

TRANSPORT AND WORKS ACT 1992

**Transport and Works (Applications and Objections
Procedure) (England and Wales) Rules 2006**

**THE NETWORK RAIL
(EAST WEST RAIL WESTERN SECTION PHASE 2) ORDER**

APPENDIX 14.1: DRAFT TRANSPORT ASSESSMENT

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| Document Reference | (EWR2-ENV-REP-PBL-200008) |
| Author | Network Rail |
| Date | April 2017 |
| Date of revision and revision number | April 2017 1.0 |

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1. INTRODUCTION

1.1.1 This Draft Transport Assessment (TA) has been prepared on behalf of Network Rail Infrastructure Limited (NR) to support the second round of consultation for the Network Rail East West Rail (Western Section) Phase 2 Transport and Works Act Order (TWAO).

1.1.2 The purpose of this Draft TA is to document the TA process undertaken for the Project. It describes the impacts identified as arising from the construction and operation of the Project alone and cumulatively, the methodology used to identify and assess these, as well as any proposed mitigation measures to avoid, reduce or remedy these effects.

1.1.3 It should be noted that on-going design development, as well as consultation comments, will affect the TA and its findings. Therefore, any conclusions or mitigation proposals included within the draft TA are provisional and subject to change. A final TA will be submitted with the TWAO Application.

1.1.4 For the purposes of this Draft TA, no reporting has been included for the Wycombe District Council sub-section; this is due to the fact that there will be very limited changes brought about by the Project in this sub-section, being limited only to a platform extension at Princes Risborough. There will be no other infrastructure or construction works to either the railway or the highway network as part of the Project within this sub-section. There are also no proposed changes to the rail services within this sub-section. It is therefore considered that there are no impacts to assess or report for this sub-section and it is not considered further within this Draft TA.

1.2 Report Structure

1.2.1 After this introduction, the Draft TA is structured as follows:

- **Section 2** – Sets out the limitations and assumptions used in this Draft TA;
- **Section 3** - outlines the national, regional and local policies relevant to the Project;
- **Section 4** - provides details of the methodology used to assess the construction and operational phases of the scheme. This includes the methodology for deriving baseline conditions, vehicle trip generation,

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distribution, impact on level crossings with increased barrier down time and public rights of way (PRoW) assessments;

- **Section 5** – sets out the baseline conditions;
- **Section 6** – provides the results of the construction phase assessment, including junction percentage impact assessments and temporary road closure assessment;
- **Section 7** – sets out the results of the operational phase of the scheme. This includes percentage impact assessment at stations, level crossing assessments and public rights of way assessments; and
- **Section 8** – provides this Draft TA's summary and conclusion.

2. LIMITATIONS AND ASSUMPTIONS

2.1.1 The assessment benefits from the Alliance arrangement in that there is a greater amount of traffic and transport information relating to construction available at this stage of the design, than would usually be the case on a project where the constructing party or 'contractor' was not on board.

2.1.2 However, during the preparation of an environmental assessment, there are inevitably some circumstances where information is limited, and in order to assess the environmental effects of the Project on traffic and transport a number of general assumptions have been made.

For the purpose of the assessment the following assumptions and limitations for the construction and operational phase of the assessments are shown in Table 2-1 and Table 2-2.

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Table 2-1 Limitations and Assumptions – Construction Phase of Assessment

| Limitations | Assumptions |
|--|---|
| <ul style="list-style-type: none"> Phasing of construction compound usage provides estimates of annual use and does not account for peak / monthly variations at each construction compound. HGV arrival and departure times are spread evenly throughout the day and therefore the assessment does not account for hourly peaks within the day. HGVs are likely to arrive over a 10 hour window on a typical weekday. For assessment purposes it is assumed that the arrival time is over a 7 hour window to account for potential hourly variations in HGV arrivals. Information regarding staff / operative travel patterns does not take account inter-peak trips. The draft Environmental Statement (ES) and TA assess the AM and PM peak hour trips when the impact of the scheme will be greatest. Construction staff and worker vehicle occupancy provided by the Alliance is based on previous experience of similar projects. This limitation is due to no survey on similar schemes. Data is not available for the location of staff and operative lodgings as the workforce is yet to be commissioned. An estimate has been provided by the Alliance based on population centres within the vicinity of the Project to identify the likely lodging locations. Traffic survey data is not available at a number of locations due to the on-going development of the construction methodology. This will be revisited in the final ES and TA. Percentage impact assessments have been undertaken at junctions and links where survey data is available. The final ES and TA will provide detailed junction capacity assessments. The construction routes assessed within this report are being developed at the time of writing, and are therefore subject to variation. | <ul style="list-style-type: none"> Rail materials (rail, Ballast and Sleepers) will be delivered by rail, all other materials will be delivered and removed from site by HGV All HGV access will be via the primary construction routes. All HGV's will arrive and depart the construction compound on the same day. Construction phasing proportions assumptions provided by the Alliance (see Table 4-4). Construction compounds will be in operation 12 months of the year and work will be spread evenly over the 12 months with no seasonal variations. There will be an average of 20 weekdays per month. HGV's will arrive / depart over 7 hours per day. Maximum of 350 operatives working on any one construction section at any one time (excluding sections 2c and 2d). Maximum of 150 staff working on any one construction section at any one time (excluding sections 2c and 2d). 100% of operatives will arrive before 07:00 with 50% departing between 17:00-18:00 and 50% departing between 18:00 – 19:00. Operative vehicle occupancy rate assumed as 2 operatives per vehicle. Staff vehicle occupancy rate assumed to be 1 for staff working out of the strategic construction compounds and 2 for staff working out of the satellite construction compounds. 95% of operatives and 80% of staff working out of the satellite construction compounds will access the Project via one of the strategic construction compounds and travel via the internal haul road. The remaining operatives / staff will travel direct to the construction compound. The trip distribution of operatives and staff has been provided by the Alliance and is detailed in Chapter 4 of this report. Traffic growth assumed to follow NTEM and NRTF forecasts. |

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Table 2-2 Limitations and Assumptions – Operational Phase of Assessment

| Limitations | Assumptions |
|--|---|
| <ul style="list-style-type: none"> • The EWR Business Case¹ has been used to derive the future passenger demand increases at each of the stopping stations. The base year of 2011 was used in the EWR Business Case and therefore the figures are based on growth projections from 2011. • The EWR Business Case provided annual demand figures and did not provide a breakdown into daily and hourly demand. Accordingly a number of assumptions have been made. • The EWR Business Case provided a future year of 2031 whereas the Draft ES and TA assesses up to 2035. • There is no data available for the modal split of passengers arriving and departing the stopping stations along the route. Mode share surveys are planned to be undertaken at the stopping stations in spring 2017. These will be used to inform the final assessment reported in the final ES and TA. • This Draft ES assesses the percentage increase in trips at the station access and assumes new trips will use a distribution based on existing traffic flows. The mode share surveys will capture postcode data which will be used to calculate the distribution of new passenger trips to and from the stations in order to undertake junction capacity assessments. • The PRoW assessments have been undertaken without the use of any survey data to establish current usage. • The assessment of the impact upon access to private land has not been considered as part of this Draft ES as this is not within the control of the LHA's. | <ul style="list-style-type: none"> • The Draft ES and TA assume no background growth in traffic will occur between 2031 and 2035. • To split the annual increase in passenger demand into typical weekday values an annualisation of 300 has been applied. • The passenger arrival and departure profiles have been derived using MOIRA data. It is assumed that the existing and future profiles will follow the MOIRA profiles. • A 70% car share has been assumed for passengers arriving and departing the stations. This assumption has been applied to the percentage impact assessments across all stations. This assumption gives a robust estimate of the increase in car trips. This will be revised in the final ES and TA once mode share surveys have completed. • The PRoW assessments have assumed that PRoW that are within 500m of a school will have a high sensitivity, PRoW that are over 500m from a school but 400m from an urban area will have a medium sensitivity and PRoW which are further than 500m from a school and 400m from an urban area will have a low sensitivity. • The Level Crossing Future Barrier down time has been taken from the East West Rail Phase 2 – Level Crossing Barrier Down Time Report². |

¹ East West Rail Western Section Updated Business Case, Atkins, 2015

² East West Rail Phase 2 – Level Crossing Barrier Downtime Assessment, Network Rail, 2015

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- 2.1.3 The new Winslow Station, to be built as part of EWR2, is not covered in the Draft TA or this Draft ES as the traffic impacts from the station has already been assessed as part of the previous planning application for the station: 13/02112/AOP.
- 2.1.4 No reporting has been included for the Wycombe District Council sub-section; this is due to the very limited changes brought about by the Project in this sub-section, being limited only to a platform extension at Princes Risborough. It is therefore considered that there are no impacts to assess or report for this sub-section and it is not considered further within this Draft TA.

3. LEGISLATION, POLICY AND GUIDANCE

3.1 Introduction

3.1.1 This section of the Draft TA considers the relevant national and local transportation policies relevant to the project. It is split into the following two sub-sections:

- National policy and guidance; and
- Local policy and guidance.

3.2 National Policy and Guidance

3.2.1 The following National Policies have been reviewed:

- The Future of Transport: A Network for 2030;
- National Policy Statement for National Networks;
- 2010 to 2015 Government Policy: Rail Network;
- National Planning Policy Framework;
- National Planning Policy Guidance;
- A Better Railway for a Better Britain;
- Strategic Business Plan for England and Wales for CP52014-19; and
- Railways Act 2005 Statement.

The Future of Transport: A Network for 2030

3.2.2 The Department for Transport's White Paper '*The Future of Transport: A Network for 2030*' was adopted in 2004 and sets out the Government's strategy for transport up to 2030. The document seeks to bring about improvements to all modes of transport through the creation of a coherent transport network. It focuses on three key themes of sustained investment, making improvements to transport management and planning ahead.

3.2.3 In the context of the proposals, the project will provide significant investments and improvements to the rail network.

3.2.4 The document acknowledges that people are becoming more accustomed to travelling further, including commuting for long distances to work. This project provides a public transport capability to do so, providing an alternative to the car.

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- 3.2.5 In terms of rail, the document states that the railways are a vital part of the country's infrastructure. As the economy grows there is increasing demand for travel, and the railways will play an important role in meeting this demand, providing an alternative to travelling by car.

National Policy Statement for National Networks

- 3.2.6 The '*National Networks National Policy Statement*' (NNNPS) was formally designated by Parliament in January 2015 and provides guidance regarding how decisions will be made relating to development consent orders for nationally significant infrastructure projects (NSIP). The NNNPS rejects a "*predict and provide*" approach in favour of a package of improvements that will ensure that economic benefits are balanced against social and environmental effects or value for money considerations.
- 3.2.7 National Network projects should be designed to minimise social/environmental impacts and to improve quality of life. Applications should include evidence that reasonable opportunities to deliver environmental and social benefits have been considered and that developments have been designed so as to be sensitive to potential adverse impacts. However, the NNNPS does acknowledge that the nature of major infrastructure projects is such that some adverse effects may remain, even when allowing for sensitive design and mitigation.

2010 to 2015 Government Policy: Rail Network

- 3.2.8 The '*2010 to 2015 Government Policy: Rail Network*' was published by the Conservative and Liberal Democrat coalition government in October 2012. It states that encouraging people to use trains rather than cars, and reducing carbon emissions from trains and stations, can contribute to the UK's carbon reduction targets. To achieve this, the policy states that £38 billion will be spent on improving and running the rail network in Great Britain, increasing the capacity with an extra 140,000 commuting journeys each day in the UK's key cities.

A Better Railway for a Better Britain

- 3.2.9 *'A Better Railway for a Better Britain'* was published by Network Rail in January 2013. It outlines Network Rail's challenges and opportunities, referring to the railway's unprecedented growth. Network Rail's purpose is to generate outstanding value for customers and tax payers and its vision is to be a trusted leader in the rail industry.
- 3.2.10 In 2002/03 there were 976m passenger journeys and in 2011/12 there were 1.46bn journeys. Passenger numbers continue to grow every year and by 2020 another 400 million rail journeys will be made. This is an almost 50% increase in passengers. The report states that Network Rail are undertaking the biggest capacity improvement programme since the Victorian era.
- 3.2.11 The report recognises that railways don't just move people and freight; they also generate and spread prosperity. Investing in rail infrastructure is important for the future of the country and provides tangible benefits for both rail users and Britain's economy. Examples of the benefits of investment include:
- Economic benefits - It is stated that for the Northern Hub, every £1 invested generates £4 for the UK economy;
 - Changing communities - It is stated that the investment in rail links in the Ebbw Valley in Wales has opened up new job opportunities for local people;
 - Creating jobs for Network Rail suppliers; and
 - Taking lorries off the road.
- 3.2.12 One of Network Rail's key themes is *"Everyone home safely every day"*. To this end, the report states that Network Rail is investing £130m to make level crossings safer. This includes closing 750 by April 2014. Relevant level crossings to the East West Rail project will be reviewed with upgrades and bridge replacements put in place as appropriate.
- 3.2.13 The report provides an example - the modernisation of the Great Western Main Line - to demonstrate Network Rail's improvement programme. The modernisation includes the East West Rail proposal, where it comments that

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it will reintroduce direct passenger services from Oxford and Aylesbury to Bletchley and Milton Keynes Central.

Strategic Business Plan for England and Wales for CP5 - 2014-19

- 3.2.14 The '*Strategic Business Plan for England and Wales*' was published by Network Rail in January 2013. It provides the Strategic Business Plan for Network Rail for the five year period from 2014 to 2019, known as Control Period 5 (or CP5). It states that East West Rail is a committed project for CP5, at a cost of £352m (2012/13 prices). It states that the objective of the project is to provide additional network capacity to accommodate growth in freight and passenger markets, by reopening and enhancing the Oxford - Bletchley - Bedford railway to create direct link between the Great Western, West Coast and Midland Main Lines.

Railways Act 2005 Statement

- 3.2.15 The '*Railways Act 2005 Statement*' defines the railway that the Government wishes to see by 2019. CP5 forecasts a 16% average growth of passenger demand and 23% in freight. It includes £5.2bn of infrastructure enhancements already committed for CP5 and includes East West Rail (Oxford - Bedford).
- 3.2.16 The Statement includes a supplementary high level specification of major projects for CP5. The list of committed projects includes East West Rail (Oxford - Bedford, Aylesbury - Calvert and links). It also states that the Secretary of State wishes for the 'Electric Spine' rail electrification and capability enhancement projects to be developed and delivered within CP5. This includes the electrification of Oxford - Bletchley - Bedford (East West Rail core route).

National Planning Policy Framework

- 3.2.17 The Department for Communities and Local Government published its '*National Planning Policy Framework*' (NPPF) in 2012. The NPPF replaces

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previous Planning Policy Guidance (PPG) Notes and Planning Policy Statements (PPS) with a single document.

3.2.18 At the heart of NPPF is "a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking" (paragraph 14).

3.2.19 The document states that:

- Transport policies have an important role to play in facilitating development but also in contributing towards wider sustainability and health objectives" (Paragraph 29);
- "The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel" (Paragraph 29); and
- "Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion" (Paragraph 30).

3.2.20 The proposals will provide additional linkages by rail which will result in increased route choice for passenger and freight travel. Additionally it will promote an alternative to private car use whereby encouraging the reduction in greenhouse gases and congestion.

3.2.21 In terms of traffic impact, NPPF sets out a key test in Paragraph 32 for the acceptability of planning applications. It states that:

- 'Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe' (Paragraph 32).

National Planning Policy Guidance

3.2.22 The '*National Planning Practice Guidance*' (NPPG) web-based resource was published on 6 March 2014 by the Department for Communities and Local Government (DCLG). This resource collates relevant planning practice guidance and provides links between the NPPF and relevant legislation and guidance.

3.2.23 In terms of transportation, the guidance on "*Travel Plans, Transport Assessments and Statements in Decision-Taking*" is relevant to the

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proposals. It essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

- "Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts".
- Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be grounds for refusal, in accordance with the National Planning Policy Framework".

3.2.24 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements. It states that:

- "The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may therefore positively influence the overall nature or the detailed design of the development."

3.2.25 Paragraph 014 goes on to state that the key issues to consider at the start of preparing a Transport Assessment are as follows:

- "The planning context of the development proposal;
- Appropriate study parameters (i.e. area, scope and duration of study);
- Assessment of public transport capacity, walking/ cycling capacity and road network capacity;
- Road trip generation and trip distribution methodologies and/ or assumptions about the development proposal;
- Measures to promote sustainable travel;
- Safety implications of development; and
- Mitigation measures (where applicable) - including scope and implementation strategy".

3.2.26 Regarding treatment of cumulative impact of development, the NPPG also states in Paragraph 014 that:

- "It is important to give appropriate consideration to the cumulative impacts arising from other committed development (i.e. development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next three years). At the decision-taking

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stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from as yet unimplemented planning approval."

- 3.2.27 Detailed scoping discussions have been undertaken with the relevant stakeholders to agree a scope for preparing this Draft TA.

3.3 Local Policy – Cherwell District Council

Cherwell Local Plan 2011-2031

- 3.3.1 The *Cherwell Local Plan* sets out the development strategy across Cherwell between 2011 and 2031.
- 3.3.2 ‘*Cherwell Local Plan 2011-2031 Part 1*’ was adopted in July 2015. Its vision is that by 2031, Cherwell District will be an area where all residents enjoy a good quality of life and it will be more prosperous than it is today. Those who and work here will be happier, healthier and feel safer.
- 3.3.3 **Strategic Objective 13** states that to reduce the dependency on the private car as a mode of travel, increases in the attraction of and opportunities for travelling by public transport, cycle and on foot, and to ensure high standards of accessibility to services for people with impaired mobility.
- 3.3.4 **Policy SLE 4** states that the Council will support key transport proposals including projects associated with East-West rail including new stations at Bicester and Water Eaton.
- 3.3.5 Part 2, currently under consultation, notes that the Non Statutory Cherwell Local Plan 2011 contains policy TR28 which states that “The Council will ensure that development does not prejudice the provision of the East West Rail proposals on existing track between Bedford and Oxford”. It states that given the continued strategic importance of proposed improvements to East-West rail links it may be important for the Local Plan Part 2 to include a similar policy.

Connecting Oxfordshire: Local Transport Plan 2015-2031

- 3.3.6 The Local Transport Plan 4 (LTP4), Connecting Oxfordshire, sets out Oxfordshire County Council's policy and strategy for developing the transport system in Oxfordshire to 2031. It includes the following goals, which can be viewed to align with the East West Rail outcomes:
- To support jobs and housing growth and economic vitality;
 - To support the transition to a low carbon future; and
 - To support social inclusion and equality of opportunity.
- 3.3.7 LTP4 states that East West Rail and the Oxford to Cambridge Expressway projects will place Oxfordshire at the centre of the south-east orbital corridor as a key hub for south-west to north-east transport. As a result, Oxfordshire will have improved agglomeration opportunities for jobs, growth and innovation, with its vastly-improved road and rail links to these high-value centres of the UK economy. It also states that these projects will provide access to Milton Keynes and beyond, as well as rail access to Heathrow from the west.
- 3.3.8 It also states that Oxfordshire County Council is progressing work to deliver a new highway bridge to allow the Eastern Perimeter Road to cross the new East West Rail line, replacing the current Charbridge Lane level crossing.
- 3.3.9 It states that rail passenger demand is predicted to increase by 68% to 2026, most of this growth being generated by new rail investment. The greatest increases are predicted on the Oxford-London corridor, where from 2015 there will be a choice of routes and increase in services, resulting from the opening of East West Rail (EWR) Phase 1 and Oxford Parkway station, and on the rail network through Oxfordshire linking Didcot, Oxford, Bicester on to Milton Keynes and beyond when Phase 2 opens in 2019. The Council's strategy for rail investment also includes other route and service upgrades, for example to support growth and investment in Science Vale and further upgrades to the Cotswold Line.

3.4 Local Policy – Aylesbury District Council

Buckinghamshire County Council Strategic Plan 2015-17

3.4.1 *'Buckinghamshire County Council's Strategic Plan'* sets out its vision for the county and the priorities on which the council need to focus. Its vision for 2025 is that Buckinghamshire will still be a great place to live and work and its economy will be one of the strongest in the country.

3.4.2 In the context of East West Rail, the plan states that the council will work with its partners to maximise external investment in the county's infrastructure, including East West Rail. It also states that the council will deliver improved road and rail connectivity.

Vale of Aylesbury Local Plan (2004)

3.4.3 Aylesbury Vale District Council is currently preparing its new local plan. The document will include the overall strategy for the district, site allocations and development management policies.

3.4.4 The document is currently open for consultation and is due to be submitted to the secretary of state in 2017. This document is commented on below. At the current time, the 2004 Local Plan is still relevant.

3.4.5 The Local Plan's vision is to make Aylesbury Vale the best possible place for people to live and work. In terms of transport, it states that the Local Plan needs to reflect the County Council's Integrated Transport Strategy (ITS).

3.4.6 In the context of East West Rail, the Local Plan Policy GP.25 states that the Council will resist development that might prejudice the use of the rail route running through the District between Bicester and Bletchley, and the northward link from Aylesbury, by passenger and freight services. In considering proposals for any associated rail development the Council will protect the amenities of occupiers close to the route.

3.4.7 Policy GP.26 states that provision is made for railways stations on sites defined on the Proposals Map at Winslow, Quainton and Calvert. The Council will resist development that would prejudice station schemes or related rail transport proposals for these sites.

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Vale of Aylesbury Local Plan – Draft Plan for Summer 2016 – Consultation

- 3.4.8 The Vale of Aylesbury Local Plan (VALP) is currently in consultation and is due to be submitted to the secretary of state in 2017, with anticipated adoption in summer 2017.
- 3.4.9 Its vision is to secure the economic, social and environmental wellbeing of the people and businesses in the area. It states that Aylesbury will be a key hub for public transport and interchange and offer a diverse choice of travel modes with stronger public transport links to Milton Keynes, Oxford and the Thames Valley, meaning that Aylesbury is an integral part of the national rail network rather than the end of the line.
- 3.4.10 In the context of East West Rail, Policy S6 states that planning permission will not be granted for development that would prejudice the implementation of protected transport schemes, which includes East West Rail.

Buckinghamshire's Local Transport Plan 4 (LTP4)

- 3.4.11 *'Buckinghamshire's Local Transport Plan 4'* sets out the transport strategy for the region between 2016 and 2036. It aims to make Buckinghamshire a great place to live and work, maintaining and enhancing its special environment, helping its people and businesses thrive and grow to become one of the strongest and most productive economies in the country.
- 3.4.12 In relation to East-West Rail, Policy 4 and Policy 5: *Maximising our Rail Network*, states that the Council will work in partnership with key stakeholders to develop a reliable rail transport network that: provides effective access within the county; links us to the rest of the country; and is integrated with other modes of transport, including airports. It also states that the Council will work to ensure that HS2 is built with minimal disruption to residents and that it brings benefits to Buckinghamshire: including a new East West Rail station in the north of the county and high-quality restoration of construction sites.
- 3.4.13 It also states that the Council will continue to work as an active member of the East-West Rail Consortium, supporting the earliest possible delivery of

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East West Rail services. It states that East West Rail will support economic growth, new housing and jobs.

- 3.4.14 LTP4 provides a case study on East West Rail, stating the following: East West Rail would help to stimulate sustainable growth and is estimated to support the development of around 120,000 homes and similar number of jobs. It would help support the England's Economic Heartland alliance and the Buckinghamshire Thames Valley Local Economic Partnership's Strategic Economic Plan. An assessment of the economic impact of the western section of East West Rail by Arup, an independent engineering and consultancy firm, shows that the project could boost the regional economy by £72.7 million a year with a £33.2 million boost to UK tax receipts.
- 3.4.15 Under 'The role of freight transport' it states that East West Rail will generate significant freight movements and that a Freight Strategy will be produced to support LTP4.
- 3.4.16 It states the council will look to fund capital programmes through such channels including the opportunities that arise from national transport projects, such as East West Rail.

3.5 Local Policy – Milton Keynes Council

Milton Keynes Local Plan 2001-2011

- 3.5.1 The Milton Keynes Local Plan 2001-2011 was adopted in December 2005. Milton Keynes Council is currently preparing a new local plan for the Borough but until this is adopted, the Local Plan 2001-2011 remains relevant. One of the principles of its vision is for a Milton Keynes that offers real choices for transport.
- 3.5.2 The Local Plan aims to promote an integrated transport system that gives priority to walking, cycling, bus, rail and canals.
- 3.5.3 It states that planning permission will be refused for development that would prejudice the construction of the East-West Rail link and that the East-West Rail project may provide new opportunities for freight transfer sites. This

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would assist Milton Keynes in achieving their objective or aiding the transfer of freight from the road to the rail and canal networks.

Milton Keynes Council Core Strategy 2013

- 3.5.4 The '*Milton Keynes Core Strategy*' is the principal spatial plan for Milton Keynes Council and was adopted in July 2013. It provides a vision for the year 2026. This states that transport links to other towns, including Aylesbury, Bedford, Luton and Northampton, will have been improved. This includes the East-West Rail link between Oxford and Cambridge via Milton Keynes.
- 3.5.5 The Strategy recognises the need to reduce carbon emissions, and recommends improving public transport, amongst other measures, to achieve this.
- 3.5.6 In the context of East West Rail, the strategy states that Milton Keynes Council accepts that East West Rail will contribute to the growth and development of Milton Keynes and provide an excellent opportunity for the Borough in both the local and regional context which will provide significant economic, environmental and social benefits. It also states the need to improve east-west transport links, including the A421 and the western section of East –West Rail link to match north – south connections.
- 3.5.7 Policy CS11 states that The Council will engage with Network Rail and relevant stakeholders along the East – West Rail line to identify operational benefits which thereby provides additional support for a more sustainable transport strategy and/or economic growth of the city.

Milton Keynes Council: Local Development Scheme 2016 - 2019

- 3.5.8 The Local Development Scheme is a three-year project plan that sets out the timescales for preparing the new planning policy documents. It states that the new Local Plan, Plan:MK is due for adoption in 2019. This will replace the existing 2005 Milton Keynes Local Plan and the 2013 Core Strategy.

Milton Keynes Council Local Transport Plan 3

3.5.9 *'Milton Keynes Council's Third Local Transport Plan'* sets out the transport strategy for Milton Keynes for 20 years between 2011 and 2031. Its vision is that by 2031, Milton Keynes will have the most sustainable transport system in the country, increasing its attractiveness as a place to live, work, visit, and do business. There will be a real transport choice to satisfy individual preferences and encourage more sustainable travel behaviour. The transport system will provide fast and efficient movement of people and goods, and will be accessible for all. Everyone will have access to key services and amenities, including employment, health, education, retail and leisure.

3.5.10 It includes the following objectives relevant to East West Rail:

- Provide real and attractive transport choices to encourage more sustainable travel behaviour as Milton Keynes grows;
- Support the economic growth of the borough through the fast, efficient and reliable movement of people and goods; and
- Reduce transport based CO2 emissions to help tackle climate change.

3.5.11 It also states that East West Rail will support economic growth and investment in new jobs and homes; provide for faster journeys between towns and cities to the north and west of London, avoid the need to travel via the capital; provide an alternative to travel by road, reducing congestion and carbon emissions; and create increased capacity elsewhere on the rail network in the longer term.

3.5.12 East West Rail would link the knowledge economies of Cambridge and Oxford with Milton Keynes. Milton Keynes Council supports the construction of East West Rail.

3.6 Local Policy – Central Bedfordshire County Council

Central Bedfordshire - Core Strategy and Development Management Policies

3.6.1 The *'Core Strategy and Development Management Policies'* document was adopted by Central Bedfordshire in November 2009. This is due to be replaced by the *Development Strategy for Central Bedfordshire* which is

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currently being prepared. However, until this document has been adopted, the *Core Strategy and Development Management Policies* remains relevant.

3.6.2 The *Core Strategy and Development Management Policies* document acknowledged that Central Bedfordshire has transport challenges including:

- Achieving an effective, efficient and sustainable transport system;
- Achieving modal shift in the context of high levels of car ownership and use;
- Providing public transport to a scattered population;
- Providing access to services for those without a car; and
- Improving peak time congestion 'hotspots'.

3.6.3 The spatial vision states that Mid Bedfordshire will be a place where access to facilities and services is available for all and that there will be increased options to travel by means other than the car.

3.6.4 It also states that the fundamental importance of the western section of the line, from Oxford to Bedford, via Milton Keynes/Bletchley, has been identified in the Milton Keynes & South Midlands Sub-Regional Strategy (MKSM SRS) and the South East Plan as a key element in delivering planned sustainable growth in the sub region.

3.6.5 “**Policy CS4: Linking Communities - Accessibility and transport**” states that the Council will seek to facilitate the delivery of strategic transport schemes including rail improvements”.

Development Strategy for Central Bedfordshire

3.6.6 The Development Strategy for Central Bedfordshire was published as a Revised Pre-submission Version in June 2014. It was published in accordance with the National Planning Policy Framework and the Planning and Compulsory Purchase Act 2004. It is referred to as the Local Plan for Central Bedfordshire and will replace the north ‘*Core Strategy and Development Management Policies Document*’ (2009).

3.6.7 It states that Central Bedfordshire is a largely rural area, with the exception of Dunstable and Houghton Regis. There are a number of small to medium

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sized towns and the area is relatively well served by strategic north-south road links. East-west movement by road is less well served. The major rail links are north-south orientated, however an east-west route exists from Bedford to Bletchley, with a link to Milton Keynes and Oxford. This route is due to be upgraded and electrified as part of the East West Rail project by 2019.

- 3.6.8 The Development Strategy states that settlements lack of self-containment results in residents travelling long distances to access employment and everyday services. The East West Rail project will improve the rail option for these longer distances, which could encourage modal shift, reducing traffic and pollution. This fits with the Development Strategy's key principles, which includes increasing accessibility through sustainable travel opportunities and making best use of existing infrastructure.
- 3.6.9 **Policy 24** includes the provision of public transport services that are effective, viable, sustainable and that match local needs.
- 3.6.10 Policy 25 states to maximise the capacity of the existing transport network and where capacity is insufficient to cater for increase in demand to travel, the provision of new transport infrastructure will be sought as a priority. It also states that the Council will take account of sites and routes which could be critical in delivering transport infrastructure, including the route of the East West Rail project.
- 3.6.11 Policy 28 states that the authority will seek the submission of a Transport Assessment with any new development and that they should be in line with appropriate best practice guidance.

Central Bedfordshire Council Local Transport Plan 3 (LTP3)

- 3.6.12 '*Central Bedfordshire Councils Third Local Transport Plan*' sets out the transport strategy for the region for a 15 year period between 2011 and 2026. Its vision is that by 2026 Central Bedfordshire will be globally connected delivering sustainable growth to ensure a green, prosperous and ambitious place for the benefit of all by creating an integrated transport system that is safe, sustainable and accessible.

3.7 Local Policy - Bedford Borough Council

Bedford Borough Local Plan and Core Strategy

- 3.7.1 The main planning policy documents for Bedford are the ‘*2002 Bedford Borough Local Plan*’ and the ‘*2008 Core Strategy and Rural Issues Plan*’ which was subsequently adopted and replaced some of the policies in the 2002 Local Plan.
- 3.7.2 The 2008 Strategy's Borough Wide Spatial Vision states that, by 2021, east-west communications will be much improved with the completion of the Oxford - Bedford rail link and that the transport network infrastructure and the quality of public transport services will have improved.
- 3.7.3 **Policy CP27** of the Core Strategy states that the borough council will support the early provision of East-West rail project (Oxford to Bedford).
- 3.7.4 The 2002 Local Plan includes an overall aim to improve communications and movement in and out of the borough. This means achieving improved levels of mobility, accessibility, convenience and personal safety.
- 3.7.5 In the context of East-West Rail, the 2002 Local Plan states the following policies:
- **Policy T8** – “The Borough Council will continue to promote Bedford as an important station on the national rail network by seeking the:
 - Maintenance and enhancement of inter-city services;
 - Maintenance and enhancement of Thameslink services; and
 - Improvement of existing cross country services and development of new links;
 - Improvement of facilities at Bedford Midland Station;
 - **Policy T9** – “The borough will encourage improved rail services to and from Bedford, the improvement of the Marston Vale Line including improved parking provision and the electrification of the route north of Bedford”; and
 - **Policy T10** – “The Borough will encourage improved access to rail services and support the construction of new stations where these are consistent with other policies of this plan and contribute to the review of the Bedford Integrated Transport Strategy”.

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- 3.7.6 It also states that Bedford Borough Council is a member of the consortium promoting the concept of an east-west rail route linking Felixstowe - Ipswich/Norwich - Cambridge - Letchworth - Bedford - Milton Keynes - Aylesbury - Oxford - Swindon and thence to west coast routes.

Bedford Borough Council Local Plan 2035

- 3.7.7 Bedford Borough Council is currently preparing its latest local plan - Local Plan 2035. The document will set out how much growth there should be in the borough in coming years (housing, jobs and associated infrastructure) and where it should take place. The Local Plan is currently at the stage of identifying sites and is undergoing a 'call for sites' process. The Local Development Scheme was published by Bedford Borough Council in April 2016. It sets out a timetable for the Local Plan 2035, as follows:

- Submission consultation - Spring 2018.
- Submission to the Secretary of State - Autumn 2018.
- Adoption - June 2019.

Bedford Borough Local Transport Plan 3

- 3.7.8 Bedford Borough Council's Local Transport Plan 3 was published on 1st April 2011 and runs until 2021. It includes four components. The components relevant to the project are outlined below:

- Bedford's Active Travel Strategy (2011 - 2021) states that a travel plan has been developed for accessing the two Bedford rail stations and its recommendations are currently being implemented. It also states the need to improve the integration of public transport services with walking and cycling routes;
- Bedford's Freight Strategy (2011 - 2021):
 - 9.2.5 East West Rail - Proposals identified in the Milton Keynes and South Midlands Sub-regional Strategy for re-instating an east-west rail link between Oxford and Cambridge are currently being subject to further investigation. This would largely make use of existing rail infrastructure between Oxford and Bedford, via the Marston Vale rail link. However, there is currently a 'missing link' between Bedford and Cambridge, which has been the subject of a recent consultation by the East- West Rail Consortium. In addition to considering the former rail route between Bedford and Cambridge, this consultation also considered an alternative route via Luton and Stevenage; and

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- 9.2.6 - A rail link between Bedford and Cambridge would create a new strategic east- west rail route east of Bedford, which could have potential to carry freight as well as passenger traffic. However, in the current economic climate this link is unlikely to be realised in the near future.
- Bedford's Passenger Transport Strategy (2011 - 2021):
 - States a public transport aim of providing the public with a wider range of travel choices as an alternative to the private car, reducing congestion air pollution and carbon emissions, improving road safety and supporting economic sustainability.
 - Includes a Delivery Action Plan Task of supporting the work of the East West Rail Consortium for the reinstatement of rail services between Oxford / Milton Keynes / Bedford / Cambridge.

4. APPROACH AND METHODOLOGY

4.1 Introduction

4.1.1 This section of the report sets out how the Draft TA assesses the impacts arising from the construction and operational phases of the Project.

4.1.2 It should be noted that discussions are currently on-going with the LHA's and the methodology set out in this chapter may be refined in the final TA.

4.1.3 The **Baseline Conditions** is currently being developed, and will describe the existing transport provision at construction compounds and rail stations along the route. The following will be considered:

- Station / Construction compound location and access;
- Local highway network including flows, speeds and Level crossings;
- Construction routes and haul road crossings;
- Road safety and vulnerable users;
- Public transport accessibility; and
- Walking and cycling networks.

4.1.4 The **Construction Assessment** will identify the impact of the Project construction on the transport network and transport users. The assessment approach is described in detail in the following sub-sections.

4.1.5 The **Operational Assessment** will identify the impact of the Project operation on the transport network and transport users. The assessment approach is described in detail in the following sub-sections.

4.2 Data Collection and Identification of Baseline Conditions

4.2.1 A range of data sources have been obtained and will be used to provide existing information on baseline conditions, obtained from the Local Highway Authorities. These are as follows:

- Level crossing audits;
- Road traffic flow data;
- BCC and OCC strategic modelling outputs;
- Personal injury accident records;

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- Traffic signal timing data;
- Bus and rail timetable information;
- National Cycle Network datasets;
- Outputs from the EWR Business Case¹; and
- MOIRA Data.

4.2.2 In addition to the above, where no data was available, additional surveys were undertaken by an independent survey company in September and October 2016. The surveys included turning count data at junctions, Automatic Traffic Counters (ATC), queue surveys and level crossing surveys. Due to the volume of the data collated, it has not been included in this report; it can be made available upon request.

4.2.3 The turning count surveys, queue surveys and level crossing surveys were undertaken using video recording equipment.

4.2.4 Further data collection may be required to further develop an understanding of the existing modal split at the stations.

4.3 Spatial Study Area

4.3.1 The study area for this draft TA and the draft traffic and transport assessment (the study area) comprises:

- All construction construction compound sites (see Figures 2.1A to J);
- Construction access routes (see Figures 2.1A to J);
- Level crossings with increased barrier down time (between Bletchley and Bedford) (see Figure 1H in Volume 4 of the ES);
- The following stopping stations:
 - Aylesbury;
 - Aylesbury Vale Parkway;
 - Bedford;
 - Bicester;
 - Bletchley;
 - Ridgmont; and
 - Woburn Sands.
- Public Rights of Way which cross the Project Area.

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Temporal scope

4.3.2 The following assessment scenarios were considered within the subsequent assessments;

- Base Year (2016) - which is when the traffic surveys were undertaken;
- The Peak Year of Construction at each construction construction compound, which will vary by compound. Details are provided later in this report;
- Cumulative peak year construction across all construction construction compounds (2019-2024);
- Project Opening (2024); and
- Future year of operation Assessment (2035).

Consultation

4.3.3 The scope of the assessment considered when preparing this TA was determined by engaging with key stakeholders. A series of meetings were held with the LHA's to discuss the scope of assessment and a series of technical notes issued. The Local Highway Authorities were led as a group by Buckinghamshire County Council who co-ordinated the group.

4.3.4 Table 4-1 shows the meetings that have been held to develop and agree the TA scope and methodology with the Local Highway Authorities. Table 4-2 sets out the consultation documents which were issued to agree the assessment approach.

Table 4-1 Summary of Scoping Meeting Dates

| Meeting Date | Stakeholder |
|--------------------------------------|-----------------------|
| 18 June 2015 | BBC |
| 19 June 2015 | CBC |
| 29 July 2015 | MKC |
| 30 September 2015 and 1 October 2015 | BBC / CBC / BCC/ MKC |
| 12 October 2015 | OCC |
| 9 August 2016 | OCC / BCC / CBC / MKC |
| 29 September 2016 | OCC / BCC / CBC / MKC |
| 9 September 2016 | OCC / BCC / CBC / MKC |
| 19 December 2016 | OCC / BCC / CBC / MKC |

Table 4-2: Summary of Issued Documents

| Document | Issue Date |
|--|-------------------|
| ES Scoping Opinion | June 2015 |
| Transport Assessment Scoping Report | 25 September 2015 |
| Transport Assessment Scoping Report | 15 July 2016 |
| CBC Survey Specification Report | 5 April 2016 |
| BCC Survey Specification Report | 5 April 2016 |
| OCC Survey Specification Report | 5 April 2016 |
| MKC Survey Specification Report | 5 April 2016 |
| Transport Assessment Scoping Report | 20 July 2016 |
| Operational Trip Generation Report | 3 November 2016 |
| Construction Trip Generation Report | 3 November 2016 |
| Spread sheet model of construction routes. | 3 November 2016 |
| Construction Trip Generation Report Version2 | 29 November 2016 |
| Spread sheet model of construction routes Version2 | 1 December 2016 |

4.4 Construction Assessment Approach and Methodology

Construction Compounds

- 4.4.1 To aid with the delivery of the Project the overall route has been split down into sections, each served by a construction compound at the approximate middle of the section. This report has assessed 17 construction compounds along the route which will be accessed via the highway network. There are two types of construction compounds as follows:
- 4.4.2 Strategic construction compounds will be the main larger construction compounds from which the project is managed and will have a larger welfare setup for the project management staff offices. These are situated in areas with good access to the highway network and where possible near to urban areas so that access via non-car modes can be maximised for staff.
- 4.4.3 Satellite construction compounds will have a smaller footprint than the strategic construction compounds and will be used to manage the works along the section. The facilities will include a small office setup with welfare facilities so operatives do not have to travel back to the main construction compounds each time they need the facilities or are on a break. These include a logistics compound at M1 Junction 13.

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4.4.4 The construction compounds which have been considered in this draft TA are set out in Table 4-3. The latest information regarding the location of the construction compounds is shown on Figures 2.1A to 2.1J.

Table 4-3 Summary of Construction compound Type and Duration of Use

| Construction compound Number | Construction compound Name | Construction compound Type | Duration of Use (Years) |
|------------------------------|----------------------------|----------------------------|-------------------------|
| A1 | Bicester | Strategic | 4 |
| A2 | Launton | Satellite | 4 |
| A3 | Marsh Gibbons | Satellite | 4 |
| A4 | Claydon Junction | Strategic | 5 |
| B1 | Steeple Claydon | Satellite | 5 |
| B2 | Verny Junction | Satellite | 5 |
| B3 | Furze Lane | Satellite | 4 |
| B4 | Little Horwood | Strategic | 5 |
| B5 | Newton Longville | Strategic | 4 |
| B6 | Bletchley | Strategic | 5 |
| C1 | Wellington Place | Satellite | 3 |
| C2 | Bletchley Viaduct | Satellite | 3 |
| D1 | M1 Junction 13 | Logistics | 4 |
| D2 | Kempston Hardwick | Satellite | 4 |
| E3 | Waddesdon | Satellite | 2 |
| E4 | Akeman Street | Strategic | 4 |
| E5 | Aylesbury Vale Parkway | Satellite | 4 |

Years of Construction and Phasing

4.4.5 Construction is planned to take place from 2019 and 2024 with various degrees of intensity of works at each construction compound over the build out process.

4.4.6 The estimated build out rate per construction compound has been provided by the Alliance and is set out in Table 4-4. It should be noted that the construction programme may change for the final ES and TA. The final construction programme will be reviewed when available and construction compound intensity revised accordingly. The use of the construction compounds below has been developed to show a likely maximum of concurrent activities, this is based on likely resource availability.

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Table 4-4 Construction compound Build Out Rates

| Construction compound Name | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|-----------------------------|------|------|------|------|------|------|-------|
| A1 – Bicester | 20% | 30% | 30% | 20% | | | 100% |
| A2 – Launton | 30% | 30% | 20% | 20% | | | 100% |
| A3 - Marsh Gibbons | 20% | 20% | 30% | 30% | | | 100% |
| A4 - Claydon Junction | 10% | 15% | 20% | 25% | 20% | 10% | 100% |
| B1 - Steeple Claydon | | 15% | 20% | 30% | 20% | 15% | 100% |
| B2 - Verney Junction | | 15% | 20% | 30% | 20% | 15% | 100% |
| B3 - Furze Lane | | 20% | 25% | 30% | 25% | | 100% |
| B4 - Little Horwood | | 20% | 25% | 25% | 20% | 10% | 100% |
| B5 – Newton Longville | | 25% | 25% | 25% | 25% | | 100% |
| B6 – Bletchley | | 15% | 25% | 25% | 20% | 15% | 100% |
| C1 - Wellington Place | | 30% | 40% | 30% | | | 100% |
| C2 - Bletchley Viaduct | | 30% | 40% | 30% | | | 100% |
| D1 - M1 Junction 13 | | | 25% | 25% | 25% | 25% | 100% |
| D2 - Kempston Hardwick | | | 25% | 25% | 25% | 25% | 100% |
| E3 – Waddesdon | | | 50% | 50% | | | 100% |
| E4 - Akeman Street | | | 20% | 25% | 30% | 25% | 100% |
| E5 - Aylesbury Vale Parkway | | | 20% | 30% | 40% | 10% | 100% |

Construction Trip Types

4.4.7 The following trip types are considered in this Draft TA:

- **HGV Trips** – Trips from Heavy goods vehicles. These will access the construction compounds via fixed construction routes;
- **Staff Trips** - Office based support and admin staff trips; and
- **Operatives** - Construction / site based personnel trips.

Construction Routes

4.4.8 The Alliance has proposed specific construction routes to and from each construction compound. Each construction compound will have a primary access route which will be used for all access and deliveries to the construction compound. An alternative secondary access route has been identified for instance where the primary route is not available ; the use of this secondary route will be limited and only used if the primary route is not available for any reason such as a temporary road closure due to an incident on the highway. This TA assumes all access will be along the primary route.

Haul Road and Site Access Strategy

- 4.4.9 The access strategy has been developed to balance the vehicle numbers and use of the public highway network and the amount of temporary land take required for haul roads. An offline haul road is to be provided along the length of the project where space allows. Within urban areas and adjacent to sensitive sites in some cases sufficient land will not be available to provide the haul road.
- 4.4.10 The haul road will be used to service construction areas between construction compounds. All construction compounds, both strategic and satellite will be used as points of access to site, with no direct access onto the haul road from the public highway.

HGV Trip Generation

- 4.4.11 The number of HGV movements has been based on the latest design information available. The main requirements for HGV movements will be due to the earthworks and main civil construction works at structures. The overall project route has been split down into sections, each served by a construction compound at the approximate middle of the section. The construction compounds will serve as the HGV access point for all works within that section and the scope of works within the limits served by each construction compound has been used to derive the HGV movements.
- 4.4.12 The project design model has been used to determine the cut and fill volumes for each section. Where the fill volume exceeds the cut, with a 10% allowance for waste / non suitable materials, fill material will need to be imported onto site. For the purposes of this assessment it is assumed that 20t tipper wagons, 9m³ capacity, will be used to import material to site.
- 4.4.13 The materials delivered to site to enable the construction of the various civils elements such as structures and drainage, a haul road will be delivered to the construction compound serving each section of the route. The scope of works for each section has been used to determine the materials based on a schedule of requirements for a standard element of works e.g. the

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construction of a new structure, or based on a standard requirement per 100m e.g. for drainage and haul road construction. The type of transport has been categorised based on the plant size or material.

- 4.4.14 Materials for the rail infrastructure, ballast, sleepers and long rail sections, will be delivered by train where possible to minimise HGV movements.
- 4.4.15 The one-way HGV movements to each construction compound are set out in Table 4-5. The values shown are the HGV movements over the duration the construction compound is in operation. For example A1 Bicester will have 2,284 (4,568 two way movements) one way HGV movements over the 4 year period that it is operation.

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Table 4-5: Total One-way HGV Trips by Construction compound during Time Each Construction compound is in Operation.

| Construction Compound Name | Construction compound Duration | Low Loader | Extendable Trailer | 40ft Arctic | 20t Tipper / Trailer | 7.5t Rigid | Concrete Wagon | Crane (up to 100t) | Crane (100-250t) | Crane (300+) | Crane ballast wagon | Concrete Pump | Total HGV's |
|-----------------------------|--------------------------------|------------|--------------------|-------------|----------------------|------------|----------------|--------------------|------------------|--------------|---------------------|---------------|-------------|
| A1 - Bicester | 4 | 47 | 21 | 88 | 1722 | 12 | 347 | 14 | 9 | 3 | 6 | 15 | 2284 |
| A2 - Launton | 4 | 26 | 7 | 40 | 1824 | 4 | 161 | 6 | 1 | 1 | 2 | 7 | 2079 |
| A3 - Marsh Gibbon | 4 | 37 | 14 | 59 | 1952 | 8 | 186 | 8 | 8 | 2 | 4 | 8 | 2286 |
| A4 - Claydon Junction | 6 | 50 | 21 | 83 | 2554 | 12 | 211 | 10 | 15 | 3 | 6 | 9 | 2974 |
| B1 - Steeple Claydon | 5 | 24 | 7 | 47 | 1210 | 4 | 161 | 6 | 7 | 1 | 2 | 7 | 1476 |
| B2 - Verney Junction | 5 | 40 | 14 | 75 | 1835 | 8 | 322 | 12 | 8 | 2 | 4 | 14 | 2335 |
| B3 - Furze Lane | 4 | 38 | 14 | 51 | 2856 | 8 | 50 | 4 | 8 | 2 | 4 | 2 | 3036 |
| B4 - Little Horwood | 5 | 70 | 35 | 104 | 3121 | 20 | 397 | 18 | 11 | 5 | 10 | 17 | 3808 |
| B5 – Newton Longville | 4 | 28 | 7 | 45 | 2203 | 4 | 161 | 6 | 1 | 1 | 2 | 7 | 2465 |
| B6 - Bletchley | 5 | 5 | 0 | 6 | 657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 668 |
| C1 - Wellington Place | 3 | 12 | 7 | 25 | 1387 | 4 | 161 | 6 | 1 | 1 | 2 | 7 | 1613 |
| C2 - Bletchley Viaduct | 3 | 12 | 7 | 25 | 160 | 4 | 161 | 6 | 1 | 1 | 2 | 7 | 386 |
| D1 - M1 Junction 13 | 4 | 72 | 14 | 113 | 2239 | 8 | 322 | 12 | 8 | 2 | 4 | 14 | 2809 |
| D2 - Kempston Hardwick | 4 | 115 | 21 | 181 | 3582 | 12 | 483 | 18 | 15 | 3 | 6 | 21 | 4457 |
| E3 - Waddesdon | 2 | 26 | 7 | 65 | 1960 | 8 | 161 | 6 | 1 | 1 | 2 | 8 | 2245 |
| E4 - Akeman Street | 4 | 45 | 14 | 71 | 2730 | 8 | 322 | 12 | 2 | 2 | 4 | 14 | 3224 |
| E5 - Aylesbury Vale Parkway | 4 | 47 | 14 | 73 | 3395 | 8 | 186 | 8 | 8 | 2 | 4 | 8 | 3753 |

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4.4.16 To breakdown the one way HGV trips into typical weekday and peak hour HGV movements the following assumptions have been applied:

- 12 months per year;
- 20 weekdays per month;
- HGV movements will remain constant throughout the year;
- 7 hour arrival / departure period per day for HGV's (the working day is longer than this. Assuming a 7 hour working day for deliveries in the trip generation calculation ensures a robust assessment of hourly movements – this approach will generate a higher number of hourly HGVs to reflect potential hourly variations in HGV movements);
- All HGV movements rounded up; and
- All HGV's will enter and exit the construction compound with in the same hour.

4.4.17 The two way estimated daily HGV trips to each construction compound is shown on Table 4-6.

Table 4-6 Two-way Estimated Daily HGV Trips by Construction Compound

| Construction Compound Name | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|-----------------------------|------|------|------|------|------|------|
| A1 – Bicester | 4 | 6 | 6 | 4 | - | - |
| A2 – Launton | 6 | 6 | 4 | 4 | - | - |
| A3 - Marsh Gibbons | 4 | 4 | 6 | 6 | - | - |
| A4 - Claydon Junction | 2 | 4 | 4 | 6 | 4 | 2 |
| B1 - Steeple Claydon | - | 2 | 2 | 2 | 2 | 2 |
| B2 - Verney Junction | - | 2 | 4 | 4 | 4 | 2 |
| B3 - Furze Lane | - | 6 | 6 | 8 | 6 | - |
| B4 - Little Horwood | - | 6 | 8 | 8 | 6 | 4 |
| B5 – Newton ongville | - | 6 | 6 | 6 | 6 | - |
| B6 – Bletchley | - | - | 2 | 2 | 2 | - |
| C1 - Wellington Place | - | 4 | 6 | 4 | - | - |
| C2 - Bletchley Viaduct | - | - | 2 | - | - | - |
| D1 - M1 Junction 13 | - | - | 6 | 6 | 6 | 6 |
| D2 - Kempston Hardwick | - | - | 10 | 10 | 10 | 10 |
| E3 – Waddesdon | - | - | 10 | 10 | - | - |
| E4 - Akeman Street | - | - | 6 | 6 | 8 | 6 |
| E5 - Aylesbury Vale Parkway | - | - | 6 | 10 | 12 | 4 |

HGV Trip Distribution

- 4.4.18 The Alliance has identified construction routes to and from each of the construction compounds. Each construction compound will have a primary access route which will be used for all access and deliveries to the construction compound. An alternative secondary access route has been identified for instance where the primary route is not available. The use of this secondary route will be limited and only used if the primary route is not available for any reason e.g. Road Traffic Accident. Therefore, the TA will assume that all access will be via the primary route.
- 4.4.19 Figure 2.1A to 2.1J show the proposed HGV construction routes. The construction routes have been derived from detailed discussions between the LHA's and the Alliance.

Staff/Operatives Trip Generation

- The staff and operative trips have been based on information provided by the Alliance. The assumptions underpinning the numbers are based on an experience of the Staffordshire Area Improvement Project (SAIP) which involved the construction of 14 km of new rail infrastructure through a rural environment with 11 new structures and considerable earthworks. This is considered as a suitable proxy to use for the Project, as the scope of work undertaken for the scheme is similar.
- 4.4.20 At peak the SAIP scheme had 350 operatives and 150 staff to deliver the construction of the route. SAIP is comparable in scope to each section of the EWR project and these resource levels have therefore been assumed. It has been confirmed that on a weekday a maximum of 350 operatives and 150 staff will be working on anyone section of the route at any one time. It should be noted these are peak construction numbers and it is likely that the actual level of resource over the period of construction will be lower than this.
- 4.4.21 Compounds between Bletchley and Bedford, and between Claydon Junction and Aylesbury, will have a reduced workforce to a decrease scope of construction along that section.

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Table 4-7: Percentage and Number of Operatives/Staff per Construction compound*

| Construction compound | Construction compound Type | % Operatives at per Construction compound | % Staff at each Construction compound | Number of operatives per construction compound | Number of Staff per construction compound | Total number of workers per construction compound |
|--------------------------------------|----------------------------|---|---------------------------------------|--|---|---|
| Bicester to Claydon Junction | | | | | | |
| A1 – Bicester | Strategic | 45% | 80% | 158 | 120 | 278 |
| A2 – Launton | Satellite | 5% | 5% | 18 | 8 | 26 |
| A-3 Marsh Gibbon | Satellite | 5% | 5% | 18 | 8 | 26 |
| A4 - Claydon Junction | Strategic | 45% | 10% | 158 | 15 | 173 |
| Total | - | 100% | 100% | 350 | 150 | 500 |
| Claydon Junction to Bletchley | | | | | | |
| B1 - Steeple Claydon | Satellite | 5% | 5% | 18 | 8 | 26 |
| B2 - VERNY Junction | Satellite | 5% | 5% | 18 | 8 | 26 |
| B3 - Furze Lane | Satellite | 5% | 5% | 18 | 8 | 26 |
| B4 - Little Horwood | Strategic | 40% | 20% | 140 | 30 | 170 |
| B5 – Newton Longville | Satellite | 5% | 5% | 18 | 8 | 26 |
| B6 – Bletchley | Strategic | 40% | 60% | 140 | 90 | 230 |
| Total | - | 100% | 100% | 350 | 150 | 500 |
| Bletchley to Milton Keynes | | | | | | |
| C1 - Wellington Place | Satellite | 10% | 5% | 35 | 8 | 43 |
| C2 - Bletchley Viaduct | Satellite | 45% | 50% | 158 | 75 | 233 |
| Total | - | 55%** | 55%** | 193 | 83 | 276 |
| Bletchley to Bedford | | | | | | |
| D1 - M1 Junction 13 | Strategic | 10% | 10% | 35 | 15 | 50 |
| D2 - Kempston Hardwick | Satellite | 5% | 40% | 18 | 60 | 78 |
| Total | - | 15%** | 50%** | 53 | 75 | 128 |
| Claydon Junction to Aylesbury | | | | | | |
| E3 – Waddesdon | 5 | 5% | 20% | 140 | 8 | 148 |

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| Construction compound | Construction compound Type | % Operatives at per Construction compound | % Staff at each Construction compound | Number of operatives per construction compound | Number of Staff per construction compound | Total number of workers per construction compound |
|-----------------------------|----------------------------|---|---------------------------------------|--|---|---|
| E4 - Akeman Street | 2 | 90% | 50% | 18 | 8 | 26 |
| E5 - Aylesbury Vale Parkway | 5 | 5% | 30% | 140 | 60 | 200 |
| Total | - | 100% | 100% | 298 | 75 | 373 |

* - Arithmetic errors due to rounding

** - Sections 2C and 2D have a reduced scope compared to 2A, B and E where the full complement of resource will be required therefore the percentage is lower than the standard requirement.

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- 4.4.22 There may be limited construction work taking place on a Saturday; however this will be at a significantly reduced rate with a maximum of 25% of staff / operatives being on site. The Draft TA will consider the weekday figures as this is when the traffic from the construction compounds will be highest.

Staff

- 4.4.23 All staff working at the strategic construction compounds will travel directly to construction compound.
- 4.4.24 All office based staff will be based at the office facilities in the strategic construction compounds. The site based staff (Engineers and Delivery / Construction Managers) will be split across the construction compounds.
- 4.4.25 For staff working at the satellite construction compounds it is assumed that 80% will report to the strategic construction compounds and travel via the internal haul road. The remaining 20% of staff will travel direct to the satellite construction compounds.

Operatives

- 4.4.26 All operatives working at the strategic construction compounds will travel directly to the construction compound.
- 4.4.27 The Alliance will encourage operatives who work at the satellite construction compounds to travel and report to the strategic construction compounds at the start of each shift. This will be achieved by the provision of the main welfare / canteen and clocking in facilities at the strategic construction compounds. They will then travel via the internal haul road to their area of work. This will minimise the impact of operatives and staff trips on the local highway network within the vicinity of the satellite construction compounds. There will be a requirement for a small proportion of operatives to report directly to the satellite such as security and vehicle marshals. The analysis in the TA will assume 5% will travel to the satellite construction compound with the remaining 95% travelling to the satellite construction compounds via the internal haul road, which will be accessed from one of the strategic construction compounds.

Staff and Operatives Access Strategy

4.4.28 Insert 4-1 and Table 4-8 shows the assumptions described in the previous two sections regarding the percentage of trips by staff and operatives to the strategic and satellite construction compounds, the percentage estimated to use the internal haul route and the forecast car occupancy rates. It should be noted that these assumptions are based on experience from the SAIP project.

Insert 4-1 Construction Transport Strategy for Staff and Operatives

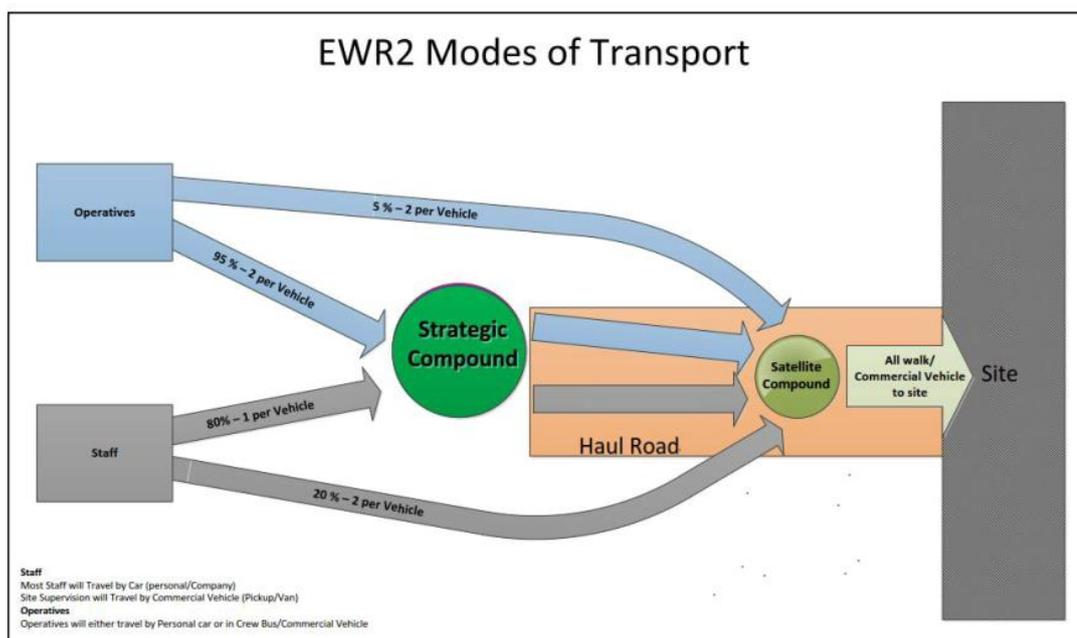


Table 4-8: Percentage of staff / operatives by construction compound type and estimated vehicle occupancy rates

| Construction compound Type | Staff | | Operatives | |
|----------------------------|------------|-------------------|------------|-------------------|
| | Percentage | Vehicle Occupancy | Percentage | Vehicle Occupancy |
| Strategic | 80% | 1 | 95% | 2 |
| Satellite | 20% | 2 | 5% | 2 |

4.4.29 The vehicle occupancy is shown in Table 4-8. This is an average occupancy that takes into account that some of staff and operatives will:

- Car share;
- Use public transport;
- Walk;

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- Cycle; and
- Use of shuttle workforce shuttle buses.

4.4.30 The assumptions set out in Table 4-8 have been applied to the trip generation calculations. As detailed previously, the operatives will report into site at the strategic construction compounds before heading to the work area and satellite construction compounds. Access to the satellite construction compounds will generally be via the nearest strategic construction compound however where operations restrict access via the haul road there may be times when access from the opposite direction will be required. The proportions of access through each construction compound are shown in Table 4-9.

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Table 4-9: Proportion of Trips accessed via each construction compound

| Proportion of Trips accessed via each construction compound | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|----------|---------|--------------|------------------|-----------------|-----------------|------------|----------------|------------------|-----------|------------------|-------------------|----------------|-------------------|-----------|---------------|------------------------|-------|------|
| Construction Compound of Work | Construction Compound | Bicester | Launton | Marsh Gibbon | Clayton Junction | Steeple Claydon | Verney Junction | Furze Lane | Little Horwood | Newton Longville | Bletchley | Wellington Place | Bletchley Viaduct | M1 Junction 13 | Kempston Hardwick | Waddesdon | Akeman Street | Aylesbury Vale Parkway | Total | |
| | Bicester | 1.00 | | | | | | | | | | | | | | | | | | 1.00 |
| | Launton | 0.76 | 0.05 | 0.19 | | | | | | | | | | | | | | | | 1.00 |
| | Marsh Gibbon | 0.48 | | 0.05 | 0.48 | | | | | | | | | | | | | | | 1.00 |
| | Clayton Junction | | | | 1.00 | | | | | | | | | | | | | | | 1.00 |
| | Steeple Claydon | 0.10 | | | 0.81 | 0.05 | | | 0.05 | | | | | | | | | | | 1.00 |
| | Verney Junction | 0.10 | | | 0.76 | | 0.05 | | 0.10 | | | | | | | | | | | 1.00 |
| | Furze Lane | | | | 0.48 | | | 0.05 | 0.48 | | | | | | | | | | | 1.00 |
| | Little Horwood | | | | | | | | 1.00 | | | | | | | | | | | 1.00 |
| | Newton Longville | | | | | | | | 0.90 | 0.05 | 0.05 | | | | | | | | | 1.00 |
| | Bletchley | | | | | | | | | | 1.00 | | | | | | | | | 1.00 |
| | Wellington Place | | | | | | | | | | 0.95 | 0.05 | | | | | | | | 1.00 |
| | Bletchley Viaduct | | | | | | | | | | 0.95 | | 0.05 | | | | | | | 1.00 |
| | M1 Junction 13 | | | | | | | | | | | | | 1.00 | | | | | | 1.00 |
| | Kempston Hardwick | | | | | | | | | | | | | 0.95 | 0.05 | | | | | 1.00 |
| | Waddesdon | | | | | | | | | | | | | | | 0.05 | 0.95 | | | 1.00 |
| | Akeman Street | | | | | | | | | | | | | | | | | 1.00 | | 1.00 |
| | Aylesbury Vale Parkway | | | | | | | | | | | | | | | | | 0.95 | 0.05 | 1.00 |

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- 4.4.31 The general site construction hours will be 0700 to 1800 Monday to Friday and 0700 – 1600 Saturday (and Sunday by exception), with a potential early finish for some activities during the winter months due to limited light / adverse weather conditions.
- 4.4.32 Operatives will be required to clock in and out at the start and finish of each shift, starting late or finishing early will result in a reduction of their pay and therefore it is assumed that no operatives will be outside of the site hours. Generally operatives will arrive early to use the welfare and canteen facilities.
- 4.4.33 Staff time will be more variable, support and admin staff will keep more traditional office hours while delivery staff (Engineers and Construction managers) will be closer to the operative hours.
- 4.4.34 The assumptions for the proportional split of arrivals and departures for operatives and staff are shown in Table 4-10 and Table 4-11. The figures are based on previous experience on the SAIP scheme.

Table 4-10: Operatives / Staff Arrival and Departure Profiles (Non-Winter Months)

| | Arrivals | | | Departures | | |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 06:00 – 07:00 | 07:00 – 08:00 | 08:00 – 09:00 | 16:00 – 17:00 | 17:00 – 18:00 | 18:00 – 19:00 |
| Operatives | 100% | 0% | 0% | 0% | 10% | 90% |
| Staff | 0% | 85% | 15% | 10% | 80% | 10% |

Table 4-11: Operatives / Staff Arrival and Departure Profiles (Winter Months)

| | Arrivals | | | Departures | | |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 06:00 – 07:00 | 07:00 – 08:00 | 08:00 – 09:00 | 16:00 – 17:00 | 17:00 – 18:00 | 18:00 – 19:00 |
| Operatives | 100% | 0% | 0% | 0% | 50% | 50% |
| Staff | 0% | 85% | 15% | 10% | 80% | 10% |

- 4.4.35 In order to provide a robust assumption in the TA, the proportions set out in the winter months will be used. This will provide an assessment of a robust scenario as the cumulative background traffic and trips from construction compounds are likely to be the greatest.
- 4.4.36 The resultant trip generation for staff and operatives can be provided on request.

HGV Trip Distribution

- 4.4.37 The assignment of HGVs has been undertaken based on the fixed routing via the primary construction route. Figure 2.1A to 2.1J shows the HGV routes proposed by the Alliance.

Staff / Operatives Trip Distribution

- 4.4.38 To allow an initial estimation of the workforce distribution a nominal centre point for the project has been assumed at Claydon Junction to allow a travel distance to be estimated. It has been assumed that the majority of personnel will limit their daily commute to less than 1hr, where their home is further than this they will lodge in the local area. Therefore a 50 mile radius has been assumed as the general commuting area for the project. This assumption is based on previous experience from work undertaken for the SAIP project which had a similar scope to EWR Phase 2.
- 4.4.39 It is estimated that those lodging away from home during the week will travel outside of this 50 mile area Monday morning and Friday evening, this approach is common for site based personal. This area has been assessed based on population centres and areas of available rental / lodgings.
- 4.4.40 Table 4-12 shows the distribution of workforce which is centred at Claydon Junction. Plans showing the distribution can be made available upon request.

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Table 4-12: Distribution of Workforce

| LOCATION | DISTRIBUTION PERCENTAGE |
|-----------------------------|-------------------------|
| Cambridge | 1% |
| London | 10% |
| South of London | 2% |
| Luton | 5% |
| Bedford | 5% |
| North of Leicester | 2% |
| Leicester | 1% |
| Milton Keynes & Northampton | 25% |
| Aylesbury & Nearby | 20% |
| Reading | 1% |
| Oxford | 2% |
| Bicester | 15% |
| Banbury | 5% |
| Birmingham & Coventry | 5% |
| Bristol & Bath | 1% |

4.4.41 Based on the distribution shown in Table 4-12 a number of zones have been established on the highway. These zones form the extremities of the network in which operatives / staff will be required to travel via in order to reach the destinations set out in Table 4-12. The estimated zones are as follows:

- M1 North;
- M1 South;
- M40 North;
- M40 South;
- A421;
- A418;
- A34;
- Bicester;
- Milton Keynes;
- Bedford;
- Aylesbury & Nearby; and
- A41.

4.4.42 The staff and operative trips have then been assigned onto the highway network based on an all or nothing assignment following the most logical

route choice with a number of different load points applied dependent upon the location of each construction compound. In the absence of detailed data regarding where operative and staff will be lodging, the load point has been estimated by using professional judgment and logical route choice. Plans showing the assignment assumptions can be made available upon request.

Construction Phase Percentage Impact Assessment

4.4.43 The following criteria, based on professional judgement and experience of similar schemes, have been used to determine the magnitude of change in traffic flows as a result of the construction traffic.

- **Negligible** - Below 30%;
- **Low** - 30% to 60%;
- **Medium** - 60% to 90%; and
- **High** - Above 90%.

Assessment Methodology

4.4.44 Using the outputs from the trip generation and trip distribution calculations, locations on the highway network where 30 or more vehicles are added per hour will be identified. These locations will be discussed with the appropriate local highway authority to identify the level of assessment required (such as junction capacity assessments).

4.4.45 To forecast future growth in background traffic, growth factors have been calculated for cars and LGV's using the National Trip Ends Model (NTEM) and for HGV's the National Road Traffic Forecasts (NRTF). These growth factors have been applied to surveyed traffic flows to provide a future year forecast without traffic generated from the Project.

4.5 Cumulative Impact of HS2

4.5.1 The final TA will provide an assessment of the cumulative impact of the Project and the construction traffic associated with HS2. This will include the following:

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- A review of HS2 construction routes will be undertaken and routes which overlap EWR will be identified;
- A review of the staff / operatives vehicle trip generation will be undertaken and links which overlap the EWR staff / operatives will be identified;
- The traffic deriving from HS2 as outlined above will be added on to the traffic generated by the construction phase of the Project for each year which the two schemes overlap. Percentage impact assessments and junction capacity modelling will be undertaken on appropriate links / junctions. The appropriate type of assessment will be discussed with the LHA's and reported on in the final TA;
- A review of HS2 temporary road closures will be undertaken to ensure there is no overlap with the Project HGV routing; and
- Based on the assessments stated above, suitable mitigation strategies will be discussed with the LHA's and HS2.

4.6 Operational Phase Assessment Approach and Methodology

Introduction

4.6.1 This section details the methodology which has been adopted to derive the future increase in passenger numbers and subsequent car trips at the following stations following the delivery of the Project:

- Bicester;
- Bletchley;
- Milton Keynes Central;
- Woburn Sands;
- Ridgmont;
- Bedford;
- Aylesbury Vale Parkway; and
- Aylesbury.

4.6.2 This section also documents the methodology used to assess the impact on the operation of Level Crossings as a result of the increase in train frequency.

Passenger Demand Increases: Trip Generation

- 4.6.3 To derive the increase in passenger numbers as a result of the Project, forecasts from the modelling work undertaken for the EWR Business Case (as previously referenced) have been used. The figures from the modelling work have been provided by Atkins who prepared the business case for the DfT.
- 4.6.4 The EWR Business Case provided origin-destination data for a ‘Do minimum’ and ‘Do Something’ scenarios in five year segments from the base year of 2011 to the opening year of 2031. For the purpose of the TA the trip generation for the opening year of 2031 has been reported.
- 4.6.5 The EWR Business Case considered two different growth scenarios. These are as follows:
- Growth based on TEMPRO growth factors at a local authority level; and
 - Growth based on proposed allocated residential sites detailed in local plans.
- 4.6.6 The EWR Business Case provided annual passenger demand figures for the two above scenarios. For the TA the highest forecast growth scenario has been used to ensure a robust assessment is undertaken.
- 4.6.7 Table 4-13 shows which of the above scenarios have been reported on for each station.

Table 4-13 Scenarios used per station

| Stations | EWR Business Case Local Plan | EWR Business Case Tempo |
|------------------------|-------------------------------------|--------------------------------|
| Bicester | X | |
| Aylesbury | X | |
| Aylesbury Vale Parkway | X | |
| Bletchley | X | |
| Milton Keynes | X | |
| Woburn Sands | | X |
| Ridgmont | | X |
| Bedford | X | |

- 4.6.8 The impact of the project has been assessed by determining the increase in annual passenger demand following the delivery of the Project. The increase

in annual demand as a direct result of the Project has been calculated by subtracting the 2031 'Do Minimum' (without Project) passenger demand figures from the 2031 'Do Something' (with Project) passenger demand figures contained within the EWR Business Case. This has provided the overall increase at each of the existing stations within the study area.

- 4.6.9 To convert the annual increase in passenger numbers into typical weekday daily passenger numbers at each station an annualisation factor of 300 was applied.
- 4.6.10 At the request of the Local Highway Authorities (LHA) affected by the Project, a bespoke assessment of the daily arrival / departure profile at each of the existing stations has been undertaken. The assessment used data from the 'MOIRA' model which is an industry standard model owned and maintained by ATOC (the Association of Train Operating Companies). The model allocates annual demand as determined from ticket sales data to individual trains.
- 4.6.11 The model has provided the proportion of passengers boarding and alighting at each station, during each time period, over the course of a typical weekday. These proportions have been applied to the calculated weekday daily passenger demand to derive the number of passengers arriving and departing the station during each time period. The breakdown of passenger numbers is provided in the operational impact assessment chapter for each sub-section.

Passenger Demand Increases: Modal Split and Trip Distribution

- 4.6.12 As previously stated, the Project will encourage modal shift towards a more sustainable mode of travel. However, the increase in passengers will lead to an increase in localised vehicle trips to and from each station as passengers may drive and leave their car or be dropped off. Therefore the draft TA considers the potential impact of the increase in passengers accessing the station by car.

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- 4.6.13 At present there is no information available regarding the proportion of passengers accessing existing stations by private vehicles (as opposed to public transport, walking and cycle). The methodology for establishing this has been discussed during consultation with the LHA's.
- 4.6.14 Therefore to inform the final TA, mode share surveys will be undertaken.
- 4.6.15 The surveys will capture the following:
- Existing passenger's mode of travel to and from each station;
 - The location they usually park if driving; and
 - Their home post code.
- 4.6.16 The above information will enable accurate multi-modal trip generation and trip distribution to be derived. The surveys have not been completed and are due to be undertaken in spring 2017 to inform the final TA.
- 4.6.17 In order to carry out an initial estimation of increase in vehicle trips to and from each station, for this Draft TA, an estimate of 70% car share has been assumed.
- 4.6.18 This draft TA reports on the percentage increase of traffic at each of the station access junctions based upon the 70% car mode share for new passengers. 70% represents a robust assessment and is well above the national average of 20% mode share as documented by the National Rail Travel Survey, December 2010³.
- 4.6.19 The following station access junctions have been considered in the assessment:
- Aylesbury;
 - Aylesbury Vale Parkway;
 - Bedford;
 - Bicester;
 - Bletchley;

³ National Rail Travel Survey – Overview Report, Department for Transport, 2010.

- Ridgmont; and
- Woburn Sands.

Level Crossing Assessment Approach

- 4.6.20 Some of the existing level crossings between Bletchley and Bedford will remain i.e. they will not be closed and diverted over a new highway bridge. An assessment is made of the predicted increase in level crossing downtime following the introduction of the new EWR services.
- 4.6.21 It should be noted that the assumptions underpinning this section (as set out in Section 2) have now been updated, and therefore this section of the Draft TA will be subject of revision to reflect this new information for the final TA.
- 4.6.22 The impact of the Project on the operation of level crossings has been assessed using LinSig⁴ traffic signal modelling software which has been adapted to assess the highway level crossings shown in
- 4.6.23
- 4.6.24 Table 4-14. The assessment of level crossing barrier down times has been informed by the Network Rail report, “*East West Rail Phase 2 – Level Crossing Barrier Downtime Assessment*”⁵ (August 2015). The report contains details on existing barrier downtimes and with Project future increased barrier downtimes.
- 4.6.25 The existing barrier downtime per hour has been used to assess the existing level crossing performance. The change on barrier down time has been based upon the forecast core scenario time table (see Chapter 2 (Project Description) of the Draft ES).
- 4.6.26
- 4.6.27 Table 4-14 shows the forecast number of trains per hour for the core scenario. It should be noted that some of the level crossings included in the

⁴ LinSig design and modelling software, produced by JCT consultancy.

⁵ East West Rail Phase 2 – Level Crossing Barrier Downtime Assessment, Network Rail, 2015

table below, namely Bicester London Road, Launton Level Crossing and Marston, will be closed and alternative crossings provided.

Table 4-14: Core Timetable worse case proposed number of trains per hour

| Crossing Name | Passenger Train Length | | Freight | Total |
|----------------------------|------------------------|-------|---------|-------|
| | 100 m | 200 m | | |
| Bicester Eastern Perimeter | 4 | 2 | 2 | 8 |
| Fenny Stratford | 4 | 0 | 0 | 4 |
| Bow Brickhill | 4 | 0 | 0 | 4 |
| Woburn Sands | 4 | 0 | 0 | 4 |
| Aspley Guise | 4 | 0 | 0 | 4 |
| Ridgmont | 4 | 0 | 0 | 4 |
| Lidlington | 4 | 0 | 0 | 4 |
| Millbrook | 4 | 0 | 0 | 4 |
| Green Lane | 4 | 0 | 0 | 4 |
| Wootton Broadmead | 4 | 0 | 0 | 4 |

4.6.28 Peak hour traffic flows have been used to assess the impact upon the highway network. Fixed time signals have been used to calculate the Practical Reserve Capacity (PRC), average delay (S) per Passenger Car Unit (PCU), mean maximum queue for each level crossing with and without the Project.

4.6.29 The LinSIG results are provided within the operational assessment for each subsection.

4.7 Accessibility Assessment Criteria

4.7.1 Table 4.15 shows the guidance documents and distances which have been utilised to assess the accessibility in terms of distance to the construction compounds and stations. The distances shown have been used to inform the GIS analysis detailed in the baseline conditions section of this report.

Table 4-15: Accessibility Assessment Criteria

| Document | Author | Mode | Distance |
|--|---|---------|---|
| 'Guidelines for Providing for Journeys on Foot' (2000) | Institute for Highways and Transportation | Walking | 1 km Desirable 2 km Preferred Maximum |
| 'Planning Policy Guidance 13: Transport (1999) | Communities and Local Government | Cycling | 5 km (Construction compounds) |

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| Document | Author | Mode | Distance |
|--|---|---------|----------------|
| 'Cycle – Rail Toolkit 2@ (2016) | Rail Delivery Group | Cycling | 3km (Stations) |
| Planning for Public Transport in Developments (1999) | Institute for Highways and Transportation | Bus | 400 m |
| | | Train | 800 m |

5. BASELINE CONDITIONS

5.1.1 An assessment of the current baseline conditions will be provided in the Final TA. This assessment will consider the conditions in the following areas:

- Cherwell District Council;
- Aylesbury Vale: Claydon/Quainton;
- Aylesbury Vale: Winslow/Swanbourne;
- Aylesbury Vale: Aylesbury;
- Milton Keynes Council;
- Central Bedfordshire Council; and
- Bedfordshire Borough Council.

5.1.2 The assessment parameters are summarised in Table 5-1.

Table 5-1: Overview of Parameters in Baseline Conditions Assessment

| Item | Details |
|---|--|
| Area of Interest | Figures showing study area within each sub-section. |
| Internal Haul Road Infaces with Highway | Figures showing highway crossing points with internal haul road. |
| Construction Construction compounds | Construction compound location and local highway description; Preliminary construction access routes; Summary of 2016 traffic flows within vicinity of construction compound access junctions; Summary of 2016 mean and 85th percentile speeds within construction compound access junction Details of sustainable transport provision including: <ul style="list-style-type: none"> • Walking and cycling networks; • Location of bus stops / train stations in the context of each construction compound: and • Summary of public transport provision including bus timetable information accessible from each construction compound. |

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| Item | Details |
|---------------------------------------|--|
| EWR Stopping Stations | Station location and local highway network; Summary of 2016 traffic flows at each station access junction; Summary of 2016 mean and 85th percentile traffic speeds within vicinity of station access junction; Details of sustainable transport provision including: <ul style="list-style-type: none"> • Walking and cycling networks including walking and cycling isochrones; • Location of bus stops in the context of each station; • Summary of public transport provision including bus timetable information accessible from each station. |
| Road Safety and Vulnerable Road Users | Summary of the most recent 5 year recorded personal injury road traffic accidents along each construction route and within 400m of each station. Including summaries of: <ul style="list-style-type: none"> • Accidents by year and severity including details of each fatal accident; and • Accidents involving pedestrians / cyclists. |
| Road Overbridges | Location of each overbridge Detailed description and photograph of each overbridge, |
| Vehicle level crossings | Location of road underbridge; and Detailed description and photograph of each road underbridge; Location of each vehicle level crossing; Detailed description and photographs of each vehicle level crossings; Summary of 2016 traffic flows at each vehicle level crossing; Summary of 2016 LinSig results at each level crossings. |
| Public Rights of Way | Figures showing location of each public right of way which cross the project alignment; and Details of each public right of way crossing the railway. |

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6. CONSTRUCTION PHASE ASSESSMENT

6.1 Introduction

6.1.1 This section of the draft TA provides a summary of the impacts the project will have during the construction phase of the assessments..

6.2 Percentage Impact Assessment

6.2.1 Traffic data was collected at several junctions which (at the time they were collected) formed part of the construction routes. Further traffic data will be collected and analysis undertaken and presented in the final ES and TA.

6.2.2 Table 6-1 provides a summary of the initial results at each junction where baseline data is available. The full results including percentages are will be provided in the final TA.

Table 6-1: Summary of Impact Assessment

| Origin | Destination | Total Veh | Total LGV / Car | HGV | PCU | Destination Total |
|-----------------|--------------------------|------------|-----------------|------------|------------|-------------------|
| M40 (South) | M40 (North) | High | High | Negligible | High | High |
| | A41 (East) | Negligible | Negligible | Negligible | Negligible | Low |
| | A34 (West) | Negligible | Negligible | Low | Negligible | Medium |
| B4100 | A4421 | Negligible | Negligible | High | Negligible | High |
| | A41 (South) | Negligible | Negligible | High | Negligible | High |
| | Gravenhill | High | High | Negligible | High | High |
| | A41 (North) | Negligible | Negligible | Low | Negligible | Medium |
| Bicester Road | A1 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| | A4421 (S) | Negligible | Negligible | High | Negligible | High |
| | A4421 (W) | Negligible | Negligible | High | Negligible | High |
| Launton Road | A4421 (E) | Negligible | Negligible | Low | Negligible | Medium |
| | A4421 (N) | Negligible | Negligible | Low | Negligible | Low |
| Buckingham Road | A4421 (E) | Negligible | Negligible | High | Negligible | High |
| | A4421 (W) | Negligible | Negligible | High | Negligible | High |
| | A4095 | Negligible | Negligible | High | Negligible | High |
| Blackthorn Road | Bicester Road | Negligible | Negligible | High | Negligible | High |
| | Station Road | High | High | Negligible | High | High |
| | W End | High | High | Negligible | High | High |
| A421 (W) | Embleton Way | Negligible | Negligible | High | Negligible | High |
| | A421 (E) | Low | Low | Negligible | Medium | High |
| | Gawcott Road | High | High | High | High | High |
| A421 (W) | Coddimoor | High | High | High | High | High |
| | A421 (E) | Negligible | Negligible | Negligible | Negligible | Negligible |
| | Whaddon | Negligible | Negligible | Negligible | Negligible | Negligible |
| | A421 S.W. | Negligible | High | Negligible | High | High |

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|----------------------|--------------------------|------------|------------|------------|------------|------------|
| Whaddon Road | A421 | Negligible | High | Negligible | High | High |
| B4304 | A421 (E) | Negligible | High | Negligible | High | High |
| | A421 (W) | Negligible | High | Negligible | High | High |
| | Snelshall | Negligible | Low | Negligible | Medium | Medium |
| Whaddon Road (S) | Whaddon (N) | Negligible | Negligible | Negligible | Negligible | High |
| | B5 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| Stoke Road | Bletchley Road | Negligible | High | Negligible | High | High |
| | Drayton Road | Low | Low | Low | High | High |
| | Whaddon Road | Negligible | High | Negligible | High | High |
| Bletchley Road | Newton Road | Negligible | High | Negligible | High | High |
| | B6 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| B4304 (W) | B4304 (E) | Negligible | High | Negligible | High | High |
| | Newton Road | High | High | High | High | High |
| | Shenley Road | Negligible | High | Negligible | High | High |
| Verney Road (E) | Verney Rd (W) | Low | Negligible | Low | High | High |
| | B2 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| Manor Road (W) | D2 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| | Manor Rd (E) | Negligible | High | Negligible | High | High |
| Water Eaton Road (N) | C2 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |
| | W.E.R. (S) | Negligible | High | Negligible | High | High |
| | C1 Construction compound | Negligible | Negligible | Negligible | Negligible | Negligible |

6.3 Impact of Temporary Road Closures

6.3.1 During the construction phase of the Project there will be a number of temporary road closures required. A schedule of the temporary road closures has been provided by the alliance. These are summarised in Table 6-2.

6.3.2 These closures will have a temporary impact upon various road users. Accordingly a desktop review has been undertaken to identify if there will be any negative impact on bus services, pedestrians, cyclists and road vehicles as a result of these closures. Local Authority bus route plans have been used to assess which services may be impacted.

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Table 6-2 Assessment of Temporary Road Closures

| Name | Traffic Management / Mitigation | Duration (weeks) | Bus Impact | Pedestrian Impact | Cycle Impact | Vehicle Impact |
|-----------------------------|---|-------------------------|--|---|--|--|
| Station Road | Lane closures under Traffic Management (TM) | 10 | Potential increase to bus journey times during 10 weeks of single lane span. Night closures to have potentially no effect. | Potential removal of a footway during TM which may cause pedestrians to cross the road during 10 weeks of single lane span. Night closures to have potentially no effect. | The potential TM may cause delays during the additional waiting times during 10 weeks of single lane span. Night closures to have potentially no effect. | The potential TM may cause delays during the additional waiting times during 10 weeks of single lane span. Night closures to have potentially no effect. |
| Charndon OB | Full closure for deck install | 1 night | Potential increase/decrease to bus journey times / change to bus route. | The area is very rural with limited pull factors for pedestrians. The diversion is unlikely to affect pedestrians. | Diversion may cause increase/decrease in journey times depending on the diversion route. | Diversion may cause increase/decrease in journey times depending on the diversion route. |
| Perry Hill Rd OB (Thame Rd) | Off line temporary diversion to west of LX | 48 | TM TBC | TM TBC | TM TBC | TM TBC |
| Verney Junction (new) | Off line new Structure, potential TM (lane closures) for final tie in | n/a | N/A | N/A | N/A | N/A |
| Addington UB | Off line new Structure, potential TM (lane closures) for final tie in | n/a | N/A | N/A | N/A | N/A |
| Verney Rd | Lane closure (single direction traffic under deck) | 26 | N/A | N/A | N/A | N/A |

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| | | | | | | |
|------------------------------|---|-----|---|--|-------------------------------------|-------------------------------------|
| A413 Buckingham Rd | Lane closure (single direction traffic under deck) | 13 | Potential increase to bus journey times | Potential disruption to desire lines if footway closes | Potential increase to journey times | Potential increase to journey times |
| Horwood Road | Lane closure (single direction traffic under deck) | 13 | Potential increase to bus journey times | No dedicated pedestrian facilities at this UB. Potentially no effect for pedestrians. | Potential increase to journey times | Potential increase to journey times |
| Horwood Road | Off line new Structure, potential TM (lane closures) for final tie in | n/a | Potential increase to bus journey times | Remote area which is unlikely to have pedestrians, therefore potentially no effect. | Potential increase to journey times | Potential increase to journey times |
| Whaddon Road / Swans Way | Road Closure (potential off line diversion but difficult!) | 45 | N/A | N/A | N/A | N/A |
| Salden OB | Off line new Structure, potential TM (lane closures) for final tie in | n/a | N/A | N/A | N/A | N/A |
| Waddon Way / Newton Approach | Lane closure (single direction traffic over deck) | 13 | N/A | N/A | N/A | N/A |
| Newton Road | Lane closure (single direction traffic over deck) | 5 | Potential increase to bus journey times | Remote area with limited footways, which is unlikely to have pedestrian movement, therefore potentially no effect. | Potential increase to journey times | Potential increase to journey times |
| Selbourne Ave | Full closure needed for works but assumed not | 22 | N/A | N/A | N/A | N/A |

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| | | | | | | |
|------------------|---|-----|--|--|---|--|
| | possible due to limited diversion therefore night closures. | | | | | |
| Water Eaton Road | Road Closure (nights) | TBC | N/A | N/A | N/A | N/A |
| Buckingham Road | TBC | TBC | N/A | N/A | N/A | N/A |
| Berry Lane | Permanent Closure and new access track | n/a | Potential increase to bus journey times with diversion routes | Limited facilities in the immediate area. Pedestrian activity is unlikely; however delays may be expected with level crossing closure. | Potential increase to journey times | Potential increase to journey times |
| Marston Rd | Full closure | 37 | N/A | N/A | N/A | N/A |
| Waddesdon Manor | Lane closure (single direction traffic over deck) | 13 | N/A | N/A | N/A | N/A |
| Akeman Street | Night closures | 7 | Potential journey delays for the 2 day closure. No delays expected for the night closures. | Limited facilities west of the UB suitable for pedestrian to walk to. Potentially no impact on pedestrians | Potential journey delays for the 2 day closure. Potentially delays expected for the night closures. | Potential journey delays for the 2 day closure. No delays expected for the night closures. |
| | Weekend (2 day closure) | 1 | | | | |
| Rabans Lane | No works | N/A | N/A | N/A | N/A | N/A |
| Griffin Lane | No works | N/A | N/A | N/A | N/A | N/A |

7. OPERATIONAL PHASE ASSESSMENT

7.1 Introduction

7.1.1 The chapter summarises the operational impact assessments following completion of the project.

7.2 Stations

7.2.1 The assessment considers impacts due to increased patronage at EWR stopping stations.

7.2.2 Percentage impact assessments were undertaken at the station access junctions between the hours of 07:00 – 19:00. They have been determined by comparison of the 2016 observed traffic flows to the increases in traffic at each station access in 2035 following the delivery of the project.

7.2.3 Table 7-1 and Table 7-2 provide a summary of the initial results during the AM and PM peak periods.

Table 7-1 Summary of AM Peak Period Percentage Impact Assessments

| Station Access Junction | Time Period | 2016 Observed Traffic Flow | 2016 Observed Traffic Flow + Increased Car trips | Net Change | Percentage Change |
|-------------------------|-------------|----------------------------|--|------------|-------------------|
| Aylesbury Vale Parkway | 07:00-08:00 | 1,719 | 1,728 | +9 | 0.51% |
| Bedford | 07:00-08:00 | 1,402 | 1,496 | +94 | 6.70% |
| Bicester | 07:00-08:00 | 684 | 786 | +102 | 14.97% |
| Bletchley | 07:00-08:00 | 732 | 900 | +168 | 22.90% |
| Ridgmont | 08:00-09:00 | 56 | 61 | +5 | 9.48% |
| Woburn Sands | 08:00-09:00 | 1,001 | 1,045 | +44 | 4.40% |

Table 7-2 Summary of PM Peak Period Percentage Impact Assessments

| Station Access Junction | Time Period | 2016 Observed Traffic Flow | 2016 Observed Traffic Flow + Increased Car trips | Net Change | Percentage Change |
|-------------------------|-------------|----------------------------|--|------------|-------------------|
| Aylesbury Vale Parkway | 18:00-19:00 | 1,427 | 1,432 | +5 | 0.35% |
| Bedford | 18:00-19:00 | 1,088 | 1,167 | +79 | 7.22% |
| Bicester | 18:00-19:00 | 708 | 817 | +109 | 15.42% |
| Bletchley | 18:00-19:00 | 1,090 | 1,207 | +117 | 10.78% |

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| Station Access Junction | Time Period | 2016 Observed Traffic Flow | 2016 Observed Traffic Flow + Increased Car trips | Net Change | Percentage Change |
|-------------------------|-------------|----------------------------|--|------------|-------------------|
| Ridgmont | 17:00-18:00 | 59 | 65 | +6 | 9.55% |
| Woburn Sands | 17:00-18:00 | 1,109 | 1,152 | +43 | 3.90% |

7.3 Level Crossings Assessment

7.3.1 The following public highway level crossings fall within the Project Area and are assessed below:

- Bicester Eastern Perimeter;
- Fenny Stratford;
- Bow Brickhill;
- Woburn Sands;
- Aspley Guise;
- Ridgmont;
- Lidlington;
- Millbrook;
- Green Lane; and
- Wootton Broadmead.

Since the time of writing, Green Lane level crossing is no longer proposed to be closed. The final TA will reflect this change and include it in the section titled 'Assessment of Level Crossing Remaining Open'.

7.3.2 In addition to the above, the level crossing located on London Road in Bicester has also been assessed. This was undertaken at the request of OCC.

7.3.3 Table 7-3 shows the existing hourly barrier downtime, the downtime following the completion of the Project and the corresponding increase in barrier downtimes.

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Table 7-3: Core Timetable worse case proposed number of trains per hour

| Crossing Name | Existing Downtime per Hour (min:sec) | With Project downtime per Hour (min:sec) | Increase in barrier downtime (min:sec) |
|-----------------------------|---|---|---|
| Bicester London Road | 14:47 | 32:10 | 17:23 |
| Bicester Eastern Perimeter* | 01:30 | 00:22:30 | 21:00 |
| Fenny Stratford | 04:26 | 00:08:52 | 04:26 |
| Bow Brickhill | 07:12 | 00:14:24 | 07:12 |
| Woburn Sands | 05:16 | 10:32 | 05:16 |
| Aspley Guise | 06:58 | 13:56 | 06:58 |
| Ridgmont | 05:41 | 11:22 | 05:41 |
| Lidlington | 06:23 | 12:46 | 06:23 |
| Millbrook | 05:29 | 10:58 | 05:29 |
| Green Lane* | 04:22 | 08:44 | 04:22 |
| Wootton Broadmead | 03:20 | 06:40 | 03:20 |

*Indicates that the Level Crossing will be replaced with a new highway bridge

Assessment of Level Crossings being closed

7.3.4 The following vehicle level crossings will be closed and replaced by road bridges. The location of these level crossings is shown in Figure 1H in Volume 4 of the ES .

- Bicester Eastern Perimeter Road (Charbridge Lane);
- Station Road, Launton;
- Queen Catherine Road [to be included in the final TA];
- Verney Junction [to be included in the final TA];
- Marston; and
- Kempston Hardwick.

7.3.5 A qualitative assessment of the impact of these closures has been undertaken and the results summarised in Table 7-4.

Table 7-4: Qualitative Assessment of Level Crossing Closure and Replacements

| Receptor | Qualitative Impact |
|------------------------|---|
| Vehicles | Positive impact due to the removal of delay caused by the existing level crossing. Safety improvement due to the removal of the existing level crossing. |
| Pedestrians | Positive impact due to improved safety due to the removal of the existing level crossing. |
| Cyclists | Positive impact due to improved safety due to the removal of the existing level crossing. |
| Public Transport Users | Positive impact due to the removal of delay caused by the existing level crossing. |

Assessment of Level Crossing Remaining Open

7.3.6 The following level crossings will not be closed. They have been assessed using LinSig modelling software:

- Fenny Stratford;
- Bow Brickhill;
- Woburn Sands;
- Aspley Guise;
- Green Lane [to be included in the final TA];
- Ridgmont;
- Lidlington;
- Millbrook; and
- Wootton Broadmead.

7.3.7 The location of the level crossings which are remaining open are contained in Figure 1H in Volume 4 of the ES.

7.3.8 The following criteria, based on professional judgement and experience of similar schemes, have been used to determine whether there will be a significant change in waiting times at these level crossings:

- **Low** – delay below 10 seconds;
- **Moderate** – delay between 10 – 120 seconds; and
- **Significant** – delay above 120 seconds.

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Fenny Stratford

7.3.9 The Fenny Stratford Level Crossing will be impacted due to the increased number of train services.

7.3.10 Table 7-5 shows the estimated impact on delay at the level crossing.

Table 7-5: Fenny Stratford Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|------------------------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Simpson Road SB ⁶ Ahead | 2016 Base | 6.6 | | | 6.9 | | |
| Simpson Road NB ⁷ Ahead | | 6.9 | | | 6.5 | | |
| Simpson Road SB Ahead | 2024 | 6.6 | 12.4 | 5.8 | 7 | 13.0 | 6.0 |
| Simpson Road NB Ahead | | 7.0 | 12.9 | 5.9 | 6.6 | 12.2 | 5.6 |
| Simpson Road SB Ahead | 2035 | 6.8 | 12.7 | 5.9 | 7.2 | 13.4 | 6.2 |
| Simpson Road NB Ahead | | 7.1 | 13.2 | 6.1 | 6.7 | 12.3 | 5.6 |

7.3.11 The Bow Brickhill Level Crossing will be impacted due to the increased number of train services.

7.3.12 The following table shows the estimated impact on delay at the level crossing.

⁶ SB = Southbound

⁷ NB = Northbound

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Table 7-6: Bow Brickhill Level Crossing Impact (average in seconds delay per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|---------------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Brickhill Street SB Ahead | 2016 Base | 18.2 | | | 26.4 | | |
| Brickhill Street NB Ahead | | 25.4 | | | 17.7 | | |
| Brickhill Street SB Ahead | 2024 | 18.9 | 36.8 | 17.9 | 29.9 | 58.6 | 28.7 |
| Brickhill Street NB Ahead | | 28.4 | 55.5 | 27.1 | 18.3 | 35.7 | 17.4 |
| Brickhill Street SB Ahead | 2035 | 20.2 | 39.2 | 19.0 | 37.8 | 75.0 | 37.2 |
| Brickhill Street SB Ahead | | 34.6 | 68.3 | 33.7 | 19.4 | 37.8 | 18.4 |

Woburn Sands

7.3.13 The Woburn Sands Level Crossing will be impacted due to the increased number of train services.

7.3.14 Table 7-7 shows the estimated impact on delay at the level crossing.

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Table 7-7: Woburn Sands Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|-----------------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Newport Road SB Ahead Left | 2016 Base | 11.4 | | | 13.8 | | |
| Cranfield Road Right Left | | 12.7 | | | 13.8 | | |
| Newport Road NB Ahead Right | | 18.2 | | | 17.9 | | |
| Newport Road SB Ahead Left | 2024 | 11.9 | 22.7 | 10.8 | 15 | 28.6 | 13.6 |
| Cranfield Road Right Left | | 13.7 | 24.6 | 10.9 | 15.1 | 27.0 | 11.9 |
| Newport Road NB Ahead Right | | 21.3 | 40.6 | 19.3 | 21.1 | 40.4 | 19.3 |
| Newport Road SB Ahead Left | 2035 | 12.8 | 24.4 | 11.6 | 17.5 | 33.4 | 15.9 |
| Cranfield Road Right Left | | 15.4 | 27.9 | 12.5 | 17.7 | 31.9 | 14.2 |
| Newport Road NB Ahead Right | | 28.1 | 54.3 | 26.2 | 29 | 56.2 | 27.2 |

Aspley Guise

7.3.15 The Aspley Guise Level Crossing will be impacted due to the increased number of train services.

7.3.16 Table 7-8 shows the estimated impact on delay at the level crossing.

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Table 7-8: Aspley Guise Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|-----------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Salford Road SB Ahead | 2016 Base | 13.7 | | | 13.6 | | |
| Salford Road NB Ahead | | 13.5 | | | 13.6 | | |
| Salford Road SB Ahead | 2024 | 13.5 | 26.1 | 12.6 | 13.7 | 26.5 | 12.8 |
| Salford Road NB Ahead | | 13.7 | 26.5 | 12.8 | 13.6 | 26.3 | 12.7 |
| Salford Road SB Ahead | 2035 | 13.5 | 26.2 | 12.7 | 13.7 | 26.6 | 12.9 |
| Salford Road NB Ahead | | 13.8 | 26.6 | 12.8 | 13.7 | 26.4 | 12.7 |

Ridgmont

7.3.17 The Ridgmont Level Crossing will be impacted due to the increased number of train services.

7.3.18 Table 7-9 shows the estimated impact on delay at the level crossing.

Table 7-9 Ridgmont Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|-----------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Salford Road SB Ahead | 2016 Base | 9.8 | | | 9.9 | | |
| Salford Road NB Ahead | | 10 | | | 9.9 | | |
| Salford Road SB Ahead | 2024 | 9.8 | 18.8 | 9.0 | 9.9 | 19.0 | 9.1 |
| Salford Road NB Ahead | | 10 | 19.1 | 9.1 | 9.9 | 18.9 | 9.0 |

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|-----------------------|------|-----|------|-----|-----|------|-----|
| Salford Road SB Ahead | 2035 | 9.9 | 18.9 | 9.0 | 10 | 19.1 | 9.1 |
| Salford Road NB Ahead | | 10 | 19.2 | 9.2 | 9.9 | 19.0 | 9.1 |

Lidlington

7.3.19 The Lidlington Level Crossing will be impacted due to the increased number of train services.

7.3.20 Table 7-10 shows the estimated impact on delay at the level crossing

Table 7-10 Lidlington Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|-----------------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Station Road SB right Ahead | 2016 Base | 12.2 | | | 12.2 | | |
| Church Street NB Ahead Left | | 12.0 | | | 11.8 | | |
| Bye Road Left Right | | 7 | | | 7 | | |
| Station Road SB right Ahead | 2024 | 12.2 | 23.2 | 11.0 | 12.3 | 23.5 | 11.2 |
| Church Street NB Ahead Left | | 12.0 | 23.1 | 11.1 | 11.9 | 22.8 | 10.9 |
| Bye Road Left Right | | 7 | 12.5 | 5.5 | 7 | 12.5 | 5.5 |
| Station Road SB right Ahead | 2035 | 12.3 | 23.4 | 11.1 | 12.4 | 23.7 | 11.3 |
| Church Street NB Ahead Left | | 12.1 | 23.3 | 11.2 | 12 | 22.9 | 10.9 |
| Bye Road Left Right | | 7.1 | 12.6 | 5.5 | 7.1 | 12.6 | 5.5 |

Millbrook

7.3.21 The Millbrook Level Crossing will be impacted due to the increased number of train services.

7.3.22 Table 7-11 shows the estimated impact on delay at the level crossing.

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Table 7-11 Millbrook Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|----------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Station Road W Ahead | 2016 Base | 9.9 | | | 10.7 | | |
| Station Road E Ahead | | 11.1 | | | 10 | | |
| Station Road W Ahead | 2024 | 10.0 | 18.9 | 8.9 | 10.9 | 20.7 | 9.8 |
| Station Road E Ahead | | 11.4 | 21.8 | 10.4 | 10.2 | 19.4 | 9.2 |
| Station Road W Ahead | 2035 | 10.1 | 19.1 | 9.0 | 11.2 | 21.3 | 10.1 |
| Station Road E Ahead | | 11.8 | 22.5 | 10.7 | 10.4 | 19.7 | 9.3 |

Wootton Broadmead

7.3.23 The Wootton Broadmead Level Crossing will be impacted due to the increased number of train services.

7.3.24 Table 7-12 shows the estimated impact on delay at the level crossing.

Table 7-12 Wootton Broadmead Level Crossing Impact (average delay in seconds per vehicle)

| Arm | Year | AM Peak Hour (08:00 - 09:00) | | | PM Peak Hour (17:00 - 18:00) | | |
|------------------------|-----------|------------------------------|--------------|-----------------------------------|------------------------------|--------------|-----------------------------------|
| | | Without Project | With Project | Increase (With - Without Project) | Without Project | With Project | Increase (With - Without Project) |
| Broadmead Road N Ahead | 2016 Base | 16.8 | | | 16.2 | | |
| Broadmead Road S Ahead | | 16.6 | | | 16.5 | | |
| Broadmead Road N Ahead | 2024 | 17.1 | 33.2 | 16.1 | 16.3 | 31.7 | 15.4 |
| Broadmead Road S Ahead | | 16.8 | 32.7 | 15.9 | 16.6 | 32.3 | 15.7 |

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|------------------------|------|------|------|------|------|------|------|
| Broadmead Road N Ahead | 2035 | 17.3 | 33.7 | 16.4 | 16.4 | 32.0 | 15.6 |
| Broadmead Road S Ahead | | 17 | 33.1 | 16.1 | 16.8 | 32.7 | 15.9 |

7.4 Public Rights of Way Assessment

This draft TA does not present the results of the PRow assessments. This is due to on-going development of the Project. The final TA will provide a full assessment of the impact of the project on the PRow.

8. SUMMARY AND CONCLUSION

8.1.1 This Draft Transport Assessment (TA) has been prepared on behalf of Network Rail Infrastructure Limited (NR) to support the second round of consultation for the Network Rail East West Rail (Western Section) Phase 2 Transport and Works Act Order (TWAO).

8.1.2 The existing baseline conditions within each subsection have been set out in the TA.

8.1.3 The trip generation for the construction and operational phase of the project have been set out however on-going scoping discussions with the EWR consortium are still being undertaken and hence the assessment methodology has not yet been determined. Accordingly there are a number of admittances in this report. These are as follows:

- Trip distribution methodology;
- Construction routes;
- Multi-modal trip generation at stations; and
- Highway impact assessments.