-	-	-

Approach (from)	Link	2021 baseline			2021 with HS2 construction traffic		
		Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)	Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)
A422 W	A422 West	724	57%	1	724	58%	1
	A422 West	670	65%	2	698	74%	4
	Circulating at A422 W	276	15%	0	468	25%	8
	Circulating at A422 W	148	8%	0	192	10%	0

Table 7-171.4: Forecast baseline and construction scenario performance at M40 junction 11 (PM peak)

Approach (from)	Link	2021 baseline			2021 with HS2 construction traffic		
		Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)	Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)
M40 N	M40 N - SB Offslip	189	73%	5	272	129%	37
	M40 N - SB Offslip	210	81%	6	214	101%	12
	M40 N - SB Offslip	207	80%	5	213	101%	12
	Circulating at M40 N	1139	84%	13	1425	100%	49
	Circulating at M40 N	982	73%	8	925	65%	9
A361	A361	221	48%	2	474	102%	21
	A361	221	53%	2	327	77%	5
	Circulating at A361	1288	34%	0	1201	32%	0
	Circulating at A361	847	22%	0	900	24%	0
A422 E	A422 East	545	73%	10	600	94%	18
	A422 East	508	68%	9	613	97%	20
	Circulating at A422 E	421	49%	6	556	55%	5
	Circulating at A422 E	250	48%	4	250	43%	6
	Circulating at A422 E	422	49%	3	533	53%	11

Approach (from)	Link	2021 baseline			2021 with HS2 construction traffic		
		Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)	Flow/ capacity %	Max queue (PCU)	Mean Delay Per PCU (s)
M40 S	M40 S - NB Offslip	370	71%	7	375	109%	27
	M40 S - NB Offslip	370	71%	7	375	109%	27
	M40 S - NB Offslip	196	38%	3	279	81%	7
	Circulating at M40 S	758	69%	6	808	62%	7
	Circulating at M40 S	930	85%	13	1146	89%	20
	Circulating at M40 S	-	-	-	-	-	-
A422 W	A422 West	885	71%	1	961	102%	41
	A422 West	904	93%	16	933	110%	65
	Circulating at A422 W	413	22%	4	646	37%	8
	Circulating at A422 W	152	8%	0	263	14%	0

Operations description

3.9.16 The SES3 and AP4 revised scheme amendments for improvements at the B4525/Sulgrave Road (Marston Road) junction (AP4-015-001) and the A361/Welsh Road junction (AP4-015-004) will be permanent.

Assessment of operation impacts

3.9.17 The impact of the SES3 and AP4 revised scheme upon the B4525/Sulgrave Road (Marston Road) and A361/Welsh Road junctions during operation is considered to be comparable to that as for during construction.

3.9.18 The proposed amendment AP4-015-001 will widen approaches to the B4525/Sulgrave Road (Marston Road) junction and provide road markings to separate on-coming traffic, a safe turning area and lighting. This is not considered to have a substantial impact on the technical assessment in the main TA and SES and AP2 TA during operation. However, it is considered that the amendment will provide a level of benefit with regard to capacity and safety in comparison to the existing layout.

3.9.19 The proposed amendment AP4-015-004 will provide improvements through a permanent staggered T-junction with lighting at A361/Welsh Road. This is not considered to have a substantial impact on the technical assessment in the main TA and SES and AP2 TA during operation. However, it is considered that the amendment will provide a level of benefit with regard to capacity and safety in comparison to the existing layout.

3.10 Ladbroke and Southam (CFA16)

Ladbroke and Southam (CFA16) SES3 and AP4 revised scheme changes

3.10.1 The original scheme is described in paragraphs 7.12.1 to 7.12.73 of the main TA and with key changes assessed in SES and AP2 TA (paragraphs 3.10.1 to 3.10.9).

3.10.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-016-002 relating to the temporary provision of a pedestrian puffin crossing in the village of Ufton.
- AP4-016-002 relating to in the permanent relocation of the viaduct over the Oxford Canal with potential impact on users of the canal, its tow path and Bridleway SM 116.
- AP4-016-006 which provides a revised alignment of the secondary construction access along Ridgeway Lane.

3.10.3 In addition there are changes relating to the transport of excavated material to and from the roadhead (RH126) on A425 Leamington Road, in the vicinity of the Dallas Burston polo ground.

Assessment methodology

3.10.4 There is no change from that reported in section 7.2 of the main TA.

Existing and future baseline

3.10.5 There is no change from that reported in sections 5.18 and 7.12 of the main TA.

Construction description

Construction trip assumptions

3.10.6 The following data replaces that in Table 7-191 in SES and AP2 TA relating to construction traffic.

Table 7-191: Typical vehicle trip generation for construction site compounds in this area - partial replacement

Compound type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movement (months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Cars/ LGV	HGV
Roadhead	RH 126	A425 Leamington Road, B4455 Fosse Way, B4100 Banbury Road, A452 Warwick Bypass	2019	3.8	45	-	234-266

Assessment of construction impacts

Traffic management, road closures and diversions

3.10.7 The following is a replacement of paragraph 7.12.28 in the main TA which adds a description and impact of the proposed temporary puffin crossing on the A425 Leamington Road in Ufton:

"There are no highways in this area which will be subject to substantial traffic management measures during the construction of the revised scheme except on the A425 Leamington Road through Ufton. A temporary pedestrian puffin crossing is to be provided in the village of Ufton across the A425 Leamington Road. The modelling of this crossing, including HS2 construction traffic showed that the ratio of flow to capacity does not exceed 61%, for users of the A425, and hence the road operates within capacity with the pedestrian crossing in use and being activated once every minute. Results are shown in additional table 7.191.1."

Table 7-191.1: Modelling results at Ufton pedestrian crossing

Approach	A425 Hourly Flow 2021(PCU))	Flow/ capacity %	Average delay per vehicle (secs)	Average queue PCU
AM				
A425 Eastbound	557	46%	5	1
A425 Westbound	727	61%	7	2
PM				
A425 Eastbound	690	58%	5	2
A425 Westbound	584	49%	5	1

PRoW closures and diversions

3.10.8 The following is additional to paragraph 7.12.30.1 in the main TA, describing the use of Ridgeway Lane as a secondary construction route:

"E road, Ridgeway Lane, is to be used as a secondary construction access route for exceptional loads. During construction of this route Ridgeway Lane will be closed to traffic for approximately four weeks but access will be maintained to properties and for non-motorised users."

Strategic and local road network traffic flows

3.10.9 The following is additional text to Tables 7-192 and 7-193, in relation to the A425 Leamington Road:

"In addition there are 17 HGVs each way, during peak hours, from Roadhead 126 to the B4452 which is an increase of two HGVs per hour derived from that reported in Table 7-191 in the main TA. The resulting flows on A452 are shown on the tables below replacing the rows in Tables 7-192 and 7-193."

Table 7-192 Ladbroke and Southam area construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicle	HGV
A452 Leamington Road between jnc with B4452 and junc with B4451	NB	602	647	696	67	49	19	8%	39%
	SB	355	381	401	61	20	19	5%	45%

Table 7-193 Ladbroke and Southam area construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicle	HGV
A452 Leamington Road between jnc with B4452 and junc with B4451	NB	442	456	474	45	18	17	4%	62%
	SB	544	587	636	40	49	17	8%	76%

3.10.10 The following adds to paragraph 7.12.39:

"The changes in traffic flows from Roadhead RH 126, as a result of the SES3 and AP4 revised scheme, would not lead to substantial impacts in terms of the capacity of roads and junctions along the A425 and the road would be well within the capacity of the existing single carriageway road."

Waterways and Canals

3.10.11 The following is additional to paragraph 7.12.58:

"The HS2 viaduct over the Oxford Canal, north of Wormleighton, temporarily reduces its width to seven metres during construction. However, this enables boats in opposite directions to pass each other and there will be no substantial impact to users of the canal and its tow path."

Operations description and assessment of operation impacts

3.10.12 There is no change from that reported in section 7.12 of the main TA and section 3.10 of the SES and AP2 TA.

3.11 Offchurch and Cubbington (CFA17)

Offchurch and Cubbington (CFA17) SES3 and AP4 revised scheme changes

3.11.1 The original scheme is described in paragraphs 7.13.1 to 7.13.72 of the main TA and with key changes assessed in SES and AP2 TA (paragraphs 3.11.1 to 3.11.7).

3.11.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-017-001 construction assumptions and revised construction traffic movements relating to the change in the movements of excavated material.
- AP4-017-001 provides for a temporary roundabout at the junction of Fosse Way and Long Itchington Road, during the construction period, to replace the priority junction included in the original scheme.
- AP4-017-002 relates to the reprioritisation of the junction between Long Itchington Road and Welsh Road, Offchurch, as a result of changes in traffic flows within the area as the northern arm of Long Itchington Road is closed to through traffic with the route of HS2.
- AP4-017-003 provides for a temporary bridge over the River Leam for construction.

3.11.3 In addition to SES3-017-001, there are revised construction traffic movements relating to changes to construction assumptions in neighbouring CFAs.

Assessment methodology

3.11.4 There is no change from that reported in section 7.2 of the main TA.

Existing and future baseline

3.11.5 There is no change from that reported in sections 5.19 and 7.13 of the main TA.

Construction description

Construction trip assumptions

3.11.6 The following data replaces that in Table 7-206 relating to construction traffic from the Fosse Way roadhead.

Table 7-206: Typical vehicle trip generation for construction site compounds in this area – partial replacement

Compound type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movement (months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Cars/ LGV	HGV
Roadhead	Fosse Way	B4455 Fosse Way, B4100 Banbury Road, A452 Warwick Bypass	2019	4.5	44	-	406-640

Assessment of construction impacts

Strategic and local road network traffic flows

3.11.7 The following table provides changes to Table 7-207 regarding Fosse Way:

Table 7-207 Offchurch and Cubbington area construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicle	HGV
B4455 Fosse Way between app. 170 m north of Long Itchington Road and Welsh Road	NB	205	225	306	66	81	44	36%	200%
	SB	505	553	598	71	45	44	8%	163%

3.11.8 The following table provides changes to Table 7-208 regarding Fosse Way:

Table 7-208 Offchurch and Cubbington area construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGV	All vehicles	HGV	All vehicle	HGV
B4455 Fosse Way between app. 170 m north of Long Itchington Road and Welsh Road	NB	548	600	642	60	42	41	7%	216%
	SB	221	242	317	55	75	42	31%	323%

3.11.9 The following is additional to paragraph 7.13.37:

"The changes in traffic flows from the Fosse Way roadhead, as a result of the SES3 revised scheme, would not lead to substantial impacts in terms of the capacity of roads and junctions along the B4455 Fosse Way and the road would be well within the capacity of the existing single carriageway road."

3.11.10 The following replaces the first bullet point in paragraph 7.13.38:

- "B4455 Fosse Way, between Welsh Road and B4100 Banbury Road, with 132 additional peak hour trips including 88 HGVs"

3.11.11 The following replaces the first part of the second sentence of paragraph 7.13.42:

"At the junction between the B4455 Fosse Way and Welsh Road construction traffic is forecast to be 146 movements per hour including 92 HGVs"

Junction assessment

3.11.12 The following is additional to paragraph 7.13.42:

"The changes in traffic flows from the Fosse Way roadhead would not lead to substantial impacts in terms of the capacity of the junction between the B4455 Fosse Way and the A425 Southam Road. The results are shown in Table 7-209.1 and demonstrates that the junction operates within practical capacity"

Table 7-209.1: Future Performance at the A425 / B4455 Fosse Way junction with HS2 traffic

	2021 AM peak hour with HS2 construction traffic			**2021 PM peak hour with HS2 construction traffic**		
Approach (from)	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**
B4455 Fosse Way North	725	61%	2	467	40%	1
A425 Southam Road East	792	71%	3	573	43%	1
B4455 Fosse Way South	603	66%	2	907	84%	5
A425 Southam Road West	449	36%	1	666	52%	2

3.11.13 The following is a replacement for paragraph 7.13.43:

"The junction of B4455 Fosse Way and Long Itchington Road was to be a priority junction during the construction period with the original scheme. This is to be replaced, under AP4 -017-001, by a five-arm temporary roundabout providing access into the construction compound and roadhead. The junction is assessed to operate well within capacity with flow/capacity ratios well below 85% during peak hours. The results are shown in Table 7-209.2"

Table 7-209.2: Future Performance at the B4455 Fosse Way / Long Itchington Road / Compound Access junction with HS2 traffic

	2021 AM peak hour with HS2 construction traffic			2021 PM peak hour with HS2 construction traffic		
Approach (from)	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**
Fosse Way North	604	47%	1	321	26%	1
Long Itchington Road East	185	16%	1	94	7%	1
Fosse Way South	343	27%	1	722	53%	2
Long Itchington Road West	162	14%	1	279	28%	1
Compound Access	47	5%	1	87	14%	1

Operations description

3.11.14 There is no change from that reported in section 7.13 of the main TA.

Assessment of operation impacts

Road network traffic flows

3.11.15 The following is additional to paragraph 7.13.64:

"The Welsh Road/Long Itchington Road is to be amended to provide priority for traffic along Welsh Road with traffic on Long Itchington Road being required to give way. Long Itchington Road to the east only provides local access as in the original scheme. The reconfigured junction is assessed to operate well within capacity with flow/capacity ratios well below 85% during peak hours. The results are shown in Tables 7-209.3 and 7-209.4"

Table 7-209.3: 2026 future performance at the Welsh Road / Long Itchington Road junction

	2026 AM peak hour			2026 PM peak hour		
Approach (from)	**Flow (Vehs)**	**Flow/ capacity %**	**Approach (from)**	**Flow (Vehs)**	**Flow/ capacity %**	**Approach (from)**
Welsh Road South	371	0	-	346	0	-
Long Itchington Road South	114	28%	1	196	50%	1
Welsh Road North	185	1%	-	196	1%	-
Long Itchington Road North	11	1%	1	12	3%	1

Table 7-209.4: 2041 future performance at the Welsh Road / Long Itchington Road junction

	2041 AM peak hour			2041 PM peak hour		
Approach (from)	**Flow (Vehs)**	**Flow/ capacity %**	**Approach (from)**	**Flow (Vehs)**	**Flow/ capacity %**	**Approach (from)**
Welsh Road South	433	0	-	403	0	-
Long Itchington Road South	133	34%	1	229	61%	2
Welsh Road North	216	1%	-	229	1%	-
Long Itchington Road North	13	4%	1	14	4%	1

3.12 Stoneleigh, Kenilworth and Burton Green (CFA18)

Stoneleigh, Kenilworth and Burton Green (CFA18) SES3 and AP4 revised scheme changes

3.12.1 The original scheme is described in paragraphs 7.14.1 to 7.14.82 of the main TA and with key changes assessed in SES and AP2 TA (paragraphs 3.12.1 to 3.12.15), including the amendments in the Burton green area (AP-018-004).

3.12.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-018-001 relating to changes in the transport of excavated material to and from the A429 Kenilworth Road roadhead and the A46 Kenilworth Bypass southbound roadhead. This involves the movement of material to/from and within the CFA. All the material coming into and leaving this CFA will do so via the motorway (M40) and trunk road (A46) network.
- AP4-018-002 revisions at the Stoneleigh Park estate. This includes revised access arrangements on the B4113 Stoneleigh Road into the estate and provision of subways across both theB4113 Stoneleigh Road and B4115 Ashow Road to facilitate pedestrians visiting the show grounds in the estate.

3.12.3 As part of SES-018-001, in order to minimise traffic impacts associated with the changes, signalisation of the A46/Stoneleigh Road junction, construction of a temporary slip road from the Kenilworth Bypass roadhead to the southbound carriageway of the A46 and an additional constriction traffic route are proposed. Paragraphs 3.12.22 and 3.12.23 later in this section provide a description of the A46 proposals.

Assessment methodology

3.12.4 In consideration of traffic impacts in the Stoneleigh Road area, the following is additional to paragraph 7.14.8, regarding the assessment methodology:

"A revised assessment has been developed, in accordance with the following assumptions:

- the levels of HGV and LGV traffic reflects the likely phasing of peak flows to compounds and roadheads and the degree to which they coincide.
- workforce trips to/from site are expected to travel before 08:00 and after 18:00. However, 10% of workforce trips are assumed to travel in the AM (08:00-09:00) and PM (17:00-18:00) peak hours."

Existing baseline

3.12.5 The following information is supplementary to the existing baseline outlined in section 5.20 of the main TA and the additional baseline information outlined in section 3.12 in the SES and AP2 TA.

Surveys

3.12.6 The following text is additional to paragraph 5.20.7:

"Additional traffic surveys have been undertaken on the Stoneleigh Road to supplement the information reported in the main TA and enable the assessment of junctions omitted from the main TA to be undertaken. These surveys were carried out in September 2014 and May 2015. The supplementary baseline survey data is contained in Annex B(iv)."

Highway network

Baseline conditions

3.12.7 The following table provides changes to Table 5-125 relating to Stoneleigh Road.

Table 5-125: Stoneleigh, Kenilworth and Burton Green 2014/2015 baseline flows- partial replacement

Location	Direction	2014/2015 baseline AM Peak 08:00 – 09:00		2014/2015 baseline PM Peak 17:00 – 18:00	
		All vehicles	HGV	All vehicles	HGV
Stoneleigh Road west of A46 (2015 surveys)	NB	1031	12	798	23
	SB	863	35	899	21
Stoneleigh Road east of A46 (2014 surveys)	NB	468	6	397	2
	SB	498	4	444	3

3.12.8 The following is additional to paragraph 5.20.17 in the main TA and paragraph 3.12.4 in the SES and AP2 TA :

"The following junctions have additionally been assessed:

- Stoneleigh Road/A46 Kenilworth Bypass; and
- Stoneleigh Road/B4115 Ashow Road"

3.12.9 The following Tables 5-132.1 and 5-132.2, relate to the A46/Stoneleigh Road junction.

Table 5-132.1: Baseline performance at the A46/Stoneleigh Road junction (east side)

	2014 baseline AM Peak (08:00-09:00)			2014 baseline PM Peak (08:00-09:00)		
Approach (from)	Flow (All PCU)	Flow/ capacity %	Max queue	Flow (All PCU)	Flow/ capacity %	Max queue
Stoneleigh Road East	561	0%	0	438	0%	0
Stoneleigh Road West	800	91%	13	782	87%	9
Off Ramp Left turn	158	45%	1	134	36%	1
Off Ramp right turn	251	123%	31	232	100%	11

Table 5-132.2 Baseline performance at the A46/Stoneleigh Road junction (west side)

	2014 baseline AM Peak (08:00-09:00)			2014 baseline PM Peak (08:00-09:00)		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road West	1020	0%	0	844	0%	0
Stoneleigh Road East	661	12%	1	530	8%	1
Off Ramp Left turn	465	114%	37	489	112%	38
Off Ramp right turn	83	36%	1	97	37%	1

3.12.10 The following is additional text in relation to Tables 5-132.1 and 5-132.2:

"Tables 5-132.1 and 5-132.2 show that the junction is operating over capacity in baseline in both peak periods."

3.12.11 The following Table 5-132.3 relates to the Stoneleigh Road/B4115 junction.

Table 5-132.3 Baseline performance at the A46/Stoneleigh Road junction (west side)

	2014 baseline AM Peak (08:00-09:00)			2014 baseline PM Peak (08:00-09:00)		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B4115 Ashow Rd North	209	32%	1	239	34%	1
B4115 Ashow Rd South	189	12%	1	87	5%	1
Birmingham Road	429	85%	5	335	42%	1
Stoneleigh Road	525	68%	2	540	74%	2

Future baseline

3.12.12 The following information is supplementary to the existing baseline outlined in section 7.14 of the main TA and the additional baseline information outlined in section 3.12 in the SES and AP2 TA.

3.12.13 Table 7-213.1 provides the additional TEMPRO growth rates applied to existing traffic volumes surveyed in 2014 to establish the future baseline conditions for 2021.

Table 7-213.1: TEMPRO growth rates for 2014 (CFA18)

Authority	**Location**	**2014-2021**		**2015-2021**	
		Average weekday peaks		**Average weekday peaks**	
		AM	**PM**	**AM**	**PM**
Warwickshire	Coventry Main	1.11	1.11	1.10	1.10
Warwickshire	Kenilworth	1.08	1.08	1.08	1.08

Local road network traffic flows

3.12.14 The following table provides partial replacement of Table 7-216 in the main TA, relating to Stoneleigh Road for the AM Peak.

Table 7-216 Stoneleigh, Kenilworth and Burton Green local road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flows				All vehicles actual change from 2014/ 2015 to 2021	All vehicles % change from 2014/2015 to 2021
		2014/2015		2021			
		All vehicles	HGV	All vehicles	HGV		
Stoneleigh Road west of A46 (2015 surveys)	NB	1031	12	1134	13	103	10%
	SB	863	35	949	39	86	10%
Stoneleigh Road east of A46 (2014 surveys)	NB	468	6	515	7	47	10%
	SB	498	4	548	4	50	10%

3.12.15 The following table provides partial replacement of Table 7-217 in the main TA, relating to Stoneleigh Road for the PM Peak.

Table 7-217 Stoneleigh, Kenilworth and Burton Green local road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flows				All vehicles actual change from 2014/ 2015 to 2021	All vehicles % change from 2014/2015 to 2021
		2014 /2015		2021			
		All vehicles	HGV	All vehicles	HGV		
Stoneleigh Road west of A46 (2015 surveys)	NB	798	23	878	25	80	10%
	SB	899	21	989	23	90	10%
Stoneleigh Road east of A46 (2014 surveys)	NB	397	2	437	2	40	10%
	SB	444	3	488	3	44	10%

3.12.16 Further to Table 7-221.1 in SES and AP2 TA, the following tables outline the future baseline for the additional junctions: Stoneleigh Road/A46 Kenilworth Bypass and Stoneleigh Road/B4115 Ashow Road.

3.12.17 Table 7-221.2 relates to the A46/Stoneleigh Road junction, east side.

Table 7-221.2: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction (east side)

0800-09:00	**2014**			**2021**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	561	0%	0	608	0%	0
Stoneleigh Road West	800	91%	13	867	101%	32
Off Ramp Left turn	158	45%	1	171	49%	1
Off Ramp right turn	251	123%	31	272	154%	56
17:00-18:00	**2014**			**2021**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	438	0%	0	475	0%	0
Stoneleigh Road West	782	87%	9	847	96%	19
Off Ramp Left turn	134	36%	1	142	40%	1
Off Ramp right turn	232	100%	11	252	120%	27

3.12.18 The following Table 7.221.3 relates to the A46/Stoneleigh Road junction west side.

Table 7-221.3: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction (west side)

0800-09:00	**2014**			**2021**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road West	1020	0%	0	1110	0%	0
Stoneleigh Road East	661	12%	1	719	13%	1
Off Ramp Left turn	465	114%	37	506	130%	74
Off Ramp right turn	83	36%	1	90	43%	1

17:00-18:00	2014			2021		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road West	844	0%	0	917	0%	0
Stoneleigh Road East	530	8%	1	576	9%	1
Off Ramp Left turn	489	112%	38	532	127%	71
Off Ramp right turn	97	37%	1	105	44%	1

3.12.19 The following Table 7.221.4 relates to the B4115 Ashow Road/Stoneleigh Road junction.

Table 7-221.4 Stoneleigh, Kenilworth and Burton Green area future baseline performance at the B4115 Ashow Road/ Stoneleigh Road junction (west side)

0800-09:00	2014			2021		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B4115 Ashow Rd North	209	32%	1	226	36%	1
B4115 Ashow Rd South	189	12%	1	205	13%	1
Birmingham Road	429	85%	5	465	102%	10
Stoneleigh Road	525	68%	2	569	79$	4
17:00-18:00	**2013**			**2021**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B4115 Ashow Rd North	239	34%	1	259	36%	1
B4115 Ashow Rd South	87	5%	1	95	6%	1
Birmingham Road	335	42%	1	362	47%	1
Stoneleigh Road	540	74%	2	584	85%	3

Construction description

Construction trip assumptions

Trip generation and mode share

3.12.20 The following table provides changes to Table 7-223 in both the main TA and SES and AP2 TA, relating to roadheads at A429 Kenilworth Road and A46 Kenilworth Bypass southbound.

Table 7-223 Stoneleigh, Kenilworth and Burton Green area typical vehicle trip generation from roadheads in the area – partial replacement

Compound type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movement (months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Cars/ LGV	HGV
Roadhead	A429 Kenilworth Road roadhead	A429 Kenilworth Road, Stoneleigh Road, A46 to join the M40	2019	3	25	-	323-356
Roadhead	A46 Kenilworth Bypass southbound roadhead	Prior to A46 direct link					
		Inbound vehicles via A46/A452 junction and Ashow Road. Outbound vehicles via Ashow Road/Stoneleigh Road Road/ A46 southbound to M40	2019	1.5	14	-	192-272
		With A46 Direct Link					
		Inbound vehicles via A46/A452 junction and Ashow Road. Outbound vehicles via Haul route to A46 southbound to M40	2020	1.5 years	8 months	-	729-822

Construction lorry routes

3.12.21 The following is an additional bullet in paragraph 7.14.28:

- "B4115 Ashow Road between 150m west of Stoneleigh Business Park access road to the A452 Leamington Road."

3.12.22 The following is additional to paragraph 7.14.28:

"The proposed routeing to the A46 Kenilworth Bypass southbound roadhead and the A429 Kenilworth Road roadhead has changed, from the main TA, with the SES3 and AP4 revised scheme, as follows:

- In the original scheme, all construction traffic associated with the A46 Kenilworth Bypass southbound roadhead would use Stoneleigh Road from the A46, Kenilworth Bypass, both inbound and outbound. With the revised arrangements most of the inbound construction traffic will use the A46 Kenilworth Bypass, A452 Kenilworth Road and B4115 Ashow Road to access the roadhead and main compound. Outbound construction traffic from the roadhead will use the temporary slip road to the A46 Kenilworth Bypass, once available. Prior to construction of this temporary slip road outbound traffic will use B4115 Ashow Road and Stoneleigh Road to access the A46 Kenilworth Bypass.
- All movements of excavated material generated between the A46 Kenilworth Bypass and A429 Kenilworth Road northbound roadhead will be diverted along the HS2 route to the A46 Kenilworth Bypass southbound roadhead once the A46 Kenilworth Bypass overbridge is constructed, which avoids local roads. With this mitigation, traffic levels will be reduced to levels equivalent to those reported in the main TA."

3.12.23 The following is additional to paragraph 7.14.37:

"In addition two further mitigation measures are proposed including:

- a junction improvement scheme will be provided at the A46/Stoneleigh Road junction to mitigate the impact of construction traffic on the existing priority junction. This can be provided within the existing highway boundary and with the available highway powers. This improvement will enable the junction to operate within capacity with HS2 construction traffic; and
- a direct connection between the A46 Kenilworth Bypass southbound roadhead and the A46 trunk road between the Stoneleigh Road junction and the A452 junction. This will reduce the amount of HGV traffic on the local road network."

Assessment of construction impacts

Local road network traffic flows

3.12.24 The following table provides partial replacement of Table 7-226.

Table 7-226 Stoneleigh, Kenilworth and Burton Green area construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehs	HGV	All vehs	HGV	All vehs	HGV
Stoneleigh Road west of A46	NB	1031	1134	1177	42	43	29	4%	219%
	SB	863	949	980	68	31	29	3%	75%
Stoneleigh Road east of A46	NB	468	515	529	20	14	13	3%	196%
	SB	498	548	561	17	13	3	2%	68%

3.12.25 The following table provides partial replacement of Table 7-227.

Table 7-227 Stoneleigh, Kenilworth and Burton Green area construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2015 baseline	2021 baseline	2021 with HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehs	HGV	All vehs	HGV	All vehs	HGV
Stoneleigh Road west of A46	NB	798	878	901	47	23	22	3%	87%
	SB	899	989	1024	45	35	22	4%	95%
Stoneleigh Road east of A46	NB	397	437	457	13	20	11	5%	500%
	SB	444	488	489	4	1	1	1%	33%

Junction performance

3.12.26 The following table provides changes to Table 7.234.1 from the SES and AP2 TA, reflecting the roundabout control at A429 Kenilworth Road/Gibbet Hill Road/Stoneleigh Road junction.

Table 7-234.1: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A429 Kenilworth Road/Gibbet Hill Road/Stoneleigh Road junction

0800-09:00	2021 baseline			2021 with HS2 Construction traffic		
Approach (from)	Flow (all PCU)	Flow/ capacity %	Max queue	Flow (all PCU)	Flow/ capacity %	Max queue
Kenilworth Road North	632	49%	1	632	52%	2
Stoneleigh Road	830	65%	2	937	73%	3
Kenilworth Road South	829	83%	5	925	92%	10
Gibbet Hill Road	670	52%	2	670	55%	2
17:00-18:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Kenilworth Road North	614	59%	2	614	62%	2
Stoneleigh Road	608	51%	2	668	56%	2
Kenilworth Road South	433	38%	1	504	45%	1
Gibbet Hill Road	1067	83%	5	1067	86%	6

3.12.27 The following is additional text in relation to Table 7-234.1:

"The modelling results demonstrates that the junction operates within capacity with HS2 construction traffic."

3.12.28 The following Table 7.234.2 relates to the A46/Stoneleigh Road junction east side.

Table 7-234.2: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction (east side)

0800-09:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	608	0%	0	641	0%	0
Stoneleigh Road West	867	101%	32	909	116%	84
Off Ramp Left turn	171	49%	1	197	65%	2
Off Ramp right turn	272	154%	56	272	204%	77
17:00-18:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	475	0%	0	512	0%	0
Stoneleigh Road West	847	96%	19	872	106%	45
Off Ramp Left turn	142	40%	1	169	54%	2
Off Ramp right turn	252	120%	27	251	137%	38

3.12.29 The following Table 7.234.3 relates to the A46/Stoneleigh Road junction west side.

Table 7-234.3: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction (west side)

0800-09:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	1110	0%	0	1137	0%	0
Stoneleigh Road West	719	13%	1	745	30%	1
Off Ramp Left turn	506	130%	74	544	152%	120
Off Ramp right turn	90	43%	1	103	57%	2

17:00-18:00	2021 baseline			2021 with HS2 Construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	917	0%	0	938	0%	0
Stoneleigh Road West	576	9%	1	602	24%	1
Off Ramp Left turn	532	127%	71	547	135%	90
Off Ramp right turn	105	44%	1	106	50%	1

3.12.30 The following replaces paragraph 7.14.3 in the main TA (page 7-446):

"Tables 7-234.2 and 7-234.3 show that the A46/Stoneleigh Road junction is over capacity in the 2021 baseline and congestion increases with HS2 construction traffic. A mitigation scheme to include signalisation and provision for left turning traffic to reduce the impact on straight on traffic has been developed. The modelling results of the signalised junction are shown in Table 7-234.4 and 7-234.5. The models use the traffic data based on the May 2015 surveys as referred to in the existing baseline."

Table 7-234.4: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction with signal mitigation scheme (east side)

0800-09:00	2021 baseline			2021 with HS2 Construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	629	47%	8	677	79%	14
Stoneleigh Road West	834	70%	11	943	84%	7
Off Ramp Left turn	154	59%	4	154	68%	5
Off Ramp right turn	182	70%	5	182	81%	6
17:00-18:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	496	38%	7	547	72%	11
Stoneleigh Road West	914	69%	10	1000	81%	7
Off Ramp Left turn	153	58%	5	153	66%	4
Off Ramp right turn	177	68%	6	177	77%	6

3.12.31 The following Table 7.234.5 relates to the A46/Stoneleigh Road junction west side.

Table 7-234.5: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the A46/Stoneleigh Road junction with signal mitigation scheme (west side)

0800-09:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	653	72%	9	653	77%	13
Stoneleigh Road West	1008	74%	16	1099	81%	19
Off Ramp Left turn	605	72%	13	715	81%	15
Off Ramp right turn	147	61%	4	165	73%	5
17:00-18:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Stoneleigh Road East	490	62%	6	490	68%	8
Stoneleigh Road West	923	66%	15	1006	77%	17
Off Ramp Left turn	610	62%	13	675	67%	12
Off Ramp right turn	160	60%	5	163	63%	4

3.12.32 The following is text in relation to Tables 7-234.4 and 7-234.5:

"The modelling results demonstrates that the mitigated junction operates within capacity with HS2 construction traffic."

3.12.33 The following Table 7.234.6 relates to the B4115 Ashow Road/Stoneleigh Road junction west side.

Table 7-234.6: Stoneleigh, Kenilworth and Burton Green area future baseline performance at the B4115 Ashow Road/Stoneleigh Road junction

0800-09:00	**2021 baseline**			**2021 with HS2 Construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B4115 Ashow Rd North	226	36%	1	226	36%	1
B4115 Ashow Rd South	205	13%	1	227	14%	1
Birmingham Road	465	102%	10	465	103%	10
Stoneleigh Road	569	79$	4	583	85%	5

17:00-18:00	2021 baseline			2021 with HS2 Construction traffic		
Approach (from)	Flow (all PCU)	Flow/ capacity %	Max queue	Flow (all PCU)	Flow/ capacity %	Max queue
B4115 Ashow Rd North	259	36%	1	259	37%	1
B4115 Ashow Rd South	95	6%	1	122	6%	1
Birmingham Road	362	47%	1	362	47%	1
Stoneleigh Road	584	85%	3	584	87%	2

3.12.34 This is additional text to Table 7-234.6:

"HS2 construction traffic has minimal impact on the B4115 Ashow Road/Stoneleigh Road junction."

Operations description

3.12.35 There is no change from that reported in section 7.14 of the main TA and section 3.12 of the SES and AP2 TA.

Assessment of operation impacts

3.12.36 The following is additional to paragraph 7.14.22 (page 7-449) in the main TA:

"The diversion of the B4113 Stoneleigh Road includes a revised location for the roundabout providing access to the Stoneleigh Park estate. The roundabout performs well within capacity as in the original scheme. The results are shown in Tables 7-234.7 and 7-234.8."

Table 7-234.7: 2026 future performance at the B4413 Stoneleigh Road / Stoneleigh Business Park

	2026 AM peak hour			2026 PM peak hour		
Approach (from)	Flow (Vehs)	Flow/ capacity %	Max queue	Flow (Vehs)	Flow/ capacity %	Max queue
B4113 Stoneleigh Rd North	874	69%	3	509	46%	1
Access to Hares Parlour field	0	0%	0	0	0%	0
B4113 Stoneleigh Road South	883	71%	3	537	38%	1
Stoneleigh Business Park access	77	5%	1	549	33%	1

Table 7-234.8: 2041 future performance at the B4413 Stoneleigh Road / Stoneleigh Business Park junction

	2041 AM peak hour			2041 PM peak hour		
Approach (from)	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**	**Flow (Vehs)**	**Flow/ capacity %**	**Max queue**
B4113 Stoneleigh Rd North	1021	81%	5	594	53%	2
Access to Hares Parlour field	0	0%	0	0	0%	0
B4113 Stoneleigh Road South	1032	85%	6	627	45%	1
Stoneleigh Business Park access	90	6%	1	642	40%	1

3.13 Coleshill Junction (CFA19)

Coleshill Junction (CFA19) SES3 and AP4 revised scheme changes

3.13.1 The original scheme is described in paragraphs 7.15.2 to 7.15.89 of the main TA and with key changes assessed in SES and AP2 TA (paragraphs 3.13.1 to 3.13.44).

3.13.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-019-001 A446 Stonebridge Road/B4114 Birmingham Road junction temporary improvement scheme. This includes widening of the westbound single lane approach on the Birmingham Road to create two lanes, in order to increase the capacity of the junction.
- AP4-019-001 Chattle Hill amendments. There are a number of changes to both utility diversions and the design of the scheme, including passive provision for potential future widening of the A446 Lichfield Road, which leads to changes in construction traffic.
- AP4-019-002 Water Orton School relating to its relocation from Attleboro Lane to Plank Lane, within Water Orton village, approximately 150 metres to the north-west.
- AP4-019-003 A446/Marsh Lane Road junction temporary improvement scheme. This includes widening of theA446 to increase the capacity of the junction

3.13.3 The above changes lead to a number of changes to the assessment in the main TA and SES and AP2 TA in Coleshill Junction (CFA19). Additionally, the relocation of the Water Orton School (AP4-019-002) to a new site introduces new assessment material which is reported at the end of this chapter.

3.13.4 Revised assessments of traffic impacts for junctions have also been undertaken for A446 Lichfield Road/B4177 Watton Lane, A446 Lichfield Road/B4118 Marsh Lane and A446 Lichfield Road between Coleshill Heath Road and Marsh Lane. This is to amend the reporting in the SES and AP2 TA.

Assessment methodology

3.13.5 There is no changes from that reported in section 7.2 of the main TA and section 3.13 of the SES and AP2 TA.

Existing baseline

3.13.6 There is no change from that reported in section 5.21 of the main TA and section 3.13 of the SES and AP2 TA.

Future baseline

3.13.7 There is no change from that reported in section 7.15 of the main TA and 3.13 of the SES and AP2 TA.

Construction description

3.13.8 There is no change from that reported in section 7.15 of the main TA and section 3.13 of the SES and AP2 TA. Changes in construction flows due to the Chattle Hill amendments had already been incorporated within Table 7-245 in changes made to the SES and AP2 TA.

Assessment of construction impacts

Junction performance

3.13.9 The table below replaces Table 7-250 in the SES and AP2 TA.

Table 7-250: Signalised junction A446 Lichfield Road/B4117 Watton Lane - 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A466 Lichfield Road (north)	1463	76%	8	1579	83%	12
A446 Lichfield Road (south)	918	59%	9	1118	72%	14
B4117 Watton Lane	235	73%	7	319	75%	8
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A466 Lichfield Road (north)	1057	52%	4	1203	65%	5
A446 Lichfield Road (south)	1298	75%	30	1498	87%	51
B4117 Watton Lane	201	78%	5	255	79%	6

3.13.10 The following replaces text in paragraph 3.13.30 in the SES and AP2 TA (paragraph 7.15.51 in the main TA):

"The modelling results demonstrate that the junction operates within practical capacity with HS2 construction traffic in the AM peak but exceeds practical capacity in the PM peak."

3.13.11 The table below replaces Table 7-251 in the SES and AP2 TA.

Table 7-251: Roundabout A446 Lichfield Road/B4117 Gilson Road - 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road	1240	50%	1	1440	58%	2
B4117 Lichfield Road	265	58%	2	265	75%	3
A446 Stonebridge Road	1084	44%	1	1309	53%	2
B4117 Gilson Road	289	45%	1	310	57%	2
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road	1024	39%	1	1220	47%	1
B4117 Lichfield Road	316	53%	2	316	64%	2
A446 Stonebridge Road	1232	50%	1	1428	58%	2
B4117 Gilson Road	151	23%	1	182	33%	1

3.13.12 The following is replacement text for paragraph 3.13.32 of the SES and AP2 TA (paragraph 7.15.52 of the main TA):

"The modelling results demonstrate that the A446 Lichfield Road/B4117 Gilson Road junction will operate within capacity in the baseline and with HS2 construction traffic in 2021."

3.13.13 The table below replaces Table 7-252 in the SES and AP2 TA.

Table 7-252: Roundabout Birmingham Road/B4114 Birmingham Road/A446 Stonebridge Road - 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A446 Stonebridge Road (North)	1522	83%	5	1722	95%	15
B4114 Birmingham Road (East)	749	66%	2	749	118%	62
A446 Stonebridge Road (South)	1201	70%	3	1415	82%	5
B4114 Birmingham Road (West)	768	73%	3	899	90%	8

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Stonebridge Road (North)	1279	69%	3	1498	82%	5
B4114 Birmingham Road (East)	599	62%	2	599	74%	3
A446 Stonebridge Road (South)	1116	61%	2	1263	71%	3
B4114 Birmingham Road (West)	863	79%	4	1014	98%	19

3.13.14 The following is replacement text for paragraph 3.13.34 in the SES and AP2 TA (paragraph 7.15.53 in the main TA):

"The modelling results demonstrate that the B4114 Birmingham Road/A446 Stonebridge Road junction would operate beyond ultimate capacity with HS2 construction traffic in the AM peak hour. The predicted queue on B4114 Birmingham Road (east) of 62 equates to approximately 350m, which would extend back across two minor junctions. In the PM peak the junction will operate beyond practical capacity but within ultimate capacity.

As a consequence of this a mitigation scheme is proposed at this junction that provides a widened approach (to two lanes) on the westbound existing single lane approach on the B4114 Birmingham Road. With this mitigation the results of the capacity analysis at this junction is shown in additional Table 7-252.1."

Table 7-252.1: Roundabout Birmingham Road/B4114 Birmingham Road/A446 Stonebridge Road - 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A446 Stonebridge Road (North)	1522	83%	5	1722	95%	15
B4114 Birmingham Road (East)	749	66%	2	749	77%	4
A446 Stonebridge Road (South)	1201	70%	3	1415	85%	6
B4114 Birmingham Road (West)	768	73%	3	899	92%	10

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Stonebridge Road (North)	1279	69%	3	1498	82%	5
B4114 Birmingham Road (East)	599	62%	2	599	50%	1
A446 Stonebridge Road (South)	1116	61%	2	1263	71%	3
B4114 Birmingham Road (West)	863	79%	4	1014	98%	19

3.13.15 This is additional text in relation to Table 7-252.1:

"The modelling results demonstrate that with the mitigation in place the junction will operate beyond practical capacity but within ultimate capacity in both peak hours and the predicted queues can be accommodated within the available stacking space."

3.13.16 The following table replaces Table 7-253.2 in the SES and AP2 TA relating to the junction between A446 Lichfield Road and Gorsey Lane.

Table 7-253.2: Signalised junction A446 Lichfield Road/Gorsey Lane- 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1632	71%	15	1832	76%	22
Gorsey Lane	348	80%	8	348	81%	9
A446 Lichfield Road South Ahead	709	47%	8	909	54%	11
A446 Lichfield Road South right turn	380	76%	13	380	81%	14

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1065	52%	12	1265	63%	11
Gorsey Lane	739	85%	19	739	90%	22
A446 Lichfield Road South Ahead	844	42%	9	1044	48%	11
A446 Lichfield Road South right turn	127	85%	8	127	77%	11

3.13.17 The following text replaces paragraph 3.13.40 in the SES and AP2 TA, in relation to Table 7-253.2:

"The modelling results demonstrate that HS2 construction traffic has minimal impact on the capacity of the junction."

3.13.18 The following table replaces Table 7-253.3 included in the SES and AP2 TA relating to the junction between A446 Lichfield Road and Marsh Lane.

Table 7-253.3 Signalised junction A446 Lichfield Road/B4118 Marsh Lane- 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1538	90%	30	1738	101%	90
A446 Lichfield Road South	874	60%	17	1074	74%	20
B4118 Marsh Lane	257	73%	8	257	73%	9
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1199	69%	10	1399	80%	17
A446 Lichfield Road South	1202	85%	23	1402	96%	37
B4118 Marsh Lane	324	83%	12	324	96%	17

3.13.19 The following text replaces paragraph 3.13.42 in the SES and AP2 TA, in relation to Table 7-253.3:

"The modelling results demonstrate that the junction reaches practical capacity in the 2021 baseline and with HS2 construction traffic in the AM peak hour the capacity of the junction would be exceeded whereas in the PM peak hour the junction would operate within ultimate capacity. As a consequence of this a mitigation scheme is proposed at this junction and the results of the capacity analysis at this junction with the mitigation are shown in additional Table 7-253.4."

Table 7-253.4 Signalised junction A446 Lichfield Road/B4118 Marsh Lane- 2021 future baseline without and with SES3 and AP4 revised scheme for AM and PM

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1538	90%	30	1738	90%	5
A446 Lichfield Road South	874	60%	17	1074	69%	18
B4118 Marsh Lane	257	73%	8	173	67%	6
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A446 Lichfield Road North	1199	69%	10	1399	73%	3
A446 Lichfield Road South	1202	85%	23	1402	93%	24
B4118 Marsh Lane	324	83%	12	270	88%	11

3.13.20 This is additional text in relation to Table 7-253.4:

"The modelling results demonstrate that with mitigation the junction will operate within its capacity, as for the baseline, in the AM and PM peak hours and all queue lengths can be accommodated within the available stacking space."

Operations description and assessment of operation impacts

3.13.21 There is no change from that reported in section 7.15 in the main TA and section 3.13 in the SES and AP2 TA.

AP4-019-002 Water Orton Primary School relocation

Reasons for the revision of the scheme

3.13.22 The original scheme impacts on the grounds of the existing school, close to school buildings. Since submission of the Bill, further consultation with Warwickshire County Council (WCC) has been undertaken and an alternative location for the school has been identified.

3.13.23 Water Orton School is currently located in Water Orton village on Attleboro Lane, near the River Tame in North Warwickshire. The village is close to the M6, M6 toll and M42 motorways. Water Orton railway station is located at the junction of the B4118 and Birmingham Road within a ten minute walk distance.

3.13.24 Water Orton Primary School caters for pupils between the ages of 4 and 11. In 2007 the school integrated the Tree House (pre-school & after school club) into the main building which has its own entrance at the front of the school.

3.13.25 The majority of children come from the village of Water Orton, with some children travelling from further afield. The school grounds are extensive and include a large playing field, three hard play surfaces, fitness trail, amphitheatre, wildlife/pond area and woodland area, vegetable garden and provision for animals.

Description of the AP4 revised scheme

3.13.26 The preferred site is part of a larger area of land that is bound to the east and north by existing housing and to the west and south by existing roads. It is bisected by a brook and a PRoW, it also has mature trees forming areas of copse and field boundaries.

3.13.27 The preferred school site is central to the priority area. It is easily accessible along lit pedestrian footpaths, within walking distance for the whole of the priority area and within walking distance of other local community provisions, such as the library, parish church and recreation grounds. Its location is approximately 0.2 miles north of the existing school with proposed access via Plank Lane, which offers easy pedestrian access. A location plan is included as Figure 7-22.1.

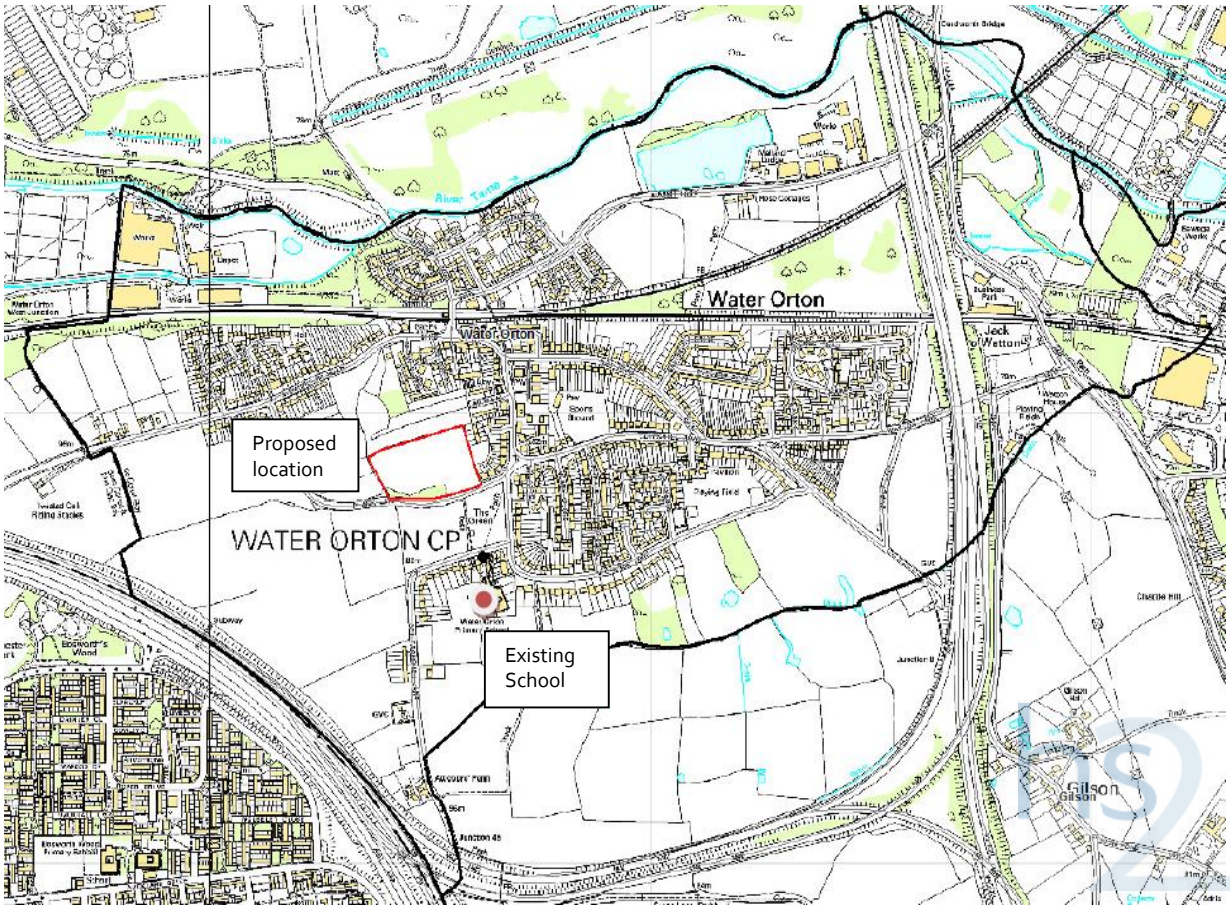
3.13.28 The capacity of the school and numbers of pupils will be unchanged so there is unlikely to be any increase in vehicle movements.

3.13.29 An existing PRoW will be preserved and will provide an alternative pedestrian route to school. It is anticipated that on-site drop-off and collection together with easy pedestrian access will reduce the need for vehicle movements and reduce parking in adjacent roads.

3.13.30 It is expected that the local planning and highway authority will give consideration to traffic regulation orders, such as yellow lines, along Plank Lane if any parking or congestion issues were to arise.

3.13.31 The new school will operate as per the existing school. Staff movement prior to 08:30 and post 16:00 Monday to Friday (term time only). Some parental drop-off and collect post 08:30 and post 15:30 Monday to Friday (term time only). There are after school clubs on weekdays between 15:30 and 16:30. After 9:00 the doors are locked and any latecomers must enter the school via the main entrance.

Figure 7-22.1 Location map of existing and new school



Parking, loading and servicing

3.13.32 The new school site will include 40 -45 parking spaces including staff, disabled and visitor parking.

3.13.33 An on-site drop-off and gyratory is proposed for on-site delivery and turning to relieve parking on local roads and to mitigate issues arising from the narrowness of Plank Lane from which the school will be accessed.

Vehicular and pedestrian access

3.13.34 The proposed pedestrian and vehicular access on Plank Lane will utilise, widen and improve the existing access point from Plank Lane, by removing hedgerows to improve visibility splays.

Sustainable travel – school travel plan

3.13.35 It is expected that a school travel plan will be prepared by the local planning authority and the school in line with prevailing policy and best practice. The school travel plan is intended to provide mechanisms for improving the sustainability of the travel behaviour of staff and pupils attending the Water Orton School. Key travel plan measures include the following:

- the production and distribution of travel awareness packs that provide relevant information on sustainable travel, including walking and cycling routes and public transport timetables as well as car sharing initiatives;

- compilation of a car sharing database for those who express an interest in this mode, which will be amalgamated with existing wider area car sharing databases where appropriate; and
- investigation into providing sustainable travel discounts for public transport or cycle usage.

Assessment methodology

3.13.36 There is no change from that reported in section 7.2 of the main TA.

Existing baseline

3.13.37 This section provides an overview of the baseline traffic and transport conditions in the vicinity of the site for the relocation of Water Orton Primary School. The supplementary traffic survey data is also included in the SES3 and AP4 baseline survey report (Annex Biv).

Surveys

Traffic surveys

3.13.38 Traffic surveys were undertaken on a neutral weekday on Wednesday 22nd April 2015. Three surveys were undertaken, two turning count surveys and one parking beat survey, the locations and time periods of the surveys included the following;

- all vehicle junction turning count at the junction of Birmingham Road/Plank Lane during morning (0700-1000) and evening peak periods (1600-1900);
- all vehicle junction turning count at the junction of Coleshill Road/Plank Lane during morning (0700-1000) and evening peak periods (1600-1900);
- parking beat survey on Attleboro Lane and Vicarage Lane during morning (0700-0845) and afternoon school peak periods (1430-1615)

3.13.39 The purpose of these surveys was to establish existing traffic flow entering and exiting Birmingham Road/Plank Lane and Coleshill Road/Plank Lane during the peak hours and the levels of parking stress on Attleboro Lane and Vicarage Lane.

Current pupil origin data at existing school location

3.13.40 Table 7-255.1 shows the postcode data for the pupils currently attending the school. It shows that over 55% of pupils live within a 20 minute walk from the school, with nearly 40% within a ten minute walk.

Table 7-255.1: School travel times for pupils

Walk time in minutes	No of Pupils	% of Pupils
0-10 minutes	126	39%
10-20 minutes	56	17%
+20 minutes	139	43%

Site observations at existing school location

3.13.41 Parents park along the west side of Vicarage Lane and the south side of Attleboro Lane for pick-up and drop-off. Vehicles generally started arriving at 08:30, most vehicles were gone by 09:00. Vehicles with children stopped for between three and ten minutes. It was noted, there were no more than three children per vehicle.

3.13.42 The school currently has 38 car parking spaces accessed from Vicarage Lane; at 08:00 there were 4 vehicles in the car park, by 08:50 there were 38 vehicles in the car park. Minimal movements were noted after 09:00 as the car park was very near capacity. Four staff/visitor vehicles were noted to have not parked in the car park.

3.13.43 Six cycle movements into the school were recorded, of which the majority were children being supervised by their parents on their way to and from school. There was one adult cycling to the school.

3.13.44 There are many pedestrian movements on site with pedestrians crossing the green to get to the school. Some disruption was apparent from vehicles hindering pedestrians from crossing safely, which could in part be due to lack of notices or designated crossing areas.

Local highway network

3.13.45 Attleboro Lane (current school location) is a narrow road with zig zag 'School Keep Clear' along the whole frontage of the school. Due to the narrow road there is no parking along Attleboro Lane. Attleboro Lane leads to Vicarage Lane to the east with 'School Keep Clear' road markings right up to the junction of Attleboro Lane/Vicarage Lane.

3.13.46 Vicarage Lane is a two-way road, it provides vehicular access to the school and the car park. Across the school access is zig zag lines and 'School Keep Clear' road markings. The neighbouring properties are all residential; some white lines are present along Vicarage Lane.

3.13.47 Vicarage Lane leads to Coleshill Road to the east and north providing access to the B4117; to the west Vicarage Lane leads to Plank Lane.

3.13.48 Plank Lane (new site location) has some residential properties but is mostly bordered by open field and hedges. There are no yellow lane marking along Plank Lane except at the junction where it meets Vicarage Lane. Plank Lane also provides access to the footpaths across the green to Attleboro Lane.

3.13.49 West of the site, Plank Lane is street lit from the southern side of the carriageway, where there is a continuous footway. There is no footway or kerb line on the northern side of Plank Lane.

3.13.50 Table 7-255.2 shows the survey results for all vehicles during the morning and evening three-hour peak periods at the Birmingham Road/Plank Lane junction.

Table 7-255.2 Junction turning movement results -Birmingham Road/ Plank Lane for AM (07:00-10:00) and PM (15:00-18:00) peaks

Time	Hourly flow of all vehicles					
	Birmingham Rd West to Plank Lane	Birmingham Rd West to Birmingham Rd East	Birmingham Rd East to Birmingham Rd West	Birmingham Rd East to Plank Lane	Plank Lane to Birmingham Rd East	Plank Lane to Birmingham Rd West
07:00 - 08:00	5	265	211	3	1	8
08:00 - 09:00	20	365	282	6	3	12
09:00 -10:00	189	222	2	7	17	189
15:00 - 16:00	259	275	6	5	8	259
16:00-17:00	293	263	3	2	11	293
17:00- 18:00	241	231	2	1	12	241

3.13.51 Table 7-255.2 shows that in the AM period the peak occurs between 08:00-09:00 with a total of 26 vehicles turning onto Plank Lane and a total of 15 vehicles exit Plank Lane on to Birmingham Road. In the evening peak period the peak hour occurred between 15:00-16:00 vehicles with 23 vehicles turning on to Plank Lane and a total of 13 vehicles exit between 15:00-16:00, 16:00-17:00 and 17:00-18:00. The junction can accommodate these flows and it operates within capacity.

3.13.52 Table 7-255.3 shows the survey results for all vehicles during the morning and evening three-hour peak periods at the Coleshill Road/Plank Lane junction.

Table 7-255.3 Junction turning movements results - Coleshill Road/Plank Lane for AM (07:00-10:00) and PM (15:00-18:00) peaks

Time	Hourly flow of all vehicles					
	Coleshill Rd North to Plank Lane	Coleshill Rd North to Coleshill Rd East	Coleshill Rd East to Coleshill Rd North	Coleshill Rd East to Plank Lane	Plank Lane to Coleshill Rd East	Plank Lane to Coleshill Rd North
07:00 - 08:00	30	11	6	25	29	27
08:00 - 09:00	66	25	18	40	40	66
09:00 -10:00	14	4	5	10	15	41
15:00 - 16:00	46	23	14	24	38	52
16:00-17:00	30	16	13	34	33	40
17:00- 18:00	16	50	9	11	23	44

3.13.53 Table 7-255.3 shows that in the AM period the peak occurs between 08:00-09:00 with a total of 106 vehicles turning onto Plank Lane and a total of 106 vehicles exit Plank Lane on to Coleshill Road and Vicarage Lane. In the evening peak period the peak hour occurred between 15:00-16:00 vehicles with 70 vehicles turning on to Plank Lane and a total of 90 vehicles exit between 15:00-16:00 of which 52 turn to Vicarage Lane and 38 to Coleshill Road. Traffic flow levels are relatively low at this junction and it operates well within capacity.

Parking and loading

3.13.54 The parking survey showed no parking occurred on Attleboro Road for the duration of the survey in the morning (07:00-08:45) and afternoon school peak periods (14:30-16:15).

3.13.55 Out of the 14 spaces on Vicarage Lane, the maximum occupancy occurred at 08:45 in the morning period with all spaces occupied. In the afternoon period the maximum occupancy occurred at 15:00 and 15:15 with 16 and 17 vehicles recorded respectively.

Accidents and safety

3.13.56 Accident data has been obtained[2] which shows that no accidents occurred on the immediate roads around the existing or new school locations between 2011 and 2013.

Rail

3.13.57 Water Orton railway station is the nearest station to the School. It is managed by London Midland. However, no London Midland trains stop there; it is only served by CrossCountry services.

3.13.58 Platform 1 is used for trains to Leicester and Birmingham. Platform 2 is used for trains to Derby, of which only one calls. Services are mainly two hourly to Birmingham New Street and Leicester, with additional services in the peak. There is one train a day Monday-Friday to Derby via Tamworth at 1750. There is no Sunday service.

Local bus and coach services

3.13.59 The nearest bus stops are located at Water Orton railway station. Table 7-255.2 shows the bus route destinations and frequency during the morning and daytime.

[2] CrashMap provides road casualty data which is available to the public online. www.crashmap.co.uk. This data is approved by the National Statistics Authority and reported on by the Department for Transport each year. The data includes all incidents up to the end of 2013 and will be updated as soon as the latest data is released by the Department for Transport

Table 7-255.2: Bus Information

Service	Destinations	Morning	Daytime
National Express West Midlands 70	Birmingham - Ward End (Fox & Goose) - Castle Bromwich - Water Orton - Coleshill - Chelmsley Wood - Marston Green - Sheldon - Solihull via Aston University, Saltley, Washwood Heath, Smiths Wood, Coleshill Parkway, Birmingham Business Park and Kitts Green	Every 30 mins	Every 30 mins
Central Buses 75	Sutton Coldfield, via Water Orton, Curdworth & Minworth Asda	Every 60 mins	Every 60 mins

Pedestrians, cyclists and equestrians

3.13.60 The school benefits from footpaths through the open green space adjacent to the School providing access to Plank Lane and Vicarage Lane.

Future baseline

3.13.61 The key transport changes in the area are expected to relate to general background growth in traffic flows between 2015 and 2041, irrespective of the revised scheme. The changes in background traffic growth are not expected to impact on the operation of roads and junctions within the vicinity of the relocated school.

3.13.62 The school is not intended to grow beyond its current size and the relocation of staff and pupils will not occur until the new site is fully constructed.

Construction description

Construction trip assumptions

3.13.63 During the peak construction period HGV movements to and from the proposed site will average 12 HGVs combined two-way trips per day for approximately 12 months. In addition there will be 40 light vehicle movements including workforce traffic and van deliveries.

Assessment of construction impacts

Local road network

3.13.64 The additional traffic, as a result of the SES3 and AP4 revised scheme, can be accommodated on Plank Lane and within the existing available capacities at its junctions with Birmingham Road and Coleshill Road/Vicarage Lane.

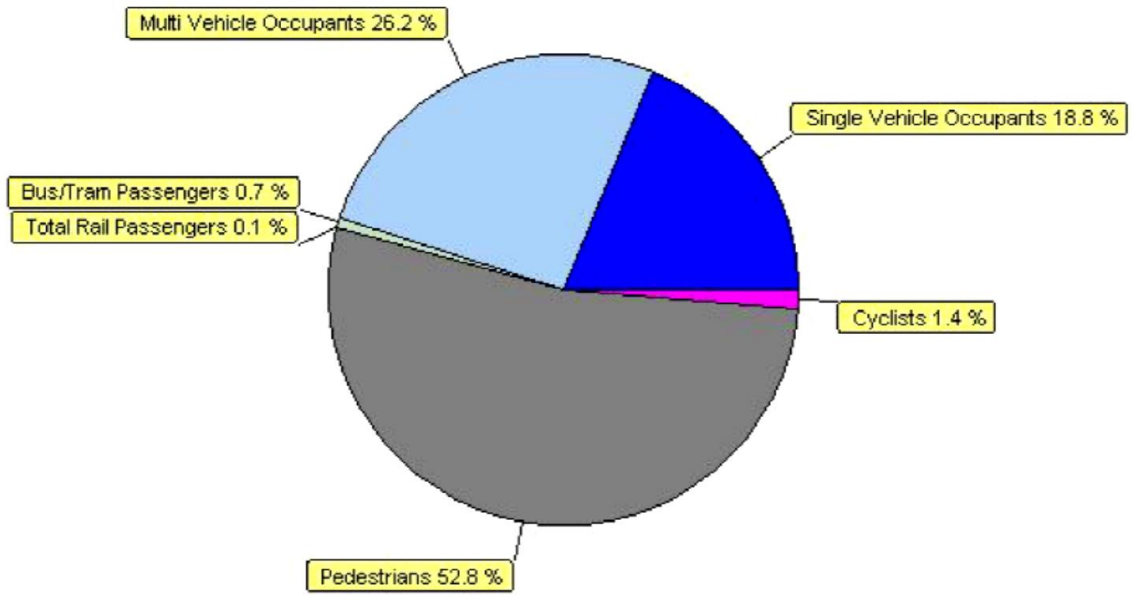
Operation description

3.13.65 It is not proposed to increase the capacity of the school or numbers of pupils, therefore it is unlikely there will be any increase in vehicle movements. Due to the close proximity of the new school, it is also anticipated that modal split will be as per the existing location. Therefore, this assessment of mode split is assumed to represent the current and new school mode split.

3.13.66 The assessment of trips generated by the school has been based on sites selected from the TRICS[3] database. These sites were selected in terms of their similarities to the site, in order to offer a valid trip rate comparison, including (where possible) locations, the level of parking provision and public transport accessibility.

3.13.67 Figure 7-22.3 shows the predicted modal split of the staff and pupils and shows that the highest modal share is pedestrian (52.8%) then multi vehicle occupant (26.2%), followed by single vehicle occupants (18.8%), with 1.4% cyclist and less than 1% by public transport.

Figure 7-22.3 Predicted modal split



3.13.68 Due to the close proximity of the relocation site across the green on Plank Lane it is expected that the modal share will be as per existing with over 50% by pedestrian mode.

Assessment of operation impacts

3.13.69 There may be some relatively small very local reassignment of traffic flows due to the relocation of the school. However, these can be accommodated along Plank Lane and its junctions with Birmingham Road and Coleshill Road/Vicarage Lane, which both operate substantially within capacity.

[3] TRICS - National standard for trip generation analysis (www.trics.org)

3.14 Curdworth and Middleton (CFA20)

Curdworth and Middleton (CFA20) SES3 and AP4 revised scheme changes

3.14.1 The original scheme is described in paragraphs 7.16.2 to 7.16.72 of the main TA and as amended by section 3.14 of the SES and AP2 TA.

3.14.2 The SES3 and AP4 revised scheme changes do not give rise to any substantially different traffic and transport impacts in this area.

3.15 Drayton Bassett, Hints and Weeford (CFA21)

Drayton Bassett, Hints and Weeford (CFA21) SES3 and AP4 revised scheme changes

3.15.1 The original scheme is described in paragraphs 7.17.2 to 7.17.72 of the main TA and as amended by section 3.15 of the SES and AP2 TA.

3.15.2 The SES3 and AP4 revised scheme changes do not give rise to any substantially different traffic and transport impacts in this area.

3.16 Whittington to Handsacre (CFA22)

Whittington to Handsacre (CFA22) SES3 and AP4 revised scheme changes

3.16.1 The original scheme is described in paragraphs 7.18.1 to 7.18.73 of the main TA and with key changes assessed in SES and AP2 TA (paragraphs 3.16.1 to 3.16.47), including the amendment in CFA22 to lower the HS2 route beneath the West Coast Main Line, the South Staffordshire Line and the A38 in Lichfield.

3.16.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-022-001 temporary junction improvements to the junction between Wood End Lane and the connection to the southbound slip roads of the A38 Rykneld Street at Hilliards Cross.
- AP4-022-001 revised diversion (from that described in SES and AP2 TA) of an electricity transmission line in north Lichfield. The amendment includes temporary works within Watery Lane and the A5192 Eastern Avenue associated with burying the power line.

Assessment methodology

3.16.3 There is no change from that reported in section 7.2 of the main TA.

Existing baseline

3.16.4 The following is additional to paragraph 5.24.6:

"Additional surveys on A5192 Eastern Avenue and Watery Lane north of Lichfield have been undertaken in July 2015. The supplementary survey data is included in Annex B(iv)."

3.16.5 The following table provides additions to Table 5.157, relating to Watery Lane and A5192 Eastern Avenue.

Table 5-157 Whittington to Handsacre local road network baseline traffic flow – partial replacement

Location	Direction	2015 baseline AM Peak 08:00 – 09:00		2015 baseline PM Peak 17:00 – 18:00	
		All vehicles	HGV	All vehicles	HGV
Watery Lane north of A5192 Eastern Avenue	NB	117	4	147	0
	SB	156	4	160	0
A5192 Eastern Avenue east of Watery Lane	NB	547	10	894	6
	SB	841	17	571	11

Future baseline

3.16.6 There is no change from that reported in the section 7.18 of the main TA and section 3.16 of the SES and AP2 TA, except for the following tables with the additions to Tables 7-295 and 7-296 in the main TA (and Tables 7-296.1 and 7-296.2 in the SES and AP2 TA), relating to A5192 Eastern Avenue and Watery Lane.

Table 7-295: Whittington to Handsacre local road network future baseline flows (vehicles) - AM peak – partial replacement

Location	Direction	Baseline flow				All vehicles actual change from 2015 - 2021	All vehicles % change from 2015 -2021
		2015		2021			
		All vehicles	HGV	All vehicles	HGV		
Watery Lane north of A5192 Eastern Avenue	NB	117	4	129	4	12	10%
	SB	156	4	172	4	16	10%
A5192 Eastern Avenue east of Watery Lane	NB	547	10	602	11	55	10%
	SB	841	17	925	19	84	10%

Table 7-296: Whittington to Handsacre local road network future baseline flows (vehicles) - PM peak – partial replacement

Location	Direction	Baseline flow				All vehicles actual change from 2015 - 2021	All vehicles % change from 2015-2021
		2015		2021			
		All vehicles	HGV	All vehicles	HGV		
Watery Lane north of A5192 Eastern Avenue	NB	147	0	162	0	15	10%
	SB	160	0	176	0	16	10%
A5192 Eastern Avenue east of Watery Lane	NB	894	6	983	7	89	10%
	SB	571	11	628	12	57	10%

Construction description

3.16.7 There is no change from that reported in section 7.18 of the main TA and section 3.16 of the SES and AP2 TA.

Assessment of construction impacts

Traffic management, road closures and diversions

3.16.8 The following is additional to paragraph 7.18.28:

"The construction works to divert an existing power line between the north east of Lichfield, immediately west of Black Slough wood to the Lichfield sub-station along the Eastern Avenue in north Lichfield would pass adjacent to, under and alongside the A515 Lichfield Road, Watery Lane and A5192 Eastern Avenue. These works can be undertaken using local traffic management measures without any substantial impact on traffic flows on these roads."

Junction assessment

3.16.9 The following is additional to paragraph 7.18.45:

"Further modelling has been undertaken at the A38/Wood End Lane (Hilliards Cross) junction (west side), which shows the junction is already operating at its capacity in the base year and this extends well beyond capacity in the 2021 baseline forecast year as shown in Table 7-297.3 in the SES and AP2 TA. A mitigation scheme has been developed which includes signalisation and local widening to provide two lanes on each approach and the capacity analysis is shown in the following table, replacing Table 7-305.3 in the SES and AP2 TA."

Table 7-305.3 Traffic signal junction A38/Wood End Lane (Hilliards Cross) 2021 without and with HS2 AM and PM

0800-09:00	**2021 baseline (70 second cycle time)**			**2021 with HS2 construction traffic (108 second cycle time)**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
Wood End Lane from A38 Northbound off slip road	658	83%	9	835	83%	13
A38 Overbridge Slip Roads	290	39%	2	290	42%	4
Wood End Lane from Lancaster Rd Ahead & Right	377	85%	7	426	85%	9
Wood End Lane from Lancaster Rd Right	334	81%	6	396	84%	9
17:00-18:00	**2021 baseline (70 second cycle time)**			**2021 with HS2 construction traffic (108 second cycle time)**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
Wood End Lane from A38 Northbound off slip road	600	88%	9	700	85%	12
A38 Overbridge Slip Roads	232	27%	2	232	28%	2
Wood End Lane from Lancaster Rd Ahead & Right	478	87%	8	548	83%	11
Wood End Lane from Lancaster Rd Right	439	85%	7	512	83%	10

3.16.10 This is additional text in relation to Table 7-305.3:

"The analysis shows that the proposed junction improvement scheme works satisfactorily and HS2 construction traffic would have limited impact on the operation of this junction."

Operations description and assessment of operation impacts

3.16.11 There are no changes from those reported in section 7.18 of the main and section 3.16 of the SES and AP2 TA.

4 West Midlands Region

4.1 Balsall Common and Hampton-in-Arden (CFA23)

Balsall Common and Hampton-in-Arden (CFA23) SES3 and AP4 revised scheme changes

4.1.1 The original scheme is described in paragraphs 8.3.1 - 8.3.11 of the main TA. The SES and AP2 revised scheme changes are reported in section 4.1 of the SES and AP2 TA.

4.1.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- AP4-023-001 - additional land required for roundabout at A452 Kenilworth Road/Marsh Lane junction. Provision of an all movement roundabout at the A452 Kenilworth Road/Marsh Lane junction. Marsh Lane will be realigned to join the new junction and Mercote Hall Lane and earthworks raised slightly to accommodate the new roundabout and tie into the new junction. New permanent road lighting and advanced signage provided along the A452 Kenilworth Road from the new roundabout junction to the existing A452 Kenilworth Road/Bradnocks Marsh Lane roundabout.
- AP4-023-002 - additional land required for the relocation of the Island Project School. The amendment proposes to relocate the Island Project School to Jerrings Hall Farm, Solihull, West Midlands.

4.1.3 The above changes lead to a number of changes to the assessment in the main TA and SES and AP2 TA in Balsall Common and Hampton-in-Arden (CFA23). Additionally, the relocation of the Island Project School (AP4-023-002) to a new site introduces new assessment material which is reported separately at the end of this chapter, including baseline analysis.

Assessment methodology

4.1.4 The assessment methodology is described in Section 8.2 of the main TA.

Existing baseline

4.1.5 Baseline traffic and transport conditions are described in Section 5.25 of the main TA, supplemented by the Island Project School baseline.

Future baseline

4.1.6 Future baseline traffic and transport conditions are described in Section 8.3 of the main TA, supplemented by the Island Project School baseline.

Construction description

Compounds and construction sites

4.1.7 Table 8-19 in the main TA shows the typical vehicle trip generation for construction site compounds in this area. The works associated with the A452 Kenilworth

Road/Marsh Lane junction will extend the duration of the A452 Kenilworth Road overbridges satellite compound by approximately six months.

Traffic management, road closures and diversions

4.1.8 Paragraph 8.3.42 is replaced by:

"The construction works to provide a roundabout at the junction of A452 Kenilworth Road/Marsh Lane will require temporary restrictions to the movements at the junction for a period of up to six months. Vehicle travelling to Marsh Lane from the north will need to travel southbound on the A452 Kenilworth Road, past the existing turning into Marsh Lane, u-turn at the A452 Kenilworth Road/Bradnocks Marsh Lane roundabout to travel northbound on the A452 Kenilworth Road to Marsh Lane. Conversely, vehicles leaving Marsh Lane wanting to travel south will need to travel northbound on the A452 Kenilworth Road and u-turn at the A452 Kenilworth Road/Meriden Road roundabout to travel southbound on the A452 Kenilworth Road. The continuous closure of Lavender Hall Lane will have an impact on flows in the surrounding area. These restrictions are assessed in the following sections."

Assessment of construction impacts

Strategic and local road network traffic flows

4.1.9 Table 8-22 and Table 8-23 of the SES and AP2 TA provided the strategic road network AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00) traffic flows with the SES and AP2 revised scheme construction. These forecast flows are further changed as shown in the following tables for the temporary traffic restrictions at the A452 Kenilworth Road/Marsh Lane.

Table 8-22: Strategic road network AM peak hour (08:00-09:00) traffic flows 2021 future baseline and with the SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A452 Kenilworth Road (between Meriden Lane and Marsh Lane)	NB	1121	20	1151	47	2.7%	135.0%	31.1%	31.9%
	SB	900	16	930	43	3.3%	168.8%	25.0%	25.8%
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	1112	20	1147	49	3.1%	145.0%	30.9%	31.9%
	SB	897	16	932	45	3.9%	181.3%	24.9%	25.9%

Table 8-23: Strategic road network PM (17:00-18:00) peak hour traffic flows 2021 future baseline and with the SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	Direction	PM Peak (17:00-18:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with the AP4 revised scheme
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	992	17	1041	51	4.9%	200.0%	27.5%	28.9%
	SB	1306	23	1355	57	3.8%	147.8%	36.3%	37.7%

4.1.10 The conclusions of paragraph 8.3.54 and 8.3.56 of the main TA are unchanged.

Operations description

Key operation transport issues

4.1.11 The 5th bullet point to paragraph 8.3.99 is replaced with the following:

- " a revised alignment of the A452 Kenilworth Road north of Balsall Common including a new roundabout junction at A452 Kenilworth Road/Marsh Lane, a new roundabout junction at Park Lane and a reconfigured junction at Bradnock's Marsh Lane;"

Assessment of operation impacts

Strategic road network traffic flows 2026

4.1.12 Table 8-31 and Table 8-32 of the SES and AP2 TA provided the strategic road network AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00) traffic flows with the SES and AP2 revised scheme in 2026. These forecast flows are further changed as shown in the following tables for the new roundabout junction at A452 Kenilworth Road/Marsh Lane.

Table 8-31: Strategic road network AM peak hour (08:00-09:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles) – partial replacement

Location	Direction	AM Peak (08:00-09:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A452 Kenilworth Road (between Meriden Lane and Marsh Lane)	NB	1121	20	1261	20	12.5%	0.0%	31.1%	35.0%
	SB	900	16	950	16	5.6%	0.0%	25.0%	26.4%
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	1112	20	1252	20	12.6%	0.0%	30.9%	34.8%
	SB	897	16	947	16	5.6%	0.0%	24.9%	26.3%

Table 8-32: Strategic road network PM peak hour (17:00-18:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles) – partial replacement

Location	Direction	PM Peak (17:00-18:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with the AP4 revised scheme
A452 Kenilworth Road (between Meriden Lane and Marsh Lane)	NB	992	17	1021	17	2.9%	0.0%	27.5%	28.3%
	SB	1340	23	1474	23	10.0%	0.0%	37.2%	40.9%
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	992	17	1021	17	2.9%	0.0%	27.5%	28.3%
	SB	1306	23	1439	23	10.2%	0.0%	36.3%	40.0%

4.1.13 The conclusions of paragraph 8.3.103 and 8.3.105 of the main TA are unchanged.

Strategic road network traffic flows 2041 Phase Two

4.1.14 Table 8-33 and Table 8-34 of the SES and AP2 TA provided the strategic road network AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00) traffic flows with the SES and AP2 revised scheme in 2041. These forecast flows are further changed as shown in the following tables for the new roundabout junction at A452 Kenilworth Road/Marsh Lane.

Table 8-33: Strategic road network AM peak hour (08:00-09:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles) – partial replacement

Location	Direction	AM Peak (08:00-09:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A452 Kenilworth Road (between Meriden Lane and Marsh Lane)	NB	1121	20	1384	20	23.5%	0.0%	31.1%	38.4%
	SB	900	16	1000	16	11.1%	0.0%	25.0%	27.8%
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	1112	20	1375	20	23.6%	0.0%	30.9%	38.2%
	SB	897	16	996	16	11.1%	0.0%	24.9%	27.7%

Table 8-34: Strategic road network PM peak hour (17:00-18:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles) – partial replacement

Location	Direction	PM Peak (17:00-18:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with the AP4 revised scheme
A452 Kenilworth Road (between Meriden Lane and Marsh Lane)	NB	992	17	1045	17	5.3%	0.0%	27.5%	29.0%
	SB	1340	23	1579	23	17.8%	0.0%	37.2%	43.8%
A452 Kenilworth Road (between Bradnocks Marsh Lane and Marsh Lane)	NB	992	17	1045	17	5.3%	0.0%	27.5%	29.0%
	SB	1306	23	1544	23	18.2%	0.0%	36.3%	42.9%

4.1.15 The conclusions of paragraph 8.3.108 and 8.3.110 of the main TA are unchanged.

AP4-023-002 - additional land required for the relocation of the Island Project School

Reason for the revision to the scheme

4.1.16 The Bill provides for the line of route on embankment (known as the Diddington Lane embankment), before passing over Shadow Brook underbridge and leaving the Balsall Common and Hampton-in-Arden area (CFA23) in the Diddington cutting as it enters the Birmingham Interchange and Chelmsley Wood area (CFA24). Diddington Hall is located approximately 350m north east of the Shadow Brook underbridge and 350m east of Diddington Lane and is the location of the Island Project School. The Island Project is an independent school for children with Autism and Asperger's Syndrome aged from 5 to 19 years (see map CT-06-105a, in the main ES, Volume 2, CFA23 Map Book).

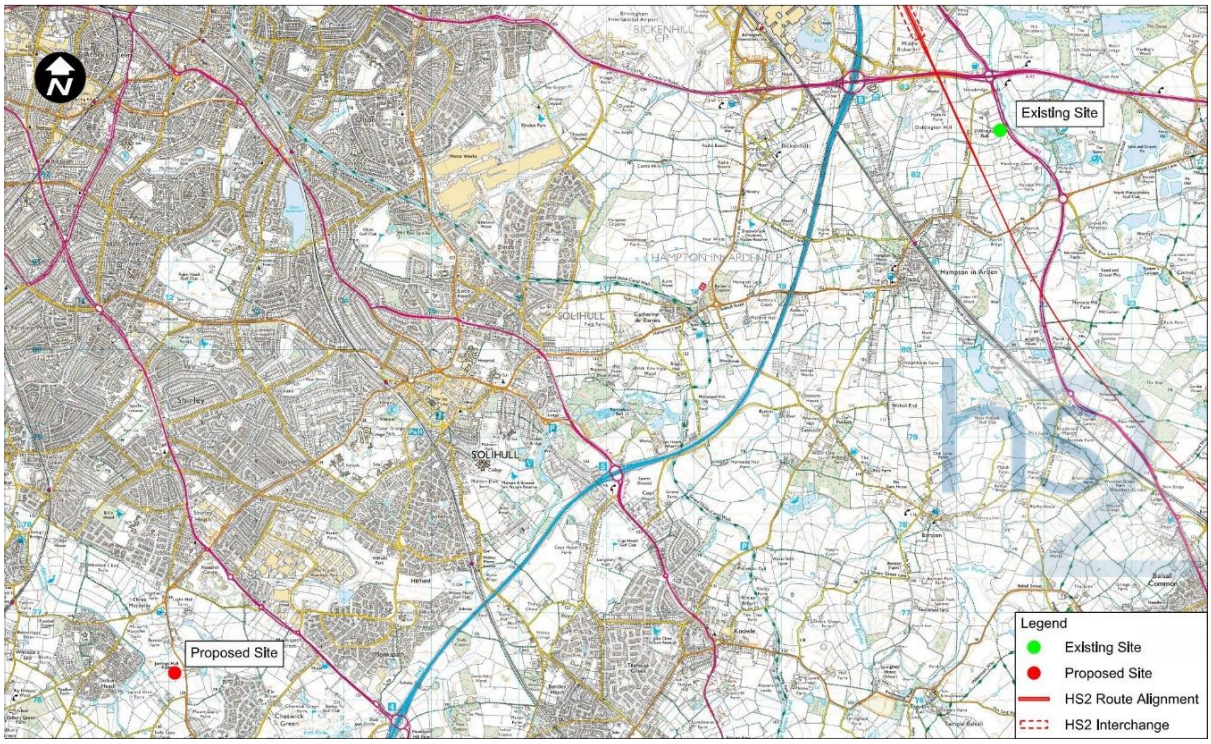
4.1.17 As reported in SES and AP2 TA, Diddington Lane would be realigned to the west of the HS2 route, approximately 450m east of the Island Project School (see SES and AP2 ES, CFA Report 23, Volume 2, AP2-023-005: Realignment of Diddington Lane).

4.1.18 The main ES as amended by the SES and AP2 ES, reported a number of effects on the Island Project School which would adversely affect the children who attend the school.

4.1.19 Since submission of the Bill, further consultation with the Island Project School has been undertaken and an alternative location for the school has been identified. The Island Project School will be relocated to Jerrings Hall Farm. The new site is located outside of the Balsall Common and Hampton-in-Arden (CFA23) boundary and the original limits of the Bill, resulting in the need for this amendment.

4.1.20 The relocation site is shown on Figure 8-3.1 in relation to the existing site and the proposed HS2 scheme.

Figure 8-3.1: Existing and proposed sites



Description of AP4 revised scheme

4.1.21 The property will require potential alterations to make it suitable for the Island Project to operate. All construction works and alterations to the new school will be completed prior to construction works beginning in the vicinity of the existing Island Project School at Diddington Hall, to allow the school to continue to operate until such time as the relocation can take place.

Assessment methodology

4.1.22 The assessment methodology is described in section 8.2 of the main TA.

4.1.23 The study area includes the local transport network comprising of B4102 Tanworth Lane, Blackford Road and Dog Kennel Lane to the A34 Stratford Road, the main strategic route through the area.

4.1.24 The impacts on traffic and transport have been assessed quantitatively, based on baseline traffic conditions and future projection scenarios. Construction traffic has been assessed on the assumption that all materials to/from the site will be removed by road.

4.1.25 The baseline forecast traffic flows for the future years of assessment have been derived using overall growth forecasts from the Department for Transport's traffic forecasting tool, Trip End Model Presentation Program (TEMPRO) taking account of all locally committed developments.

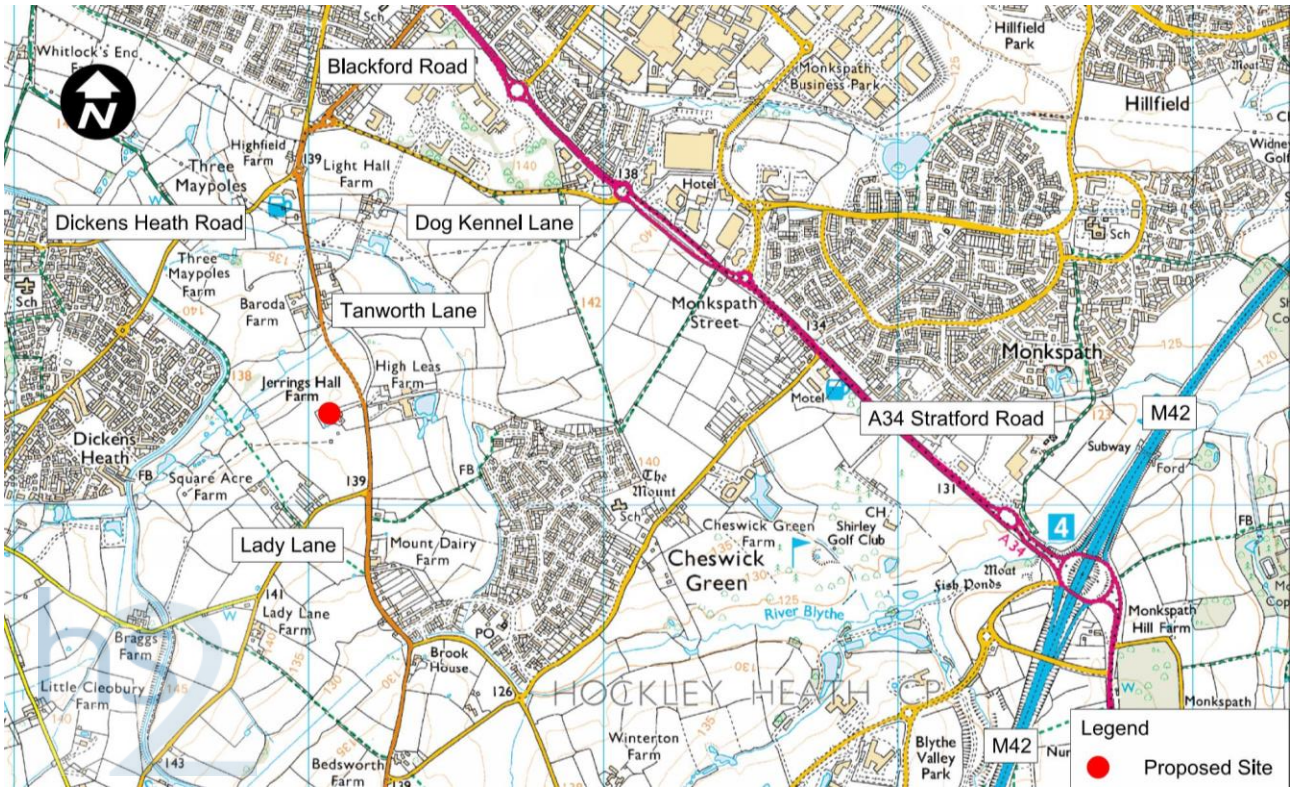
Existing baseline

4.1.26 This section provides an overview of the existing baseline traffic and transport conditions in the vicinity of the site for the relocation of the Island Project School.

Strategic and local road network

4.1.27 The road network is shown on Figure 8-3.2.

Figure 8-3.2: Road network in the vicinity of the proposed site

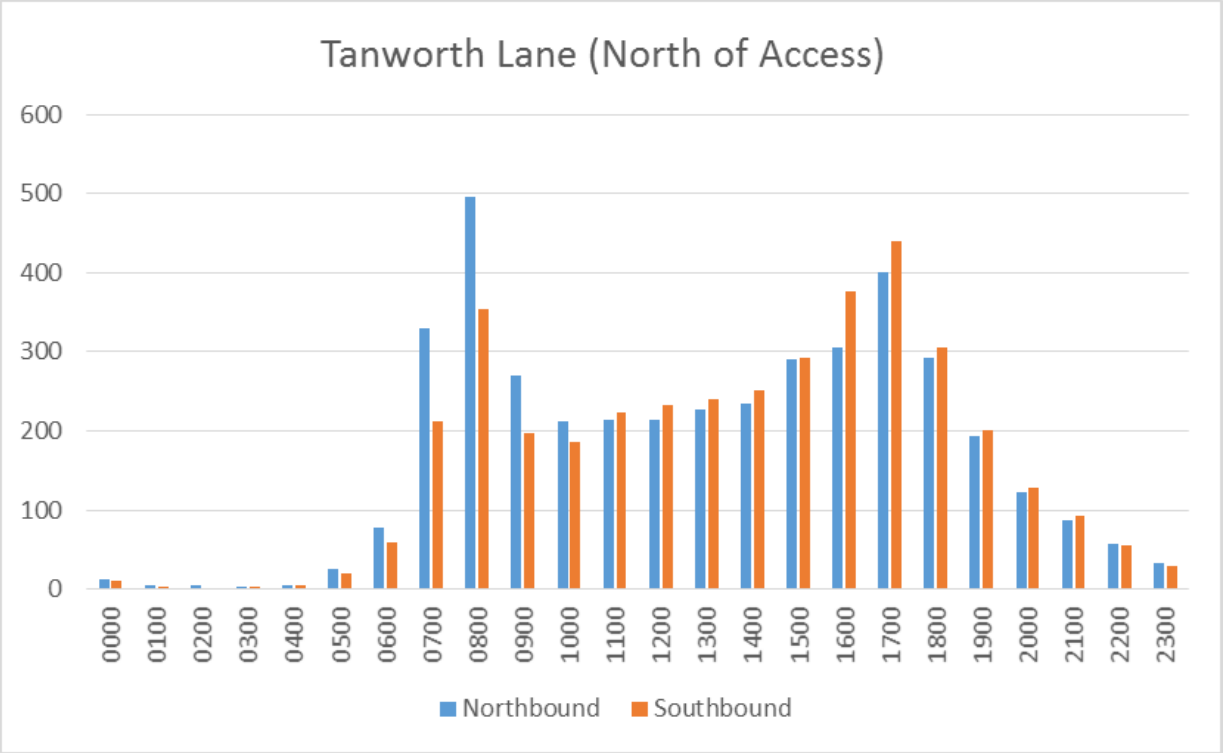


4.1.28 The B4102 Tanworth Lane is a rural road and connects to Blackford Road to the north which in turn connects to the A34 Stratford Road in the east which is the main strategic route in the area. To the south, B4102 Tanworth Lane provides access to the village of Cheswick Green. There is a footway on the western side of B4102 Tanworth Lane which provides access to bus stops located north and south of the site.

4.1.29 Transport surveys were undertaken in 2015 to obtain baseline data for the impact assessment. The traffic surveys comprised of ATC on B4102 Tanworth Lane and on the access to the existing Island Project School site. The ATC data was gathered for a continuous two week period.

4.1.30 The average weekday traffic flows are summarised on the graph in Figure 8-3.3.

Figure 8-3.3: Average weekday traffic flows for Tanworth Lane, in vicinity of Island Project School.



4.1.31 The data shows that on an average weekday, there are some 8,050 two-way vehicle movements per day (4,100 northbound and 3,950 southbound) in the vicinity of Jerrings Hall Farm. Daily variation in flow is less than +/- 5%.

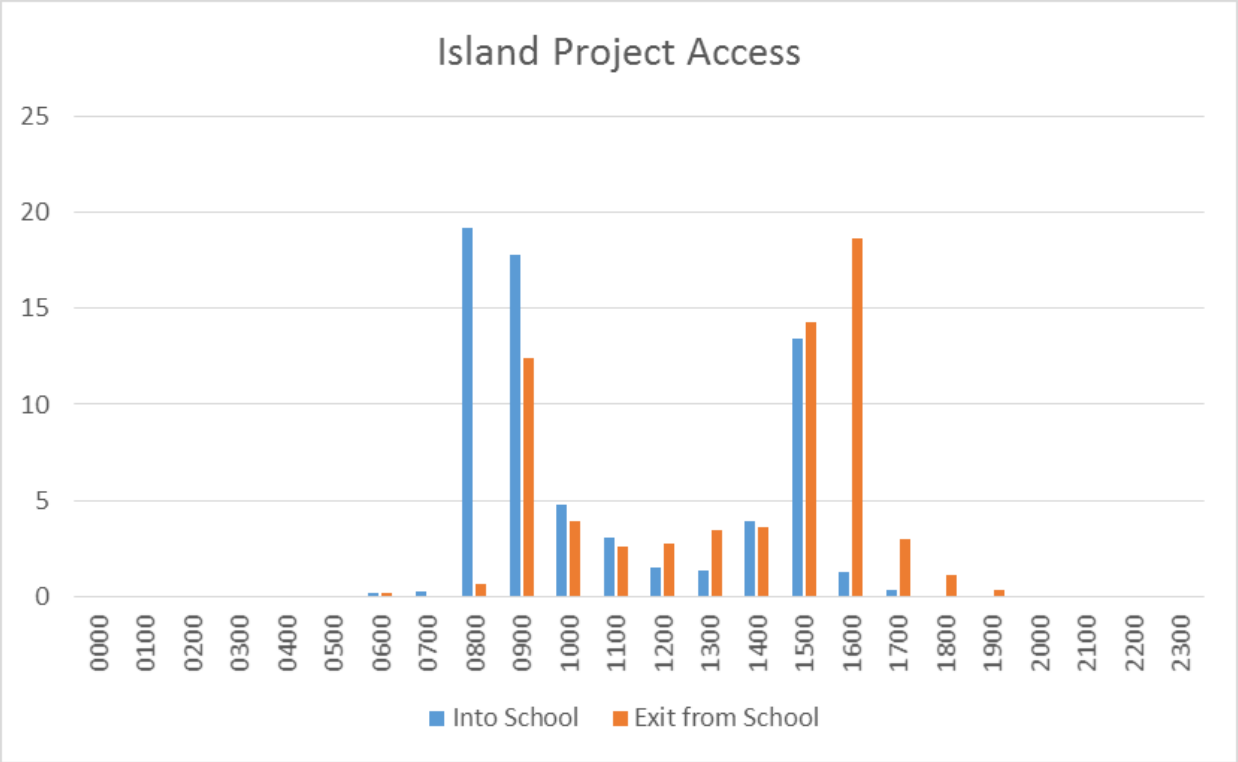
4.1.32 The network peak hours are 08:00 to 09:00 in the morning and 17:00 to 18:00 in the evening. The morning peak hour flow is 850 two-way vehicles per hour with the evening peak hour flow slightly lower.

4.1.33 In terms of vehicle mix, the majority of vehicles are small vehicles including motorcycles, cars and light vans/small buses which make up over 99% of the demand. However, on a typical weekday there are some 30-35 two-way HGV movements per day.

4.1.34 Data was also gathered for movements into and out of the existing Island Project School site to provide data to enable an assessment of the relocation.

4.1.35 The average weekday traffic flows are summarised on the graph in Figure 8-3.4.

Figure 8-3.4: Average weekday traffic flows for Island Project School access



4.1.36 The data showed that on a typical weekday, there are 134 two-way trips (67 arrivals and 67 departures). The arrival peak is for 19 vehicles between 08:00 and 09:00, which coincides with during the local network peak period and there is a departure peak between 16:00 and 17:00 for 19 vehicles which occurs before the local network peak period. These peaks are likely to coincide with the arrival and departure of staff to and from the site. In the 17:00-18:00 period, which relates to the network peak, there is typically only one arrival and three departure movements.

4.1.37 The peak demand of movements associated with the school amount to a morning peak of 30 trips (two-way flows) between 09:00 and 10:00 and a corresponding two-way afternoon school peak of 28 trips between 15:00 and 16:00. The split between arrivals and departures is broadly equal and this is therefore likely to represent the pupil drop-off and pick-up peaks and the start and end of the day. In terms of vehicle mix, the majority of vehicles are either private cars/taxis/motorcycles (94%) with a small number or two-axle trucks and/or buses (6%). There were no heavy goods vehicles recorded in the survey.

4.1.38 The traffic survey data has been further supplemented by existing traffic data on roads around the site including Blackford Road, Dog Kennel Lane and A34 Stratford Road.

4.1.39 Baseline traffic flows on the network of relevance to the site are shown in Table 8-39.1 and Table 8-39.2 for the network AM and PM peak hours respectively.

Table 8-39.1: Strategic and local road network baseline flows (vehicles) - AM (08:00-09:00) peak

Location	Direction	Baseline flow AM (08:00-09:00) peak		
		2015		
		All Veh	HGV	V/C
A34 Stratford Road (South of Dog Kennel Lane)	NB	1196	27	46.0%
	SB	1720	39	66.2%
Dog Kennel Lane	EB	1042	7	93.8%
	WB	268	2	24.2%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	1498	7	115.3%
	SB	650	3	50.0%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	495	2	55.0%
	SB	354	2	39.3%
Tanworth Lane (south of proposed access)	NB	493	2	54.8%
	SB	355	2	39.5%

Table 8-39.2: Strategic and local road network baseline flows (vehicles) - PM (17:00-18:00) peak

Location	Direction	Baseline flow PM (17:00-18:00) peak		
		2015		
		All Veh	HGV	V/C
A34 Stratford Road (South of Dog Kennel Lane)	NB	1673	8	64.4%
	SB	1739	8	66.9%
Dog Kennel Lane	EB	420	3	37.8%
	WB	608	5	54.8%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	701	1	54.0%
	SB	1358	3	104.5%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	400	1	44.5%
	SB	440	1	48.9%

Location	Direction	Baseline flow PM (17:00-18:00) peak		
		2015		
		All Veh	HGV	V/C
Tanworth Lane (south of proposed access)	NB	398	1	44.2%
	SB	442	1	49.1%

4.1.40 The above tables show that in the AM peak, Dog Kennel Lane is seen to be approaching its theoretical capacity and Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road) operates above its theoretical capacity in the direction towards the A34 Stratford Road. In the PM peak, Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road) operates above its theoretical capacity in the direction away from the A34 Stratford Road. This is likely to be as a result of traffic from the residential areas to the east of A34 Stratford Road accessing the strategic network in the AM peak and leaving the strategic network in the PM peak.

Parking and loading

4.1.41 There are no parking or loading restrictions in the vicinity of the site.

Accidents and safety

4.1.42 Personal Injury Accident (PIA) data has been obtained for the Tanworth Lane from its junction with Dickens Heath Road to the north and Salter Street/Watery Lane to the south. Data was obtained for the most recent six-year time period of 01/01/2009 to 31/12/2014. The data shows that over the six year period there have been 11 relevant PIAs. These accidents have been reviewed and the analysis shows:

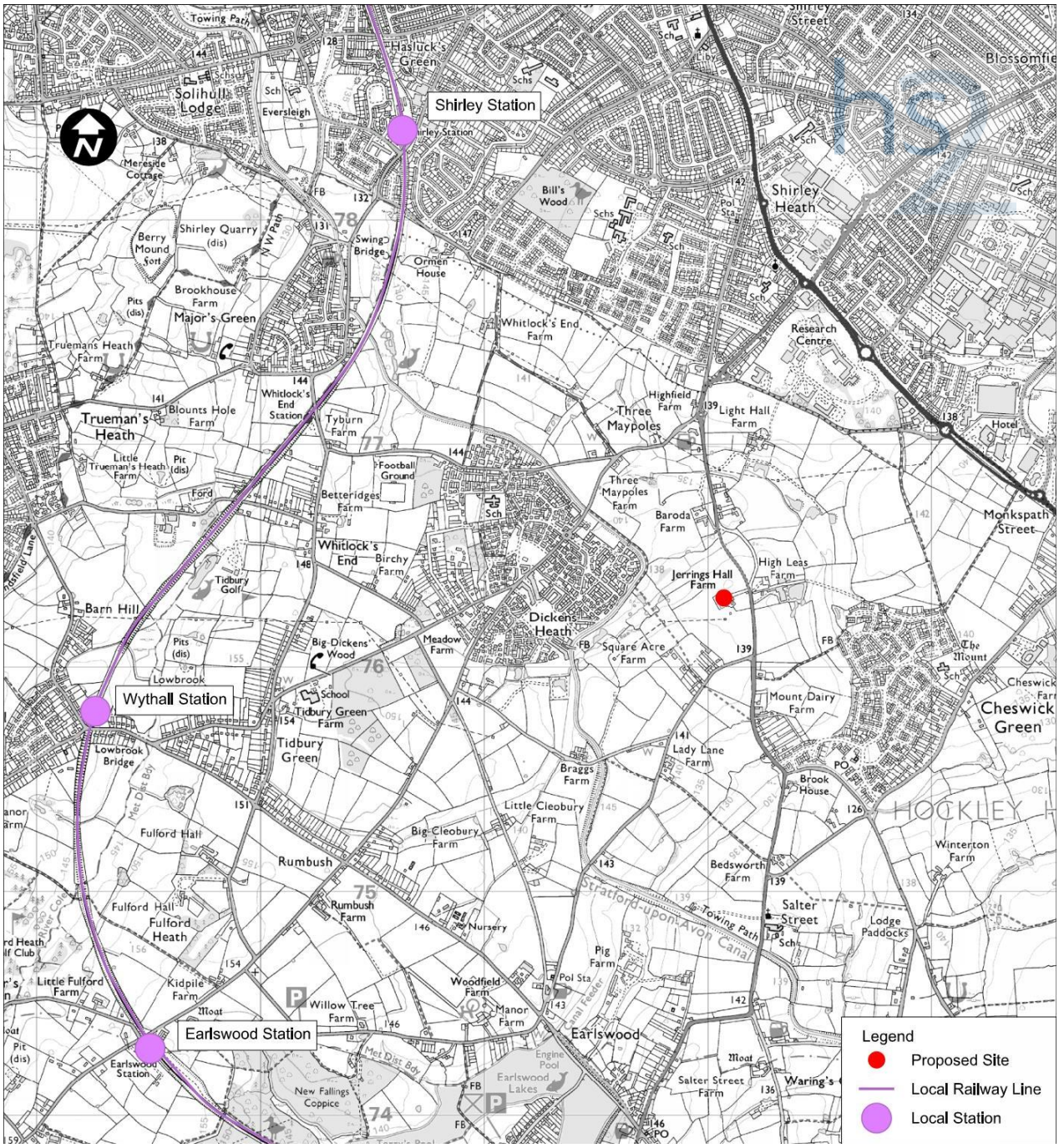
- The 11 PIAs resulted in 13 casualties.
- Of the 13 casualties, there were no fatalities, 38% resulted in serious injury and 62% in slight.
- There were no pedestrian casualties.
- Three of the accidents occurred on the roads to the south of the site with eight accidents occurring to the north of the site.

4.1.43 In overall terms, the frequency of accidents is not considered to raise concerns in relation to the scheme proposals. The accidents are located at various locations along Tanworth Lane with no obvious hot-spots, although four of the accidents occurred at the junction of Tanworth Lane and Dickens Heath Road. A number of the accidents involved cyclists with the most common contributory factors being driver error and speed.

Rail

4.1.44 The rail network is shown on Figure 8-3.5.

Figure 8-3.5: Rail network in the vicinity of the proposed site

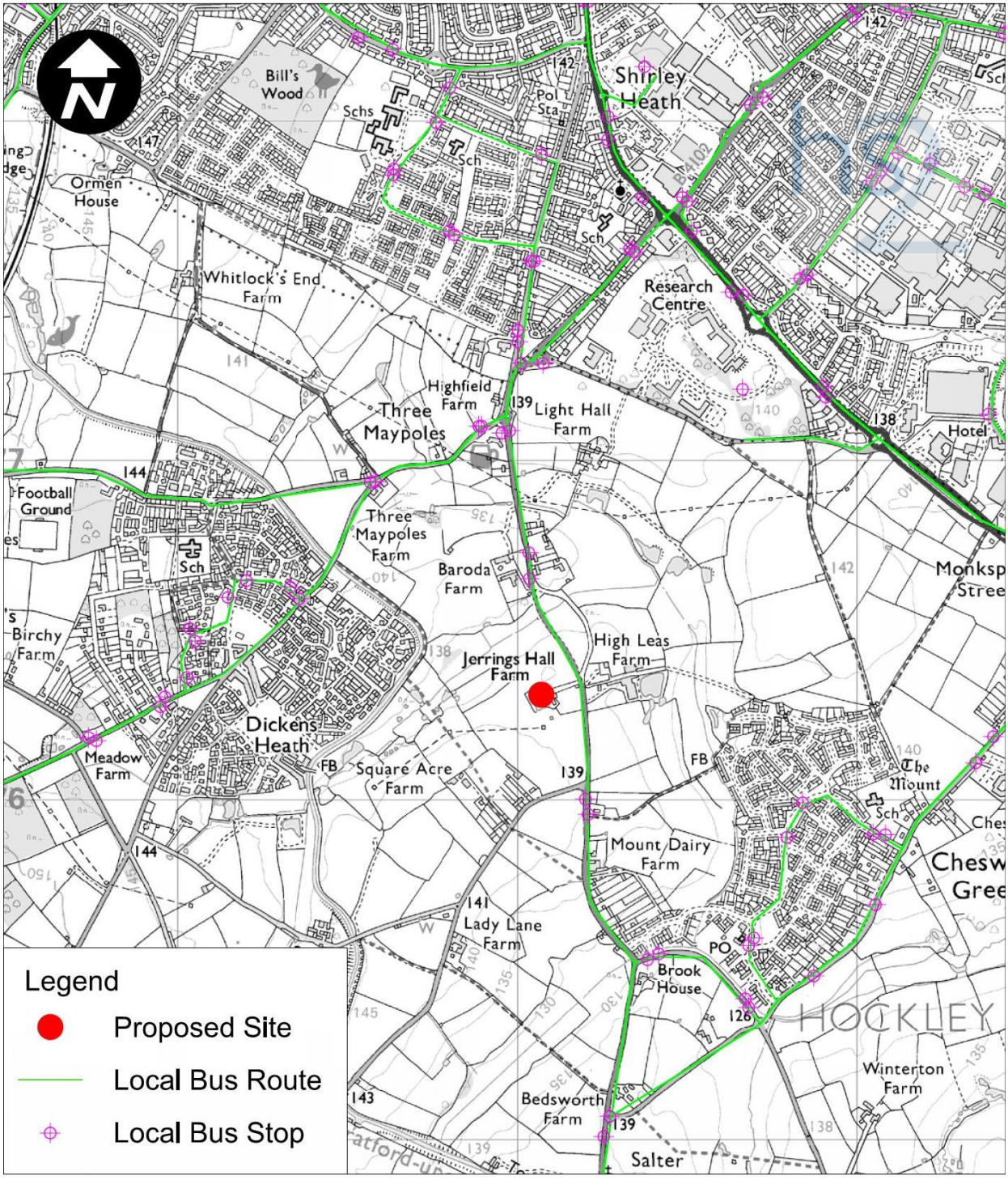


4.1.45 The Birmingham-Stratford upon Avon rail line is located some 2.5km to the west of the site. The nearest rail station is at Whitlocks End located some 1.8km away and providing access to local rail services into Birmingham City Centre to the north and Stratford upon Avon to the south.

Local bus and coach

4.1.46 The local bus network is shown on Figure 8-3.6 below.

Figure 8-3.6: Bus network in the vicinity of the proposed sites



4.1.47 The footway on the western side of B4102 Tanworth Lane provides access to bus stops located north and south of the site. The stops are used by school services only.

4.1.48 There are no long distance coach services in the area.

4.1.49 There are no substantial public transport interchange facilities in the area.

Pedestrians, cyclists and equestrians

4.1.50 There are no PRoW that are impacted upon by the proposals. There is a footway on the western site of B4102 Tanworth Lane.

Waterways/canals

4.1.51 The North Stratford Canal is located approximately 0.4km to the west of the site. There is access to the North Stratford Canal at Lady Lane Wharf to the south of the site.

Air transport

4.1.52 There are no air transport facilities in the immediate local area.

Future baseline

4.1.53 The key transport changes in the area are expected to relate to general background growth in traffic flows between 2015 and 2041, irrespective of the revised scheme.

4.1.54 With regard to future flows, the proposals for up to 220 dwellings on land at Mount Dairy Farm, Cheswick Green (planning application number PL_2014_01985_OLM) are of direct relevance as access is provided off Tanworth Lane. There are a number of other committed developments in the area which largely relate to housing developments in and around the surrounding urban areas and these have been included in the TEMPRO growth rates applied to the baseline flows for the future years.

4.1.55 Construction activities have been assessed against 2021 baseline traffic flows, irrespective of when they occur in the construction period. TEMPRO indicates peak hour growth of around 9% between years 2015 and 2021.

4.1.56 The assessment of operation of the school has been assessed against 2026 and 2041 flows. Future baseline traffic volumes in the peak hours at the relocation site are forecast to grow by around 17% by 2026 compared to 2015. Future baseline traffic volumes in the peak hours at the relocation site are forecast to grow by around 41% by 2041 compared to 2015.

4.1.57 There are no substantial committed changes to the transport network in the area.

4.1.58 Table 8-39.3 and Table 8-39.4 summarise the 2021, 2026 and 2041 AM (08:00-09:00) and PM (17:00-18:00) peak baseline traffic flows, compared to 2015 and provide a summary of the V/C ratios for each location.

4.1.59 The tables show that in addition to the issues identified in the baseline, a number of the roads are expected to approach or exceed capacity in the 2041 future assessment year due to a combination of consented and planned development in the area.

Table 8-39.3: Road network future baseline flows (vehicles) - AM (08:00-09:00) peak

Location	Direction	Baseline flow AM (08:00-09:00) peak											
		2015			2021			2026			2041		
		All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C
A34 Stratford Road (South of Dog Kennel Lane)	NB	1196	27	46%	1314	30	51%	1403	32	54%	1692	39	65%
	SB	1720	39	66%	1896	43	73%	2023	46	78%	2439	56	94%
Dog Kennel Lane	EB	1042	7	94%	1158	8	104%	1235	8	111%	1487	10	134%
	WB	268	2	24%	303	2	27%	323	2	29%	388	3	35%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	1498	7	115%	1677	8	129%	1788	8	138%	2151	10	165%
	SB	650	3	50%	730	3	56%	778	4	60%	935	4	72%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	495	2	55%	622	3	69%	658	3	73%	778	4	86%
	SB	354	2	39%	426	2	47%	452	2	50%	538	2	60%
Tanworth Lane (south of proposed access)	NB	493	2	55%	620	3	69%	656	3	73%	776	3	86%
	SB	355	2	39%	428	2	48%	454	2	50%	540	2	60%

Table 8-39.4: Road network future baseline flows (vehicles) - PM (17:00-18:00) peak

Location	Direction	Baseline flow PM (17:00-18:00) peak											
		2015			2021			2026			2041		
		All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/c
A34 Stratford Road (South of Dog Kennel Lane)	NB	1673	8	64%	1842	9	71%	1966	9	76%	2372	11	91%
	SB	1739	8	67%	1906	9	73%	2035	9	78%	2457	11	94%
Dog Kennel Lane	EB	420	3	38%	469	4	42%	500	4	45%	602	5	54%
	WB	608	5	55%	683	5	62%	728	6	66%	875	7	79%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	701	1	54%	786	2	60%	838	2	64%	1008	2	78%
	SB	1358	3	104%	1522	3	117%	1622	3	125%	1952	4	150%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	400	1	44%	478	1	53%	508	1	56%	605	1	67%
	SB	440	1	49%	559	1	62%	591	1	66%	698	1	78%
Tanworth Lane (south of proposed access)	NB	398	1	44%	476	1	53%	505	1	56%	602	1	67%
	SB	442	1	49%	561	1	62%	593	1	66%	700	1	78%

Construction description

4.1.60 Internal reconfiguration of the Farmhouse will be required. The works will require site clearance, topsoil stripping and fencing for car park construction. Site clearance will include the removal of perimeter hedging required for safe sightlines at the access onto Tanworth Lane. Local temporary traffic management including temporary footpath provision will be required for a short period to be carried out early in the programme.

Compound and construction sites

4.1.61 The alterations to Jerrings Hall Farm will be supported by a new satellite compound (Island Project satellite compound) at the site and managed from the Park Lane main compound. Works will commence in approximately quarter 1 of 2017 and will take up to six months to complete. The compound will support up to 18 workers each day. Table 8-39.5 summarises the anticipated average and peak workforce to be required at the construction compound.

Table 8-39.5: Assumed workforce at construction site

Compound Type	Location	Assumed daily workforce per site for duration with busy vehicle movements	
		Average	Peak
Satellite	Island Project satellite compound	12	18

4.1.62 Employee car trips will be mostly outside weekday peak hours (08:00-09:00 and 17:00-18:00).

4.1.63 During the peak construction period there will be no more than ten HGV two-way trips per day and 30 car/LGV two-way trips per day to and from the proposed site. The duration of peak HGV movements is estimated to be less than one month. Table 8-39.6 shows the typical vehicle trip generation for construction compound.

Table 8-39.6: Typical vehicle trip generation for construction compound

Compound Type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movements (Months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Car/LGV	HGV
Satellite	Island Project satellite compound	Tanworth Lane	Q1 2017	6 months	1	21-30	<10-<10

Construction lorry routes

4.1.64 Construction access to the site will be off B4102 Tanworth Lane with the construction access route from the site north to Blackford Road and via Dog Kennel Lane to the A34 Stratford Road.

Avoidance and mitigation measures

4.1.65 Avoidance and mitigation measures in the area have been set out in Section 8.3 of the main TA and will apply to the alterations works to Jerrings Hall Farm.

Assessment of construction impacts

4.1.66 With regards to traffic and transport, the main issues are changes in traffic during construction, particularly in relation to increased traffic on local roads as a result of construction vehicles.

Strategic and local road traffic flows

4.1.67 Tables 8-39.7 and 8-39.8 show that the impact of HS2 construction traffic on overall traffic volumes in the peak periods is low in both percentage terms and absolute terms.

Table 8-39.7: Road network AM peak hour (08:00-09:00) traffic flows 2021 future baseline and with the SES3 and AP4 revised scheme construction traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	1314	30	1315	31	0.0%	1.7%	51%	51%
	SB	1896	43	1896	44	0.0%	1.2%	73%	73%
Dog Kennel Lane	EB	1158	8	1159	8	0.0%	6.3%	104%	104%
	WB	303	2	303	3	0.2%	24.1%	27%	27%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	1677	8	1678	8	0.0%	6.6%	129%	129%
	SB	730	3	730	4	0.1%	15.2%	56%	56%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	622	3	622	3	0.1%	17.8%	69%	69%
	SB	426	2	427	2	0.1%	26.0%	47%	47%

Location	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Tanworth Lane (south of proposed access)	NB	620	3	620	3	0.0%	0.0%	69%	69%
	SB	428	2	428	2	0.0%	0.0%	48%	48%

Table 8-39.8: Road network PM peak hour (17:00-18:00) traffic flows 2021 future baseline and with the SES3 and AP4 revised scheme construction traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	1842	9	1843	9	0.0%	5.8%	71%	71%
	SB	1906	9	1907	9	0.0%	5.6%	73%	73%
Dog Kennel Lane	EB	469	4	469	4	0.1%	13.7%	42%	42%
	WB	683	5	684	6	0.1%	9.4%	62%	62%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	786	2	787	2	0.1%	32.7%	60%	61%
	SB	1522	3	1522	3	0.0%	16.9%	117%	117%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	478	1	479	1	0.1%	53.8%	53%	53%
	SB	559	1	559	2	0.1%	46.1%	62%	62%
Tanworth Lane (south of proposed access)	NB	476	1	476	1	0.0%	0.0%	53%	53%
	SB	561	1	561	1	0.0%	0.0%	62%	62%

4.1.68 The tables show that the peak construction works associated with the relocation of the Island Project School will have minimal impact on the network around the proposed site. There is a large percentage increase in HGV movements on some of the roads, but this is due to the low level of background HGV movements. In absolute terms, the construction works are not expected to add more than one HGV in each direction during the peak hours and this is not considered substantial.

Accidents and safety

4.1.69 The baseline safety assessment identified no locations at which there have been nine or more accidents over the last three year period.

4.1.70 Whist increases in traffic have the potential to result in an increase in accidents, it has been demonstrated that there is not expected to be any substantial traffic increases during construction and therefore should not substantially increase the related safety issues during construction.

Rail

4.1.71 The proposed construction works will have no impact on rail in the area.

Local bus and coach

4.1.72 The impact of construction is expected to have little impact on bus routes with no proposed diversions of scheduled services.

Pedestrians, cyclists and equestrians

4.1.73 The proposed construction works are not expected to have any substantial impact on pedestrians, cyclists and equestrians in the area. Temporary traffic management will be required at the access to the site to remove part of the existing hedge line to improve vehicle sightlines.

4.1.74 The temporary traffic management will require the temporary closure of the footway on the western site of B4102 Tanworth Lane, however the traffic management will include for the provision of a temporary pedestrian route and therefore there will be no substantial impact users.

4.1.75 There will also be additional crossing movements of the footway on B4102 Tanworth Lane and additional movements along the local roads as a result of construction traffic. However these are not expected to cause any substantial increase in disruption for pedestrians, cyclists and equestrians.

Operation description

4.1.76 The current Island Project School will remain in operation during works at the relocation site. The Island Project School at Diddington Hall serves approximately 26 children from ages 5 to 19 years. Pupils generally access the site via private vehicle modes due to the wide catchment area of the school and the associated needs of the pupils.

4.1.77 On relocation it is assumed that the levels of usage of the school and associated trips will remain the same. The existing baseline data identified the associated travel demand which is assumed to relocate to the proposed site.

4.1.78 It is considered that the majority of pupils and staff will arrive via the wider strategic network and in particular the M42 motorway to the south of the site and then via the A34 Stratford Road. Pupils and staff will then utilise the local road network to arrive and depart the site from the north due to the combination of minor roads to the south and the limited turning opportunities at the junction of the A34 Stratford Road/Creynolds Road.

Assessment of operation impacts

4.1.79 This section considers the operational impacts of the proposed Island Project School on the surrounding road network.

4.1.80 The 2026 forecast AM and PM peak hour traffic increases on the surrounding local road network are shown in Tables 8-39.9 and 8-39.10, respectively.

4.1.81 The 2041 forecast AM and PM peak hour traffic increases on the surrounding local road network are shown in Tables 8-39.11 and 8-39.12, respectively.

4.1.82 When compared to the peak background traffic flows, the operational flows represent an increase of between 1%-6% on the roads shown in these tables, with the larger increases on the least busy roads and no substantial change in the associated V/C ratios. Therefore, operational traffic to and from the school will not result in any substantial traffic impact on the local road network.

4.1.83 A number of the pupils and staff may experience increased travel times, although others are likely to have reduced travel times. Overall, the impacts are not considered to be substantial.

Accidents and safety

4.1.84 The baseline safety assessment identified no locations at which there have been nine or more accidents over the last three year period.

4.1.85 Whilst increases in traffic have the potential to result in an increase in accident and safety risks, it has been demonstrated that there is not expected to be any substantial traffic increases with the relocation of the school and therefore should not substantially increase the related safety risks during operation.

Rail

4.1.86 The proposed relocation will have no impact on rail in the area.

Local bus and coach

4.1.87 Apart from a small increase in general congestion, the proposed relocation is expected to have little impact on bus routes. The impact is not considered to be substantial.

Pedestrians, cyclists and equestrians

4.1.88 There are no operational impacts on pedestrians, cyclists and equestrians as footpaths will not be permanently affected.

Table 8-39.9: Road network AM peak hour (08:00-09:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	1403	32	1421	32	1.3%	0.0%	54%	55%
	SB	2023	46	2024	46	0.0%	0.0%	78%	78%
Dog Kennel Lane	EB	1235	8	1236	8	0.1%	0.0%	111%	111%
	WB	323	2	341	2	5.7%	0.0%	29%	31%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	1788	8	1789	8	0.0%	0.0%	138%	138%
	SB	778	4	796	4	2.4%	0.0%	60%	61%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	658	3	659	3	0.1%	0.0%	73%	73%
	SB	452	2	471	2	4.1%	0.0%	50%	52%
Tanworth Lane (south of proposed access)	NB	656	3	657	3	0.1%	0.0%	73%	73%
	SB	454	2	454	2	0.0%	0.0%	50%	50%

Table 8-39.10: Road network PM peak hour (17:00-18:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	1966	9	1966	9	0.0%	0.0%	76%	76%
	SB	2035	9	2038	9	0.1%	0.0%	78%	78%
Dog Kennel Lane	EB	500	4	503	4	0.6%	0.0%	45%	45%
	WB	728	6	728	6	0.1%	0.0%	66%	66%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	838	2	841	2	0.3%	0.0%	64%	65%
	SB	1622	3	1623	3	0.0%	0.0%	125%	125%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	508	1	510	1	0.6%	0.0%	56%	57%
	SB	591	1	592	1	0.1%	0.0%	66%	66%
Tanworth Lane (south of proposed access)	NB	505	1	505	1	0.0%	0.0%	56%	56%
	SB	593	1	593	1	0.0%	0.0%	66%	66%

Table 8-39.11: Road network AM peak hour (08:00-09:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2041 Baseline (veh)		2041 Baseline with the AP4 revised scheme traffic		Percentage Impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	1692	39	1710	39	1.1%	0.0%	65%	66%
	SB	2439	56	2440	56	0.0%	0.0%	94%	94%
Dog Kennel Lane	EB	1487	10	1488	10	0.0%	0.0%	134%	134%
	WB	388	3	406	3	4.8%	0.0%	35%	37%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	2151	10	2151	10	0.0%	0.0%	165%	165%
	SB	935	4	954	4	2.0%	0.0%	72%	73%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	778	4	779	4	0.1%	0.0%	86%	87%
	SB	538	2	556	2	3.4%	0.0%	60%	62%
Tanworth Lane (south of proposed access)	NB	776	3	776	3	0.1%	0.0%	86%	86%
	SB	540	2	540	2	0.0%	0.0%	60%	60%

Table 8-39.12: Road network PM peak hour (17:00-18:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A34 Stratford Road (South of Dog Kennel Lane)	NB	2372	11	2372	11	0.0%	0.0%	91%	91%
	SB	2457	11	2460	11	0.1%	0.0%	94%	95%
Dog Kennel Lane	EB	602	5	604	5	0.5%	0.0%	54%	54%
	WB	875	7	876	7	0.0%	0.0%	79%	79%
Tanworth Lane (between Dog Kennel Lane and Dickens Heath Road)	NB	1008	2	1011	2	0.3%	0.0%	78%	78%
	SB	1952	4	1952	4	0.0%	0.0%	150%	150%
Tanworth Lane (between Dickens Heath Road and proposed access)	NB	605	1	608	1	0.5%	0.0%	67%	68%
	SB	698	1	698	1	0.1%	0.0%	78%	78%
Tanworth Lane (south of proposed access)	NB	602	1	602	1	0.0%	0.0%	67%	67%
	SB	700	1	701	1	0.0%	0.0%	78%	78%

4.2 Birmingham Interchange and Chelmsley Wood (CFA24)

Birmingham Interchange and Chelmsley Wood (CFA24) SES3 and AP4 revised scheme changes

4.2.1 The original scheme is described in paragraphs 8.4.1 - 8.4.43 of the main TA. The SES and AP2 revised scheme changes are reported in paragraphs 4.2.1 to 4.2.38 of the SES and AP2 TA.

4.2.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- SES3-024-001 - relocation of Bickenhill Waste Recycling Centre near the A45 Coventry Road. The Bickenhill Civic Amenity Site will be relocated approximately 200m east of the existing facility.
- AP4-024-001 -additional land required for mitigation car parking at National Motorcycle Museum. As detailed in the SES and AP2 ES, Volume 2, CFA Report 24, further design work has been undertaken which removes the permanent loss of 45 car parking spaces, reported in the main TA. This AP4 amendment addresses the temporary loss of 55 car parking spaces that would have remained.

4.2.3 The above changes lead to a number of changes to the assessment in the main TA and SES and AP2 TA in Birmingham Interchange and Chelmsley Wood area (CFA24).

Assessment methodology

4.2.4 The assessment methodology is described in Section 8.2 of the main TA.

Existing baseline

4.2.5 Baseline traffic and transport conditions are described in Section 5.26 of the main TA.

4.2.6 Supplementary traffic surveys were undertaken in November 2014 at the access to the existing Bickenhill Civic Amenity Site. The supplementary traffic survey data is included in the SES3 and AP4 baseline survey report in Annex B(v).

Future baseline

4.2.7 Future baseline traffic and transport conditions are described in Section 8.4 of the main TA, updated by the supplementary traffic surveys.

Construction description

Compounds and construction sites

4.2.8 Table 8-88 in the main TA showed the assumed workforce at each of the construction sites. Table 8-88 is changed with the A45/A45 Service Road overbridges satellite compound deleted and replaced by the Diddington Lane overbridge satellite compound located some 200m south of the proposed A45/A45 Service Road overbridges satellite compound. The Diddington Lane overbridge satellite compound change is shown in the following table.

Table 8-88: Assumed workforce at construction sites – partial replacement

Compound Type	Location	Assumed daily workforce per site for duration with busy vehicle movements	
		Average	Peak
Satellite	Diddington Lane overbridge satellite compound	28	42

4.2.9 Table 8-89 in the main TA showed the typical vehicle trip generation for construction site compounds in this area. It has been changed with the deletion of A45/A45 Service Road overbridges satellite compound and replacement by the Diddington Lane overbridge satellite compound. The Diddington Lane overbridge satellite compound change to Table 8-89 is shown in the following table.

Table 8-89: Typical vehicle trip generation for construction site compounds in this area – partial replacement

Compound Type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movements (Months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Car/LGV	HGV
Satellite	Diddington Lane overbridge satellite compound	Diddington Lane (initially)/A45 Service Rd (Westbound)	Q2 2017	2 years 9 months	6	49-75	17-25

Construction lorry routes

4.2.10 The 2nd bullet to paragraph 8.4.172 is replaced with the following:

- "The proposed lorry route for the Diddington Lane overbridge satellite construction site compound will initially be from Diddington Lane (for site establishment), southwards along the site access to Diddington Lane and then northwards along Diddington Lane to Stonebridge Island via the A452 Kenilworth Road. From Stonebridge Island the route will proceed westwards along the A45 Coventry Road to junction 6 of the M42. This route will be replaced by direct access off the A45 Service Road once the access and haul road are established early in the programme;"

4.2.11 Table 8-90 showed the temporary haul routes that would be created in the area to seek to reduce the need to move materials and waste via the public highway network. The first row of the table is replaced to reflect the change in compounds from the A45/A45 Service Road overbridges satellite compound to the Diddington Lane overbridge satellite compound. The change is shown in the following table.

Table 8-90: New haul routes (temporary) for CFA24 – partial replacement

Description of route including access from public highway	Compounds served by haul route
Access to the Diddington Lane overbridge satellite compound is site is from a temporary access route from CFA23 from Shadow Brook viaduct satellite compound. Access would be along the haul route to the west of the Proposed Scheme, passing to the east of Pasture Farm and then continuing to the south of the A45 running adjacent to the Proposed Scheme on the eastern side. Access to the A45/A45 Service Road overbridges site will be off a spur from the haul road.	Diddington Lane overbridges satellite compound, A45 Service Road A45/A45 Service Road overbridges satellite compound (formerly the East Way Loop Underbridge satellite compound)

Assessment of construction impacts

Strategic and local road network traffic flows

Strategic road network

4.2.12 Tables 8-93 to 8-95 of the SES and AP2 TA showed the 2021 strategic road network traffic flows for the future baseline and with proposed scheme construction traffic (vehicles) for the AM peak hour, PM peak hour and 18-hr daily traffic flows. Further changes to these tables as a result of the SES3 and AP4 revised scheme are shown in the following tables.

4.2.13 There are no substantial changes to comments and findings in paragraphs 8.4.187-188 (AM peak), 8.4.190 (PM peak) and 8.4.197 (18 hour) of the main TA, as a result of the construction of the SES3 and AP4 revised scheme.

Local road network

4.2.14 Tables 8-96 to 8-98 of the SES and AP2 TA showed the 2021 local road network traffic flows for the future baseline and with proposed scheme construction traffic (vehicles) for the AM peak hour, PM peak hour and 18-hr daily traffic flows. These changes as a result of the SES3 and AP4 revised scheme are shown in the following tables.

4.2.15 There are no substantial changes to comments and findings in paragraphs 8.4.197 (AM peak), 8.4.199 (PM peak) and 8.4.201-203 (18 hour) of the main TA, as a result of the construction of the SES3 and AP4 revised scheme.

Table 8-93: Strategic road network AM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A45 between M42 Junction 6 and Stonebridge Roundabout	EB	2420	149	2469	198	2.0%	32.7%	43.2%	44.1%
	WB	3024	187	3075	238	1.7%	27.1%	54.0%	54.9%
M42 south of Junction 6	NB	5220	303	5323	406	2.0%	33.9%	72.5%	73.9%
	SB	5509	320	5612	423	1.9%	32.1%	76.5%	77.9%
M42 north of Junction 6	NB	4182	243	4247	308	1.5%	26.6%	58.1%	59.0%
	SB	5887	342	5955	410	1.2%	19.8%	81.8%	82.7%
M42 J6 Northbound off slip	NB	2180	127	2226	172	2.1%	35.2%	121.1%	123.6%
M42 J6 Southbound on slip	SB	1482	86	1527	132	3.0%	53.2%	82.3%	84.8%

Table 8-94: Strategic road network PM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

	Direction	PM Peak (17:00-18:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	Veh	HGV	Baseline	with AP4 revised scheme
A45 between M42 Junction 6 and Stonebridge Roundabout	EB	2932	136	2981	185	1.7%	35.8%	52.4%	53.3%
	WB	3637	169	3688	220	1.4%	30.0%	65.0%	65.9%
M42 south of Junction 6	NB	5676	267	5785	376	1.9%	40.7%	78.8%	80.3%
	SB	5950	280	6058	389	1.8%	38.8%	82.6%	84.1%
M42 north of Junction 6	NB	5906	278	5991	363	1.4%	30.5%	82.0%	83.2%
	SB	5290	249	5377	336	1.6%	34.8%	73.5%	74.7%
M42 J6 Northbound off slip	NB	1494	70	1540	116	3.1%	65.4%	83.0%	85.5%
M42 J6 Southbound on slip	SB	1976	93	2022	139	2.3%	49.2%	109.8%	112.3%

Table 8-95: Strategic road network 18-hr daily traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	**2021 baseline (veh)**		**2021 baseline with AP4 revised scheme construction traffic**		**Percentage impact**	
	veh	**HGV**	**Veh**	**HGV**	**veh**	**HGV**
M42 J6 Northbound off slip	23931	1259	24742	1713	3.4%	36.0%
M42 J6 Southbound on slip	22524	1185	23332	1639	3.6%	38.3%
A45 between M42 Junction 6 and Stonebridge Roundabout	80269	3987	82289	4977	2.5%	24.8%
M42 south of Junction 6	145615	7663	147827	9143	1.5%	19.3%
M42 north of Junction 6	138513	7290	139620	8216	0.8%	12.7%

Table 8-96: Local road network AM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A45 westbound service road between East Way and M42 Junction 6	WB	196	5	207	16	5.4%	210.0%	17.0%	17.9%

Table 8-97: Local road network PM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	Dir	PM Peak (17:00-18:00)							
		2021 baseline (veh)		2021 baseline with AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
A45 westbound service road between East Way and M42 Junction 6	WB	91	2	102	12	11.5%	475.0%	7.9%	8.8%

Table 8-98: Local network 18-hr daily traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles) – partial replacement

Location	**2021 baseline (veh)**		**2021 baseline with AP4 revised scheme Construction Traffic**		**Percentage impact**	
	veh	**HGV**	**veh**	**HGV**	**veh**	**HGV**
A45 westbound service road between Stonebridge Roundabout and East Way	2709	52	2880	87	6.3%	67.4%
A45 westbound service road between East Way and M42 Junction 6	1930	37	2101	139	8.9%	275.2%

Parking

4.2.16 Paragraph 4.2.15 of the SES and AP2 TA, referring to the temporary loss of parking at the National Motorcycle Museum, is deleted as the amended scheme provides temporary parking during construction to mitigate the loss. It should be noted that the loss of permanent parking reported in the main TA was mitigated in the SES and AP2 TA.

4.2.17 Table 8.102 of the main TA is changed to remove references to the temporary loss of car parking spaces at National Motorcycle Museum.

Operations description

4.2.18 The SES3 and AP4 revised scheme includes the relocation of the Bickenhill Civic Amenity Site to a site approximately 200m east of the existing facility. The proposed facility will be approximately 30-40% larger than the existing facility to meet modern standards, but this is not expected to change the levels of use. The facility will include a 'zig-zag' queuing lane to minimise the risk of queuing on the A45 Service Road. A new balancing pond will be provided.

Assessment of operation impacts

Strategic and local road network traffic flows

4.2.19 The relocated Bickenhill Civic Amenity Site will be accessed and egressed from the westbound A45 Service Road. The proposed access arrangements will be similar to those provided at the existing facility and therefore there will be no change to the traffic flows on the strategic or local network.

Accidents and safety

4.2.20 The relocated Bickenhill Civic Amenity Site will incorporate a 'zig-zag' queuing lane, to reduce the risk of queuing on the A45 Service Road once operational.

4.3 Castle Bromwich and Bromford (CFA25)

Castle Bromwich and Bromford (CFA25) SES3 and AP4 revised scheme changes

4.3.1 The original scheme is described in paragraphs 8.5.1 - 8.5.22 of the main TA. The SES and AP2 revised scheme changes are reported in paragraphs 4.3.1 to 4.3.11 of the SES and AP2 TA.

4.3.2 The principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- AP4-025-002 - additional land required for the relocation of a bottom ash plant to Tyseley. A new bottom ash plant will be provided at Tyseley to replace the existing plant at Castle Bromwich Business Park. The new bottom ash plant will be located on the site of the Atlas Works, off Redfern Road, Tyseley.

4.3.3 The above change does not give rise to any substantial changes to the assessment in the main TA and SES and AP2 TA. The relocation of the bottom ash plant (AP4-025-002) to a new site introduces new assessment material which is reported below.

AP4-025-002 - additional land required for the relocation of a bottom ash plant to Tyseley

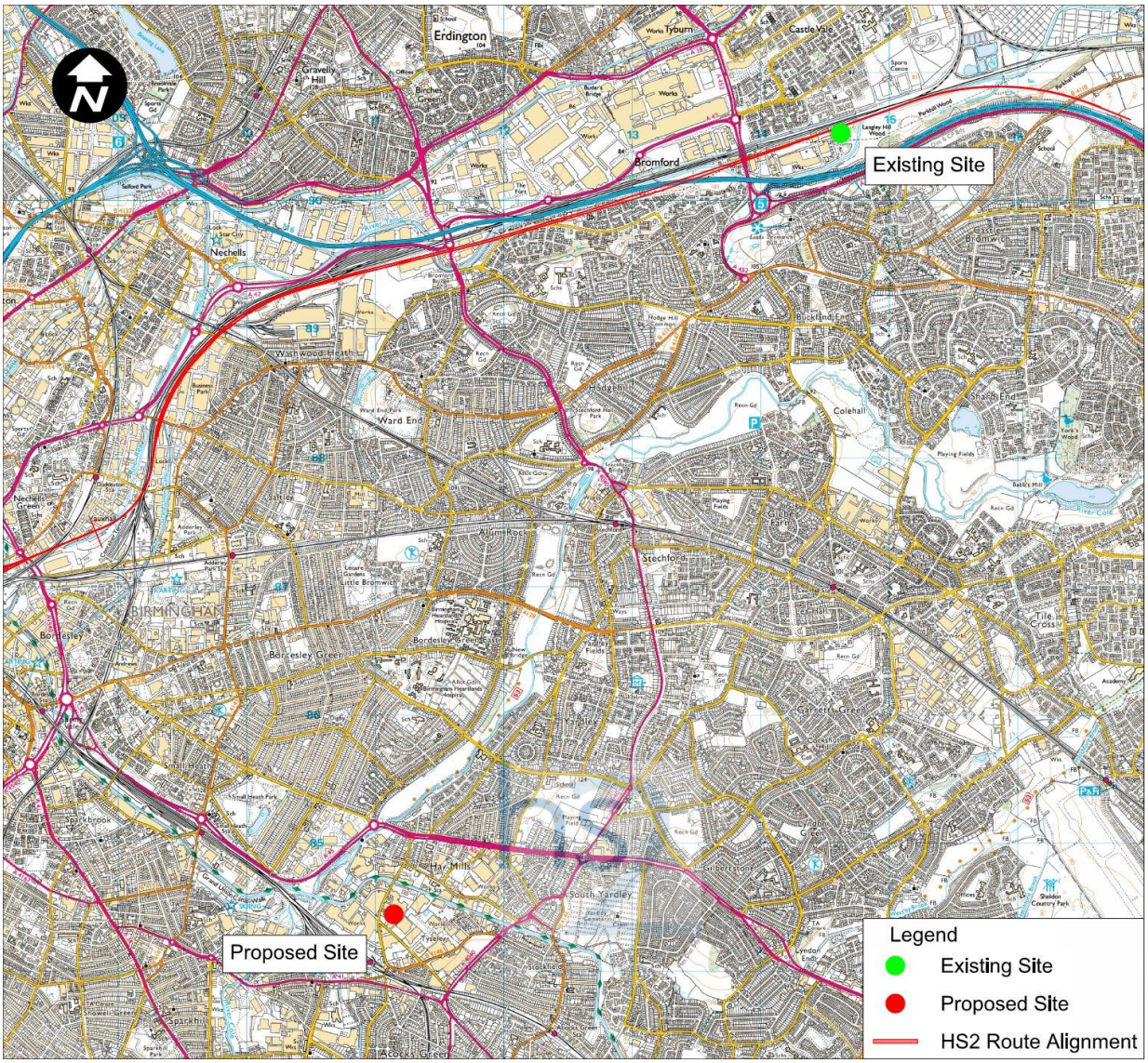
Reason for the revision to the scheme

4.3.4 The Bill provides for the construction of the route through the Castle Bromwich Business Park. Nine buildings within the business park would be demolished to accommodate the construction of the original scheme, including the existing Veolia bottom ash processing plant.

4.3.5 Since submission of the Bill, HS2 Ltd has identified a suitable site for the relocation of the existing bottom ash plant. The replacement site is located on the site of the former Atlas Works, off Redfern Road, Tyseley.

4.3.6 The relocation site is shown on Figure 8-17.1 in relation to the existing site and the SES3 and AP4 revised scheme.

Figure 8.17.1: Existing and proposed sites



Description of AP4 revised scheme

4.3.7 The relocation of the bottom ash plant to the new site will require a main plant building, weighbridge, offices including welfare facilities and car parking.

Assessment methodology

4.3.8 The assessment methodology is described in Section 8.2 of the main TA.

4.3.9 The study area includes the local transport network comprising of Redfern Road and Kings Road to the A45 Coventry Road, the main strategic route through the area.

4.3.10 The impacts on transport have been assessed quantitatively, based on baseline traffic conditions and future projection scenarios. Construction traffic has been assessed on the assumption that all materials to/from the site will be removed by road.

4.3.11 The baseline forecast traffic flows for the future years of assessment have been derived taking account of all locally committed developments and using overall growth forecasts from the Department for Transport's traffic forecasting tool, Trip End Model Presentation Program (TEMPRO).

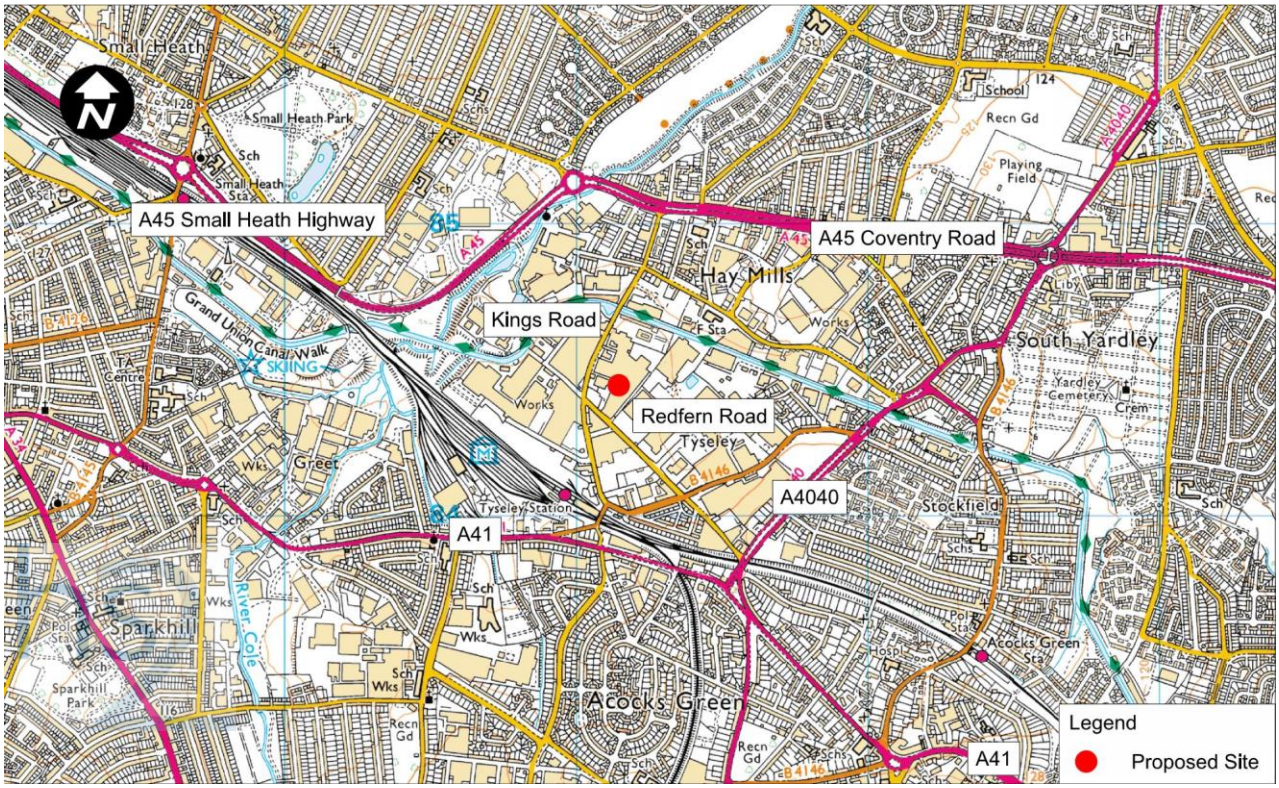
Existing baseline

4.3.12 This section provides an overview of the baseline traffic and transport conditions in the vicinity of the site for the relocation of the bottom ash plant.

Strategic and local road network

4.3.13 The road network is shown on Figure 8-17.2.

Figure 8.17.2: Road network in the vicinity of the proposed site



4.3.14 Redfern Road runs to the south of the site and will provide the access to the site. Redfern Road is a 7.3m wide (approximately) local distributor road which connects to Kings Road in the west and east and B4146 Wharfdale Road in the east. Kings Road in turn connects to the A45 Coventry Road approximately 700m to the north of the site.

4.3.15 In the vicinity of the site access, parking is restricted on Redfern Road between the hours of 7.30am to 6.30pm Monday to Friday. There are traffic calming measures on Redfern Road. There are wide footways on both sides of Redfern Road.

4.3.16 Transport surveys were undertaken in 2015 to obtain baseline data for the impact assessment. The traffic surveys comprised of ATC and manual classified counts (MCC) on roads in the vicinity of the proposed site as well as at Tameside Drive, Castle Bromwich Business Park (to enable use of the existing site). ATC data was gathered for a continuous two week period. MCC data was gathered for a weekday, Saturday and Sunday.

4.3.17 Figures 8-17.3 – 8-17.5 show the average weekday, Saturday and Sunday HGV traffic flows for the existing bottom ash plant derived from the ATC surveys.

Figure 8-17.3: Average weekday HGV traffic flows for existing bottom ash plant

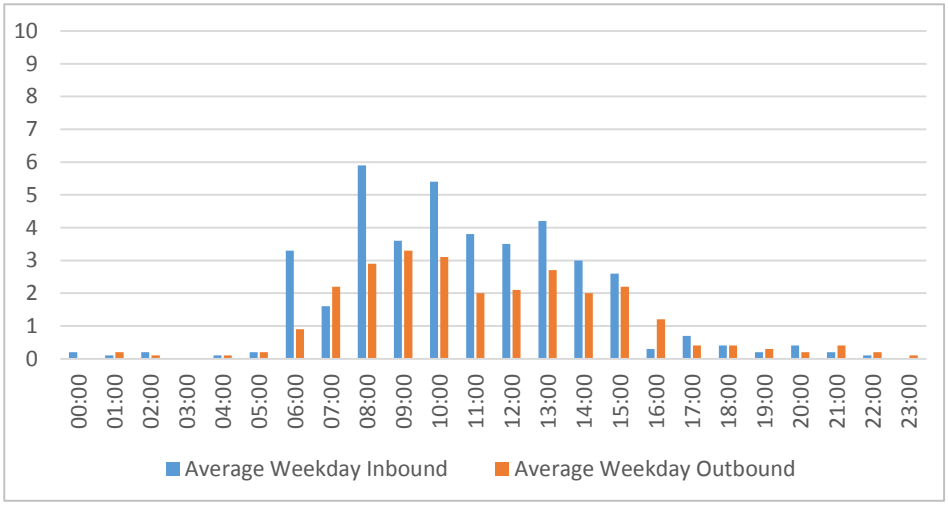


Figure 8-17.4: Average Saturday HGV traffic flows for existing bottom ash plant

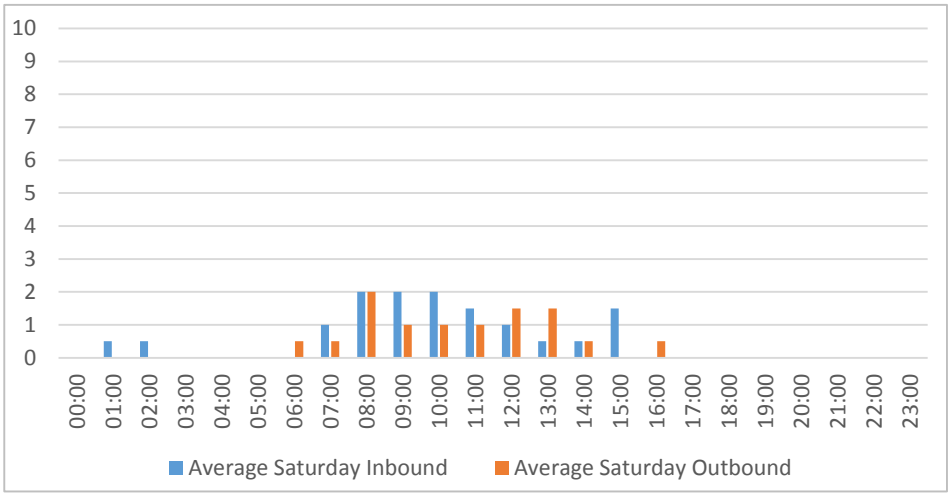
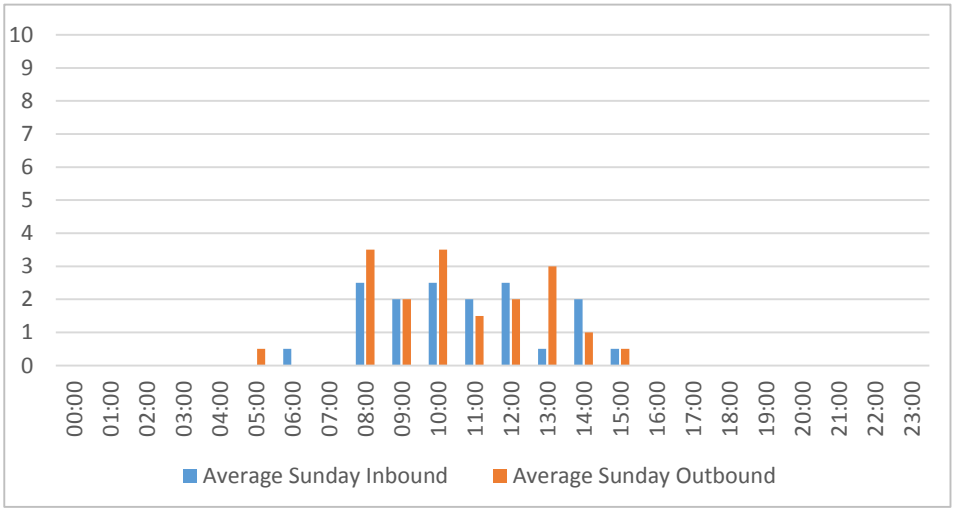


Figure 8-17-5: Average Sunday HGV traffic flows for existing bottom ash plant



4.3.18 The data showed that on a typical weekday, there are approximately 70-75 two-way HGV trips. The demand throughout the day is relatively constant at between 6-10 two-way HGV trips per hour between the hours of 08:00 and 16:00.

4.3.19 On a typical Saturday, there are approximately 22 two-way HGV trips with no more than four two-way HGV trips per hour. On a typical Sunday, there are approximately 50 two-way HGV trips with no more than six two-way HGV trips per hour.

4.3.20 The demand throughout the day is relatively constant at between 6-10 two-way HGV trips per hour between the hours of 08:00 and 16:00.

4.3.21 The traffic survey data collected at the relocation site has also been analysed. Baseline traffic flows on the network of relevance to the site are shown in Table 8-320.1 and Table 8-320.2 for the AM and PM network peak hours respectively.

Table 8-320.1: Road network baseline flows (vehicles) - AM (08:00-09:00) peak

Location	**Direction**	**Baseline flow AM (08:00-09:00) peak**		
		2015		
		All Veh	**HGV**	**V/C**
Kings Road (between A45 and Speedwell Road)	NB	866	9	53%
	SB	688	7	42%
Kings Road (between Speedwell Road and Redfern Road)	NB	570	6	37%
	SB	541	6	35%
Redfern Road (between Kings Road and proposed access)	EB	128	3	10%
	WB	93	2	7%

Table 8-320.2: Road network baseline flows (vehicles) - PM (17:00-18:00) peak

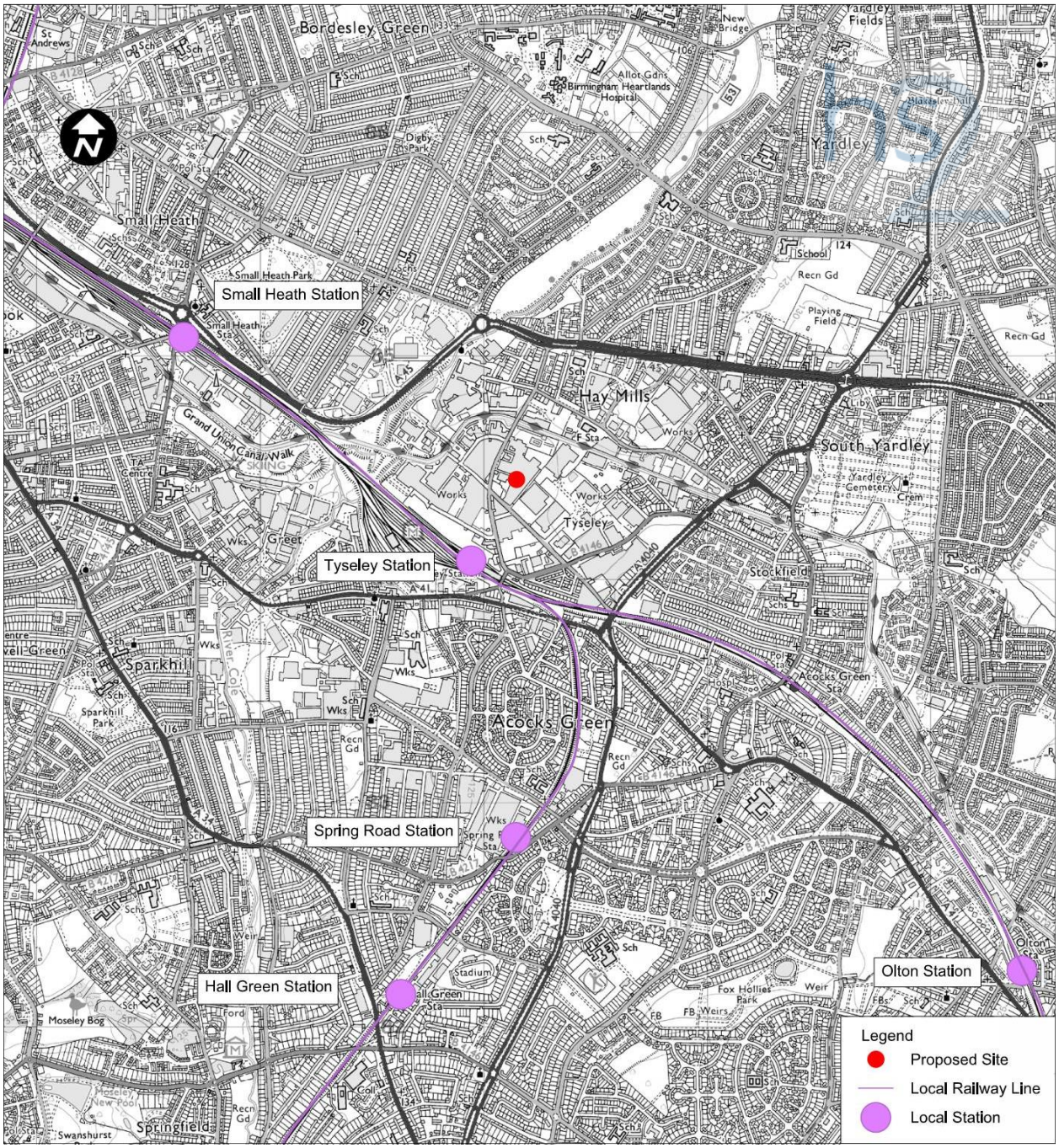
Location	**Direction**	**Baseline flow PM (17:00-18:00) peak**		
		2015		
		All Veh	**HGV**	**V/c**
Kings Road (between A45 and Speedwell Road)	NB	829	6	51%
	SB	643	4	40%
Kings Road (between Speedwell Road and Redfern Road)	NB	591	4	39%
	SB	425	3	28%
Redfern Road (between Kings Road and proposed access)	EB	286	1	22%
	WB	106	0	8%

4.3.22 The data shows that the local network in the vicinity of the proposed site operates within capacity with all V/C ratios less than 85%.

Rail

4.3.23 The rail network is shown on Figure 8-17.6.

Figure 8-17.6: Rail network in the vicinity of the proposed site



4.3.24 The nearest rail station is at Tyseley located some 400m to the south of the site and providing access to regular rail services into Birmingham City Centre.

Local bus and coach

4.3.25 The local bus network is shown on Figure 8-17.7.

Figure 8-17.7: Bus network in the vicinity of the proposed site

4.3.26 The nearest bus stops are located on Kings Road some 200m from the site.

Pedestrian, cyclist and equestrian

4.3.27 There are no PRoW that are impacted upon by the proposals.

Future baseline

4.3.28 The key transport changes in the area are expected to relate to general background growth in traffic flows between 2015 and 2041, irrespective of the revised scheme.

4.3.29 With regard to future flows, there are a number of small committed developments in and around the surrounding urban area. However, as none of these have direct access on the routes into the proposed site, it is considered that these are adequately included in the TEMPRO growth rates applied to the baseline flows for the future years.

4.3.30 Construction activities have been assessed against 2021 baseline traffic flows, irrespective of when they occur in the construction period. TEMPRO indicates peak hour traffic growth of around 10% between years 2015 and 2021.

4.3.31 The assessment of operation of the plant has been assessed against 2026 and 2041 flows. Future baseline traffic volumes in the peak hours at the relocation site are forecast to grow by around 19% by 2026 compared to 2015. Future baseline traffic volumes in the peak hours at the relocation site are forecast to grow by around 48% by 2041 compared to 2015.

4.3.32 There are no substantial committed changes to the transport network in the area.

4.3.33 Table 8-320.3 and Table 8-320.4 summarise the 2021, 2026 and 2041 AM (08:00-09:00) and PM (17:00-18:00) peak baseline traffic flows, compared to 2015 and provide a summary of the V/C ratios for each location.

4.3.34 The tables show that the level of flows forecast is expected to be well within the capacity of the local roads even in the future years.

Table 8-320.3: Road network future baseline flows (vehicles) - AM (08:00-09:00) peak

Location	Direction	Baseline flow AM (08:00-09:00) peak											
		2015			2021			2026			2041		
		All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C
Kings Road (between A45 and Speedwell Road)	NB	866	9	53%	957	10	59%	1032	11	64%	1293	14	80%
	SB	688	7	42%	760	8	47%	820	9	51%	1027	11	63%
Kings Road (between Speedwell Road and Redfern Road)	NB	570	6	37%	629	7	41%	679	7	44%	851	9	56%
	SB	541	6	35%	597	6	39%	644	7	42%	807	9	53%
Redfern Road (between Kings Road and proposed access)	EB	128	3	10%	141	3	11%	152	3	12%	191	4	15%
	WB	93	2	7%	102	2	8%	110	2	8%	138	3	11%

Table 8-320.4: Road network future baseline flows (vehicles) - PM (17:00-18:00) peak

Location	Direction	Baseline flow PM (17:00-18:00) peak											
		2015			2021			2026			2041		
		All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C	All Veh	HGV	V/C
Kings Road (between A45 and Speedwell Road)	NB	829	6	51%	913	6	56%	982	7	61%	1224	8	76%
	SB	643	4	40%	708	5	44%	762	5	47%	949	6	59%
Kings Road (between Speedwell Road and Redfern Road)	NB	591	4	39%	650	4	43%	700	5	46%	872	6	57%
	SB	425	3	28%	468	3	31%	503	3	33%	627	4	41%
Redfern Road (between Kings Road and proposed access)	EB	286	1	22%	315	1	24%	339	2	26%	422	2	32%
	WB	106	0	8%	116	1	9%	125	1	10%	156	1	12%

Construction description

Compound and construction sites

4.3.35 The new bottom ash plant will be delivered from a new satellite compound (Bottom Ash satellite compound) at the relocation site, and managed from the Bromford tunnel east portal (east) main compound. The new compound will be operational for one year starting in 2017 with the works taking approximately one year to complete. The compound will support up to 12 workers each day and be accessed via the local road network. Table 8-320.5 summarises the anticipated average and peak workforce to be required at the construction compound.

Table 8-320.5: Assumed workforce at construction site

Compound Type	Location	Assumed daily workforce per site for duration with busy vehicle movements	
		Average	Peak
Satellite	Bottom Ash satellite compound	8	12

4.3.36 Employee car trips will be outside weekday peak hours (08:00-09:00 and 17:00-18:00).

4.3.37 During the peak construction period there will be no more than ten HGV two-way trips per day and 21 car/LGV two-way trips per day to and from the proposed site. The duration of peak HGV movements is estimated to be six month. Table 8-320.6 shows the typical vehicle trip generation for construction compound.

Table 8-320.6: Typical vehicle trip generation for construction compound

Compound Type	Location	Access to/from compound	Indicative start/set up date	Estimated duration of use (Years)	Estimated duration with busy vehicle movements (Months)	Average daily combined two-way vehicle trips during busy period and within peak month of activity	
						Car/LGV	HGV
Satellite	Bottom Ash satellite compound	Redfern Lane	2017	1 year	6	14-21	<10-10

Construction lorry routes

4.3.38 Construction access to the site will be off Redfern Lane with the construction access route via Kings Road to the A45 Coventry Road.

Avoidance and mitigation measures

4.3.39 Avoidance and mitigation measures in the area have been set out in section 8.5 of the main TA and will apply to the alterations works to the relocation site.

Assessment of construction impacts

4.3.40 With regard to traffic and transport, the main issues are changes in traffic during construction, particularly in relation to increased traffic as a result of construction vehicles.

Strategic and local road traffic flows

4.3.41 Table 8-320.7 and 8-320.8 show that the impact of HS2 construction traffic on overall traffic volumes in the peak periods is low in both percentage terms and absolute terms.

4.3.42 The tables show that the peak construction works associated with the relocation of the bottom ash plant will have minimal impact on the network around the proposed site. There is a large percentage increase in HGV movements on some of the roads, but this is due to the low level of background HGV movements. In absolute terms, the construction works are not expected to add more than one HGV in each direction during the peak hours and this is not considered substantial.

Table 8-320.7: Road network AM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	957	10	957	11	0.1%	4.9%	59%	59%
	SB	760	8	760	9	0.1%	6.1%	47%	47%
Kings Road (between Speedwell Road and Redfern Road)	NB	629	7	630	7	0.1%	7.4%	41%	41%
	SB	597	6	598	7	0.1%	7.8%	39%	39%
Redfern Road (between Kings Road and proposed access)	EB	141	3	141	4	0.4%	15.9%	11%	11%
	WB	102	2	103	3	0.5%	22.0%	8%	8%

Table 8-320.8: Road network PM peak hour traffic flows 2021 future baseline and with SES3 and AP4 revised scheme construction traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2021 baseline (veh)		2021 baseline with the AP4 revised scheme construction traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	913	6	913	7	0.1%	08.2%	56%	56%
	SB	708	5	708	5	0.1%	10.5%	44%	44%
Kings Road (between Speedwell Road and Redfern Road)	NB	650	4	651	5	0.1%	11.5%	43%	43%
	SB	468	3	468	4	0.1%	16.0%	31%	31%
Redfern Road (between Kings Road and proposed access)	EB	315	1	315	2	0.2%	34.6%	24%	24%
	WB	116	1	117	1	0.4%	93.5%	9%	9%

Rail

4.3.43 The proposed construction works will have no impact on rail in the area.

Local bus and coach

4.3.44 Apart from a small increase in general congestion, the impact of construction is expected to have little impact on bus routes with no proposed diversions of scheduled services. The impact is not considered to be substantial.

Pedestrians, cyclists and equestrians

4.3.45 The proposed construction works are not expected to have any substantial impact on pedestrians, cyclists and equestrians in the area.

Operation description

4.3.46 It has been assumed that the proposed site will operate substantially in the same manner as the existing site. The existing baseline data identified the associated travel demand which is assumed to relocate to the proposed site. There are minimal private car trips due to the nature of the business and the low level of employment.

Assessment of operation impacts

4.3.47 This section considers the operational impacts of the relocated bottom ash plant on the surrounding road network.

Strategic and local road traffic flows

4.3.48 Material supplied to the existing bottom ash plant is derived from the energy recovery facility located a short distance away from the proposed site off the A45 Small Heath Highway. It is likely that these trips use the A45 Coventry Road between the energy recovery facility and the existing bottom ash plant.

4.3.49 The forecast 2026 AM and PM peak hour traffic increases on the surrounding road network are shown in Tables 8-320.9 and 8-320.10, respectively.

4.3.50 The forecast 2041 AM and PM peak hour traffic increases on the surrounding road network are shown in Tables 8-320.11 and 8-320.12, respectively.

Table 8-320.9: Road network AM peak hour (08:00-09:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	1032	11	1035	14	0.3%	27.1%	64%	64%
	SB	820	9	831	17	1.4%	91.1%	51%	51%
Kings Road (between Speedwell Road and Redfern Road)	NB	679	7	682	10	0.4%	41.2%	44%	45%
	SB	644	7	655	15	1.8%	115.9%	42%	43%
Redfern Road (between Kings Road and proposed access)	EB	152	3	163	11	7.5%	236.5%	12%	13%
	WB	110	2	113	5	2.7%	122.2%	8%	9%

Table 8-320.10: Road network PM peak hour (17:00-18:00) traffic flows 2026 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	982	7	986	7	0.3%	0.0%	61%	61%
	SB	762	5	762	5	0.0%	0.0%	47%	47%

Location	Direction	PM Peak (17:00-18:00)							
		2026 baseline (veh)		2026 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between Speedwell Road and Redfern Road)	NB	700	5	703	5	0.5%	0.0%	46%	46%
	SB	503	3	503	3	0.0%	0.0%	33%	33%
Redfern Road (between Kings Road and proposed access)	EB	339	2	339	2	0.0%	0.0%	26%	26%
	WB	125	1	130	1	4.0%	0.0%	10%	10%

Table 8-320.11: Road network AM peak hour (08:00-09:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	AM Peak (08:00-09:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	1293	14	1296	17	0.2%	21.6%	80%	80%
	SB	1027	11	1039	19	1.1%	72.7%	63%	64%
Kings Road (between Speedwell Road and Redfern Road)	NB	851	9	854	12	0.4%	32.9%	56%	56%
	SB	807	9	819	17	1.4%	92.5%	53%	53%

Location	Direction	AM Peak (08:00-09:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Redfern Road (between Kings Road and proposed access)	EB	191	4	202	12	5.9%	188.7%	15%	16%
	WB	138	3	141	6	2.2%	97.5%	11%	11%

Table 8-320.12: Road network PM peak hour (17:00-18:00) traffic flows 2041 future baseline and with the SES3 and AP4 revised scheme traffic (vehicles)

Location	Direction	PM Peak (17:00-18:00)							
		2041 baseline (veh)		2041 baseline with the AP4 revised scheme traffic		Percentage impact		V/C Ratio	
		veh	HGV	veh	HGV	veh	HGV	Baseline	with AP4 revised scheme
Kings Road (between A45 and Speedwell Road)	NB	1224	8	1227	8	0.3%	0.0%	76%	76%
	SB	949	6	949	6	0.0%	0.0%	59%	59%
Kings Road (between Speedwell Road and Redfern Road)	NB	872	6	875	6	0.4%	0.0%	57%	57%
	SB	627	4	627	4	0.0%	0.0%	41%	41%
Redfern Road (between Kings Road and proposed access)	EB	422	2	422	2	0.0%	0.0%	32%	32%
	WB	156	1	161	1	3.2%	0.0%	12%	12%

4.3.51 When compared to the peak background traffic flows, the operational flows represent an increase of between 3% to 8% in 2026 and 1% and 6% in 2041 on the roads shown and the associated V/C ratios do not exceed 85% or change substantially. There is an increase in the percentage and relative number of HGV movements however, as this is largely a commercial area, these increases are not considered substantial.

4.3.52 The forecast increases will not substantially increase congestion and delay on the junctions to the proposed site.

Rail

4.3.53 The proposed relocation will have no impact on rail in the area.

Local bus and coach

4.3.54 Apart from a small increase in general congestion, the proposed relocation is expected to have little impact on bus routes. The impact is not considered to be substantial.

Pedestrians, cyclists and equestrians

4.3.55 There are no operational impacts on pedestrians, cyclists and equestrians as footpaths will not be permanently affected.

4.4 Washwood Heath to Curzon Street Station (CFA26)

Washwood Heath to Curzon Street Station (CFA26) SES3 and AP4 revised scheme changes

4.4.1 The original scheme is described in paragraphs 8.3.1 - 8.3.11 of the main TA. The SES and AP2 revised scheme changes are reported in paragraphs 4.4.1 to 4.4.21 of the SES and AP2 TA.

4.4.2 The SES3 and AP4 revised scheme changes do not give rise to any substantially different traffic and transport impacts in this area.

5 Route-wide and off-route assessment

5.1 Introduction

5.1.1 In the SES and AP2 TA an additional new section was added to the route-wide and off-route assessment chapter. This section considered the impact of relocating the Heathrow Express (Hex) depot to Langley.

5.1.2 Since the submission of the SES and AP2 TA, further assessment has been carried out on the Langley depot, the finding of which have been reported in this section.

5.2 Langley

Langley SES3 and AP4 revised scheme changes

5.2.1 The original scheme is described in section 5.4 of the SES and AP2 TA.

5.2.2 The SES3 and AP4 revised scheme changes in traffic and transport terms in is:

- SES3-000-001 revisions to the Heathrow Express depot, Langley, construction traffic assumptions.
- AP4-000-001 additional land for ecological mitigation at Langley.

5.2.3 In summary, the revised construction directional traffic distribution will be 70% via the west access northwards (to the A40/M40), 15% via the eastern access northwards and 15% via the eastern access southwards (to the A4/M4).

5.2.4 Compared to the AP2 revised scheme, this reduces construction traffic northbound from the eastern access by almost 80% and southbound from the eastern access by 25%. Construction traffic on the western route will increase to 18 HGV trips per direction per hour in the peak construction traffic period.

5.2.5 The above changes lead to a number of revisions to the SES and AP2 TA.

Construction description

Compound and construction sites

5.2.6 Paragraph 5.4.39 in the SES and AP2 TA is replaced by:

"The compounds used for the Langley site construction and the relevant accesses are:

- Station Approach satellite compound via Langley Park Road, Thorney Lane North and South.
- HEx depot main compound via Langley Park Road.
- Hollow Hill Lane main and satellite compound via Langley Park Road.
- HEx depot east connection satellite compound via Langley Park Road.

5.2.7 In addition, Thorney Road North and South will be used to support these principal access routes"

5.2.8 Paragraph 5.4.40 is retained:

"During the peak construction period approximately 500 HGV two-way trips per day (52 per hour) and 215 LGV two-way trips per day (22 per hour) are expected to travel to and from the proposed site."

Construction lorry routes

5.2.9 Paragraph 5.4.43 in the SES and AP2 TA is replaced by:

"Construction traffic is expected to travel to/from the proposed depot site primarily using the west access and Station Road and with a more limited volume via Thorney Lane access to the east. The proposed construction lorry routes are:

- Eastern Access: to/from north of site via – M40/A40 (Junction 1 – Denham Roundabout) – A412, Denham Road – Bangors Road (N & S) – High St – Thorney Lane (N) – Thorney Lane Business Park;
- Eastern Access: to/from south of site via M4 (Junction 5 Langley Roundabout) – London Road –Sutton Lane – North Park – Richings Way –Thorney Lane (S) – Thorney Lane Business Park; and
- Western Access: to/from north of site via – M40/A40 (Junction 1 – Denham Roundabout) –A412 – Wood Lane – Langley Park Road – Station Road – Station Approach."

5.2.10 Paragraph 5.4.44 in SES and AP2 TA is replaced by :

"For construction, the expected directional traffic split for the overall traffic will be 70% via the west access northwards, 15% via the east access northwards, and 15% via the east access southwards to the A4. Access to the motorway and trunk road network is via the A40/M40, to the north, and the A4/M4 to the south."

Assessment of construction impacts

Strategic and local road traffic flows

5.2.11 Paragraph 5.4.52 of the SES and AP2 TA is replaced by:

"Table 9-15 and 9-16 shows that the impact of HS2 construction traffic on overall traffic volumes in the peak periods is low in both percentage terms (1 to 8%) and absolute terms with a maximum increase of 27 vehicles/hour per direction on Denham Road."

5.2.12 Paragraph 5.4.53 is replaced by:

"The increases in HGV movements are higher than general traffic increases in percentage terms. The main changes are:

- A412, Denham Road (an increase of 76% in HGVs during AM peak and 105% during the PM peak);
- Langley Park Road (an increase of 144% in HGVs during AM peak and 189% during PM peak)
- Wood Lane (an increase of 116% in HGVs during AM peak and 144% during PM peak)
- Bangors Road (an increase of 47% in HGVs during AM peak and 50% during PM peak); and
- Thorney Lane (an increase of 31% in HGVs during the AM and PM peak traffic hours)."

5.2.13 Tables 9-15 and 9-16 in the SES and AP2 TA have been replaced.

5.2.14 Paragraph 5.4.54 is replaced by:

"The increases in construction traffic on the A412 Denham Road, Wood Lane, Langley Park Road, Bangors Road and Thorney Lane are likely to result in some limited additional delay and congestion at the following locations:

- A412 Denham Road/Bangors Road North;
- Bangors Road/A4007 Slough Road;
- Bangors Road South/Iver High Street;
- Iver High Street/Thorney Lane North;
- Wood Lane/Uxbridge Road/ A412 Church Road; and
- Langley Park Road/ Wood Lane."

Table 9 15: Langley Depot strategic and local road network construction traffic flow – AM peak

Location	Actual Location (Flow Direction)	Survey Data 2014-15		Forecast baseline 2021		2021 construction of depot		Change from 2021 future baseline AM			
		All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All veh %	HGVs %
Parlaunt Road	Tamar Way towards Heron Drive (Eastbound)	588	19	588	19	589	19	2	0	0%	0%
	Heron Drive towards Tamar Way (Westbound)	385	13	385	13	386	13	1	0	0%	0%
Station Road	Langley Road (S) to Scholar Road (N) (Southbound)	458	3	458	3	458	3	0	0	0%	0%
	Scholar Road (N) to Langley Road (S) (Northbound)	535	9	535	9	535	9	1	0	0%	0%
Langley Park Road	Canal Wharf (S) to Trenches Lane (N) (Northbound)	394	9	394	9	414	27	21	18	5%	200%
	Trenches Lane (N) to Canal Wharf (S) (Southbound)	464	16	464	16	485	34	21	18	5%	113%
Mansion Lane	Mansion Lane towards Hollow Hill Lane (Northbound)	361	5.33	361	5.33	361	5.33	1	0	0%	0%
	Hollow Hill Lane towards Mansion Lane (Southbound)	343	6	343	6	343	6	1	0	0%	0%
Denham Road	Seven Hill Road towards Denhams Road (North-east bound)	894	28	894	28	921	50	27	22	3%	79%
	Denhams Road to Seven Hill Roads (South west Bound)	1121	30	1121	30	1148	52	27	22	2%	73%
Wood Lane	Langley Park Road to Bellswood Lane (north Bound)	685	12	685	12	706	30	21	18	3%	150%
	Bellswood Lane to Langley Park Road (Southbound)	755	19	755	19	776	37	22	18	3%	95%

Location	Actual Location (Flow Direction)	Survey Data 2014-15		Forecast baseline 2021		2021 construction of depot		Change from 2021 future baseline AM			
		All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All veh %	HGVs %
Bangors Road South	Coppers Ln (S) to Love Green Lane (S) (northbound)	277	6	277	6	282	10	5	4	2%	67%
	Love Green Lane to Copper Ln (Southbound)	416	11	416	11	421	15	6	4	1%	36%
Thorney Lane North	Ridgeway towards Marina Way (Northbound)	420	13	420	13	425	17	6	4	1%	31%
	Marina Way towards Ridge Way (Southbound)	441	17	441	17	447	21	6	4	1%	24%
North Park	Sutton Lane to Richings Place (Eastbound)	430	19.2	430	19.2	436	23.2	6	4	1%	21%
	Richings Place to Sutton Lane (Westbound)	360	21	360	21	366	25	7	4	2%	19%
Sutton Lane	Hurricane Way to Grasholm Way (Northbound)	696	10	696	10	701	14	5	4	1%	40%
	Grasholm Way to Hurricane Way (Southbound)	841	13	841	13	846.7	17	6	4	1%	31%

Table 9-16: Langley Depot strategic and local road network construction traffic flow – PM peak

Location	Actual Location (Flow Direction)	Survey Data 2014-15		Forecast baseline 2021		2021 construction of depot		Change from 2021 future baseline PM			
		All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All veh %	HGVs %
Parlaunt Road	Tamar Way towards Heron Drive (Eastbound)	467	11	467	11	468	11	1	0	0%	0%
	Heron Drive towards Tamar Way (Westbound)	511	9	511	9	512	9	1	0	0%	0%

Location	Actual Location (Flow Direction)	Survey Data 2014-15		Forecast baseline 2021		2021 construction of depot		Change from 2021 future baseline PM			
		All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All veh %	HGVs %
Station Road	Langley Road (S) to Scholar Road (N) (Southbound)	425	3	425	3	425	3	0	0	0%	0%
	Scholar Road (N) to Langley Road (S) (Northbound)	577	6	577	6	578	6	1	0	0%	0%
Langley Park Road	Canal Wharf (S) to Trenches Lane (N) (Northbound)	474	8	474	8	495	26	21	18	4%	225%
	Trenches Lane (N) to Canal Wharf (S) (Southbound)	402	11	402	11	423	29	21	18	5%	164%
Mansion Lane	Mansion Lane towards Hollow Hill Lane (Northbound)	321	4	321	4	321	4	0	0	0%	0%
	Hollow Hill Lane towards Mansion Lane (Southbound)	364	6	364	6	365	6	1	0	0%	0%
Denham Road	Seven Hill Road towards Denhams Road (North-east bound)	1378	22	1378	22	1404	44	26	22	2%	100%
	Denhams Road to Seven Hill Roads (South west Bound)	1096	20	1096	20	1122	42	26	22	2%	110%
Wood Lane	Langley Park Road to Bellswood Lane (north Bound)	741	13	741	13	762	31	21	18	3%	138%
	Bellswood Lane to Langley Park Road (Southbound)	661	12	661	12	682	30	21	18	3%	150%
Bangors Road South	Coppers Ln (S) to Love Green Lane (S) (northbound)	412	8	412	8	417	12	5	4	1%	50%
	Love Green Lane to Copper Ln (Southbound)	311	8	311	8	316	12	5	4	2%	50%

Location	Actual Location (Flow Direction)	Survey Data 2014-15		Forecast baseline 2021		2021 construction of depot		Change from 2021 future baseline PM			
		All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs	All veh %	HGVs %
Thorney Lane North	Ridgeway towards Marina Way (Northbound)	493	13	493	13	499	17	6	4	1%	31%
	Marina Way towards Ridge Way (Southbound)	386	13	386	13	392	17	6	4	1%	31%
North Park	Sutton Lane to Richings Place (Eastbound)	369	18	369	18	375	22	6	4	2%	22%
	Richings Place to Sutton Lane (Westbound)	464	14	464	14	470	18	6	4	1%	29%
Sutton Lane	Hurricane Way to Grasholm Way (Northbound)	839	9	839	9	844	13	5	4	1%	44%
	Grasholm Way to Hurricane Way (Southbound)	591	10	591	10	596	14	5	4	1%	40%

5.2.15 The following paragraph is added after paragraph 5.4.55:

"Parking

5.2.16 Due to revised construction traffic flows, some uncontrolled parking spaces will be displaced on the approach to the western access to the site via Station Park Road."

Pedestrians, cyclists and equestrians

5.2.17 The following sentence is added to paragraph 5.4.57:

"During the works to create the ecological mitigation area (AP4-000-001), it may be necessary to temporarily divert or close Footpath WEX/13/2. The intention is to have only short-term closures with local diversions. However, if a full closure is necessary then users would have to use other existing footpaths during the closure. On a precautionary basis, the assessment assumes a closure of over four weeks. The alternative routes available would increase travel distance for users by up to 400m."

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