

**The Network Rail
(East West Rail Bicester to Bedford Improvements) Order**

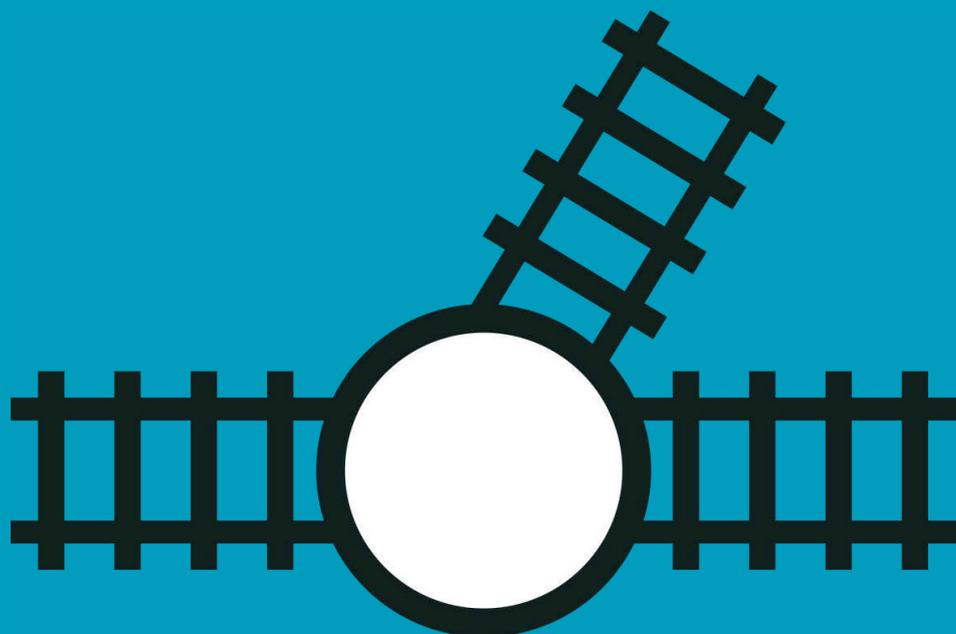
Transport and Works Act 1992

The Transport and Works
(Inquiries Procedure) Rules 2004

Proof of Evidence of Tim Colles

Traffic

NR55



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Contents

Section	Page
1	Introduction 3
2	Evidence 4
2.2	Impact on roads 4
2.3	Construction phase highway safety 10
2.4	The impact on public rights of way 12
2.5	HS2 construction impact 14
2.6	Adverse impact after mitigation 14
3	Responses to specific objectors 17
4	Conclusions 25
5	Declarations 26

Tables

Table 2.1: Link assessment (total construction traffic) summary table	4
Table 2.2: Link assessment (HGV construction traffic) summary table	5
Table 2.3: Construction phase capacity summary	7
Table 2.4: Operational phase capacity summary	9
Table 2.5: Summary of collision locations and proposed mitigation in study area	11
Table 2.6: Summary of proposed mitigation at additional locations	11
Table 2.7: Prow significance of effect summary table	12
Table 2.8: Residual Effects Summary for roads	15
Table 2.9: Residual effects summary for PRowS	15
Table 2.10: Residual effects summary.	16

Appendices

Appendix A – Technical Notes

List of acronyms and abbreviations

Acronym or abbreviation	Definition
ATC	Automatic Traffic Count
CAR	Construction Access Route
CTC	Classified Turning Count
CoCP	Codes of Construction Practise
CTMP	Construction Traffic Management Plan
DMRB	Design Manual for Roads & Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
EWR2	East West Rail Phase Two
HGV	Heavy Goods Vehicle
HS2	High Speed 2
LGV	Light Goods Vehicle
LHA	Local Highway Authority
PIA	Personal Injury Accident Data
PCU	Passenger Car Unit
PRoW	Public Rights of Way
RFFP	Reasonably Foreseeable Future Project
SRN	Strategic Road Network
TWAO	Transport and Works Act Order
TA	Transport Assessment

Glossary

Term	Definition
Transport construction study area	Roads that have the potential to be affected by the Project during the construction phase of the Project
Transport construction assessment area	The transport construction assessment area was defined based on IEMA Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1).
Transport operational study area	Roads within the area surrounding the following stations (which are being assessed as part of the Project) which have the potential to be affected by the increased passengers at the stations
Transport operational assessment area	The transport operational assessment area based on IEMA Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1)
Scheme Boundary	The level crossings and PRoWs within the Scheme Boundary and which are affected by the Project

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1 Introduction

- 1.1.1 My name is Tim Colles. I am a Senior Managing Consultant with Atkins Limited. My firm was retained by Network Rail as part of the East West Rail Alliance to prepare the Traffic and Transport Section of the Environmental Statement (Volume 2i Section 14) which incorporates the Transport Assessment (Volume 3 Appendix 14.1) and to respond to objections. I am a Civil Engineer (BEng Hons) with 19 years' experience. During my career I have provided transport planning to support nationally significant infrastructure and development in the UK and Middle East.
- 1.1.2 My involvement with Phase 2 of the Western Section of East West Rail (EWR2) started in June 2017 when I was retained to assess the transportation impacts of the construction and operation of EWR2. I have been involved with all stages of the assessment from stakeholder consultation through to road safety analysis, assessment of the traffic impact, identification of mitigation measures and sustainable access.
- 1.1.3 I will provide evidence on the following topics:
- a. The impacts on roads, including the Strategic Road Network, from increased traffic and construction vehicles.
 - b. The impact on Public Rights of Way and access to public amenities.
 - c. The impact from the cumulative effects of HS2.
 - d. Measures to avoid, reduce or remedy any major or significant adverse impacts of the project.
 - e. The extent of any adverse environmental impacts that would still remain after the proposed mitigation.
 - f. Responses to specific objectors.

2 Evidence

- 2.1.1 EWR2 has been subject to an Environmental Impact Assessment (EIA), which is reported in the Environmental Statement (ES) (NR16). The ES considers Traffic and Transport in Volume 2i, Section 14 and a Transport Assessment (TA) in Volume 3 Appendix 14.1. Key aspects of the TA and Traffic and Transport ES Section are presented in this Proof of Evidence.

2.2 Impact on roads

Traffic impact due to construction and operation of the Project

- 2.2.1 The impact on roads as a result of the Order Scheme will be primarily due to construction vehicles, but also, to a lesser extent, operational traffic arriving and departing from the railway stations. The vehicular impact considered in this Proof of Evidence relates to traffic volumes, junction capacity and highway safety.
- 2.2.2 The derivation of construction trips is explained in detail in Section 11 of the TA. Traffic generated by HGVs, LGVs, Staff and Operatives has been assigned to the Construction Access Routes based on the daily trip generation of each compound, local access point and structure. The start dates and durations of construction activities have been applied to the daily trip generation to determine the maximum two-way trips on each link on the Construction Access Routes, to and from the compounds, local access points and structure to the strategic highway network. Figures 11.3A to 11.3F in the TA provide the maximum two-way construction traffic flows in the AM and PM peak hours as well as daily trips by vehicle type. Maximum daily construction trips range from 5 to 1524 vehicles on links along the Construction Access Routes.
- 2.2.3 Operational trips relate to increased passenger numbers driving to the stations in order to access EWR2. The increase in passenger numbers has been determined from the Business Case during the scoping stage and it has been assumed that same proportion of passengers drive to stations as they do at present based on mode share surveys. Full details of the operational trip generation are provided in Section 12 of the TA. The number of additional operational car trips to each station is provided in Table 12.3 of the TA.

Construction phase potential effects

- 2.2.4 The construction traffic impact on roads has been assessed in Volume 14 of the ES Chapter in accordance with IEMA guidelines, with full details of the assessment provided in Section 14.5. All links where traffic flows (or HGVs) increase by 30%, or 10% with sensitive receptors, have been considered.
- 2.2.5 A total of 28 highway links were identified for detailed assessment based on construction traffic (total vehicles and HGVs). The magnitude of impact and the significance of effect criteria, as presented in DMRB and IEMA guidelines, were considered in terms of: severance, pedestrian delay and amenity, driver delay, residential amenity, and accidents and safety.
- 2.2.6 Table 2.1 provides a summary of the links assessed, the magnitude of change, sensitivity of receptor and significance of effect for total traffic.

Table 2.1: Link assessment (total construction traffic) summary table

Link ID	Road name	Magnitude of change	Sensitivity of receptor	Significance of effect
47	Unnamed Road off Station Road, north of Mursley	Moderate	Low	Slight
38	Furze Lane, Winslow	Minor	Medium	Slight
102	Unnamed Road off A421 and Mill Road, north of Stratton Audley	Negligible	Low	Slight
40	Verney Road, Winslow	Negligible	Negligible	Neutral
31	Unnamed Road off Main Street, south of Poundon	Negligible	Low	Neutral

30	Unnamed Road north of Poundon and east of Stratton Audley	Negligible	Low	Neutral
35	Queen Catherine Road, Steeple Claydon	Negligible	Low	Neutral
244	Station Road (Mursley)	Negligible	Low	Slight
138	Furze Lane, Winslow	Negligible	Medium	Neutral
25	Station Road north of Launton	Negligible	Low	Neutral
212	Unnamed Road off A413, Lenborough	Negligible	Low	Slight
98	Unnamed Road, centre of Verney Junction	Negligible	Low	Neutral

2.2.7 Table 2.1 shows that the significance of effect for all links is neutral or slight.

2.2.8 Table 2.2 provides a summary of the links assessed, the magnitude of change, sensitivity of receptor and significance of effect for HGV traffic.

Table 2.2: Link assessment (HGV construction traffic) summary table

Link ID	Road name	Magnitude of change	Sensitivity of receptor	Significance of effect
38	Furze Lane, Winslow	Major	Medium	Large
138	Furze Lane, Winslow	Major	Medium	Large
220	Bletchley Road (Mursley Road – Drayton Road)	Moderate	Low	Slight
200	Station Road/Main Street/B4032, Mursley	Moderate	High	Large
148	Buckingham Road/ Herds Hill (Steeple Claydon)	Slight	Low	Slight
62	Newton Road/Bletchley Road, Bletchley	Moderate	Medium	Moderate
63	Buckingham Road, Bletchley	Moderate	Low	Slight
243	Whaddon Road (Mursley)	Moderate	Low	Slight
209	A413 between Padbury and Furze Lane	Minor	Low	Slight
193	Buckingham Road, Bletchley	Minor	Medium	Slight
145	School Hill, Charndon	Moderate	Medium	Moderate
133	A413 High Street (Vicarage Road – Horn Street), Winslow	Minor	Medium	Slight
103	B4100 between The Green and A4095	Minor	Low	Slight
41	A413 Buckingham Road	Negligible	Low	Neutral
132	A413 (High Street – Little Horwood Road)	Negligible	Medium	Slight
134	A413 Buckingham Road/ High Street (Great Horwood Road – Vicarage Street), Winslow	Negligible	High	Slight

2.2.9 Table 2.2 shows that the significance of effect for most links is neutral or slight, two links are moderate and three links (two roads) are large. The effects are temporary and will only be experienced during the peak construction period.

- 2.2.10 Links 38 and 138 (Furze Lane, Winslow) are particularly affected due to the narrow overbridge which restricts two-way traffic flow. Increased opposing traffic flows due to the location of a Touch Point could result in temporary adverse impacts on this road, including driver delay. There are temporary traffic signals operating on this overbridge. Retention of these temporary mitigation signals could reduce any impacts in order to control two-way traffic flow. Consultation with local stakeholders could also identify opportunities for improving the facilities on this road.
- 2.2.11 Link 200 (Station Road, Mursley) is particularly affected due to the large number of sensitive receptors in Mursley village. The increase in traffic could cause temporary adverse impacts related to severance, access to facilities and residential amenity.
- 2.2.12 Link 62 Newton Road/ Bletchley Road, Bletchley is particularly affected due to the number of residential properties and pedestrian access to local facilities. Increased traffic flows due to the Project could result in temporary adverse impacts on this road, including severance, pedestrian delay and reduced amenity, and reduced residential amenity.
- 2.2.13 Link 145 School Hill, Chardon is particularly affected due to the location of a playground to the north of the Link. Increased traffic flows due to cumulative development and the Project could result in temporary adverse impacts on this road, including severance and impaired access to facilities.
- 2.2.14 A mitigation strategy is provided in the ES Chapter and TA which includes the use of temporary signage and consultation with local stakeholders to identify the most appropriate mitigation measures in order to reduce any impacts.

Construction phase junction capacity impact

- 2.2.15 Junction capacity analysis has been undertaken where construction traffic exceeds thresholds along the Construction Access Routes. Further details of the construction traffic junction capacity analysis are provided in Section 13 of the TA. Given that a significant amount of the Construction Access Routes are rural areas and currently have low levels of traffic, junction capacity analysis was restricted to junctions where construction impact exceeded 10% of the existing traffic, and hourly traffic flows exceeded 50 vehicles in order to identify where impact could be significant. A second threshold of impact exceeding 5% and hourly traffic flows exceeding 30 vehicles has also been considered, taking into account construction impact durations and location on a junction by junction basis. This was used to determine if any further detailed assessment would be required.
- 2.2.16 The analysis criteria resulted in 36 junctions being assessed for capacity, of which 17 were compound or local access points. All of the compound and local access points were found to work well within capacity resulting in no significant delays or queues. No mitigation was therefore required for the compound or local access points.
- 2.2.17 Of the 19 off-site junctions, 10 operated within capacity with and without EWR2 construction traffic. The remaining nine junctions exceed acceptable capacity thresholds with and without EWR2 construction traffic. The addition of construction traffic does result in the junctions operating with longer queues and delays during the temporary period of construction.
- 2.2.18 The network of Construction Access Routes, as identified in the Chapter 14 of the ES and in the TA, utilises both local road and roads which are part of the Strategic Road Network, operated by Highways England. The relevant SRN links and junctions which are included in the network of Construction Access Routes are as follows:
- a. Area 7
 - i. A43: M40 Junction 10 to A421
 - b. Area 8
 - i. A5: between each branch of the A4146
 - ii. A421: M1 Junction 13 to A6
 - iii. M1: Junction 13 and 14
 - c. DBFO Area 30
 - i. M40: Junction 8A, 9 and 10
- 2.2.19 Chapter 14 of the ES and the TA assessed the potential effects of the Project on the SRN, considering the forecast temporary increases in traffic flows, and mitigation measures which would be implemented.

2.2.20 A capacity summary is provided in Table 2.3 for the Construction phase. Junctions operating within theoretical capacity (RFC < 0.85) are shown green, junctions exceeding theoretical capacity but within capacity (RFC 0.85 -1.00) are shown in amber and junctions exceeding capacity (RFC > 1.00) are shown in dark orange.

Table 2.3: Construction phase capacity summary

Junction ID	Location	Local Highway Authority	AM peak			PM peak		
			Junction capacity modelling results			Junction capacity modelling results		
			Constructio n Future Baseline	Constructi on Future Baseline+ EWR2	Cumulative	Construct ion Future Baseline	Construction Future Baseline+ EWR2	Cumulative
J006	A4421 Skimmingdish Lane / A4421 / Launton Road	OCC	●	●	●	●	●	●
J007	A4421 Skimmingdish Lane / Buckinghamshire Road / A4095	OCC	●	●	●	●	●	●
J014	A43(N), A43(S), M40	HE	●	●	●	●	●	●
J015	A43/ B4100	HE	●	●	●	●	●	●
J021*	A421/Gawcott Road/Embleton Way	BCC	●	●	●	●	●	●
J022*	A421/Embleton Way/Osier Way	BCC	●	●	●	●	●	●
J023*	A421/London Road/A413	BCC	●	●	●	●	●	●
J030	A421 Standing Way/B4304/Snelshall Street	MKC	●	●	●	●	●	●
J107	A41/Quainton Road	BCC	●	●	●	●	●	●
J108	A41/Blackgrove Road/Waddesdon Hill	BCC	●	●	●	●	●	●
J111	A41/Paradise Orchard/Aylesbury Vale Parkway Station Access	BCC	●	●	●	●	●	●
J122	Stoke Lyne Road/A4421/The Green	OCC	●	●	●	●	●	●
J126	A4421/Unnamed Road (to Stratton Audley/Mill Road)	OCC	●	●	●	●	●	●
J129	A41/Blackthorn Road	OCC	●	●	●	●	●	●
J130	A41/Station Road/Townsend	OCC	●	●	●	●	●	●
J135	A41/The Broadway	BCC	●	●	●	●	●	●
J137	A41/Kingswood Road/Grendon Road	BCC	●	●	●	●	●	●
J176	A41/Station Road	BCC	●	●	●	●	●	●
J177	Mill Road/Main Street/Unnamed Road (Stratton Audley)	OCC	●	●	●	●	●	●

*There is a proposed pinch-point scheme at this location therefore no further assessment has been undertaken in relation to the impacts associated with the operational phase of the Project.

**The Ashburnham Road/ Thameslink car park access junction is not modelled in the Bedford strategic transport model and therefore it has not been assessed using strategic model flows. As outlined in the Operational assessment section of this report, this junction of is forecast to operate within acceptable capacity thresholds within the Future Baseline (without EWR2 operational trips) and Future Baseline with EWR2 (with EWR2 operational trips) scenarios.

Construction phase junction capacity mitigation

- 2.2.21 The junction capacity assessment identified junctions that are already operating at capacity where the construction phase traffic impact would further increase delays and queues. The construction phase traffic flows assessed were the highest experienced at each location during construction and typically only last for one month. Whilst the capacity of the junctions would exceed the normally acceptable thresholds, the temporary nature and short duration of the increased traffic does not warrant capacity improvements. Any physical junction capacity improvements would cause increased delay and disruption compared to the construction traffic and therefore it is not warranted.
- 2.2.22 The impact of construction traffic will be monitored to determine if congestion exceeded the levels assessed. Should further management be required, temporary measures will be implemented, and they will be agreed with the highway authority as appropriate. Congestion management will take the form of signage and publicity to increase awareness of the temporary issues to enable drivers to plan alternative routes, journey times or modes of travel during busy periods.

Operational phase junction capacity impact

- 2.2.23 Operational phase junction capacity impact is reported in Section 14 of the TA. Junction capacity analysis was undertaken where the increases in traffic exceeded 5% in the operational study area. This resulted in 11 junctions being assessed. Of the 11 junctions, seven were found to operate within capacity with and without EWR2 traffic. Impact at three of the other junctions was marginal and did not significantly increase the queues and delays in the Base scenario. The remaining junction, Bromham Road/Shakespeare Road (Bedford Railway Station) is subject to an improvement as part of the Bedford Town Centre Transport Strategy.
- 2.2.24 Assessments of level crossings have been undertaken in Section 14.5 of the TA. A total of nine level crossings will be impacted by the increased train frequency as a result of EWR2. The impact of increased train frequencies has been assessed to determine the impact on queues and delays. The maximum increase in delay as a result of EWR2 is less than 30 seconds per Passenger Car Unit which is unlikely to be perceptible.
- 2.2.25 Additional junction capacity analysis has been done in response to issues raised by BCC. BCC were concerned that the junction capacity analysis of the A41/Station Way did not accurately reflect the congestion currently experienced. In order to take account of congestion from up and downstream junctions, a VISSIM microsimulation model has been developed. The additional analysis is included in Technical Note_017 included Appendix A. The findings of the VISSIM analysis were that the modelled journey time results for the Base with EWR2 model fell within the confidence limits of the Base model. This demonstrates that the range of likely journey times of the local highway network with EWR2 is likely to be comparable to the range of journey times without EWR2. Therefore, for the comparison using the Base model, it has been demonstrated that the impact of the EWR operational trips on the A41 corridor journey times are not considered to be significant.
- 2.2.26 A capacity summary is provided in Table 2.4 for the Operational phase.

Table 2.4: Operational phase capacity summary

Location	Local Highway Authority	AM Peak			PM Peak		
		Junction capacity modelling results			Junction capacity modelling results		
		Baseline 2031	Baseline + Development 2031	Cumulative	Baseline 2031	Baseline + Development 2031	Cumulative
A41/Station Way (Aylesbury Railway Station)	BCC	●	●	●	●	●	●
Bromham Road/Shakespeare (Bedford Railway Station)	BBC	● *	● *	● *	● *	● *	●
Ashburnham Road/Thameslink car park access	BBC	●	●	● **	●	●	● **
Shakespeare Road/Woburn Road/Bedford Railway Station car park access (Bedford Railway Station)	BBC	●	●	●	●	●	●
Ashburnham Road/Midland Road (Bedford Railway Station)	BBC	●	●	●	●	●	●
London Road/Station Approach (Bicester Railway Station)	OCC	●	●	● ***	●	●	● ***
London Road/Mallards Way/Talisman Road (Bicester Railway Station)	OCC	●	●	● ***	●	●	● ***
B4034 Buckinghamshire Road/Sherwood Drive/Water Eaton Road (Bletchley Railway Station)	MKC	●	●	●	●	●	●
Sherwood Drive/Station Access (Bletchley Railway Station)	MKC	●	●	● ****	●	●	● ****
Midsummer Boulevard/V6 Grafton Street (Milton Keynes Railway Station)	MKC	●	●	●	●	●	●
Avebury Boulevard/V6 Grafton Street (Milton Keynes Railway Station)	MKC	●	●	●	●	●	●

*There is a proposed pinch-point scheme at this location therefore no further assessment has been undertaken in relation to the impacts associated with the operational phase of the Project.

**The Ashburnham Road/ Thameslink car park access junction is not modelled in the Bedford strategic transport model and therefore it has not been assessed using strategic model flows. As outlined in the Operational assessment section of this report, this junction is forecast to operate within acceptable capacity thresholds within the Future Baseline (without EWR2 operational trips) and Future Baseline with EWR2 (with EWR2 operational trips) scenarios.

***London Road south of the London Road/ Station approach junction is assumed to be closed in the Bicester strategic transport model (future assessment year). Therefore, it has not been assessed using strategic model flows. As outlined in the Operational assessment section of this report, this junction is forecast to operate within acceptable capacity thresholds within the Future Baseline (without EWR2 operational trips) and Future Baseline with EWR2 (with EWR2 operational trips) scenarios.

**** The Sherwood Drive/ Station access junction is not modelled in the Milton Keynes strategic transport model and therefore it has not been assessed using strategic model flows. As outlined in the Operational assessment section of this report, this junction is forecast to operate within acceptable capacity thresholds within the Future Baseline (without EWR2 operational trips) and Future Baseline with EWR2 (with EWR2 operational trips) scenarios.

Operational phase junction capacity mitigation

2.2.27 The operational traffic does increase queues and delays in the operational study areas but the impact is marginal. Of the junctions assessed, all but four operate within acceptable capacity thresholds. The four junctions where there are capacity issues are all existing issues with the exception of Ashburn

Road/Woburn Road/Bedford Railway Station car park access. At this location, the ratio of flow to capacity is below 1.00 and therefore is shown to still operate within capacity.

- 2.2.28 The operational phase analysis assumed unconstrained car park capacity to provide robust junction capacity assessment. However, given station car parks are generally close to capacity, it is not anticipated the level of additional traffic assessed will be realised. The railway stations are in sustainable locations and it is therefore anticipated some of the forecast car trips would actually be made by alternative modes of transport.
- 2.2.29 Due to the marginal impact on capacity and the potential for trips to be made by more sustainable modes to the stations, no junction capacity mitigation is proposed or required for the operational phase.
- 2.2.30 The impact at level crossings is not likely to be perceptible and is less than 30 seconds per Passenger Car Unit and therefore no mitigation is required.

2.3 Construction phase highway safety

- 2.3.1 A road safety assessment has been undertaken in Section 6 of the TA. Collision data was provided by the LHAs for the most recent 5 years available (1st January 2012 to 31st December 2016) which included all the highway links and junctions in the construction and operational study areas.
- 2.3.2 In order to identify areas with particular safety issues, all the collisions were plotted using GIS software. From the collision plots, areas along the construction access routes were identified over a 150m radius, where 15 or more collisions had occurred within the 5-year analysis period, or where there was one fatal collision. Safety issues were identified at 35 locations throughout the study area.
- 2.3.3 In order to assess and identify causation factors for the collisions at the 35 locations, conflict diagrams were produced for 422 individual collisions. The conflict diagrams were based upon the collision data provided and considered the commonality of accident types and the movements of vehicles and pedestrians.
- 2.3.4 The assessment of collisions identified that the vast majority were attributable to driver error, several did not have any common causation factors, and recent or proposed improvement schemes would address issues at other locations. Two locations were identified as having existing problems which could be compounded by the addition of EWR2 construction traffic. These locations are:
- BUCKS18 – A131 between Duffron Road and Winslow Road; and
 - BUCKS20 A41 Bicester Road/A41 Gateshead Road/Bicester Road/A4157 Weedon Road.
- 2.3.5 A comprehensive mitigation strategy has been provided in Section 15 of the TA to promote safety during construction of EWR2. A Framework CTMP has been prepared which includes the following measures:
- Defined Construction Access Routes
 - Time restrictions on the use of Construction Access Routes
 - Auditing and monitoring of construction traffic to routes and restrictions
 - Temporary traffic control measures
- 2.3.6 The proposed Construction Access Routes have been assessed using vehicle tracking software to identify locations where the carriageway width is not sufficient to allow vehicles to pass each other safely. Temporary highway works are proposed to provide passing places and road widening. Passing places are proposed at a maximum spacing of 200m and provide the required indivisibility between opposing vehicles. The detailed design of passing places is currently being undertaken.
- 2.3.7 A signage strategy will be developed and agreed with the highway authorities to improve driver awareness of particular safety issues including highway layout and speed. Section 15 of the TA provides details of the proposed mitigation. It is proposed to mitigate the construction impact at BUCKS 18 and BUCKS 20 using a signage strategy that will be agreed with the local highway authority.
- 2.3.8 Further analysis has been undertaken to address concerns raised by BCC regarding locations experiencing collisions due to driver error and additional locations on the Construction Access Route. A summary of the locations where issues were identified is provided in Tables 2.5 and 2.6 along with proposed mitigation measures.

Table 2.5: Summary of collision locations and proposed mitigation in study area

Collision location	Mitigation proposals
A41 Bicester - roundabout with Gravehill Road, London Road and the A4421/ Neunkirchen Way	Warning signs with consideration to providing white lining such as cycle symbols
A40 (between A40 London Road and M40 J8)	Vegetation cut back
A421/Padbury Road/Lower End	Vegetation cut back and white lining re-laid
A4146/Stoke Road/Jersey Drive	Vegetation cut back
Blackgrove Road (between Berryfields Road and A41)	White lining should be refreshed
Blackgrove Road/Waddesdon Hill/A41	None proposed
A41/Rabans Lane/Caffron Close	Provision of advance warning signs and refreshed road markings
A41 Gatehouse Road/A418/A41/A418	Pedestrian crossing warning signs should be introduced. Lighting provision review
A418 (between New Road and Churchway)	SLOW markings on carriageway, on top of red surfacing
A413 (between Lower Road and Lower Road)	Warning signs installed. SLOW markings
A413 (between Dunton Road and Winslow Road)	Warning signs and SLOW markings
A413 (between Main Street and Springfields)	SLOW markings enhanced with red surfacing
A41 Bicester Road/ A41 Gatehouse Road / Bicester Road/ A4157 Weedon Road	White lining refresh
Bletcham Way / V7 Saxon Street	Red surfacing reinstated
V10 Brickhill Street	White lining and red surfacing refresh
A4146 (V11) Tongwell Street (near Tanfield Lane overpass)	Pedestrian signing strategy should be reviewed
A421 Standing Way/V10 Brickhill Street	Advanced signing
A5141 Ashburnham Road / Shakespeare Road / A4280 Bromham Road	Refresh existing white lining, provide warning signs

Table 2.6: Summary of proposed mitigation at additional locations

Location	Mitigation proposals
A421 / Tingewick Road west of Buckingham	Red surfacing
A421 / Gawcott Road	None proposed
A421 / Osier Way	Refresh white lining on top of red surfacing
A421 / A413 / London Road	Refresh white lining on top of red surfacing
A421 / A413 west of Bourton	Apply red surfacing beneath hatching
A413 between A421 and Needlepin Way (Lace Hill)	Refresh white lining on top of red surfacing
A413 between Thornborough Road and The Paddocks (Padbury Village)	None proposed
A413 / Lenborough Road	Apply red surfacing beneath hatching
Whaddon Road northwest of Newton Longville	Warning signs

Blackgrove Road northeast of Waddesdon	Vegetation should be cut back. Warning signs
A41 at Fleet Marston	Apply red surfacing
A41 Jackson Road - Raban Lane, Aylesbury	Extend the parking restriction
A413/Vicarage Road/Sheep Street	None proposed
A413 Winslow	Great Horwood Road / A413 - Provide white lining and apply red surfacing Furze Lane / A413 - Apply red surfacing beneath hatch marking Little Horwood Road / A413 – None proposed
A41 (between Bicester and Aylesbury)	A41/Broadway – none proposed A41/Station Road - junction realignment A41/Quainton Road – None proposed No additional mitigation measures proposed A41/Sir Henry Lee Crescent/Paradise Orchard - Consider refreshing white lining
A421 between Little Horwood Road and Winslow Road	None proposed
Station Road/Main Street (between Mursley FC and Swanbourne Road)	None proposed
Drayton Road/ Bletchley Road/ Newton Road/Main Road, Drayton Parslow	Refresh white lining and red surfacing

2.3.9 A full safety review is provided in Technical Note 007 – Road safety in Appendix A.

Operational phase highway safety

2.3.10 A road safety assessment was undertaken for the operational study area in Section 6.5 of the TA using the same data and methodology as the construction phase highway safety assessment. Of the eight operational study areas at railway stations, there were no personal injury collisions recorded at six of them. There was one collision at Bletchley and 15 at Bedford.

2.3.11 The only existing safety issue was identified at the junction of the A5141 Ashburnham Road/Shakespeare Road/A4280 Bromham Road in Bedford. This junction is subject to an improvement scheme as part of the Bedford Town Centre Transport Strategy which would resolve the existing safety issues.

2.4 The impact on public rights of way

2.4.1 Public Rights of Way (PRoWs) that will experience temporary or permanent changes as a result of the construction and operation of the Project have also been assessed based on the significance of effect of the proposed diversion routes.

Table 2.7: ProW significance of effect summary table

PRoW Name	ProW Reference	Magnitude of change	Temporary impact	Sensitivity of receptor	Significance of effect
School Crossing Woburn Sands	WOBURN SANDS FP 003	Medium	No	High	Large
Verney Junction Footpath	MCL/2/1, MCL/3/1, MCL/3/2, MCL/2/2	Medium	No	Medium	Moderate
Winslow No6	WIS/6/9 AND WIS/6/1	High	Yes	High	Large
Woburn Road	KERA1A FP A1	High	Yes	Medium	Moderate

School Crossing Lidlington	FP6/A6	Medium	No	High	Large
Pilling Farm South	FP1, FP4	High	No	Medium	Large
Stewartby Brickworks	STW 5	High	No	Medium	Large
Marsh Gibbon	FP MGI/5/1	High	Yes	Low	Slight
Queen Catherine Road - Steeple Claydon No9	MCL/9/1	Negligible	None	Low	Neutral
Charndon No3	FP CHA/3/1	High	Yes	Low	Slight
Middle Clayton FP (No4 and No6)	MCL/4/1, MCL/4/2, MCL/6/2, MCL/6/1	High	Yes	Low	Slight
Addington FP No 13	ADD/13/1 and ADD/13/2	Negligible	None	Low	Neutral
Fisherman's Path	WOBURN SANDS FP 002	Low	No	Medium	Slight
Waddesdon Footpath No4	FP WAD/4/2	Negligible	None	Low	Neutral
Bletchley 79	BLETCHLEY FP 079	Negligible	None	Medium	None
Bow Brickill FP004	FP004	None	None	Medium	None
FP/272/9/20 Launton	FP/272/9/20	None	None	High	None
Poundon No2	POD/2/1	High	Yes	Low	Slight
Twyford No2	FP TWY/2/3 and FP TWY/2/2	High	Yes	Low	Slight
Middle Clayton FP No8	FP SCL/13 and MCL/8/1	High	Yes	Low	Slight
Winslow FP No17	SWA/17/1	Medium	Yes	Low	Slight
Moco Farm No2	SWA/1/2	Medium	Yes	Low	Slight
Swan's Way	FP MUR/13/1	High	Yes	Low	Slight
North Bucks Way No1	FP WAD/3/5	High	Yes	Low	Slight
Pony	BOW BRICKHILL BW 014	Low	Yes	Medium	Slight
Jarvis' Lane	FP 129/15/20	Negligible	None	Medium	Neutral
Grange Farm	FP 272/11/10	Negligible	None	Medium	Neutral
Twyford No3	FP TWY/3/1	Medium	Yes	Low	Slight
Swanbourne Old Station	MUR/19/1, SWA/20/1, LHO/27/1	High	No	Low	Moderate
Launton No1	FP 272/13/10	Low	No	Low	Slight
Launton No2	FP 272/21/10	Low	No	Low	Slight

Queen Catherine Road – Steeple Claydon No14	SCL/14/1	Negligible	None	Low	Neutral
Winslow FP No5	FP W/5/5/7 and FP ADD/11/1	Medium	Yes	Low	Slight
Mursley Restricted Byway No18	MUR/18/1	Medium	Yes	Low	Slight
Mursley Restricted Byway No15	MUR/15/1	Medium	Yes	Low	Slight
Griffin Lane	FP AYL/7/1	Negligible	None	High	Slight
Husborn Crawley FP 10	FP 10	High	Yes	Low	Slight
Marston Bridleway	N/A	Negligible	None	Medium	None
Millennium Park	FP 13	Negligible	None	Low	Neutral

2.4.2 The PRow assessments indicate the overall significance of effect upon each PRow due to temporary and permanent changes made as part of the Scheme. In total, eight PRows across the assessment area have an overall significance of effect of moderate or large, indicating that mitigation may be required. The majority of PRows that see a high magnitude of change are as a result of temporary closures, so resultant impacts will be temporary.

2.5 HS2 construction impact

2.5.1 The construction of HS2 will generate traffic within the EWR2 construction study area and the study area will also be impacted by HS2 related temporary and permanent road closures.

2.5.2 Section 9 of the TA provides full details and analysis of the impact from HS2. HS2 is considered as an integral part of the baseline assessment in the TA. Given that HS2 traffic is considered in the EWR baseline, all analysis considers the cumulative impact of HS2.

2.5.3 The temporary road closures identified in the construction study area all relate to traffic management and therefore Construction Access Routes will remain open for EWR2 construction traffic.

2.5.4 Where highway works are proposed as part of HS2, EWR2 construction traffic will utilise the existing highway network until they are complete.

HS2 operational impact

2.5.5 There are no HS2 railway stations within the vicinity of the operational study area and therefore there will not be any local traffic related to HS2 accessing stations. There will therefore not be any operational impact.

2.6 Adverse impact after mitigation

2.6.1 Four construction links and 11 PRows were deemed to have a moderate or large significance of effect due to the construction and/or operation of the Project.

2.6.2 For assessed Links, mitigation measures have been proposed. These aim to minimise the effects of the construction traffic during the construction phase.

2.6.3 Impacts on PRows due to the construction and operation of the Project have also been considered and associated mitigation measures have been proposed. These aim to reduce any remaining adverse impacts due to changes in the provision of PRow facilities.

2.6.4 For temporary impacts that arise from construction traffic, the significance of effect is likely to remain the same as the volume of traffic remains unchanged. However, these effects will be better managed when the recommended mitigation is implemented, which reduces the likelihood of any adverse impacts.

Furthermore, most effects will be temporary in nature and will cease following the construction phase of the Project.

- 2.6.5 For residual effects on PRoWs, the recommended mitigation measures will not see a reduction in journey length, changes in gradient, or provision of step-free alternatives; therefore, the significance of effect remains moderate or large. However, measure such as improved signage will make these effects more manageable by improving ease of access. These measures should help to reduce the likelihood of any adverse impacts.
- 2.6.6 Consultation with local stakeholders to identify route improvements may reduce the significance of effect by improving crossing facilities or reducing journey distances. It is anticipated that any improvements made to the Stewartby Brickworks footpath as a result of the Stewartby Landfill site redevelopment will provide such benefits; therefore, the estimated significance of effect has been reduced to moderate.
- 2.6.7 Table 2.8 provides a summary of the residual effects for roads and Table 2.9 provides the residual effect summary for PRoW.

Table 2.8: Residual Effects Summary for roads

Link ID	Road name	Significance of effect (pre mitigation)	Mitigation considered	Estimated significance of effect (post mitigation)
38	Furze Lane, Winslow	Large	Yes	Large
138	Furze Lane, Winslow	Large	Yes	Large
200	Station Road/Main Street/B4032, Mursley	Large	Yes	Large
62	Newton Road/Bletchley Road, Bletchley	Moderate	Yes	Moderate
145	School Hill, Charndon	Moderate	Yes	Moderate

Table 2.9: Residual effects summary for PRoWs

	PRoW name	Significance of effect (pre mitigation)	Mitigation considered	Estimated significance of effect (post mitigation)
	School Crossing Woburn Sands	Large	Yes	Large
	Winslow No6	Large	Yes	Large
	School Crossing Lidlington	Large	Yes	Large
	Pilling Farm South	Large	Yes	Large
	Stewartby Brickworks	Large	Redevelopment of Stewartby Landfill site (not associated with the Project) will mitigate impacts	Moderate
	Verney Junction Footpath	Moderate	Yes	Moderate
	Woburn Road	Moderate	Yes	Moderate
	Swanbourne Old Station	Moderate	Yes	Moderate
	WIS/6/1 (crossing Furze Lane, Winslow)	Large	Yes	Large
	STE/13/1 and DPA/11/1 (crossing	Moderate	Yes	Moderate

	PRoW name	Significance of effect (pre mitigation)	Mitigation considered	Estimated significance of effect (post mitigation)
	Station Road, Mursley)			
	STE/26/1 and DPA/10/1 (crossing Station Road, Mursley)	Moderate	Yes	Moderate

2.6.8 The residual effects are summarised in Table 2.10 according to impacts on each relevant receptor.

Table 2.10: Residual effects summary.

Environmental Topic	Receptor	Description of impact	Mitigation	Residual effect
Traffic and Transport	People at home	Temporary adverse impact on residential amenity affecting approximately two properties in Furze Lane (Winslow), approximately 16 properties on School Hill (Charndon) and numerous properties on Newton Road/Bletchley Road (Bletchley) and Station Road (Mursley)	Consultation, appropriate trip distribution	Slight to large adverse
Traffic and Transport	People at work places	Driver delay; severance (pedestrian and vehicular); pedestrian delay, fear and intimidation; accident/safety risks on Links with a moderate to large significance of effect. Most effected links are largely rural or residential, however there a few businesses located on each.	Consultation, temporary signage, temporary signals, appropriate trip distribution	Slight to moderate adverse
Traffic and Transport	Sensitive groups and locations	Severance (pedestrian and vehicular), pedestrian delay, fear and intimidation; accident/ safety risks on Links with a moderate to large significance of effect. The majority of properties effected are schools located in Winslow, Bletchley and Mursley. There is a playground located on School Hill (Charndon) and a village hall and church in Winslow which may also be adversely impacted.	Consultation, temporary signage, temporary signals, appropriate trip distribution	Slight to large adverse
Traffic and Transport	Pedestrians and cyclists	Severance, pedestrian delay, fear and intimidation; accident/safety risks on PRoWs that cross Station Road (Mursley) and Furze Lane (Winslow) and footways on Station Road (Mursley), Newton Road/Bletchley Road (Bletchley), which are located in built up areas where pedestrians can access local facilities.	Consultation, temporary signage, temporary signals, appropriate trip distribution	Moderate to large adverse
Traffic and	Existing road	Accident/safety risks and driver	Consultation,	Slight to

Environmental Topic	Receptor	Description of impact	Mitigation	Residual effect
Transport	users	delay, particularly on Furze Lane (Winslow) where there is a single-track bridge which restricts two-way flow and Station Road (Mursley) which has some narrow sections of carriageway	temporary signage, temporary signals, appropriate trip distribution	large adverse
Traffic and Transport	Pedestrians (PRoW users)	Temporary and permanent increase in journey distance and severance on a number of PRoWs, including: Woburn Sands FP 003 (School Crossing), Verney Junction Footpath, Winslow No6, KERA1A FP A1 (Woburn Road), School Crossing Lidlington, Pilling Farm South, Stewartby Brickworks and Swanbourne Old Station, STE/13/1 and DPA/11/1 (Station Road, Mursley) and STE/26/1 and DPA/10/1 (Station Road, Mursley)	Consultation, enhanced wayfinding signage, provision of alternative routes, erect Public Information Notices	Moderate to large adverse
Traffic and Transport	Cyclists/ Equestrians (PRoW users)	Majority of PRoWs affected are footpaths so are not suitable for cycling or equestrian access. Some temporary closures may be required.	Consultation, enhanced wayfinding signage, provision of alternative routes, erect Public Information Notices	Neutral to slight adverse
Traffic and Transport	Vulnerable users (PRoW users)	Temporary and permanent increase in journey distance, severance, permanent loss of step free access and increased gradient at: Middle Claydon FP (No4 and No6), Woburn Sands FP 003 (School Crossing), Poundon No2, Twyford No2, Middle Claydon No8, Verney Junction Footpath, Moco Farm No2, North Bucks Way No1, Jarvis Lane, Grange Farm, KERA1A FP A1 (Woburn Road), Twyford No3, Swanbourne Old Station, Launton No1, School Crossing Lidlington and Pilling Farm South.	Some PRoWs are not suitable for vulnerable user access. However, consultation, enhanced wayfinding signage, provision of alternative routes, erect Public Information Notices should be considered where feasible	Moderate to large adverse

3 Responses to specific objectors

3.1.1 Main objectors on transportation grounds where the methodology and assessment are considered are:

- Rep 8 - Highways England

- OBJ 232 - Buckinghamshire County Council
- 3.1.2 Other objectors on Transportation grounds where the impact of construction or operational traffic are considered are:
- OBJ 34 – Charndon Parish Council
 - OBJ 156 – O&H Q6 Ltd and O&H Q7 Ltd
 - OBJ 182 – Grendon Underwood Parish Council
 - OBJ 214 – Edgcott Parish Council
 - OBJ 223 – Bedford Borough Council
 - OBJ 233 – Calvert Parish Council

Rep 8 – Highways England

Objection

- 3.1.3 Highways England’s Statement of Case, Reference TWA/18/APP/04REP/8, refers to three main areas of concern: ‘impact of construction traffic on the SRN at the M40 J10 and Baynards Green roundabout, the access arrangement for Compound D1 and the operational impacts of Rigmont Station car park’. However, the Statement of Case concentrates on the first concern, ‘impact of construction traffic’ at M40 J10.
- 3.1.4 Specifically, Highways England has identified that the junction capacity assessment undertaken in the Transport Assessment for the construction period has forecast significantly shorter queues at the M40 J10 Padbury roundabout (herein referred to as the Padbury roundabout) compared to Highways England’s observations and results of a VISSIM microsimulation model (a microscopic multi-modal traffic flow simulation software package), developed for the junction to assess traffic flows in 2016. Highways England does not consider ARCADY (a Transport Research Laboratory software program used to assess roundabout capacity and delay), used in the Transport Assessment, to be a suitable model to assess the geometric delay at the junction as the layout of the junction is not typical for a roundabout.
- 3.1.5 Highways England’s conclusion is that Network Rail should provide further flexibility with the construction programme for EWR2 and additional travel demand management at this location to minimise the construction impacts.

Response

- 3.1.6 The Padbury roundabout has been assessed as a standalone roundabout in the Transport Assessment using ARCADY, which is an industry standard software developed by Transport Research Laboratory to predict capacities, queues, delays and accident risk at roundabouts. Whilst the Padbury roundabout geometry is not typical, due to its dumbbell shape with elongated central section, the operation is that of a roundabout with entry arms giving way to circulating traffic. ARCADY is therefore appropriate to assess the capacity of the roundabout in isolation, but the queueing identified by Highways England is a result of blocking back from upstream junctions which is not taken into account in ARCADY.
- 3.1.7 Whilst the methodology used to assess the capacity of Padbury roundabout is accurate in isolation, and shows that it operates within capacity with and without construction traffic, it is acknowledged that interaction from upstream junctions results in significantly longer queues being formed than are reported in the Transport Assessment. These queues could block back to obstruct southbound traffic on the M40 and therefore EWR2 are committed to ensuring safety is not compromised at this junction.
- 3.1.8 Highways England have made their VISSIM model available to EWR2 to test the construction impact on the wider network with a view to considering temporary traffic lights to manage the queueing on the M40 southbound off-slip. This work is ongoing and should be completed prior to the Planning Inquiry.
- 3.1.9 EWR2 have committed to provide further details of the monitoring and mitigation measures and confirmation of trigger points required to implement them.

OBJ 232 – Buckinghamshire County Council

- 3.1.10 Buckinghamshire County Council raised several areas of concern which are considered individually below.

Objection

- 3.1.11 Junction layout plans have not been provided by EWR so it is not possible to undertake a detailed check of geometry.

Response

- 3.1.12 Technical Note 002 - Junction capacity modelling geometry plans has been submitted to BCC and is included in Appendix A and contains details of all the site access, off site junctions and operational junction layout plans.
- 3.1.13 The requested plans have been provided to BCC.

Objection

- 3.1.1 The Highway Authority is concerned with the use of survey data over 3-4 years old as this does not follow best practice.

Response

- 3.1.2 The traffic data was reviewed and it was identified that a single junction on the Construction Access Route exceeded the 3-year threshold. A classified turning count was commissioned to obtain up to date data for A413/Little Horwood Road junction and took place on Tuesday 9th October 2018. In total, across both peak periods and all movements at the junction, the 2018 count data was found to have an additional 70 PCU movements in comparison with the 2017 Base Year. This increase is relative to over 2,000 movements and equates to an additional 3%. The use of factored 2013 count data at this location has resulted in the same outcome as using the 2018 count data and therefore the findings of the TA in relation to other junctions are still correct. Further details are provided in Technical Note [003] – Secondary traffic surveys in Appendix A.

Objection

- 3.1.3 The Highway Authority has concerns regarding the car parking utilisation shown in Table 4.2. Aylesbury Vale Parkway utilisation seems very high (90%). Surveys should be provided indicating the current cycle parking utilisation to ensure that it can accommodate future demand and meet the need of increased passengers using the train stations along the East West Rail (EWR2) rail route.”

Response

- 3.1.4 Aylesbury Vale Parkway car park has been resurveyed and the maximum occupancy is 26% resulting in 370 spare spaces which is consistent with Buckinghamshire County Council’s comments. The maximum cycle parking occupancy has been determined as 17% resulting in 30 spare spaces. The forecast increase in passenger daily demand at Aylesbury Vale Parkway is 49 passengers, therefore there is significant spare capacity to accommodate growth in demand for car and cycle parking. Full details of the revised survey are provided in Technical Note 004 – Multi-modal trip generation and car parking assessment in Appendix A.

Objection

- 3.1.5 The Highway Authority has requested that EWR include a full multi-modal assessment of passenger demand increase, as currently only car has been considered as per Table 12.3.

Response

- 3.1.6 The number of passengers utilising each individual constituent mode has been applied to the forecast passenger demand increases for Aylesbury Railway Station.
- 3.1.7 The multi-modal assessment of person trip generation for sustainable modes at Aylesbury Railway Station is shown below.

Mode	Person Trip Generation					
	Unconstrained					
	AM Arrivals	AM Departures	PM Arrivals	PM Departures	Daily Arrivals	Daily Departures
Bus	21	7	7	20	66	60
Cycle	2	1	1	5	13	12
Walk	47	37	36	44	358	325

3.1.8 Full details of the mode share calculations are provided in Technical Note 004 – Multi-modal trip generation and car parking assessment in Appendix A.

Objection

3.1.9 Walking and cycling isochrones have been provided for Aylesbury and Aylesbury Vale Stations. The isochrones demonstrate the distance which can be walked or cycled from the station within 20 minutes. These do not consider the quality of the routes to and from stations, and some of these routes are unlikely to be utilised in the hours of darkness. Further consideration needs to be paid to the quality of the walking and cycling links to the train stations.

Response

3.1.10 The walking and cycling isochrones have been reviewed and updated to ensure all routes are suitable for use by pedestrians and cyclists. No changes were required for the Aylesbury walking isochrone. The Aylesbury cycle isochrone and walking and cycling isochrones for Aylesbury Vale Parkway have been updated.

3.1.11 Full details of the revised isochrones are provided in Technical Note 004 – Multi-modal trip generation and car parking assessment in Appendix A.

Objection

3.1.12 Cumulative Assessment of Operational Traffic Flows in Aylesbury have not been undertaken using traffic models containing traffic and mitigation of allocated sites.

Response

3.1.13 Details of the methodology and data used to undertake the assessment are provided in Paragraph 16.2.1 of the Transport Assessment. Operational traffic flows in Aylesbury were provided by Jacobs, on behalf of BCC, from the Aylesbury Traffic Model. The traffic flows provided were from the 2022 Do Minimum Scenario. The Traffic Forecasting and Assumptions report confirms that the 2022 Do Minimum Scenario consists of committed Local Plan sites, and a number of developments that have yet to be determined. It is therefore concluded that allocated sites have been considered.

Objection

3.1.14 Manual Classified Counts have been undertaken to determine the vehicle movements by classification at junctions. The Manual Classified Counts have been undertaken in neutral months in accordance with WEBTAG. The surveys were only however undertaken on a single day and usually the Highway Authority would request 2 days of survey data. The flows associated with the Manual Classified Counts should therefore be cross referenced with the Automatic Traffic Count data to ensure that flows are reflective normal day

Response

3.1.15 To determine if the flows were reflective of a normal day, traffic flows within the transport construction study area and transport operational study area were compared to CTCs for junctions across Buckinghamshire.

3.1.16 The assessment demonstrated that the traffic flows on the dates on which surveys were conducted were representative of typical two-way flows for September 2017. The conclusions of assessments based on the traffic flow data within the ES and TA therefore remain valid and robust. Further details of the comparison are provided in Technical Note 006 – Traffic count ATC comparison in Appendix A.

Objection

- 3.1.17 To identify locations within the construction and operational study area, a series of heat maps have been produced. These are contained in Figure 6 however it appears that the following areas within Buckinghamshire have been omitted: Winslow, Drayton Parslow, Mursley, Charndon, Poundon, Edgcott. The heat maps for these areas has been requested from EWR and are required to allow a final assessment to be undertaken by the Highway Authority.
- 3.1.18 The Highway Authority has questioned this methodology and has asked EWR for justification in relation to how they came up with these criteria. Furthermore, it is unclear how the criteria have been applied in relation to an area (e.g. 15 or more collisions over 200m or 2 miles).
- 3.1.19 It should be noted that some of the rural roads are lightly trafficked and are not necessarily used by HGVs, it is therefore important to consider any patterns across links and junctions to understand if this would be exacerbated by the proposed construction traffic.
- 3.1.20 In addition the collision history has not been considered in the assessment of the location of new access points onto the local highway network. Further work is required in order to support the locations proposed and outlined in Appendix H Construction Strategy and Appendix G Construction Access Drawings.
- 3.1.21 The detailed construction analysis consistently refers to driver error and therefore no mitigation is proposed. The Highway Authority is concerned with this approach given that this fails to consider a number of other factors such as speed perception, gradients, failure to look properly, poor turning manoeuvres, or loss of control on slippery surfaces. In addition there is an assumption that no improvements could be made to mitigate such collisions from occurring. The highway authority maintains that mitigation measures can be implemented that can raise awareness of hazards and reduce the risk of collisions.

Response

- 3.1.22 A comprehensive response is provided in Technical Note 007 – Road safety in Appendix A. Additional proposed mitigation measures have been provided. Project-wide measures such as temporary signs, routing signs for HGVs and monitoring of any issues are considered suitable Project-wide strategies, alongside the site-specific mitigation measures are proposed.

Objection

- 3.1.23 Framework Construction Travel Plans do not provide enough information about the staff and operatives journeys, sustainable travel opportunities, commitment to increasing sustainable travel and monitoring mode shares.

Response

- 3.1.24 The Construction Travel Plans are currently frameworks that will be developed fully and agreed with Buckinghamshire County Council before commencement of construction. Technical Note 008 in Appendix A provides full details of further commitments to resolve the requests for additional information.
- 3.1.25 A commitment has been made to develop the Framework Construction Travel Plans further which will be agreed with Buckinghamshire County Council in advance of construction.

Objection

- 3.1.26 Station Road, Quainton, is diverted across a new bridge. This has not been considered in cumulative assessment, and this point should be addressed in Framework CTMP.

Response

- 3.1.27 The cumulative assessment is based on the existing situation and is reported in Section 16 of the TA. The site access to Compound E3 has been assessed and shown to operate well within capacity. The Station Road diversion is part of the HS2 scheme. Technical Note 009 in Appendix A identifies the alternative access arrangements with the Station Road diversion and identifies the daily construction traffic flows that would be impacted are 89.
- 3.1.28 A commitment will be made to further consider the impact when further information is made available by HS2. This will be addressed in the Framework CTMP.
- 3.1.29 The alternative access arrangements and impacted construction traffic flows are not considered to cause any adverse impacts.

Objection

- 3.1.30 The Transport Assessment however notes “the staff and operative construction trips were then investigated further and refined on a junction by junction basis”. Further information is required in relation to the process undertaken and the changes applied before the Highway Authority can agree to the approach.

Response

- 3.1.31 The construction traffic trips were initially calculated as two-way trips to capture the arrivals and departures of trips along the link in either direction. At junctions where the sifting process identified an impact above the 5% threshold, a manual refinement was carried out to calculate approach flows in each peak so that they reflected the likely approach movements at each junction.
- 3.1.32 At links containing trips going to more than one compound, for the manual refinement process, the staff and operative trip generation has been duplicated in both directions to ensure a robust assessment. At links with trips going to only one compound, for the manual refinement process it is assumed that staff and operatives arrive at the compound in the morning and depart from the compound in the evening. Further details are provided in Technical Note 010 – Staff and operative assignment methodology in Appendix A.

Objection

- 3.1.33 Based on the initial assessment the Highway Authority is of the view that additional junctions need to be addressed.

Response

- 3.1.34 Analysis of the additional junctions indicated that of the 16 junctions identified by BCC, 10 junctions are predicted to operate within capacity in all scenarios and four of the identified junctions are predicted to operate over capacity in the Construction Future Baseline without EWR2 temporary construction trips.
- 3.1.35 At junctions forecast to operate within capacity in all scenarios, it is considered that the EWR construction trips have no material impact on the operation of the junction and that therefore, mitigation is not required.
- 3.1.36 At the four junctions identified as operating over capacity in all scenarios, it is considered that based on the temporary nature of the trips and the impact of the additional temporary EWR2 construction trips through the junction on queues and RFCs, that the impact at these locations is acceptable. It is therefore not considered that physical mitigation is required, and that monitoring, advanced notice signage and stakeholder engagement, provided through the Construction Traffic Management Plan (CTMP), would be a suitable form of mitigation for any temporary impact at this location. Further details are provided in Technical Note TN011 – Additional Junction Models in Appendix A.

Objection

- 3.1.37 The number of trips generated by the proposal between 06:00-07:00 and 18:00-19:00 hours is more than double the number generated between 08:00-09:00 and 17:00-18:00. Consideration should therefore be given to the impact during the development peak hours.

Response

- 3.1.38 On the vast majority of links assessed in the TA and ES, the future assessment year plus EWR2 traffic flows are higher in the Network Peak Hour than the Development Peak Hour, validating the findings and conclusions.
- 3.1.39 Five links were identified which would have higher traffic flows (which warranted further consideration) in the Development Peak Hour compared to the Network Peak Hour. However, it is concluded that the total level of traffic volumes on these links, in both the Network Peak Hour and Development Peak Hour would not result in a severe impact on the highway network.
- 3.1.40 The conclusions within the ES and TA therefore remain valid and robust. Further details are provided in Technical Note TN012 – Development peak hour assessment in Appendix A.

Objection

- 3.1.41 Greater consideration should be given to the impacts of HGV traffic on the safety and attractiveness of sustainable travel. Key zones of concern and in need of detailed assessment include any interface with

National Cycle route 51, which is well used, and key routes within residential areas (e.g. Verney Road and Furze Lane, Winslow; Queen Catherine Road, Steeple Claydon; Verney Junction etc.).

Response

- 3.1.42 Given the characteristics of trips associated with National Cycle Route 51 and the temporary nature of the increase in HGV flows, cyclists using the route are considered to have a reasonable ability to absorb change, and could temporarily change their routing. Additionally, HGV drivers can be made aware of the potential presence of cyclists along construction routes. Therefore, the impact of construction HGVs is not considered to materially change the conclusions and outcomes of the assessment documents produced. Further details can be found in Technical Note 014 – HGVs on National Cycle Route 51 in Appendix A.

Objection

- 3.1.43 Three off-site junctions are not considered to be acceptable and further work needs to be carried out in order to address this issue.

Response

- 3.1.44 Further junction capacity analysis, updated in line with comments received from BCC regarding the inclusion of pedestrian crossings and entry widths, has demonstrated that these three junctions are predicted to operate over acceptable thresholds of capacity in both peak periods in the Construction Future Baseline with and without temporary EWR2 construction trips.
- 3.1.45 Based on the temporary nature of these trips, and that the peaks in construction activity only happen for a short period of time it is not considered that the residual impact of EWR2 can be considered unacceptable. It is also considered that the mitigation proposed, in the form of monitoring, advanced notice signage and stakeholder engagements, provided through the CTMP, is reasonable and appropriate. Further details can be found in Technical Note 015 – Off-site junction sensitivity in Appendix A.

Objection

- 3.1.46 It is also noted that queue length survey data and the raw traffic survey data has not been provided so it is not possible to confirm that the junction models have been correctly calibrated.

Response

- 3.1.47 Raw classified turning count (CTC) data utilised in the operational and construction phase assessment has been provided in Technical Note 016 – Survey Data contained in Appendix A.
- 3.1.48 Due to the extent of the study area and timescales for commissioning surveys, queue length surveys were not conducted. Queue length data can be very subjective and inaccurate, and this method of validation is identified as unsuitable in software guidance for Junctions 9, LinSig and Transport for London guidance on VISSIM. Queue length surveys have not been provided.

Objection

- 3.1.49 The junction modelling is not considered representative of current known conditions at the A41/Station Way junction. The ARCADY model has assumed clear exit onto the A41, which in reality is not the case. The main issue with the A41/Station Way roundabout junction relates to interaction with the A41/Walton Street roundabout and the A41/Station Way signals resulting in blocking back of traffic through the junction. Current traffic conditions and site observations highlight issues with vehicles exiting Station Way at peak times and this is not reflected in the current junction model.

Response

- 3.1.50 Given the limitations of traditional standalone junction modelling, microsimulation software VISSIM has been used for further assessment of the A41 corridor outside Aylesbury Railway Station.
- 3.1.51 The results of the analysis show that modelled journey times along the A41 corridor for the model with EWR operational trips falls within the confidence limits of the model without EWR operational trips. This is true for both directions along the A41 corridor for both peaks.
- 3.1.52 It has therefore been demonstrated that the impact of the EWR operational trips on the A41 corridor journey times are not considered to be significant, and are not considered severe. Further details are provided in Technical Note TN017 – Aylesbury Modelling in Appendix A.

OBJ 034 - Charndon Parish Council

Objection

- 3.1.53 School Hill is an unsuitable route to access the compounds - request to access from the north. It relies on HS2 rebuilding a road bridge near Portway Farm. If unavailable, request for footpath to link village with School Hill properties. Request for road closures and traffic management to be fully coordinated with HS2 to prevent clashing schemes.

Response

- 3.1.54 The increase in vehicles resulting from the project is low in comparison to the existing flows. Furthermore, we have proposed that the majority of construction traffic will access the works from the north. We therefore, do not consider it necessary to provide a footway or otherwise upgrade School Hill.
- 3.1.55 The maximum daily construction traffic flows along School Hill are 44 vehicles which is less than 10% of the existing traffic flow. Swept path analysis has demonstrated that School Hill is suitable to accommodate the construction traffic and given the low impact, it is not considered that a footway or restrictions on operational times are required. The Construction Access Routes will be defined and therefore reprioritising the junction arrangements will not be beneficial.

OBJ 156 – O&H

Objection

- 3.1.56 Closure of Pilling Farm South Level Crossing and to extinguish FP1, where this currently runs across crossing. Objection due to impact on connectivity at Lidlington and severance of the village. Additional 11 minutes walking time for pedestrians to reach the same point on the Marston Vale Trail long distance footpath. Diversion will result in footpath passing through field with grazing livestock. Concerns that this will have a detrimental impact on agricultural use. Not clear if footpath will be fenced or segregated.

Response

- 3.1.57 Pilling Farm Level Crossing is proposed to be closed with a diversion via Lidlington Station Road Level Crossing to the West. To improve connectivity and reduce severance, the project is also upgrading the permissive bridleway that crosses the railway to the east of the Level Crossing.

OBJ 167 – Grendon Underwood Parish Council

Objection

- 3.1.58 Route through end of Grendon Underwood, Edgcott and School Hill is unnecessary and unsuitable for 25% of vehicles.

Response

- 3.1.59 The maximum daily construction traffic flows along School Hill are 44 vehicles which is less than 10% of the existing traffic flow. Swept path analysis has demonstrated that School Hill is suitable to accommodate the construction traffic and given the low impact, it is not considered that a footway or restrictions during operational times are required.
- 3.1.60 In order to reduce any impacts, temporary signage and consultation with local stakeholders will identify the most appropriate mitigation measures.
- 3.1.61

OBJ 198 – Edgcott Parish Council

Objection

- 3.1.62 Proposal for construction of passing places at locations on route that are not common sense and demonstrate lack of understanding of real effects, on the ground of EWR proposals.

Response

- 3.1.63 The proposals are based on a preliminary design stage on available data at the time. Detailed design (Grip 5) is currently underway.
- 3.1.64 All reasonable skill and care has been used to provide a suitable access, where practicable (including mitigation works where necessary).

OBJ 214 – Bedford Borough Council

Objection

- 3.1.65 There are a number of sites within the town centre masterplan that are not listed that could be reasonably affected by the proposals.

Response

- 3.1.66 The operational cumulative assessment utilised traffic flows from the Bedford strategic model. It is assumed this includes flows from Reasonably Foreseeable Future Projects (RFFPs) and sites within town centre masterplan which could be reasonably affected by the proposals.

OBJ 217 – Calvert Parish Council

Objection

- 3.1.67 Concerned about additional construction traffic and consider School Hill unsuitable for access to A4 Green Lane compound. Request access is provided from north only. If not possible, construction traffic should be prohibited during school periods and a suitable pavement installed along School Hill.

Response

- 3.1.68 The maximum daily construction traffic flows along School Hill are 44 vehicles which is less than 10% of the existing traffic flow. Swept path analysis has demonstrated that School Hill is suitable to accommodate the construction traffic and, given the low impact, it is not considered that a footway or restrictions during operational times are required.

OBJ221 – Oxfordshire County Council and Cherwell District Council

- 3.1.69 Objections relating to transport have been withdrawn

OBJ 232 Milton Keynes Council

- 3.1.70 Objections related to transport have been withdrawn.

4 Conclusions

- 4.1.1 The TA and ES have considered the impact of the construction and operational phases of EWR2.
- 4.1.2 Vehicle flows, highway safety, PRow and impact from HS2 have all been considered.
- 4.1.3 The significance of effect of all construction traffic on the highway network for all links is neutral or slight. The significance of effect for HGVs is mostly neutral or slight. Two roads experience a large effect but they are temporary and a mitigation strategy has been developed to minimise the impact.
- 4.1.4 The junction capacity assessment identified junctions that are already operating at capacity where the construction phase traffic impact would further increase delays and queues. The construction phase traffic flows assessed were the highest experienced at each location during construction and typically only last for one month. Whilst the capacity of the junctions would exceed the normally acceptable thresholds, the temporary nature and short duration of the increased traffic does not warrant capacity improvements. Any physical junction capacity improvements would cause increased delay and disruption compared to the construction traffic and therefore it is not warranted.

- 4.1.5 Operational impact at junctions is marginal and does not significantly increase the queues and delays with the exception of Bromham Road/Shakespeare Road (Bedford Railway Station) which is subject to an improvement as part of the Bedford Town Centre Transport Strategy.
- 4.1.6 A mitigation strategy is proposed to promote safety during construction of EWR2 which is incorporated into the Framework CTMP. The assessment in the TA and ES has been supplemented with additional analysis post submission which is appended to this Proof of Evidence. Additional localised road safety improvements are proposed in Buckinghamshire to mitigate the impact of HGVs during construction.
- 4.1.7 It is concluded that there are no long term significant, severe or unacceptable impacts of the Project.

5 Declarations

5.1.1 I hereby declare as follows:

- (i) This proof of evidence includes all facts which I regard as being relevant to the opinions that I have expressed and that the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- (ii) I believe the facts that I have stated in this proof of evidence are true and that the opinions expressed are correct.
- (iii) I understand my duty to the Inquiry to help it with matters within my expertise and I have complied with that duty.